Our biggest-ever user group meeting opens September 27

We are expecting over 600 NOTIS users to converge on Chicago's Palmer House Hotel for the 1989 NOTIS Users' Group Meeting (NUGM). Proceedings get under way at 8:30 Wednesday morning, September 27. Many users will also attend the two pre-NUGM workshops on September 26. Over 300 are registered for the workshops on authority control and on NOTIS Release 4.6 installation. Thank you for participating!

NOTIS ‘Basic Support Policy’ updated

Reprinted in this issue—see page 17

In our August issue (NOTISes/45 pages 5-6), we told you about how we were implementing your suggestions for improving our responsiveness to your needs. We described our new approaches to such areas of concern as telephone support, problem resolution, and staff training. The “NOTIS Customer Services Basic Support Policy” document, which details our customer services plan, has been updated to reflect these changes. We are reprinting this document in full in this issue (page 17). If you have any questions regarding basic support, please contact Maribeth Ward, Vice President, Customer Services at (312) 866-0675.

NUGM Program Agenda—p. 11
Here is the latest information on how to order the NOTIS Generic Transfer and Overlay (GTO) utility for the online transfer of records from bibliographic utilities into your NOTIS database. (See page 4 of our July issue—NOTISes/44—for a complete list of GTO hardware and software.)

**Base price**

The price for the first bibliographic utility is $10,000. The price for subsequent utilities is $5,000 (these prices are in effect only until December 31, 1989).

Order one GTO Package for each bibliographic utility (RLIN, OCLC, or UTLAS). The GTO package for the first bibliographic utility is full price. The GTO package for additional utilities may be ordered at a reduced price.

**Site License**

The price of the GTO package includes a site license for the microcomputer portion of the software. Customers may make as many copies as necessary for the number of microcomputers in their configuration without additional charges. The GTO package license fee includes:

- GTO program diskettes
  (both 3 1/2" and 5 1/4" format diskettes are included)
- Generic version of the GTO online loader programs on tape
- Two sets of GTO user and technical documentation (covering all installation, configuration, operation and maintenance of GTO hardware and software)
- First-year software support and maintenance (maintenance begins when the package is shipped)
- Two hours of technical assistance (via phone) from NOTIS Conversion Services, if required, on data conversion issues

**Maintenance**

- Maintenance for the first year is included in the GTO price. Maintenance for subsequent years is $1,500 a year for the first bibliographic utility and $600 for each additional utility. Maintenance includes technical support from User Services and Technical Support, as outlined in the "NOTIS Customer Service Basic Support Policy." Maintenance is subject to an annual increase.

**Additional support**

Additional telephone support from Conversion Services may be purchased at $100 an hour.

**Additional documentation**

Additional sets of GTO documentation may be purchased at $50 a set.

**Maintenance of peripheral hardware**

Although NOTIS can order the microcomputer peripheral boards as a convenience to our customers, monthly maintenance on hardware is provided directly by the manufacturer.

**Basic, Consolidated, and Enhanced versions**

NOTIS offers three GTO product levels—basic, consolidated, and enhanced. The essential difference is the amount and type of programming support we will provide.

**Basic GTO**

The basic GTO Package includes instructions for creating an online conversion program that handles incoming data in the same way as the institution's customized batch conversion program. In effect, this is done by "cloning" the institution's batch loader and inserting or deleting code to make it run as an online program.

**Consolidated GTO**

If the customer wishes, NOTIS's Conversion Services group will do the programming necessary to create an online version of the institution's customized batch loader. The fee for this service is $8,000. NOTIS will also test the program. This fee does not include any changes to the conversion logic or data output of the program.

**Enhanced GTO**

Enhanced GTO includes the basic GTO package plus site-specific customization of the GTO online data conversion logic. Customization is priced through the same process as any NOTIS customized programming; the actual cost will depend on the number of NOTIS programming hours required to customize the GTO loader according to the customer's specifications.

The Enhanced GTO Package license fee covers all the items listed above under "Site license" except for the two hours of telephone assistance from NOTIS Conversion Services. (This assistance should not be necessary since NOTIS, not the customer, is creating the online loader.) Maintenance for subsequent years is $1,500 a year for the first bibliographic utility and $600 a year for each additional utility. Maintenance is subject to an annual increase. Conversion Services will support all enhanced GTO products provided no changes are made to the code after delivery.

**Shipping Schedule**

The Enhanced GTO Package will be shipped in two parts:

- The microcomputer code, instructions, and documentation will be shipped 4-6 weeks after your authorized order is received and processed at NOTIS.
- The enhanced mainframe software portion of the GTO package will be shipped as soon as NOTIS Conversion Services has completed the conversion program to your specifications. Each portion of your Enhanced GTO package will be invoiced when shipped.

**3278 Emulation Board**

If the customer wishes to connect the GTO microcomputer to the mainframe using an IBM 3x74-type communications controller, a 3278 emulation board is required.
GTO option: online version of LBC30

LBC30 is a NOTIS conversion utility offering far greater functionality than the generic conversion loader (LBC70 and LBC90) distributed with our Library Management System (LMS). LBC30 converts MARC formatted bibliographic records—such as those available from OCLC or RLIN—into NOTIS formatted bibliographic holdings, and item records. It offers a very wide variety of processing routines and options.

Some NOTIS users have expressed an interest in using an online version of LBC30 in conjunction with the GTO online transfer and overlay utility. If you are interested in an online version of the LBC30 conversion loader program, please call Bill Ecton in Conversion Services at (312) 886-0158.

Problem reported with some RLIN terminals

RLIN users with RLG90 and RLG84 terminals report these terminals do not pass multi-screen records successfully through GTO-RLIN. The problem occurs only with multi-screen records. (The LRG40 terminal passes multi-screen records with no problems.) RLG has announced that it will not make any modifications to address this problem. Since any fix would have to occur within the RLIN terminals, NOTIS cannot offer a solution either. RLG no longer supports the RLG90 terminal and in fact now encourages all RLIN users to use PCs. GTO-RLIN sites with PCs emulating RLIN terminals have reported no transfer problems with multi-screen records.

Technical Support

Principles of Troubleshooting. Part Two:

How to diagnose batch job problems

by Jerry Specht
Chief Systems Engineer

This is Part II of a two-part article for NOTIS application-support staff explaining how to troubleshoot problems in the NOTIS system. Part I, "How to Diagnose Online System Problems," appeared in NOTIS/4/44 (July 1989), pages 7-10. Both parts will be incorporated in 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 Kernel 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 code.

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.

We should also check the version number and version date of the software that may be incorrect.

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 your 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 (FL6000001) may be the problem.

Jobs cancelled by a NOTIS program

If a NOTIS batch program encounters an illegal condition, it may cancel the job by one of two means. The most common way is by using the ABORT macro. All LXXX programs use this method.

The second method of cancellation is by means of an illegal instruction that results in a program check interruption with an OC1/operation exception. Some LXXX programs use this form.

ABORT macro under VSE

Under VSE, the NOTIS ABORT macro consists of an SVC instruction with a code of...
32 [X'O A32]. Under VSE 1.3, this causes the message G0401 ILLEGAL SVC HEX LOCATION xxxxx SVC CODE '32' to appear on the console. Under VSE 2.1 or higher, the message is G0401 SVC xxxxx CANCELLED, REQUEST FROM SYSTEM SERVICES ROUTINE. When this message appears, you should examine the dump. The instruction, ABORT 01, followed by the instruction, ABORT 02, in the program L0630 will appear as X'A03201500A32030' in the dump. If the ABORT 01 is taken, the PSW in the dump will point to the byte following the first '0A32' instruction. That is, it will point to the '0A30'. This '0A30' indicates ABORT 01 within a program ending in 50. If the page contains more than one program with the last two digits of 50, you should search backwards in the dump from the PSW to see what module you are in.

ABORT macro under MVS

Under MVS, the NOTIFY ABORT macro causes a user abandon of the form described above. 'U=0150' indicates "ABORT 01" within a program ending in 50.

If the load module contains more than one program with the last two digits of 50, you should search backwards in the dump from the PSW to see what module you are in.

Problem determination

Once you have determined the ABORT number and the program number, consult the Abend and Keyword Index to the "Troubleshooting Guide" (TSG) to see if there is an entry for this abend. If there is no entry in the TSG, consult either the documentation for the program in the NOTIS Programmer's Reference Manual (PRM) or a source listing for this program. Both references contain a brief comment indicating the cause of the ABORT.

Jobs cancelled by the operating system

First, consult the Abend and Keyword Index in TSG. If the operating system encounters an invalid operation, it will cancel the job. Under VSE, this will appear as G0931 PROGRAM CHECK INTERRUPTION - HEX LOCATION xxxxx - CONDITION CODE y - 00000000 EXCEPTION. Under MVS, it will appear as a system abend OX. Some of the common causes of program check interruptions/system abends are discussed below. For a complete list, see Part I of this article, "ASRA abandon" (page 8). An OX in the LDX00 job will be listed under both "Abend OX (in LDX00)" and "LDX00, OPERATION EXCEPTION (OC1)."

Program Check Interruptions/System Abends

OC1/operation exception

An operation exception occurs when the system finds something other than a valid opcode where there should be a valid opcode. The two most common causes of operation exceptions in NOTIS batch programs are: (1) omission of a necessary module from the linked list with the PSW; and (2) the intentional inclusion of an invalid instruction to cause the job to cancel when an illegal condition is encountered.

If the HEX LOCATION for the instruction is '0000000' or the six rightmost digits in the PSW are '000002', then this may indicate that a necessary module has been omitted from the linked list. You should check and make certain that you did not receive any EXTRs (unresolved external references) in the linked list, unless this is an LDBxx link. If so, see TSG Problem 0063.

If the address specified in the PSW is in a NOTIS program and there is no entry for this OX in TSG, examine the assembled listing of the program and see what instruction appears before the one pointed to by the PSW. VSE gives you the "HEX LOCATION" that is the address of the bad instruction itself. For instance, if the content at the HEX LOCATION is DC 'H0' (this appears in the dump as 'X'0000' where the opcode and operand should be), then there will be a comment indicating why it is forcing the abandon at this point. In most of these instances, there is also a message printed in the output (prior to the forced OX) with detailed information on the cause.

It may be that the PSW address is within a NOTIS program, but when you examine the "instruction" it is trying to execute, you find that it is not a DC 'H0' forced abandon, but rather some other data. This might be caused by an erroneous branch to a data area or the erroneous overlay of program instructions by data. The MVS program OX (release 5/13 or later) is an attempt to GET or PUT to an unopened file.

An operation exception can cause OX1s to occur, then examine the values in registers as described for OX4/ protection exception (see below).

OCS/addressing exception

Same as protection exception above, except that the address to which the program was trying to branch was beyond the end of the partition or region. The MVS program OX (release 5/13 or later) is an attempt to GET or PUT to an unopened file.

If the cause of an OX1s causes, examine the values in registers as described for OX4/ protection exception (see below).

OC4/protection exception

A protection exception occurs when a program tries to reference an address that is in a protected area of storage. Under MVS, an empty input file or a missing/misspelled DD can sometimes result in an OX4, as can the block size and record size being specified as equal for variable-length records. Otherwise, diagnosis is likely to be difficult. Consider the record being processed. If the program finds characters where it expects to find a field length, this can result in a protection exception or an addressing exception (see "What record was being processed?" below). If the record seems OK, find out what section of the program was executing at the time it tried to branch to this protected area. Examining addresses in the various registers should give you a feeling for what the program was doing at the time this problem occurred. Tools such as "Abend Aid" may be helpful in this.

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Jobs that run indefinitely

First, check under the job operand that should be in packed decimal format but is not. You should get an assembled listing of the program and examine the instruction at the "HEX LOCATION" address (VSE) or the instruction prior to that pointed to by the PSW (MVS). For those operands which number in the Abend and Key- word Index.

If a job is taking longer than you think it should, check the I/O activity. If CPU is high and there is no I/O, the job is looping. If both CPU and I/O activity are high, it is possible that the same output record is being written repeatedly. MVS users can check I/O activity while the job is still running. DOS users should wait until they are certain that the job is taking abnormally long and then cancel it and examine the output. If there is no CPU or I/O activity in this partition, the job is waiting for something.

Loop

If, after the job is cancelled, you find that the same output record has been written repeatedly, examine the input record(s) that produced this output. If the last output record is not repeated, but there is output, then you should use the methods described above to determine the current input record. If the program finds binary zeroes where it expects a field length, this can result in a loop. If examination reveals that there is nothing distinctive about the current input record, or if the job loops on the first input record, then you should determine which instructions are looping. The instructions immediately preceding the one pointed to by the PSW is within the loop, so start here. It may be useful to insert ADDRTOS to see what values certain variables have at strategic points. Tools such as "Abend Aid" may be helpful in this.
Output is incorrect
If only some of the records are processed correctly, check to see if the incorrectly processed records have anything in common. If all records are processed incorrectly, it may be useful to compare these results to the results of the generic job.

What record was being processed?
To diagnose problems that fall into the first three categories, it may be useful to determine whether the job encountered difficulties before it tried to process any records, while it was processing the first input record, or after it had processed some records.

To locate the record that was being processed, look at the output file(s) after the job is cancelled. Determine the last record that was written successfully to the output. This may indicate where the job encountered problems. Remember, however, if the output file is in blocked format, the last logical record you see is probably not the last one processed. The job accumulates logical records until there are enough to fill up a physical record or block. To get around this under VSE, you may either change the DTF for the output file from RECFORM=VARBLK to VARUNB (or if it's fixed, change to FIXED); Under MVS, change the RECDEF=MVB to RECDEF=V (or RECDEF=F) in the DD statement. The MVS default for an abending step is to delete the output file.

Alternatively, you can examine the dump. Sometimes the program will contain the key of the current record. In other cases, it will just have the address and you will need to go to that address to see the record. You will need to have an assembled listing of the program that reads the input record in order to locate the offset at which the key, or the address of the current record is located.

Once you have located it, check to see if there is a problem with the record. For example, each variable-length field in a NOTIS record begins with two bytes that indicate the length of the field. If the record is corrupted so that the program finds binary zeros where it expects to find a length, this can result in a loop. If the program finds characters where it expects to find a length, this can result in a protection exception or addressing exception.
Who's implementing what?

NOTIS users are usually happy to help others. The information provided here, which supplements the information in the NOTIS User Directory, may be of assistance to NOTIS users who wish to contact other sites in order to exchange information.

Please consider giving information about your library's implementation strategy to your NOTIS User Services Librarian.

September 1989

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1989 NUGM PROGRAM AGENDA

D A Y 2

LIBRARIANS/GENERAL

PROGRAMMERS

ALL

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**LUNCH PRESIDENT'S CHAIR**

For your information, each session has a unique number followed by a letter. The letters indicate:
- B = Basic
- A = Advanced
- Q = General Interest (Appropriate for both Librarians and Programmers)

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**Correction to Problem V329 (August NOTISes):** The code six lines after the label D240L63 (in LC544HAL) should be:

- MVC T/R/D/PO/F/S
- MVC T/R/E/D/S/B/R/M
- MVC T/R/E/D/S/B/R/M change

**Correction to Problem V330 (August NOTISes):** The code six lines after the label D240L64 (in LC550BAL) should be:

- MVC T/R/E/D/S/B/R/M
- MVC T/R/E/D/S/B/R/M change
- MVC T/R/E/D/S/B/R/M (3), C/M/L/N/S

**Correction to Problem V333 (August NOTISes):** The changed statement should read:

UNCH DC SC/30°*  *

{C1.300°* is equivalent but doesn't assemble.}

**Problem V343**

Despite the fact that you have placed a CATL request* for a certain copy holdings record, no catalog cards print when you run 1B040.

**Causes/Solution:** Does the SR= parameter in your profile (in LOCB in LC106Tsx) have a value other than L.C.M.A.V., or F? If so, the cards won't print—nor will any error message be produced.

Note: the NOTIS Library Implementation Manual has an example with SR=0. This is wrong and has been corrected in the 9/89 update to the NOTIS Library Implement-