Technical Graphics Transfer

Using:

International TechneGroup Incorporated's Data

MIL-D-28003 (CGM)

Quick Short Test Report

15 February 1994

19960822 079

DTIC QUALITY INSPECTED 3

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST
QUALITY AVAILABLE. THE
COPY FURNISHED TO DTIC
CONTAINED A SIGNIFICANT
NUMBER OF PAGES WHICH DO
NOT REPRODUCE LEGIBLY.

Technical Graphics Transfer

Using:

International TechneGroup Incorporated's Data

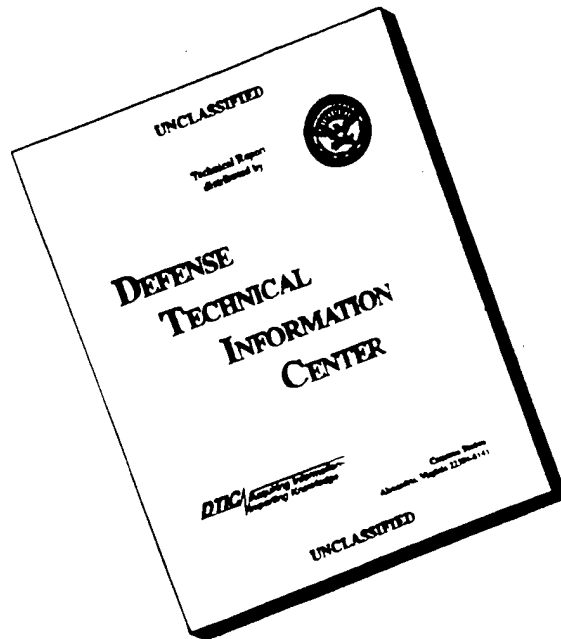MIL-D-28003 (CGM)

Quick Short Test Report

15 February 1994

Prepared By
Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

AFCTB Contact
Gary Lammers
(513) 427-2295

AFCTN Contact
Mel Lammers
(513) 427-2295

DISCLAIMER

Air Force CALS Test Bed

Notification of Test Results

15 February 1994

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

International TechneGroup, Inc.

Identified as follows:

Title:	**MIL-D-28003 CALS Compliance**
Program:	**ITI Translator Development Program**
Program Office:	**International TechneGroup, Inc.**
Contract No.:	**N/A**
QSTR No.:	**AFCTB-ID 94-005**

Received on the following media: **Internet**

The results of the AFCTB Quick Short Test Report evaluation are as follows:

MIL-STD-1840A Media Format:	**N/A**
MIL-D-28000A IGES:	**N/A**
MIL-M-28001A SGML:	**N/A**
MIL-R-28002A Raster:	**N/A**
MIL-D-28003 CGM:	**Pass**

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

Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Ac-quisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Auto-mated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary partic-ipants from industry and government managed by the Elec-tronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effec-tiveness of the CALS standards for technical data inter-change 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 tech-nical 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 inter-pretations of the standards, to increase the base of par-ticipation in the CALS initiative, and respond to the many requests for help that come from participants. Partici-pants take part voluntarily, benefit by receiving an evalu-ation 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 International TechneGroup Incorporated's (ITI) interpretation and use of the CALS standards, in transferring technical illustration data. ITI used its CALS Technical Data Interchange System to produce CGM data, in accordance with the standards, and delivered it to the AFCTN technical staff using an electronic transfer.

The stated purpose of this test is to evaluate the CGM translator output files. Both CALS and ANSI standard CGM files were provided. No MIL-STD-1840A evaluation will be made.

2. Test Parameters

Test Plan: AFCTB 94-005

**Date of
Evaluation:**   15 February 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:**   JMM
                                International TechneGroup Incorporated
                                5303 DuPont Circle
                                Milford OH 45150
                                (513) 576-3900

**Data
Description:**   Technical Graphics Test
                                        4 Computer Graphics Metafile (CGM) files

**Data
Source System:**

                CGM
                        HARDWARE
                                Unknown
                        SOFTWARE
                                Unknown

Evaluation Tools Used:

                MIL-D-28003 (CGM)
                        SUN SparcStation 2
                                ArborText *cgm2draw*
                                Carberry *CADLeaf Plus v3.1*
                                Island Graphics *IslandDraw v3.0*
                                Island Graphics *IslandDraw v4.0*

PC 486/50

Advanced Technology Center
(ATC) *MetaCheck R 2.10*
Software Publishing Corporation
(SPC) *Harvard Graphics v3.05*
Inset Systems *HiJaak Pro*
Lotus *Freelance v2.01*
Micrografx *Designer v4.0*
Corel *Ventura Publisher*

**Standards
Tested:**

MIL-D-28003

3. 1840A 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 files received by the AFCTB were not MIL-STD-1840A files. The files were not named per the standard conventions, as the stated purpose of the evaluation was the basic data structure.

3.2.1 Tape Formats

No tape was submitted for evaluation.

3.2.2 Declaration and Header Fields

The files were submitted for evaluation without the CALS headers or Document Declaration file. The purpose of the evaluation was the basic data files.

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 include in this evaluation.

6. Raster Analysis

No Raster files were included in this evaluation.

7. CGM Analysis

Four CGM files were transmitted electronically to the AFCTB for evaluation. The files consisted of two sets, which were the same except for the specifications used. Two of the files were submitted using the CALS MIL-D-28003 specification and the other two were submitted using a basic ANSI specification.

The four files were evaluated using ATC's *MetaCheck* software. The CALS files were tested using the CALS options while the ANSI files were not. All four files were reported without error using the tested specification.

The CGM files were evaluated using the beta AFCTN *validcgm* utility. This utility only tests for CALS requirements, therefore, when an attempt was made to test the ANSI CGM files with this utility, it reported errors. Other discrepancies were reported in all files.

The AFCTB has several tools for viewing CGM 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 and indication of CALS capability. All operations were performed using the default settings.

The CGM files were converted using ArobrText's *cgm2draw* utility without a reported error. The resulting files were read into Island Graphics' *IslandDraw v3.1*, displayed and printed. The displayed and printed images appeared to be complete with no errors noted.

The files were read into Carberry's *CADLeaf* software and displayed without a reported error. The displayed and printed images appeared to be complete.

The files were viewed using a software available within the AFCTB. All four files were imported without a reported error. The images displayed and printed without a problem.

The files were imported into Micrografx's *Designer* without a reported error. When initially displayed, the images were a black block. The color option was used changing the background to white to correct this problem. The displayed and printed images appear to be complete with no noted errors.

The files were imported into Lotus' *Freelance* without a reported error. The images displayed and printed without a problem. The images appeare to be complete with no noted discrepancies.

The files were imported into SPC's *Harvard Graphics v3.05* with a reported bad color error. When displayed the image was completely black. The image was ungrouped and the background color removed. This background color had to be deleted twice in order for the file to display and print correctly.

The files were read into Inset Systems' *HiJaak Pro* without a reported error. However, the displayed image was a black box. It was not possible to change the color to display the images. *HiJaak Pro* was able in read in the PGL file format generated by another software available within the AFCTB, which it displayed and printed without a problem.

According to Beverly Bernard of Inset Systems, "HiJaak Pro Shipstream has corrected the display problem you cite in this report. Curent shipping versions will display properly and any user with an older version of HiJaak Pro who need the Shipstream need only to contact Inset Systems for the update."

The files were imported directly into Island Graphics' *IslandDraw v4.0* without a reported error. When the images were displayed only part was visible. Changing the background color still would not permit the image to display. When the image was ungrouped and all entities were selected, they still did not display.

The files were imported into Corel's *Ventura Publisher* without a reported error. The images displayed and printed without a problem. No discrepancies were noted.

The CALS CGM files meet the CALS MIL-D-28003 specification. The ANSI CGM files meet the ANSI specification. Several of the software applications within the AFCTB had problems with the background color in the files.

8. Conclusions and Recommendations

The stated purpose of this test was to evaluate CGM files
from a new ITI translator. The files were not submitted in
an 1840A format and were not evaluated against this stan-
dard.

The four CGM files submitted by International TechneGroup
Incorporated meet the CALS MIL-D-28003 specification, and
the ANSI CGM specification. However, several software
applications had problems with the background color which
required changing or removal.

9. Appendix A - Detailed CGM Analysis

9.1 File ITIMECH.CAL

9.1.1 Parser Log MetaCheck

```
MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 02/15/94      Time:  10:32:32

Metafile Examined      : i:\94005\itimech.cal

Pictures Examined     : All
Elements Examined     : All
Bytes     Examined     : All

===================== Trace Report =====================

Tracing not selected.

============= CGM Conformance Violation Report =============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

No profile discrepancies detected.

================ Conformance Summary Report ================

MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 02/15/94      Time:  10:33:03

Name of CGM under test: i:\94005\itimech.cal
Encoding              : Binary

Pictures Examined     : All
Elements Examined     : All
Bytes     Examined     : All

BEGIN METAFILE string : >iw_plot.1709.cal<
METAFILE DESCRIPTION  : >igesworks MIL-D-28003/BASIC-1<

Picture 1 starts at octet offset 206: >PIC1<
```

Conformance Summary : This file conforms to the CGM specification.
                        This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

```
         1 Pictures Tested
      9456 Elements Tested
    212716 Octets Tested


         ====================================
         |    No Errors Were Detected    |
         ====================================
```

================ End of Conformance Report ==================
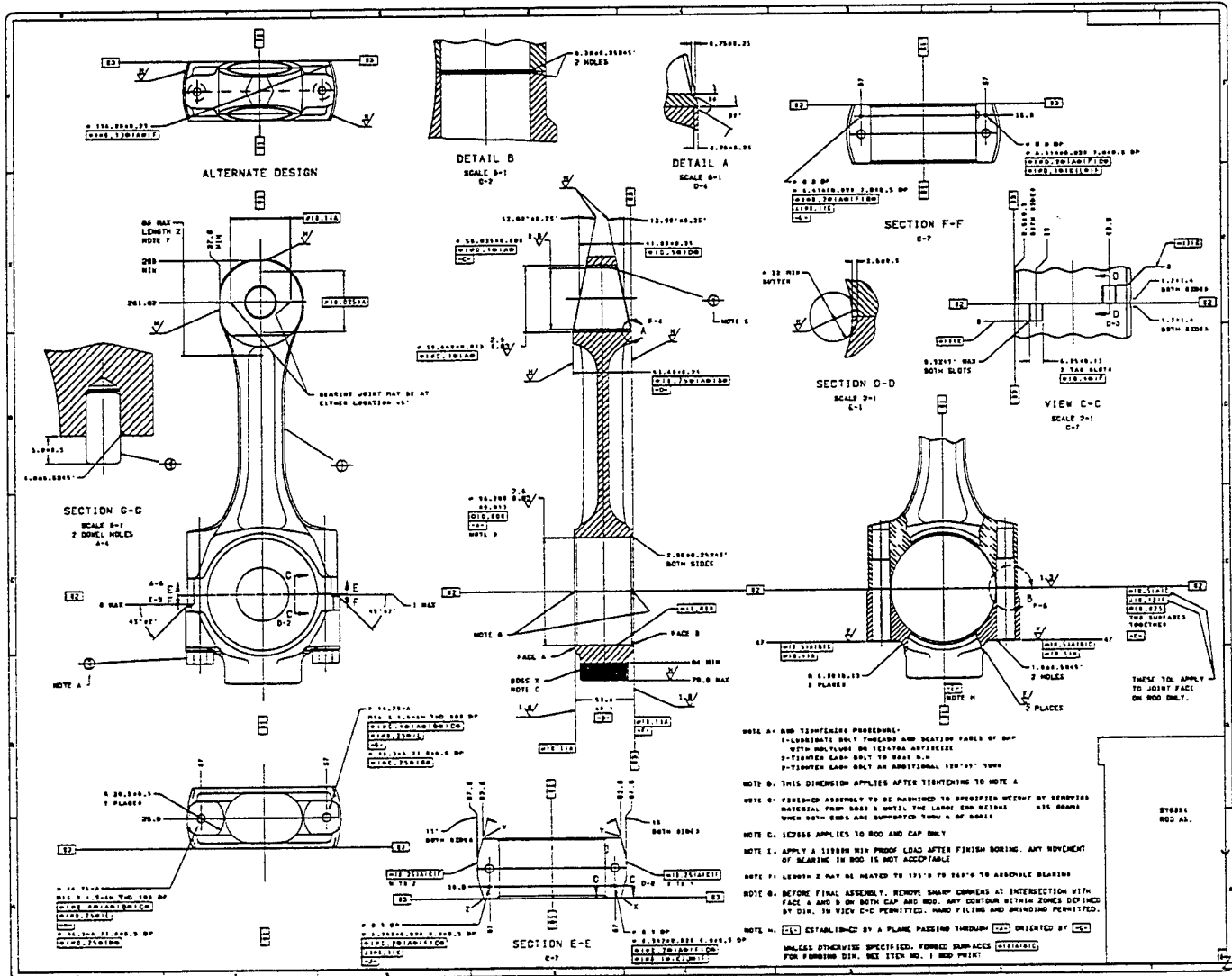
9.1.2 validcgm Log

```
Analysis for file itimechc.cgm using table table
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 3) not yet seen
(6.1, 0)          (2, 6, 8)        VDC Extent (0, 0) (31978, 25582)
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 9) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 4) occurred 1 time
(2, 6) occurred 1 time
(2, 6) occurred illegally 1 time
(2, 7) never occurred, required by standard B
(3, 5) occurred 1345 times
(3, 6) occurred 1 time
(4, 1) occurred 6034 times
(4, 7) occurred 1797 times
(4, 11) occurred 2 times
(4, 17) occurred 26 times
(5, 2) occurred 53 times
(5, 3) occurred 152 times
(5, 4) occurred 2 times
(5, 22) occurred 27 times
(5, 23) occurred 2 times
(5, 34) occurred 1 time
```
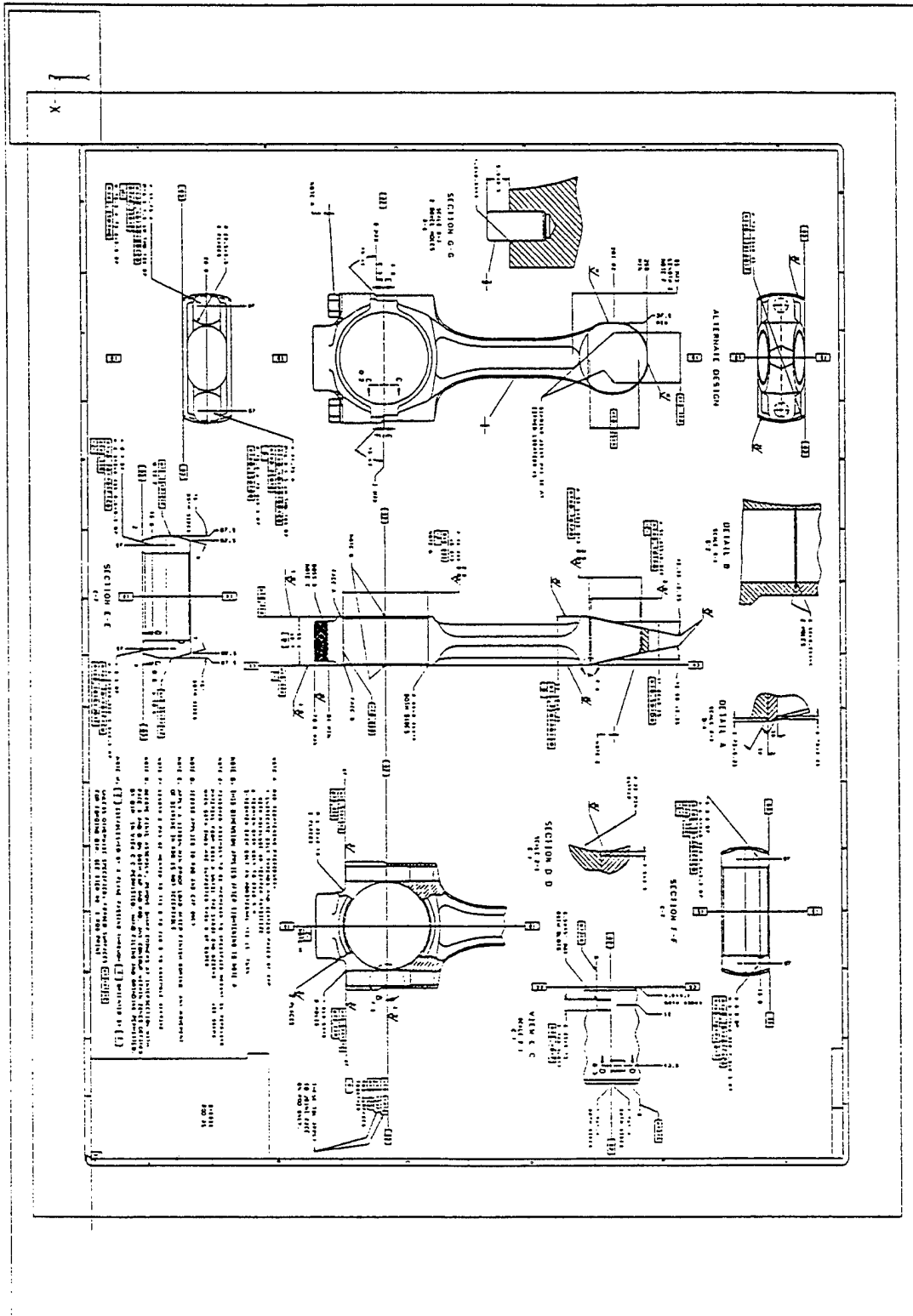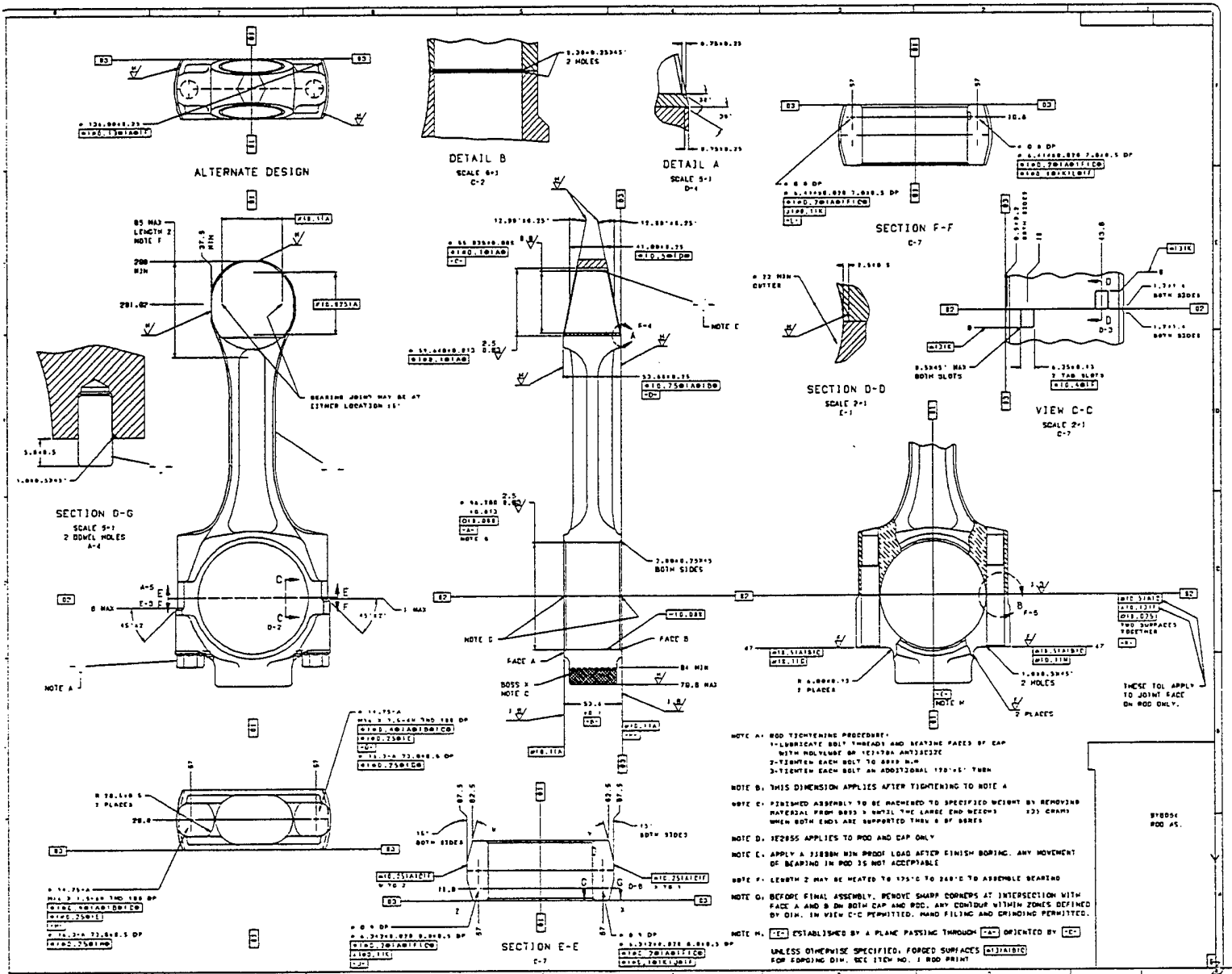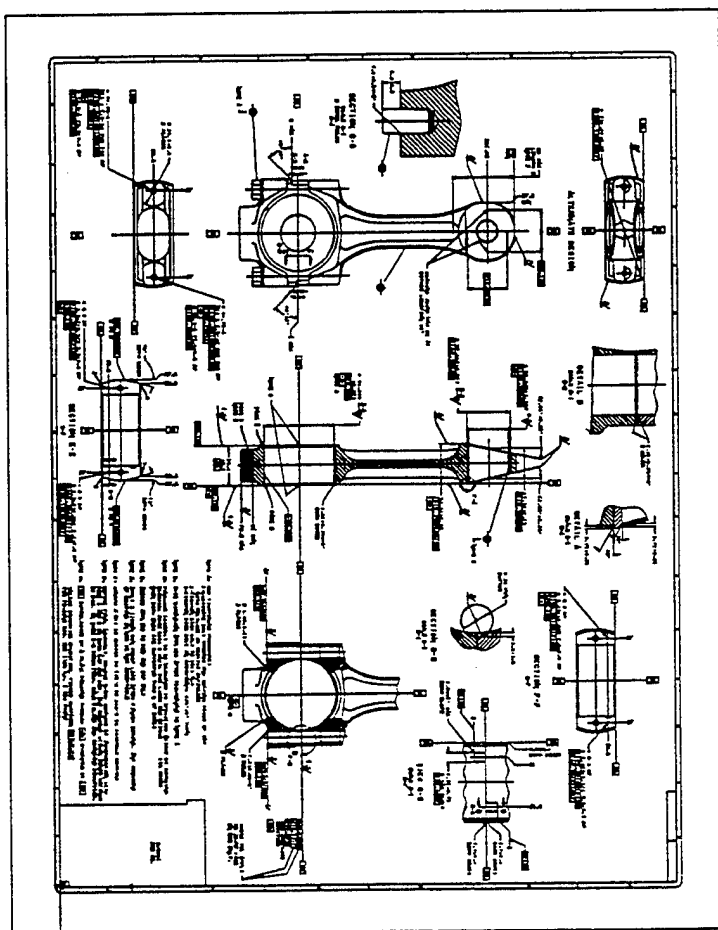
9.1.3 Output cgm2draw/IslandDraw

9.1.4 Output CADLeaf

9.1.5 Output Generic
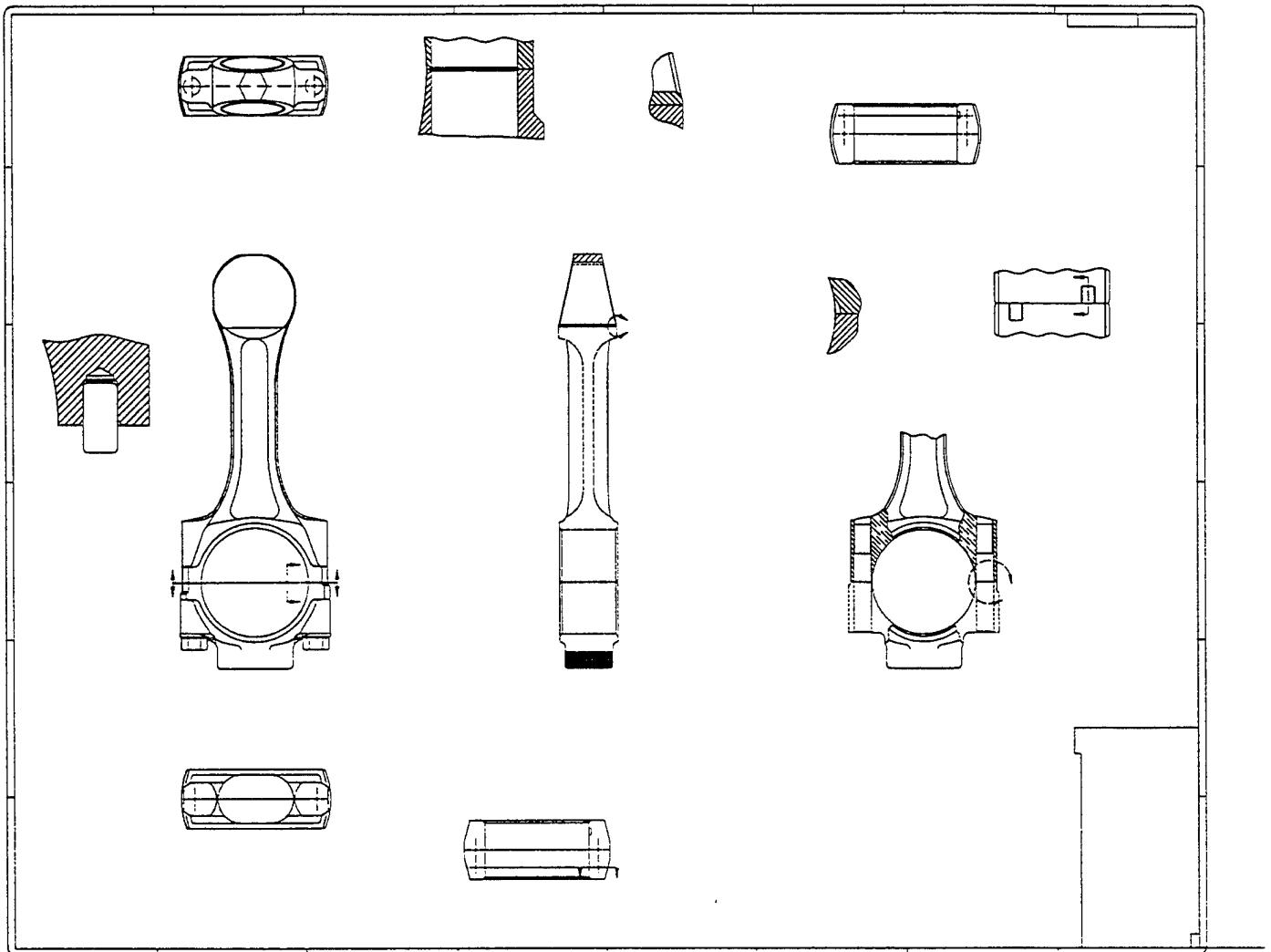
9.1.6 Output Designer

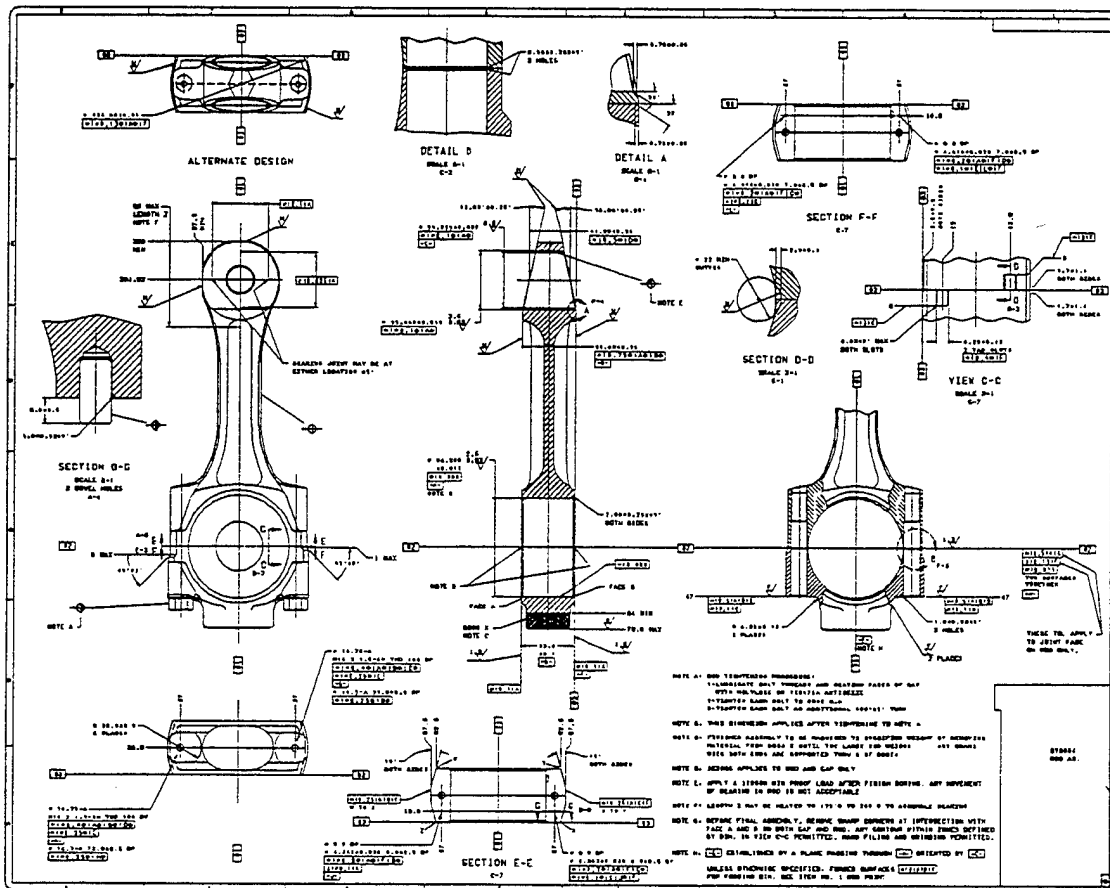## 9.1.7 Output Freelance

9.1.8 Output Harvard Graphics

9.1.9 Output IslandDraw v4.0

9.1.10 Output Ventura Publisher

9.2   File ITIMECH.ANS

9.2.1   Parser Log MetaCheck

```
MetaCheck Version 2.10 -- CGM Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 02/15/94      Time:  11:30:57

Metafile Examined     : i:\94005\itimech.ans

Pictures Examined     : All
Elements Examined     : All
Bytes    Examined     : All


======================= Trace Report ========================

Tracing not selected.

============= CGM Conformance Violation Report ==============

No Errors Detected

================ Conformance Summary Report ================

MetaCheck Version 2.10 -- CGM Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 02/15/94      Time:  11:31:28

Name of CGM under test: i:\94005\itimech.ans
Encoding               : Binary

Pictures Examined     : All
Elements Examined     : All
Bytes    Examined     : All

BEGIN METAFILE string : >iw_plot.1709.ans<
METAFILE DESCRIPTION  : >igesworks<

Picture 1 starts at octet offset 186: >PIC1<

Conformance Summary  :  This file conforms to the CGM specification.

Summary of Testing Performed and Errors Found:

        1 Pictures Tested
     9456 Elements Tested
```

212696 Octets Tested

```
=====================================
|     No Errors Were Detected     |
=====================================
```

================ End of Conformance Report ==================

9.2.2   validcgm Log

Analysis for file itimech.cgm using table table
MILSPEC 28003 error: descriptor doesn't contain MIL-D-28003/BASIC-1
(3, 24)   (1, 2, 10)   Metafile Description "igesworks"
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 3) not yet seen
(6.1, 0)   (2, 6, 8)   VDC Extent (0, 0) (31978, 25582)
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 9) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 4) occurred 1 time
(2, 6) occurred 1 time
(2, 6) occurred illegally 1 time
(2, 7) never occurred, required by standard B
(3, 5) occurred 1345 times
(3, 6) occurred 1 time
(4, 1) occurred 6034 times
(4, 7) occurred 1797 times
(4, 11) occurred 2 times
(4, 17) occurred 26 times
(5, 2) occurred 53 times
(5, 3) occurred 152 times
(5, 4) occurred 2 times
(5, 22) occurred 27 times
(5, 23) occurred 2 times
(5, 34) occurred 1 time

```

## 9.3  File ITITORUS.CAL

## 9.3.1  Parser Log MetaCheck

```
MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 02/15/94   Time: 10:34:51

Metafile Examined   : i:\94005\ititorus.cal

Pictures Examined   : All
Elements Examined   : All
Bytes   Examined   : All

====================== Trace Report ========================

Tracing not selected.

============= CGM Conformance Violation Report ==============

No Errors Detected

========== CALS CGM Profile (MIL-D-28003) Report ============

No profile discrepancies detected.

================ Conformance Summary Report =================

MetaCheck Version 2.10 -- CGM/MIL-D-28003 Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 02/15/94   Time: 10:34:54

Name of CGM under test: i:\94005\ititorus.cal
Encoding   : Binary

Pictures Examined   : All
Elements Examined   : All
Bytes   Examined   : All

BEGIN METAFILE string : >iw_plot.1709.cal<
METAFILE DESCRIPTION   : >igesworks MIL-D-28003/BASIC-1<

Picture 1 starts at octet offset 206: >PIC1<

Conformance Summary   : This file conforms to the CGM specification.
                         This file meets the CALS CGM Profile (MIL-D-28003).
```

Summary of Testing Performed and Errors Found:

```
         1 Pictures Tested
       119 Elements Tested
      3128 Octets Tested


         ===================================
         |    No Errors Were Detected      |
         ===================================
```

================= End of Conformance Report ==================

9.3.2 validcgm Log

```
Analysis for file ititorusc.cgm using table table
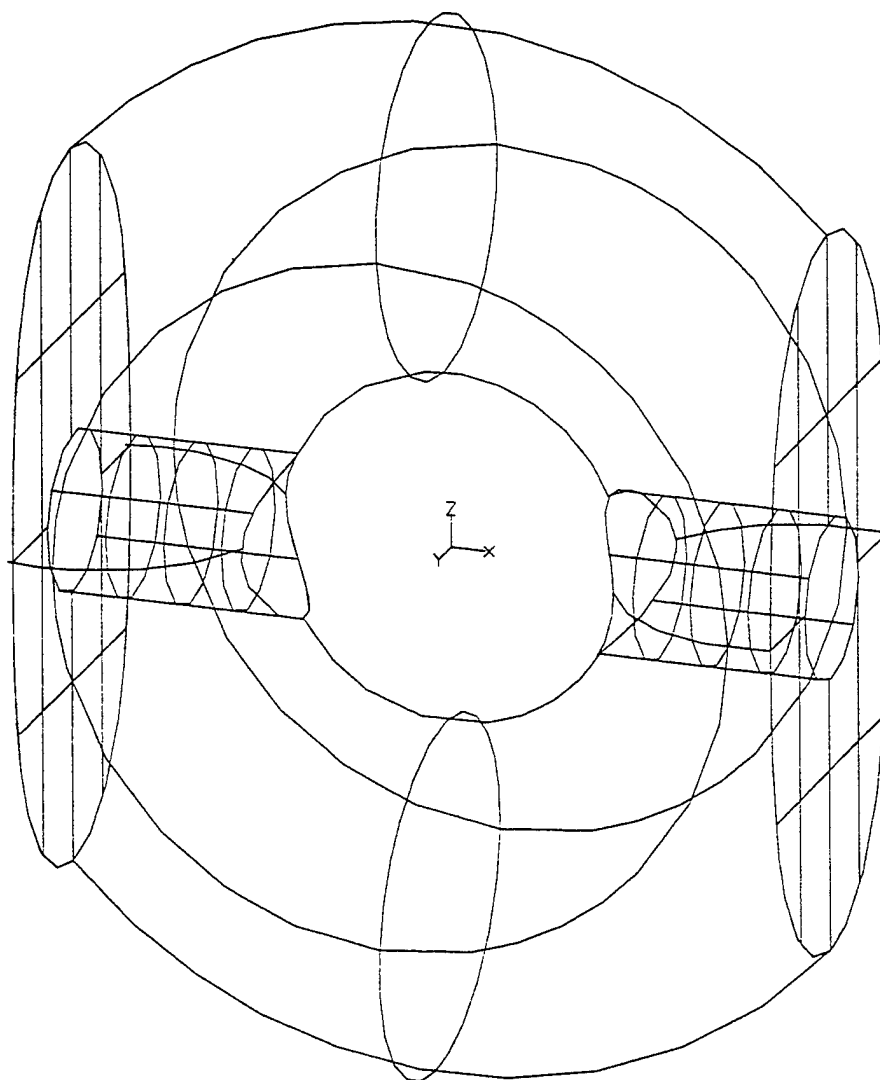ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 3) not yet seen
(6.1, 0)          (2, 6, 8)      VDC Extent (0, 0) (31978, 25582)
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 9) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 4) occurred 1 time
(2, 6) occurred 1 time
(2, 6) occurred illegally 1 time
(2, 7) never occurred, required by standard B
(3, 5) occurred 5 times
(3, 6) occurred 1 time
(4, 1) occurred 84 times
(4, 11) occurred 2 times
(5, 2) occurred 1 time
(5, 3) occurred 7 times
(5, 4) occurred 2 times
(5, 22) occurred 1 time
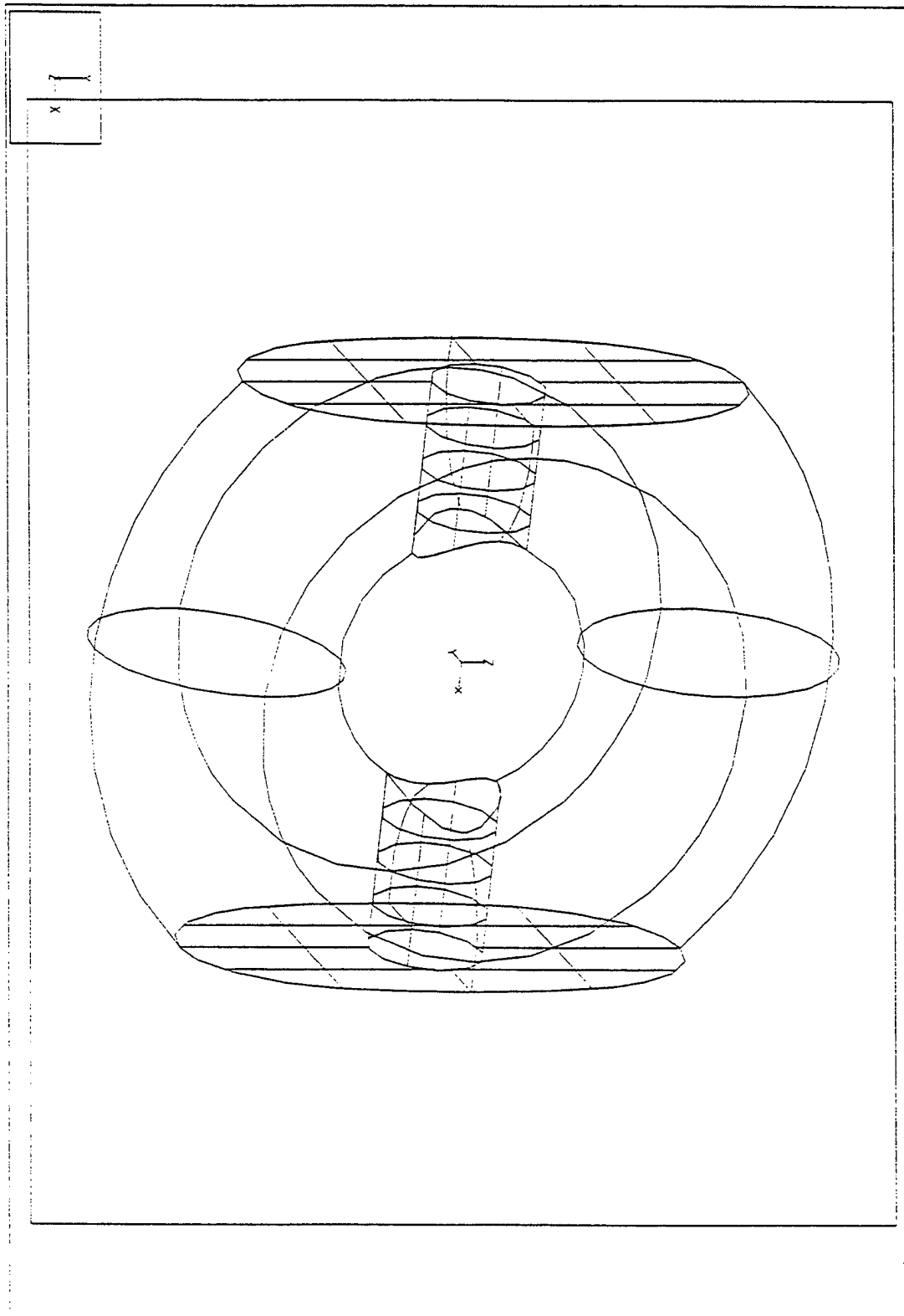(5, 23) occurred 1 time
(5, 34) occurred 1 time
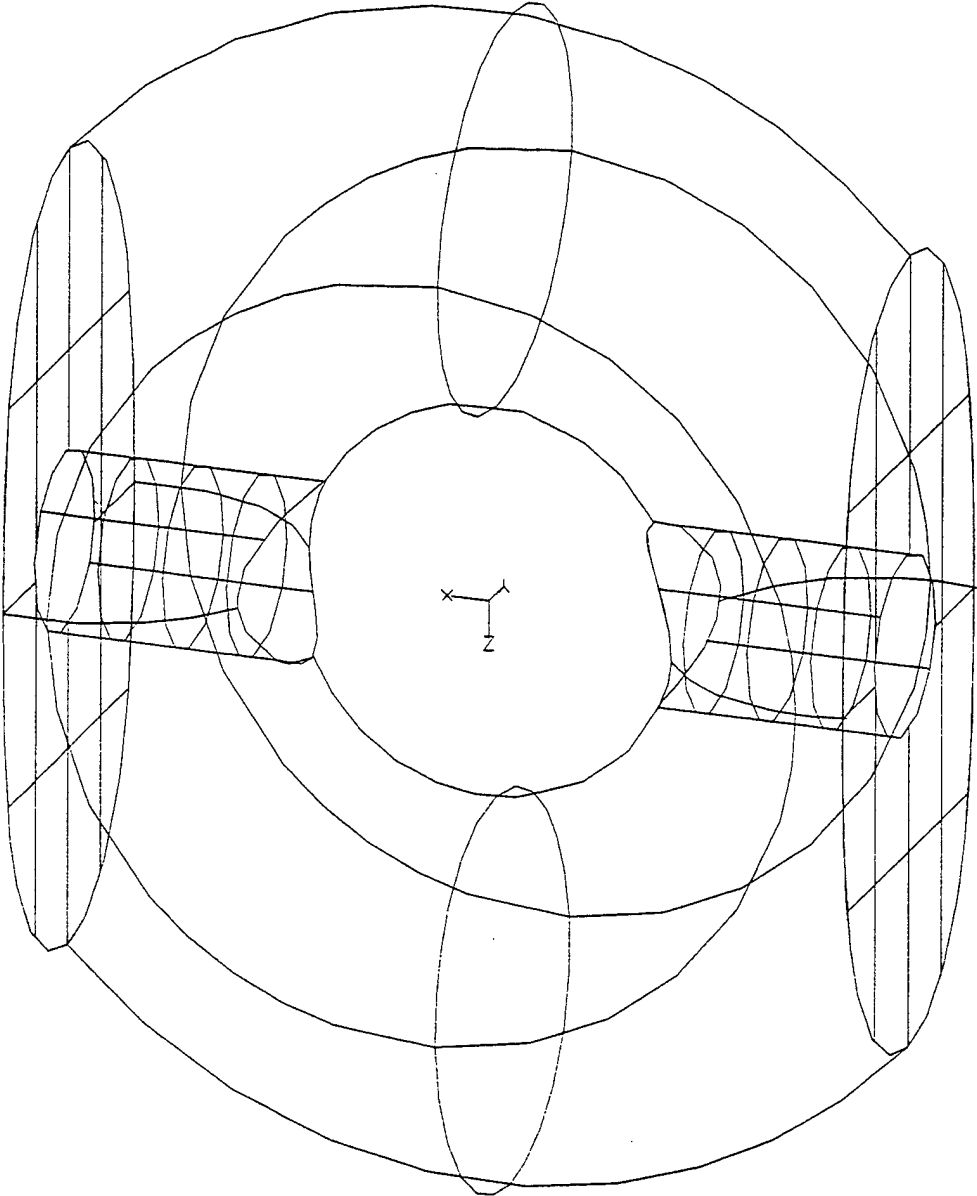```

### 9.3.3 Output cgm2draw/IslandDraw

## 9.3.4 Output CADLeaf

## 9.3.5  Output Generic

# 9.3.6 Output Designer

## 9.3.7  Output Freelance

## 9.3.8 Output Harvard Graphics

## 9.3.9 Output IslandDraw v4.0

## 9.3.10  Output Ventura Publisher

# 9.4  File ITITORUS.ANS

## 9.4.1  Parser Log MetaCheck

```
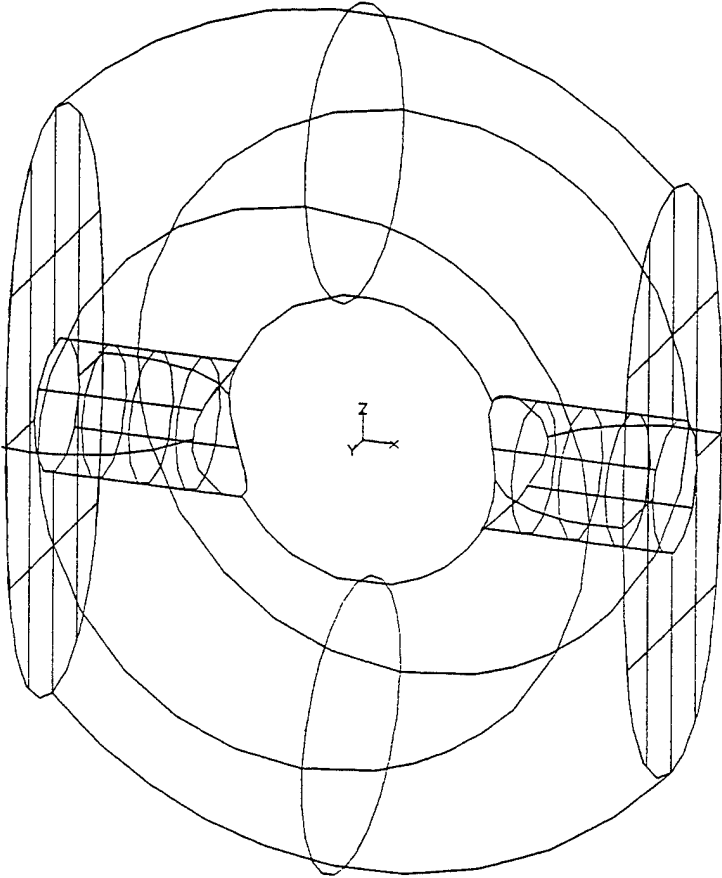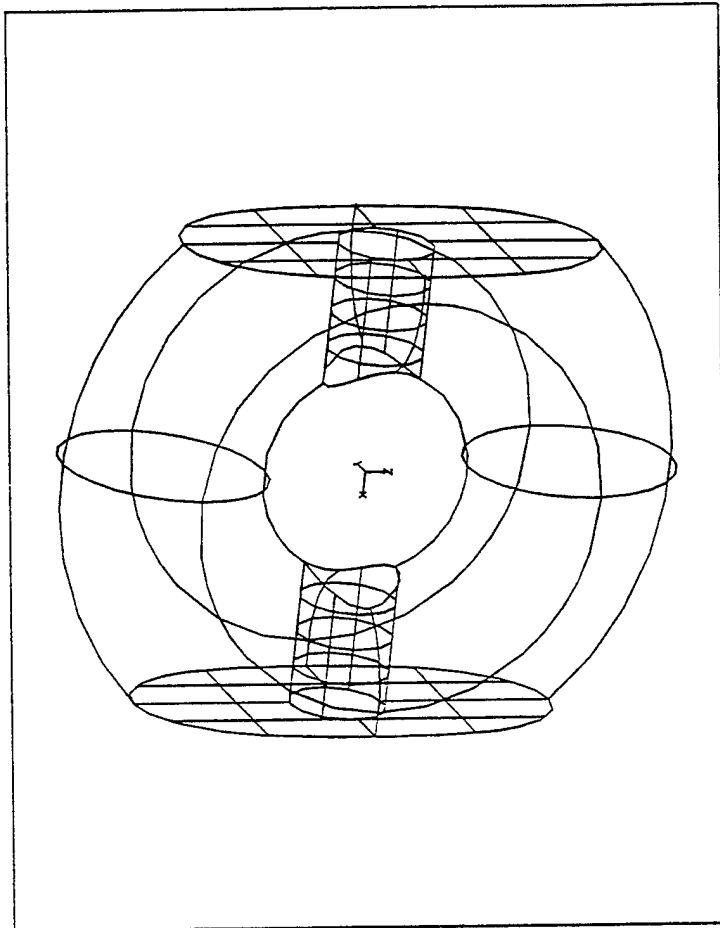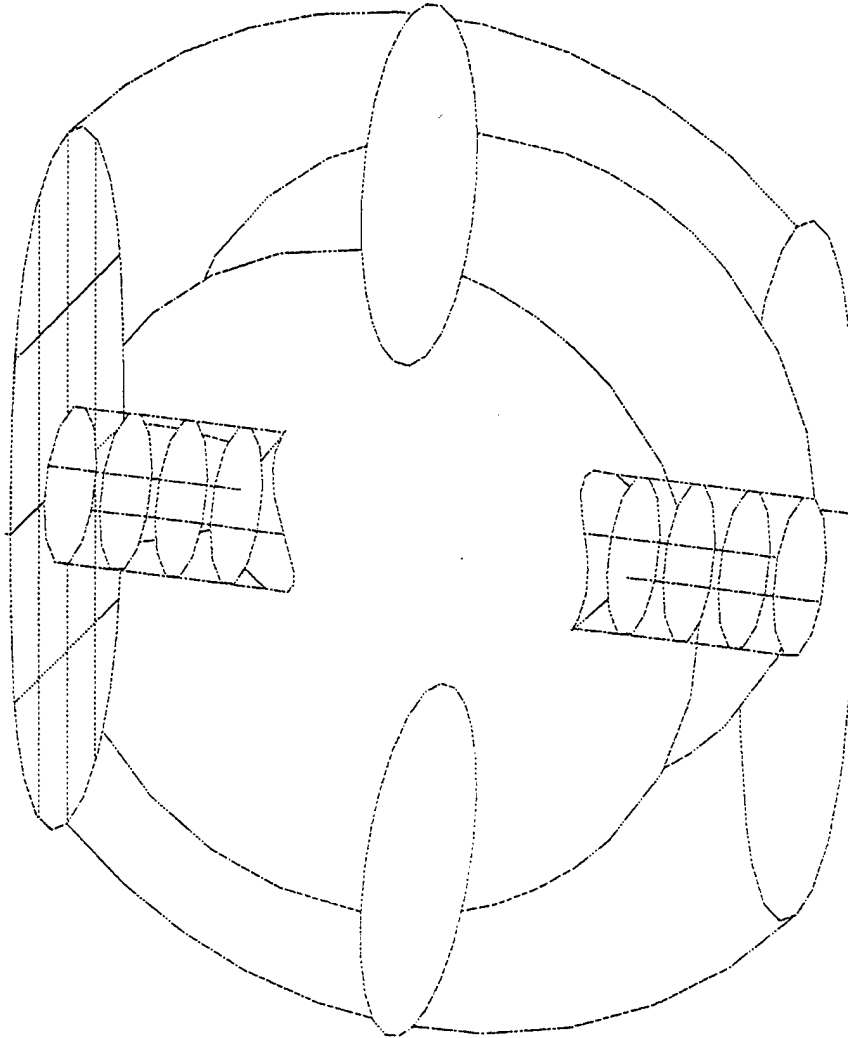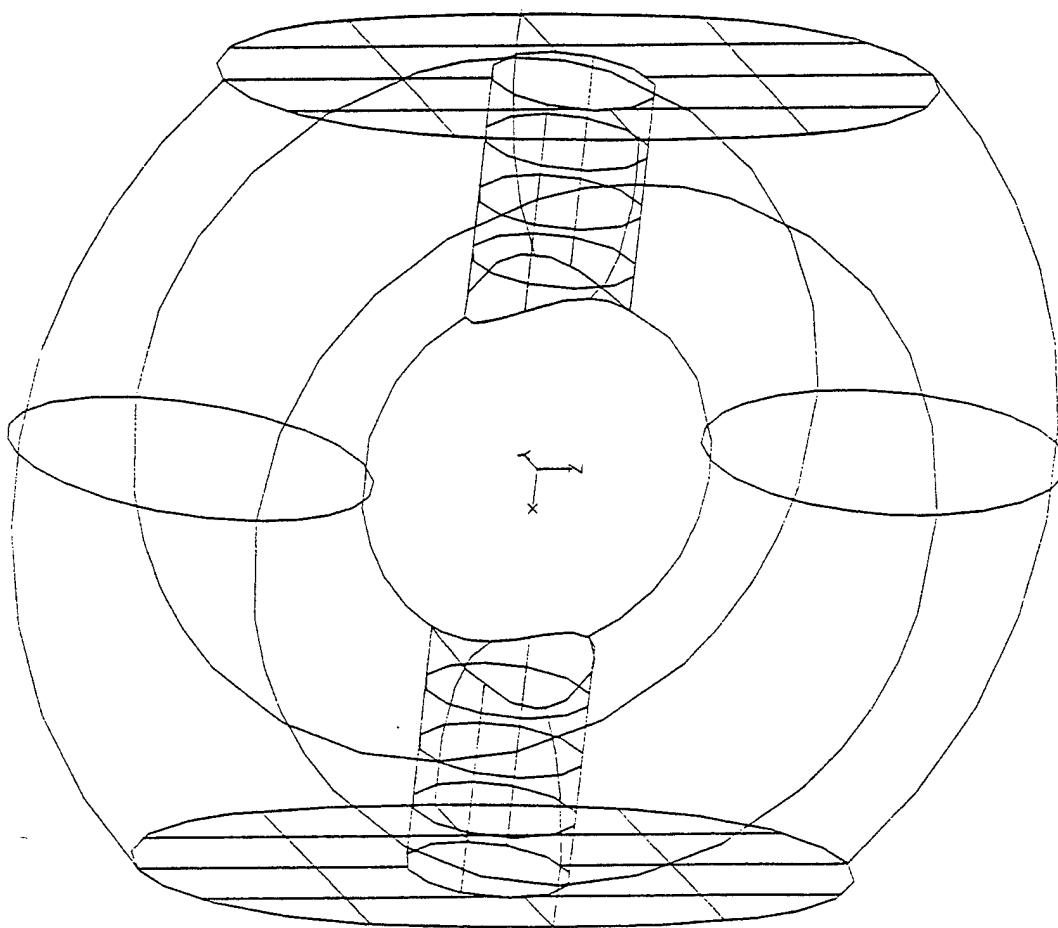MetaCheck Version 2.10 -- CGM Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 02/15/94      Time:  10:34:27
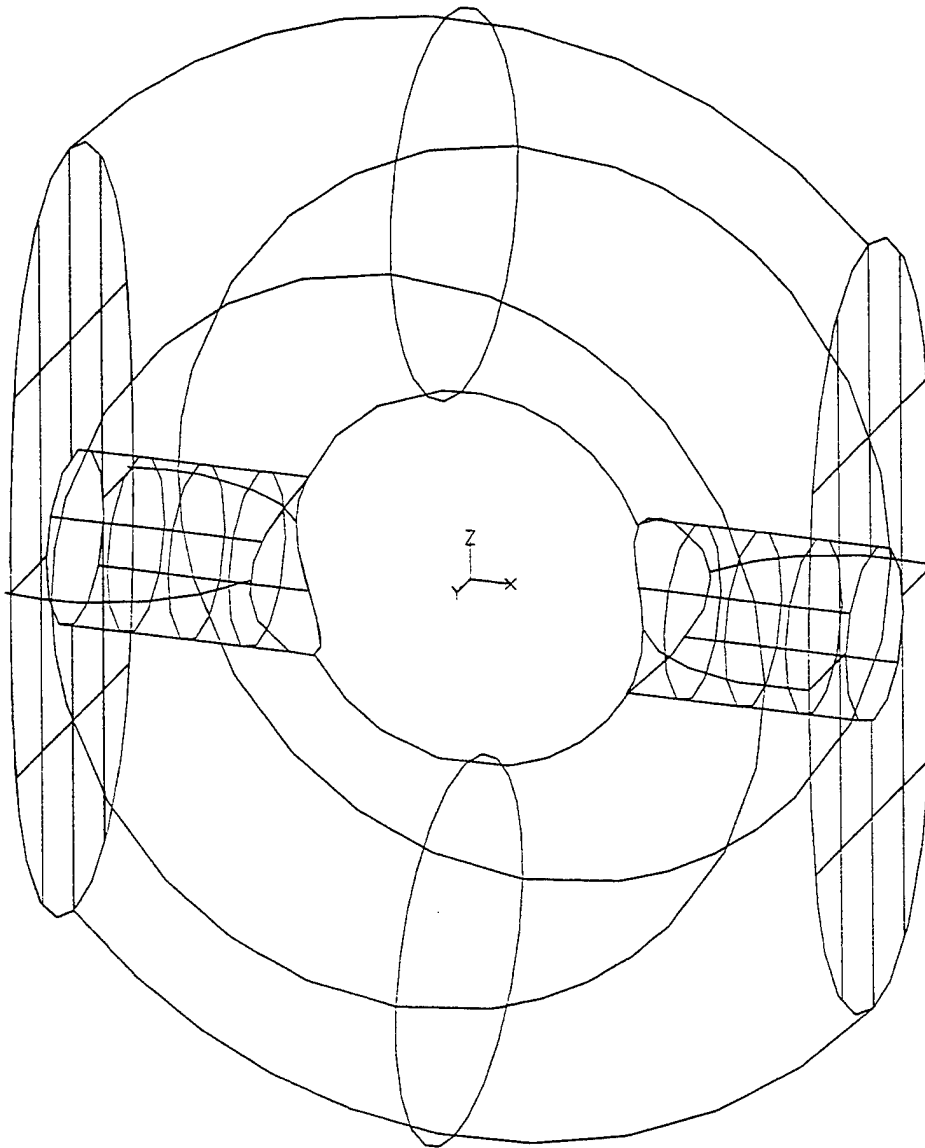

Metafile Examined      : i:\94005\ititorus.ans

Pictures Examined      : All
Elements Examined      : All
Bytes     Examined     : All


====================== Trace Report ======================

Tracing not selected.

============== CGM Conformance Violation Report ==============

No Errors Detected

================ Conformance Summary Report ================

MetaCheck Version 2.10 -- CGM Conformance Analyzer
Copyright 1988-93 CGM Technology Software
Execution Date: 02/15/94      Time:  10:34:29

Name of CGM under test: i:\94005\ititorus.ans
Encoding                : Binary

Pictures Examined      : All
Elements Examined      : All
Bytes     Examined     : All

BEGIN METAFILE string : >iw_plot.1709.ans<
METAFILE DESCRIPTION   : >igesworks<

Picture 1 starts at octet offset 186: >PIC1<

Conformance Summary  :  This file conforms to the CGM specification.

Summary of Testing Performed and Errors Found:

        1 Pictures Tested
      119 Elements Tested
```

3108 Octets Tested

```
===================================
|    No Errors Were Detected    |
===================================
```

================= End of Conformance Report ==================

9.4.2 validcgm Log

Analysis for file ititorus.cgm using table table
MILSPEC 28003 error: descriptor doesn't contain MIL-D-28003/BASIC-1
(3, 24)   (1, 2, 10)   Metafile Description "igesworks"
ERROR: illegal in this state (2), std B
ERROR: required precursor (0, 3) not yet seen
(6.1, 0)   (2, 6, 8)   VDC Extent (0, 0) (31978, 25582)
(0, 1) occurred 1 time
(0, 2) occurred 1 time
(0, 3) occurred 1 time
(0, 4) occurred 1 time
(0, 5) occurred 1 time
(1, 1) occurred 1 time
(1, 2) occurred 1 time
(1, 3) occurred 1 time
(1, 9) occurred 1 time
(1, 11) occurred 1 time
(1, 12) occurred 1 time
(2, 2) occurred 1 time
(2, 3) occurred 1 time
(2, 4) occurred 1 time
(2, 6) occurred 1 time
(2, 6) occurred illegally 1 time
(2, 7) never occurred, required by standard B
(3, 5) occurred 5 times
(3, 6) occurred 1 time
(4, 1) occurred 84 times
(4, 11) occurred 2 times
(5, 2) occurred 1 time
(5, 3) occurred 7 times
(5, 4) occurred 2 times
(5, 22) occurred 1 time
(5, 23) occurred 1 time
(5, 34) occurred 1 time
```