

**AUDIT OF DATA INTEGRITY CONTROLS FOR SELECTED DIVISION OF
RESOLUTIONS AND RECEIVERSHIPS (DRR) AUTOMATED SYSTEMS**

Audit Report No. 99-047

December 21, 1999



OFFICE OF AUDITS

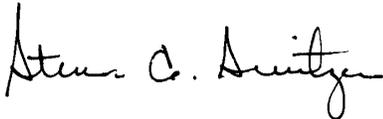
OFFICE OF INSPECTOR GENERAL

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DATE: December 21, 1999

MEMORANDUM TO: Mitchell Glassman, Acting Director
Division of Resolutions and Receiverships



FROM: Steven A. Switzer
Deputy Inspector General

SUBJECT: Report Entitled *Audit of Data Integrity Controls for Selected Division of Resolutions and Receiverships (DRR) Automated Systems* (Audit Report No. 99-047)

The Federal Deposit Insurance Corporation (FDIC) Office of Inspector General (OIG) has completed a review of data integrity controls for selected Division of Resolutions and Receiverships (DRR) automated systems. Our review focused on data integrity controls for systems used by DRR to manage the assets of failed financial institutions including owned real estate, loans, and subsidiaries.

Significant declines in assets under the FDIC's control over the past several years coupled with new systems development initiatives that DRR has underway and planned should enhance DRR's ability to maintain high levels of data integrity. However, until new systems initiatives are fully implemented and their effect on data integrity can be measured, interim controls can assist DRR in monitoring and improving data integrity for DRR systems of record. Further, the experience that DRR obtained during past data integrity efforts can assist it in developing and implementing its new initiatives. Our report includes five recommendations that are designed to enhance data integrity controls in critical DRR automated systems of record.

BACKGROUND

DRR is responsible for the management and disposition of assets acquired from failed insured financial institutions. As of May 31, 1999, DRR was managing assets in liquidation valued at \$1.7 billion. DRR projected that the value of these assets would be reduced to \$1.3 billion by December 31, 1999. While assets valued at \$1.3 billion are significant, they are substantially less than the \$18 billion in assets that DRR managed as of January 1, 1996. Asset levels have been reduced significantly in each of the past 4 years. This can be attributed in large part to DRR's effective disposal program and to the health of the banking industry, which has resulted in very few assets being added to DRR's inventory of assets in liquidation.

DRR relies on a variety of application systems to support its operations. Systems supporting DRR functions include the National Processing System (NPS), Credit Notation System (CNS), Owned Real Estate System (ORES), and the Subsidiaries Management Information Network

(SIMAN). NPS, a mainframe-based system, is jointly owned by DRR and the Division of Finance (DOF) and is the system of record for financial information pertaining to assets of failed institutions controlled and serviced by the FDIC.

CNS, ORES, and SIMAN are network-based systems that are the primary systems that DRR asset account officers use to manage loans, owned real estate, and subsidiaries, respectively. These three systems are the systems of record for non-financial data that resides in them. To the extent that non-financial data that resides in the DRR systems CNS, ORE, and SIMAN, also resides in NPS, the three referenced DRR systems are the systems of record for that data. The same can be said for financial data that resides in NPS and the three referenced DRR systems. That is, NPS is the system of record for the financial data that resides in both systems.

DRR issued *Data Integrity Directive 4360.12* on February 25, 1994 to ensure commitment to maintaining accurate and reliable data in its asset liquidation systems. The directive's primary focus was to establish quarterly data verification procedures through the use of a software program called the Data Integrity Verification and Electronic Reporting System (DIVERS). DIVERS was used to choose a representative sample of assets from NPS for data verification tests. NPS was identified as the financial and non-financial system of record for all internally managed assets in liquidation. However, over a period of time other subsidiary systems, such as CNS, ORE, and SIMAN were used extensively by DRR account officers to perform their day-to-day management activities.

DIVERS data integrity evaluations performed on NPS data between September 1996 and June 1998 identified error rates for critical data elements that consistently exceeded established tolerance levels. Between February 1994 and October 1997, DRR field offices were required to develop corrective action plans if overall error rates exceeded 5 percent. DRR field offices were consistently unable to achieve staying under the 5 percent error threshold. In October 1997, DRR increased the error threshold requiring an action plan for error rates of 10 percent or greater. Management stated that they believed it was not economically practical or feasible to continue with the 5 percent error threshold.

DRR drafted a briefing paper on April 21, 1998 that recommended terminating the DIVERS program. The primary reason presented in the referenced DRR briefing paper, was that network-based systems had replaced NPS as the systems of record for non-financial data and were supported by independent data verifications. In addition, DRR management officials stated that DIVERS was not year 2000 compliant. Their April 21, 1998 memorandum recommended that the DIVERS data integrity program be phased out and that data verification responsibilities be re-evaluated and redesigned to work with the new systems environment.

SIMAN was designated as the system of record for non-financial data relating to subsidiaries in March 1998. CNS and ORE were also designated as the systems of record for non-financial data relating to loans and owned real estate, although there was no formal notification that apprised staff of that situation. System interface routines between NPS, and CNS and ORE were changed in 1998 to compare data in NPS with data that resided in CNS and ORE. Prior to CNS and ORE becoming the systems of record for non-financial data, the interface compared data in CNS and

ORE with data in NPS.

On March 19, 1999, DRR's Data Integrity Advisory Group drafted a memorandum recommending a self-certifying program for DRR systems of record. The group also recommended that data stewards and DRR's Information Systems Section be tasked with developing and implementing data integrity systems, and that data stewards and users be assigned responsibility for program oversight. The self-certifying program that was designed to replace the DIVERS program had not been implemented as of October 19, 1999.

Finally, in a related vein, the OIG's Atlanta office was performing an audit, entitled *Audit of the Northeast Service Center's (NESC) Subsidiary Inventory*. The objective of that review was to determine whether NESC had a complete inventory of subsidiaries belonging to failed financial institutions in its geographic area of responsibility. Accordingly, that review assessed whether the NESC's SIMAN system contained a complete inventory of subsidiaries. A report is scheduled for issuance in January 2000.

OBJECTIVES, SCOPE, AND METHODOLOGY

The objective of the audit was to determine the adequacy of the DRR data integrity controls for selected DRR application systems. To accomplish our audit objective, we interviewed headquarters DIRM and DRR personnel, and DRR and DOF field office personnel in Hartford, Connecticut, and Dallas, Texas.

In addition, to determine the effectiveness of DRR's error correction strategies, we reviewed DIVERS Certification Reports and resulting error correction strategies for NPS data elements from four offices between the periods September 1996 through June 1998. We also reviewed DRR directives related to the DIVERS program and overall data integrity. We reviewed the March 29, 1999 functional requirement documents for CNS, data input and processing procedure manuals for DRR systems of record, and DRR survey results relating to the proposed self-certification program.

Further, we reviewed the May 29, 1999 functional requirements document for the Sync and Sync compare systems, which electronically compare non-financial data from CNS and ORE to NPS. When differences are identified, an exception report is generated, and DRR account officers are required to research differences and make the appropriate corrections.

We also reviewed DRR's 1999 Annual Performance Plan and noted that one of the objectives listed was to ensure asset inventory data was accurate. DRR established a target that stated the quality of inventory data will continue through the data integrity project.

Initially, our review was also intended to evaluate the reconciliation process that takes place each month between the FDIC's Control Totals Module (CTM) and the Central Loan Database (CLD). CTM supports the FDIC's general ledger system, and CLD is an asset inventory system for all loans. Each month, the contractor that maintains CLD reconciles CLD and CTM differences

pertaining to asset counts and amounts. After a preliminary evaluation of the reconciliation process, we decided to delete this objective from our review.

Our decision was based on several factors including the fact that the inventory of loans maintained in CLD had been reduced significantly and further reductions were expected. In addition, DRR and the CLD contractor were effectively reconciling CTM and CLD data, and many of the more significant reconciling items were due to data entry timing differences for CTM and CLD. Finally, planned and in-process system development was intended to further facilitate the reconciliation process.

Our audit work relating to data input, processing, and interface controls was limited to the NPS, CNS, ORES, and SIMAN automated systems. The audit was conducted in accordance with generally accepted government auditing standards between May 1998 and July 1999.

RESULTS OF AUDIT

DRR monitoring of NPS data integrity historically identified error rates that exceeded DRR's acceptable tolerance levels. Management discontinued its practice of using the DIVERS system for routinely measuring data accuracy and planned an alternative means of monitoring data accuracy using data stewards and a self-certification procedure. However, this approach did not provide adequate assurance that data accuracy tests were consistently applied or that the results were reliable.

To better ensure data integrity, DRR needs to establish effective controls, including detailed data integrity criteria for NPS and other critical DRR systems of record. DRR can also improve data integrity by developing and communicating a more comprehensive definition of data steward responsibilities and ensuring effective oversight for the data steward self-certification process. In addition, implementing better error prevention and correction strategies would serve to improve DRR data.

MONITORING DATA INTEGRITY IN DRR SYSTEMS OF RECORD

Our audit identified opportunities for DRR to improve data integrity controls for data that reside in its systems of record and to develop standardized data integrity policies and procedures that provide detailed criteria to be used when measuring data integrity.

DRR did not have an effective process in place to measure data accuracy or correct errors in its systems of record. DRR relied on the DIVERS program to evaluate NPS data integrity on a quarterly basis until the second quarter of 1998 when DIVERS use was discontinued. Management discontinued the use of DIVERS for routinely measuring data accuracy in NPS and planned an alternative means of monitoring data accuracy in NPS and DRR systems of record using data stewards and a self-certification procedure. However, this approach did not provide

adequate assurance that data accuracy tests were consistently applied or that the results were reliable.

DRR performed a comprehensive data integrity survey in April 1998 that determined the DIVERS data verification program could be replaced by a program that allows a data steward and system users to certify the accuracy of their system's data. However, DRR had not developed or implemented policy or standard procedures for the program. Further, DRR's Dallas and Hartford offices differed in their design and implementation of data verification controls, and neither office had developed procedures requiring periodic review and verification of CNS data or assigned a data steward to oversee data verification procedures.

The ORE data steward in Dallas had implemented a comprehensive data verification process that included quarterly matching of system data to source documents and automated ticklers to ensure that dynamic data elements were reviewed and modified when necessary. However, Hartford ORE managers had not developed a formal system of data verification.

DRR plans to better address its long-term data integrity needs through a system currently being developed. DRR's Consolidated Asset Systems Modernization Program (CAMP) is designed to provide a suite of systems that can more effectively and efficiently support DRR's business needs. Phase I of the CAMP project involves the definition, development, and implementation of the National Asset Inventory System (NAIS), the central application that will bring DRR's various databases into a single data environment and interface. Phase II of CAMP involves re-engineering the current Clipper systems, including CNS and ORE, into a Windows-based relational database environment. The common elements in the systems will be combined into common database tables to reduce data feeds and redundant data entry.

Full implementation of CAMP should provide DRR the ability to significantly improve data integrity. However, the initial phases of CAMP are not expected to be complete until March 31, 2000. Until CAMP is fully implemented and its effect on data integrity can be measured, DRR needs to develop interim controls to ensure that data accuracy is effectively monitored and maintained.

The SIMAN system that is used to manage subsidiaries was not included within the scope of the CAMP project. Accordingly, there is a need for an effective short and long-term data monitoring and correction program for that system also.

Considering the recent downsizing and the limited resources available to support effective data integrity controls, we believe that management should consider placing greater emphasis on data verification procedures for dynamic data elements and large-dollar assets. Dynamic data elements are those that are subject to more frequent modification, such as "appraisals" and "foreclosure" data for CNS, and "broker listings" and "property managers" for ORE. By concentrating on data that most impacts its operations, DRR can better focus its resources.

Recommendations

We recommend that the Acting Director, Division of Resolutions and Receiverships:

- (1) Strengthen data integrity controls by establishing detailed policies and procedures that include criteria for monitoring data accuracy for each critical DRR system of record and ensure they are documented and applied consistently in all field offices.
- (2) Develop interim data integrity processes that focus on dynamic data elements and large-dollar assets until CAMP is fully implemented.

BETTER DEFINITION OF DATA STEWARD RESPONSIBILITIES

DRR performed a comprehensive survey in April 1998 that determined the DIVERS data verification program could be replaced by a program that allows a data steward and system users to certify the adequacy of their system's data. However, to better ensure data integrity, DRR needs to establish effective controls, including detailed data integrity criteria for NPS and other critical DRR systems of record. DRR can also improve data integrity by developing and communicating a more comprehensive definition of data steward responsibilities and ensuring effective oversight for the data steward self-certification process.

DRR data stewards did not know they had been assigned the title and duties or were unclear as to the extent of their data integrity responsibilities. The Internal Review managers for both the Hartford and Dallas offices stated that data stewards within their offices did not clearly understand the extent of their data integrity responsibilities, and some did not know they had been assigned the title.

The CNS data steward in Dallas believed his responsibilities were limited to approving system access and recommending automated system edits. The DIRM manager responsible for overseeing the FDIC data steward program also indicated that the program needs to be revised to resolve this confusion. In addition, DRR Internal Review officials confirmed that the data steward program needs strengthening. They determined that 6 out of 10 DRR systems evaluated were not adequately supported by data stewards.

DIRM issued Circular 1301.6 on June 5, 1996 establishing the FDIC's data integrity program. That Circular states that data stewards are responsible for data quality initiatives and quality standards. In addition, DIRM later issued a data steward handbook that further describes a data steward's roles and responsibilities at a high level. Neither the circular nor handbook provide detailed criteria or guidelines regarding frequency of testing or what constitutes an unacceptable error rate. These documents also do not prescribe what actions should be taken if unacceptable error rates are obtained or provide guidance on testing methodologies to be employed.

Additionally, the data integrity program did not provide for periodic independent testing of data to validate the results of tests and error correction strategies. In our opinion, this is an area where DRR's Internal Review group could independently review the accuracy of data and evaluate the

effectiveness of the program. While account officers and program officials can self-certify data based upon testing under the guidance of data stewards, the data validation and correction process could be enhanced by periodic testing by an independent organization such as DRR's Internal Review group.

Without more detailed criteria on the roles and responsibilities of data stewards, the reliability of data test results is questionable, as the methodologies used to evaluate and test the accuracy of data are not uniform and consistent. Similarly, absent detailed procedures that prescribe the actions that are required when error rates are exceeded, there is no assurance that effective error correction strategies will be implemented and that data accuracy will improve.

Recommendations

We recommend that the Acting Director, Division of Resolutions and Receiverships:

- (3) More clearly define the roles and responsibilities of data stewards who will support data integrity for DRR systems of record.
- (4) Ensure that periodic, independent data integrity testing is performed by DRR's Office of Internal Review to validate the results of any self-certification programs employed.

ERROR CORRECTION AND PREVENTION STRATEGIES

While DRR needs to implement an effective data integrity monitoring program for its critical systems of record, it also needs to implement more effective error correction and prevention strategies. Improvements in these areas could reduce the error rates that field offices experienced when data integrity was monitored for NPS data.

DIVERS data integrity evaluations performed on NPS data between September 1996 through June 1998 identified error rates for critical data elements that consistently exceeded established tolerance levels. Between February 1994 and October 1997, DRR field offices were required to develop corrective action plans if the overall error rate for data tested exceeded 5 percent. Despite evidence that the overall 5 percent threshold was consistently exceeded, DRR revised its procedures in October 1997 and increased the threshold at which a corrective action plan was required to 10 percent.

DRR Data Integrity Directive 4360.12 required DRR management to develop error correction strategies when the quarterly DIVERS reports indicated the office's overall error rate to be over 5 percent. The Directive's intent was not only to identify and correct data errors but to assist management in identifying systemic weaknesses that might have contributed to errors.

DRR Internal Review officials in Dallas and Hartford indicated that one reason the error rates remained high was because account officers limited their error correction efforts to those assets that were sampled and for which errors were found. Under the DIVERS program, DRR did not

develop procedures that required account officers to review their complete asset portfolio for similar errors or to determine whether errors were the result of systemic causes. We noted two instances where field offices stated in their action plans that they planned to do a scrub of the data that exceeded acceptable error thresholds. However, error rates generally remained the same or increased in field offices where DRR error thresholds were exceeded. Management stated that it was in the process of developing uniform criteria for corrective action plans when the decision was made to terminate the DIVERS program.

We also noted that some reported errors were due to needed corrections in testing methodology rather than procedural or system problems. For example, we noted that DIVERS data accuracy evaluations sometimes recorded multiple errors that were attributable to one inaccurate data element. This occurred because one data element impacted other data elements for the same asset. For example, if the interest rate was inaccurate, the payoff amount was also inaccurate. In a similar fashion, appraisal value could affect fair market value.

In addition, we noted where data was classified as inaccurate because there was no supporting documentation, even though the data may have been accurate. Additionally, some reported errors were based on differing interpretations of asset values rather than clear data errors. Missing data was also recorded as inaccurate data.

The reliability and accuracy of data maintained on DRR's systems of record is critical to the successful liquidation and sales efforts used by DRR to dispose of assets acquired from failed financial institutions. The FDIC relies upon this information to make prudent business decisions in the best interests of the Corporation and the receivership estate. When error rates for sampled data elements exceed acceptable thresholds, management should require more comprehensive error correction strategies for assets that were not part of the sampled universe. For example, procedures could require a complete data scrub of all assets, or subsets of asset groups, or a more limited scrub that encompassed all assets with a value in excess of a specified dollar threshold or other criteria. In addition, if errors are of a type that could be prevented through automated edits, system changes should be considered to incorporate the appropriate automated edits.

Recommendation

We recommend that the Acting Director, Division of Resolutions and Receiverships:

- (5) Ensure that effective long-term error correction strategies are implemented when error rates exceed established tolerance levels, including identifying systemic causes of errors.

CORPORATION COMMENTS AND OIG EVALUATION

On December 15, 1999, the Acting Director, DRR, provided a written response to the draft report. Management agreed with each of the report's recommendations and proposed actions that satisfied the intent of each recommendation. A summary of management's responses to the recommendations contained in this report follows.

Management agreed with recommendations 1 and 2 and stated that a DRR task force would be appointed to establish an interim Data Quality program. Management also stated that it would implement a data integrity process that would focus on dynamic data elements and large dollar assets, or some other approach that meets the intent of our recommendation.

Management agreed with recommendations 3 and 4. Regarding recommendation 3, it stated that it would develop an interim program that would include defining the roles and responsibilities for data stewards or their functional equivalent. Concerning recommendation 4, management stated that DRR's Office of Internal Review would implement independent testing that will be a part of DRR's interim data integrity program.

Finally, management agreed with recommendation 5 and stated that it would establish a process to identify causes of excessive systemic errors.

The Corporation's response to the draft report provides the elements necessary for management decisions on each of the report's recommendations. Accordingly, no further response to this report is required.



December 15, 1999

MEMORANDUM TO: David H. Loewenstein
Assistant Inspector General

FROM: Mitchell L. Glassman, Acting Director
Division of Resolutions and Receiverships

SUBJECT: OIG Draft Report Entitled Audit of Data Integrity
Control for Selected Division of Resolutions and
Receiverships (DRR) Automated Systems

Mitchell L. Glassman

On October 29, 1999 the Office of the Inspector General (OIG) issued its draft report on the results of an audit of data integrity controls for selected DRR automated systems (Audit Number 98-902).

Following are management's responses to the areas questioned in the audit report.

1. Strengthen data integrity controls by establishing detailed policies and procedures that include criteria for monitoring accuracy for each critical DRR system of record and ensure they are documented and applied consistently in all field offices.

Management agrees with the OIG's recommendation. The Acting Director, DRR has designated Co-Chairs for a task force to establish an interim Data Quality program. The Co-Chairs of the task force are the Associate Director (Field Operations Branch) and the Associate Director (Internal Review). The task force will include staff drawn from the major business program areas, Information Services Section (ISS) and Internal Review. In addition, DRR will contact the Director, Office of Internal Control Management and the Office of Inspector General to solicit their participation in the Task Force.

Initially, the Task Force will identify the primary business systems relied upon by DRR. The Task Force will also develop interim policies and procedures for implementing a data quality program. A preliminary plan will be in place by the end of the 1st quarter 2000.

DRR Internal Review, in conjunction with the work of the Task Force, will conduct targeted data testing. The objective of the testing will be to provide the Task Force with preliminary information on the current quality of the relevant data.

2. Develop interim data integrity processes that focus on dynamic data elements and large dollar assets until CAMP is fully implemented.

Management agrees with the OIG's recommendation. The DRR task force will adopt this recommendation or other approach which is acceptable to the OIG. The task force will establish an interim approach by the end of the 1st quarter 2000.

3. More clearly define the roles and responsibilities of data stewards who will support data integrity for DRR systems of record.

Management agrees with the recommendation; however, DRR notes that the FDIC is currently involved in a Corporate effort to re-develop its Data Stewardship program. Pending the finalization of the Corporate policy related to Data Stewardship, DRR will develop an interim program which will include defining the roles and responsibilities for Data Stewards or their functional equivalent. The interim implementation plan will be completed by the end of the 1st quarter 2000.

4. Ensure that periodic, independent data integrity testing is performed by DRR's Office of Internal Review to validate the results of any self-certification programs employed.

Management agrees with the OIG that independent testing be performed by Internal Review. IR will implement independent testing that will be a part of the interim plan. The IR independent testing program will be completed by the end of the 2nd quarter 2000.

5. Ensure that effective long-term error correction strategies are implemented when error rates exceed established tolerance levels, including identifying systemic causes of errors.

Management agrees with the OIG's recommendation. DRR will establish a process to identify causes of excessive systemic errors. The process will focus on cost-effective remedies. If excessive errors are identified, DRR will develop a cost-effective, corrective action plan to correct the cause of the error.

MANAGEMENT RESPONSES TO RECOMMENDATIONS

The Inspector General Act of 1978, as amended, requires the OIG to report on the status of management decisions on its recommendations in its semiannual reports to the Congress. To consider FDIC’s responses as management decisions in accordance with the act and related guidance, several conditions are necessary. First, the response must describe for each recommendation

- the specific corrective actions already taken, if applicable;
- corrective actions to be taken together with the expected completion dates for their implementation; and
- documentation that will confirm completion of corrective actions.

If any recommendation identifies specific monetary benefits, FDIC management must state the amount agreed or disagreed with and the reasons for any disagreement. In the case of questioned costs, the amount FDIC plans to disallow must be included in management’s response.

If management does not agree that a recommendation should be implemented, it must describe why the recommendation is not considered valid.

Second, the OIG must determine that management’s descriptions of (1) the course of action already taken or proposed and (2) the documentation confirming completion of corrective actions are responsive to its recommendations.

This table presents the management responses that have been made on recommendations in our report and the status of management decisions. The information for management decisions is based on management’s written response to our report.

Rec. Number	Corrective Action: Taken or Planned / Status	Expected Completion Date	Documentation That Will Confirm Final Action	Monetary Benefits	Management Decision: Yes or No
1	<p>Management agreed with the finding and recommendation.</p> <p>The Acting Director, DRR has designated Co-Chairs for a task force to establish an interim Data Quality program. The task force will include staff drawn from the major business program areas, Information Services Section (ISS), and Internal Review (IR). In addition, DRR will contact the Director, OICM, and the OIG to solicit their participation in the task force.</p> <p>Initially, the task force will identify the primary business systems relied upon by DRR. The task force will also develop interim policies and procedures for implementing a data quality program.</p> <p>DRR’s IR, in conjunction with the work of the task force, will conduct targeted data testing. The objective of the testing will be to provide the task force with preliminary information on the current quality of the relevant data.</p>	3/31/00	Written policies and procedures, and correspondence implementing a data quality program.	N/A	Yes

APPENDIX II

Rec. Number	Corrective Action: Taken or Planned / Status	Expected Completion Date	Documentation That Will Confirm Final Action	Monetary Benefits	Management Decision: Yes or No
2	<p>Management agreed with the finding and recommendation.</p> <p>The DRR task force will adopt this recommendation or another approach which is acceptable to the OIG.</p>	3/31/00	Written criteria that illustrate data integrity processes are focusing on dynamic data and large-dollar assets.	N/A	Yes
3	<p>Management agreed with the finding and recommendation.</p> <p>Pending the finalization of the corporate policy related to data stewardship, DRR will develop an interim program which will include defining the roles and responsibilities for data stewards or their functional equivalent.</p>	3/31/00	DRR directive or policy memo that defines the roles and responsibilities of data stewards in DRR.	N/A	Yes
4	<p>Management agreed with the finding and recommendation.</p> <p>The Office of Internal Review will implement independent testing that will be a part of the interim data integrity program.</p>	6/30/00	Results of initial data integrity testing by IR.	N/A	Yes
5	<p>Management agreed with the finding and recommendation.</p> <p>DRR will establish a process to identify causes of excessive systemic errors. The process will focus on cost-effective remedies. If excessive errors are identified, DRR will develop a cost-effective, corrective action plan to correct the cause of the error.</p>	3/31/00	Management's response to the draft report.	N/A	Yes