# NOTISes

## Special Report:
# VIRGO comes to Virginia

*By George Crafts*
*University of Virginia Library*

**From the start, it was a success—and it's getting even better.**

On January 18, 1989, the University of Virginia Library made VIRGO, its online catalog, available to the public. Thanks to extensive data conversion projects, VIRGO contained about 96% of the titles in the library's general circulating collection when it was made available to the public. Projects to convert the remaining 4% are well under way. At present, the system contains about 1,380,000 bibliographic records and 1,470,000 authority records.

VIRGO runs on an IBM 3084-Q mainframe at the university's Administrative Computing Services. The university has a Local Area Network (LAN) and offers dial-up access from remote locations. About thirty terminals were available for public use when VIRGO first went up. That number has now grown to about seventy. Approximately sixty staff terminals are also in operation. Almost all our terminals are linked to printers. Currently the system has 150 ports, 32 of them recently added to provide for an anticipated increase in users due to dial-up access.

On opening day, our online catalog was made available simultaneously in the university's central library and in ten branch locations. Soon afterwards, it was operational in the library of the graduate business school. The law library and the health sciences library have separate online systems to serve the needs of their specialized clientele. VIRGO users, however, can access these specialized systems and users in the law and health sciences libraries have access to VIRGO through the LAN.

For a few months before VIRGO was unveiled to the public, a large part of the database was available for an extensive staff training program. Manuals were prepared that covered each level of expertise. The entire library staff was instructed in the beginning level.

Instructional materials were prepared for

## Also in this issue . . .

## User info needed

*LIB1s should have received the "NOTIS Customer Profile" and "NOTIS Customer Directory Information Sheet" in the NUGM information packet. Please update this information for the "NOTIS User Directory." If you have not returned your updated information, please do so now, to allow time for preparation of the 1989 directory before NUGM convenes in September.*

> *VIRGO proved so easy to learn that the regular reference staff was soon able to handle requests for help.*

the general public, including a flip-chart, a bookmark, and a twenty page self-paced tutorial based on the beginning-level manual for staff.

On "Day One," volunteers from all parts of the library stationed themselves near the terminals to offer assistance to users. VIRGO proved so easy to learn, however, that the regular reference staff was soon able to handle requests for help. A guide entitled "VIRGO Information and Troubleshooting" was compiled with information on everything from handling a terminal malfunction to instruction in sophisticated searching techniques.

### Media coverage and festivities

We made an extensive effort to publicize our new online catalog. VIRGO received coverage in the student press, the university newsletter, and the alumni magazine. A few weeks after "Day One," the library sponsored a reception to celebrate the event. Among the guests were officers of the university, department chairpersons, and library representatives from all academic departments, all computing center staff involved in the project, and the entire library staff. We arranged to have terminals at the festivities to show off the new system. In addition, the library ran a contest ("The VIRGO Game") to encourage students to try out the new catalog. Contestants had to search the database to find answers to a set of questions. Prizes were donated by the university press, the bookstore, food services, and the copy center.

> *Public response to the new online catalog has been overwhelmingly positive.*

Public response to the new online catalog has been overwhelmingly positive. The powerful features of the system, the large size of the database, the numerous terminals and printers, and the quality of the instructional materials have all helped to produce an enthusiastic response from library staff and the public.

Excited by what we had to offer, our users soon wanted more. After initial testing by a group of volunteers, the library began to offer dial-up access to the university and surrounding community in mid-April. In June, dial-up access was publicized to libraries throughout the state.

### Future enhancements

What lies ahead for VIRGO? Implementation of the circulation module will begin in some locations in September. The acquisitions and serials modules are scheduled to be operational by the summer of 1990. The library is purchasing bibliographic records for some major microforms sets from OCLC and plans to acquire more as funds permit. Manuscripts catalogers are beginning to enter records directly into VIRGO. U.S. Government Printing Office tapes from 1976 to the present will be purchased and loaded in the near future. New GPO tapes will be then be loaded as we receive them. The library is also investigating ways to input new state and international documents and selected older documents of all types. We are considering the Multiple Database Access System and other options for mounting databases locally.

As new functions are implemented and new types of materials added to the database, we know VIRGO will prove even more valuable to our users and staff. ■

## Announcements

## MFHL update

Do you have questions about MFHL? If so, now is a good time to send them in.

The MFHL (MARC Format for Holdings and Locations—usually pronounced "muffle") project will provide the capability for representing holdings information in MARC format within the NOTIS Library Management System.

We will present two sessions on MFHL during September's NOTIS Users' Group Meeting (NUGM). They are designated session 3A,B and 18A,B. MFHL-related issues may also be discussed in the Serials Control Discussion Group. The session presenters would like to receive your questions now so they can prepare to address them during the sessions. Send your questions and comments by August 30 to:

Diane Paldan
Wayne State University
FAX (313) 577-3613

Last June we gave a special MFHL presentation at the NOTIS Serials Interest Group meeting during the ALA (American Library Association) Annual Conference in Dallas. A summary of the ALA presentation, including illustrations, will appear in next month's *NOTISes*.

## Survey coming soon

LIB1s will receive the NOTIS 1989 enhancement survey in early August for completion by August 30, 1989. If your site has not received the survey by August 10, please call Liz Feltmann at (312) 866-0180.

## Conversion sets tape recycling policy

Does the term "tape glut" sound familiar to you? Well, it's been a constant problem in NOTIS Conversion Services.

As part of our new support policy for customized programs, we will be placing limits on how long we can retain customer tapes after we have shipped the program.

With all the tapes we receive from customers, potential customers, and interested vendors, we occasionally run out of room and have to clean house. When we clean house, we recycle tapes. This helps us keep our costs down and frees up storage space for new tapes.

So if you call with a new request for an old program or to report a problem after some months, please don't be surprised if we ask for sample data. We simply cannot retain tapes indefinitely. ■

## News From Users

## Journal publishes users' articles

Two NOTIS customers contributed articles to the June 1989 issue of *Information Technology and Libraries*. Flo Wilson of Vanderbilt University describes Vanderbilt's experience with the NOTIS Multiple Database Access System. Emily Gallup Fayen at the University of Pennsylvania discusses Pennsylvania's choice of BRS/Search software to mount local databases. ■

# What you need to run GTO

Since we last published an article about our Generic Transfer and Overlay (GTO) product (see *NOTISes/41*, April 1989), there have been minor changes to the list of required equipment. This should bring you up to date.

The NOTIS GTO package includes software and hardware for the microcomputer as well as mainframe software. The list assumes a library is already on line to the bibliographic utility from which records are to be passed (RLIN, UTLAS, or OCLC).

## Hardware

### Microcomputers

In order to run GTO, a NOTIS site should have a microcomputer dedicated solely to this function. GTO has been tested on three IBM models:

- PC/AT
- PS/2 Model 30
- PS/2 Model 30-286

Microcomputers used for GTO must have
- 1 floppy disk drive
- 20 megabyte hard disk drive
- DOS 3.3 or higher
- 640K on motherboard
- Internal clock/calendar
- AT/XT-style bus (Industry Standard Architecture)

### Other computer types

NOTIS Systems has tested GTO on the three IBM microcomputer models specified above, and can offer support only for configurations using these three models.

We have found that GTO will *not* work properly on microcomputers that use "microchannel architecture" (or "MCA") because of an incompatibility between the HOSTESS™ serial port adapter (see below) and the MCA bus. The IBM PS/2 models which use the MCA bus—and which therefore *cannot* be used for GTO—include models 50, 50Z, 55SX, 60, 70, 80, and their variations.

### Mainframe connection

The GTO microcomputer communicates with the mainframe by means of terminal emulation—that is, by "looking like" (to the mainframe) either a VT100-type asynchronous terminal or a 3278 bisynchronous terminal. It may be connected to the mainframe in the same manner as the other NOTIS system display terminals in the library: via either the IBM 3x7x-type bisynchronous terminal controller or the IBM 7171 asynchronous terminal controller.

#### 3278 (Bisynchronous) Terminal Emulation

If the GTO microcomputer is to be connected to the mainframe via the IBM 3x7x-type terminal controller, it must be outfitted with the PCOX/ONE™ SOFTWARE and PCOX/COAX™ BOARD. This emulation package can be purchased from NOTIS.

#### VT100 (Asynchronous) Terminal Emulation

If the microcomputer is connected to a 7171 telecommunications controller, neither the PCOX/ONE™ SOFTWARE and PCOX/COAX™ BOARD nor any other third-party terminal emulation hardware or software are required. The NOTIS GTO programs provide VT100-type asynchronous terminal emulation.

### HOSTESS™ Multiple Port Serial Adapter

The NOTIS GTO package includes a microcomputer serial port adapter and diagnostic software for this adapter. The serial port adapter allows connection of multiple bibliographic utility terminals to the GTO microcomputer. The serial port adapter is available in four-port and eight-port models. These can be combined in various ways to allow the connection of up to fifteen or sixteen bibliographic source terminals. (In asynchronous terminal
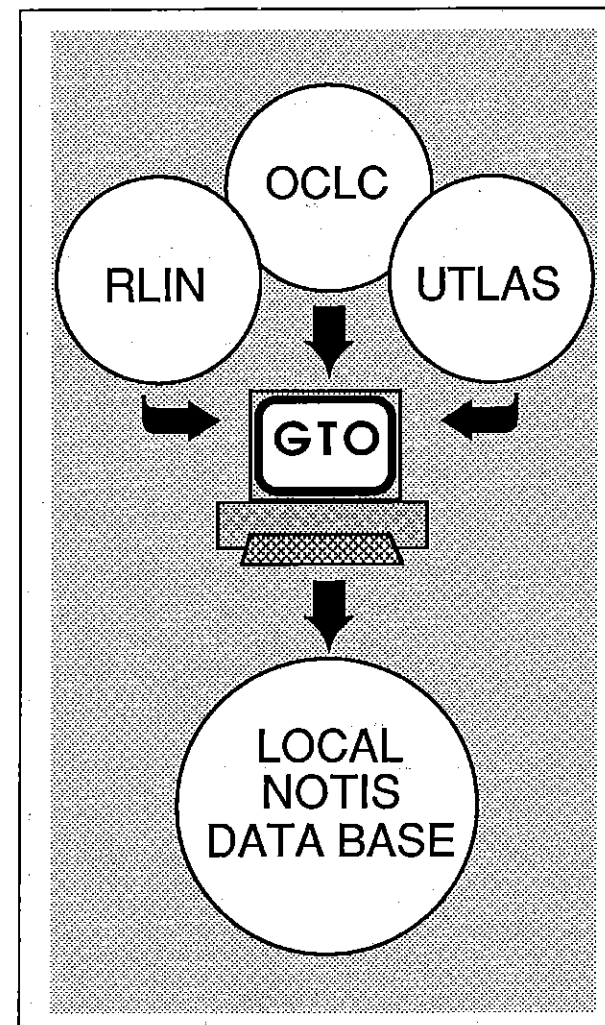


emulation mode, one serial port must be reserved for the 7171 connection.)

### Cables

One RS-232 25-pin shielded cable is needed to connect the serial port of each bibliographic terminal to the HOSTESS™ serial port adapter board in the GTO microcomputer. The exact wiring specifications of the cable(s) are determined by the input/output characteristics of the HOSTESS™ serial port adapter and the bibliographic terminal(s).

The HOSTESS™ serial port adapter uses pin number 2 to transmit data and pin number 3 to receive data. Consult the operator's manual for the bibliographic terminal(s) you want to connect to determine the transmit/receive pin assignments for each terminal's serial port. If the terminal transmits data on pin number 2 and receives data on pin number 3, then a "null-modem" type RS-232 cable must be used. If the terminal receives data on pin number 2 and transmits data on pin number 3, then a "straight-through" type RS-232 cable must be used.

Also, check the terminal to see whether it accepts a male or female RS-232 connector. The HOSTESS™ serial port adapter accepts a male connector.

Generally, the bibliographic terminal(s) should be within fifty feet of the GTO microcomputer. Connecting cables longer than fifty feet may be subject to signal degradation due to electrical interference.

### Optional accessories

#### Bibliographic Terminal Attached Printer

Even though the bibliographic terminal's serial port must be connected to the GTO microcomputer, it is still possible to print terminal screen displays on an attached printer.

This capability is available by means of a data switch (sometimes called an "A/B Switch"). One such switch is the ABC-25 from Black Box Corporation. The data switch lets the operator route the terminal's serial port output to either the GTO microcomputer or the terminal's printer.

#### Power Protection Hardware

To protect data integrity, we urge GTO users to install some form of protection against power surges, power spikes, and power loss. Your local microcomputer dealer or microcomputer support center can provide more information on power protection.

## Software

The following software must be present on your microcomputer's hard disk in order to run GTO:
- NOTIS GTO Microcomputer Program Diskette files.
- PCOX/ONE™ Software (for bisynchronous emulation only).
- IBM Microcomputer Operating Software (DOS 3.3 or higher). *Customer-provided.* ∎

# GTO

## ORDER FORM

INSTITUTION: _____ DATE:___/___/___

CONTACT PERSON: _____

TELEPHONE # AREA CODE ( _ _ _ ) _ _ _ _ - _ _ _ _ _

**SHIP TO:** (We cannot ship to a P.O. Box)

NAME _____

INSTITUTION _____

ADDRESS _____

CITY, STATE, ZIP _____

### PLEASE INDICATE

CICS release: ☐ 1.6 ☐ 1.7

Operating system: ☐ MVS ☐ VSE

Mainframe connection: ☐ 3X74 ☐ 7171

Number of bibliographic terminals to be connected: ☐

Number of GTO microcomputers to be connected: ☐

Microcomputer type: PS/2 MODEL 30 ☐ PC/AT ☐

### SOFTWARE OPTIONS

**Please indicate which on-line loader(s) are needed for your institution.**

|  | RLIN | OCLC | UTLAS |
|---|---|---|---|
| **BASIC** ($10,000 for first utility, subsequent utilities $5,000 each) | ☐ | ☐ | ☐ |
| **CONSOLIDATED** ($10,000 for first utility, subsequent utilities $5,000 each plus $3,000 per source for consolidating and testing by NOTIS) | ☐ | ☐ | ☐ |
| **ENHANCED\*** ($10,000 for first utility, plus Conversion costs, subsequent utilities $5,000 each plus Conversion costs) | ☐ | ☐ | ☐ |

\* A Customized Work Letter will be produced after both parties agree in detail on what changes are needed, and on the associated cost for the customized Loader.

### HARDWARE OPTIONS

**Select as many as you need of each.**

HOSTESS Multi-port adapter board :

4-port board ($356 plus shipping and handling) # of boards - _____

8-port board ($556 plus shipping and handling) # of boards - _____

3278 Emulation board # of boards - _____
($659 plus shipping and handling includes P/COX software)

Please see GTO Ordering Information for maintenance details

CUSTOMER AUTHORIZATION _____

DATE ___/___/___

Purchase order must accompany this order form.

(3/28/89)

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Principles of Troubleshooting, Part One:

# How to diagnose online system problems

*by Jerry Specht*
*Chief Systems Engineer*

This is Part I of a two-part article explaining how to troubleshoot problems in the NOTIS system. Part I deals with online system problems; the next installment will cover batch jobs. The complete article will be incorporated into the "Troubleshooting Guide" (Appendix E to the *Installation & Operations Manual*).

## Troubleshooter's tools

When you encounter a problem, first check the "Troubleshooting Guide" (TSG). Consult the Abend and Keyword Index for specific problem numbers or browse the relevant problem number ranges listed in the Table of Contents.

If you do not find an entry in TSG for an abend, consult the *NOTIS Programmer's Reference Manual* (PRM) or the source listing of the program itself. The entry for each program in PRM usually contains a brief explanation of the abend codes.

For VSE/MVS/CICS system problems, there are some entries in TSG, but typically you will need to consult the IBM *Messages and Codes*. In the case of CICS problems, check the IBM *CICS Problem Determination Guide*.

## Programs, tables, or data?

First, try to pinpoint whether the problem lies in a program, in table values, or in data. To help you do this, we supply you with test files and tables.

If the problem can be duplicated with our tables and our data, it is probably a program problem.

If the problem cannot be duplicated, table values or data may be the cause. (Separating table problems from data problems can be difficult since using our data with your tables or our

tables with your data is not an easy matter.)

If you are able to duplicate the problem with our tables and data, then try to re-create the problem with NOTIS generic programs, exactly as we distribute them. If the problem cannot be duplicated under these conditions, either local changes or installation options (in LC000OPT) may be the problem.

## Problems in the online system

### CICS abends

The following are the more common messages associated with a CICS crash or failure to come up.

DFH0501 (abend U0501)—an unrecoverable storage violation has occurred. (More under *Storage violation* below.)

DFH0601 (abend U0601)—corruption of the common system area or other CICS system areas. This may also indicate a problem with journals. Sometimes a message about a journal will precede the abend code. Check JCT and journal formatting. If a journal is specified as "CRUCIAL" and CICS cannot open it, CICS will not come up. If you close the journal, CICS will come down when you attempt to access the journal. An incorrect WRKAREA specification can also produce DFH0601. See Problem 9509.

DFH0602 (abend U0602)—a secondary message. (During recovery from one program check, there has been another program check.) Investigate the previous message(s), not this one.

A number of other causes of CICS crashes are discussed in TSG. See the problems listed under "CICS goes down" in the Abend and Keyword Index. Note in particular Problem 0002.

## Transaction abends

### NOTIS abends

A NOTIS abend may be recognized by a code consisting of three numbers followed by one number (or letter). The first three digits of a NOTIS abend code represent the program number. The fourth character is a letter or number indicating a specific abend within the program. For instance, there is comment on abend 390C at label ZOOC in the program LC390BAL. By finding where the program branches to ZOOC, you can gain some insight into what might be wrong. (There are often multiple branches in a program to the same ZOOx—so you cannot assume that the first such branch you encounter is the only one.)

### Transaction Dump

Sometimes the cause of a NOTIS abend is not obvious. If this is the case, examine the transaction dump in order to find out what values certain variables had at the time the problem occurred. The dump may be printed by executing the program DFHDUP.

If you find that the dump data set is empty, then it may be that you have DCP=NO specified in your SIT. This should be changed to DCP=YES.

The trace in the transaction dump shows what was going on prior to the abend. When CICS is called upon to look for another program, file, etc. ("PCP LINK", "PCP LOAD", "FCP ..."), the address in register 14 is the address of the instruction in the calling program to which CICS will return.

If no trace is being printed as part of the dump, and the abend is reproducible, you may want to "CEMT SET TRACE ON". "TRT=nn or YES" will cause it to be set on when CICS is started.

### ASRA abend

An ASRA is an online program check (0C1/operation exception, 0C7/data exception, etc.). For ASRAs, the Program Status Word (PSW) is very important. Bytes 5 through 8 (the second 4-byte group) in the PSW contain the address of the instruction after the one on which the transaction abended.

Byte 12 of the PSW identifies the type of program check for ASRA abends:

1 .....Operation exception
2 .....Privileged operation
3 .....Execute exception
4 .....Protection exception
5 .....Addressing exception
6 .....Specification exception
7 .....Data exception
8 .....Fixed-point overflow
9 .....Fixed-point divide exception
A .....Decimal overflow
B .....Decimal divide exception
C .....Exponent overflow
D .....Exponent underflow
E .....Significance exception
F .....Floating-point divide exception

If a NOTIS program was executing at the time of the abend, its address will be found in register 11. If the address in the PSW is lower than this, then the abend is not in the NOTIS program. It may, of course, be too high and therefore beyond the end of the program.

If the PSW address is in a NOTIS program, then examine the instruction previous to the one pointed to by the PSW. If the PSW indicates a data exception, fixed-point overflow, or divide exception, then examine the variables in this instruction carefully. Is the program finding binary or character data where it expects to find packed decimal?

If the PSW address is not in a NOTIS program, then a NOTIS program may have executed a BR instruction (a branch to the address in a particular register) where the register did not contain an address but rather some other value. This is especially likely if the PSW address is very low (less than 00000100). If the PSW address is in an IBM module, this may indicate a problem with CICS. Our experience has shown that this rarely happens. If this is the case, however, consult IBM.

If the address is not in a NOTIS program, then examine the values in other registers that do contain addresses. Look especially for addresses that point to locations in NOTIS programs.

Base registers (R10, R11, and sometimes R9) should be ignored. Register 12 ('C') in an online program always points to byte 0 in the TASK CONTROL AREA-USER AREA (TCA-USER) and therefore is not given. Similarly, register 13 always points to byte 0 of the Common System

Area (CSA).

To summarize:

- for a NOTIS abend, locate the relevant section of the program by finding where it branches to the abend.

- for an ASRA abend, locate the relevant section by using the address in the PSW or addresses in registers.

### Relating the dump to the assembled program

In order to establish a correspondence between the values you see in the dump and the program instructions, you need to have an assembled version of the program that corresponds to the phase or load module in the dump. The object code in the left-hand columns of the assembled program should correspond exactly to the code you see in the dump. This can be essential in locating any values stored within the NOTIS program. It is likely, however, that the most interesting and important values will be either in the TCA-USER or in temporary storage (TRANSACTION STORAGE - TS). Those operands with a base register 12 ('C') will be found in the TCA-USER.

For example, in an instruction "9284C100", the operand "C100" points to a value X'100' (256) bytes into the TCA-USER. Bytes X'00' - X'FF' in the TCA-USER are defined by the CICS DSECT DFHTCA. Bytes X'100' up are defined by the relevant NOTIS Transaction Work Area (TWA) that is copied into the program at assembly time. For instance, LC530BAL copies in LC530TWA. If there is an abend in DFLCA530, then the values beginning at byte X'100' in the TCA-USER are likely to be relevant and the definition of these values will be found in LC530TWA. The register that is used as the base for temporary storage varies from one program to the next.

### AICA abend

AICA indicates a runaway task. See *Loop*.

### APCT abend

Contrary to intuition, APCT abends are not caused by a problem in the PCT, but rather the PPT or the load library (phase library). When a NOTIS program asks CICS to load or link to a particular module and there is no entry for that module in the PPT, or the module is disabled, or there is no module by this name in the library, CICS returns the APCT.

The abend screen may give the name of the

module for which CICS was looking. If not, the trace (in the transaction dump) will have this, and it may also be elsewhere in the dump.

There is potential for erroneous module names because NOTIS programs construct these names from different variables. The names of text modules are particularly susceptible to this (see Problem 1118.) The source module, LC405TXE, is the English-language text associated with LC405. When assembled, it becomes DFLCE405. (Presumably, LC405TXS is the Spanish text and would become DFLCS405.) When LC405BAL wants to load this text module, it will read the NOTIS tables to find out what language the operator uses or, if not specified, what language the terminals in the service unit use. If the DSECT that is being used by the program to read the tables is out of sync with the actual structure of the tables, then the program may be looking in the wrong place for the language and getting, for instance, X'00' instead of 'E'.

### Other CICS transaction abends

Any abend that begins with "A" followed by three letters is a CICS-produced abend. In addition to the ASRA, AICA, and APCT discussed above, the other abends we have seen are AFCL, ATNI, APCP, AKCT, ASRB, and ATCH. Consult the Abend and Keyword Index in TSG for further information.

### CICS "hung"

Sometimes when CICS is up, it does not respond when you enter a transaction. CICS might be in the process of abending. If so, there should be an indication of this on the console. CICS sometimes takes a very long time to come down. If there is no indication that CICS is abending, then you should examine the CPU usage by the CICS partition: high CPU indicates looping; low CPU usage indicates Stall/WAIT.

### Loop

First, consider the problems listed in TSG under "Abend AICA" and "CICS loops". If CICS is looping, take a snap dump ("CEMT P SNAP"). The address in the PSW points to an instruction somewhere within the loop. If this instruction is in a section of the code that is searching a record for particular fields, it may be that the record is corrupted. (Each field in a NOTIS record begins with a 2-byte length; an incorrect value can cause the search to loop.) Otherwise, examine

the trace. If there are links to other programs in the loop, register 14 will show where in the calling program it is returning. Addresses that appear in the registers may also be informative.

A regular trace will probably only show the loop. In order to see what preceded the loop, you will need to turn on AUXTRACE. (AUXTRACE does not overwrite itself whereas a regular trace does.)

You will need to do the same sort of diagnosis for an AICA abend. A looping transaction will terminate in an AICA if the number of milliseconds specified in the ICVR= value in the SIT have been exceeded.

*Stall/WAIT*

See the IBM *CICS Problem Determination Guide* for a thorough discussion of stalls and WAITs.

Are there any short-on-storage messages? Sometimes a stall can occur if the system is short on memory. A deadlock can occur if two tasks are waiting for the same resource—usually access to a data set. To the best of our knowledge, this has not happened with NOTIS programs.

For a VSE CICS bug that can cause a stall, see Problem 9510.

**Storage violation**

Storage violations are usually more difficult to diagnose than abends. The program that is executing at the time the storage violation is detected is frequently, but not always, the cause of the storage violation.

If CICS is unable to recover from a storage violation, it will come down with a DFH0501 message. Otherwise, it will just print a message indicating the violation occurred.

In order to diagnose a storage violation, you will need to print a formatted dump. Check the control block index at the end of the dump. The control block that is indicated as being in error and the ones preceding it usually require attention.

If the dump data set is too small, the dump may have been truncated and the control block index omitted. If this happens, increase the size of the dump data set.

Specifying ANTICPG=nn (or YES) and CLASS=LONG in the PCT helps to isolate the storage that each transaction is using from that being used by other transactions. However, all Terminal Input/Output Areas (TIOA) are together.

A storage violation commonly occurs when a transaction writes past the end of the TWA or TIOA that has been specified for it.

Chapter 2.2 in the IBM *CICS Problem Determination Guide* includes a thorough discussion of formatted dumps.

**NOTIS error messages**

For explanations of NOTIS error messages, consult TSG and the NOTIS *Terminal Operator's Manual*, vol. 1, part 3, Appendix III.

**Incorrect output**

*Incorrect search result*

1) No records found. Check TSG under NO ENTRIES FOUND, NO INDEX ENTRIES FOUND, and RECORD NOT FOUND. In regard to the latter, see especially Problem V274.

2) Wrong record found. Wrong records resulting from a subject search are discussed in Problems 1121 and 6316. Wrong records for certain keyword searches are discussed in Problems 3507, V286, and V287.

*Incorrect screen display message*

As discussed in Problem 0005, problems with staff mode screens or messages frequently relate to LCxxxTXE and LCxxxMSG modules and their synchronization with the programs that use them.

Problems with screens or messages in the online public catalog (OPAC) usually have to do with LC798BAL and, for messages displayed as part of records, its synchronization with LC794BAL, LC795BAL, and LC798DSC.

*Record display incorrect*

Failure to display all fields or incorrect display of certain fields almost certainly indicates a data problem. You may need to do a VSAM print (dump) of the record to see what is actually there.

In the case of an incorrect display of a record in OPAC mode, you should do a staff-mode display of the bibliographic and holdings records, etc. This will show whether the problem lies in the OPAC or in the records themselves. ■

*The second installment will discuss problems encountered in NOTIS batch processing.*

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Circulation tips:

# How to control patron address selection

The NOTIS Library Management System can store multiple mailing addresses for each library patron. Each patron address

- is associated with one (or more) patron groups
- has a distinct address type
- has a specified time period during which the address is valid

When a patron record contains more than one address, LB620BAL uses these three variables to determine which address is to be printed on circulation notices.

**Patron Group.** LB620BAL uses the patron group associated with the patron ID to which the item was checked out. This connection is determined through the patron subrecord.

**Address Type.** The address type to be used is selected as follows:

If an address type override exists for the subrecord, then LB620BAL uses that value. Otherwise, the program looks for an address-type hierarchy entry in table RPTBL (within LB620BAL) for this patron group/patron category combination.

**Address Selection.** If neither an override nor an RPTBL entry is found for this patron group/patron category combination, then the program uses the first address in the patron record as a default.

Otherwise, a multi-step search for the "best" address is performed. The first step looks for an address that matches both the patron group and the first address type, and which is valid for

> *When a patron record contains more than one mailing address, certain variables determine which one will be printed on circulation notices. Here is how it works, and how you can control the selection hierarchy.*

the current date. If these criteria are not satisfied, then each subsequent address type in the address type hierarchy is substituted, and the search is repeated until the address type list has been exhausted. Then (if there is still no match) the same search is repeated without the check for patron group. If still not successful, LB620BAL looks for the first address with valid dates.

Note that the the NTPADDR installation option (in LC000OPT) does not play a role in this process.

**Modifying the RPTBL table.** Each entry in table RPTBL in LB620BAL is twelve bytes long.

Byte 1 is the first character of the request type. ("F" applies to FA, FB, FC, FD, FE, and FG requests; "J" applies to the JD requests.)

Bytes 2-3 are the patron group.

Bytes 4-7 are the patron category. If some (or all) of the categories for a particular patron group share the same address type hierarchy, then a default category of "****" may be specified.

Bytes 8-12 are the address type hierarchy. You may use whatever letters you like. They should, however, correspond to the values you are entering into the records via the LB510JOB or online. If you specify fewer than five address types, do *not* reposition the right single quotation mark ("tick mark"). It must remain in column 30. Pad the string with blanks. ■

*This information will be incorporated into NOTIS documentation in a future update.*

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## Quote of the Month

66

We hope that, when the insects take over the world, they will remember with gratitude how we took them along on all our picnics.

99

—*Bill Vaughan*

# NOTIS Staff News

John Slywka III began working for Conversion Services in March. John comes to NOTIS from Direct Marketing Technology, where he was a programmer analyst with experience in Assembler and Dylakor. John is a graduate of the University of Miami at Coral Gables with a degree in electrical engineering, including computer logic and Basic programming.

Brian Ingerson and Donna Shapiro joined Conversion Services in May. Before coming to NOTIS, Brian worked for over a year as a programmer analyst in the insurance industry, utilizing BAL and COBOL. He is also experienced in program design, documentation writing, and JCL. Brian received his B.S. degree in computer

science from Northern Illinois University in 1987.

Donna comes to us with a background in programming and employee training. She has extensive experience in MVS/XA, TSO/ISPF/JES2, IBM 3084, AND OS/JCL environments. Donna graduated with a B.S. in management information systems in 1986 from Pennsylvania State University, Behrend College.

Eva Salamon has transferred from Conversion Services to Systems Development. Eva, who started at NOTIS in May of last year, received a B.A. from the Sorbonne (Paris) and a master's degree in computer science from Loyola University of Chicago. ∎

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# Troubleshooting

### By Jerry Specht, Chief Systems Engineer

This column is a regular feature of NOTISes. As we encounter problems which we plan to include in the "Troubleshooting Guide" (Appendix E to the **Installation & Operations Manual**) we list them here in **NOTISes** so you won't have to wait for a new release in order to be aware of them. If you have suggestions, send them to Jerry Specht.

We recommend that you take these troubleshooting pages and append them to the February

1989 "Troubleshooting Guide." The problems have been, and will continue to be, assigned "temporary" numbers beginning with V200, so that they will be in sequence. We will periodically issue an updated index which will encompass both these problems and the ones already in the guide. Once per year we will send you an entirely new guide in which all of the problems which have appeared in NOTISes since the last publication of the guide will be integrated and assigned permanent numbers.

**Correction to Problem 3013:** Change "you get an abend 7949" to "you get an abend 7949 (pre-4.5) or 7959 (release 4.5 or later)." Also, add an index entry for "Abend 7959."

**Correction to Problem 3019:** Change "you get an abend 7945" to "you get an abend 7945 (pre-4.5) or 7955 (release 4.5 or later)." Also, add an index entry for "Abend 7955."

**Correction to Problem 3024:** Change "you get an abend 794p" to "you get an abend 794p or (with release 4.5 or later) 795p." (Note that the 794p can still occur with 4.5.) Also, add an index entry for "Abend 795p."

Thanks to Alan Alexander-Manifold at Purdue University for pointing out the need for the above changes.

## Problem V314

(4.5.1 only)

You find that since you have started running the **LB680/LB682*** job to correct the CHARGES and OVERDUE counters in patron records, certain patrons who have not yet received any notices are being **blocked for overdues.**

**Causes/Solution:** This problem occurs when there is a gap between the time that items become overdue and the sending of notices. Two possible causes of such a gap are 1) not running LB610 nightly and 2) having CPOVER statements (in LC102Tzz) which contain OVERDUE parameters with a first value other than '1.' The first condition could be avoided by running LB680/2 only immediately after LB610 has been run. Since we do not know a way of avoiding or working around the second condition, we have developed changes to LB682BAL. The changes involve the printing of a new message and are too complicated to list here. Their main feature, however, is a comparison of the new OVERDUE value with the existing one.

**\* Boldface type in the problem description indicates index terms and/or main topics.**