



**AFCTN Report  
94-119**

**AFCTB-ID  
94-122**



**Technical Raster Transfer Using:**

**AlliedSignal Technical Services' Data**



**Supporting:**

**SA-ALC/TILDAM's EDCARS System**

(Contract #F41608-91-C-1276)



**MIL-STD-1840A**

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



**Quick Short Test Report**

**23 September 1994**

**19960408 030**

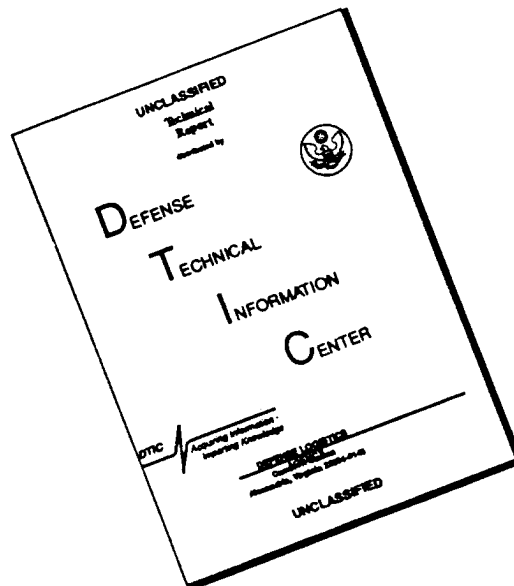


Prepared for  
Electronic Systems Center  
Air Force CALS Program Office  
HQ ESC/AV-2  
4027 Colonel Glenn Hwy Suite 300  
Dayton OH 45431-1672

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**AFCTN Test Report**  
**94-119**

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**Using:**

**AlliedSignal Aerospace's Data**

**Supporting:**

**SA-ALC/TILDAM's EDCARS System**

**(Contract #F41608-91-C-1276)**

**MIL-STD-1840A**

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

**Quick Short Test Report**

**23 September 1994**

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**Prepared By**

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# **Air Force CALS Test Bed**

## ***Notification of Test Results***

**23 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:

### **AlliedSignal Technical Services**

Identified as follows:

Title:	<b>Technical Raster Transfer</b>
Program:	<b>EDCARS System</b>
Program Office:	<b>SA-ALC/TILDM</b>
Contract No.:	<b>F41608-91-C-1276</b>
QSTR No.:	<b>AFCTB-ID 94-122</b>

Received on the following media: **9-Track Tape**

The results of the QSTR evaluation are as follows:

MIL-STD-1840A Standard	<b>Fail</b>
MIL-STD-1840A Media Format:	<b>Fail</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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## 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.

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## 1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze AlliedSignal Aerospace Technical Service Corporation's interpretation and use of the CALS standards in transferring technical Raster data. AlliedSignal 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 94-122

**Date of Evaluation:** 23 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:** AlliedSignal Technical Services Corp.  
Harry S. Barnes  
One Bendix Road  
Columbia MD 21045-1897  
(410) 964-7000

**Data Description:** Technical Raster Test  
1 Document Declaration file  
4 Raster files

**Data Source System:** 1840  
**HARDWARE** VAX  
**SOFTWARE** Tapetool 1.2.10 VMS

**Raster**  
**HARDWARE** IBM PC  
**SOFTWARE** AutoCadd DXF to HiJaak GP4

**Evaluation Tools Used:**

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

SUN 3/280

AFCTN Tapetool v1.2.10 UNIX  
XSoft CAPS/CALS v40.4

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

HP 735

AFCTN xrastb.hp  
Carberry CADLeaf Plus v4.1  
InterCAP X-Change v7.82

SGI Indigo2

IGES Data Analysis (IDA) CALSView

SUN SparcStation 2

AFCTN validg4  
AFCTN xrastb.sun4  
IDA IGESView v3.0

PC 486

IDA IGESView Windows  
IDA CALSView Windows  
Inset Systems HiJaak Pro  
Expert Graphics RxHighlight 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. 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.

The tape was read using XSoft's *CAPS read1840A* utility without any reported errors.

The physical structure of the tape meets the requirements defined in ANSI X3.27 and MIL-STD-1840A.

##### 3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file. No errors were reported in the data file headers. The submitted files were reported to be a sample for an EDCARS system. A visual check of the Raster file headers showed that the `srcdocid` was incorrect. This record contained additional

---

information. The typical EDCARS srcdocid has several spaces followed by number and characters. The AFCTB tapetool utility will report errors because MIL-STD-1840A permits only one space between the colon and the start of valid information. The space character is a valid character and is permitted by MIL-STD-1840A. Shown below is the srcdocid record for file D001R001. Note the two "srcdocid" references in the record.

```
srcdocid: SRCDOCID : 823187200000000068480D          00010001UMBDHN  
A 001
```

While the Raster header files report no errors, the duplicate srcdocid reference are incorrect and the data does not meet the requirements defined in MIL-STD-1840A and also fail to meet the requirements for an EDCARS submission.

#### 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

The tape contained four Raster files. All files were evaluated using the AFCTN *validg4* utility. This program reported that all four files meet the CALS MIL-R-28002A specification.

The files were read into the AFCTN *xrastb.sun4* viewing utility. No problems were noted with the exception of visual presentation. The small text on the image did not appear to be readable. The quality of the image did not appear to match reported 300dpi scanned density.

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. The images were displayed, and an unreadable condition was noted.

The files were read using IDA's *CALSVIEW*. An unreadable condition was noted.

The files were read into IDA's *IGESVIEW* and *IGESVIEW for Windows* without a reported error. All images were printed from this utility. Detailed areas were printed to highlight the unreadable conditions noted in all applications.

The files were read into Inset Systems' *HiJaak Pro* without a reported error. The unreadable condition was again noted.

The files were read using InterCAP's *X-Change*. Files D001R001 and D001R003 were reported as being invalid files. The other two files displayed without a problem. The unreadable condition was again noted.

The Raster files were converted using Rosetta Technologies' *Prepare* without a reported error. The resulting files were read into Rosetta Technologies' *Preview* and displayed. The unreadable condition was noted.

---

The Raster files were imported into Expert Graphics' *Rx-Highlight* and displayed without a reported error. The unreadable condition was noted.

The Raster files submitted on this tape meet the requirements defined in MIL-R-28002A. Only one application had problems reading some of the files. The quality of the information on the images was marginal to unreadable for the smaller text.

## 7. CGM Analysis

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

## 8. Conclusions and Recommendations

In summary, the tape from AlliedSignal Technical Service could be read properly using the AFCTN *Tapetool* Software without any reported errors. The physical structure of the tape was correct and meets the requirements defined in MIL-STD-1840A and ANSI X3.27.

The headers on the Raster files, while not being reported in error, were incorrect. The *srcdocid* had duplicate entries. The submitted data would not be acceptable to the EDCARS system, and does not meet the MIL-STD-1840A requirements.

The Raster files meet the requirements defined in MIL-R-28002A. The quality of the images was marginal to unreadable for smaller text.

The tape submitted by AlliedSignal does not meet the requirements defined in MIL-STD-1840A.

---

## 9. Appendix A - Tapetool Report Logs

### 9.1 Tape Catalog

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

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

Fri Sep 23 09:58:44 1994

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set049

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001R001	Raster	F/00128	02048/000010	Extracted
D001R002	Raster	F/00128	02048/000007	Extracted
D001R003	Raster	F/00128	02048/000007	Extracted
D001R004	Raster	F/00128	02048/000008	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

Fri Sep 23 09:58:40 1994

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALSO1

4

Label Identifier: VOL1  
Volume Identifier: CALSO1  
Volume Accessibility:  
Owner Identifier:  
Label Standard Version: 4

HDR1D001                    CALSO100010001000000 94258 00000 000000

Label Identifier: HDR1  
File Identifier: D001  
File Set Identifier: CALSO1  
File Section Number: 0001  
File Sequence Number: 0001  
Generation Number: 0000  
Generation Version Number: 00  
Creation Date: 94258  
Expiration Date: 00000  
File Accessibility:  
Block Count: 000000  
Implementation Identifier:

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

##### End of Volume CALSO1 #####  
##### End Of Tape File Set #####

Deallocating /dev/rmt0...

Tape Import Process terminated normally.

---

### 9.3 Tape File Set Validation Log

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

Standards referenced:

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

Fri Sep 23 09:58:44 1994

MIL-STD-1840A File Set Evaluation Log

File Set: Set049

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: atscv1

srcdocid: Test of CALS/EDCARS tape generation.

srcrelid: NONE

chglvl: ORIGINAL

dteis: 19940915

dstsys: EDCARS System, SA-ALC/TILDM, Kelly AFB, Tx., 78241

dstdocid: Test of CALS/EDCARS tape generation.

dstrelid: NONE

dtetrn: 19940915

dlvacc: F41608-91-C-1276

filcnt: R4

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Product Data

docttl: Chassis, Altered.

Found file: D001R001

Extracting Raster Header Records...

Evaluating Raster Header Records...

srcdocid: SRCDID : 823187200000000068480D  
A 001

00010001UMBDHN

dstdocid: NONE

txtfilid: NONE

figid: NONE

srcgph: NONE

doccls: UNCLASSIFIED

rtype: 1

rorient: 090,270

rpelcnt: 001500,000970

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: SRCDOCID : 823187200000000068480D 00010001UMBDHN  
A 002  
dstdocid: NONE  
txtfilid: NONE  
figid: NONE  
srcgph: NONE  
doccls: UNCLASSIFIED  
rtype: 1  
rorient: 090,270  
rpelcnt: 001500,000970  
rdensty: 0300  
notes: NONE

Saving Raster Header File: D001R002\_HDR  
Saving Raster Data File: D001R002\_GR4

Found file: D001R003  
Extracting Raster Header Records...  
Evaluating Raster Header Records...

srcdocid: SRCDOCID : 823187200000000068480D 00010001UMBDHN  
A 003  
dstdocid: NONE  
txtfilid: NONE  
figid: NONE  
srcgph: NONE  
doccls: UNCLASSIFIED  
rtype: 1  
rorient: 090,270  
rpelcnt: 001500,000970  
rdensty: 0300  
notes: NONE

Saving Raster Header File: D001R003\_HDR  
Saving Raster Data File: D001R003\_GR4

Found file: D001R004  
Extracting Raster Header Records...  
Evaluating Raster Header Records...

srcdocid: SRCDOCID : 823187200000000068480D 00010001UMBDHN

---

A 004  
dstdocid: NONE  
txtfilid: NONE  
figid: NONE  
srcgph: NONE  
doccls: UNCLASSIFIED  
rtype: 1  
rorient: 090,270  
rpelcnt: 001500,000970  
rdensty: 0300  
notes: NONE

Saving Raster Header File: D001R004\_HDR  
Saving Raster Data File: D001R004\_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.

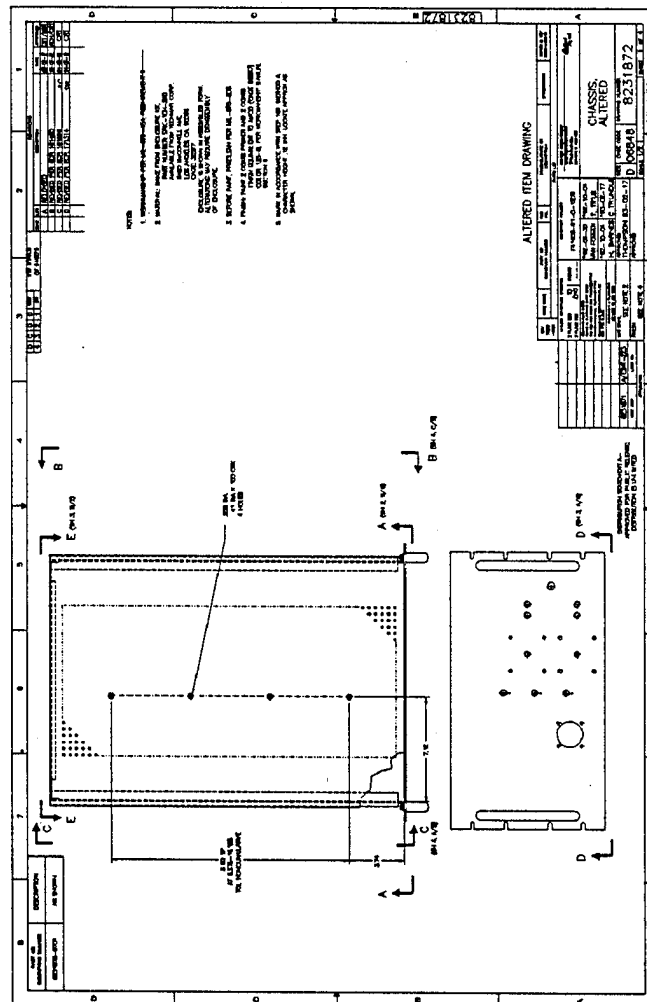
No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

## 10. Appendix B - Detailed Raster Analysis

### 10.1 File D001R001

#### 10.1.1 Output IGESView



AFCTN Test Report  
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AFCTB Test Report  
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10.2 File D001R001 - Detail

10.2.1 Output IGESView

ALTERI

CITY REQD --0001	CAGE CODE	PART OR IDENTIFYING NUMBER	PND NO.
UNLESS OTHERWISE SPECIFIED			
2 FLAGE DEC		.10 ANGLES	F41628-01-C
3 FLAGE DEC		.010	D-92-09-30
DIMENSIONS ARE IN INCHES ROUND ALL EDGES AND SHARP EDGES DOD-800-0001 (MAY BE APPLIED) DIMENSIONS AND TOLERANCES SHALL BE HELD PER PLANS			
DIMENSIONS & TOLERANCES ARE BASED ON THE YOUNG			
MATERIAL SEE NOTE 2			
FINISH SEE NOTE 4			
A/E24T-223			
USED ON			
LOCATION			
3			

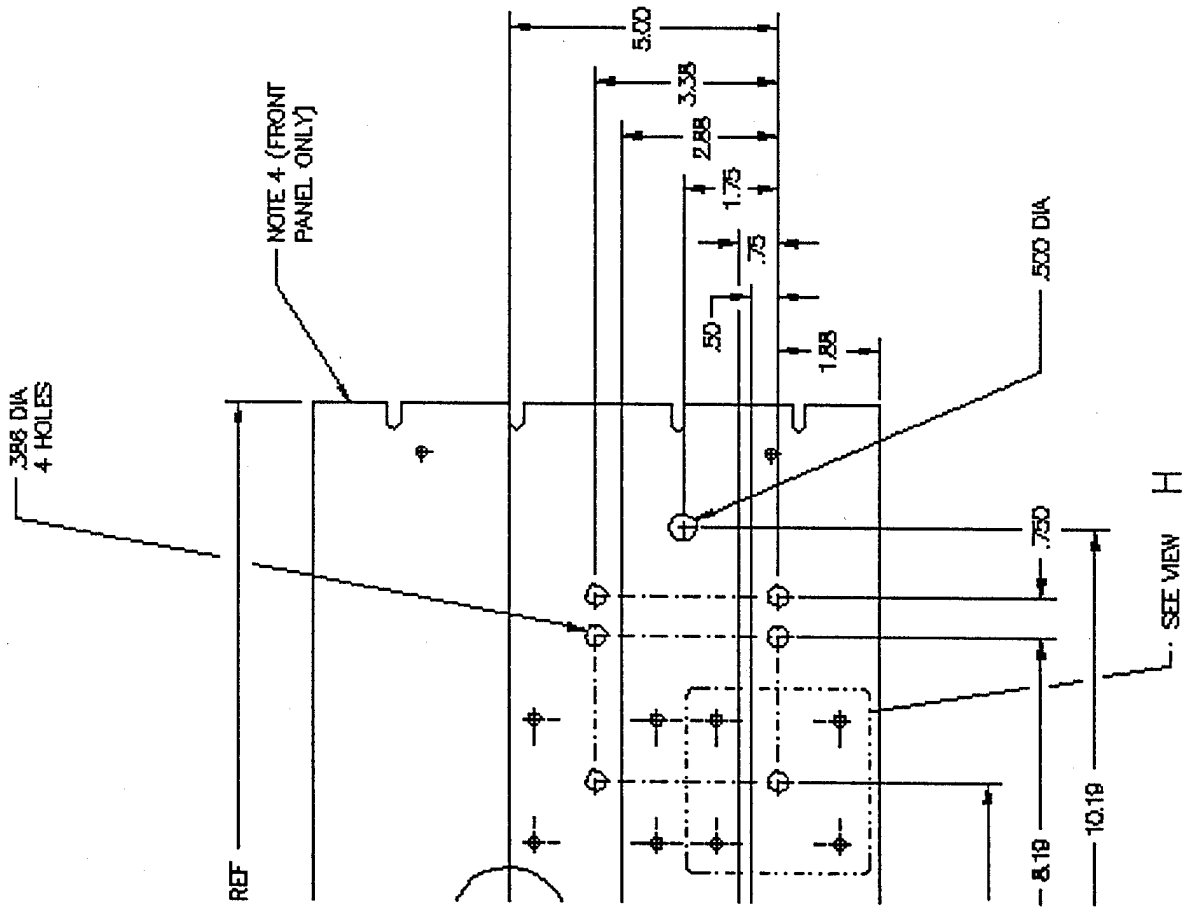
10.3 File D001R001 - Detail

10.3.1 Output IGESView

	CITY REQD -0001	CAGE CODE	CENT
		UNLESS OTHERWISE SPECIFIED	
	2 PLACE DEC	70	ANGLE
	2 PLACE DEC	010	
	UNLESS OTHERWISE SPECIFIED		
	UNLESS OTHERWISE SPECIFIED		
	UNLESS OTHERWISE SPECIFIED		
	UNLESS OTHERWISE SPECIFIED		
	UNLESS OTHERWISE SPECIFIED		
13	UNLESS OTHERWISE SPECIFIED		
	UNLESS OTHERWISE SPECIFIED		

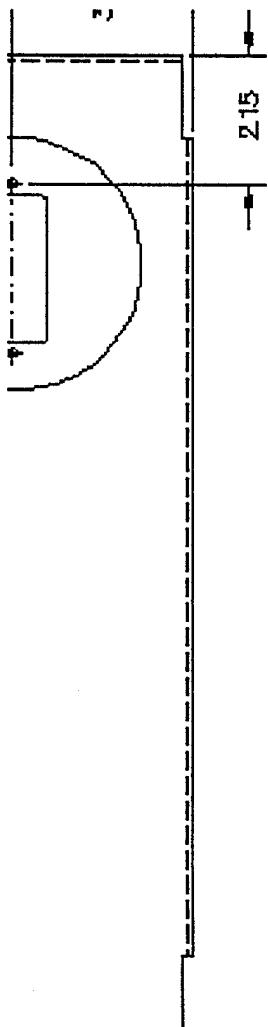
## 10.4 File D001R002 - Detail

### 10.4.1 Output IGESView

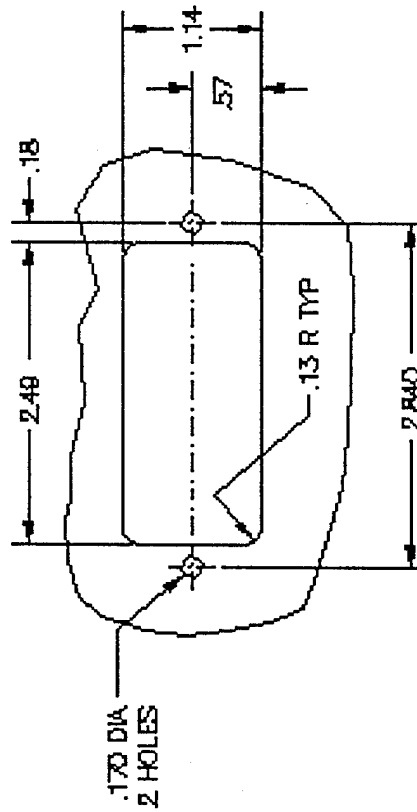


## 10.5 File D001R003 - Detail

### 10.5.1 Output IGESView



VIEW E — (SH 1, D/5)  
ROTATED 180  
REAR PANEL ONLY SHOWN FOR CLARITY



VIEW J  
SCALE 1/1

SIZE	SCALE	AUTO
D		
	2	
	3	

---

## 10.6 File D001R004 - Detail

### 10.6.1 Output IGESView

