

**Release Notice:**  
**ICOBOL 2**  
**for AViiON<sup>®</sup> Systems**

**Revision 2.05**

**January 1995**

Part number 085-600409-02

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L031A

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### **Release Notice: ICOBOL 2 for AViiON Systems 085-600409-02**

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# 1 Introduction

This release notice describes the ICOBOL 2 software product for Data General's family of AViiON® computers and includes information not currently available in the product manual. Please read this release notice completely before installing ICOBOL 2. **See Section 8 for installation instructions—these instructions supercede the installation instructions in the manual *Installing and Configuring Interactive COBOL on UNIX*®.**

This printed release notice always accompanies the software. You may print additional copies of the release notice after you have loaded ICOBOL 2. The file `/usr/opt/icobol.205/release/icobol.205.rm` is suitable for line printers. The file `/usr/opt/icobol.205/release/icobol.205.ps` is suitable for PostScript® printers. Please note that the printed release notice might be more up-to-date than the copy on the release medium. If the printed release notice and the copy on the release medium are different, the printed release notice takes precedence.

## 2 Product Description

ICOBOL 2 for AViiON Systems is a robust software development environment (SDE) for developing, executing, and maintaining COBOL applications. Based on the ANSI COBOL 74 and ANSI COBOL 85 standards, the product includes two compilers. One compiler (`icobol`) produces code that can be ported to other platforms running ICOBOL 2. The other compiler (`icoboldg`) produces .PD and .DD files, which can be exported to systems running Data General's Interactive COBOL.

ICOBOL 2 also includes a runtime environment, a source level debugger, and a set of utilities that allow you to tailor ICOBOL 2 to your applications and hardware.

## 3 Environment

### 3.1 Hardware

ICOBOL 2 requires an AViiON system and 19,000 blocks of free disk space. ICOBOL 2 runs with the minimum equipment configuration for the DG/UX™ operating system. To install ICOBOL 2, you must have access to a 1/4-inch tape drive or a CD ROM drive.

ICOBOL 2 also requires the serial port protection device that is shipped with the product.

### 3.2 Software

ICOBOL 2 for AViiON Systems requires the DG/UX operating system, revision 5.4.0 or later.

## 4 Enhancements and Changes

This is the third release of ICOBOL 2 for AViiON systems. The following sections describe enhancements and changes made since the last release of the software.

### 4.1 Enhancements

1. The statement `ACCEPT <id> FROM TIME` returns hundredths of seconds in positions 7 and 8 of the identifier.

2. **icexec** checks that devices specified in the Console (@CON), Serial (@SER), and Printer (@PRN) logical device tables are valid devices. If the devices are not valid, the system displays an error message similar to the one shown below, and **icexec** will not start.

```
Error: Named item is the wrong type to perform this operation:
      (device-in-error) (@CON16)
Error: Allocation error on base I/O global data
      icexec is finished
```

3. The utility **iccheck** supports a new exit code—10—which means that **iccheck** encountered one or more unreliable ISAM files.

## 4.2 Changes

1. The compilers (**icobol** and **icoboldg**) correctly handle VALUE clause assignments. In the previous release of the software, the compilers truncated a VALUE clause assignment for COMP when the value was larger than the picture. (For example, “PIC 9 COMP VALUE 13” was stored as 3).
2. In the previous release of the software, the runtime system (**icrun**) would not start if the variable ICTIMEOUT was set to zero. This error has been fixed. Valid values for the variable ICTIMEOUT are -65535 to 65535. The effect of the statement ICTIMEOUT = n is as follows:

n <= 0	Wait forever
1 = n <= 6300	Wait for n seconds
6300 <= n < 65535	Wait for 6300 seconds
n >= 65535	Wait forever

3. Refer to the “fixes section” in the files `/usr/opt/icobol.205/readme.dev` and `/usr/opt/icobol.205/readme.run` for information about additional changes to the ICOBOL 2.05 product set.

## 5 Notes and Warnings

1. You cannot run ICOBOL 2 revision 2.05 and previous versions of ICOBOL 2 concurrently.
2. The utility **icfixup**, when used with the **-U di** command line option, might fail to fix some Revision 7 ISAM files. Therefore, after using the **icfixup** utility, you should check the integrity of the files with the utility **iccheck**.
3. You can use configuration files from previous versions of ICOBOL 2 with this release of the software. These files include ICOBOL 2 configuration files (default filename extension **.cf**), terminal descriptor files (default filename extension **.td**), and printer translation files (default filename extension **.pt**).

## 6 Documentation

### 6.1 Printed Documentation

The following printed documentation is provided with the ICOBOL 2 software.

Part Number	Publication
069-100533-00	Interactive COBOL Language Reference
069-100534-00	Installing and Configuring Interactive COBOL on UNIX
069-100531-00	Interactive COBOL Utilities Guide
069-100532-00	Interactive COBOL Developer's Guide

This documentation is the same as that provided with the previous release of the software.

### 6.2 On-Line Documentation

The following files contain additional information about the ICOBOL 2 software:

File Name	Contents
<b><code>/usr/opt/icobol.205/readme.dev</code></b>	Description of ICOBOL 2 development system files, updates to printed documentation, and a list of updates to the software.
<b><code>/usr/opt/icobol.205/readme.run</code></b>	Description of ICOBOL 2 runtime system files, updates to printed documentation, and a list of updates to the software.
<b><code>/usr/opt/icobol.205/examples/changes.unix</code></b>	Description of global differences between the ICOBOL 2 system and the Interactive COBOL system
<b><code>/usr/opt/icobol.205/release/icobol.dif</code></b>	Description of differences in the source code requirements for ICOBOL 2 and Interactive COBOL
<b><code>/usr/opt/icobol.205/release/icobol.strs</code></b>	Description of the Software Trouble Reports (STRs) filed against Interactive COBOL that have been fixed in ICOBOL 2.

## 7 Software Distribution

### 7.1 Media

ICOBOL 2 for AViiON Systems is released on both QIC-150 cartridge tape and compact disk (CD). The following table lists the part numbers for the software release media.

Part Number	Description
079-600378-02	QIC cartridge tape (150 Mbyte)
068-600098-02	CD ROM

### 7.2 Files

After you have loaded ICOBOL 2, you can find a list of files present on the distribution medium in the file `/usr/opt/icobol.205/release/icobol.205.fl`.

## 8 Installation Instructions

ICOBOL 2 for AViiON Systems is structured to be loaded by the DG/UX utility `sysadm`. The `sysadm` installation procedure loads the software directly into the `/usr/opt/icobol.205` directory and sets up the appropriate links. Before you install ICOBOL 2, make sure that `/usr/opt` has at least 19,000 blocks of free disk space. If `/usr/opt` does not have enough space, you can install ICOBOL 2 in another file system and link that file system to `/usr/opt/icobol.205`. Alternatively, you can create a separate logical disk or virtual disk unit with at least 19,000 blocks and set up a file system in that logical or virtual disk named `/usr/opt/icobol.205`.

NOTE: If you do not plan to store the ICOBOL 2 system files (configuration, log, failsafe, and printer queue files) in `/usr/opt/icobol.205`, then the file system `/usr/opt/icobol.205` needs only 16,000 blocks.

Throughout the following sections, examples contain prompts as you would see them using the character-based version of `sysadm` (`asysadm`). If you use the X/Motif version of `sysadm` (`xsysadm`), the system prompts will look different than those shown here. Also, the way that you select answers is different using `xsysadm`. For more information about `asysadm` and `xsysadm`, refer to *Managing the DG/UX System*.

If you are installing ICOBOL 2 from tape, refer to the following instructions; if you are installing the software from a CD, refer to section 8.2.

---

NOTE: If you have a previous version of ICOBOL 2 installed on your system, you might want to save your ICOBOL 2 configuration files before you install this software. Configuration files that you might want to save include the following:

- ICOBOL 2 system configuration files (default filename extension `.cf`)
  - terminal descriptor files (default filename extension `.td`)
  - printer translation files (default filename extension `.pt`)
-

## 8.1 Installing from Tape

1. Check that the tape is write protected.
2. Insert the tape into the tape drive.
3. Log in as root or become super user (**su**).
4. At the DG/UX system prompt, type:
 

```
asysadm
```
5. Select Software from the sysadm Main Menu.
6. Select Package from the Software submenu.
7. Select Install from the Package submenu.
8. The system then displays prompts similar to the following. In most cases, all you need to do is press **↵** and accept the defaults.

```
Tape Device: [/dev/rmt/0]↵
Is /dev/rmt/0 ready? [yes] ↵
Interactive COBOL 2 2.05 of January 1995 from Data General
Corporation

Package Name(s): [all]↵
List file name while loading? [no] ↵
OK to perform operation? [yes] ↵
Loading Interactive COBOL 2 of January 1995 from Data General
Corporation [*].

Positioning the tape to load: icobol.205. . . .
Loading the package: icobol.205 . . . .
```

The **sysadm** utility proceeds to load the files and, after several minutes, displays the following messages:

```
Updating proto root (/srv/release/PRIMARY/usr/root.proto).
Updating MY_HOST root (/srv/release/PRIMARY/root/MY_HOST).
Package load is finished.
The selected packages have been loaded.
Setting up icobol.205 in MY_HOST root.
Creating links, if not already there, in /usr/release for
the release notice and file list.
```

The installation script then asks if you want **icexec** to start automatically whenever the system is booted. When you respond positively, the start-up scripts are linked.

```
Do you want ICEXEC to be started
automatically during system boot? y↵
Done -- effective on next system boot
```

Then the system displays reminders about creating a configuration file and editing the **icexec** start-up script. (See sections 8.3 and 8.4).

```
You must have an ICOBOL 2 configuration file
in order for icexec to start successfully. Please run icconfig
if you do not already have an ICOBOL configuration file.
```



Please edit `/usr/sbin/init.d/rc.icobol.205` to set the location of the configuration file (CNFLOC) and log, failsafe, and printer control queue directories.

Enter a number, a name, ? or <number>? for help, <NL> to redisplay menu, ^ to return to previous menu, or q to quit. **q**

ICOBOL 2 is installed. Refer to section 8.3 for information about setting up ICOBOL 2.

## 8.2 Installing from CD

1. Place the CD into the CD caddy and insert the caddy into the CD drive.
2. Make a CD ROM mount point. At the DG/UX prompt, issue the following commands:
 

```
$ su
# mkdir /cdrom
# mount -t dg/ux -r /cd_drive_device_name /cdrom
```

If you do not know the CD drive device name, consult the `/etc/devlinktab` file.
3. At the DG/UX system prompt, type:
 

```
asysadm
```
4. Select Software from the sysadm Main Menu.
5. Select Package from the Software submenu.
6. Select Install from the Package submenu.
7. At the following prompt, enter the name of the CD ROM mount point.
 

```
Tape Device: [/dev/rmt/0] /cdrom ↵
```
8. The system then displays prompts similar to the following. In most cases, all you need to do is press **↵** and accept the defaults.
 

```
Is ./cdrom ready? [yes] ↵
Interactive COBOL 2 2.05 of January 1995 from Data General
Corporation

Package Name(s): [all] ↵
List file name while loading? [no] ↵
OK to perform operation? [yes] ↵
Loading Interactive COBOL 2 of January 1995 from Data General
Corporation [*].

Positioning the tape to load: icobol.205. . . .
Loading the package: icobol.205 . . . .
```

The `sysadm` utility proceeds to load the files and, after several minutes, displays the following messages:

```
Updating proto root (/srv/release/PRIMARY/usr/root.proto).
Updating MY_HOST root (/srv/release/PRIMARY/root/MY_HOST).
Package load is finished.
The selected packages have been loaded.
Setting up icobol.205 in MY_HOST root.
```

```
Creating links, if not already there, in /usr/release for
the release notice and file list.
```

The installation script then asks if you want **icexec** to start automatically whenever the system is booted. When you respond positively, the start-up scripts are linked.

```
Do you want ICEEXEC to be started
automatically during system boot? y↵
Done -- effective on next system boot
```

Then the system displays reminders about creating a configuration file and editing the **icexec** start-up script. (See sections 8.3 and 8.4)

```
You must have an ICOBOL 2 configuration file
in order for icexec to start successfully. Please run icconfig
if you do not already have an ICOBOL configuration file.
```

```
Please edit /usr/sbin/init.d/rc.icobol.205
to set the location of the configuration file
(CNFLOC) and log, failsafe, and printer control
queue directories.
```

```
Enter a number, a name, ? or <number>? for help, <NL> to redisplay
menu, ^ to return to previous menu, or q to quit. q↵
```

ICOBOL 2 is installed. Refer to section 8.3 for information about setting up ICOBOL 2.

## 8.3 Setting up ICOBOL 2

Before you can run the ICOBOL 2 server (**icexec**), you must do the following:

- install the protection device
- set some environment variables
- generate a configuration file

### 8.3.1 Installing the Protection Device

You must install the protection device on a serial port. If the system console is a serial terminal, we recommend that you install the protection device on the back of the system console. If you cannot install the protection device on the system console, see the section *On a Terminal, the Host, or Cluster Controller*.

#### ***On the System Console***

If your system console is a serial terminal, follow the steps below to install the protection device on the back of the console.

1. Build the protection device assembly. This assembly consists of two reversers and the protection device. Plug one reverser into each end of the protection device.
2. Check the hardware configuration of the system console. (If necessary, refer to the instruction manual for the system console.) Check the characteristics of the line between the host and the console with the command **stty -a**. The terminal (hardware) and the line (software) must be set up with the following characteristics:

- speed = 9600 baud
- character length = 8 bits
- stop bits = 1
- parity =none

If necessary, change the console's hardware configuration and line characteristics.

3. Attach the protection device assembly to the back of the system console. **Make sure that the female end of the protection device points toward the host computer.**
4. Attach the terminal cable to the end of the protection device assembly.
5. Check that the protection device is properly installed. When the protection device is properly installed, the system console operates as it did before you installed the protection device. If the system console is not operating properly, repeat steps 2 through 4.

### ***On a Terminal, the Host, or Cluster Controller***

If you cannot install the protection device on the system console, you must install the device on one of the following ports:

- the terminal from which you will run **icexec**
- any RS-232 serial port on the host
- any RS-232 serial port on a cluster controller

Follow the steps below to install the protection device.

1. Check that the directory **/dev** contains an entry for the serial port. For example, if the port is **tty00**, then the file **/dev/tty00** must exist.
2. Check the hardware configuration of the terminal. (If necessary, refer to the manual for the terminal.) Check the characteristics of the line between the port and the terminal with the command **stty -a**. The terminal (hardware) and the line (software) must be set up with the following characteristics:
  - speed = 9600 baud
  - character length = 8 bits
  - stop bits = 1
  - parity =none

If necessary, change the hardware configuration and line characteristics.
3. Depending on where you install the protection device, you may need to use reversers. Check the serial port and determine whether you need to use reversers. If necessary, build the protection device assembly, which consists of two reversers and the protection device. Plug one reverser into each end of the protection device.
4. Attach the protection device (or assembly) to the serial port. **Make sure that the female end of the protection device points toward the host computer.**
5. If required by your configuration, attach the terminal cable to the end of the protection device (or assembly).
6. If you installed the protection device on the back of a terminal or on a port connected to a terminal, check that the protection device is properly installed. When the protection device

is properly installed, a terminal operates as it did before you installed the protection device. If the terminal is not operating properly, repeat steps 2 through 4.

### 8.3.2 Setting Environment Variables

Before you use the ICOBOL 2 software, set the environment variables **ICROOT** and **ICTERM**. **ICROOT** specifies the full path name for the ICOBOL 2 product directory. **ICTERM** specifies the terminal on which you are running your COBOL applications.

Use the command **ls \$ICROOT/ term** to list the terminals that ICOBOL 2 supports. When you specify a terminal name, do not include the **.td** extension.

The commands you enter to set the environment variables are determined by the shell you are running. For example, when ICOBOL 2 is installed in the directory **/usr/opt** and you are using a vt100 terminal, then you enter the following commands if you are running the C shell (csh):

```
setenv ICROOT /usr/opt/icobol.205
setenv ICTERM vt100
setenv PATH ${PATH}:/usr/opt/icobol.205
```

If you are running the Bourne shell (sh, bsh) or the Korn shell (ksh), enter the following commands:

```
ICROOT=/usr/opt/icobol.205
export ICROOT
ICTERM=vt100
export ICTERM
PATH=$PATH:/usr/opt/icobol.205
export PATH
```

### 8.3.3 Generating the Configuration File

The ICOBOL 2 global server, **icexec**, will not run until you have generated an ICOBOL 2 configuration file. To generate the file, become super user, and run the program **icconfig**. This program generates the configuration file—by default, the name of the file is **icobol.cf**.

See the manual *Installing and Configuring Interactive COBOL on UNIX* for complete instructions on running the program **icconfig** and for an explanation of setting the environment so that you will have the resources you need to run your Interactive COBOL applications. For example, user consoles must be enabled in the configuration file.

## 8.4 Starting the ICOBOL 2 Server (icexec)

You can start **icexec** from the command line, or you can set up ICOBOL 2 so that **icexec** starts whenever the system is booted.

- If you want to start **icexec** interactively, refer to section 8.4.1.
- If you want the system to start **icexec** automatically, refer to section 8.4.2.

### 8.4.1 Starting icexec Interactively

The following sets of instructions describe how to modify the script `start_icexec` so that you can easily start `icexec` from the command line. Determine where the protection device has been installed, and then follow the appropriate set of instructions for starting `icexec`.

- If the protection device is installed on the terminal from which you will start `icexec`, refer to the section *From a Terminal Connected to the Protection Device*.
- If the protection device is installed on any other terminal or port, refer to the section *From Any Other Terminal*.

#### *From the Terminal with the Protection Device*

Follow these instructions if you want to start `icexec` from the terminal that has the protection device installed.

1. Become super user (`su`).
2. Change permissions on the file `/usr/opt/icobol.205/example/start_icexec` by typing the following command:

```
chmod u+xw /usr/opt/icobol.205/examples/start_icexec
```

3. Define the `icexec` environment variables (shown in the following table) by editing the following lines in the file `/usr/opt/icobol.205/examples/start_icexec`.

```
CNFLOC=  
LOGDIR=  
FAILDIR=  
PCQLOC=
```

Variable	Purpose	Default
CNFLOC	specifies the directory of default configuration file ( <code>icobol.cf</code> ) or full path name of user's defined ICOBOL 2 configuration file	<i>current directory/ icobol.cf</i>
LOGDIR	specifies directory location of ICOBOL 2 log files	<i>current directory</i>
FAILDIR	specifies directory location of ICOBOL 2 failsafe files, which permit you to run <code>icexec</code> for a short time should the protection device fail	<i>current directory</i>
PCQLOC	specifies directory location of default printer queue file ( <code>icobol.pq</code> ) or the full path name of the ICOBOL 2 printer queue file	<i>current directory/ icobol.pq</i>

4. Save the file `/usr/opt/icobol.205/examples/start_icexec`.
5. Type the following command:

```
/usr/opt/icobol.205/examples/start_icexec start
```

After **icexec** is running, you can use the COBOL 2 compilers (**icobol**, **icoboldg**), runtime system (**icrun**), and debugger (**icdeb**).

See the manual *Installing and Configuring Interactive COBOL on UNIX* for more information about running **icexec**. Also, refer to the file `/usr/opt/icobol.205/example/start_icexec`—it explains further how you can modify the script that starts **icexec**.

### **From Any Other Terminal**

These instructions describe how to start **icexec** from any terminal other than the one that has the protection device installed.

1. Become super user (**su**).
2. Remove the port with the protection device from management of the terminal monitor (**ttymon**).
  - At the DG/UX system prompt, type:
 

```
asysadm
```
  - Select Device from the sysadm Main Menu.
  - Select Port from the Device submenu.
  - Select Terminal from the Port submenu.
  - Select Delete from the Port submenu.
  - If the port on which the protection device is installed appears in the list, delete it.
  - Exit from **asysadm**
3. Change permissions on the file `/usr/opt/icobol.205/example/start_icexec` by typing the following command:
 

```
chmod u+xw /usr/opt/icobol.205/examples/start_icexec
```
4. Define the **icexec** environment variables (shown in the following table) by editing the following lines in the file `/usr/opt/icobol.205/examples/start_icexec`.

```
CNFLOC=
LOGDIR=
FAILDIR=
PCQLOC=
```

Variable	Purpose	Default
CNFLOC	specifies the directory of default configuration file ( <b>icobol.cf</b> ) or full path name of user's defined COBOL 2 configuration file	<i>current directory/ icobol.cf</i>
LOGDIR	specifies directory location of COBOL 2 log files	<i>current directory</i>

Variable	Purpose	Default
FAILDIR	specifies directory location of ICOBOL 2 failsafe files, which permit you to run <b>icexec</b> for a short time should the protection device fail	<i>current directory</i>
PCQLOC	specifies directory location of default printer queue file ( <b>icobol.pq</b> ) or the full path name of the ICOBOL 2 printer queue file	<i>current directory/ icobol.pq</i>

5. Specify the location of the protection device by changing the line

```
$ICROOT/icexec -A $LOGDIR/icexec$THISREV.lg -C $CNFLOC -F $FAILDIR -P
$PCQLOC $*
```

to read

```
$ICROOT/icexec -A $LOGDIR/icexec$THISREV.lg -C $CNFLOC -F $FAILDIR -P
$PCQLOC -L s /dev/ttyii $*
```

where

-L            is license type  
s             is serial license  
/dev/ttyii    is the port on which the protection device is installed (for  
example, /dev/tty00)

6. Save the file **/usr/opt/icobol.205/examples/start\_icexec**.

7. Type the following command:

```
/usr/opt/icobol.205/examples/start_icexec start
```

After **icexec** is running, you can use the ICOBOL 2 (**icobol**, **icoboldg**), runtime system (**icrun**), and debugger (**icdeb**). In addition, you may place the port with the protection device under the management of the terminal monitor (**ttymon**). As super user, use **sysadm Device->Port->Terminal->Add** and select the appropriate port.

See the manual *Installing and Configuring Interactive COBOL on UNIX* for more information about running **icexec**. Also, refer to the file **/usr/opt/icobol.205/example/start\_icexec**—it explains further how you can modify the script that starts **icexec**.

## 8.4.2 Starting icexec Automatically

If you set up ICOBOL 2 so that **icexec** starts whenever you boot the system, you need to edit the start-up script **/usr/sbin/init.d/rc.icobol.205**. The start-up script specifies the name of the port on which the protection device is installed and defines several environment variables.

The default location for the protection device is the system console. If you have installed the protection device elsewhere, you must edit the two instances of **/dev/console** in the start-up script to

reflect the name of the port on which the protection device is installed. For example, if you installed the protection device on port **tty00**, change both instances of **/dev/console** to **dev/tty00**.

Define the **icexec** environment variables (shown in the following table) by editing the following lines in the start-up script.

```
CNFLOC=
LOGDIR=
FAILDIR=
PCQLOC=
```

Variable	Purpose	Default
CNFLOC	specifies the directory of default configuration file ( <b>icobol.cf</b> ) or full path name of user's defined ICOBOL 2 configuration file	<b>/usr/opt/icobol.205/icobol.cf</b>
LOGDIR	specifies directory location of ICOBOL 2 log files	<b>/usr/opt/icobol.205</b>
FAILDIR	specifies directory location of ICOBOL 2 failsafe files, which permit you to run <b>icexec</b> for a short time should the protection device fail	<b>/usr/opt/icobol.205</b>
PCQLOC	specifies directory location of the ICOBOL 2 printer queue file	<b>/usr/opt/icobol.205</b>

After **icexec** is running, you can use the ICOBOL 2 compilers (**icobol**, **icoboldg**), runtime system (**icrun**), and debugger (**icdeb**).

## 9 Preparing a Software Trouble Report (STR)

If you believe you have found an error with ICOBOL 2 or its documentation, or if you have a suggestion for enhancing or improving the product, use a Data General Software Trouble Report (STR) to communicate this to DG.

The standard STR form is available on-line. It is called **/usr/release/STR\_form** and is line printer ready. STR forms are also available from the nearest DG office or DG representative, or the Software Support Center. If your contract permits, you may report the information called for in this section to your Data General representative. To help us process STRs quickly, **please include only one problem or suggestion on each STR form**. Please follow these guidelines when filling out your Software Trouble Report:

1. List the name of the product as "ICOBOL 2" and the release number as "2.05".
2. Decide what kind of STR you are writing:
  - **Enhancement:** describe the proposed enhancement clearly and tell why you want it. The better we understand your desire, the easier it is for us to evaluate your request.
  - **Documentation Error:** list the title and part number of the document and list the page and



paragraph (or section) containing the error. Please state exactly why you think there is an error.

- Software Problem: clearly and specifically state the problem so that support personnel can try to reproduce it. See the section *Software Problems* below for more details.
3. On the STR form provide all of the following information:
    - Date
    - Name and revision of the product
    - Revision of the operating system
    - Names and revisions of other software this product uses
    - The CPU type and amount of memory
    - Terminal and printer types, if relevant
    - The command line, complete instruction, or program name that caused the problem
    - How often the problem occurs and how serious it is
    - The action(s) necessary to reproduce the problem
  4. If the problem occurred soon after installing a new revision of the operating system, after installing ICObOL 2, or after installing new hardware, note this.
  5. If you received an error message, please write down the exact text (and number, if present) of the message. Also, note when you received the message.

## 9.1 Software Problems

Report any particular activity or program running on the system that seems to cause the problem. If the program is supplied by DG, report in detail the exact steps used to reproduce the problem. If the program is supplied by another vendor or written by an installation, include a copy of the program and its source code if possible. Again, report in detail the exact steps used to reproduce the problem. You can shorten the time it takes to solve the problem by isolating the problem to the best of your ability. To do this, you might try to identify whether the problem is hardware dependent by trying it on different machines (if available).

For problems with terminals, printers, or modems send the device characteristics and the hardware settings.

If we cannot reproduce a problem because you did not send necessary software (program module, breakfile, macro, or other crucial file), it will delay answering the STR. Sometimes, we have to close the STR with the answer “not reproducible” or “insufficient information”. To avoid this, please:

- Include the smallest possible application that demonstrates the problem. This can be a shortened version of the original application. Make sure you send any necessary shell scripts or configuration files needed to reproduce the problem.
- Include a text file on the media describing the application sent, calling hierarchy (if one exists), and what you’ve done to track down the problem. You can send hard copy, but a text file is preferable.
- Clearly label the media, giving format, contents, density, buffersize, and date. Verify that the media is readable.

End of ICObOL 2 for AViiON Systems Release Notice

