Burroughs Corporation

BUSINESS MACHINES GROUP
INTERNATIONAL GROUP

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B 2500/B 3500 SYSTEMS UPDATE RELEASE - ASR #4.1

The ASR #4.1 UPDATE RELEASE contains updated and improved versions of all Master Control Programs, FORTRAN Compiler, COBOL Program Generator (COPRGN), B 300 Simulator System, and other software programs. Also included as an addendum to this letter is a more detailed explanation of the reports produced by the Time Accounting and Billing System (TABS), released with ASR #4.0. Improved versions of the Time Accounting System programs are contained on the ASR #4.1 UPDATE tape, and all users are encouraged to begin using TABS as soon as possible.

Upon receipt of the ASR #4.1 software, all users will be permitted 30 days to convert their operations to ASR #4.x software. The use of previous versions will not be supported by Medium Systems Support.

With this release, all items mentioned in Software Flashes, up to and including #91, have been corrected or noted in ASR #4.0 release documentation. All Flashes, up to and including #91, may be discarded.

Copies of the ASR #4.1 UPDATE tape, Master Control Program Listing tape, and 10 extra copies of this letter have been sent to each District Sales Technical Manager.

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ASR #4.1 RELEASE INFORMATION

1. MASTER CONTROL PROGRAMS.

1.1. IMPROVEMENTS.

1.1.1. Sequential I/O now works correctly.

1.1.2. The EOF pointer on random disk files is now handled correctly. This cancels Software Flash #90, item 1.

1.1.3. The error retry routine for Facit paper tape readers has been corrected.

1.1.4. A single-line control can be introduced into the system at other than cold-start time.

1.1.5. The PM message may be used without requiring the DUMP option. This cancels Software Flash #90, item 2.

1.1.6. The OPENing, CLOSEing, and reOPENing of unlabeled tape files now work correctly. This cancels Software Flash #90, item 4.

1.1.7. The error retry routine for a tape overspace has been corrected.

1.1.8. The problem of writing two labels on P-E tapes has been corrected.

1.1.9. The problem of schedule inhibit being set incorrectly has been corrected. This includes pushdown, crashout, and sort rollout. This cancels Software Flash #90, item 3.

1.1.10. An OPEN file during a sort that is pushed down no longer causes a program light.

1.2. KNOWN ERRORS.

1.2.1. MCP1S requires 21,500 bytes of core instead of the specified 20,000 bytes.

1.2.2. To cold-start MCP1M, MCP1C, MCP2M, or MCP2C, users must specify MCP1S or MCP2S, set the MICR and/or Data Communications options (ON), and halt-load the system.

2. FORTRAN.

2.1. IMPROVEMENTS.

2.1.1. A 1HO carriage-control specification now causes a double space on the printer. This cancels Software Flash #91, item 2a.

2.1.2. A program's segment dictionary is no longer overwritten when a disk file header is brought into core at file OPEN time.

2.1.3. A carriage-control specification following a slash (/) in a FORMAT statement is now recognized. This cancels Software Flash #91, item 2b.

3. ASSEMBLER.

3.1. ENHANCEMENTS.

3.1.1. Undigits may be specified as constant data in the NUMR pseudo.

3.1.2. A library call is now accepted from either the AF/BF field or the A ADDRESS field. For example, the following are both valid calls:

```
14    18      22
LIBR  DOIT
LIBR          DOIT
```

3.1.3. An M in column 3 of the SPEC card causes symbolic code to be listed with every MACRO and LIBRARY call.

3.1.4. The following instructions have been added to the Assembler for use on a shared disk system:

a. An S in column 39 of the FILE declaration specifies a shared disk file. Any shared file must also be declared random.

b. A 1 in column 18 of the READ pseudo causes a READ with LOCK to be performed.

c. A SEEK with LOCK is specified by a 1 in column 18 of the SEEK pseudo.

d. A new pseudo, UNLK, causes a WRITE with UNLOCK to be performed. The A ADDRESS field specifies the internal file name of the file to which a record is to be released. An end-of-volume branch may optionally be specified in the B ADDRESS field.

4. SORT GENERATOR.

4.1. ENHANCEMENT.

4.1.1. The SPO error message, which flags loss of records during a DISKSORT, has been changed. This message appears at the beginning of the final merge if the input record count is greater than the processed record count. The new message is:

> NNNNNN INPUT RECORDS LOST FOR SORT TO CONTINUE ENTER Y,
> ELSE DS OR DP PROGRAM

NNNNNN is the number of records that were dropped.

5. SORT INTRINSIC.

5.1. IMPROVEMENTS.

5.1.1. EOF NO LABEL no longer occurs when the input record count is evenly divisible by the SORT's internal blocking factor.

5.1.2. When the output record length is greater than the input record length, the intrinsic now correctly writes a short final block in the output file.

5.2. KNOWN ERROR.

5.2.1. When input to the intrinsic is a multi-reel file, the SHORT INPUT RECORD message is displayed, followed by an address error, at the time the second reel is opened.

6. DMPALL.

6.1. IMPROVEMENTS.

6.1.1. Pseudo card files are printed correctly.

6.1.2. ANSI (USASI) labels are correct on PERFORM option output files.

6.1.3. Proper hardware types are generated for paper tape files when using the GENERATE option.

6.1.4. The FILE-ID portion of tape labels now prints correctly with the tape SEARCH option.

7. COBOL AND COBOLL COMPILERS.

7.1. KNOWN ERRORS.

7.1.1. The following errors have been detected since the ASR #4.0 release and should be added to those reported on the ASR #4.0 release letter.

7.1.2. A condition-name with two VALUE statements does not generate a syntax error but generates code only for the first value.

Example: 88 A VA 123 VA 456
generates code only for 123.

Permanent Fix: ASR #4.2.

7.1.3. ADD CORRESPONDING indicates an illegal subscript if an indexed data-name is referenced.

Permanent Fix: ASR #4.2.

7.1.4. The variants for READ ⟨file-name⟩ VOICE and TONE are not generated correctly.

Permanent Fix: ASR #4.2.

7.1.5. ACTUAL KEY is ⟨file-name⟩ is not detected as a syntax error.

Permanent Fix: ASR #4.2.

7.1.6. A WRITE PRINT-FILE INVALID KEY... statement generates a slew character not recognized by printer back-up. This will generate a syntax error on ASR #4.2.

7.1.7. In multi-level tables, incorrect addresses are generated if a literal subscript follows a data-name subscript.

Permanent Fix: ASR #4.2.

7.1.8. Resequencing will be incorrect if a non-numeric literal of eight characters is used in the Compiler Option ($) card.

Permanent Fix: ASR #4.2.

7.1.9. If FILE SECTION appears twice in the DATA DIVISION, an error is not noted, but incorrect code may be generated.

Permanent Fix: ASR #4.2.

7.1.10. A construct using both index-names and conditionals, such as IF ⟨index-name⟩ EQUAL ⟨data-name⟩ OR literal..., does not generate correctly.

7.1.11. If a VALUE is placed on an item with USAGE INDEX, an address error occurs.

Permanent Fix: ASR #4.2.

7.1.12. A field with a PICTURE K99 CMP is incorrectly denoted as 8-bit information.

Permanent Fix: ASR #4.2.

7.1.13. MONITORing a MOVE to a numeric-edited field containing a decimal point causes the decimal point to appear twice.

7.1.14. FILL and ZIP constructs referencing subscripted data-names generate incorrect addresses.

7.1.15. The JAPN option in the Compiler Option ($) card causes the compilation summary to contain extraneous characters.

Permanent Fix: ASR #4.2.

7.1.16. COBOL only. An IF ⟨class-test⟩ (e.g., IF NUMERIC) statement does not generate correct code if it is the first IF statement in a paragraph.

Permanent Fix: ASR #4.2.

8. WARM START.

8.1. IMPROVEMENT.

8.1.1. Warm-start now correctly loads CP versions of the MCP. This cancels Software Flash #91, item 4.

9. SYMERG.

9.1. ENHANCEMENT.

9.1.1. A new (optional) routine has been added to SYMERG which replaces the files on the SYSTEM tape with the files on the UPDATE tape and places any new files at the end of the tape; this maintains the current sequence of the SYSTEM tape. Files on the UPDATE tape must be in the same sequence as the SYSTEM tape, with any new files at the end of the tape. To use this function, execute SYMERG with a VALUE 0 = 1 control instruction. An example is:

```
CC EXECUTE SYMERG VALUE 0 = 1.
```

9.2. IMPROVEMENT.

9.2.1. SYMERG now merges input tapes containing more than 99 files. The initial file table has been set to contain 99 file names. This can be increased by approximately 80 additional files, with each 1000 digits of core used at execution time.

For example,

```
CC EXECUTE SYMERG CORE 22000
```

allows a tape containing 180 files to be used as input.

10. MFSOLT.

10.1. ENHANCEMENTS.

10.1.1. A new source card deck containing all cards in the pseudo-card file will be produced by indicating PUNCH as one of the options in columns 8-40 of the A-CARD. The new deck will not include B-CARDs.

10.1.2. Any 1- to 8-character literal, enclosed in quotes as one of the options in the A-CARD, will be placed in columns 73-80 of the output pseudo-deck and/or tape records for COBOL or COBOLL programs.

10.1.3. To allow flexibility in control cards, the program-ID in the A-CARD is now free form, but must be the first entry following the A.

10.1.4. All options, including those previously mentioned, may be abbreviated by using only the first three letters of the control word; i.e., COBOL = COB, PATCH = PAT, INSERT = INS, and so forth.

10.1.5. The REMARKS portion of the A-CARD (columns 41-80) is now included on the directory listing. These are changed each time the PATCH, INSERT, or REPLACE option is specified.

10.1.6. To allow for better clarification, the words COMPILE or COMP have been added to give the same results as the COPY option. No change will be made to the output tape.

10.1.7. COBOLL source statements may be added from disk. The file-ID of this disk file must be the same as the program-ID. For label equating, the internal file-name of the disk file is SOLD.

10.2. IMPROVEMENTS.

10.2.1. To allow for six or eight lines per inch printing, END OF PAGE DECLARATIVES have been added to advance the line printer carriage to channel-1 whenever channel-12 is sensed.

10.2.2. The VOID option is no longer applicable when using ASMBLR. This option has been changed to use the DLET construct presently used by the Assembly Language Compiler (ASMBLR).

10.2.3. A print loop no longer results when an error is detected in the A-CARD. The program containing the error will be the only one aborted.

10.2.4. Update source statements now are included when added following the last sequence number of a program on the input tape.

10.2.5. B-CARD control information is no longer erroneously placed in the pseudo-deck when no other patches are included with FORTAN or ASMBLR programs.

10.2.6. Intermediate files will be purged if the run is programmatically aborted due to A-CARD errors.

10.3. KNOWN ERROR.

10.3.1. HOLLERITH statements (FORTRAN) cannot be used when building an MFSOLT tape.

11. 1401 SIMULATOR.

11.1. IMPROVEMENTS.

11.1.1. The SPO option is now incorporated in non-tape versions of the Simulator, MS1401-MS1404.

11.1.2. Constants of 100 characters or more may now be transferred with a single instruction.

11.1.3. Single Operand Subtract now handles undigit values to ensure correct simulation. Previously, undigits, such as periods, lozenge, record marks, etc., were not simulated correctly.

11.1.4. Single Operand instructions that do not incorporate chaining have been corrected. This includes: Compare, Move Numeric, Move Zone, Move to Record Mark.

11.1.5. Move to Record Mark now transfers the accompanying word mark with the group mark. The move now handles 100-character records.

11.1.6. All versions of the Simulator, MS1401-MS1407, require an additional 3,000 digits of memory. The additional core requirements resulted from the inclusion of a comprehensive trace routine.

12. B 300 SIMULATOR.

12.1. ENHANCEMENTS.

12.1.1. Processor instruction execution has a 36 percent improvement in execution speed. This affects B 300 programs that are currently processor bound on the B 3500.

12.1.2. The card reader, card punch, and printer files now have alternate areas. This should lead to better overlap of these I/O's with normal program execution.

12.1.3. The B 300 simulated memory dump now gives the word address and word content in five columns just like the B 300 memory dump. This dump can be obtained during program execution, giving a snapshot of B 300 memory.

12.1.4. Punch Stacker Select is now included in the PUNCH subroutine.

12.1.5. The printers now have a line control option in the Dollar Sign ($) card that allows the printer back-up option to be used and still obtains normal heading lines. The printers also have the F and G Dollar Sign options for special forms handling. (Refer to paragraph 12.1.11.)

12.1.6. The arithmetic subroutines now handle B 300 divide overflow correctly.

12.1.7. The B 300 System operator now has the capability to dynamically halt the Simulator and allow any of the HALT options to be performed. This enhances any debugging operation. The keyboard input message, ⟨mix⟩ IN 70 1 UN = 4, halts the program simulation.

12.1.8. Core requirements for the execution of the B 300 Simulator programs have been reduced as follows:

ID	Old Requirement	New Requirement
SIM048	51,000 digits	45,000 digits
SIM096	61,000 digits	55,000 digits
SIM192	80,000 digits	74,000 digits
SIM048	63,000 digits	57,000 digits
SIMD96	73,000 digits	67,000 digits
SIMD92	92,000 digits	86,000 digits

12.1.9. The ADM command now wraps memory in converting addresses.

12.1.10. Seven-track tape output is now forced to even parity. This allows interchange of tapes between the B 3500 and B 300.

12.1.11. Several additions have been made to the B 300 Simulator Dollar Sign ($) card. The present Dollar Sign card format and options are:

Columns	Contents	Remarks
1	$	Identifies the B 300 $ card. More than one card may be included, but only the last card will take effect.
2	blank	This causes the standard B 300 machine load of the auto-load deck.
	1	This causes a programmatic load. Columns 61-63 of the auto-load card designate the address where the contents are to be loaded. Columns 64-65 specify the length.
3	F	Special forms are required for printer number one.
	G	Special forms are required for printer number one but converting the 120-character B 300 printer to a 132-character B 3500 printer. This is necessary on narrow forms.
4	F	Same as above for printer number 2.
	G	Same as above for printer number 2.
5-6		Reserved.
7	I or O	Designates whether tape unit one is input or output.
8-12		Same as above for tape units two through six, respectively.
13		Reserved.
14-17	DUMP	This causes a B 300 memory dump after the load and prior to the execution of the first command. A memory dump during execution can be requested by entering ⟨mix⟩ IN 70 1 UN = 2. This causes a snapshot of memory to be printed and continuation of the program. A memory dump can be requested also from the halt condition.

Columns	Contents	Remarks
18		Reserved.
19-21	xxx	This is the B 300 address of where the first machine instruction is to be executed after loading if the first instruction is at a location other than 000.
22-29		Reserved.
30-34	TRACE	The B 300 instruction is traced, execution starting with the first instruction after loading is performed. The B 300 trace can also be set dynamically by setting base relative position 70 to a 1. ⟨mix⟩ IN 70 1 UN = 1 (turns trace on) ⟨mix⟩ IN 70 1 UN = 0 (turns trace off)
35-39		Reserved.
40-41	nn	Line count for printer one. This should be the number of lines to be printed on any one page.
42-43	nn	Same as above for printer two.
44-80		Reserved.

13. COPRGN.

13.1. ENHANCEMENT.

13.1.1. An input or output record may now be described as computational by placing a C in column 18 of the file specification card. Any field within the record may be specified as computational by placing a C in the picture field of the FIELD NAME specification card.

14. TIME ACCOUNTING AND BILLING SYSTEM.

14.1. ENHANCEMENTS.

14.1.1. The LGAOFL file has been eliminated from the system, allowing all programs in a complete status to be processed with each run.

14.1.2. The percentage of idle time is given for each hour on the Hourly Execution Report.

14.1.3. With the addition of alternate areas and blocking sort files, the run time of Program LGAD02 has been decreased.

14.1.4. The Log Analysis Report has been enhanced to include the percentage of processor utilization. It also includes the charge number for programs aborted during the log period. The number of aborted programs listed has been raised from 24 to 96.

14.1.5. The Services Rendered Report may now be obtained by using VALUE 1 = ⟨user charge number⟩ when the LGACHG Program is executed if only one report is required.

14.1.6. The Computer Charges Summary may be obtained without the Services Rendered Report by executing LGACHG with VALUE 2 = 1.

14.1.7. The information contained in the header record for each charge number on LGAMAS is now printed on ea h Services Rendered Report.

14.2. IMPROVEMENTS.

14.2.1. Erroneous LOG ID ERROR has now been eliminated.

14.2.2. The LGAEXP file is now correctly updated when over 16 channel-unit combinations are encountered.

14.2.3. OVERHEAD charges are now distributed over those charge numbers using printer back-up, punch-back, and pseudo readers, rather than those charge numbers using the PRINTER, PUNCH, or READER.