
AUDIT REPORT



INTEGRATED DISBURSEMENT AND INFORMATION SYSTEM (IDIS)

00-DP-166-0003

MAY 11, 2000

INFORMATION SYSTEMS AUDITS DIVISION
OFFICE OF AUDIT



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, D.C. 20410-4500

OFFICE OF THE INSPECTOR GENERAL

May 11, 2000

MEMORANDUM FOR: Cardell Cooper, Assistant Secretary for Community Planning
and Development, D
Joseph Smith, General Deputy Assistant Secretary for
Administration, AA

FROM: Benjamin K. Hsiao, Director, Information Systems Audit Division, GAA

SUBJECT: Final Audit Report of the Integrated Disbursement and Information System (IDIS)

We completed an audit of HUD's ongoing development efforts for improving the Department's Integrated Disbursement and Information System (IDIS). The objectives of our audit were to review: (1) the current status of the IDIS development efforts (including the process for making changes to program code); (2) Community Planning and Development's (CPD) operation of the system and interface with the grantee system users; and (3) the control over data input security and integrity.

We found that several changes are being made to improve the system but without adequate program code testing. As a result, additional programming errors are being introduced which are preventing CPD from reaching its goal of restoring user faith in the system. Much of the testing inadequacies can be corrected by enforcing adequate testing of all changes and using an automated testing tool. We also found that security over data input is inadequate and have made several recommendations for improvement.

Within 60 days, please submit for each recommendation a status report on: (1) corrective action taken; (2) the proposed corrective action and target completion dates; or (3) why corrective action is considered unnecessary.

Thank you for the assistance provided to us by your staff during the course of our review. Should you have any questions, please contact me at 708-3444, extension 149.

Attachment

Executive Summary

We completed an audit of HUD's ongoing development efforts for improving the Department's Integrated Disbursement and Information System (IDIS). The objectives of our audit were to review: (1) the current status of the IDIS development efforts (including the process for changes to program code); (2) Community Planning and Development's (CPD) operation of the system and interface with the grantee system users; and (3) the control over data input security and integrity.

Our audit concluded that although improvements are being made to system, additional programming errors are being introduced because of inadequate testing of the program code (software) changes. The Quality Assurance staff was not testing all system changes and lacked an automated testing tool to ensure that adequate baseline testing was performed. Reliance on supplemental testing by grantee users and others of the pre-releases of new software versions is not justified because few of these parties are using the pre-production facility.

Due to various data problems, such as those caused by a lack of system functionality and input edit features, the CPD had to allow its contractor staff to make data corrections directly to the system database files bypassing normal online entry edits. In the process, the audit trail identifying entry sources and entry times was destroyed. Our review of drawdowns of grant funds found that 60 percent were requested and approved by the same grantee user. Our contact with a sample of grantees found that they have adequate staff available to permit better segregation of duties for reducing the risk of fraud, waste, and abuse.

We made a total of 16 recommendations to improve the effectiveness and efficiency of the ongoing development processes and system security. Many of the testing inadequacies can be corrected by forcing the testing of all system revisions and by purchasing and using an automated testing tool. Adequate data security and integrity can be established by enforcing the principle of segregation of duties for all data entries. This segregation includes discontinuing data entries by HUD contractors, and ensuring that grantee entries for requesting and approving grant funds are performed by different individuals.

Response to Report

We provided the draft report to the General Deputy Assistant Secretary for Administration and the Assistant Secretary for Community Planning and Development on January 31, 2000, with a requested response date of February 25, 2000. These officials provided us separate written comments to those report recommendations applicable to their respective operations on April 27 and April 28, 2000. The responses are included in Appendices C and D. These officials agreed with seven of the report's 16 recommendations. We are requesting that these officials eliminate their nonoccurrence. Our evaluation of their comments and our reasons for requesting agreement with those report recommendations are included prior to the report's recommendation sections.

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Introduction

Integrated Disbursement and Information System (IDIS). The IDIS system consolidated the processing of four major entitlement (formula) grant programs within HUD's Community Planning and Development (CPD) operations. The four programs are the Community Development Block Grant Program (CDBG), the Home Investment in Affordable Housing Program (HOME), the Emergency Shelter Grant Program (ESG), and the Housing Opportunities for Persons With AIDS (HOPWA). The system became operational in February 1996, and it is the first automated system to allow non-Departmental end users -- the grantees -- to become the primary source for entering grant project and activity data (including payment requests). One of the main objectives of the system, besides consolidation, is to permit the grantees to setup, request, and report grant project funds by individual detailed activities. Other objectives include: (1) providing for monitoring grantee activities and accomplishments through a comprehensive set of reports; (2) providing subgranting capability; (3) tracking grants by projects, activities, and accomplishments; (4) allowing for program income to be added to authorized amounts for drawdown purposes; (5) and strengthening data integrity.

Although the IDIS generates automated vouchers for requesting grant fund payments, the Department's existing grant payment system, the Line of Credit Control System (LOCCS), is used for requesting payment from the U.S. Treasury. Based upon IDIS data as of May 1999, approximately \$4.5 billion is disbursed annually through IDIS. As of June 3, 1999, there were 1,317 grantees throughout the nation with bank accounts for IDIS requested payments (998 entitlement grantees and 319 non-entitlement subgrantees or subrecipients). The state governments, however, have been slow to embrace IDIS, as only 11 states were on IDIS as of May 1999. In an October 5, 1998, Conference report to HUD's appropriations law for FY 1999, Congress ordered HUD not to require additional states to implement IDIS until the problems with data and reporting are corrected and the system can provide for Electronic Data Interchange (EDI) and Internet capabilities. Both of these capabilities have since been added, and as of April 27, 2000, 41 state governments have been established as grantees. The CPD objective is to have all states, with one exception, on IDIS by June 30, 2000. In addition, a change control management program has been installed on IDIS to control and track all system program code changes.

Departmental Grants Management System (DGMS). The Department has two broad categories of grant programs -- entitlement (entitled due to the grantee's population size) and discretionary (competitively awarded). A goal of the Department has been to consolidate as many of the 100 plus grant programs as possible under one grant system. A feasibility study for DGMS was completed on September 17, 1998, and concluded that most Departmental grants, including entitlement and discretionary, can be processed similarly. A second version of the draft Functional Requirements Document, issued on June 30, 1999 concluded that a new single grant system (Oracle based) covering both categories should be developed to replace the existing grant systems, including IDIS. The Department is in the process of developing this system.

Prior GAO and Inspector General Audit Reports. The General Accounting Office (GAO) has issued an audit report (GAO/RCED-99-98, dated April 27, 1999) on IDIS. The report identified many data integrity and system functionality problems with IDIS and recommended that the

Department consider whether it is more cost-effective to continue to improve and modify IDIS for eventual use in the new DGMS or to replace it.

Our office issued an audit report (00-DP-166-0002, dated November 4, 1999) on the initial development efforts of DGMS. We found that HUD reversed its decision made in the feasibility study to use and modify IDIS and another federal agency's system to develop the new grants management system. We recommended that HUD perform a new feasibility study to determine whether this change had merit and was beneficial. We also recommended the consolidation of the separate ongoing development efforts of IDIS and DGMS under the Department's Chief Information Office (CIO) and curtailment of both efforts until completion of the new study. HUD management disagreed with the consolidation under the CIO. It agreed with the new feasibility study recommendation and issued this study on December 07, 1999. However, we have questioned the reliability of this study and its associated cost analysis. The study also failed to address the feasibility of the initial decision to proceed with a single grant system for HUD programs.

Our office has also performed reviews of IDIS for the annual financial statement purposes and has made comments regarding IDIS' problems on those financial statements. The scope of our reviews for these purposes related to the capability of using IDIS output reports for grantee monitoring and the status of accounting for program income.

Audit Objective

The objective of our audit was to review the current status of IDIS' ongoing development and improvement efforts. We reviewed the process for changes to program code, CPD's operation of the system and interface with the grantee system users, and the control over data input security and integrity.

Scope and Methodology

Our audit was performed at the Department's Headquarters, the Detroit Field Office, and selected grantees in the State of Michigan. Our review was conducted during February 1999 through December 1999, and included review of the real-time (production) IDIS database files, pre-production (grantee test and training) database files, and the records of the development team, help-desk operations, CPD, and selected grantees. We also performed some limited tests using the pre-production facility.

Our audit scope excluded the review of recently installed IDIS improvements, such as the change control management program, EDI, and Internet capabilities. We also have reserved the review of the program income accounting and the monitoring value of IDIS output reports for the annual financial statement audit.

The management control categories relating to our audit objectives include compliance with the following categories:

- Testing of program code changes
- User assistance and training
- Control over data input integrity
- Control over system security

Our review found weaknesses in these categories and our recommendations for their improvement are included under the Findings section of the report.

Our audit was completed in accordance with the "Government Auditing Standards," issued by the Comptroller General of the United States. Accordingly, we included such tests of records and other auditing procedures that we considered necessary under the circumstances .

System Changes Are Affected By New Programming Errors

Due to inadequacies in the initial system design, the IDIS is constantly being modified with a new version coming out every 30 days and with several quick fixes in between. Initial design problems affected the reliability of both data input recording and output reports. To reintroduce users (grantees) faith in the system, the Community Planning and Development (CPD) program has had to resort to making corrections directly to the database, bypassing system input controls, establishing a stabilization plan to prioritize the system fixes, and initiating a massive data cleansing operation. Although the new releases and fixes are improving the functionality of the system, these modification efforts are being done without adequate development test plans and end-user testing. These efforts have resulted in new data integrity and functionality problems and user complaints. The constant system changes have also resulted in a high occurrence of user trouble (help desk) calls and a need for efficient user training. Much of the ongoing system problems can be resolved through adequate test plans and user testing.

Background

CPD staff identifies the need for system modification or fixes with assistance from contractor staff. This staff includes two individuals working directly for the Systems Development and Evaluation Division and a help desk operation contracted for the system. One of the contractors is responsible for reconciling grant balances based upon IDIS records with payment records under HUD's LOCCS system. This contractor is the source of many of the correcting data entries to the IDIS and a source of system improvement ideas. The other contractor analyzes the numerous help-desk calls from grantees to also help analyze the need for system improvements and modification. Data corrections and requests for changes and additions to the system programs are forwarded to the IDIS contract development staff, who works for the Office of Administration's Office of Grants Management and Program Compliance Support. The development staff processes the data corrections and writes and tests the program code (COBOL) changes. After testing is completed, system changes are moved to the pre-production facility for optional grantee testing or training use.

Scope of our tests

To determine the inadequacies of the initial system design, we reviewed the comments included on the COBOL programs explaining the past problems being corrected or improvements being made. We also

reviewed the CPD summary listing of these comments, presented as a list of system improvements, on its Internet site. In addition, we reviewed CPD's stabilization plan and data cleansing procedures for the system. To determine any inadequacies in current system procedures, we reviewed the data correction procedures, testing procedures, and help-desk operations. We also performed a limited number of tests using the pre-production facility.

The Initial System Design was Inadequate

The system was "rushed to the market"

CPD officials have acknowledged to us that the IDIS was "rushed to the market". For example, one of the pre-design steps in the system development and implementation, the Functional Requirements Document, was not issued in Draft until July 23, 1996. However, the system became operational in February 1996 and many of the computer programs were designed (written) over a year earlier in February 1995. The GAO in its audit report (GAO/RCED-99-98 Community Development, April 1999), concluded that the system was: fraught with major design flaws; difficult to use; subject to data entry problems; and difficult to correct data entry errors and to obtain output reports. Aware of the initial design inadequacies, CPD has been continuing to upgrade the capability and functionality of the system under a "stabilization plan" with new versions being issued on an average of every 30 days.

CPD listed 175 system corrections and improvements on its Internet site

To report its system improvements and its stabilization plan results, CPD listed 175 corrections of major problems since Fiscal Year 1998 on its Internet site. An excerpt of the list is included in Appendix A of this report. The problems were primarily related to: (1) developer programming errors which resulted in incorrect or invalid data input and reporting insufficient logical edits (such as, system acceptance of alpha-numeric dates when only numeric are valid); (2) online screen display problems; and (3) system freezes or aborting (abends) during grantee input operations. These programming problems, along with inadequate grantee knowledge of user input procedures, have resulted in numerous corrections being made by HUD

contractors directly to the systems database files. The CPD also initiated a large "data cleansing" operation to be performed by the grantees.

Corrections being made directly to the database files by HUD contractors

The CPD contractors and developers have used two methods to make data corrections to system database files -- COBOL programs and direct changes using a mainframe utility tool for DB2 databases, named Structured Query Language (SQL) Processor Using File Input (called SPUIFI). The developers' COBOL program code generally includes the name of the program or fix to identify such changes made by this method, such as "C04BO27" or "FIX617." However, the development team said that the COBOL program method was discontinued as it took longer (a couple of weeks) to obtain approval of these.

Contractor corrections lack grantee participation

Corrections made by the SPUIFI method are generally executed the same day as the development staff receives them. Approximately two-thirds of the 1,149 SPUIFI entries between October 2, 1997 and July 1, 1999, were made by the CPD contractor responsible for reconciling grant fund balances. The contractor made these corrections rather than the grantees because the corrections may involve one or more of the following:

- multiple grantee database files
- more than one grantee
- changes for which IDIS lacks functionality, such as certain data deletions
- lack of grantee know-how
- more expediency by avoiding grantee involvement

SPUIFI corrections are being made almost every day and average 55 per month. Often, corrections of several different grantees are consolidated under one SPUIFI correction entry. Unlike changes through COBOL programs, these changes are not separately identified as correcting entries. Corrections which involve new record inserts will generally have the contractor's unique access ID number, but record changes (record updates) will generally not contain the developer's ID. We estimate that over 85 percent of the SPUIFI corrections involve updates. The security implications of SPUIFI entries and our recommendations to discourage use of this method are discussed in detail under Finding 2 of

**Data correction efforts
are labor intensive**

this report.

In addition to corrections being identified by CPD and grantee daily operations, CPD has initiated a massive data cleansing operation. This include printing listings of possible invalid data, such as data fields with blanks or illogical data (alpha dates, etc.), and sending the lists to grantees for reconciliation with their input records. Certain complete database files for each grantee have also been provided for grantee review purposes. The Director of the CPD Systems Development and Evaluation Division said that this data cleansing effort will be a continuing activity for the foreseeable future. The data cleansing efforts, as well as the corrections through the SPUIFI utility, are labor intensive activities. The database files sent to grantees have resulted in numerous calls (5% of the total calls) to the help-desk staff requesting explanation and assistance. The SPUIFI entry process, included under Appendix B of this report, is a 15 step process that involves at least three contractors and one HUD employee. Although many of these efforts are the result of past inadequate system design, our review found that current modification efforts are not being adequately tested and, in turn, have created additional problems.

Testing of System Changes is Inadequate

System design changes are made by program developers by writing new COBOL program modules or by making changes to existing modules. These new modules or module fixes are tested by the programmers to determine if they work (called module or unit testing). After the initial unit testing, the modules are forwarded to the contracted Quality Assurance (QA) staff, who develops a plan for testing the operation of the module with the other system program modules (integration testing) and for testing against previous operation of the past program versions (regression testing). After testing is completed and prior to the release for grantee use, the change is released on the pre-production facility for grantees to test and to obtain self-training on the new planned version. The lead developer told us that he partially relies on the pre-production facility testing by the grantees and the CPD contractors as part of the overall testing effort of system changes.

System testing is substantially inadequate

Our review of the testing program found that it is substantially inadequate. We selected 10 requests for program module changes and found that only 5 had test plans. In addition, the test plans reviewed were basically ad hoc, that is based upon what the QA staff thought was important for testing. There were no formal procedures to ensure that integration and regression tests were done. In addition, we found that few grantees or others were testing on the pre-production facility.

The QA staff lacks an automated testing tool

The QA staff lacked any automated testing software program which would have helped ensure that adequate integration and regression testing was performed. We believe that a commercial automated testing program, like "CA-Verify", would especially help in regression testing -- that is, ensuring what worked previously will work again with the new version. This program automatically takes screen captures of test input which can be copied over (if successfully run without problems) to form a baseline to run future program changes. The QA staff has been trying to capture input test streams through manual print-screens, which is inefficient and ineffective in terms of capture assurance. Automated testing software would be helpful not only to IDIS modifications but also for other Hitachi mainframe applications.

New software version crashes on a mandatory entry

We found an example of both inadequate regression and pre-production testing involving a new version released on the pre-production facility on August 8, 1999. On September 20, we ran some tests by setting up a project and requesting a grant fund drawdown in the following order mandated by the system programs:

- Set up a project
- Approve the project
- Set up an activity
- Commit funds for the activity
- Drawdown authorization entry "01"
- Request fund drawdown
- Approve fund drawdown

We were able to proceed to the point of the drawdown authorization entry 01. At this step, our computer froze and we had to perform a hard-reboot. We tried the entry four times with the same result. An IDIS user

manual, dated April 30, 1999, describes the entry 01 as:

"Always the first step in any drawdown activity. Regardless of whether you are creating a draw, changing a draw, or viewing your grants, you must always do Authorization, Option 01".

We notified the help-desk about the problem on September 20. The representative responded that the online version had already been released on the previous Friday (September 17, 1999) and they had received several grantee calls about the problem. The developers had been notified at that time and had fixed the program that day. As a result of our call, the developers copied the fix to the pre-production version. Although the problem was quickly fixed, frequent problems, such as these, do not help CPD's objective of restoring grantee faith in the IDIS system. The help-desk representatives said they often receive numerous calls when new versions are released because of similar program problems.

**Few grantees are using
the pre-production
testing facility**

To determine how many grantees were actually using the pre-production facility for testing or training, we tallied the source and number of the entries to the "draw_xaction" database file (table). This table is the centerpiece of the IDIS system as it involves requesting and approving fund drawdowns. For the 5-month period between May 29, 1999 and October 22, 1999 (the date of our review), we found only 8 out of an estimated total 6,700 "active" grantee users had made test/training entries to the facility. These users had made a total of only 36 entries, with four users making only one entry each. Besides the two OIG auditors, there were 13 other users making entries -- 3 HUD Field Office personnel and 10 developers or help-desk staff. The number of entries made by all users totaled only 92 entries. These statistics indicate that IDS should not continue with the current practice of relying on grantees and other parties of catching program errors/bugs before new versions are released for use.

**Grantees lack incentives
to use the facility**

Although CPD encourages grantees to use the pre-production facility to test new versions via news announcements on the online IDIS, there seems to be insufficient incentive for grantees to devote their limited resources. This may be especially true since frequent issuance of new versions increases the resource demands. Realizing this environment, we recommended in our audit report on the proposed IDIS replacement system, the Departmental Grants Management System, that HUD reimburse grantees for their efforts in testing new programs for that system. This recommendation is not without precedent, as Congress in its FY 1999 appropriations for HUD provided the states with an option to retain a maximum of \$50,000 of grant funds to help defray the cost of converting to the IDIS system. Therefore, we are repeating this recommendation again for CPD to recruit and reimburse experienced grantee IDIS users to help test new system revisions.

Training of System Users is Inadequate

Training of grantees and other users of the IDIS system can be accomplished through various means. Besides use of the pre-production facility, other methods include classroom training with hands-on computer/terminal use, issuance of user manuals and other training materials, such as CD-ROM disks, help-desk assistance, and interactive responses to data entries from the online system itself. All five methods are being used by CPD; however, similar to the pre-production facility usage, there are shortfalls in each.

**Classroom training
cannot reach most
grantees**

During FY 1999, CPD through a contractor, provided six classroom training sessions, which trained an estimated 345 students. We believe, however, that classroom training might possibly be one of the least efficient methods. Based upon a total active user base of 7,500 (6,700 grantee users and 800 HUD employees), this training represented only 4.6 percent of the total users. The total base of users could be substantially larger if all of the state governments join IDIS and the number of existing users is expanded under recommendations that we made in Finding 2. Other factors limiting the efficiency of classroom training (and published training materials like CD-ROM disks) are the frequent system changes and/or the turnover in grantee staff.

Several grantees in Michigan had large staff turnovers with one having a complete turnover.

IDIS user manual needs improvement

Probably the best method of instruction is the combination of a good user manual and an adequate interactive response system. In fact, with these resources, we were able to learn the basic system data entries in four to six hours without any formal training. The user manual that we were using, however, was not as effective as it could have been. The manual, which was included on the CPD website in Adobe Acrobat format, was not consolidated as each chapter was listed separately¹. Prior to using the pre-production facility, we joined all the chapters together. We walked through the entry process by "blocking off and copying" the online screen number and pasting it to the "find" feature on the electronic user manual to take us to detailed entry instructions.

We noted another problem with the user manual. It lacked an overview section on the mandatory seven step process for obtaining a fund drawdown (discussed under the testing section of this finding). An overview section has since been added in a later manual version but it does not clearly identify or summarize the seven drawdown steps.

Additional logical edits needed

The most effective method for guiding users is the system program's interactive features, which basically are the logical edits. These edits prevent the acceptance of invalid entries and respond with the reasons therefor. As shown in Appendix A, several logic edits were missing in the past and more need to be installed. Establishing additional edits will help guide inexperienced users through the data entry process.

Help-desk staff need access to select pre-production accounts

As a last resort, grantee users who are unable to make the desired entries to the system can call the help-desk for assistance. User training is a byproduct of the help-desk's providing this assistance. However, from our discussions with the help-desk staff, they expressed difficulty in assisting some users because they could not see the users' screens. The IDIS lacks the functionality of view access rights for non-grantee users to grantee screens. To establish view access right functionality, reprogramming would be involved, which might not be justified in view of the planned DGMS replacement of IDIS. As a substitute

¹ A consolidated manual (in Microsoft Word format) was later available on the website but it was not easily locatable.

measure, we recommend that the help-desk staff be provided (on the pre-production facility) with a sample of grantee accounts that are fully populated with most of the data entry scenarios. Since the pre-production facility does not involve official data, security is not harmed. The staff will be able to see a data entry problem, only the specific figures will be different.

Auditee Comments

The Office of Administration and the Office of Community Planning and Development provided their written responses to our draft audit report on April 27, and April 28, 2000, respectively. See Appendices C and D for the full responses. Administration agreed with four (No. 1, 2, 4, and 6) of the five recommendations that related to their responsibilities -- IDIS development activities.

Administration did not agree with recommendation No. 5, while CPD disagreed with recommendation No. 3. In disagreeing with No. 5, Administration said they needed examples of those edits that were lacking. For recommendation No. 3, CPD said that use of reimbursable agreements for selected grantee users to test new IDIS software versions on the pre-production facility was unnecessary since the DGMS system being developed will soon replace IDIS.

In its response, Administration also disagreed with our opinion that classroom training might be the least efficient training method and that additional IDIS interactive features are needed to help guide users through the data entry process. Administration also took exception with inclusion of certain historical information in the background sections of the report.

**OIG Evaluation of
Auditee Comments**

We request that management change their positions on recommendations No. 3 and 5 and try to hasten the implementation of recommendation No. 1 (purchase of automated testing software). Problems with inadequately tested new versions of IDIS software continue to exist. Although management plans to include automated testing software in its FY 2001 budget, moving the procurement up (if any current budget funds are found) will help solve some of these problems. Testing by developers through the use of automated tools still needs to be supplemented by user testing. Grantee user testing through the pre-

production facility (recommendation No. 3) can be a very helpful method to find software bugs before they are issued in new versions. CPD's reliance on the future release of DGMS to make this recommendation obsolete is overly optimistic. We do not share in this optimism because of HUD's history of development problems with IT projects. These problems are the reason why we have included historical information on IDIS and DGMS development in the background sections of this report.

Administration's comments on classroom training, interactive IDIS features, and logical edits (recommendation No. 5) all relate to the ability of the user to navigate through the system to complete his/her tasks, such as grantee data entry or HUD monitoring or review. Because of the large number of grantee employees and employee turnover, we do not believe sufficient resources and funds exist to train all grantee employees and their replacements. According to the FY2000 workplan for the replacement DGMS system, the project team estimates that it will need 32 trainers working at five different sites for 80 weeks to train 29,000 users. However, this total falls short of the 100,000 anticipated DGMS users. Although our projected 15,000 IDIS users (based upon 7,500 active users in May 1999 plus new users from the addition of state grantees and their subgrantees plus additional users recommended by us for adequate separation of duties) is less than the DGMS user projections, training of all IDIS users is not practical. Training one or two representatives from each grantee organization is a viable option for supplementing other training methods.

Our recommended IDIS user training/navigation method relies on the interactive features and accompanying logical edits to guide the users through the process. The IDIS system does have a substantial number of interactive features, but needs more. We could not test the recent status of interactive features/edits for data entry because our access to the pre-production facility was removed by CPD; however, we performed a couple of tests of the view access and reports download rights during May 3 and May 4, 2000.

We experienced online session crashes or freezes during both of our tests. The first test, where we attempted to view the "LOCCS Interface" selection on the IDIS "Utilities" menu, resulted in a session crash (abend). We

had to exit the session and wait for 30 minutes (the mainframe timeout limit) before we could log back onto IDIS. The second test involved the reports (and data) download option. Approximately 10 percent of the self-help desk calls involve problems or questions with reports downloads. Our first two attempts [selecting data download option "E03", then selecting a grantee, and then deciding to go back to the main menu "F4", or in lieu of "F4" selecting "F8" (next screen) and then "F4" and back to "E03"] each resulted in session freezes which required us to logoff IDIS and then log back in. Through trial and error, we were able to download a report, but IDIS did not provide interactive responses on how to cancel the process or when to press "enter" or whether the "Dest" (destination field) was required. Although the session crashes and freezes were the result of inadequate programming and testing, the successful download lacked sufficient interactive guidance.

Recommendations

We recommend that the Assistant Secretary for Administration:

1. Invest in an automated software testing tool for use when making IDIS system changes.
2. Ensure that all IDIS program revisions are adequately tested.

We recommend that the Assistant Secretary for Community Planning and Development:

3. Use temporary reimbursable agreements to obtain experienced grantees to use the pre-production facility to help test IDIS system program changes.

We recommend that the Director of the CPD Systems Development and Evaluation Division:

4. Consolidate the IDIS User Manual and clarify the overview section.
5. Prioritize and establish those logical edits that guide grantees through the entry process.
6. Provide a sample of fully populated grantee

accounts on the pre-production facility to the help-desk staff for assisting grantees during trouble calls.

System Security Is Inadequate

Security over data entries, fund requests, and user access rights is inadequate. Grantee requests for grant funds and the subsequent request approvals are not adequately separated. Sixty percent of the fund drawdowns were requested and approved by the same grantee individual. In addition, help-desk contractors sometimes requested fund drawdowns for the grantees by obtaining grantee access rights from the security administrator or by borrowing the grantee passwords. In addition, contracted system developers and CPD contractors have frequently made correcting or adjusting entries for the grantees through the SPUFI mainframe utility program without identifying themselves as the entry source and without evidence of grantee authorization. Normal security controls were bypassed due to the crisis mode of assisting new or untrained grantees in obtaining grant funds and in correcting grantee data entries. Security discipline needs to be reinforced to ensure data integrity and that the system is protected against fraud, waste, and abuse.

Background

Besides requiring valid user-IDs to access the system, there are three principle controls that provide security over database entries. The initial control is the user access rights file (table) maintained by the IDIS security administrator. The administrator provides individuals with either grantee, HUD Field Office, or HUD Headquarters user access rights or user administration rights. Access rights for the grantees are the only ones that accept input entries from grant transactions to the database files. The various Field Office and Headquarters rights provide for limited viewing rights, report production, and certain other non-grant transaction rights. Those grantees or HUD officials, who were granted "user administration rights," can add, change, or remove individual access rights for each user within their organization.

The next control involves the physical separation of duties concept. The IDIS security objective prescribes that certain grant transactions, such as the grant activity setup, the fund drawdown request, and the drawdown approval are separate functions and should be performed by different grantee individuals. The separation of duties concept also applies throughout the system processes, including HUD Headquarters activities.

The final control concept involves maintaining an audit trail for data input that identifies who made the entries and the exact date and time of the entries. This information can be used to help verify entry authorization and timing or to provide a source to contact in case of questions. The audit

trail is included on all of the major database files in the form of an user-insert ID (an individual's mainframe ID access number), update-user ID, and the system date and timestamp of those entries.

Inadequate Separation of Duties at Grantee Organizations

Scope of our tests

In order to determine the status of the separation of duties involving grantee IDIS entries, we reviewed the user access rights security file, as of May 6, 1999. We also reviewed the database file for the actual fund drawdown transactions, as of May 17, 1999, which included all drawdown requests since April 16, 1998. To determine the number of available staff at grantee organizations, we contacted five Michigan grantees (mid-size cities) who had a limited number of staff with IDIS access.

The access rights security file reveals a lack of separation of duties

The user access rights security file shows that 43 percent of the grantee users can both setup the grant activity accounts and request fund drawdowns against those accounts. The file also shows that 26 percent of the grantee users can perform all three major grant functions -- setup activities, request fund drawdowns, and approve the drawdowns. This consolidation of control over a complete transaction to a single individual increases the opportunity for creating fraudulent or wasteful activities. The ideal control objective is to preclude any grantee user from having access to more than one function. The May 8, 1997 draft IDIS Security Procedures states that: "Data entry for activity setup and drawdown functions cannot be granted to a single user in the same grantee office." Although it is logical that the individual requesting grant funds should not have the capability to approve that request, IDIS was not initially programmed to provide for the separation functionality -- that is, a user who could approve fund requests also had to have fund request access rights². It was not until October 4, 1999, that this functionality was added.

60 % of the fund drawdowns are being requested and approved by the same individual

Although it was not possible to force such separation of

² The requester did not have to have fund approval rights.

duties by program software prior to this date, grantee organizations could still provide for separation of duties by ensuring that those users who were approving fund requests were also not requesting funds. Our review found that this was not being done as 60 percent of the total 352,000 completed drawdown transactions had been requested and approved by the same individual. The GAO had also found an inadequate separation of duties at five of the eight grantee organizations that it visited during its audit of IDIS. In response to GAO's report, HUD management provided some statistics from the security file showing numerous grantee organizations with only one to three employees who had IDIS access rights. Based upon this data, management concluded that grantees have insufficient staff to permit adequate separation of duties. Our review of the security file also showed similar statistics. Over 30 percent of the entitlement grantees had three or fewer employees with active IDIS access. However, our review and analysis of selected grantees did not result in the same conclusion.

Grantees have additional staff to provide for better separation of duties

We reviewed the security file information on all 43 grantees from the state of Michigan and selected 5 grantees with only 1 to 3 users. The population of the grantee communities ranged from 40,450 to 79,144. We contacted grantee officials to determine the possible number of staff that could be involved in the grant transaction process. We asked about staff employed by the Community Planning departments (which generally operate the IDIS programs) and the number of staff at the grantees' Finance and Accounting departments. The following are the results:

<u>Grantee</u>	<u>Pop.</u>	<u>Com. Plan. Dept.</u>	<u>Fin./Acctg. Dept.</u>	<u>Total Avail.</u>	<u>No. w/IDIS Access</u>
Linc. Park	40,450	2	3	5	1
Roseville	51,592	2	3-4	5-6	1
Farm. Hills	79,144	1	9	10	2
Wyoming	63,688	9	12	21	2
East Lansing	50,322	4	10-12	14-16	3

Lincoln Park, Roseville, and East Lansing have staff with IDIS access only from the Community Planning and Development departments, while Farmington Hills and Wyoming also have Finance/Accounting staff with such access. We recommend that the other grantees also utilize the Finance and Accounting staff. In fact,

we believe the approval of fund drawdown requests is a logical function of those departments. HUD program staff can oversee the degree of the separation of duties by modifying a standard grant agreement attachment (Form 424A) to require the grantees to provide data on the number of staff in both departments. In addition, the HUD security administrator needs to add back the provision (contained in the May 1997 procedures) which prohibited a single user from performing all three grant transactions. The revised September 1999 Security Plan had made this provision optional.

HUD Contractors are Making Entries for Grantees

The control problems associated with inadequate separation of duties within the grantees are magnified because contractors working for HUD Headquarters have also been making entries for the grantee organizations. Since the grantees are solely responsible for entering their grant transactions into IDIS, security is compromised when this function is done by others. Security problems are further compounded when documentation of grantee authorization to others is lacking and the audit trail is destroyed during the substitute entry process. Management has provided two explanations for entries by contractor staff -- help desk contractors are assisting untrained grantees in requesting fund drawdowns and contracted CPD staff and developers are making correcting entries for the grantees. Separation of duties is lessened in the first category because one less grantee employee is involved in the drawdown transaction process. Control is even worse in the second category since the grantee is not involved in the entry (correcting entry) process at all.

Help Desk contractors are requesting funds for grantees by obtaining grantee access rights or by borrowing their passwords

Help desk contractors are requesting fund drawdowns for grantees by obtaining grantee access rights or by borrowing (sharing) their passwords. From our review of the May 17, 1999 drawdown transaction file and the mainframe user-insert IDs listed for each transaction, three of the help desk staff made entries to at least 25 fund request vouchers. Of these voucher entries, 14 were requests for fund drawdowns totaling \$278,000. The help desk supervisors informed us that occasionally new (or untrained) grantee employees will

urgently need to request fund drawdowns but do not know how to do it. In these instances, the help desk contractors will request the IDIS security administrator to provide them with access rights to that grantee accounts. The contractors will then make the entries for requesting funds.

The supervisors also told us that they may have to ask the grantees for their passwords in order to make the entries if the security administrator is not available. The supervisors stated, however, that they never approve the fund requests (review of the 14 voucher entries confirms this) since the approval entry can easily be done by the grantee staff. After using the borrowed passwords, the help desk contractor will request the grantee to obtain a new password and will then transfer the grantee phone call to ADP Security, which controls the mainframe access and passwords. The help desk supervisors said they were no longer borrowing passwords. However, it is impossible to detect entries from borrowed passwords since they mask the audit trail. The fund request entries will appear to have been made by the grantees when, in fact, they were made by the help desk contractors. Borrowing of passwords should never be permitted. Although the Department-wide Computer security manual prohibits the sharing of passwords, this policy is not clearly stated in IDIS Security Plan.

CPD and developer contractors are making correcting entries for the grantees

As discussed in Finding No. 1, a substantial number of entries to IDIS are being made by the CPD contractors who help determine the need for new system software changes and who reconcile IDIS data with LOCCS payments data. These entries primarily relate to adjustments or corrections to grantee entries and accounts. They generally include updates/changes to previously made grantee entries as well as numerous new entries for grantees. IDIS system developers and testers have also made numerous correcting or new entries for grantees. These entries are made directly to the database files bypassing the normal system edit checks and the grantee authorization process, through use of the SPUIFI utility. The SPUIFI log shows a total of 31 different individuals (mostly contractors), who have made a total of 1,149 entries as of July 1, 1999. Each SPUIFI entry could involve a single grantee entry/record or hundreds of entries. This entry method removes the grantee (who is responsible for making the

original data entries as well as any necessary reentering of correcting data) from the entry process.

Our review disclosed several security problems relating to the SPUIFI entries -- a lack of grantee authorization, inconsistent methods in writing the SPUIFI entries, and destruction of the audit trail. To determine if there was any documentation of grantee authorization for the contractor entries, we reviewed documentation supporting six SPUIFI entries made by one of the two CPD contractors.

Contractors lack documentation of grantee authorizations

Of the six sets of documentation supporting the SPUIFI entries, four lacked evidence of the grantees' authorizations of the contractor to make the entries on their behalf. For the other two entries, the grantees had contacted the help-desk staff informing them of problems with entered data. One grantee had specifically requested a correcting entry and the other grantee had requested research for a particular problem. Although an entry by non-grantee users is a security weakness, any entry by others, as a minimum, should be documented by direct grantee authorization.

Contractors entries are inconsistent and destroy the audit trail

Our review of the SPUIFI entries revealed that there was no standard method for writing such entries among the contractor staff. For example, two of the contractors used different methods for identifying themselves as the entry source for new record inserts to the "grantee" database file (table). The grantee table is important as it lists the name, address, and ID code of the grantee, as well as whether the grantee has a bank account for fund payment purposes, and various other data fields. The CPD contractor included his mainframe ID number for the user-insert ID and the user-update ID. This correctly identifies the source of the entries in case there are any subsequent questions. The other contractor, a developer, wrote in "IDIS" in both of the user ID fields. In this method, one cannot tell who made the entries. The insert and update timestamp fields were also done differently. The CPD contractor puts in a specific date and time for all of his insert entries (time is always written as "15.00.00"). All the other contractors use the

system clock to automatically stamp the date and time of the record entry. The latter is the more accurate

timestamp method.

A more serious control problem involves contractor update entries, which are more prevalent and involve changes to various data fields, such as fund drawdown amounts, in the existing grantee entries. Most of the contractors do not change the user ID fields nor the timestamps when making these entries. The changed entries, therefore, will appear to have been made solely by the original source of the entries -- the grantees -- when, in fact, they were changed later by the contractors. The two CPD contractors keep copies of their entries in a file directory under their ID on the mainframe computer, however, anyone else reviewing the database files would not know that the changed entries had been altered. The IDIS Data Base Administrator stated that the contractors making these entries should include their IDs in the user-update field. Our review did find one contractor who had done this. We recommend that the direct database entries using the SPUIFI utility should be eliminated as much as possible, but at the very least, they should be identified by the audit trail.

**Developer staff has
grantee user access
rights**

Another security problem evident in the users access rights security file was that, at least, three of the contracted developer staff had grantee access rights, including activity setup, fund drawdown request, and drawdown approval. The GAO "Federal Information System Controls Audit Manual," provides examples of control techniques commonly used at federal agencies. The manual also suggests audit procedures and states that application developers should not have access to database files. Separation of duties control is at risk since the developers can modify computer program changes to cover up any unauthorized entries to the database or vice-versa (such as, changing data entries to cover up errant computer programs).

The security file showed that the lead developer had 45 grantee accounts, another developer had 1 account, and the lead Quality Assurance program tester had 5 accounts. Each grantee account pertains to a specific grantee city or community. Both the developer and the program tester had made SPUIFI entries directly to the database. The lead developer made at least one update entry to a grantee database file. The lead developer

informed us that he needs access to the live database files in order to view and better understand a particular problem that a grantee may be having. As discussed in Finding Number 1 regarding the help-desk grantee account viewing rights, we believe that the non-live, pre-production facility can provide almost similar viewing rights without the security risk. We recommend that the grantee rights be terminated for the developer staff. Two of these staff members have since transferred to the DGMS development project.

The Security Administrator's Role Needs Strengthening

In its April 1999 report, GAO stated that the IDIS security administrator lacked sufficient knowledge of computer security and that the administrator considered "himself more as an access facilitator than a security person." The GAO also reported that it is unclear within the CPD whether he should oversee the contractor staff and what the scope of his duties should be in general. Our review supports the GAO conclusions.

During our April 1999 discussions with the administrator, he was unaware until just prior to that time that he could get a print-out of the user access rights security file. Previously, he was reviewing security issues on an individual user basis -- one screen at a time. In order to adequately identify security problems, this file needs to be downloaded and analyzed via a spreadsheet or database program. In addition, the database files such as the drawdown transaction file and other files should be periodically downloaded and analyzed for any security problems, such as contractor SPUIFI entries.

**Inactive accounts deleted
without guaranteed backup**

In reviewing the SPUIFI entries, we noticed one of the CPD contractors wrote a SPUIFI for the administrator on May 5, 1999, that deleted 285 inactive user access accounts. The administrator informed us that he periodically requests deletions from the file to make it more compact. In responding to the exit-conference copy of the draft report, a CPD official also informed us that deletions are made to prevent inactive users from system access through possible programming bugs. A

deletion entry, however, removes all data, including the audit trail. Although all database files are routinely backed up, the back up copy is an "image" copy, which is not easily assessable, readable, or recoverable for use on a routine basis. The original objective of the IDIS design was not to permit deletions because of the loss of the audit trail. Since past information on user access rights is a necessary part to reviewing the audit trail on all of the database entries, retaining inactive user account information is important. We recommend that inactive account information be retained in the user access rights security file, or, as a minimum, be permanently backed up on an automatic (programmed) basis in readable form whenever any deletion to it is made. Although the CPD contractor, making the SPUFI, retained a copy of all accounts deleted on a mainframe file in a directory under her ID number and on a floppy disk, there is no guarantee that these files will be permanent.

**Security Administrator
lacks independence**

In response to the GAO report, CPD stated that the security administrator had attended a computer security course and plans on attending additional courses. Even with increased knowledge of computer security, there is another problem that hinders security -- the lack of administrator independence from routine IDIS operations. The administrator works for the Systems Development and Evaluation Division, which is responsible for day-to-day operations of the system. The help desk operations also work for this division. We discussed earlier that the administrator had provided grantee accounts to the help desk staff to assist the grantees in making entries. Because of the continuing and sometimes urgent need in assisting grantees and correcting database entries, the security administrator has become part of the operating function and therefore, lacks the independence to oversee system security. The security function needs to be transferred from this division and placed in a CPD office not associated with IDIS daily operations.

Auditee Comments

CPD agreed with only 3 (No. 4, 9, and 10) of the 10 recommendations. Management stated the following reasons for disagreement: For recommendations No.1 and 3, management said that modifying the SF-424A grantee budget data to show the number of grantee employees would be an arduous task but that they might "explore" the

possibility of forcing the separation of duties through use of the IDIS security option. Transferring the IDIS security administrator to another CPD office (No. 2) was determined to be no longer necessary as the conflicting help-desk operation has since been transferred. For recommendations No. 5 and 6, management wanted examples where SPUFIs could have been avoided by the grantees making the corrections and examples where grantee authorizations were not obtained. For No. 7, management stated that program data updates through SPUFIs are adequately maintained on a separate log with the SPUIFI authors identified. For No. 8, management said that (besides the DBA), only the lead developer has access to production data.

**OIG Evaluation of
Auditee Comments**

We request that management reconsider its position on all recommendations for which it disagrees, as these recommendations remain valid. Our reasons follow:

The SF-424A currently provides for total grantee salary information, but it also provides a field for other budget information or details (line 21), which the federal grantor agency can require. We recommend that HUD use this option to request the number of grantee employees in the program and finance offices. CPD needs some basic information to determine when they should force the separation of duties through the security option. The IDIS security administrator is still located in the same office as the SPUIFI authors; therefore, transferring to another office will help ensure independence.

In regards to recommendation No. 5, our May 3, 2000 review of recent SPUIFI update entries revealed that many were simple in nature, such as changing the suballocation amounts or grant drawdown amounts for the "Grant" table or changing the grant recipient's organizational type from "other entity" to "CHDO reserve" on the "Act Funding" table. Because our access to the pre-production data entry facility was removed, we cannot verify whether the IDIS functionality would permit the grantee users from making these changes. If it does not, then the functionality should be programmed so that the developer or contractor team is not a required permanent data entry fixture. In regards to No. 6, we had previously provided CPD a copy of our audit workpaper showing those SPUIFI entries without documented grantee authorization. CPD has not

commented on that information. The log that CPD is referring to in its response to No. 7, is an EXCEL spreadsheet maintained on a HUD personal computer. When reviewing grantee transaction data recorded on the mainframe IDIS database tables, the reviewer would not know whether any of this data was updated by a SPUIFI if such author did not include his ID number in the SPUIFI code. Therefore, the reviewer would have no inclination to search for a log entry on someone's personal computer.

In regards to recommendation No. 8, our concern was with the production access by the lead developer. It is routine for the DBA to have such access. Management's response did not provide the justification why the lead developer needed such access.

Recommendations

We recommend that the Assistant Secretary for Community Planning and Development:

1. Modify the standard grant agreement attachment (Form 424A) to require that grantees provide data on the number of staff in their grant administration departments and finance/accounting departments.
2. Transfer the IDIS security administrator from the Systems Development and Evaluation Division to a CPD office not associated with IDIS daily operations.

Strengthen the IDIS Security Plan by including the following requirements.

3. Require that the grant transactions of activity setup, fund request, and fund request approval be performed by separate grantee users, whenever shown possible by 424A employee data.
4. Prohibit the borrowing/sharing of user access passwords.
5. Permit direct database entries using the SPUIFI utility only on an urgent need basis.
6. Require that SPUIFI entries be supported by documentation of grantee authorization.

7. Provide for a standard method for writing SPUFI entries, to include the entrant's ID and the use of the system clock for the entry's timestamp.
8. Prohibit access to the live database files by the application development staff.
9. Require the security administrator to periodically download and analyze database files, such as the drawdown transaction file, for any security irregularities.
10. Require that inactive user account information be retained in the user access rights security file, or, as a minimum, be permanently backed up in readable form whenever any deletions are made.

Excerpt **From** List Of Prior Problems

<u>Problem</u>	<u>Correction</u>
Grantees reported that in the Total Program section of the Status of HOME Grants report, C04PR27, the amount shown for Program Income in the Total Drawn column is double what it should be.	The HOME Grants report, C04PR27, has been modified to display the correct PI amount.
Users felt that the data displayed on the IDIS canned reports was difficult to read and interpret.	All IDIS canned reports have received a cosmetic makeover for readability. All reports are now easier to read and interpret with the addition of better-aligned headings, new subtotal, and commas in numeric fields.
Grantees reported that the Summary of Activities report lacked subtotals and totals, numeric fields had no commas, cents were not displaying properly, dates were not displaying properly, and the report was difficult to read.	The Summary of Activities report, PR03, was modified to include new subtotal and total fields, numeric fields include commas for readability, dollar and cents display correctly, dates display correctly, and the overall format looks better.
Grantees reported that pressing F7 on the Reports Status screen (C04MU16) causes anabend.	Pressing F7 on the Reports Status screen (C04MU16) now functions correctly.
Grantees reported two problems on the ESG Grantee Summary report (C04PR20): 1) some activities were missing; 2) commitment and disbursed amounts are incorrect.	The ESG Grantee Summary report (C04PR20) now correctly displays activities and the calculations for committed and disbursed amounts have been corrected.
Grantees reported that the Drawdown Voucher Summary report (C04PR07) was not displaying all vouchers.	The Drawdown Voucher Summary report (C04PR07) now displays all vouchers for the grantee in historical date order.
Grantees requested that the Drawdown Voucher Summary report print UOG codes and numbers instead of grantee numbers.	The Drawdown Voucher Summary report (C04PR07) now prints UOG codes and numbers instead of grantee numbers.
Grantees could not get the Summary Of Activities report (C04PR03) to run properly.	The Summary Of Activities report (C04PR03) now runs properly for the grantee. Research determined that the problem was program related. The programmers added another position to the Displayed Amount Field.

Excerpt **From** List Of Prior Problems

Problem

Grantees reported that the Status Of HOME Grant report (C04PR27) was displaying the Percentage Of Disbursed Amounts as greater than 100%.

Grantees requested a way to request draws from a prior plan year, not the current plan year.

Grantees reported that the Total Drawn Amount on the Grants Summary Listing screen (C04MD51) is calculated incorrectly.

Grantees reported that the Create Drawdown (C04MD10) screen is processing vouchers even when an invalid date is entered.

Grantees reported that the Approve Drawdown screen (C04MD12) will accept an invalid year entry, for example an alpha numeric. Also, the screen displays the field color for Year incorrectly.

When creating a Draw, the Activity Committed Amount was not being reduced by Program Income receipts.

Grantees reported that the Security report (C04PR30) is aborting before it downloads.

Grantees reported that the View Activity Funding screen (C04MO04) displays duplicate entries when scrolling up.

The HOME program office wanted a way to

Correction

The Percentage Of Disbursed Amounts now displays correctly. The program was modified to subtract returned funds.

Grantees can now request a draw from a prior Plan Year on the Create Drawdown screen, C04MD11. If it is within 90 days of the end of the CDBG Plan Year, a Plan Year Flag field appears on this screen. Users can enter Y to draw from the previous CDBG Plan Year or leave the field blank to fund from the current CDBG Plan Year.

The Total Drawn Amount on the Grants Summary Listing screen (C04MD51) is now calculated and displayed correctly.

The IDIS code was modified to display an “Invalid Date” message if the user enters an invalid date on the Create Drawdown (C04MD10) screen.

The Approve Drawdown screen (C04MD12) now requires a valid numeric year. If a non-valid year is entered, the field will turn red.

The Activity Committed Amount is now reduced by the appropriate Program Income amount. The programmers also corrected a spelling mistake in an error message.

The Security report (C04PR30) now downloads properly; a processing problem caused the download process to abort.

The View Activity Funding screen (C04MO04) now displays entries correctly when a user scrolls down or up.

The status of a HOME activity cannot be

Excerpt **From** List Of Prior Problems

<u>Problem</u>	<u>Correction</u>
stop grantees from “Completing” HOME activities on the Activity Setup screen (C04MA04) without entering all data required by the HOME Program Office.	changed to Completed on the Activity Setup screen (C04MA04) unless all required HOME data has been entered. IDIS will check the common path and HOME path for any missing, required data and display an error message.
Grantees reported that IDIS hung while processing an ESG program.	A system program was modified to fix a looping problem.
Grantees reported that the CDBG Activity screen, C04MC01, was displaying phantom amounts in the Unliquidated Amount field that the grantee had not entered.	CDBG processing was corrected so that the CDBG Activity screen, C04MC01, no longer displays an amount in the Unliquidated Amount field if it was not entered by the grantee.
Grantees needed to be able to type in cents as well as dollars in the Unliquidated Obligations field on the CDBG Activity screen (C04MC01).	The CDBG Activity screen (C04MC01) now lets users type the Unliquidated/Obligated amount in dollars and cents.
Grantees requested the ability to cancel a project on-line if it had no drawdowns against it. They also requested a new screen where they could provide the reason for cancellation.	Users can now cancel a project on the Maintain Project screen, C04MK02, if it has had no drawdowns against it. They no longer need to contact the TAU to cancel a project.
Grantee administrators reported that the F5/F7/F8/F10 keys are not working properly on the User Information screens (CO4MA20, C04MU01, C04MU03, and C05MU05).	The F5/F7/F8/F10 keys now work properly on the User Information screens (CO4MA20, C04MU01, C04MU03, and C05MU05).
Program C04PB02 is causing LOCCS to reject voucher transactions that use Program Income for the draw.	Program C04PB02 was modified so that vouchers using Program Income are properly processed by LOCCS.

Processing Steps Using The SPUFI Utility

1. Originator writes SPUFI SQL code
2. Originator prepares and sends an e-mail describing correction and attaches SPUFI code to the Quality Assurance (QA) staff
3. QA assigns a log number and logs in the proposed SPUFI
4. QA prepares a description of proposed correction on a separate correction form
5. QA sends an e-mail back to originator that he has received the SPUFI code
6. QA provides correction form with location of SPUFI code on the mainframe to the data base administrator (DBA)
7. DBA reviews SPUFI
8. DBA batches SPUFI with or without others in a standard JCL (which includes 8 mainframe automated execution steps)
9. DBA prepares e-mail on a standard form with various data elements, attaches JCL, and e-mails the package to HUD's Production Management Branch (PMB)
10. PMB employee verifies HUD authorization by observing that a HUD (versus a contractor) official is copied on the e-mail addressees
11. PMB e-mails the data to the data center for execution
12. Upon execution, DBA reviews output results for any SQL error codes
13. DBA completes bottom portion of correction form and provides to QA
14. QA completes the logbook entry and files correction form
15. QA sends an e-mail to originator saying entry was or was not executed successfully

CPD's Comments

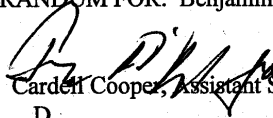


U.S. Department of Housing and Urban Development
Washington, D.C. 20410-7000

APR 28 2000

OFFICE OF ASSISTANT SECRETARY
FOR COMMUNITY PLANNING AND DEVELOPMENT

MEMORANDUM FOR: Benjamin K. Hsiao, Information Systems Audit Division, GAA

FROM: 
Carden Cooper, Assistant Secretary for Community Planning and Development,
D

SUBJECT: Response to Draft Audit of the Integrated Disbursement and Information System (IDIS)

We appreciate the opportunity to review and comment on the draft audit of IDIS. The following comments are intended to (1) offer revised wording and concepts that will present a balanced view of the system and (2) identify our planned corrective action or disagreement with the draft findings and recommendations.

CHANGES TO REPORT LANGUAGE

While the audit identifies recommendations for further improvements to IDIS, we are disappointed that it does not recognize the significant progress that has been made over the last year. A reading of the report leaves one with the impression that IDIS remains a broken system. The truth is that substantial improvements have been made as a result of Office of Inspector General (OIG) and General Accounting Office (GAO) audits, as well as comments from CPD and grantee users. It is only fair that your report give credit to these system improvements. As evidence of these improvements consider the following:

- The Council of State and County Development Agencies (COSFDA) has been one of IDIS' harshest critics. On December 2, 1999, we received a supportive letter from a COSFDA official, Ms. Carol Hynes Assman. She states the following:

"In August of 1998, COSFDA provided HUD with a very specific list of items that were wrong with the IDIS system and needed to be fixed. On the top of that list was the need for access via the Internet (rather than through a slow modem connection) and an electronic data interchange to ease (or hopefully eliminate) the amount of duplicate data entry... To the best of my knowledge, HUD has addressed all of the requested changes/adjustments."

CPD's Comments

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- More than 200 IDIS system enhancements have been implemented, many of which were requested by both HUD, grantee customers, the OIG and GAO. Examples of some of these enhancements are as follows:
 - ⇒ New Internet web access established which offers efficient way to connect to IDIS
 - ⇒ States can now directly transfer projects/activities to IDIS, because of the development of electronic data interchange
 - ⇒ CAPER process eased, because of major improvements to reports module
 - ⇒ More reliable data now exists due to data cleanup efforts
 - ⇒ “National” training sessions now held more frequently
 - ⇒ IDIS system security improved to address OIG recommendations
 - ⇒ Users better informed, because of live technical assistance and documentation.
 - ⇒ Grantees can now draw from prior year funds to better manage accruals
 - ⇒ Draws now permitted against receipted funds, after commitment
 - ⇒ Users can use existing activity as template for new activity
 - ⇒ Users can now quickly and easily reallocate excess activity funds to another activity
 - ⇒ Program-specific screens are easier to use, and contain more edit checks
 - ⇒ And nearly 200 more!
- Forty states and over 1000 entitlement communities are currently live on IDIS. The remaining states, including the Insular Areas, will be on IDIS by June 30, 2000. Further, much of the improved IDIS functionality will be incorporated into the Departmental Grants Management System (DGMS). This would never have been allowed to happen if IDIS was not performing at a high level of proficiency.

AUDIT FINDINGS AND RECOMMENDATIONS

The draft audit report cites two findings, and offers multiple recommendations. The findings and recommendations that are addressed to the Office of Community Planning and Development (CPD), and our planned corrective action or disagreement with them are described below:

CPD's Comments

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Finding 1: System Changes are Affected by New Programming Errors.

Recommendations

- 1. Invest in the purchase of an automated software testing tool for use in IDIS system changes (as well as other Hitachi applications).**

Response: This is the first time CPD has been made aware of OIG's desire for such a testing tool to be purchased. This recommendation falls within the purview of the Office of Administration (OA). A copy of their response covering this item is attached.

- 2. Ensure that all IDIS program revisions are adequately tested.**

Response: This recommendation falls within the purview of OA. A copy of their response covering this item is attached.

- 3. Use temporary reimbursable agreements to obtain experienced grantees to use the pre-production facility to help test IDIS program changes.**

Response: CPD does not concur in this recommendation. We do not see the merit in investing a large amount of staff time and other resources in trying to implement this recommendation for IDIS, because system development efforts for IDIS are scheduled to end this year with the activation of DGMS. This suggestion has been conveyed to DGMS project sponsors for possible implementation for that project.

- 4. Consolidate the IDIS User Manual and clarify the overview section.**

Response: We are modifying the manual and expect to complete the effort during FY 2000.

- 5. Prioritize and establish those logical edits that guide grantees through the entry process.**

Response: The OIG did not identify any suggested edits to help guide the grantees through the data entry process. We would gladly consider any specific recommendations you may have.

- 6. Provide a sample of fully populated grantee accounts on the pre-production facility to the help-desk staff for assisting grantees during trouble calls.**

Response: CPD and OA will work together to establish a separate environment that is the mirror image of the production region to further enable the help-desk staff in assisting grantees during trouble calls. Training will be conducted to a degree that

CPD's Comments

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help-desk personnel, who support grantees, have the capability to duplicate functions required by the grantees.

Finding 2: System Security is Inadequate.

Recommendations

1. **Modify the SF-424 to require grantees to enter the number of their staff in grant admin and finance/accounting functions**

Response: This recommendation is made because of the OIG's concern that a proper separation of duties does not currently exist. Modifying the SF-424 to enter the number of staff would be an arduous task, requiring the approval of the Office of Management and Budget. That process could last upwards of a year or more, if approved at all. By that time, DGMS should be close to full operation. Our response to item no. 3 below, to modify IDIS to help enforce the separation of duties requirement, would appear to be a more valid solution.

2. **Transfer IDIS Security Administration to a CPD office that is not associated with its daily operation.**

Response: CPD believes that the security administration function is properly placed in CPD's Systems Development and Evaluation Division. This practice is consistent with other on-going system operations in the Department. The help-desk function, that is currently in the same division as the security administrator, is being transferred to OA. The transfer will effectively close this recommendation.

3. **Require that set-up and drawdown functions be performed by separate grantee users whenever shown possible by the count information on the SF-424.**

Response: We do not concur with the use of the SF 424 to achieve this purpose, as described in our response to recommendation no.1 above. IDIS has security features, including access rights based on a user's duties and responsibilities. The system can be modified to strictly enforce separate drawdown and approval functions. We will explore that method as a means of ensuring, to the maximum extent possible, that proper separation of duties occurs.

4. **Prohibit sharing user access passwords.**

Response: The HUD ADP Security policy does NOT allow grantees to share user IDs and passwords. As a reminder to grantees, this policy will be reiterated via IDIS Live (on-line CPD newsletter on the Internet) and IDIS News (On-line news bulletin accessible to grantees).

CPD's Comments

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5. Permit direct database entries using the SPUFI utility only on an urgent need basis.

Response: This is the current policy. It is only used for changes that can not be made by the grantee. Please provide us with specific instances in which you feel there was not an urgent need.

6. Require that SPUFI entries be supported by documentation of grantee authorization.

Response: SPUFI changes are currently only made with the authorization of the grantee. Please provide us evidence that such changes are being made without grantee authorization.

7. Provide for a standard method for writing SPUFI entries, to include the entrant's ID and the use of the system clock for the entry's time-stamp.

Response. Such a method already exists. A strict procedure is used for controlling and executing SPUFI updates. In all cases, they are properly coordinated, documented and logged. SPUFIs are run sparingly and only in emergency cases, as directed by CPD. An audit trail is available via a documented log, and is kept by CPD. Additionally, since most situations for SPUFI updates are to address unique circumstances which do not conform to the system's update flow of normal business rules, and are not predictable, the system can not be modified to handle them. As a result, each case must be individually analyzed and the data corrected via SPUFI.

The SPUFI update process is thorough and well structured. OA/Office of Information Technology (IT) will notify staff performing SPUFI updates in IDIS that they must record their user ID in the log for all updates. Where coordination with a grantee is appropriate, they will also record in the log that the grantee was contacted and notified of the need/result of the update.

8. Prohibit access to the live database files by the application development staff.

Response: OA did not address this in their response to the audit. However, they previously informed us that the regular development staff does not have access to the production environment for any IDIS update functionality. The only production access allowed is to the Database Administrator and Project Lead to support production problem resolution. The Database Administrator needs access to monitor the integrity of the database and update when circumstances warrant.

9. Require the Security Administrator to periodically download data base files, such as the drawdown transaction file, for security irregularities.

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Response: CPD will download the information and distribute it to field offices for review by the public trust officers.

10. Require that inactive user account information be retained in a readable form whenever any deletions are made.

Response: CPD will work with OA to develop procedures for identifying and securing inactive user accounts, including the archiving and automated retrieval of data regarding historical access control records.

If you would like to discuss our comments further before the report is finalized, please advise.

Attachment

Administration's Comments



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, D.C. 20410-3000

OFFICE OF THE ASSISTANT SECRETARY
FOR ADMINISTRATION

MEMORANDUM FOR: Benjamin K. Hsiao, Information Systems Audit Division, GAA
FROM: Joseph F. Smith, General Deputy Assistant Secretary for Administration, AA
SUBJECT: Response to Draft Audit of the Integrated Disbursement and Information System

We appreciate the opportunity to review and comment on the above draft audit, and look forward to working with the Office of Inspector General (IG) to improve the system's operating performance. The following comments are intended to offer wording and concepts that will present a balanced view of the system as well as to identify the intended actions that will be taken to mitigate the draft findings and recommendations.

Draft Report Comments:

While the audit makes several good points and recommendations, to ensure that the audit accurately reflects the condition of the IDIS, the following corrections/edits are requested:

Finding 1 - System Changes Are affected By New Programming Errors

The text in this section does not consistently reflect the IDIS as it was when the audit commenced in February 1999, much less when it was completed in December 1999., but rather the condition of the system one to two years earlier. Examples of such are as follows:

- On page 1, paragraph 2, states *"In a Conference report to HUD's appropriations law for Fiscal Year 1999, Congress ordered HUD not to require additional states to implement IDIS until the problems with data and reporting are corrected and the system can provide for Electronic Data Interchange (EDI) and Internet capabilities"*. Both of these capabilities have been added, and therefore, the reference to this prior problem that was corrected should be removed from the report.
- On page 1, paragraph 2, sentence 4 begins with the sentence *"As of December, 1999, only 17 states*". Please remove the word *"only"*, and start a new paragraph, adding the revised sentence to the end of the new paragraph as follows:

"In Fiscal Year 1999, the IDIS developers implemented enhancements which have improved data quality, allowed grantees to access IDIS via the Internet, and provided an Electronic Data Interchange (EDI) capability. This satisfies the requirements per a Conference Report to HUD's appropriations law for Fiscal Y 1999, which stated that State grantees were not required to be converted to IDIS until these features were part of IDIS. As of December, 1999, 17 States have been converted to IDIS, and full conversion of all States is expected to be completed by June, 2000".
- The December 1999 Feasibility Study for DGMS evaluates and documents the decisions that were made in the DGMS development and provides a cost analysis for evaluating the

Memorandum received by OIG on April 27, 2000

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development options for DGMS. Therefore, the reference that this document will not be available until June 2000 is inaccurate, as it is currently stored in I-TIPS. Please remove the statement at the end of the first paragraph on page 2, “. . .however, this study will not be completed until June 2000.” and replace it with a new sentence as follows: *“The feasibility study has been completed and is available in I-TIPS for review.”*

- On page 4, the lead paragraph contains numerous pejorative adjectives and adverbs that give a biased and unbalanced presentation. We request that the following text be removed:

“Due to inadequacies in the initial system design, . . . initiating a massive data cleansing operation” and be replaced with:

To remediate IDIS' initial design problems, enhancements were identified to correct data, improve reporting, and provide data entry/access through the Internet and EDI. In all, over 120 initiatives were identified for Fiscal Year 1999. These were prioritized and scheduled such that a maintenance release would be performed each month. To assist grantees with data clean-up, the Office of CPD authorized their staff and IDIS developers to make corrections directly to the database.

- On page 5, paragraph 1, referring to a GAO audit that was performed almost one year ago, demonstrates the emphasis on past problems that have since been corrected. Please remove the following sentence that begins in the middle of this paragraph:

“The GAO in its audit report . . .and difficult to correct data entry errors and to obtain output reports”.

Audit Findings and Recommendations

The draft audit report cites two findings, and offers multiple recommendations. The findings and recommendations, and planned corrective actions or disagreement with them are described below:

Finding 1: System Changes are Affected by New Programming Errors.

Recommendations

1. Invest in an automated software testing tool for use when making IDIS system changes.

Response: The Office of Administration (OA) concurs, and will initiate a study to evaluate the automated testing tools that are available in the market including that recommended in the report (CA-Verify). The study will investigate the availability of automated testing software for features and cost, and the tool will be evaluated as a department-wide testing device – not just for IDIS. The selected software's purchase/license costs will be included in the FY 2001 budget. The IDIS developers will comply with HUD's recommendation.

2. Ensure that all IDIS program revisions are adequately tested.

Response: OA concurs, and will ensure that programs are adequately tested by implementing a more in-depth testing process, including the use of test plans for all releases. This will be in addition to the current procedure of unit testing by the developer, system testing, and verification by the IDIS Quality Assurance (QA) staff. Regression testing will be performed

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for all releases which have software that updates the IDIS data base. There will be no reliance by the IDIS development staff on the pre-production facility to debug software.

3. **Use temporary reimbursable agreements to obtain experienced grantees to use the pre-production facility to help test IDIS system program changes.**

This recommendation falls solely under the purview of CPD.

4. **Consolidate the IDIS User Manual and clarify the overview section.**

Response: Working with staff in CPD, OA will identify needed changes, and make those adjustments deemed necessary, subject to available funding and time constraints.

5. **Prioritize and establish those logical edits that guide grantees through the entry process.**

Response: Enhancements for edit controls will be initiated as they are identified by CDP and the OIG. Specific edits and controls that guide the grantees during data entry were not identified in the audit. As these enhancements are identified, they will be prioritized by CPD for implementation

6. **Provide a sample of fully populated grantee accounts on the pre-production facility to the help-desk staff for assisting grantees during trouble calls.**

Response: A separate environment, that is the mirror image of production region, will be established for the Help desk for assisting grantees during trouble calls.

Note #1: Contrary to the suggestion that classroom training is not effective, it has been observed that many grantees need such an environment to focus on the training away from their offices in a milieu where the student has the opportunity to "make mistakes and learn" and also be able to get immediate answers to questions, despite the fact that logistics and limited training funds prevent training grantees on a very large scale.

Note #2: The report is inaccurate in implying that the program does not have interactive features. The IDIS system uses Help keys and drop-down menus.

Finding 2: System Security is Inadequate.

The 10 recommendations under this finding fall solely under the purview of CPD.

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Associate Director, Housing and Community Development Issue Area, US GAO, 441 G Street, NW,
Room 2474, Washington, DC 20548 (Attn: Judy England-Joseph)