



**AFCTN Report  
94-118**

**AFCTB-ID  
94-120**



**Technical Raster Transfer Using:**

**Rockwell International's Rocketdyne  
Division Data**



**Supporting:**

**HQ AFMC/ENCT's CALS  
Evaluation and Integration Office**



**MIL-STD-1840A & MIL-STD-1840B**



**MIL-R-28002A (Raster)**

**Quick Short Test Report**

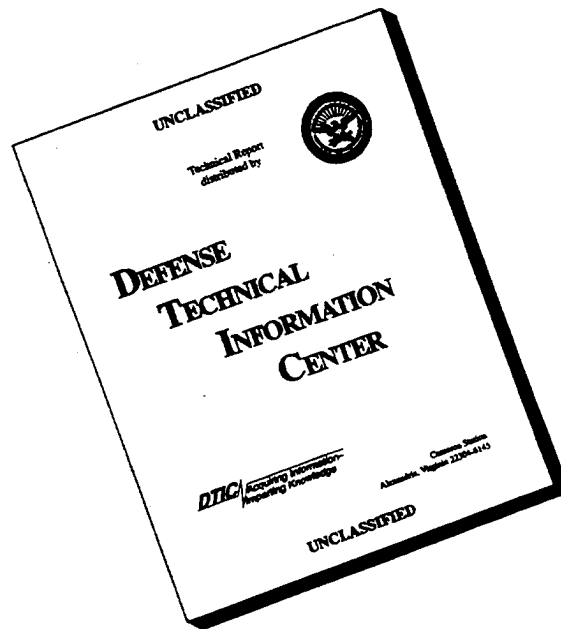
**14 September 1994**



Prepared for  
Electronic Systems Center  
Air Force CALS Program Office  
HQ ESC/AV-2  
4027 Colonel Glenn Hwy Suite 300  
Dayton OH 45431-1672

**19960606 125**

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**AFCTN Test Report**  
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**14 September 1994**

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**Prepared By**

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# Air Force CALS Test Bed

## *Notification of Test Results*

14 September 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

### **Rockwell International's Rocketdyne Division**

Identified as follows:

Title:	<b>Technical Raster Transfer</b>
Program:	<b>CALS Evaluation &amp; Integration Office</b>
Program Office:	<b>HQ AFMC/ENCT</b>
Contract No.:	<b>N/A</b>
QSTR No.:	<b>AFCTB-ID 94-120</b>

Received on the following media:      **Electronic Transfer**

The results of the QSTR evaluation are as follows:

MIL-STD-1840A & 1840B Standard:	<b>Pass</b>
MIL-STD-1840A & 1840B Media Format:	<b>Pass</b>
MIL-D-28000A IGES:	<b>N/A</b>
MIL-M-28001B SGML:	<b>N/A</b>
MIL-R-28002A Raster:	<b>Pass</b>
MIL-D-28003 CGM:	<b>N/A</b>

Formal results with associated disclaimer are documented and available from the AFCTB.

**Air Force CALS Test Bed  
HQ ESC/AV-2P  
4027 Colonel Glenn Highway, Suite 300  
Dayton, OH 45431-1672  
Phone: 513-257-3085      FAX: 513-257-5881**

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## Contents

1.	Introduction.....	1
1.1.	Background.....	1
1.2.	Purpose.....	2
2.	Test Parameters.....	3
3.	1840A & 1840B Analysis.....	5
3.1.	External Packaging.....	5
3.2.	Transmission Envelope.....	5
3.2.1.	Tape Formats.....	5
3.2.2.	Declaration and Header Fields.....	5
4.	IGES Analysis.....	5
5.	SGML Analysis.....	5
6.	Raster Analysis.....	6
7.	CGM Analysis.....	7
8.	Conclusions and Recommendations.....	8
9.	Appendix A - Tapetool Report Logs.....	9
9.1.	MIL-STD-1840A Data Set.....	9
9.1.1.	Tape Catalog.....	9
9.1.2.	Tape File Set Validation Log.....	10
9.2.	MIL-STD-1840B Data Set.....	12
9.2.1.	Tape Catalog.....	12
9.2.2.	Tape File Set Validation Log.....	13

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10. Appendix B - Detailed Raster Analysis.....15

    10.1. File D001R001.....15

        10.1.1. Output IGESView.....15

    10.2. File D001R002.....16

        10.2.1. Output IGESView.....16

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## 1. Introduction

### 1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALs) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840B, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALs standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALs initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

## 1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Rocketdyne's (a division of Rockwell Int'l) interpretation and use of the CALS standards in transferring technical Raster data. Rocketdyne used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff using and electronic transfer to the internet server.

Two file sets were transmitted for this test, an 1840A and an 1840B data set.

## 2. Test Parameters

**Test Plan:** AFCTB 94-120

**Date of Evaluation:** 14 September 1994

**Evaluator:** George Elwood  
Air Force CALS Test Bed  
DET 2 HQ ESC/AV-2P  
4027 Colonel Glenn Hwy  
Suite 300  
Dayton OH 45431-1672

**Data Originator:** Betty Boyadjian  
Rocketdyne Division, Rockwell International  
6633 Canoga Ave M/S AB41  
Canoga Park, CA 91304  
(818) 586-4934

**Data Description:** Technical Raster Test (2)  
1 Document Declaration file  
2 Raster files

**Data Source System:** 1840

**HARDWARE**  
SUN

**SOFTWARE**  
AFCTN Tapetool 2.0B  
AFCTN Tapetool 1.2.10

**Raster**

**HARDWARE**  
SUN

**SOFTWARE**  
SPICER *IMAGEnation VME*

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**Evaluation Tools Used:**

**MIL-STD-1840B (TAPE)**

PC 486/50

AFCTN *Tapetool v1.2.10 DOS*

AFCTN *Tapetool v2.0.0 (1840B)*

**MIL-R-28002 (Raster)**

HP 735

AFCTN *xrastb.hp*

InterCAP *X-Change v7.82*

Carberry *CADLeaf v4.0*

SGI Indigo2

AFCTN *xrastb.sgi*

IGES Data Analysis (IDA) *CALSView*

SUN SparcStation 2

IDA *IGESView v3.0*

PC 486

AFCTN *validg4*

IDA *IGESView Windows*

Inset Systems *HiJaak Pro*

Expert Graphics *RxHighlight v1.0*

**Standards**

**Tested:**

MIL-STD-1840A

MIL-STD-1840B

MIL-R-28002A

### **3. 1840A & 1840B Analysis**

#### **3.1 External Packaging**

The files arrived at the Air Force CALS Test Bed (AFCTB) via an electronic transfer to the internet server. No physical media was exchanged or evaluated.

#### **3.2 Transmission Envelope**

The electronic transfer received by the AFCTB contained MIL-STD-1840A and MIL-STD-1840B files. The files were named per the standard conventions.

##### **3.2.1 Tape Formats**

No tape was evaluated.

##### **3.2.2 Declaration and Header Fields**

No errors were found in the Document Declaration file or data file headers of either file set. This portion of the electronic transfer meets the requirements defined in CALS MIL-STD-1840A and MIL-STD-1840B.

### **4. IGES Analysis**

No Initial Graphics Exchange Specification (IGES) files were included in this evaluation.

### **5. SGML Analysis**

No Standard Generalized Markup Language (SGML) files were included in this evaluation.

---

## 6. Raster Analysis

Each transfer set contained two Raster files from a MIL-STD-1840A and MIL-STD-1840B data package. The Raster files were compared and found to be exact matches. The Raster evaluation was done using the MIL-STD-1840A data files.

The procedure used to create these files at Rocketdyne was as follows:

Original engineering drawing created using *CATIA*. These files were then scanned at 300 DPI. File D001R001 is an "E" size drawing while D001R002 is an "A" size drawing. The 1840A output was generated using the AFCTB *Tapetool v1.2.10*. The 1840B output was generated using the AFCTN *Tapetool v2.0.0*. The 1840B header contained additional fields, which are not currently supported by the AFCTB Raster test tools; *xrastb* and *validg4*. All evaluations of the Raster files were done using the MIL-STD-1840A data set.

The 1840A files were read into the AFCTN *xrastb.sgi* viewing utility. No problems were encountered. It was noted that the decompressed file size of D001R001 was over 15 megabytes. Files this large may cause problems in some systems with limited memory. The image quality was excellent. All text could be read. The SUN Sparc version of the software would not display the image due to lack of memory.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The Raster files were read into Carberry's *CADLeaf* software without a reported error. In order to make the images acceptable, only a small section of the images could be displayed.

According to R. Bryan DiAntonio of Carberry, "We worked with these files and all images were displayed without a reported error."

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The files were read using IDA's *CALSVIEW* without a reported error.

The files were read into IDA's *IGESVIEW* without a reported error. The files were printed from this utility. The files were read into Inset Systems' *HiJaak for Windows*. Because of the size of the files and available memory on the PC, error messages were displayed indicating a lack of memory to process the files.

No errors were reported while using InterCAP's *X-Change*. The images appeared correctly. The text size was very small, making it necessary to use the zoom function in order to view it.

The Raster files were imported into Expert Graphics' *Rx-Highlight* and displayed without any reported errors. The images were enlarged and all text was legible.

The two Raster files in these transfer sets meet the CALS MIL-R-28002A specification.

## 7. CGM Analysis

No Computer Graphics Metafiles (CGMs) were included in this evaluation.

## 8. Conclusions and Recommendations

The CALS Document Declaration file and data file headers were correct. This portion of the electronic transfers meets the CALS MIL-STD-1840A and MIL-STD-1840B requirements.

The Raster files meet the CALS MIL-R-28002A specification.

The electronic transfer sets submitted by Rocketdyne conform to the CALS MIL-STD-1840A and MIL-STD-1840B requirements.

---

## 9. Appendix A - Tapetool Report Logs

### 9.1 MIL-STD-1840A Data Set

#### 9.1.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (0)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes  
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed Sep 14 11:17:09 1994

MIL-STD-1840A File Catalog

File Set Directory: C:\TT\SET012

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00256	02048/000000	Extracted
D001R001	Raster	F/00128	02048/000000	Extracted
D001R002	Raster	F/00128	02048/000000	Extracted

Catalog Process terminated normally.

---

## 9.1.2 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (O)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Wed Sep 14 11:17:10 1994

MIL-STD-1840A File Set Evaluation Log

File Set: SET012

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: Rocketdyne Div, Rockwell Intl, 6633 Canoga Ave, Canoga Park, CA 91303

srcdocid: Engineering Drawing #R046284

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19940908

dstsys: CALS Evaluation and Integration Office, %CALS Digital Standards Office, HQ  
AFMC/ENCT, Wright-Patterson AFB, OH 45433-50

dstdocid: Engineering Drawing #R046284

dstrelid: NONE

dtetrn: 19940908

dlvacc: NONE

filcnt: R2

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Product Data

docttl: Casting, Outlet Elbow, Enhanced MCC

Found file: D001R001

Extracting Raster Header Records...

Evaluating Raster Header Records...

srcdocid: Engineering Drawing #R046284

dstdocid: Engineering Drawing #R046284

txtfilid: NONE

figid: NONE

srcgph: NONE

doccls: UNCLASSIFIED

rtype: 1

rorient: 000,270

rpelcnt: 010672,015736

rdensty: 0300

notes: NONE

Saving Raster Header File: D001R001.HDR  
Saving Raster Data File: D001R001.GR4

Found file: D001R002  
Extracting Raster Header Records...  
Evaluating Raster Header Records...

srcdocid: Engineering Drawing #R046284  
dstdocid: Engineering Drawing #R046284  
txtfilid: NONE  
figid: NONE  
srcgph: NONE  
doccls: UNCLASSIFIED  
rtype: 1  
rorient: 000,270  
rpelcnt: 002551,003301  
rdensty: 0300  
notes: NONE

Saving Raster Header File: D001R002.HDR  
Saving Raster Data File: D001R002.GR4

Evaluating numbering scheme...  
No errors were encountered during numbering scheme evaluation.  
Numbering scheme evaluation complete.

Checking file count...  
No errors were encountered during file count verification.  
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

---

## 9.2 MIL-STD-1840B Data Set

### 9.2.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 2.0; Release 1 (C)

**Standards referenced:**

- MIL-STD-1840B (1992) - Automated Interchange of Technical Information
- ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes  
for Information Interchange
- ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed Sep 14 12:31:06 1994

MIL-STD-1840B File Catalog

File Set Directory: C:\TAPEB\SET004

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	F/00128	02048/000000	Extracted
D001R001	Raster	F/00128	02048/000000	Extracted
D001R002	Raster	F/00128	02048/000000	Extracted

Catalog Process terminated normally.

## 9.2.2 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 2.0; Release 1 (C)

Standards referenced:

MIL-STD-1840B (1992) - Automated Interchange of Technical Information

Wed Sep 14 12:31:06 1994

MIL-STD-1840B File Set Evaluation Log

File Set: SET004

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

version: MIL-STD-1840B, 0, 19921103

srcsys: Rocketdyne Div, Rockwell Intl, 6633 Canoga Ave, Canoga Park, CA 91303

srcdocid: Engineering Drawing #R046284

srcrelid: NONE

chglvl: ORIGINAL, 0, 0, 19940908/1033:17

dteisu: 19940908/1033:17

dstsys: CALS Evaluation and Integration Office, %CALS Digital Standards Office, HQ

AFMC/ENCT, Wright-Patterson AFB, OH 45433-50

dstdocid: Engineering Drawing #R046284

dstrelid: NONE

dtetrn: 19940908/1033:17

dlvacc: NONE

filcnt: R2

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: CATIA Drawings, scanned on E and A size scanners

docttl: Cating, Outlet Elbow, Enhanced MCC

transactyp: PRODUCT DATA

Found file: D001R001

Extracting Raster Header Records...

Evaluating Raster Header Records...

specversion: NONE

srcdocid: Engineering Drawing #R046284

dstdocid: Engineering Drawing #R046284

moduleid: NONE

dtype: 1

rorient: 000,270

rpelcnt: 010672,015736

rdensty: 0300  
didid: NONE  
doccls: UNCLASSIFIED  
notes: E-size scanned image, 300 dpi

Found file: D001R002  
Extracting Raster Header Records...  
Evaluating Raster Header Records...

specversion: NONE  
srcdocid: Engineering Drawing #R046284  
dstdocid: Engineering Drawing #R046284  
moduleid: NONE  
dtype: 1  
rorient: 000,270  
rpelcnt: 002551,003301  
rdensty: 0300  
didid: NONE  
doccls: UNCLASSIFIED  
notes: A-size scanned image, 300 dpi

Evaluating numbering scheme...  
No errors were encountered during numbering scheme evaluation.  
Numbering scheme evaluation complete.

Checking file count...  
No errors were encountered during file count verification.  
File Count verification complete.

No errors were encountered in Document D001.

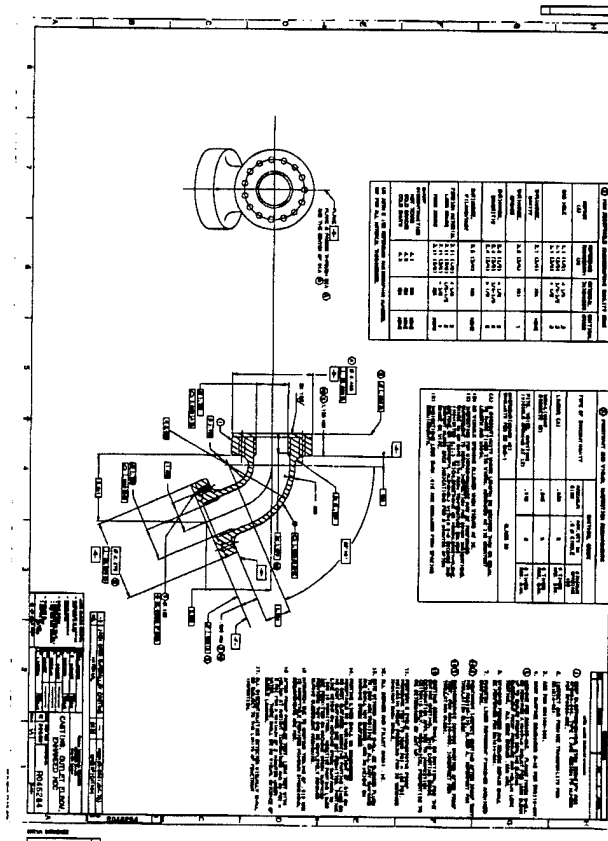
No errors were encountered in this File Set.

MIL-STD-1840B File Set Evaluation Complete.

## 10. Appendix B - Detailed Raster Analysis

### 10.1 File D001R001

#### 10.1.1 Output IGESView



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## 10.2 File D001R002

### 10.2.1 Output IGESView

IMAGE FROM: JUL 25, 1996 15:41:20

