**UFD UPDATE INFORMATION FILE -- REV 17.3**

This UFD contains all software updates generated after the initial Rev 17 release to the field. Information about all previous update releases since the initial release is presented in this file also. The initial Rev 17 release was 17.2.

A magtape is supplied to update your master disk. The tape consists of logical tapes A1, B1 and B2. To update your master disk, restore logical tape A1 onto your master disk partition MXXXA1, restore tape B1 onto partition MXXXB1 and tape B2 onto partition MXXXB2. The tape will overwrite the files that are on your disk. If you do not have three separate disk partitions on your master disk, restore the tape on the partition where the files you are updating currently exist.

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THE PRINTING THAT TAKES PLACE ON THE DEVICE DURING THE EVFU TEST DOES NOT SHOW THE OPERATOR THAT IN FACT
THE FORMS LOAD IS BEING TESTED. THE MESSAGE PRINTED ON THE DEVICE DOES NOT CHECK FOR WORSE CASE PAPER SLEW.

DESCRIPTION OF CHANGE:
EACH CHANNEL HAS BEEN LOADED WITH VARIED AMOUNTS OF LINES AND FULL LINE PRINTING (132 CHARACTERS) NOW TAKES PLACE.

* 347 (RTCT2)

REV 17.3 -- DOCUMENTATION -- RTCT2

REASON FOR CHANGE:
TO BETTER CHECK THE PIC.

DESCRIPTION OF CHANGE:
A SHORT PIC TEST WAS ADDED AFTER TEST26. THE PIC IS ENABLED DELAY 1000 MSEC AND STOP PIC. CHECK TO MAKE SURE THE NUMBER OF COUNTS IS +/- 10% OF THE CORRECT AMOUNT. IT IS DONE FOR BOTH 3.2 USEC AND 1024 USEC CLOCKS.

* 348 (XACHE1)

REV 17.3 -- DOCUMENTATION -- XACHE1

REASON FOR CHANGE:
TO ACCOMMODATE P750 MICROCODE REVISION K.

DESCRIPTION OF CHANGE:
ADDED NEW TIMING CONSTANTS.

* 349 (MTUT3)

REV 17.3 -- DOCUMENTATION -- MTUT3

REASON FOR CHANGE:
DEVICE WILL NOT WORK IF WE TRY TO CHANGE DEVICE ADDRESS ON THE CONTROLLER TO ANYTHING EXCEPT THE STANDARD DEVICE ADDRESS (*14).

DESCRIPTION OF CHANGE:
CORRECTED ROUTINE THAT CHANGES 9/1 PIO INSTRUCTIONS TO NEW DEVICE ADDRESS.
REV 17.3 -- DOCUMENTATION -- MDLCT2 (DIAGNOSTIC)

REASON FOR CHANGE:
MICRO-CODE REVISION. FORMAT-ERROR HANDLING WAS IMPROVED IN
THE MICRO-CODE, SO A TEST WAS ADDED TO EXERCISE IT. IF AN
OLD REVISION OF MICRO-CODE IS ON THE MDLC, A MESSAGE SAYING
"OUT OF REV" WILL BE TYPED. THE TEST WILL CONTINUE TO RUN
EVEN IF THE MICRO-CODE IS OUT OF REVISION.

DESCRIPTION OF CHANGE: ADDED SUB-TEST 24 TO EXERCISE
RECEIVED FORMAT ERROR LOGIC.

REV 17.3 -- DOCUMENTATION -- HSMT3 (DIAGNOSTIC)

REASON FOR CHANGE:
REV 7 OF HSMT3 HAD A BUG WHICH CAUSED FAILURES ON P100-P200
CPU'S WITHOUT HSA. A UII CONSTANT HAD BEEN MOVED INCORRECTLY.

DESCRIPTION OF CHANGE:
A CONSTANT IN THE UII ROUTINE WAS MOVED INTO AN AREA THAT
MOVED WITH THE PROGRAM DURING RELOCATION.

REV 17.3 -- DOCUMENTATION -- HSMT4

REASON FOR CHANGE:
TEST FAILED WHEN IT WAS RUN ON A P750.

DESCRIPTION OF CHANGE:
ADDED INSTRUCTIONS TO CLEAN CACHE PARITY AFTER AN UNCORRECTABLE
MEMORY PARITY TRAP.
REV 17.3 -- DOCUMENTATION -- PPPTST

THIS REVISION ENHANCES THE PARALLEL PORTION OF DIAGNOSTIC TO SUPPORT TESTING OF CONTROLLER FUNCTIONS. THE SOC DRIVER HAS BEEN UPDATED SO THAT TEST #1 WOULD PRINT CORRECTLY. TEST #8 WAS REWRITTEN SO THAT A FORM FEED WOULD START THE TEST. THE AMLC DRIVER WAS ENHANCED TO SUPPORT DIFFERENT BAUD RATES. SEE TABLE BELOW FOR BAUD RATES NOW SELECTABLE.

THE BAUD RATES BELOW ARE NOW SELECTABLE USING THE COMMAND MODE (SENSE SW 15) INPUT SEQUENCE B, X WHEN X WOULD BE THE NUMBER CORRESPONDING TO CERTAIN BAUD RATES DESIRED:

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THIS REVISION WILL NOW SUPPORT ALL PRINTERS (SERIAL OR PARALLEL) LPTST1 AND URCT1 WILL NO LONGER BE USED TO TEST SUCH DEVICES.

REV 17.3 -- DOCUMENTATION -- ACCEPT

ACCEPT WAS UPDATED TO REFLECT CHANGES IN THE COBOL LIBRARY NAMES AT REV 16.

 SUBJECT: APPLICATIONS LIBRARY FOR REV 17.3

THE FOLLOWING BUG FIXES AND CHANGES WERE MADE TO THE APPLICATIONS LIBRARY (APPLIB AND VAPPLIB) FOR REV 17.3:

1. THE INTERNAL ROUTINE MSGPRT, USED BY CMDLSA TO PRINT ERROR
MESSAGES, HAS BEEN CHANGED TO MSG$A IN ORDER TO BE CONSISTENT WITH
APPLIB NAMING CONVENTIONS.

2. THE ROUTINE MSUB$A WAS NOT BLANKING OUT THE DESTINATION SUBSTRING
IF THE SOURCE SUBSTRING WAS NULL. THIS HAS BEEN CHANGED TO BE
CONSISTENT WITH SIMILAR STRING MANIPULATION RULES IN VARIOUS
LANGUAGES (E.G. PL/I, COBOL, BASIC), IE. IF THE SOURCE STRING IS
NULL THE DESTINATION STRING WILL BE ENTIRELY PADDED WITH BLANKS.
THIS CHANGE ALSO AFFECTS MSTR$A IN THE SAME WAY.

389 (AVAIL)

REV 17.3 -- AVAIL -- DOCUMENTATION

IF THE PHYSICAL RECORD WAS NOT 1040, THE DSKRAT FILE
WAS NOT CLOSED CORRECTLY -- THIS FIX IS IN REV 17.3.

390 (BASICV)

REV 17.3 -- DOCUMENTATION -- BASICV

22242 - ACCESS VIOLATION ON 750 PROCESSOR. FIXED
22881 - PROGRAM RUNS ON P650 BUT NOT ON P750. FIXED.
25479 - UNPREDICTABLE CRASHES FROM CHANGE STATEMENT. FIXED.

391 (COBOL)

COBOL RUNTIME LIBRARY (VCOBLB, NVCObLB) FOR REV. 17.3

REV. 17.3 CONTAINS SEVERAL BUG FIXES AND PERFORMANCE IMPROVEMENTS, SOME
OF WHICH HAD BEEN PREVIOUSLY RELEASED, BUT POSSIBLY DISCONTINUED.

0 WHEN USING INDEXED I/O, WHICH IS DONE THROUGH MIDAS, THE RUNTIME
LIBRARY CALLS NTFYMS TO LEAVE SEGMENT DIRECTORY SUBFILES OPEN
BETWEEN CALLS, RESULTING IN A POSSIBLE PERFORMANCE INCREASE. THIS
ENHANCEMENT HAD BEEN PREVIOUSLY AVAILABLE AT REV. 16.6, BUT WAS
MISTAKENLY DROPPED FOR 16.9 AND 17.2. DUE TO THE WAY THE MIDAS 
LIBRARY WORKS, THE PREVIOUSLY ABSENCE OF THESE CALLS WOULD 
MANIFEST ITSELF NOT ONLY THROUGH REDUCED THROUGHPUT, BUT FILES 
WOULD BE LEFT OPEN UPON EXIT TO PRIMOS.

0. AN ADDITIONAL IMPROVEMENT HAS BEEN MADE TO NOT LOCK DATA RECORDS 
ALL THE TIME WHEN SEQUENTIALLY TRAVERSING A MIDAS FILE.

BUGS FIXED ARE:

0  PROCEDURE CALLS TO EXTERNAL, SHARED, OR 
RING C LIBRARIES CANNOT HAVE XB% RELATIVE ARGUMENT POINTERS 
UNLESS THE XB% IS LOADED IN THE PROCESS OF TRANSFERRING THE 
ARGUMENT LIST VIA AN ARGUMENT POINTER WITHOUT THE 'S' (STORE) 
BIT SET. IF THESE RULES ARE VIOLATED, AS THE LIBRARY PREVIOUSLY 
DID, RESTARTED CALLS COULD EITHER FAIL OR WORK WITH INCORRECT 
DATA. IT IS ALMOST IMPOSSIBLE TO ASSIGN SYMPTOMS TO THIS BUG DUE 
TO ITS SPORADIC AND UNTRACEABLE NATURE.

0  THE INTERNAL LIBRARY ROUTINE, C$AU, HAS BEEN REPLACED BY THE USE 
OF K$GETU IN CALLS TO SRCH$$ AND TSRC$$ TO DO THE SAME FUNCTION. 
UNDER C$AU, IT WAS POSSIBLE TO ASCRIBE MORE FILE UNITS OPEN TO 
EXTERNAL SUBSYSTEMS THAN ACTUALLY SO, POSSIBLY CAUSING A 'NO FILE 
UNITS AVAILABLE' ERROR.

0  USE OF PARAMETERS FROM SYSCOM>FILD.P HAVE BEEN REPLACED BY THEIR 
EQUIVALENTS FROM SYSCOM>KEYS.P. THIS IS AN INTERNAL COSMETIC 
CHANGE.

MODIFICATIONS TO DBG FOR REV 17.3

1) TYPE COMMAND NOW WORKS WITH MEMBERS OF PL1G STRUCTURE.

2) HELP COMMAND PRINTS NAME OF IDR REFERENCE MANUAL.

3) ACTION LISTS AND OTHER ATTRIBUTES NOW HANDLED CORRECTLY 
IF EXIT BREAKPOINT SET IN CURRENT BLOCK.

THIS DOCUMENT DESCRIBES PROBLEMS AND BUGS THAT WILL BE ELIMINATED BY 
INSTALLATION OF REV 17.3 DBMS.
A. FORTRAN SUBSCHEMA COMPILER (FSUBS)

1. THE FOLLOWING POST PROCESSING CHANGES HAVE BEEN MADE: VECTORS MAY NOW APPEAR IN CHUNKS; ITEMS SUBORDINATE TO A GROUP LEVEL ITEM WITH NO OCCURS CLAUSE MAY NOW APPEAR IN A CHUNK; A POST PROCESSING MAP INDICATING WHICH ITEMS ARE IN A CHUNK WILL APPEAR IN THE SUBSCHEMA LISTING FILE. (TAR #24054).

B. COBOL SUBSCHEMA COMPILER (CSUBS)

1. THE FOLLOWING POST PROCESSING CHANGES HAVE BEEN MADE: VECTORS MAY NOW APPEAR IN CHUNKS; ITEMS SUBORDINATE TO A GROUP LEVEL ITEM WITH NO OCCURS CLAUSE MAY NOW APPEAR IN A CHUNK; A POST PROCESSING MAP INDICATING WHICH ITEMS ARE IN A CHUNK WILL APPEAR IN THE SUBSCHEMA LISTING FILE; TYPE STRING IN THE SCHEMA AND TYPE PICTURE 'XXX ... ' IN THE COBOL SUBSCHEMA ARE TREATED AS EQUIVALENT DATA TYPES, I.E., IF THE PICTURE LITERAL DEFINES AN ITEM OF THE SAME LENGTH AS THE TYPE STRING SPECIFICATION IN THE SCHEMA, THAT ITEM CAN BE IN A CHUNK. (TAR #24054, #24047).

C. DATA MANIPULATION LANGUAGE COMMAND PROCESSOR (DMLCP)

1. IT WAS POSSIBLE TO STORE A RECORD INCORRECTLY (OR NOT BE ABLE TO STORE IT AT ALL), WHEN THE LOCATION MODE OF THE RECORD WAS DIRECT AND THE DATABASE KEY WAS PART OF THE RECORD, AS OPPOSED TO BEING A LEVEL 77 DATA-BASE-DATA-NAME.

2. CHANGES HAVE BEEN MADE TO FIND, FORMAT V TO FIX THE FOLLOWING PROBLEM:


3. UNDER CERTAIN CIRCUMSTANCES BEFORE IMAGE RECOVERY MIGHT FAIL BECAUSE FORCE WRITING OF THE BEFORE IMAGE FILE WAS NOT DONE. THIS BUG HAS BEEN FIXED.

4. WHEN A RECORD OCCURRENCE WAS MODIFIED AND MADE SMALLER BY A CERTAIN AMOUNT, THE UNUSED PIECES OF THE RECORD REMAINED LINKED TO THE USED PIECES. ALL SUBSEQUENT FINDS AND FETCHS OF THAT RECORD OCCURRENCE WOULD RESULT IN AN MM17 ERROR (DELETED RECORD INVOLVED). THIS BUG HAS BEEN FIXED.
5. The following performance improvement has been made: a bit manipulation routine has been rewritten, considerably speeding up operations that involve sort, search, and calc keys.

6. Under certain unusual conditions command rewind would fail. Under other unusual conditions, update transactions may have been aborted unnecessarily. These bugs have been fixed.

7. Under certain circumstances, when before-image recovery was run after a soft crash it would complete successfully but leave the database in an inconsistent state. This bug has been fixed.

8. Occasionally, a particular type of concurrent update conflict caused an internal fatal error message to be printed. This concurrency conflict will now generate a non-fatal error message, with a contingency type of 21. (TAR #13346).

D. Clean-up Processor (CLUP)

1. CLUP used to close the command input file unit. It will now close all file units the user has open except for command input and command output (units 6 and 127 respectively). (TAR #23843).

E. DBUTL

1. Many new features have been added to DBUTL for Rev 17.3. DBMS>INFO for details.

F. Schema Editor (SCHED)

1. The schema editor has been significantly enhanced to allow the addition of new set types to a schema. See DBMS>INFO for details. In addition, a series of bug fixes have been made.

2. It was possible that SCHED might go into an infinite loop if a record had no items: this has been fixed.

3. A problem arose if additional areas were added to the within clause of a new record several times in the same SCHED session. This has been fixed.

4. SCHED was unable to decompile real literals in the change session: this has been fixed.

5. If a SCHED session was aborted, sometimes SCHED was unable to
G. DATABASE ADMINISTRATOR COMMAND PROCESSOR (DBACP)

1. DBACP WILL NOW CORRECTLY COMPUTE THE NUMBER OF AREAS, RECORDS,
SETS, AND LOCKS FOR THOSE SCHEMAS WHERE SOME OF THESE ENTITIES
ARE NOT INCLUDED (FOR EXAMPLE, IF SCHEMA HAD NO SETS OR LOCKS,
THEN THE CALCULATION OF THE NUMBER OF AREAS WOULD BE
INCORRECT).

* 394 (ED)

REV 17.3 -- ED -- DOCUMENTATION

THIS UPDATE DISCUSSES 12 "BUGS" WHICH HAVE BEEN FIXED FOR THE REV 17.3
EDITOR.

THE FOLLOWING "BUGS" HAVE BEEN FIXED FOR THE REV 17.3 EDITOR:

1) TYPING AN ASTERISK (*) ON A COMMAND LINE WITHOUT PRECEEDING IT BY
ANY COMMANDS WILL NO LONGER CAUSE THE EDITOR TO HANG. THE USER WILL
INSTEAD RECEIVE AN ERROR MESSAGE. (TAR 80916)

2) UNLOAD (AND DUNLOAD) WILL NOW CORRECTLY COMPRESS BLANK LINES WHEN
WRITING THEM TO A FILE. (TAR 25812)

3) SAVE HAS BEEN IMPLEMENTED SO A FILE CAN BE SAVED WITHOUT LEAVING THE
EDITOR.

4) THE EDITOR PRINTS THE NAME OF THE FILE JUST WRITTEN AFTER A SAVE OR
FILE COMMAND HAS BEEN EXECUTED, IF THE NAME WAS NOT SPECIFIED ON THAT
COMMAND.

5) QF (OR QUIT FINAL) HAS BEEN IMPLEMENTED. THIS ALLOWS THE USER TO
QUIT OUT OF A MODIFIED FILE WITHOUT BEING QUERIED IF IT'S OK.

6) IB (OR INSERT BEFORE) HAS BEEN IMPLEMENTED. THIS IS IDENTICAL TO AN
INSERT PRECEEDED BY AN N-1 THAT DOES NOT PRINT THE LINE.

7) NLOCATE HAS BEEN IMPLEMENTED. THIS IS ANALOGOUS TO NFININ ANYWHERE
ON THE LINE.

8) X WITHOUT A BUFFER NAME TO BE EXECUTED RE-EXECUTES THE LAST COMMAND
LINE.
9) OOPS HAS BEEN IMPLEMENTED. IT REINSTATES THE LAST LINE CHANGED THE WAY IT WAS BEFORE THE MODIFICATION, AT THE CURRENT LOCATION.

10) PPRINT HAS BEEN ADDED. IT PRINTS A RANGE OF LINES, RELATIVE TO THE CURRENT POSITION WITHOUT CHANGING YOUR CURRENT POSITION. THE FORMAT IS PP F L, WHERE F IS THE NUMBER OF LINES AWAY FROM THE CURRENT POSITION FROM WHICH TO START PRINTING AND L IS THE RELATIVE NUMBER OF LINES FROM THE CURRENT POSITION AT WHICH TO STOP PRINTING. IF ONLY ONE NUMBER IS SPECIFIED IF IT IS NEGATIVE IT IS THE FIRST NUMBER AND THE DEFAULT LAST NUMBER IS THE CURRENT LINE. IF ONLY ONE NUMBER IS SPECIFIED AND IT IS POSITIVE THAT IS WHERE TO STOP PRINTING AND THE FIRST LINE IS THE CURRENT LINE. PP WITHOUT ANY NUMBERS DEFAULTS TO -5 5 (OR PRINT FROM 5 LINES ABOVE THE CURRENT POSITION TO 5 LINES AFTER THE CURRENT POSITION.)

11) MODE AND SYMBOL NAMES NOW MATCH WITH LEFT UNIQUE SUBSTRING RATHER THAN HAVING TO TYPE THE ENTIRE NAME.

12) THE FIRST COUPLE WORDS OF THE STACK SEGMENT ARE INITIALLY ZEROED SO THE FORTRAN LIBRARY WILL GET RESET EACH INVOCATION.

* 395 (FORMS)

REV 17.3 -- DOCUMENTATION -- FORMS

THIS UPDATE DESCRIBES THE CHANGES MADE TO THE FORMS MANAGEMENT SYSTEM AT SOFTWARE REVISION 17.3. IT INVOLVES THE ADDITION OF A DEVICE DRIVER FOR THE P3234 TERMINAL, AND REMOTE LOGIN SUPPORT WITH THE INQUIRE PSEUDO-TERMINAL TYPE. IT ALSO INCLUDES A CHANGE IN THE SEGMENT NUMBER FOR THE SHARED FORMS LIBRARY.

1. P3234 DEVICE DRIVER

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THE P3234 DEVICE DRIVER (P3$IO) IS DESIGNED FOR A STOCK P3234 TERMINAL AND IS CAPABLE OF SUPPORTING FUNCTION KEYS.

THE DEVICE DIMENSIONS ARE 24 LINES BY 80 COLUMNS (1920 CHARACTERS). ALL CHARACTER POSITIONS EXCEPT THE LAST SEVEN, (74,24) THROUGH (80,24), ARE AVAILABLE FOR USE BY THE FORM DEFINITION.
<IF A FORM IS INVOKED WHICH HAS NO UNPROTECTED FIELDS (I.E. IT IS TOTALLY PROTECTED), THE BELL WILL RING AND THE RESULTS WILL BE UNPREDICTABLE.>

<WHEN AN INPUT OPERATION OCCURS, THE DATA ON THE SCREEN MAY BE TRANSMITTED TO THE COMPUTER BY PRESSING THE SEND KEY (TOP LEFT OF KEYBOARD). IF FUNCTION KEYS ARE ENABLED, STRIKING ANY OF THE 16 FUNCTION KEYS (F1 - F16 ALONG TOP OF KEYBOARD) WILL SEND THE DATA TO THE COMPUTER AND MAKE AVAILABLE TO THE APPLICATION PROGRAM THE NUMBER OF THE FUNCTION KEY DEPRESSED.>

<WHEN USER INPUT IS REQUIRED, ONE OF THE FOLLOWING PROMPT MESSAGES IS PRINTED IN THE LOWER RIGHT CORNER OF THE SCREEN.>

<ENTER OPERATOR INPUT IS REQUIRED - PRESS THE SEND KEY OR ONE OF THE FUNCTION KEYS WHEN DONE.>

<data? THE DATA IN THE FIELD TO WHICH THE CURSOR IS POSITIONED DOES NOT CONFORM TO ANY OF THE VALIDATION CRITERIA SPECIFIED IN THE FORM DEFINITION. RE-ENTER THE DATA AND DEPRESS THE SEND KEY.>

<size? TOO MANY CHARACTERS WERE SENT FOR A GIVEN FIELD IN THE FORM DEFINITION. THIS USUALLY INDICATES THAT A CHARACTER WAS LOST DURING TRANSMISSION. PRESS THE APPROPRIATE SEND OR FUNCTION KEYS AGAIN.>

<func? A FUNCTION KEY WAS PRESSED WHEN FUNCTION KEYS WERE DISABLED. RE-ENTER THE DATA AND PRESS THE SEND KEY.>

<NO SPECIAL SWITCH SETTINGS ARE REQUIRED WHEN A FCRRMS PROGRAM IS RUN ON THE P3234.>

<2. SHARED SEGMENT>

<IN PREVIOUS RELEASES, THE FORMS SHARED LIBRARY HAS BEEN IN SEGMENT NUMBER 2014, WITH THE COBOL AND MIDAS LIBRARIES. HOWEVER, THE ADDITION OF THE P3234 DRIVER IN THIS RELEASE (REV 17.3) HAS INCREASED THE SIZE OF THE FORKS LIBRARY. TO ALLOW ROOM FOR THIS, AND FOR ANY OTHER DEVICE DRIVERS WHICH USERS MAY WISH TO INCLUDE, A NEW SEGMENT NUMBER HAS BEEN ALLOCATED FOR FORMS - SEGMENT 2021. THEREFORE, FUTURE EXPANSIONS OF THE FORMS LIBRARY, EITHER BY PRIME OR BY USERS, WILL NOT AFFECT THE COBOL AND MIDAS SHARED LIBRARIES, WHICH WERE PREVIOUSLY OCCUPYING THE SAME SEGMENT AS FORMS.>
3. REMOTE LOGIN SUPPORT

THE USER MANUAL FOR REV 17 FORMS DOES NOT YET INCLUDE A DESCRIPTION OF
THE INQUIRE FACILITY. HERE THEN IS A REPEAT OF THE INFORMATION
PREVIOUSLY GIVEN AT REV 16.2.

FORMS WILL NOW FUNCTION PROPERLY ACROSS A REMOTE LOGIN USING X.25.
AS IT IS IMPOSSIBLE TO IDENTIFY THE TERMINAL (THROUGH THE USER
NUMBER) ON REMOTE LOGIN, USING A PUBLIC DATA NETWORK, OR USING
DIAL-UP LINES, A NEW PSEUDO-TERMINAL TYPE, "INQUIRE", HAS BEEN
DEFINED. WHEN A USER NUMBER IS ASSOCIATED WITH THIS
PSEUDO-TERMINAL TYPE (THROUGH FAP'S TCB COMMAND), THE OPERATOR IS
QUERIED AT PROGRAM EXECUTION TIME FOR THE ACTUAL TYPE OF THE
TERMINAL.

N.B. REMEMBER THAT IT IS NOT NECESSARY TO PUT THIS TERMINAL TYPE INTO
THE DEVICE CONTROL FILE (DCF.AS).

* 396

REV 17.3 -- DOCUMENTATION -- FTN

THE FOLLOWING BUG FIXES WERE MADE TO FTN AT REV 17.3:

BAD CODE WAS SOMETIMES GENERATED FOR ARRAY SUBSCRIPT EXPRESSIONS
INVOLVING PARENTHESES.

BAD CODE WAS GENERATED FOR AN INTEGER *2 ARRAY WITH UPPER BOUND 1.
(TAR'S 10438, 81571).

DUMMY ARRAYS WITH INTEGER *4'S IN THEIR DIMENSIONS OR IN THEIR
SUBSCRIPT EXPRESSIONS WERE NOT ALWAYS HANDLED CORRECTLY (TAR'S
80669, 81465).

AN IMPLICIT STATEMENT SHOULD AFFECT THE BOUNDS OF A DUMMY ARRAY
BUT DID NOT (TAR'S 24844, 24245).

THE COMPILER FAILED TO DETECT AN ARRAY WHICH IS GIVEN DIMENSIONS
TWICE IN ONE PROGRAM (TAR'S 12524, 12637, 12534, 25547).

THE DO-LOOP OPTIMIZER MISHANDED LOGICAL IF STATEMENTS (TAR 20312).

A QUOTED CHARACTER STRING WHICH CROSSES TO A CONTINUATION LINE
WAS PARSED WRONG (TAR'S 24568, 15453).
THE DO-LOOP OPTIMIZER (FOR R-MODE) SOMETIMES WOULD LEAVE OUT THE DBL INSTRUCTION.

THE EXPRESSIONS B**1 AND B**C WERE REJECTED BY THE COMPILER BECAUSE IT DID NOT ALLOW UNARY MINUS IN ALL CONTEXTS.

* 397

(FTNLIB)

REV 17.3 -- DOCUMENTATION -- R-MODE FORTRAN LIBRARY

ON EXPONENT UNDERFLOW, THE FORTRAN FLOATING POINT EXCEPTION HANDLER (FSFLEX) NOW STORES ZERO IN THE FLOATING POINT ACCUMULATOR (AS WELL AS IN THE RESULT VARIABLE) -- TAR 20375.

THIS CHANGE ALLOWS CALCULATIONS TO CONTINUE USING THE VALUE OF ZERO RATHER THAN THE VALUE THAT CAUSED THE EXCEPTION.

* 398

(VFTNLIB)

SUBJECT: FTN/F77 LIBRARY FOR REVISION 17.3

THIS DOCUMENT DESCRIBES THE COMBINED FTN/F77 LIBRARIES FOR REV. 17.3. MAJOR ENHANCEMENTS INCLUDE THE MERGING OF THE F77 AND FTN LIBRARIES, I/O MODIFICATIONS, THE ADDITION OF NEW ROUTINES, AND BUG FIXES.

MERGED LIBRARY

BEGINNING WITH REV. 17.2, BOTH THE SHARED (PFTNLB, S2050, AND IFTNLB) AND UNSHARED (NPFTNLB AND IFTNLB) VERSIONS OF THE FORTRAN LIBRARY CONTAIN THE COMPLETE FUNCTIONALITY REQUIRED BY PROGRAMS COMPILED BY EITHER F77 OR FTN. IN MERGING THE TWO LIBRARIES, THE FOLLOWING CHANGES WERE MADE IN THE LIBRARY STRUCTURE:

1. TWO VERSIONS OF FSIO, CALLED FSIOFTN AND FSIOF77, ARE INCLUDED IN THE LIBRARY. THESE CONTAIN ONLY THE ENTRY POINTS REQUIRED BY EACH TYPE OF FORTRAN RUN FILE. THEY SHARE THE SAME CONIOC TABLES AND IOCSS; HOWEVER, THE ROUTINES IN FSIOFTN READ AND WRITE RECORDS IN A COMPATIBLE FASHION, WHEREAS THE ROUTINES IN FSIOF77 READ AND WRITE VARIABLE-LENGTH RECORDS IN THE DEFAULT CASE. THE ROUTINES IN FSIOFTN IGNORE THE VARIABLE-LENGTH BIT (BIT 1) SET IN
EACH ENTRY OF THE CONIOC TABLES. TO ELIMINATE NAME CONFLICTS, F77
GENERATES A CALL TO FS$CB77 TO DUMP THE I/O BUFFER AT THE END OF A
TRANSFER, INSTEAD OF A CALL TO FS$CB. THE FOLLOWING ENTRY POINT
NAMES ARE PRESENT IN FS$I077:

FS$IFR - INITIALIZE FORMATTED READ
FS$IBR - INITIALIZE UNFORMATTED READ
FS$ILD R - INITIALIZE LIST-DIRECTED READ
FS$INR - INITIALIZE NAMELIST READ
FS$IFW - INITIALIZE FORMATTED WRITE
FS$IBW - INITIALIZE UNFORMATTED WRITE
FS$ILDW - INITIALIZE LIST-DIRECTED WRITE
FS$INW - INITIALIZE NAMELIST WRITE
FS$IIFR - INITIALIZE INTERNAL FORMATTED READ (DECODE)
FS$IIFW - INITIALIZE INTERNAL FORMATTED WRITE (ENCODE)
FS$ILD - INITIALIZE INTERNAL LIST DIRECTED READ
FS$XFR - DATA TRANSFER
FS$CB77 - TERMINATE LIST

2. THE VARIABLE LENGTH I/O UTILIZED BY F77 PROGRAMS HAS CAUSED THE
IOCS ROUTINES TO BE ENHANCED AS FOLLOWS:

A. THE PL1G LIBRARY ROUTINE PSRLIN HAS HAD A NEW ENTRY POINT,
FSRLIK ADDED TO IT WHICH IS CALLED BY FS$I077. THIS ROUTINE
BYPASSES THE USE OF RDLINS AND I$AD07.

B. A NEW I$BD07 ROUTINE, CALLED I$BD7X, HAS BEEN ADDED TO THE
LIBRARY. THIS IS CALLED BY FS$I077 DIRECTLY FOR BINARY Reads FROM
DISK, ELIMINATING THE CALL TO RDBIN.

THESE TWO ROUTINES WERE MADE NECESSARY NOT ONLY BY THE USE OF
VARIABLE-LENGTH I/O IN FS$I077, BUT ALSO BY ENHANCEMENTS IN THE BUFFER
BOUNDARY CHECKING DISCUSSED BELOW.

3. THE FORTRAN STATEMENT "BACKSPACE" IS NOW SUPPORTED FOR DISK AND
MAGTAPE IN BOTH FTN AND F77 AS OF REV. 17.2. PRIOR TO THIS REV. FTN
SUPPORTED "BACKSPACE" FOR MAGTAPE ONLY.

4. AS OF REV. 17.2 THE FORTRAN STATEMENT "ENDFILE" WORKS ACCORDING TO
THE FORTRAN-77 STANDARD. PRIOR TO REV. 17.2 FTN TOOK "ENDFILE" TO
MEAN "CLOSE FILE" -- IT CLOSED DISK FILES, WROTE AN END-OF-FILE MARK,
ANDREWOUND TAPE UNITS. "ENDFILE" NOW WRITES AN END-OF-FILE MARK AND
POSITIONS AFTER IT. IT DOES NOT CLOSE DISK FILES OR REWIND TAPE UNITS.

BUFFER SIZE AND BOUNDARY CHECKING

IN FTN PROGRAMS WHICH ATTEMPT I/O, THERE HAS CLASSICLY BEEN NO CHECKING
OF F$IOBF OVERFLOW. IN GOING TO A VARIABLE-LENGTH RECORD FORMAT REQUIRED BY ANS FORTRAN-77, IT WAS FOUND NECESSARY TO PUT CHECKS INTO F$IO77 FOR AN END-OF-BUFFER CONDITION. THE SPECIFIC ENHANCEMENTS TO THE LIBRARY ARE AS FOLLOWS:

1. A GLOBAL RUN-TIME VARIABLE CALLED F$IOSZ (FOUND IN THE F$IOBF SOURCE MODULE) CONTAINS THE CURRENT LENGTH OF F$IOBF. IN THE UNSHARED LIBRARY, IT IS SET TO 128, WHILE IN THE SHARED LIBRARY ITS VALUE IS 16K-1. F$IO77, PLUS F$RLIN AND ISBD7X MENTIONED ABOVE, USE THE VALUE IN F$IOSZ TO CHECK FOR END OF BUFFER CONDITIONS.

2. THE SIZE OF F$IOBF IN THE SHARED AND UNSHARED VERSIONS OF THE LIBRARY MIRRORS THE DEFAULT VALUES OF F$IOSZ, NAMELY, 128 WORDS IN THE UNSHARED VERSION, AND 16K-1 WORDS IN THE SHARED VERSION. SINCE 16K-1 IS THE MAXIMUM BUFFER SIZE THAT F$IO77 (AND F$IOFTN) CAN TRANSFER, SHARED LIBRARY USERS NEED NEVER WORRY ABOUT I/O BUFFER OVERFLOW FOR RECORD SIZES UNDER 16K-1. FTN PROGRAMS USE THE SAME F$IOBF, BUT ARE NOT AWARE OF F$IOSZ, AND NO CHECKING OF BUFFER OVERFLOW IS DONE. IN BOTH LIBRARIES, RECORDS LARGER THAN F$IOSZ CAN BE WRITTEN; HOWEVER, SUCH RECORDS WILL BE WRITTEN OUT AS MULTIPLE RECORDS. Thus writing a 16K RECORD USING THE SHARED LIBRARY WILL RESULT IN TWO RECORDS ACTUALLY BEING WRITTEN, THE FIRST CONTAINING 16K-1 WORDS, AND THE SECOND CONTAINING ONE WORD - IF VARIABLE SIZE RECORDS ARE BEING OUTPUT (AVAILABLE ONLY WITH F77) - OR 16K-1 WORDS IF FIXED LENGTH RECORDS ARE BEING WRITTEN.

F77 USERS LOADING THEIR PROGRAMS WITH THE UNSHARED LIBRARY WHO WISH TO PROVIDE THEIR OWN F$IOBF MUST NOW PROVIDE THEIR OWN F$IOSZ IF THEY WISH TO CHANGE THE BUFFER SIZE. THIS IS DONE THE SAME WAY AS THE F$IOBF SOURCE MODIFICATION:

```
INTEGER*2 F$IOSZ,BUFSIZ(N)
COMMON /F$IOSZ/F$IOSZ
COMMON /F$IOBF/BUFSIZ
DATA F$IOSZ/N/
```

WHERE N IS THE SIZE OF F$IOBF. F$IOSZ CAN BE USED BY THE F77 PROGRAMMER FOR HIS OR HER OWN CHECKING AS WELL. F77 PROGRAMS USING THE SHARED LIBRARY HAVE NO ACCESS TO F$IOBF OR F$IOSZ DIRECTLY, BUT SINCE THE SIZE OF F$IOBF IN THE SHARED LIBRARY IS THE MAXIMUM VALUE ALLOWED THEY SHOULD HAVE NO REASON TO TOUCH EITHER OF THEM.

F77 RUN TIME ERRORS

THE F77 I/O ROUTINES CURRENTLY OUTPUT AN ERROR CODE AT THE USER TERMINAL AT RUNTIME RATHER THAN A LINE OF TEXT. THESE ERROR CODES MEAN THE FOLLOWING:
100  BAD LUTBL ENTRY
101  NO DRIVER FOR DEVICE
102  WRONG FILE TYPE
103  FORMAT/DATA MISMATCH
104  BAD FORMAT STATEMENT
105  BAD DOPE VECTOR
106  I/O BUFFER OVERFLOW

CODES 100, 104, AND 105 CAN INDICATE THAT THE PROGRAM IS WRITING OVER ITSELF OR PARTS OF THE LIBRARY; 104 AND 105 COULD ALSO BE OUTPUT IN THE UNLIKELY EVENT OF COMPILER AND/OR LIBRARY ERROR. HOWEVER, ODDS ARE THAT USER PROGRAM IS ITSELF IN ERROR, AND USERS ARE CAUTIONED TO CHECK THEIR PROGRAMS CAREFULLY BEFORE CONCLUDING THAT THE SYSTEM IS A FAULT.

NEW ROUTINES

1. ADDITION OF V-MODE AND I-MODE FORTRAN-77 SUPPORT ROUTINES. MANY OF THESE ROUTINES ARE ALSO USED BY THE PL1G COMPILER. FTN AND F77 USERS NEED ONLY DO AN LI (OR LI NPFTNLB) TO LOAD THEIR PROGRAMS WHEN USING THESE LIBRARIES. THESE ROUTINES WERE ADDED AT REV. 17.2.

2. THE FOLLOWING ROUTINES WERE ADDED AT REV. 17.2 TO SUPPORT FORTRAN-77 I/C:

F$BKSP - BACKSPACE STATEMENT
F$ENDF - ENDFILE STATEMENT
F$REW - REWIND STATEMENT
F$OPEN - OPEN STATEMENT
F$CLOSE - CLOSE STATEMENT
F$INQU - INQUIRE BY UNIT STATEMENT
F$INQF - INQUIRE BY FILE STATEMENT
F$STOP - STOP STATEMENT
F$PAUS - PAUSE STATEMENT

3. F$SRPWR (WHICH RAISES A REAL*4 NUMBER TO A REAL*4 POWER) WAS ADDED TO THE LIBRARY AT REV. 17.3 FOR USE BY F77, PL1G, AND FULL PL/1.

4. SEVERAL (BUT NOT ALL) ROUTINES NEEDED FOR FULL PL/1 WERE ADDED TO THE LIBRARY AT REV. 17.3.

BUG FIXES FOR REV. 17.2

1. THE FOLLOWING PRIMOS DYNTS HAVE BEEN ADDED TO THE

PL/P USERS NO LONGER NEED TO SEARCH THE PL/P LIBRARY (PLPLIB). THEY MAY NOW SEARCH THE FORTRAN LIBRARY INSTEAD (OR EXCLUSIVELY).

2. THE FOLLOWING PRIMOS DYNTS WERE DELETED FROM THE LIBRARIES: TA$ AND SEGACS.

3. THE FOLLOWING FTN SUPPORT ROUTINES WERE SLIGHTLY SPED UP BY THEIR USE OF THE NEW SHORT CALLED ($X) MATH FUNCTIONS: ALOG10, ATAN2, DLOG10, TANH, E$62, E$66, E$22.

4. DINT (FOR FTN) WAS SPED UP SLIGHTLY.

5. SINCX (CALLED ONLY FROM FTN PROGRAMS) WAS REWRITTEN IN ORDER TO INCREASE ITS ACCURACY. THIS ROUTINE IS SIGNIFICANTLY FASTER THAN ITS PREDECESSOR. (TAR 22787)

6. REMOVED UNNEEDED LIST COMMON IN ERRST$.

7. OS$AA01 SUPPRESS SINGLE SPACE AT END OF LINE.

8. CSQRT (FOR FTN) WAS MODIFIED TO ALWAYS RETURN A RESULT THAT IS WITHIN THE PRINCIPAL RANGE OF THE FUNCTION.

BUG FIXES FOR REV. 17.3

1. ERRORS WERE CORRECTED IN THE FOLLOWING I-MODE F77 FUNCTIONS: SHFT, LT, RT, LS, RS, AND CDLOG, CDSIN, AND CDCOS. (I-MODE SUPPORT FOR F77 WAS ADDED TO THE LIBRARY AT REV. 17.2, BUT THE COMPILER DID NOT GENERATE I-MODE CODE UNTIL REV. 17.3)

2. ERRORS WERE CORRECTED IN THE FOLLOWING V-MODE F77 FUNCTIONS: CDLOG, CDSIN, CDCOS, AND ALL ALLOWED INTRINSIC FUNCTIONS MAY BE PASSED AS PARAMETERS TO FORTRAN-77 SUBROUTINES.

3. THE LIST OF ENTRIES INTO THE SHARED FORTRAN LIBRARY,
CONTAINED IN THE FILE FTDYNT, WAS EXPANDED TO CONTAIN THE
NAMES OF ALL SHARED SHIFT TABLES. (THIS WAS NECESSARY FOR
SUPPORT OF FULL PL/1.)

4. F$IO77 AND I$BD7X WERE MODIFIED TO FIX A BUG IN THE DIRECT
ACCESS OF FILES AND A BUG INVOLVING THE POSSIBLE
MISPOSITIONING OF RECORDS DURING UNFORMATTED FILE ACCESS.

5. O$A06 AND O$AP02 WERE MODIFIED SO THAT THEY NOW OUTPUT A
BLANK RECORD WHEN THEY ARE CALLED WITH A COUNT WORD OF ZERO.
PRIOR TO REV. 17.3 THESE ROUTINES TRIED TO OUTPUT ONE SEGMENT
OF DATA WHEN CALLED WITH A COUNT WORD EQUAL TO ZERO.

6. MINOR TYPOS WERE CORRECTED IN THE FTN SUPPORT ROUTINES
DEXP$X AND DEXP.

7. F$IOFTN WAS CHANGED TO:

A. ALLOW OUTPUT OF THREE AND FOUR DIGIT EXPONENTS AS
FOLLOWS (TAR 25269):

EXPONENTS WHOSE MAGNITUDE IS IN THE RANGE 100 <= EXPONENT
< 1000 WILL BE OUTPUT BY NOT PRINTING THE "E" (OR "D")
BEFORE THE EXPONENT, AND USING THAT SPACE FOR THE SIGN OF
THE EXPONENT. THE SIGN OF THE EXPONENT WILL ALWAYS BE
OUTPUT IN THIS FORM, AND EXPONENTS OUTPUT IN THIS MANNER
MAY BE READ WITH FORTRAN I/O STATEMENTS. EXAMPLES OF
THIS FORM ARE "1.2+456" AND "1.2-456", WHICH SIGNIFY THE
NUMBERS 1.2*(10**456) AND 1.2*(10**(-456)) RESPECTIVELY.

EXPONENTS WHICH ARE LARGER IN MAGNITUDE THAN 999 WILL BE
OUTPUT WITH AN INDICATION OF OVERFLOW. THUS, 1.2$456
SIGNIFIES THAT A POSITIVE EXPONENT, NOTE THE "$" SIGN,
WHOSE FIRST THREE DIGITS (OF FOUR) ARE "456" WAS OUTPUT.
SIMILARLY, 1.2-456 SIGNIFIES THAT A NEGATIVE EXPONENT,
NOTE THE "-" SIGN, WHOSE FIRST THREE DIGITS (OF FOUR) ARE
"456" WAS OUTPUT. SINCE THIS FORM OF OUTPUT IS INTENDED
to denote an error in output format, it cannot be read
with FORTRAN I/O STATEMENTS. FOUR DIGIT EXPONENTS CAN
ONLY BE OUTPUT USING FORTRAN-77'S "EW.DEE" FORMAT. THIS
FORMAT IS NOT AVAILABLE TO FTN PROGRAMS.

FTN'S OUTPUT OF THREE AND FOUR DIGIT EXPONENTS (AS
DESCRIBED ABOVE) IS IDENTICAL TO F77'S. TWO DIGIT
EXPONENTS ARE STILL OUTPUT BY FTN PROGRAMS AS THEY ALWAYS
HAVE BEEN; NAMELY, WITH AN "E", OR "D", FOLLOWED BY A
SPACE, IF A POSITIVE EXPONENT, OR A "-" SIGN, IF A
NEGATIVE EXPONENT, FOLLOWED BY THE TWO DIGITS OF THE
EXPONENT. FOR EXAMPLE, "1.2E 34" AND "1.2E-34" REPRESENT
1.2*(10**34) and 1.2*(10**(-34)) respectively. F77's output of two digit exponents is identical to FTN's except that a "+" sign is always output for a positive exponent (instead of a space) after the "E" or "D" of the exponent. FTN users who desire this functionality may reassemble F$IOFTN and rebuild their FORTRAN LIBRARY. See paragraph 1 below for details.

B. Free format decode of "xx" into an integer*2 variable now gives an error.

C. A slash may now be used to terminate a record in list directed input. (TAR 13550)

D. Implied repeat of groups in a format statement now works correctly. (TAR 12577)

E. Free format input of a non-numeric character when reading into a real variable now gives an error. (TAR 81771)

F. Free format input of real numbers input in exponential form with a space after the "E" or "D" of the exponent (rather than a "+") sign) is now allowed.

G. An assembly option has been added so that trailing blanks in input fields may now be treated as zeroes rather than being ignored. Thus, the number "2 <SPACE> <SPACE> <SPACE>" read in I4 format can be interpreted as the number 2000 rather than the number 2. For compatibility with prior FTN programs, F$IOFTN is assembled to ignore trailing blanks on input. F77 also ignores trailing blanks on input unless the file is opened with "BLANK='ZERO'" specified or a format statement uses the "BZ" descriptor. See paragraph I below for details. (TAR 22000)

H. An assembly option has been added so that a "/" as the last item in a format statement skips one line. Thus, "WRITE(1,’(//)’)" can either skip one line or two (since the closing ")" of the format statement causes a blank line to be output in either case). For compatibility with prior FTN programs, F$IOFTN is assembled to skip one line. Users who wish two lines skipped may reassemble F$IOFTN as described in paragraph I. F77 always skips two lines. (TAR's 25251 and 25757)

I. F$IOFTN may be reassembled to change certain defaults by setting the B-register to the indicated octal values:

B-register = 2 to treat trailing blanks as zeroes
B-register = 4 to print a plus sign after "D" and "E" in
EXPONENTIAL OUTPUT
B-REGISTER = 10 FOR "/" TO SKIP ONE LINE IF AT THE END OF A FORMAT STATEMENT

THE ABOVE OPTIONS MAY BE COMBINED WITH EACH OTHER.
SELECTION OF ONE OR MORE OF THESE OPTIONS IS DONE BY USING THE COMMAND LINE FORM "PMA FILENAME 2/N" WHERE N EQUALS THE OCTAL VALUE DESIRED. THE SUGGESTED WAY TO REBUILD THE FORTRAN LIBRARY IS TO EDIT THE FILE C_COMPILE IN THE MASTER DISK UFD VFTNLIB>SOURCES SO THAT A "2/N" (WHERE "N" IS THE OCTAL VALUE DESIRED) IS ADDED TO THE LINE WHICH ASSEMBLES F$1OFTN, AND THEN USE THE FILE C_VFTNLIB IN THE MASTER DISK UFD VFTNLIB TO REASSEMBLE AND REBUILD THE FORTRAN LIBRARY. THE FORTRAN LIBRARY ON THE MASTER DISK CONTAINS A COPY OF F$1OFTN WHICH WAS BUILT WITH ALL BITS IN THE B-REGISTER EQUAL TO ZERO.

8. FSALFA0.PMA, FSALFA1.PMA, ISARFA0.PMA, AND ISARFA1.PMA WERE MODIFIED SO THAT LOGICAL*1 AND CHARACTER VARIABLES IN LONG COMMON BLOCKS ARE ACCESSED CORRECTLY ACROSS SEGMENTS BY PL1, PL16, AND F77.

SUBJECT: FORTRAN-77 FOR REV 17.3

THIS MEMO DESCRIBES THE OPERATING PROCEDURES OF THE NEW FORTRAN-77 COMPILER. IN PARTICULAR, THE COMMAND LINE OPTIONS OF THE NEW COMPILER ARE LISTED AND NOTES ON THE USE OF THE COMPILER ARE FURNISHED. THIS INFORMATION WILL ALLOW USERS ALREADY FAMILIAR WITH FORTRAN-77 TO COMPILE, LOAD, AND EXECUTE THEIR PROGRAMS. USERS NOT FAMILIAR WITH THE FORTRAN-77 LANGUAGE SHOULD READ THE FORTHCOMING USER'S MANUAL.

1 F77 COMPILER OPTIONS

F77 IS THE FORTRAN-77 COMPILER. IT IS INVOKED BY THE COMMAND:

F77 NAME [OPTIONS]

OPTIONS ARE PRECEDED BY A '-'. THE NAME MAY BE A PATH NAME, BUT NEITHER IT NOR ANY FILE NAME MADE FROM IT MAY EXCEED 32 CHARACTERS.
THE COMMAND LINE SYNTAX IS THE SAME AS OTHER PRIME COMPILERS: THE
-S, -B, AND -L OPTIONS ARE ALL SUPPORTED.

THE FOLLOWING OPTIONS ARE SUPPORTED:

-**XREF** — PRODUCE A CROSS-REFERENCE LISTING. (IMPLIED L)
-**NOXREF** — NO CROSS REFERENCE.
-**OFFSET** — PRODUCE AN OFFSET MAP IN L_NAME (IMPLIED L)
-**EXPLIST** — PRODUCE A PSEUDO-ASSEMBLY LISTING OF THE GENERATED
  CODE IN L_NAME (IMPLIED L)
-**OPTIMIZE** — EXECUTE THE OPTIMIZER PHASE
-**NOOPTIMIZE** — DON'T USE THE OPTIMIZER
-**STATISTICS** — PRINT OUT STATISTICS ABOUT THE COMPILATION
-**RANGE** — COMPILE CODE TO CHECK SUBSCRIPT AND SUBSTR RANGES.
-**UPCASE** — MAP LOWER CASE TO UPPER CASE IN IDENTIFIERS
-**LCASE** — UPPER AND LOWER CASE ARE DISTINCT IN IDENTIFIERS
-**SILENT** — SUPPRESS LEVEL 1 (WARNING) ERROR MESSAGES
-**DEBUG** — PRODUCE A FULL DEBUGGER (DBG) SYMBOL TABLE.
-**64V** — PRODUCE V-MODE CODE
-**BIG** — DENOTES THAT ARRAYS MAY BE LARGER THAN 1 SEGMENT
-**NOBIG** — ASSUMES ARRAYS ARE LESS THAN ONE SEGMENT
-**PRODUCTION** — PRODUCE "PRODUCTION" DEBUGGER SYMBOL TABLE
-**INL** — MAKE INTEGER*4 THE DEFAULT
-**INTS** — MAKE INTEGER*2 THE DEFAULT
-**LOGL** — MAKE LOGICAL*4 THE DEFAULT
-**LOGS** — MAKE LOGICAL*2 THE DEFAULT
-**DO1** — CAUSES ALL DO LOOPS TO BE AT LEAST ONE TRIP
-**DYNM** — ALLOCATE LOCAL VARIABLES ON THE STACK.
-**SAVE** — ALLOCATE LOCAL VARIABLES IN STATIC SPACE.
-**ERRTTY** — WRITE ERROR MESSAGES TO THE TERMINAL.
-**ERRLIST** — CREATE AN ERROR ONLY LISTING FILE.
-**XREFS** — MAKE A CROSS REFERENCE IN WHICH VARIABLES THAT ARE
  DECLARED BUT NOT USED ARE NOT PRINTED OUT.
-**321** — GENERATE 321 MODE CODE.

THE DEFAULT OPTIONS AS DISTRIBUTED ARE '-B YES -L NO -64V -OPTIMIZE
-UPCASE -INL -LOGL -NOBIG -DYNM -ERRTTY '. THE DEFAULT OPTIONS MAY
BE CHANGED BY USE OF THE PROGRAM F77DF, WHICH IS FOUND IN THE TOOLS
UFD.

EXAMPLE:

F77 FOO -L YES -INTS

WILL COMPILE FOO TO PRODUCE AN OBJECT FILE NAMED B_FOO AND A LISTING
FILE NAMED L_FOO. INTEGERS WILL BE ASSUMED TO BE INTEGER*2, LOGICALS
WILL BE ASSUMED TO BE LOGICAL*4, AND THE CODE WILL BE OPTIMIZED.

EACH COMPILATION PRODUCES TEMPORARY FILES (NAMED "TSXXXX") IN THE
CURRENT WORKING DIRECTORY. THESE FILES ARE NORMALLY DELETED AT THE
END OF THE COMPILATION.
2 ERROR MESSAGES

ERROR MESSAGES ARE WRITTEN TO THE TERMINAL WHEN THE -ERRTTY OPTION IS ON, AND ARE ALSO DUMPED TO THE LISTING FILE. THE FILE "FILENAME.ERROR" IS NO LONGER CREATED. FOUR LEVELS OF ERRORS ARE REPORTED: LEVEL 1 IS A WARNING, LEVEL 2 IS AN ERROR THAT HAS BEEN FIXED, LEVEL 3 IS AN ERROR THAT HAS NOT BEEN FIXED, AND LEVEL 4 IS AN ERROR THAT PREVENTS CONTINUED COMPILATION. ANY ERROR OF LEVEL 3 PREVENTS OPTIMIZATION AND CODE GENERATION IF DETECTED PRIOR TO THOSE PHASES.

3 PROGRAM LOADING

AT REV. 17.3 THE F77 COMPILER OUTPUTS BOTH I-MODE AND V-MODE CODE. THUS, THE SEGMENTED LOADER (SEG) MUST BE USED TO LOAD THE OBJECT MODULES PRODUCED BY THE COMPILER. ONLY THE STANDARD LIBRARY IS NEEDED.

4 MISCELLANEOUS NOTES

4.1 CROSS-REFERENCE OPTION

IT IS UNLIKELY THAT THE CROSS-REFERENCE OPTION WILL CAUSE THE COMPILER'S VIRTUAL SYMBOL SPACE TO OVERFLOW FOR VERY LARGE SOURCE PROGRAMS, BECAUSE EXTERNAL PROCEDURES WITHIN A SOURCE FILE ARE NOW COMPiled SEPARATELY.

4.2 DBG INTERFACE

THE LINE NUMBERS GIVEN IN DBG REFER TO THE LINE NUMBERS FOUND IN THE SOURCE FILE. THUS ANY CODE IN $INSERT FILES CAN NOT BE SEEN BY THE DEBUGGER. SINCE COMPILATION IN DEBUG MODE PRODUCES EXTRA INFORMATION IN THE BINARY AND SEG FILES, USE OF THE "-DEBUG" OPTION FOR LARGE PROGRAMS MAY REQUIRE A SIGNIFICANT AMOUNT OF DISK SPACE.

AT REV 17.3, USE OF DBG ON PROGRAMS IN WHICH MULTIPLE EXTERNAL PROCEDURES EXIST IN A SINGLE SOURCE FILE IS SUPPORTED.

4.3 SEGMENT USAGE
COMPILATION OF F77 PROGRAMS USES SEGMENTS 4004-4007 AND 4027. IN USER PROGRAMS SEGMENTS 4027 THROUGH 4010 ARE USED IN DESCENDING ORDER AS THE SYSTEM FREE STORAGE POOL (IN WHICH ALLOCATE AND FREE REQUESTS OPERATE AND IN WHICH SOME COMPILER-GENERATED TEMPORARIES ARE ALLOCATED).

* 401

(LOGPRT)

PLEASE SEE LOGPRT>INFO

* 402

(MAGNET)

REV 17.3 — MAGNET — DOCUMENTATION

MAGNET REV 17.3 FIXES TAR #25766 — READ OPERATIONS NOW RESULT IN CORRECT RECORD AND LINE COUNTS BEING PRINTED.

* 403

(MAGSAV/RST)

REV 17.3 — DOCUMENTATION — MAGSAV/RST

MAGSAV/MAGRST

1) THE MAGSAV PROGRAM HAS BEEN CHANGED SO THAT A SUB-UFD CALLED MFD CAN BE SAVED BY TYPING MFD. IF THE USER IS ATTACHED TO A TOP-LEVEL MFD, THE WHOLE MFD WILL BE SAVED (EXACTLY AS BEFORE). HOWEVER, IF THE USER IS NOT ATTACHED TO A TOP-LEVEL MFD, THE FOLLOWING MESSAGE IS OUTPUT:-

WARNING—SAVING FILE OR SUB-UFD CALLED MFD

THE PROGRAM THEN LOOKS FOR AN ENTRY IN THE CURRENT UFD CALLED MFD.

NOTE THAT IF A SUB-UFD CALLED MFD IS RESTORED WHILE ATTACHED TO A TOP-LEVEL MFD, ANY FILES IN THE UFD (AND IN ANY SUB-UFD'S CALLED MFD) WILL ALL BE RESTORED AS FILES IN THE TOP-LEVEL MFD.

IF AN ATTEMPT IS MADE TO RESTORE A FILE CALLED MFD WHILE ATTACHED TO A TOP-LEVEL MFD, THE MESSAGE:-

FILETYPE MISMATCH, FILE OMITTED: MFD
IS OUTPUT AND THE FILE IS NOT RESTORED.

2) A BUG INTRODUCED AT REV 1.2 HAS BEEN FIXED. IT CAUSED TAPES TO RUN OFF THE REEL WHILE RESTORING.

END-OF-FILE MARKS ARE ALSO NOW WRITTEN AT THE END OF A PHYSICAL REEL. THEREFORE, IF THE BLOCK WHICH MARKS END OF REEL IS MISSED (FOR EXAMPLE, THE TAPE IS BAD AT END OF REEL), AN END-OF-FILE MARK WILL BE DETECTED, AN ERROR MESSAGE OUTPUT AND END OF PHYSICAL REEL ASSUMED. THIS IS ALSO IN ORDER TO STOP TAPES RUNNING OFF END OF REEL.

3) BOTH MAGSAV AND MAGRST WILL NO LONGER ACCEPT A .CR. IN ANSWER TO THE 'TAPE UNIT NO:' PROMPT. ONLY A NUMBER FROM 0 TO 7 WILL BE ACCEPTED; PREVIOUSLY A .CR. WAS TAKEN AS ZERO.

* 404 (MAKE)

REV 17.3 -- MAKE -- DOCUMENTATION

REV 17.3 MAKE HAS AN ADDITIONAL QUESTION WHICH ASKS THE USER TO SELECT THE BAUD RATE. THE DEFAULT IS 300 BAUD.

* 405 (MIDAS)

REV 17.3 -- DOCUMENTATION -- MIDAS

REV 17.3 CF MIDAS IS A 'BUG FIX' RELEASE. NO NEW FUNCTIONALITY HAS BEEN ADDED OR OLD FUNCTIONALITY DROPPED. BECAUSE OF THE NUMBER OF BUG FIXES IN THIS REV. THAT DID NOT MAKE IT IN TIME FOR REV. 17.2, RELEASE OF THE RE-WRITTEN UTILITIES HAS BEEN DELAYED AND IS CURRENTLY PLANNED FOR REV. 17.4. THE BUG FIXES IN THIS REV. INCLUDE:

0 TAR 12659
THE SYMPTOM WAS THE RECEIPT OF 'MIDAS ERROR 20' WHEN ADDING AN ENTRY AFTER SEVERAL ENTRIES HAD BEEN DELETED. WHAT WAS HAPPENING WAS THE 'STOPPER' ENTRIES WERE BEING PLACED IN THE WRCNG SPOT.

0 TAR 14758
AFTER MPACK'ING A FILE, ADDING AN ENTRY TO THE FILE MIGHT CAUSE MIDAS TO LOOP UNTIL THE DISK IS FULL. THE PROBLEM WAS THE MPACK WAS SHRINKING DOWN THE SIZE OF THE ROOT BLOCK SO NOTHING COULD BE
0 TAR 21043
CURRENCY CHECKS IN MIDAS DID NOT ALLOW FOR LARGE MIDAS FILES, WHERE
THE DATA FILE EXPANDED PAST SEGMENT 256. THE PROBLEM WAS 8 BITS
INSTEAD OF 10 BITS OF THE SEGMENT NUMBER WAS BEING PRESERVED.

0 TAR 21258
SEE TAR 21043.

0 TAR 21615
SYMPTOM IS THAT A MIDAS ERROR 52 OCCURS WITH A DIRECT ACCESS FILE
WHEN ADDING TO THE PRIMARY KEY. THE FILE IN FACT ONLY HAS INDEX
SUBFILE 2 FULL AND SUBFILE 3 -10 AVAILABLE. THE CAUSE IS THE USE
OF THE (NEGATIVE) DIRECT ACCESS FLAG INSTEAD OF '0' (PRIMARY INDEX)
IN CHECKING THE SIZE OF THE INDEX BEING EXPANDED.

0 TAR 21722 (REV. 17.2)
MANY USERS ARE APPARENTLY INSERTING MIDAS>KPARAM INTO THEIR
PROGRAMS. THIS IS BAD PRACTICE. THEY SHOULD BE USING SYSCOM>PARM.K
THIS ALSO MEANS THAT KPARAM HAS TO BE COPIED TO MIDAS FROM
MIDAS>SOURCE.

0 TAR 21724
SEARCHES FOR THE NEXT GREATER ENTRY VIA FINDS WITH FLSNXT SET ON A
PARTIAL KEY FAILED BY RETURNING THE CURRENT OR PREVIOUS ENTRY. THIS
WAS DUE TO NOT EXAMINING THE NEXT LAST LEVEL INDEX BLOCK TO THE
RIGHT IN LOOKING FOR THE DESIRED ENTRY.

0 TAR 21726
WHEN FLSUSE WAS SPECIFIED, MIDAS DID NOT CHECK THAT THE CURRENT
INDEX POSITION DESCRIBED BY THE USER ARRAY WAS THE SAME INDEX AS THE
ONE THE USER WAS TRYING TO DO AN OPERATION ON. THIS WAS FIRST
NOTICED IN DELETS OPERATIONS THAT PREVIOUSLY WORKED.

0 TAR 21813
SEE TAR 14758.

0 TAR 21918
MPACK'ING A FILE THAT CONTAINED LOCKED RECORDS WOULD TRASH THE FILE,
EVEN IF THE FILE WERE BEING MPACK'ED TO A NEW FILE. THE CODE TO
UNLOCK RECORDS WAS FIXED AND MPACK WILL NOT UNLOCK RECORDS IN THE
OLD FILE IF IT IS BEING MPACK'ED TO A NEW FILE.

0 TAR 22451 (REV. 17.2)
RPG HAD PROBLEMS WITH UPDAT$ AND LOCK$. FIXED.

0 TAR 23802
FIND$ ON A PARTIAL KEY DID NOT WORK. SEE TAR 21724.

0 TAR 238C3
FIND$ OPERATIONS WITH FLSPLW SET TO GET THE NEXT INDEX ENTRY ON A
PARTIAL KEY SEARCH DID NOT WORK. SEE TAR 27124 AND TAR 23802.

0 TAR 24263 (REV. 17.2)
A KEY SIZE OF 256 BITS COULD OVERFLOW AND SET THE WRONG BIT IN CREATK.

0 PSF 27192
SEE TAR'S 21724, 23802, 23803.

0 PSF 27194
MIDAS DOES NOT INHIBIT BREAK'S FOR ALL OPERATIONS. THIS HAS BEEN FIXED SO THE KXS$LCK AND KXS$ULK WHICH GET AND RELEASE THE MIDAS 'LOCK' DISABLE AND ENABLE BREAK'S.

* 406
(MSCRTS)

REV 17.3 -- MSORTS -- DOCUMENTATION

REV 17.3 MSORTS INCLUDES THE FOLLOWING BUG FIX. THE MSORTS LIBRARY ROUTINE RADXEX DID NOT WORK IF THE SORT KEY CROSSED A WORD BOUNDARY. THIS PROBLEM USUALLY RESULTED IN AN ILLEGAL INSTRUCTION ERROR.

407
(PSFAV/RST)
INITIAL REV 17 RELEASE. SEE PHYSR>INFO

* 408
(PL16)

PL1G COMPILER FOR REV. 17.3

SUBJECT: PL1G COMPILER FOR REV. 17.3

THIS MEMO DESCRIBES THE OPERATING PROCEDURES OF THE PL1G COMPILER. IN PARTICULAR, THE COMMAND LINE OPTIONS OF THE COMPILER ARE LISTED AND NOTES ON THE USE OF THE COMPILER ARE FURNISHED. THIS INFORMATION WILL ALLOW USERS ALREADY FAMILIAR WITH PL/I SUBSET G TO COMPILE, LOAD, AND EXECUTE THEIR PROGRAMS.
1.1 COMMAND-RELATED CHANGES

-ERTTTY/-NCERTTY/-ERRLIST COMMAND LINE OPTIONS HAVE BEEN ADDED; THIS OBLIVIATES THE NEED FOR A "FILENAME.ERROR" FILE, WHICH HAS BEEN ELIMINATED. ERROR MESSAGES WILL NOW BE SORTED BY LINE NUMBER IN LISTING FILES.

LINES IN %INCLUDE FILES ARE NOW NUMBERED SEPARATELY, MEANING THAT LINE NUMBERS IN LISTINGS AND ERROR MESSAGES REFER TO THE LINE NUMBER IN THE SOURCE FILE RATHER THAN TO A COMPILER-GENERATED SEQUENTIAL LINE NUMBER. THIS CHANGE ALLOWS THE ORIGINAL SOURCE FILE TO BE SPECIFIED BY THE COMPILER AS THE DBG SOURCE FILE; THEREFORE, NO "FILENAME.CBG" FILE IS NEEDED OR PRODUCED.

SINCE THE SIZE OF FILE CONTROL BLOCKS PRODUCED BY THE COMPILER HAS CHANGED, INCOMPATIBILITIES MAY RESULT WHEN USING PRE-17.3 PL1G BINARIES WITH THOSE PRODUCED BY THIS COMPILER. SHOULD THIS OCCUR, RECOMPILATION OF THE OLDER PROGRAMS WILL RESOLVE THE DIFFICULTY.

1.2 PROGRAM-RELATED CHANGES

SEVERAL RESTRICTIONS HAVE BEEN RELAXED. THE MAXIMUM SIZE OF A SOURCE LINE IS NOW 255 CHARACTERS (AN ERROR MESSAGE WILL BE ISSUED IF THIS SIZE IS EXCEEDED); A STATEMENT MAY HAVE UP TO 6143 TOKENS; AND %INCLUDE FILENAMES MAY NOW BE UP TO 128 CHARACTERS LONG AND MAY INCLUDE PASSWORDS. EXTRALINGUAL CHARACTERS APPEARING IN THE SOURCE OUTSIDE STRINGS AND COMMENTS WILL NOW BE FLAGGED AS AN ERROR.

1.3 I/O-RELATED CHANGES

SEVERAL CHANGES REQUIRING MODIFICATION OF SOURCE PROGRAMS ARE IN THE REVISION>17.3 PL1G LIBRARY. THE FILE FORMAT OF DIRECT FILES HAS CHANGED SO AS TO BE COMPATIBLE WITH THAT OF SEQUENTIAL FILES; TO ACCESS OLD FORMAT DIRECT FILES, "-NOSIZE" MUST BE SPECIFIED IN THE TITLE OPTION. DEVICE NAMES MUST NOW BE PRECEDED WITH "@" (E.G., "@TTY", "@MTO", ETC.). RECORD SIZES IN TITLE OPTIONS ARE NOW SPECIFIED IN BYTES RATHER THAN IN WORDS.

SOME RESTRICTIONS HAVE BEEN RELAXED. RECORD SIZES MAY NOW
BE UP TO 131,062 BYTES LONG. PATHNAMES IN TITLE OPTIONS MAY BE UP TO 128 CHARACTERS LONG AND MAY CONTAIN PASSWORDS.

SEQUENTIAL FILES MAY NOW BE DAM FILES, AND DIRECT FILES MAY BE SAM FILES.

2 PL1G COMMAND LINE OPTIONS

PL1G IS THE PL/I SUBSET G COMPILER. IT IS INVOKED BY THE COMMAND:

`PL1G NAME [OPTIONS]`

OPTIONS ARE PRECEDED BY A ' - '. THE NAME MAY BE A PATH NAME, BUT NEITHER IT NOR ANY FILE NAME MADE FROM IT MAY EXCEED 128 CHARACTERS.

THE COMMAND LINE SYNTAX IS THE SAME AS OTHER PRIME COMPILERS: THE -S, -B, AND -L OPTIONS ARE ALL SUPPORTED.

THE FOLLOWING OPTIONS ARE SUPPORTED:

- `XREF` — PRODUCE A CROSS-REFERENCE LISTING. (IMPLIED L)
- `OFFSET` — PRODUCE AN OFFSET MAP IN L_NAME (IMPLIED L)
- `EXPLIST` — PRODUCE A PSEUDO-ASSEMBLY LISTING OF THE GENERATED CODE IN L_NAME (IMPLIED L)
- `OPTIMIZE` — EXECUTE THE OPTIMIZER PHASE
- `NOOPTIMIZE` — DON'T USE THE OPTIMIZER
- `STATISTICS` — PRINT OUT STATISTICS ABOUT THE COMPILATION
- `RANGE` — COMPILE CODE TO CHECK SUBSCRIPT AND SUBSTR RANGES
- `UPCASE` — MAP LOWER CASE TO UPPER CASE IN IDENTIFIERS
- `LCASE` — UPPER AND LOWER CASE ARE DISTINCT IN IDENTIFIERS
- `NESTING` — PUT A NESTING LEVEL NUMBER IN THE LISTING (IMPLIED L)
- `SILENT` — SUPPRESS LEVEL 1 (WARNING) ERROR MESSAGES
- `DEBUG` — PRODUCE A FULL DEBUGGER (DBG) SYMBOL TABLE
- `64V` — PRODUCE V-MODE CODE
- `32I` — PRODUCE I-MODE CODE
- `BIG` — DENOTES THAT ARRAYS MAY BE LARGER THAN 1 SEGMENT
- `PRODUCTION` — PRODUCE "PRODUCTION" DEBUGGER SYMBOL TABLE
- `ERRTTY` — LIST ERRORS ON THE TERMINAL
- `NOERRTTY` — DO NOT LIST ERRORS ON THE TERMINAL
- `ERRLIST` — PRODUCE AN ERRORS-ONLY LISTING FILE

THE DEFAULT OPTIONS AS DISTRIBUTED ARE '-B YES -L NO -64V -OPTIMIZE -UPCASE -ERRTTY'. THE DEFAULT OPTIONS MAY BE CHANGED BY USE OF THE PROGRAM FL1GDF, WHICH IS FOUND IN THE TOOLS UFD.

EXAMPLE:
PL1G FOO -L YES -NESTING

WILL COMPILE FOO TO PRODUCE AN OBJECT FILE NAMED B_FOO AND A LISTING
FILE NAMED L_FOO. THE LISTING WILL CONTAIN A NESTING LEVEL NUMBER
AND THE CODE WILL BE OPTIMIZED.

EACH COMPILATION PRODUCES TEMPORARY FILES (NAMED "TSXXXX") IN THE
CURRENT WORKING DIRECTORY. THESE FILES ARE NORMALLY DELETED AT THE
END OF THE COMPILATION.

3 ERROR MESSAGES

FOUR LEVELS OF ERRORS ARE REPORTED: LEVEL 1 IS A WARNING, LEVEL 2 IS
AN ERROR THAT HAS BEEN FIXED, LEVEL 3 IS AN ERROR THAT HAS NOT BEEN
FIXED, AND LEVEL 4 IS AN ERROR THAT PREVENTS CONTINUED COMPILATION.
ANY ERROR OF LEVEL 3 PREVENTS OPTIMIZATION AND CODE GENERATION IF
DETECTED PRIOR TO THOSE PHASES.

4 PROGRAM LOADING

AT REV. 17.3 THE PL1G COMPILER OUTPUTS V-MODE AND I-MODE CODE.
THUS, THE SEGMENTED LOADER (SEG) MUST BE USED TO LOAD THE OBJECT
MODULES PRODUCED BY THE COMPILER. ALSO, THE PL1G LIBRARY MUST BE
LOADED PRIOR TO LOADING THE STANDARD LIBRARY. THIS LIBRARY IS NAMED
PL1GLB AND IS LOCATED IN UFD LIB. THUS, THE FOLLOWING COMMANDS
ISSUED TO SEG'S VIRTUAL LOADER SHOULD BE USED FOR PL1G PROGRAMS
(AFTER ALL USER MODULES HAVE BEEN LOADED):

$LI PL1GLB
$LI

5 MISCELLANEOUS NOTES

5.1 CROSS-REFERENCE OPTION

THE CROSS-REFERENCE OPTION MAY CAUSE THE COMPILER'S VIRTUAL SYMBOL
SPACE TO OVERFLOW FOR VERY LARGE SOURCE PROGRAMS.

5.2 DBG INTERFACE

AT REV 17.3, USE OF DBG ON PROGRAMS IN WHICH MULTIPLE EXTERNAL
PROCEDURES EXIST IN A SINGLE SOURCE FILE IS NOT SUPPORTED. ALSO,
THE COMPILER DOES NOT PROVIDE %INCLUDE LINE NUMBERS TO DBG;
THEREFORE, ALL STATEMENTS IN %INCLUDE FILES ARE REFERENCED AS IF
THEY APPEARED DIRECTLY ON THE SOURCE FILE LINE CONTAINING THE
%INCLUDE.
5.3 SEGMENT USAGE

Compilation of PL/16 programs uses segments 4004-4007 and 4027. In user programs segments 4027 through 4010 are used - in descending order - as the system free storage pool (in which allocate and free requests operate and in which some compiler-generated temporaries are allocated).

5.4 ONCODE BUILTIN FUNCTION

Values returned by the ONCODE BUILTIN function are divided into two classes according to whether or not they represent an input-output error. Values which are less than the value of the symbol "ONCODE_BASE" are input-output errors and values greater than or equal to "ONCODE_BASE" represent all other runtime errors. This symbol is defined in the file SYSCOM>ONCODES.PL1. Since the values returned by this function are subject to change, it is recommended that this file be included in the source file (%INCLUDE 'SYSCOM>ONCODES.PL1') and the symbolic keys in the file referenced instead of the numeric values themselves.

The symbols defined in this file represent all errors which are not related to input-output. Thus, these symbols should have the value of the symbol "ONCODE_BASE" added to them before they are used in calling "SIGNALS", so that they are not confused with the input-output related errors.

Two one-dimensional arrays of character strings are also defined in this file. They contain the text of the error messages output by the default ONUNIT handler. The array "IO_ONCODE_MESSAGE" - which contains strings declared as "CHAR(68) VARYING" - contains the text of the input-output related error messages, and the array "ONCODE_MESSAGE" - which contains strings declared as "CHAR(46) VARYING" - contains the text of all the other possible error messages. To access the message corresponding to a given ONCODE value, the following constructs should be used:

```plaintext
ONCODE_VAL = ONCODE();
IF ONCODE_VAL > C & ONCODE_VAL <= MAX_IO_ONCODE
    THEN MSG = IO_ONCODE_MESSAGE(ONCODE_VAL);
ELSE IF ONCODE_VAL >= ONCODE_BASE &
    THEN MSG = ONCODE_MESSAGE(ONCODE_VALUE - ONCODE_BASE + 1);
ELSE /* NO MESSAGE AVAILABLE */;
```

* 409 (PMA)  

REV 17.3 -- DOCUMENTATOHO_HHIPHON -- PMA
A UNIQUE OBJECT GROUP WAS GENERATED FOR 32 I MODEHHHH-MODE. THIS DOES NOT AFFECT ANY EXISTING DOCUMENTATION.

* 410 (POWER)

REV 17.3 -- DOCUMENTATION -- POWER

CHANGES SINCE REV 16.9

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THE NUMBER OF DIGITS ALLOCATED FOR THE DISPLAY OF REAL NUMBERS HAS BEEN INCREASED FROM 12 TO 18.

ALL STANDARD FORMATS FOR LEADING EMBEDDED SIGNS ARE HANDLED CORRECTLY.

ATTEMPTS TO ADD A RECORD TO A MIDAS FILE IN WHICH DUPLICATE KEY VALUES ARE NOT ALLOWED FAIL WHEN ONE OF THE KEY VALUES IS A DUPLICATE.

SORTING RECORDS IN A BINARY FILE IS WORKS CORRECTLY.

THE 'ADD FILENAME' COMMAND WILL CORRECTLY HANDLE FILES FOR WHICH THE LAST DESCRIPTOR IS OF TYPE 'DATE'.

* 411 (POWERPLUS)

DOCUMENTATION -- REV 17.3 -- POWERPLUS

CHANGES SINCE REV 16.9

----------------------------------------

THE NUMBER OF DIGITS ALLOCATED FOR THE DISPLAY OF REAL NUMBERS HAS BEEN INCREASED FROM 12 TO 18.

ALL STANDARD FORMATS FOR LEADING EMBEDDED SIGNS ARE HANDLED CORRECTLY.

ATTEMPTS TO ADD A RECORD TO A MIDAS FILE IN WHICH DUPLICATE KEY VALUES ARE NOT ALLOWED FAIL WHEN ONE OF THE KEY VALUES IS A DUPLICATE.

IN THREE LEVEL LINK STRUCTURES REPEATED ENTRIES ARE DISPLAYED
CORRECTLY.

SORTING RECORDS IN A BINARY FILE IS WORKS CORRECTLY.

THE 'ADD FILENAME' COMMAND WILL CORRECTLY HANDLE FILES FOR WHICH
THE LAST DESCRIPTOR IS OF TYPE 'DATE'.

* 412 (PRIMCS)

1 CORRECTED REVISION 17.2 PROBLEMS

1.1 PRIMOS INITIALIZATION

1. CALCULATE PAGRC5("2") IN AINIT CORRECTLY.

2. 1ST 8 PAGES ON A PAGING PARTITION ARE NOT USED. THEREFORE, THE
AVAILABLE NUMBER OF PAGING SPACE SHOULD BE 8 PAGES LESS THAN
WHAT IT OTHERWISE CALCULATES.

3. PAGREL IS THE COMMON PAGDEV SHOULD BE INTEGER*4 INSTEAD OF
INTEGER*2.

1.2 GETUN, RESERVE UNITS

DON'T ALLOW TOO MANY RESERVE UNITS TO BE ALLOCATED TO ONE PROCESS.

1.3 PRIMOS, CMD

SORT BAD RECORD INDICES TO PREVENT OVERLAPPING DEFINITIONS. IT IS
CURRENTLY POSSIBLE TO MISS A BAD SPOT IF THE DEFECTIVE TRACKS ARE
ADJACENT.

1.4 ABBREV

TO ADD USAGE INFORMATION TO ABBREV, AND FOLLOW THE WILD CARD
STANDARD. REMOVE EXCESSIVE ERROR MESSAGES.

1.5 PASSWD COMMAND

PASSWD COMMAND NO LONGER ACCEPTS DIGIT AS FIRST CHARACTER IN A
PASSWORD.
1.6 SMLC FOR RJE

Fix bug in SMLCEx to notify emulators on all status if low overhead node not set.

1.7 T$SLC1

To update data set states word if no control block given.

1.8 BAD PASSWORD, STATIC NODE

Default on-unit for bad-password fails to turn on tty output.

1.9 SMLC (T$SLC1, PRIMENET, BSCMAN)

To make segment 0 allocation node dynamic for SMLC routines and to support 8 SMLC lines for T$SLC1, PRIMENET, and BSCMAN.

1.10 DPTX

Fix a problem with successive output of large screens of data.

1.11 PL/I CONDITION SUPPORT

Change condition mechanism to support the system and swap options of the PL/I on-statement.

1.12 PHANTOM, BENCHMARK

To put phantoms on low priority queue when they login. This is important for benchmarks which are frequently run using phantoms.

1.13 BLOCK DEVICE INTERFACE SEMAPHORE

To enable 'QUIT' while waiting on the DPTX multiple semaphores.

1.14 SETIME COMMAND

To fix bug in SETIME command. It accepted non-numerics without an error message in some cases.

1.15 AMLDIM

The timing for grace periods in the AMLDIM was based upon the last
LINE SPEED. IF THAT SPEED CHANGED, THEN THE GRACE PERIOD VALUES ARE also changed.

1.16 DMA CHAINING
ADDED DMA CHAINING FOR LARGE TAPE RECORDS.

1.17 ATTACH
FIX TWO BUGS IN ATTACH COMMAND.
1. ATTACH UNKNOWN-UFD>SUBUFD CAUSED AND ATTACH TO HOME.
2. ATTACH UFD>SUBUFD 1/0 WAS SAME AS ATTACH SUBUFD (I.E. SEARCHED THE MFD FOR SUBUFD.

1.18 STATUS COMMAND
STATE UNITS ALWAYS PRINTS TREENAME ON A SECOND LINE EVEN IF IT WOULD FIT ON THE FIRST.

1.19 PROCESS-FAULT HANDLER FOR INTERRUPT PROCESSES
TO FIX TOO SMALL OF A STACK FRAME FOR PROCESS-FAULT HANDLER FOR INTERRUPT PROCESS.

1.20 OLD-STYLE SVC'S
TO GET CLD-STYLE SVC'S TO PRINT ERROR IF NO ALTRN SUPPLIED.

1.21 MDLC FOR RJE
ALLOW DEVICES OTHER THAN 50 OR 51 TO BE SPECIFIED.

1.22 DPTX, 327C SUPPORT, BLOCK DEVICE INTERFACE
TO FIX BLOCK DEVICE INTERFACE BUG. 3270 SUPPORT TRAFFIC MANAGER TIME-STANDING.

1.23 COMOUTPUT BUFFER OVERFLOW IN PUDCOM, PABORT
TO PREVENT COMOUTPUT BUFFER OVERFLOW BY TAKING A PROCESS ABORT WHILE EMPTYING THE BUFFER.

1.24 SCHED AND CHAP COMMAND
TO ADD SOME REAL TIME CAPABILITY TO THE SCHEDULER, FOR TP SUPPORT.

1.25 COMO HANDLING FOR USER 1

1. A NEW MECHANISM TO HANDLE MESSAGES SENT TO USER 1 BY OTHER USERS.

2. A NEW FUNCTION IN 'STATUS' COMMAND 'STAT SY' WILL PRINT OUT THE VERSION NUMBER OF THE OPERATING SYSTEM CURRENTLY RUNNING. IF TYPED AT SYSTEM CONSOLE, IT WILL ADDITIONALLY PRINT OUT THE AMOUNT OF MAIN MEMORY IN USE.

1.26 DFTX/TSF, 327C TERMINAL SUPPORT, FREE POOLS, QUEUE

TO MOVE THE IDENTIFICATION OF THE FREE POOL THAT TM IS TO USE FOR ITS DPTX QUEUES TO EXECUTION TIME RATHER THAN COMPLETION TIME TO AVOID A CONFLICT WITH NETWORKS.

1.27 DPTX

DPTX FILES WHICH USED IP_QUEUES.INS.FTN IN ORDER TO OBTAIN CERTAIN PROCESS NUMBERS NOW MUST ALSO INSERT PHUSRS.INS.FTN. THIS WAS DONE SO THAT NON-DPTX PROCESSES WHICH NEED TO KNOW CERTAIN PROCESS NUMBERS WILL NOT HAVE TO LOAD DPTX INFO WHICH WOULD NEVER BE USED.

1.28 DPTX, BSCMAN

DELETED PARAMETER STATEMENTS ADDED ASSIGNMENT STATEMENTS TO OBTAIN FREE POOL IDS. TO OBTAIN FREE POOL IDS AT RUNTIME, RATHER THAN LOAD TIME.

1.29 NETWORKS

INTERNAL

-ADDED NEW QUEUES TO NETWORKS.
-REMOVE IPC FROM NETS.
-REMOVE NETEVI3 FROM NETS.
-REMOVE FARR FROM NETS.
-FIX MISC QUEUE ROUTINE BUGS.
-ADD DEBUG ASSEMBLY FLAG.
-FIX MISC RLOGIN BUGS.
-FIX REMOTE LOGIN WHEN ALREADY COMING REMOTE DUPLEX PROBLEMS.
-FIX MISC PNCDIM BUGS.
-DISCONNECT FROM RING ON 'SH ALL'.

DISCONNECT FROM RING ON 'SH ALL'.
ADD SEGMENTS 30 AND 31 FOR NETS, 32 TO 37 AS SPARES.
USER VISIBLE

MISC NETWORK PRIMITIVE FIXES
-X$GVVC RETURNS XSSUNK IF TARGET USER IS NOT LOGGED IN.
-XLCOMP RETURNS XSSUNK INSTEAD OF XSS$BNP IF NODE NAME IS NOT FOUND
-X$CLR$ WILL NOW DRAIN THE USERS NETWORK SEMAPHORE.
-XRAS$G WILL NO LONGER RETURN XSS$QUE WHEN ASSIGNING A PORT AFTER A
   ASSIGN
   FOR A COUNT OF -1.

1.30 SYNCHRONOUS COMMUNICATIONS

1. FIX TCP CLEAR MASK INSTRUCTION AT INITIALIZATION FOR WARM START.
2. FIX UPG WITH 8 SMLC LINES.

1.31 NETWORKS

FIX TYP$ IN BUG FIX OF 12/14/79. THIS PROBLEM CAUSES A HALT IF A
   USER IS REMOTELY LOGGED IN AND THE LINE TO HIS SYSTEM GOES DOWN.

1.32 NETWORKS

FIX BUG IN COMPATIBLE MODE SMLC INIT WHICH UNMAPS TO MANY SEGMENTS.
FIX INCORRECT CALL TO GETSEG IN NETUTU.FTN

1.33 CO-0 HANDLING FOR USER 1

FIX A BUG WHICH WAS INTRODUCED BY THE INSTALLATION OF USER 1 MESSAGE
   HANDLING MECHANISM.

1.34 NETWORKS

FIX PROBLEM WITH FACILITIES AND FAMILY OVER PDN'S. ADDED NEW PRIMENET
   KEY TO XLCOMM AND XLCPT TO USER BEST FACILITIES ACCORDING TO NT
   TYPE. REWRITE FACILITIES PARSING CODE AND PUT IN FACILITIES PARSING
   IN ALL CALL REQUESTS AND CALL ACPT CODE PATHS.

1.35 'STAT SYS' COMMAND

THE STAT SYS COMMAND WILL NOW PRINT 'PRIMOS' INSTEAD OF 'PRIMOS IV'.
1.36 MAG TAPE

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1) REMOVE OVERLAP OF DMA CHANNELS BY MTDIM (CONTROLLER 2) AND PRIME NETWORK CONTROLLER.

2) DOCUMENT DMA USE OF PNC IN TMAIN. ALSO UPDATE DMA CHANNEL TABLE TO SHOW REMOVAL OF IPC.

1.37 CMD WRITE PROTECT

---

FIX CMD WRITE PROTECT PROBLEM. DON'T USE WP CONDITION BIT FOR SM WRITE.

1.38 MAG TAPE

---

FIX BUG IF INDEXING 2ND CHANNEL IN DMA CHAINING.

1.39 CMD WRITE PROTECT

---

FIXED CMD WRITE PROTECT PROBLEM. FIXED FORMAT ORDER.

1.40 NETWORKS

---

FIX BUGS WHICH ALLOW PRIMITIVES USER TO CRASH SYSTEM. FIX BAD FACILITIES EXCEPTION PARSING IN X$FLTY; CORRECT ERROR PATH IN XLACPT.

1.41 TERMINAL BUFFER

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1) DPTX HAD A NEED FOR BUFFER SPACE GREATER THAN 1 SEGMENT.

2) TAR #5115, AIWIT.FTN WILL NOT ALLOW OUTPUT BUFFER OF LESS THAN 100 CHARACTERS.

THE TFLIO3 BUFFERING MECHANISMS WERE ENHANCED TO INCORPORATE TWO SEGMENTS IN PLACE OF BUFFERING SPACE.

1.42 DPTX

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ENHANCEMENTS AND BUG FIXES TO BRING DPTX TO GENERAL RELEASE.
1.43 DPTX

FIX BUG IN TM3270 WHICH WOULD HANG UP TERMINALS ON CERTAIN OPERATOR ACTIONS.

(PRINET)

REV 17.3 -- DOCUMENTATION -- PRINET
INCLUDES CHANGES TO FAM, NETCFG, X$KEYS

JETPRT IS NO LONGER INCLUDED WITH PRINET. ITS FUNCTIONALITY HAS BEEN
ABSORBED BY LOGPRT. SEE LOGPRT>INFO FOR DOCUMENTATION.

HANGES TO FAM FOR 17.3

'/29/79 CONNECT REQUEST FREQUENCY WAS CHANGED FROM A CONSTANT 10 SECONDS TO
A STEP FUNCTION SO THAT THE FREQUENCY OF CALL REDUCES THE LONGER A
REMOTE FAM IS DOWN.

'/80 STACK OVERFLOW ON STOP IS FIXED BY CALLING LOGO$$ RATHER THAN STOP.

'/6/80 PRIMENET CCNNS AND ACPTS ARE NOW DONE WITHOUT FACILITIES BUT WITH THE
NEW KEY X$FCT (FIXES TELENET PROBLEMS).

1.8. THIS VERSION OF THE FAM IS INCOMPATIBLE WITH PRE-REV 17.3 PRIMOS.

HANGES TO NETCFG FOR 17.3

1) IPC SUPPORT HAS BEEN REMOVED FROM REV 17.3 OF PRIMOS. THEREFORE,
NETCFG NO LONGER QUERIES FOR IPC SUPPORT.

2) THE ACCEPTABLE RANGE FOR SYNCHRONOUS LINE NUMBERS HAS BEEN CHANGED
FROM 0 - 3 TO 0 - 7, IN LINE WITH THE NEW SUPPORT FOR 8 SYNCHRONOUS
LINES IN PRIMOS. NOTE THAT CURRENTLY, NETWORKS DOES NOT SUPPORT
MORE THAN 2 SYNCHRONOUS LINES.

3) THIS VERSION OF NETCFG IS FULLY COMPATIBLE WITH THE REV 17.1 NETCFG.

THE FOLLOWING CHANGES HAVE BEEN MADE TO THE X$KEYS FILE FOR 17.3
A NEW KEY, XK$FCT HAS BEEN ADDED. THIS KEY INSTRUCTS PRIMENET TO FILL IN THE FACILITIES FIELD AS IT THINKS BEST. THE USER MAY NOT SPECIFY ANY FACILITIES WITH THIS KEY.

A NEW KEY XK$HDX HAS BEEN ADDED. THIS IS FOR FUTURE GROWTH.

THE VALUE FOR XK$RTE HAS BEEN CHANGED. THIS SHOULD NOT AFFECT ANY PROGRAMS CURRENTLY WRITTEN, AS THIS KEY IS NOT USED BY PRIMENET.

14 (RJECOM)

RJECOM DOC.UFD CONTAINS A PRE-RELEASE VERSION OF THE EMULATOR HANDBOOK IN RUNOFF SOURCE AND RUNOFF OUTPUT FORM.

HE SUB UFD 'CARDSPOOL>INFO' CONTAINS THE DOCUMENTATION FOR THE CARD SPOOLER.

15 (RJEGRTS)

REV 17.3 -- DOCUMENTATION -- RJEGRTS

JEGRTS>U SYMBNT>GRTS GRTS MAIN SYMBIONT ROUTINE DATED 12/12/79
JEGRTS>U SYMBNT>GRTSUB GRTS SUBROUTINES DITTO
JEGRTS>U SYMBNT>GRTCOD GRTS COMMON DITTO
VARIABLES ETXREC,SOHREC,STXREC,TRSL$$,SPRC$$ CHANGED TO BE ON A PER-LINE BASIS.

JEGRTS>RPARAM GRTS RECEIVE PARAMETERS DATED 01/08/80
PARAMETER MAXLOP CHANGED FROM 9999 TO 9 (RECEIVE PROCESSING) - NOW PROCESSES 10 OUTPUT BUFFERS BEFORE RETURNING (USED TO BE 10,000 !)

JEGRTS>RECEIV GRTS RECEIVE MODULE. DATED 01/17/80
EXTRA CODE ADDED TO COPE WITH R FILE WITH BAD PASSWORD IN HEADER. PRINTS 'BAD RECEIVE FILE' AND DISABLES RECEIVE PROCESSING.

16 (RJEHASP)

SUBMITTED AS PART OF THE RJE 'PACKAGE'
NO CHANGES MADE AT 17.3
REV 17.3 -- DOCUMENTATION -- RJEX80

RJEX80 BECAME RJEX80 ON 14TH AND 15TH JANUARY. THE CHANGES WERE NOT ALL DATED AND INITIALLED BECAUSE THERE WERE SO MANY OF THEM. UFD NAMES CHANGED, FILENAMES CHANGED, COMMAND FILES CHANGED, AND THE WS AND RJ COMMANDS THEMSELVES CHANGED - TO WSX80 & RJX80.

RJEX80>TRANSMIT

RJEX80 TRANSMIT MODULE. DATED 01/17/80 CHANGES -- STOP CHANGENAME OF TFILE IF THE NEXT FILE TO BE SENT DOES NOT EXIST. SYMPTOMS WERE AN ENTRY SLOT IN TRANSMIT Q.

SUBMITTED AS PART OF THE RJE 'PACKAGE' NO CHANGES MADE AT 17.3

REV 17.3 -- DOCUMENTATION -- RJE200UT

RJE200UT>TRANSMIT

20CUT TRANSMIT MODULE. DATED 12/19/79. CHANGES MADE TO CORRECT ERROR WHEREBY THE PREVIOUS T FILE WOULD BE DELETED WHEN AN ERROR OCCURRED ON OPENING THE SEND FILE.

RJE200UT>TRANSMIT

20CUT TRANSMIT MODULE. DATED 01/16/80. CHANGED TO SET CORRECT BIT IN T FILE HEADER WHEN RUNNING IN ASCII MODE. CHANGED FOR TAR 24786.

REV 17.3 -- DOCUMENTATION -- RJE7020

RJE7020>U_SYMBOINT>7020

MAIN 7020 SYMBIONT MODULE. DATED 10/25/79.
CHANGES MADE TO SEND DC4 AT THE END OF A BLOCK AFTER RECEIVING A WARNING STATUS FROM THE HOST.

JE7020>Yu SYMBINT 7020 SYMBIONT DATED 01/04/80.
CHANGES MADE SIMPLY ADDING COMMENTS TO INSTRUCT THE ANALYST HOW TO AVOID THE 'LOOP AFTER RECEIVE TIME-OUT' THAT OCCURS ON SOME SITES. THE MOD HAS NOT BEEN PUT IN AS STANDARD AS IT DOES NOT OCCUR ON ALL SITES.

21

(RPG)

SUBJECT: INFORMATION PERTAINING TO REV 17.3 RPG

TAR RESPONSES SINCE REV 17.0 HAVE BEEN SUMMARIZED IN THIS DOCUMENT.

RPG WAS UPDATED FOR REV 17.2 TO PROVIDE FOR USE OF TREEPATHS IN THE FILE NAME OR FILE NAME REPLACEMENTS.

INFORMATION PERTAINING TO REV 17.3 RPG

ENHANCEMENT

TREEPATH CAPABILITY
THE FUNCTION OF ALLOWING THE USER THE CAPABILITY OF OVERRIDING AT RUNTIME A FILENAME AS GIVEN ON THE FILE SPECIFICATION LINE HAS BEEN ADDED. TO UTILIZE THIS FEATURE, A 'T' MUST BE SUPPLIED IN COLUMN 52 OF THE HEADER SPECIFICATION. AFTER INVOKING THE RUNTIME IMAGE, THE USER WILL BE PROMPTED FOR FILE NAME REPLACEMENTS.

TAR RESPONSES

TAR 14419
IF FILE ADDITION IS SPECIFIED FOR A SEQUENTIAL OUTPUT FILE WITH MORE THAN THREE INDICATORS USED TO CONDITION OUTPUT, THE INDICATION THAT ADD IS REQUESTED IS IGNORED AND THE FILE IS TRUNCATED RATHER THAN APPENDED.
RESPONSE: FIXED FOR REV 17.2.

TAR 14420
MATCHING RECORDS NOT WORKING WITH ONLY SECONDARY FILES.
RESPONSE: MATCHING IS ALLOWED WITH PRIMARY AND SECONDARY FILES ONLY. NOT A PROBLEM.
TAR 24450
UPDATING DIRECT ACCESS FILES CAUSES THE RPG PROGRAM TO HANG.
RESPONSE: THE PROBLEM WAS FOUND TO BE IN MIDAS WHICH HAS BEEN FIXED FOR REV 17.2. USE REV 17.2 VERSION OF MIDAS.

TAR 14746
UPDATING A MIDAS FILE USING MATCHING RECORD CAUSES UPDATES TO THE WRONG RECORD.
RESPONSE: FIXED FOR REV 17.3

TAR 22449
PACKED FIELDS IN THE BEGINNING OF THE RECORD RESULTS IN AN END POSITION TOO LOW ERROR MESSAGE.
RESPONSE: FIXED FOR REV 17.2.

TAR 14418
IF THE SAME INDICATOR NUMBER IS USED FOR THE PLUS, MINUS, AND ZERO FIELD INDICATOR IN THE INPUT SPECIFICATIONS THEN THE LATTER ASSIGNMENT IS NOT RECOGNIZED.
RESPONSE: FIXED FOR REV 17.3.

TAR 14421
COMPARE OPERATION IN REV 15.4 RPG IS NOT WORKING PROPERLY.
RESPONSE: THE PROBLEM WAS PREVIOUSLY REPORTED IN TAR 15386 AND FIXED IN REV 16 OF RPG.

TAR 21711
A CONSTANT OTHER THAN $ WHICH IS TO THE LEFT OF THE ZERO SUPPRESSION STOP CHARACTER IS NOT BEING SUPPRESSED.
RESPONSE: FIXED IN REV 17.3.

TAR 22121
NON-LR CALCULATION SPECIFICATIONS EMBEDDED IN LR CALCULATION SPECIFICATION LINES ARE IGNORED.
RESPONSE: MIXING OF DETAIL, TOTAL, LR, AND SR CALCULATION SPECIFICATIONS IS NOT ALLOWED.

TAR 2122
OUTPUT CONDITIONED BY MORE THAN THREE INDICATORS IN AN OR LINE, THUS REQUIRING USE OF AN AND LINE, DOES NOT FUNCTION AT ALL.
RESPONSE: FIXED IN REV 17.3.

TAR 2123
ZERO LINE FEED DOES NOT WORK IN REV 16.4 RPG.
RESPONSE: REV 17 ENHANCEMENT. THIS IS DOCUMENTED IN THE RPG MANUAL AS UNIMPLEMENTED AS OF REV 16.

TAR 2124
SPACE ONE BEFORE ON OUTPUT REQUEST GIVES ADDITIONAL BLANK LINE.
RESPONSE: This is related to the zero line feed. REV 17 ENHANCEMENT.
There is no report on the RPG program listing as generated by the Rev 16 RPG compiler of indicators used but not assigned, nor does the user's program halt if such a condition occurs. Response: Rev 17 enhancement. The runtime interpreter cannot halt the user's program at this point. It is the RPG programmer's responsibility to check the warning messages issued by the compiler.

The IEBUG feature in the calculation specifications suppresses zeros whether they be leading zeroes or embedded zeroes. Response: Fixed in Rev 17.3.

Pre-release version of Rev 17 RPG is dropping the character found in position one on all printed output. Response: Problem was corrected on official release of software.

Files conditioned by external indicators (U-INDICATORS) are referenced by the RPG software if output is not conditioned by a U-INDICATOR. This then causes a unit not open message to be issued. Response: Condition output using the applicable U-INDICATOR.

Unable to update a compressed (sequential) file in Rev 16 RPG. The append capability is not functioning. Response: Fixed in Rev 17.2.

End position too low message given when the first field of an output record is a small packed field. Response: Message issuance is corrected in Rev 17.2.

Program execution stops when a chain to a given record occurs. Response: See TAR 22450.

Wrong records are updated when updating a Midas file using matching record. Response: See TAR 14746.

Not all indicators are printed on the indicator summary given by the Rev 17 RPG compiler. Response: Fixed for Rev 17.3.

More than one update to the same record of a file within the same program cycle causes previous updates to be lost. Response: Fixed in Rev 17.3.
This document lists the changes that have been made to Runoff for Revs 16.9 and 17.3, and a previously undocumented restriction.

1) The `.PRRF` command used to print the first `'-'` in the first column which could cause it to be interpreted as a Fortran control character, it will now skip the first column. (TAR 81588)

2) When using decimalization the margins are figured relative to current position. If the decimal number was reset for level one before doing any decimal headings, Runoff tried to undent as though it were already at the text margin after the first level heading. This should no longer happen.

A restriction that Runoff users should be aware of is, when using decimalization a `.UNDENT` without the number of spaces to undent will cause Runoff to undent all the way to the last set margin, this may cause further decimalization to incorrectly set its relative margins.

3) If a symbol definition gets truncated because it is over 30 characters in length, a warning will be issued and errors flagged, but Runoff will continue processing the file.

4) `.RETURN` now operate as the manual describes. If one does a return from the main file you are returned to command level. (TAR 81366)

5) Adding a footer will no longer cause Runoff to shorten the number of text lines by 1. (TAR 81365)

6) The `.PICTURE` command will no longer skip one more then the number of lines requested. (TAR 81365)

This is the whole document.

(Seg)

Rev 17.3 -- Documentation -- Seg

The following changes were made to Seg for Rev 17.3

DBG SUB -- Error reporting changed from immediate return to start return to prevent such errors as `DISK FULL` from occurring.

LOD415 -- Support for Real 32-I mode desectoring mode has been added.
SOR 17.3 -- SORT/VSRTLI -- DOCUMENTATION

THIS DOCUMENT LISTS THE CHANGES THAT HAVE BEEN MADE TO VSRTLI FOR REV 17.3.
S CE SORT USES VSRTLI ROUTINES, CHANGES MADE TO THE LIBRARY AFFECT THE
()"•• COMMAND.

THE MAXIMUM RECORD LENGTH IS SPECIFIED TO BE AN ODD NUMBER OF
RACTERS, THE VARIABLE LENGTH (BINARY) RECORDS OF THIS LENGTH ARE
ATED, THEN "WARNING - LINE TRUNCATED" MESSAGES ARE ISSUED EVEN THOUGH
DATA IS LOST.

THE FIX ELIMINATING THIS BUG REQUIRED CHANGES TO THE ROUTINE RLSE$$.

MAXIMUM NUMBER OF SORT FIELDS (KEYS) HAS BEEN INCREASED FROM 50 TO
AS REQUIRED BY SPSS RELEASE 8.0.

THIS CHANGE REQUIRED MODIFICATIONS TO THE DATA COMMON MASCOM AND TO
 ROUTINE KG$$.

(SPCOL)

REV 17.3 -- DOCUMENTATION -- SPOOL

NING: REV 17.3 SPOOLER IS INCOMPATIBLE WITH REV 17.1 ENVIRONMENT FILES.
IF YOU HAVE REV 17.3, BE SURE TO INSTALL THE NEW ENVIRONMENT FILES
THAT COME WITH 17.3. THEN MAKE ANY CUSTOMIZED CHANGES TO
THE NEW FILES.

THE FOLLOWING BUG FIXES WERE MADE TO REV 17.3 SPOOL:

FILES PRINTING ON THE CENPR PORT WILL NOW BE FORMATTED
CORRECTLY WHEN USING -FTN FORMAT CONTROL (BLANK LINES
NOT ALWAYS PRINTED) -- TAR 21203, 23853.

-FTN FORMATTING NOW WORKS CORRECTLY WHEN PRINTING ON
THE VERSATEC (NO BLANK LINES WERE BEING PRINTED) --
TAR'S 23080, 13314.
THE XON/OFF SENT BY THE PRINTRONIX ON AN AMLC LINE IS 
NOW RECOGNIZED (DATA WAS BEING LOST) -- NO TAR.

(VPSD)

REV 17.3 -- DOCUMENTATION -- VPSD

REV 17.3 VPSD DECODES ALL CHARACTER AND DECIMAL INSTRUCTIONS. THE INSTRUCTIONS ADDED BITS SYMBOL TABLE ARE:

1. XAD
2. XCM
3. XDV
4. XED
5. XMP
6. XMV
7. ZCM
8. ZED
9. ZMV
10. XBTD
11. XDTB
12. XVRY
13. ZFIL
14. ZMVD
15. ZTRN

THE TRANSFER FIELD LENGTH TO L REG. INSTRUCTION (OP CODES 001323, 001333) NOW HAS ITS CORRECT MNEMONIC OUTPUT. THAT IS, TFLLO AND TFFL1 ARE NOW OUTPUT. (OLDER VERSIONS OF VPSD OUTPUT TFFLO AND TFFL1).

(X.25)

REV 17.3 -- DOCUMENTATION -- X.25

INCLUDES CHANGES TO FAM, NETCFG, X$KEYS

LOGPRT IS NO LONGER INCLUDED WITH X.25. ITS FUNCTIONALITY HAS BEEN ORBED BY LOGPRT. SEE LOGPRT>INFO FOR DOCUMENTATION.

CHANGES TO FAM FOR 17.3
29/79 CONNECT REQUEST FREQUENCY WAS CHANGES FROM A CONSTANT 10 SECONDS TO
A STEP FUNCTION SO THAT THE FREQUENCY OF CALL REDUCES THE LONGER A
REMOTE FAM IS DOWN.

/80 STACK OVERFLOW ON STOP IS FIXED BY CALLING LOGO$$ RATHER THAN STOP.

/80 PRIMENET CNNS AND ACPTS ARE NOW DONE WITHOUT FACILITIES BUT WITH THE
NEW KEY XK$FCT (FIXES TELENET PROBLEMS).

. THIS VERSION OF THE FAM IS INCOMPATIBLE WITH PRE-REV 17.3 PRIMOS.

4GES TO NETCFG FOR 17.3

1) IPC SUPPORT HAS BEEN REMOVED FROM REV 17.3 OF PRIMOS. THEREFORE,
NETCFG NO LONGER QUERIES FOR IPC SUPPORT.

2) THE ACCEPTABLE RANGE FOR SYNCHRONOUS LINE NUMBERS HAS BEEN CHANGED
FROM 0 - 3 TO 0 - 7, IN LINE WITH THE NEW SUPPORT FOR 8 SYNCHRONOUS
LINES IF PRIMOS. NOTE THAT CURRENTLY, NETWORKS DOES NOT SUPPORT
MORE THAN 2 SYNCHRONOUS LINES.

3) THIS VERSION OF NETCFG IS FULLY COMPATIBLE WITH THE REV 17.1 NETCFG.

THE FOLLOWING CHANGES HAVE BEEN MADE TO THE X$KEYS FILE FOR 17.3

A NEW KEY, XK$FCT HAS BEEN ADDED. THIS KEY INSTRUCTS
PRIMENET TO FILL IN THE FACILITIES FIELD AS IT THINKS BEST.
THE USER MAY NOT SPECIFY ANY FACILITIES WITH THIS KEY.

A NEW KEY XK$HD$X HAS BEEN ADDED. THIS IS FOR FUTURE GROWTH.

THE VALUE FOR XK$RTE HAS BEEN CHANGED. THIS SHOULD NOT
AFFECT ANY PROGRAMS CURRENTLY WRITTEN, AS THIS KEY IS NOT USED
BY PRIMENET.

(DPTX-DSC)
SEE DPTX-DSC>INFO

(DPTX-TSF)