District of Columbia
Child Support Enforcement System
(DCCSES)

Independent Verification & Validation
Assessment Report

February 8, 1999

U.S. Department of Health and Human Services
Administration for Children and Families
Office of Child Support Enforcement

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1 EXECUTIVE SUMMARY

An Independent Verification and Validation (IV&V) assessment of the District of Columbia Child Support Enforcement System (DCCSES) was conducted on February 2-3, 1999. The purpose of the assessment review was to determine the extent of IV&V services required to support the DCCSES system development project. This report presents the findings of that review.

Scope of Required IV&V

The review focused mainly on project planning and management, as well as system configuration and documentation. There were sufficient deficiencies identified in the overall project's planning and management structure and activities, and sufficient District dissatisfaction with system documentation and functionality, to lead the team to conclude that all areas of the project would benefit from ongoing Independent Verification and Validation services. These services are more fully discussed in Section 4. Recommendations of this report.

IV&V Provider

The District must move to immediately acquire Independent Verification and Validation services. These services appear to be most appropriately obtained from contracted resources via an approved RFP or from a District agency independent of the Office of Corporation Counsel. It should be noted that the review team could not identify suitable, readily-available, independent resources within the District government to serve the DCCSES project in the capacity of IV&V provider, hence the need for contracted IV&V.

High-Level District Government Involvement

The success of the DCCSES project depends on renewed commitment of high-level executive support on the part of both the District's Office of Corporation Counsel and Superior Court. The seriously deficient commitment of resources to the project, both in terms of District staffing and contract resources must be significantly strengthened. Vendors' contractual obligations must be clearly defined and monitored closely. Further, the District must immediately move to complete and execute all outstanding Requests for Proposals (RFPs) and their resultant contracts. Without such expeditious procurement action, the DCCSES project will continue to suffer schedule delays and cost overruns, and ultimately, continue its lack of progress.

Independent Verification and Validation (IV&V) Assessment Report Of The District of Columbia's Child Support Enforcement System (DCCSES) Project

2 INTRODUCTION

As a result of missing the October 1, 1997 deadline for achieving federal certification of system modifications necessary to meet the requirements of the Family Support Act of 1988, the District of Columbia automated Child Support Enforcement Systems became subject to the mandatory provisions of 45 CFR 307.15(b)(10). These provisions require an entity independent of the District to review all technical and managerial aspects of the project. (See OCSE-AT-98-26) ACF requested a review of the current documentation of the system, as well as the status of the project, so it could make recommendations as to the extent of the IV&V services that the District will be required to obtain.

2.1 Background

The last APDU received from the District called for the development of DCCSES based on the transfer of the Connecticut automated child support enforcement system. DCCSES was planned to be ready for certification by October 1995. UNISYS Corporation was the Implementation Contractor. Service Design Associates (now Tier Technologies, Inc.) and ABSS, Inc., are subcontractors to UNISYS responsible for the software development and facilities management of the system, respectively. Ron McGee Enterprises supports the project as a consultant with responsibility for assisting in project planning, making recommendations to the District regarding conduct of the project, and reviewing deliverables submitted by UNISYS. ACF last performed a Functional Review[1] of the system in September 1998, and reported functional deficiencies that would prevent the system from being certified. As of October 1998, the system was still uncertified, triggering this IV&V assessment.

The ACF collected data for its IV&V assessment of DCCSES on February 2 and 3, 1999, at the District of Columbia's Office of Corporation Counsel, (OCC) Child Support Enforcement

[1] Also known as a Level I Certification, or Pilot Test Review, a functional review considers the effectiveness of the application software's functional comprehensiveness relative to the criteria set forth in the ACF guidance document, Automated Systems for Child Support Enforcement: A Guide for States, but does not address issues related to the installation and operation of the system statewide.

Division (CSED) offices in Washington, D.C. Interviews and data collection concentrated on various project management and operational concerns. ACF's IV&V assessment review team consisted of Central Office staff, namely:

Joseph Bodmer	ACF DCSIS
Edward Morris	ACF DCSIS
Tom Mahony	ACF DCSIS

They were assisted by the following CSED personnel and contractors:

Sheila Bradley	OCC CSED
Phil Browning	OCC CSED
Charlie Worley	OCC CSED
Darren Catoe	OCC CSED
Pedro Brathwaite	OCC CSED
Patricia Miller-Thompson	OCC CSED
Phylllis Ferguson	OCC CSED
John Hubczak	UNISYS
Joseph Hall	UNISYS
Diane Stokes	UNISYS
Irma Neal	SDA

2.2 Methodology

The ACF team interviewed District and contractor personnel. Historical data on the project (including plans, proposals, status reports, etc.,) as was available, was collected and examined. Work products were briefly examined. The reviewers mainly concentrated on gaining an understanding of the status of the project and its development processes and work products through staff interviews and analysis of supporting documentation.

During the review, a list of specific documentation, and in some cases, documentation types, was requested by the review team both during and subsequent to the onsite portion of the review. The District and its contractors failed to deliver any of the subsequent documentation requested during the February site visit. ACF was only able to evaluate the documentation collected while on-site. Many areas of project management and application development could not be evaluated and therefore must be assumed to be inadequate. Of particular note in this regard were statements to the effect that much of the documentation related to project management, relative to scheduling, resource tracking and loading, deliverables assessment and quality control, were essentially non-existent and would have to be created or compiled from sources unavailable at the time of the review. Of particular interest to the review team assessment of the management of the

project were contractor assertions that much of what was requested in the way of project management reporting and tracking documentation did not exist, either internally to State project team efforts, or externally as would be provided from the contractor's project management team. The documents made available and actually collected and examined are detailed below.

2.3 Documents

Document	Originator	Date
Advance Planning Document Update	OPCSE	March 20, 1997
DCCSES Security Manual	SDA	August 1997
DCCSES Installation Manual	SDA	Undated
DCSES General System Design	Lockheed IMS	May 12 1992
DCSES Detailed System Design	Lockheed IMS	Feb 27, 1997
DCSES System Administration Manual	SDA	August 1997
Nightly Processing Run Sheets	ABSS	Feb 3, 1999
Letter to Emmet Wade re: Detail Design Document	OPCSE	May 2, 1992

3 FINDINGS

This section describes the IV&V Assessment Review Team's observations and analyses relative to the District's overall management and control of the DCCSES project, as well as issues related to the system's software and hardware configuration management and various documentation components.

3.1 Project Organization

The District has a complicated management structure for the project, and it has changed drastically since project inception. The current project organization is shown in Figure 1 below.

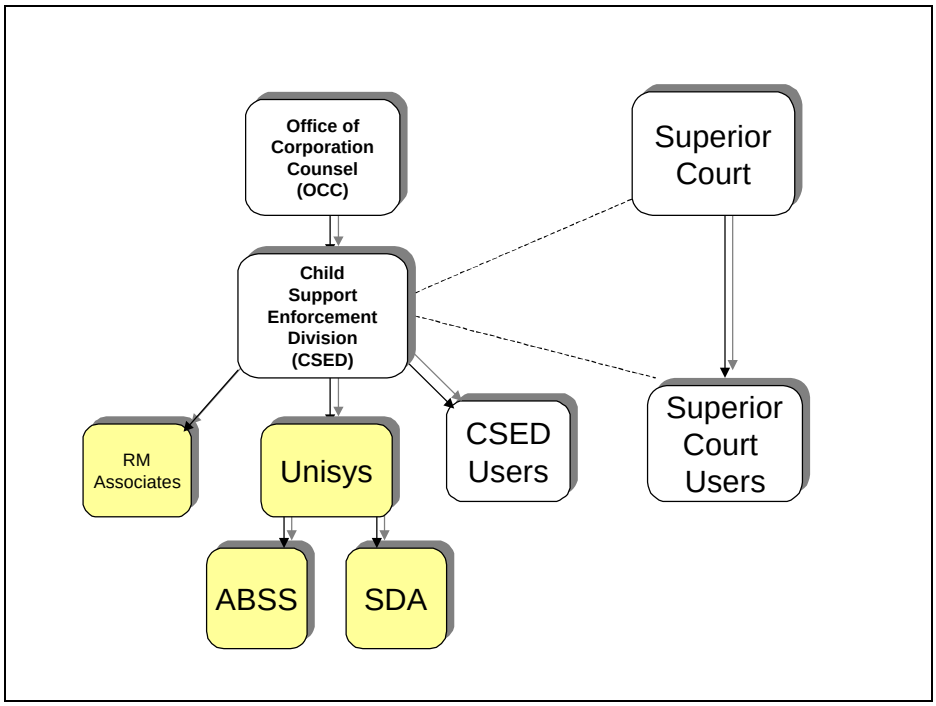

Figure 1 Project Organization

District : **Contractors:**

As shown in Figure 1, the system users on the Superior Court staff are not under direct control of CSED. They generally perform different functions from the CSED staff, as is required by District statutes. The large number of contractors and the independence of the Superior Court from project management impose significant management challenges. Though this new

organizational structure has reduced the number of actual independent entities involved in the project from three to two (from CSED *(formerly OPCSE),* OCC and the Superior Court, to only OCC and the Superior Court *(with CSED now under OCC)*) there appears to be little substantive change in project's organization, as CSED retains essentially the same role and responsibility for the project as before the agency's reorganization.

There is currently no project Steering Committee active. A Steering Committee with representation from all agencies involved in Child Support Enforcement (CSED, OCC, and the Superior Court) should be reconstituted and meet regularly to help provide consistent high-level oversight, direction and executive support.

DC technical management resources are insufficient for effective oversight of the project. The project manager does not have sufficient authority or personnel to effectively control the project. Further, the experience levels of District staff relative to the direction, control and leadership of an automation project of the complexity and scope of the DCCSES continues to be lacking. The review team could find no appreciable experience with systems development and implementation among any of the project's development and management staff other than that currently being acquired through on-the-job involvement in the DCCSES effort.

3.2 Project Estimating and Scheduling

Program management has cited significant delays in the project due to relocation ("Our move to a new location during November 1995 to January 1996 contributed to a delay in Pilot testing." - APDU March 20 1997). At the time of our IV&V Assessment Review, according to the DCCSES Program Manager, another relocation of CSED was planned. If CSED personnel need be relocated, sufficient resources must also be made available to the project to plan and manage the move so as to keep the move from having a disruptive effect on the project.

Procurement delays such as the, "significant delay in obtaining local approval for a required contract extension for Unisys and the project consultant …" as described in the March 20, 1997, APDU have severely affected the project schedule. Vendors have continued to work on the project without contracts. The DCCSES project must have a more streamlined vehicle for obtaining contractor services if it is expected to meet its technical goals and project deadlines.

3.3 Project Planning and Reporting

Though, the project has an ambitious Federal Certification Corrective Action Plan, the review found that this action plan only ran through January 1999. Unfortunately, no revisions to this already (as of the date of the review) out-of-date action plan were in development by the project

team or contractor as of the date of our review. Further, DCCSES project team members could not state when an updated project schedule would be available.

3.4 Oversight of Contractors

The project's technical staff resources are insufficient to effectively review contractor deliverables and work products. Throughout much of the project there has been only one District systems professional reviewing deliverables, and that individual is not a District employee, but rather a services contractor (Ron McGee of Ron McGee Enterprises.) Such a dearth of experienced, full-time professional resources has resulted in the District having approved of work products without adequate review or of the level of documentation sufficient to describe the acceptance or failings of such contract deliverables and work products.

The project's prime contractor has consistently failed to deliver complete design documentation (see section below entitled System Design.) Where any documentation has been delivered, the review team found them to be significantly out-of-date and predominantly unrepresentative of the actual software designs and application code in use. Further, the review team was unable to have the District deliver hardware configuration diagrams, a system capacity study or analysis, security and disaster recovery and business continuity manuals, or other promised materials to ACF. It should be noted that much of the documentation requested for review is cited either by specific reference in contract language or is a foundation vehicle of effective and efficient facilities and project management.

The District and its contractors have a substantial number of unresolved technical and managerial disputes and misunderstandings. Further, many of the unresolved disputes have entailed protracted and contentious negotiations. For example, the District recognized that the Detailed Design Documentation on the DCCSES was incomplete as early as 1992, and requested that it be completed (Letter from then District IV-D Director Norris E. Sheppard to Mr. Emmet Wade of UNISYS/Lockheed, May 19, 1992). The design documents are still incomplete as of the date of this review.

The District has been unable in the past to renew contracts in a timely fashion. The long delays in renewing contracts have delayed the project considerably and could only have had an adverse effect on work quality. Unisys and its subcontractors have on a number of occasions in the past, worked without contracts in place. These procurement issues continue to this day.

3.5 Program Turnover

District personnel require transition training to allow for future turnover of the operational management and maintenance of the DCCSES system to the District or to another contractor the District may assign. This training has not taken place, nor was such training envisioned by project staff during our review.

The District does not currently have sufficient documentation to take over operation of the system, or for another contractor to take over the system. In most respects, the existing DCCSES documentation, as a whole, is irrelevant to the system's design, operation, and configuration. ACF, upon inspection, found the following system documents incomplete:

General System Design
Detailed System Design
Data Dictionary
System Administrator's Manual
Security Manual

As an example of the deficient nature of the documentation on DCCSES, the District currently receives Nightly Processing Run Sheets of the batch and online operation of the system, but does not have sufficient information about the system (in documentation) to evaluate the impact of error messages in the reports.

3.6 User Training

There is no permanent training staff or ongoing training program relative to the DCCSES user community. Training, a contractor task under the original implementation contact, is regarded by the contractor as a completed deliverable, despite the fact that the contractor continues to deliver new or significantly modified functionality. A system of this complexity, with this many users, should have permanently assigned trainers, a constantly revisited and revised training plan, and an ongoing training program that addresses the entire DCCSES community from end-user through administrative and supervisory staff.

3.7 Process Definition and Standards

The project lacked clear standards for the design, format, construction and definition or application software and hardware configuration work products. The District has no Citywide or Departmental set of information systems standards and no standards were specified in the RFP relative to contract deliverables.

3.8 Quality Assurance

CSED has no independent Quality Assurance organization for the project. Further, ACF has, to-date, received no information on contractor and subcontractor Quality Assurance resources, services or organizations. The sole Quality Assurance/Quality Control resource the District has had available to it during the course of the last five years of DCCSES development has been Mr. Ron McGee of Ron McGee Enterprises, who unfortunately has also served the project in the roles of Advance Planning Document consultant, and contract and project monitor. Obviously, too many roles for one individual to support, and in some instances, roles that can lead to conflicts of interest between that of contract monitor and consultant reviewing and creating contract deliverables. The District, given it inability to adequately review and evaluate contract deliverables, desperately requires a full-time, dedicated Quality Assuarance/Quality Control function within the DCCSES project.

3.9 Configuration Management

The District has no insight into the management of the software configuration currently in place for the DCCSES system. The District does not know what version of the DCCSES software is being run at any given time, nor what problems are fixed in what version release. ACF has, to-date, received no information on how contractors perform configuration management activities on either the application software, operating system and utilities software, or hardware.

Software Incident Reports are used to track errors. The District is informed when a change has been made and is shown a demonstration of the change. Design documentation is not updated and formal test plans are not delivered to the District.

The review team found that the District does not maintain backup copies of the various online and batch operational environments (development, training, operational) or application software programs and modules. Further, the system does not have any version control, nor configuration management capabilities in the event of a disaster recovery episode, such as a natural or man-made disaster or defective/destructive program installation. This includes off-site

maintenance, under the control of the District and not the contractor, of at least three generations of all software program, operating systems and utilities, and databases.

3.10 Requirements Management

The District has no structured management of, nor insights into, the requirements management process of DCCSES, and no means of tracing requirements. Design documentation has not been updated, and thus provides no relief of this issue.

3.11 System Capacity

System capacity and performance are not monitored on an on-going basis. There is no Capacity Plan. A Capacity Analysis Report was apparently generated at one time according to District staff, though review team members were unable to obtain a copy of this report for analysis.

3.12 Unit and Integration Testing

The District has no insight into what level of testing is performed for a software change. A system level demonstration is given to the District for each change. However, it did not appear that District project staff were involved in nor had review or oversight of application testing processes conducted by contractor staff. ACF could not identify information on what types or forms of testing contractors perform on application software prior to delivery. Further, District staff were unable to illuminate for the review team such testing related issues as procedures, metrics, scripting, safeguards and oversight.

3.13 Acceptance Testing

The District does not have sufficient technical staff to perform acceptance testing. The review team found that the implementation contractor has turned application software programs over to the District as part of DCCSES software revisions on which the District had never performed acceptance testing prior to their installation in an operational mode. Program updates resulting from Incident Reports are accepted after a test demonstration. These test demonstrations, however, utilize no repository-based test data, scripting, or documentation, and are essentially unrepeatable and untracked from a configuration management perspective.

3.14 Security Manual

The Security Manual mainly covers procedures for adding users and terminals. It does not state what the security policy is, describe actions for various security breaches, investigation and maintenance activities, nor refer to a security policy document. It does not cover security for data storage media. The Security Manual does not have a sufficient level of detail for the procedures it does cover. For example, on Page 3, under "Adding Users to the System" there is the instruction, " Add the User to the operating system security files." However, there is no additional information as to what files are meant, what should go into them, and how they should be modified.

The table "User Security Maintenance" on page 5 calls for manually editing the "/etc/passwd" file to add new users. It is not a safe practice to edit this file manually. Modifying this file by hand will eventually cause it to become corrupted, creating a security risk. However, no other process, nor utility software application is presented with which to perform such security table/file maintenance.

3.15 System Administrator's Manual

The System Administrator's manual is obviously patched together from some other document. The manual states on page B-2, " Not every program on the Special Functions Menu is documented here because they are reserved for the use by the System Administrator..." Most of the internal pages are labeled "Operation Manual". An example of the failings of this documentation can be shown in a review of the Backup & Restore Section of the manual which deals only with backing up and restoring OCSE-156 statistics. No procedures are presented for operational hardware restarts, storage media failures, or catastrophic failures.

3.16 Installation Manual

The Installation Manual is out of date and describes an unacceptable installation procedure. It refers to installation beginning "in-house at Lockheed", a former contractor, and a tape being sent to a client for installation on their system. If this is no longer the current installation procedure, then the new procedure should be described. The DCCSES should have the ability to re-install the existing system at its facility without outside resources.

3.17 System Design

The General Design and the Detailed Design documents are incomplete, and are so significantly out-of-date as to prevent cross-referencing of one to the other. Large sections of the Detailed Design are missing or are given only as deltas to the Connecticut system. Only a few of the programs are designed using flowcharts and a program design language. The Data Dictionary is incomplete and not in the format requested by the District. The District does not have the information in electronic format, making it difficult to search and cross-reference the design information. This system, due to its documentation's current state of disrepair, could not be transferred to another jurisdiction.

4 RECOMMENDATIONS

The District must acquire Independent Verification and Validation services. These services may be obtained from a contractor via RFP or from a District agency independent of OCC. ACF will provide oversight of these services upon request. If a contractor is used, the RFP and contract (or similar documents if IV&V is performed by another State agency) must be submitted to ACF for approval prior to execution in order to secure Federal financial participation, regardless of the cost thresholds, funding levels or rates of reimbursement involved. Further, the IV&V contract must include the names and skills of key personnel who will actually perform the ongoing IV&V analysis. The District must submit an APD Update to include IV&V activities and costs eligible for Federal financial participation (FFP) at the appropriate rates of reimbursement (80 or 66 percent matching rate, respectively.) These IV&V services will be required of this project for a period to begin immediately through to completion of the requirements of the Personal Responsibility and Work Opportunities Reconciliation Act of 1996 (PRWORA of 1996.)

The IV&V provider must provide the following services:

1) Develop a project management plan, including recommendations for: adequate staff; staff skills, positions and abilities; equipment resources; training and facilities; and functional responsibility and authority within a structured project organization.

2) Review and make recommendations on both the management of the project, for both State staff and vendors, and for management of the technical aspects of the project.

3) Consult with all stakeholders and assess the user involvement and buy-in regarding system functionality, as well as the system's ability to meet program needs. Recommend an effective organization constituency and structure for both a DCCSES Steering committee and DCCSES Users Group, and establish both expeditiously.

4) Conduct an analysis of past project performance sufficient to identify and report on recommendations for improvement.

5) Provide for risk management and assessment services as well as capacity planning and monitoring services.

6) Develop performance metrics, which allow tracking of project completion against milestones set by the District. These metrics should also include a Quality Assurance and Quality Control (QA/QC) function dedicated to the application and execution of project-wide QA/QC metrics and monitoring.

The IV&V provider must supply all plans, reports and recommendations to ACF Central and Regional Offices at the same time that they are supplied to the District. Further, the IV&V provider must be independent of all three entities currently involved in the DCCSES project (CSED, OCC, and Superior Court).

The analysis of past project performance will provide more insight into the reasons for the project's failure to meet the federal deadlines as well as District schedules. The recommendations on project management organization and structure will help insure that sufficient personnel and resources are assigned to the project.

The consultation with the DCCSES user community and stakeholders, and the verification of system requirements will help nail down the system definition and make the scope of work clearer for all parties involved.

The risk management and performance monitoring recommendations will ensure that project risk and project progress is visible and understood by all parties involved. Communications should thus be enhanced, problems identified earlier and resolved more quickly.

These IV&V recommendations cannot make up for lack of commitment and funding from the District or for contractor non-performance. They will, however, provide for independent oversight and reporting on the project, which is intended to enhance communications and provide all parties with a common understanding of what the project needs to accomplish.