Technical Raster Transfer

using:

Cubic Defense Systems' Data

MIL-R-28002A (Raster)

Quick Short Test Report

21 September 1993

Prepared for

Electronic Systems Center
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Cubic Defense Systems' Data

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21 September 1993

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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-1840A, 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 Cubic Defense Systems' interpretation and use of the CALS standards in transferring technical Raster data. Cubic Defense Systems used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.
2. Test Parameters

Test Plan: AFCTB 93-092

Date of Evaluation: 21 September 1993

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: John Akin
Cubic Defense Systems
9333 Balboa Avenue
San Diego CA 92186-5587
(619) 277-6780 X 2785

Data Description: Technical Raster Test
3 Document Declaration files
14 Raster files

Data Source System: 1840

HARDWARE Unknown
SOFTWARE Unknown

Raster

HARDWARE Unknown
SOFTWARE Unknown
Evaluation Tools Used:

MIL-STD-1840A (TAPE)
SUN 3/280
  AFCTN Tapetool v1.2.10 UNIX
  XSoft CAPS/CALS v40.4
PC 486/50
  AFCTN Tapetool v1.2.10 DOS

MIL-R-28002 (Raster)
SUN SparcStation 2
  ArborText g42tiff
  Carberry CADLeaf Plus v3.1
  AFCTN validg4
  AFCTN calstb.475
  AFCTN xрастb.sun4
  IGES Data Analysis (IDA) IGESView v3.0
  Island Graphics IslandPaint v3.0
PC 486/50
  IDA IGESView Windows
  Inset Systems HiJaak Window v1.0

Standards Tested:

MIL-STD-1840A
MIL-R-28002A
3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with a magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in barrier sheet material as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density as, required by MIL-STD-1840A, para. 5.3.1. It was also noted that the tape reel had two cracked sections. No small parts were found in the packing material so it is assumed that the tape reel had these defects before it was sent. Enclosed in the box was a packing list showing all files recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTN Tapetool v1.2.10 utility. No errors were encountered while evaluating the contents of the tape labels.

A note was reported on the tape label version. MIL-STD-1840A permits the use of both version three and four. The use of the most current standard should be used and noted.

The tape was read using XSoft's CAPS read1840A utility with no reported errors.

The tape's physical structure meets the MIL-STD-1840A requirements.
3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file or the data file headers. This portion of the tape meets the requirements defined in CALS MIL-STD-1840A.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on this tape.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on this tape.

6. Raster Analysis

The tape contained 14 Raster files. All files were evaluated using the AFCTN validg4 utility. This program reported all files meet the CALS MIL-R28002A specification.

The files were read into the AFCTN xrastb.sun4 viewing utility. All files could be viewed without a reported problem. All files appeared to be clean with no orphan pixels noted. It was noted that all of the images were scanned at a slight angle.

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 files were converted using ArborText's g42tiff utility without a reported error. The resulting files were read
into Island Graphics' *IslandPaint*, displayed, and a sample printed.

The Raster files were read into Carberry's *CADLeaf* software. The software was able to read and display the images on the screen without a reported error.

The files were read into IDA's *IGESView*. This software was able to read, display, and print the files without a reported error. *IGESView for Windows* read and displayed the files without a reported error.

All files were read into Inset Systems' *HiJaak for Windows* without a reported error.

All files were converted using Rosetta Technologies' *Prepare* without a reported error. The resulting files were viewed using Rosetta Technologies' *Preview* without a problem. A sample file was printed.

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

7. **CGM Analysis**

No Computer Graphics Metafile (CGM) files were included on this tape.
8. Conclusions and Recommendations

The tape from Cubic Defense Systems had no reported errors in the physical structure. The document declaration and header files were also without a reported error. This portion of the tape meets the CALS MIL-STD-1840A requirements.

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

The tape submitted by Cubic Defense Systems meets the CALS MIL-STD-1840A requirements.
9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

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

Standards referenced:
- ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes for Information Interchange
- ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Sep 21 16:16:52 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Se020

<table>
<thead>
<tr>
<th>File Name</th>
<th>File Type</th>
<th>Format/Block Length/Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>D001</td>
<td>Document Declaration</td>
<td>D/00260 02048/000001</td>
</tr>
<tr>
<td>Extracted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D002</td>
<td>Document Declaration</td>
<td>D/00260 02048/000001</td>
</tr>
<tr>
<td>Extracted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D003</td>
<td>Document Declaration</td>
<td>D/00260 02048/000001</td>
</tr>
<tr>
<td>Extracted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D001R001</td>
<td>Raster</td>
<td>F/00128 02048/000010</td>
</tr>
<tr>
<td>Extracted</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<<< PART OF LOG FILE REMOVED HERE >>>>

<table>
<thead>
<tr>
<th>File Name</th>
<th>File Type</th>
<th>Format/Block Length/Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>D001R007</td>
<td>Raster</td>
<td>F/00128 02048/000007</td>
</tr>
<tr>
<td>Extracted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D002R001</td>
<td>Raster</td>
<td>F/00128 02048/000015</td>
</tr>
<tr>
<td>Extracted</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<<< PART OF LOG FILE REMOVED HERE >>>>
D002R006  Raster  F/00128 02048/000012
Extracted
D003R001  Raster  F/00128 02048/000058
Extracted

Catalog Process terminated normally.
9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release 10 (C)
Standards referenced:
   ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
   for Information Interchange
   ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Sep 21 16:16:39 1993

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOLL CALS01
3

Label Identifier: VOLL
Volume Identifier: CALS01
Volume Accessibility: 
Owner Identifier: 
Label Standard Version: 3

*** NOTE (ANSI X3.27; 8.3.1.8) - The Label Standard Version
should be 4 to represent the current level of ANSI X3.27.

HDR1D001 CALS0100010001000100 93260 93260 000000DECFILE11A

Label Identifier: HDR1
File Identifier: D001
File Set Identifier: CALS01
File Section Number: 0001
File Sequence Number: 0001
Generation Number: 0001
Generation Version Number: 00
Creation Date: 93260
Expiration Date: 93260
File Accessibility: 
Block Count: 000000
Implementation Identifier: DECFILE11A

HDR2D0204800260

Label Identifier: HDR2
Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 00

<<<<<< PART OF LOG FILE REMOVED HERE >>>>>

************* Tape Mark **************

############## End of Volume CALS01 ##############

############## End Of Tape File Set ##############

Deallocating /dev/rmt0...

Tape Import Process terminated with 0 error(s), 0 warning(s), and 1 note(s).
9.3 Tape File Set Validation Log

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

Standards referenced:

Tue Sep 21 16:16:52 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set020

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: CUBIC DEFENSE SYSTEMS INC. 9333 BALBOA AVE. SAN DIEGO, CA 92123
FSCM 94987
srcdocid: 147345
srcrelid: NONE
chqlvl: 3,3,19930308
dteism: 19770324
dtsys: AD/YI
dstdocid: NONE
dstrelid: NONE
dtetrn: 19930917
dlvcac: A011R, E010R
fiecnt: R7
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctype: Document/Drawing List
docttl: ADHRSIVE

Found file: D001R001
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: DL147345 94987 C 00010001UMEAHN
001
dstdocid: NONE
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: NONE
rtype: 1
rorient: 000,270
xpelcnt: 002048,002560
rdensity: 0200
notes: NONE

Saving Raster Header File: D001R001_HDR
Saving Raster Data File: D001R001_GR4

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

Saving Raster Header File: D001R007_HDR
Saving Raster Data File: D001R007_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.

Found file: D002
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: CUBIC DEFENSE SYSTEMS INC. 9333 BALBOA AVE. SAN DIEGO, CA 92123
FSCM 94987
srcdocid: 147348
srcrelid: NONE
chglvl: 3,3,19930308
dteisu: 19770324
dstsys: AD/YI
dstdocid: NONE
dstrelid: NONE
dtetrn: 19930917
dlvacc: A011R, B010R
filcnt: R6
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Document/Drawing List
docttl: GROMMET ASSY

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

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 D002.

Found file: D003  
Extracting Document Declaration Header Records...  
Evaluating Document Declaration Header Records...

srcsys: CUBIC DEFENSE SYSTEMS INC. 9333 BALBOA AVE. SAN DIEGO, CA 92123  
FSCM 94987  
srccid: 217021  
srcrel: NONE  
chglvl: 5,5,19930309  
dteis: 19901220  
dstsys: AD/YI  
dstdocid: NONE  
dstrelid: NONE  
dtetrn: 19930917  
dlvacc: A011R, E010R  
filcnt: R1  
ttlcls: UNCLASSIFIED  
doccls: UNCLASSIFIED  
doctyp: Document/Drawing List  
docttl: SCREW ASSY, CAPTIVE  

Found file: D003R001  
Extracting Raster Header Records...  
Evaluating Raster Header Records...

srccid: DL217021  
srcrel: NONE  
txtfilid: NONE  
figid: NONE  
srccph: NONE  
doccls: UNCLASSIFIED  
rtype: l  
rorient: 000,270  
rpelcnt: 006992,004600  
rdensty: 0200  
notes: NONE
Saving Raster Header File: D003R001_HDR
Saving Raster Data File: D003R001_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 D003.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.
10. Appendix B - Detailed Raster Analysis

10.1 File D002R006

10.1.1 Output HiJaak Pro

**SUGGESTED SOURCES OF SUPPLY**

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>VENDOR PART NO.</th>
<th>VENDOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>FX10-15019</td>
<td>TRIDAIR INDUSTRIES, FASTENER DIVISION TORRANCE, CA 90505 CODE IDENT: 29372</td>
</tr>
</tbody>
</table>

**FIGURE 1**

![Diagram of a component with dimensions and notes](image)

**ITEM: GROMMET**

- **MATERIAL**: 18-8 TYPE 300 SERIES CRES PER QQ-S-764
- **FINISH**: PASSIVATE PER QQ-P-35

**ITEM: SPRING**

- **MATERIAL**: 17-7 PH CRES PER AMS 5643
- **FINISH**: PASSIVATE PER QQ-P-35, HEAT TREAT TO COND CH 900

**Contract No.** 1100019-77-C-0218

**SCALE** NONE **REV** C **SHEET** 6
### 10.1.2 Output G42TIFF/IslandPaint

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>VENDOR PART NO.</th>
<th>VENDOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>FX10-15019</td>
<td>TRIDAIR INDUSTRIES,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FASTENER DIVISION</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TORRANCE, CA 90505</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CODE IDENT: 29372</td>
</tr>
</tbody>
</table>

**Figure 1**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MATERIAL</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROMMET</td>
<td>18-8 TYPE 300</td>
<td>PASSIVATE PER QQ-P-35</td>
</tr>
<tr>
<td></td>
<td>SERIES CRES</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PER QQ-S-764</td>
<td></td>
</tr>
<tr>
<td>SPRING</td>
<td>17-7 PH CRES</td>
<td>PASSIVATE PER QQ-P-35</td>
</tr>
<tr>
<td></td>
<td>PER AMS 5643</td>
<td>HEAT TREAT TO COND CH 900</td>
</tr>
</tbody>
</table>

Contract No. MEOY-77-0210

<table>
<thead>
<tr>
<th>SIZE</th>
<th>CODE PRT NO.</th>
<th>DRAWING NO.</th>
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<tbody>
<tr>
<td>A</td>
<td>94987</td>
<td>147349</td>
</tr>
</tbody>
</table>
10.1.3 Output Preview

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>VENDOR PART NO.</th>
<th>VENDOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FX10-15019</td>
<td>TRIDAIR INDUSTRIES, FASTENER DIVISION TORRANCE, CA 90505 CODE IDENT: 29372</td>
</tr>
</tbody>
</table>

**FIGURE 1**

<table>
<thead>
<tr>
<th>ITEM - 1</th>
<th>MATERIAL</th>
<th>FINISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROMMET</td>
<td>18-8 TYPE 300 SERIES CRES PER QQ-S-764</td>
<td>PASSIVATE PER QQ-P-35</td>
</tr>
<tr>
<td>SPRING</td>
<td>17-7 PH CRES PER AMS 5643</td>
<td>PASSIVATE PER QQ-P-35, HEAT TREAT TO COND CH 900</td>
</tr>
</tbody>
</table>

Contract No. 1100019-77-C-0218  
A 94987  
SCALE NONE REV C SHEET 6  
DRAWING NO. 147348