

Audit



Report

OFFICE OF THE INSPECTOR GENERAL

**SECOND USER ACCEPTANCE TEST OF THE
ELECTRONIC DOCUMENT MANAGEMENT SYSTEM AT
THE DEFENSE FINANCE AND ACCOUNTING SERVICE
OPERATING LOCATION OMAHA, NEBRASKA**

Report No. 98-013

October 24, 1997

Department of Defense

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Acronyms

DFAS	Defense Finance and Accounting Service
EDM	Electronic Document management
EDS	Electronic Data Systems
IAPS	Integrated Accounts Payable System
IOT&E	Initial Operational Test and Evaluation
JITC	Joint Interoperability Test Command
LAN	Local Area Network
OPLOC	Operating Location



INSPECTOR GENERAL
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October 24, 1997

**MEMORANDUM FOR DIRECTOR, DEFENSE FINANCE AND ACCOUNTING
SERVICE**

SUBJECT: Report on the Second User Acceptance Test of the Electronic Document Management System at the Defense Finance and Accounting Service Operating Location, Omaha, Nebraska (Report No. 98-013)

We are providing this evaluation report for your information and use. This report provides the results of our follow up on the design and development deficiencies identified in our earlier review of the Electronic Document Management system at the Defense Finance and Accounting Service Omaha Operating Location. The results of the earlier review were reported in IG, DoD, Report Number 97-050, "Evaluation of Controls Over Workflow Applications Selected for Electronic Document Management," December 17, 1996. The initial evaluation was performed in response to a September 19, 1995, request from the Defense Finance and Accounting Service (DFAS) for assistance in reviewing the design and development of the Electronic Document Management vendor payment system. We announced this followup evaluation on November 18, 1996.

We provided a draft of this report on September 5, 1997. Because this report contains no findings or recommendations, written comments were not required, and none were received. Therefore, we are publishing this report in final form.

We appreciate the courtesies extended to the evaluation staff. Questions on the evaluation should be directed to Ms. Kim Caprio, Evaluation Program Director, at (703) 604-9139 (DSN 664-9139 or KCaprio@DODIG.OSD.MIL) or Mr. Carl F. Zielke, Evaluation Project Manager, at (703) 604-9147 (DSN 664-9147 or CZielke@DODIG.OSD.MIL). See Appendix B for the report distribution. The evaluation team members are listed inside the back cover.

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Office of the Inspector General, DoD

Report No. 98-013
(Project No. 6FG-5019.01)

October 24, 1997

Second User Acceptance Test of the Electronic Document Management System at the Defense Finance and Accounting Service Operating Location Omaha, Nebraska

Executive Summary

Introduction. This report follows up on the design and development deficiencies identified in our review of the Electronic Document Management system. The initial evaluation was performed in response to a September 19, 1995, request from the Defense Finance and Accounting Service (DFAS) for assistance in reviewing the design and development of the Electronic Document Management vendor payment system. DFAS requested this review to ensure that management and system control requirements were met before system acceptance.

The first user acceptance training and test was conducted from April 1 through May 28, 1996. Because of design and development deficiencies identified during the first user acceptance test at the DFAS Omaha Operating Location, testing was suspended on May 28, 1996, so that the contractor could develop and test solutions to the identified deficiencies. We reported the results of the first user acceptance test in IG, DoD, Report No. 97-050, "Evaluation of Controls Over Workflow Applications Selected for Electronic Document Management," December 17, 1996. On June 20, 1996, the contractor provided "Solutions A - T for the DFAS Electronic Document Management Partnership," which described the solutions and schedule for completion of the deficiencies reported during the first test. The second user acceptance test was from November 19 through December 20, 1996. We announced this followup evaluation of that test on November 18, 1996.

Evaluation Objectives. The overall evaluation objective was to determine whether the Electronic Document Management (EDM) system can satisfactorily execute vendor payment workflows while providing adequate security for system and production data. Specifically, we determined whether system performance and control deficiencies identified during the first user acceptance test were corrected.

Evaluation Results. We commend DFAS for resolving the functional deficiencies reported in the first user acceptance test. Based on the results of the second acceptance test, we believe the EDM system is capable of performing in an operational environment the tasks assigned for the vendor payment process. The only open exception is noncompliance with the trusted computer system criteria defined in DoD 5200.28-STD, "Department of Defense Trusted Computer System Evaluation Criteria," December 1985. The noncompliance is due to an incompatibility between the EDM workflow application software and the DFAS server's UNIX-based operating system, which DFAS and Electronic Data Systems, the EDM contractor, are working to correct. As a result, the EDM system was determined ready for the next milestone in its development, an

independent test by the Joint Interoperability Test Command. The results of the independent test were favorable. For further discussion of the evaluation results, see Part I.

Management Comments. We provided a draft of this report on September 5, 1997. Because this report contains no findings or recommendations, written comments were not required, and none were received. Therefore, we are publishing this report in final form.

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Part I - Audit Results

Evaluation Background

In 1995, DFAS selected the Omaha Operating Location (OPLOC) for the design, development, and implementation of the Electronic Document Management (EDM) system prototype for vendor payments. On September 19, 1995, the Defense Finance and Accounting Service (DFAS) requested that the Office of the Inspector General, DoD, review the design and development of the EDM system to ensure that management and system control requirements were met before DFAS accepted the system.

The first EDM system user acceptance training and testing was performed at the Omaha OPLOC from April 1 through May 28, 1996. The primary purpose of user acceptance testing is to determine whether the EDM system could operate in a production environment for the Omaha OPLOC. Both functional and technical areas were tested and evaluated. The test was used as the basis for determining partial contractual acceptance of the overall EDM solution, as designed, developed and delivered by the contractor, Electronic Data Systems (EDS).

On May 23, 1996, the EDM Project manager at the DFAS Omaha OPLOC briefed the DFAS Configuration Control Board, recommending that testing be suspended because 21 functional and 9 technical requirements were identified needing system-wide solutions before the EDM system acceptance test could resume. On June 7, 1996, DFAS and EDS formally detailed the system problems and requirements, and on June 20, 1996, EDS submitted "Solutions A-T for the DFAS Electronic Document Management Partnership," which documented proposed solutions and a schedule for completion. Based on approval of the solutions to those deficiencies reported in the first user acceptance test, DFAS scheduled the second user acceptance test from November 19 through December 20, 1996.

On December 17, 1996, we issued Report No. 97-050, "Evaluation of Controls Over Workflow Applications Selected for Electronic Document Management," which identified 4 functional and 3 technical deficiencies requiring improvement. The functional deficiencies identified included document capture and indexing, accounts payable workflows, voucher certification workflow, and disbursing and for-others workflows. The technical deficiencies identified were unlimited attempts to log on to the local area network (LAN), the audit trail application not being activated, and inadequate secure file protection that does not meet Controlled Access Protection under the DoD 5200.28-STD, "Department of Defense Trusted Computer System Evaluation Criteria," December 1985.

On December 20, 1996, DFAS determined that the EDM solutions and full system were functionally and technically tested in sufficient detail to fully demonstrate all aspects of the design associated with the electronic capture, routing, and processing of documents. At the conclusion of the test period, DFAS determined that the EDM solution was ready for transition from the test environment to an operational production environment (Milestone III). This report discusses the actions taken by DFAS to address the four functional and three technical deficiencies that we addressed in our December 17, 1996, audit report.

Evaluation Objectives

The overall evaluation objective was to determine whether the EDM system can satisfactorily execute vendor payment workflows while providing adequate security for system and production data. Specifically, we determined whether system performance and control deficiencies identified during the initial acceptance test period were corrected. For a discussion of audit scope and methodology and prior coverage related to the evaluation objectives, see Appendix A.

Second User Acceptance Test

Based on the results of the second user acceptance test, the EDM system has demonstrated that it can perform in an operational environment the tasks assigned for the vendor payment process. Functional and technical weaknesses reported earlier have been corrected. The only open exception is trusted system compliance due to a vendor limitation that DFAS and EDS are working to correct. Although important, the exception was not sufficient to delay testing of the system. In addition, DFAS implemented an effective user testing process that ensured user participation and developer support. As a result, the EDM system received a favorable report on an independent test by the Joint Interoperability Test Command.

Test Purpose

The primary purpose of user acceptance testing is to determine whether the EDM system could operate successfully in a production environment to meet the user's needs. The first user acceptance training and test conducted from April 1 through May 28, 1996, resulted in 30 functional and technical deficiencies that needed system-wide solutions before the EDM system could be accepted by DFAS. The second user acceptance test was conducted to determine whether the developed solutions corrected the identified deficiencies and prepared the EDM system for Initial Operational Test and Evaluation (IOT&E).

The second user acceptance test followed a structured approach to evaluate the solutions and all aspects of the EDM system. The test included a designated team of 51 testers from varied locations: DFAS Headquarters, DFAS Denver Center, DFAS Omaha OPLOC, DFAS Indianapolis Center, DFAS Orlando OPLOC, DFAS Charleston OPLOC, DFAS Columbus Center, and DFAS Kansas City Center. Testers followed specific instructions on 134 test scenarios to support both functional and technical evaluations and documented the results. The testers generated 228 problem reports that were analyzed to determine ways for correction. Only one problem report relating to user authentication remained after the test which DFAS is working with the developer to correct. As a result of the successful test, DFAS determined that the EDM system was ready for independent testing.

The Joint Interoperability Test Command (JTIC), Fort Huachuca, Arizona, the operational test agency for the DFAS, conducted the EDM IOT&E from May 27 through June 6, 1997. The primary purpose of the IOT&E is to determine whether the EDM system is operationally effective and suitable for the intended users. The results of the IOT&E are provided to the Milestone Decision Authority and the Program Manager in an Independent Evaluation Report that is used to support requirements for the Milestone III decision to deploy the system. The IOT&E results were favorable.

Test Results

DFAS should be commended for resolving the functional and technical issues reported in their first user acceptance test. The EDM system at the Omaha OPLOC has demonstrated that it can perform in an operational environment the tasks assigned for the vendor payment process. The only exception is noncompliance with DoD trusted computer system criteria as defined in DoD 5200.28-STD. Trusted computer systems are able to simultaneously process a range of sensitive unclassified or classified information for a diverse set of users without violating access privileges. The noncompliance is due to an incompatibility with the EDM workflow application software and the DFAS server's UNIX-based operating system, which affects secure file protection on the UNIX server. DFAS and EDS are working to correct this deficiency. The second user acceptance test verified that the proposed solutions to the functional and technical deficiencies reported during our first evaluation, work as intended. DFAS implemented an effective user testing process that ensured user participation and developer support.

Identified Functional Weaknesses. Four functional control weaknesses were identified during the first user acceptance test: document capture and indexing, accounts payable workflows, voucher certification workflow, and disbursing and for-others workflows. During the second user acceptance test, these control weaknesses were corrected, retested, and determined adequate.

Document Capture and Indexing. Document capture personnel misrouted incoming fax documents; in addition, multiple-page incoming fax documents were split by personnel unfamiliar with vendor payment documents. As a result, documents were forwarded to the wrong vendor pay indexing area or were inappropriately split or missing. As a part of the second user acceptance test, procedures were modified for incoming electronic fax documents to be automatically routed to the indexer (tier 2) screens instead of the document capture center. This allows indexing personnel, who are more knowledgeable of the vendor pay process, to split the documents appropriately and route those documents to the correct workflow more quickly.

Accounts Payable Workflows. Accounts payable workflows required technicians to return documents to the document capture center for rescanning or exception handling when document types needed to be changed, workflow cases needed to be canceled, or new cases needed to be created. Once the document was deleted, rescanned, and sent through the indexing process, a new workflow case was created for that re-indexed document. The tested solution showed that workflow software was modified to allow the accounts payable team leader to change document types, cancel old workflow cases, and create a new case when documents were indexed incorrectly. Productivity increased because technicians could forward documents directly to the team leader for correction instead of waiting for the document capture center to locate the original document, delete the image, and rescan as appropriate. The time spent in returning documents to the document capture center can now be spent more productively on current workload.

Voucher Certification Workflow. The voucher certification workflow did not allow the voucher to be voided after certification. The EDM system uses the

Second User Acceptance Test

Integrated Accounts Payable System voucher print file by converting the voucher to an image and creating a workflow case for each voucher. This voucher workflow case is inserted into the workflow for certification. During this process, supporting document images (such as invoices and receiving reports) are added to each workflow case by linking contract numbers, invoice numbers, and dates when goods and services are received. The certifying officers view the workflow cases that contain the voucher and supporting documents images and certify, void, or return the voucher assembly to an accounts payable technician for additional review. The EDM system could not void vouchers after certification, even those certified in error. The second user acceptance test showed that workflow software had been modified to allow for voiding a certified voucher until the check print file is sent to the DFAS Denver Center, Denver, Colorado, for payment processing. This modification saves time when the automatic assembly of supporting documentation results in an error and allows the certifying officer to void a previously certified voucher when incorrect supporting documentation is discovered.

Disbursing and For-Others Workflows. Disbursing personnel had difficulty reconciling the check print file sent to the DFAS Denver Center because the types of payments were not listed. The DFAS Omaha OPLOC disbursing personnel reconcile the check print file to ensure that the EDM records agree with the Integrated Accounts Payable System payment file. The workflow for forwarding automated payments to the DFAS Denver Center for payment processing required correction to show separate totals for cash, check, and electronic funds transfer payments in the reconciliation report. No modifications were needed to the for-others workflow. The disbursing workflow for automated payments was modified to show the various types of payments and make voucher status data available for the disbursing personnel to reconcile voided and certified vouchers between the Integrated Accounts Payable System and EDM. Now the disbursing office electronically forwards the reconciled and certified check print files listing the various types of payments to the DFAS Denver Center for payment processing, which in turn enables payments to be made promptly.

Identified Technical Weaknesses. Three technical control weaknesses were identified during the first EDM system acceptance test. The results of the first test showed that the system could not demonstrate the necessary log-on security, audit trails, and safeguards for protecting secure files. During the second user acceptance test, the procedures for logging on to the local area network (LAN) were corrected and audit trail software was activated. Requirements for secure file protection were not implemented due to a vendor limitation that DFAS and EDS are working to correct.

Log-on Security. The DFAS Omaha OPLOC operating system allowed unlimited attempts to log on to the LAN. However, the system administrator could determine the number of attempts allowed to minimize the potential of misuse or fraud. For the second user acceptance test, the system administrator modified the operating system to allow for only three log-on attempts before the user was blocked from further attempts. Accordingly, after the third attempt, the user must notify the system administrator to reset the operating system. System control is enhanced because it alerts the system administrator to unauthorized attempts to enter the system and also complies with Federal Information Processing Standard Publication 112, "Password Usage," May 30, 1985.

Audit Trails. Features of the off-the-shelf software designed to ensure adequate audit trails were not activated during the first user acceptance test. Data must be available for reconstruction of any user session to aid security review or audit. During the second user acceptance test, off-the-shelf audit trail software was activated for specific test scenarios. The results showed that adequate information is being collected and that system recovery is adequate to ensure that data would not be lost.

Secure File Protection. The secure file protection option on the DFAS server's UNIX-based operating system was not implemented in order to maintain compatibility with the EDM workflow application software. Therefore, the password file in Unix is not hidden from potential unauthorized system users. Once access to Unix server is obtained, individuals can read the list of user identification codes in the secure password file and attempt to decode the encrypted passwords, including the system administrator password. Once the system administrator password is obtained, an unauthorized user could alter any file on the EDM server, including the audit files, thus eliminating any evidence of intrusion.

The results of the first and second EDM system acceptance tests showed that the system did not demonstrate controlled access protection. According to DoD 5200.28-STD, Class 2 controlled access protection (C2) enforces more discretionary access control by making users individually accountable for their actions through log-on procedures and auditing of security-relevant events.

Appendix I to the "Defense Finance and Accounting Service Electronic Document Management (EDM) Program Increment 1 - Vendor Pay Operational Requirements Document," April 3, 1997, states that because the EDM system is based on the Wang Open/Image product requiring the Network Information Services application, the Hewlett-Packard secure (trusted) computer system cannot be implemented. Therefore, the EDM system is not C2 compliant. The developer states that noncompliance results because the trusted system is not compatible with the Network Information Service configuration used by EDM to provide basic user authentication for the Wang products.

The DFAS Omaha OPLOC personnel are working to make the EDM system C2 compliant. According to the "Test and Evaluation Master Plan for Electronic Document Management Program," May 23, 1997, the DFAS Omaha OPLOC has implemented minimum security requirements to include the use of user-identifications and passwords; anti-virus software; controlled access to the LAN; user security clearances; user accountability; security training and awareness; and physical security controls. During the second user acceptance test, we noted security awareness and controlled access to certain functionalities based on role definition of the users and physical security controls for the image control room. DFAS Headquarters has decided to transition to a Windows NT platform throughout the agency beginning in FY 1998 that will support C2 requirements. However, at the time of our evaluation, neither Unix or the Wang software were C2 compliant.

Summary

DFAS implemented an effective user testing process that ensured user participation and developer support. For the second user acceptance test, EDS provided system support for the solutions to the 30 system-wide deficiencies resulting from the first user acceptance test. Using 134 specifically developed test scenarios, 51 users tested those solutions both functionally and technically and determined that the EDM system can perform in an operational environment the tasks assigned for the vendor payment process at the Omaha OPLOC. The only exception is trusted system compliance due to a vendor limitation that affects secure file protection that DFAS is working to correct. As a result, the EDM system participated in the Initial Operational Test and Evaluation from May 27 through June 6, 1997. The results of that test were favorable and support requirements for the Milestone III decision to deploy the system. For these reasons, we are making no further recommendations.

Part II - Additional Information

Appendix A. Evaluation Process

Scope and Methodology

Work Performed. For fiscal years 1995 through 2002, Electronic Document Management (EDM) system program life cycle costs are estimated at \$386.8 million. We participated in the second user acceptance test from November 19 through December 20, 1996. The scope of this evaluation included the testing of the solutions provided by EDS in "Solutions A - T for the DFAS Electronic Document Management Partnership," June 20, 1996. That document is the outcome of the first user acceptance test that resulted in 30 system-wide deficiencies.

Use of Computer-Processed Data. Computer-processed data supporting the second user acceptance test are determined to be reliable. To achieve the evaluation objective, we extensively relied on computer-processed data contained in the Oracle database for the EDM system. We assessed the reliability of these data through the user acceptance test scenarios and found them to be adequate. As a result of the tests and assessments, we conclude that the computer-processed data are sufficiently reliable for meeting the evaluation objectives.

Evaluation Type, Dates, and Standards. We performed this program evaluation from November 1996 through July 1997 in accordance with standards implemented by the Inspector General, DoD. Our scope was limited in that we did not include tests of management controls.

Contacts During the Evaluation. We visited or contacted individuals and organizations within DoD. Further details are available on request.

Summary of Prior Coverage

IG, DoD, Report No. 97-050, "Evaluation of Controls Over Workflow Applications Selected for Electronic Document Management," December 17, 1996, reported the results of the first user test. The overall objective of the evaluation was to determine whether the EDM system could achieve management control objectives related to the completeness, accuracy, and authorization of data and whether the system could meet requirements for document retention. Specifically, we determined whether controls over workflow applications selected for EDM were adequate. The first EDM system acceptance test showed that controls over the EDM vendor payment process and workflows can achieve management control objectives related to the completeness, accuracy, and authorization of data. However, improvements were needed in the security controls over EDM system data. Specifically,

controls were needed to limit log-on attempts, meet auditability requirements, and protect secure files. DFAS initiated corrective action; therefore, no recommendations were made in the report.

Appendix B. Report Distribution

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