
 THE PURPOSE OF THE PRODUCT RELEASE NOTICE IS TO PROVIDE THE USER WITH SPECIFIC INFORMATION ABOUT THE PRODUCT WHICH IS NOT AVAILABLE IN THE PRODUCT MANUALS. A PIECE OF INFORMATION MAY BE REPEATED IN MORE THAN ONE RELEASE NOTICE IF THE APPROPRIATE MANUAL IS NOT YET AVAILABLE. BETWEEN REVISIONS OF THE PRODUCT, PERIODIC UPDATES TO THE PRODUCT MAY BE ISSUED. THE NORMAL PURPOSE OF AN UPDATE IS TO PROVIDE A LEVEL OF CORRECTIONS TO THE PRODUCT WHICH DOES NOT REQUIRE A RELEASE OF THE COMPLETE PRODUCT (WHICH IS WHAT DISTINGUISHES A RELEASE FROM AN UPDATE). EACH UPDATE SUPERCEDES THE PREVIOUS UPDATE.

A RELEASE OF THE PRODUCT CONSISTS OF FOUR MAJOR PARTS, AS DEFINED BELOW:

PART DESCRIPTION -----	PART NUMBER -----
1. RTOS REV 6.00 RELEASE NOTICE	085-000030-048
2. RTOS REV 6.00 RELEASE MEDIA	DEFINED BY THIS RELEASE NOTICE IN SECTION 2A - PRODUCT ORGANIZATION.
3. RTOS REV 6.00 UPDATE 1 NOTICE	078-000026-00
4. RTOS REV 6.00 UPDATE 1 MEDIA	071-000266-00 070-000197-00 072-000322-00 088-000381-00 088-000382-00

THE PART NUMBER WILL BE THE SAME FOR SUBSEQUENT REV 6.00 UPDATES EXCEPT THAT THE SUFFIX CHARACTER WILL BE INCREMENTED.

INCLUDED IN THIS RELEASE NOTICE ARE:

1. SUMMARY
2. PRODUCT ORGANIZATION
 - A. SOFTWARE
 - B. DOCUMENTATION
3. ENVIRONMENT
4. ENHANCEMENTS
5. NOTES/WARNINGS
6. FIXES
7. DOCUMENTATION CHANGES
8. PROBLEMS/STATUS

NOTE: THE SECTION "PATCHES" IN THE RELEASE NOTICE, IS NOW IN THE UPDATE NOTICE. IN THE RELEASE NOTICE, IS NOW IN THE UPDATE NOTICE.

1. SUMMARY

--

 RTOS REV. 6.00 CONTAINS SEVERAL ENHANCEMENTS AND FIXES. MOST NOTABLE IS THE AVAILABILITY OF SUPPORT FOR VIRTUAL OVERLAYS AND WINDOW MAPPING FOR NOVA AND ECLIPSE VERSION OF RTOS. THIS RELEASE NOTICE ASSUMES THAT THE READER IS FAMILIAR WITH RTOS AND HAS STUDIED THE RTOS MANUALS. ALSO, THE DISCUSSIONS OF THE NEW SUPPORT FOR EXTENDED MEMORY ASSUME THE READER IS FAMILIAR WITH THIS SUBJECT AS PRESENTED IN THE RDDS REFERENCE MANUAL (RDDS REFERENCE-ECLIPSE 093-000129, NOVA 093-000075).

2. PRODUCT ORGANIZATION

A. SOFTWARE

PRODUCT REORGANIZATION:

- 1) MICRONOVA VERSION OF RTOS IS ONLY INCLUDED WITH SCHEDULE NUMBER 510 FOR RTOS.
- 2) THE SCHEDULER SOURCES ARE NOT INCLUDED WITH THE RTOS SCHEDULE, BUT RATHER APPEAR UNDER A SEPARATE SCHEDULE, NUMBER 3656.
- 3) MAPPED LIBRARIES ARE INCLUDED UNDER A SEPARATE SCHEDULE, 583 FOR NOVAS AND 676 FOR ECLIPSES.

NOTE: THE SYMBOLS USED IN THE FOLLOWING MEAN:
 A - ADDED SINCE LAST REV OF PRODUCT
 R - REVISED WITH THIS UPDATE

SCHEDULES:

510 NOVA LINE RTOS

610 ECLIPSE LINE RTOS

STATUS	PART NUMBERS NOVA LINE	ECLIPSE LINE	FILE NO	FORMAT	NAME(S)
-----	-----	-----	----	-----	-----
	PAPER TAPE MODELS				
	3100	3391			
R	088-000082-07	088-000184-04	N/A	DUMP	(B)RTOSGEN.SV
R	089-000163-06	089-000178-04	N/A	XFER	(B)RTOSGEN.RB
R	089-000164-04	089-000177-02	N/A	XFER	(B)GSUBR.RB
R	090-000520-09	090-003884-04	N/A	XFER	PARR.SR
R	091-000081-09	091-000107-05	N/A	XFER	(B)RTOSGEN.AB
R	099-000060-08	099-000124-05	N/A	XFER	(N,B)RTOS1.LB
R	099-000061-07	099-000126-04	N/A	XFER	(N,B)RTOS2.LB
R	099-000222-01	---	N/A	XFER	MRTOS1.LE
R	099-000223-01	---	N/A	XFER	MRTOS2.LB
	MAG TAPE MODELS (800 BPI)				
	3100M	3391M			
R	071-000007-07	071-000052-05	0	DUMP	(ALL THE ABOVE EXCEPT RTOSGEN.AB)
	HIGH DENSITY MAG TAPE MODELS (1600 BPI)				
	3100H	3391H			
R	071-000007-07	071-000052-05	0	DUMP	(ALL THE ABOVE EXCEPT RTOSGEN.AB)

CASSETTE MODELS
3100C

3391C

R	070-000024-07	070-000087-05	0	DUMP	(B)RTOSGEN.SV (B)RTOSGEN.RB (B)GSUBR.RB) PARR.SR
R	070-000174-01	---	0	DUMP	NRTOS1.LB NRTOS2.LB MRTOS1.LB MRTOS2.LB
R	---	070-000173-01	0	DUMP	BRTOS1.LB BRTOS2.LB

DISKETTE MODELS
3100F

3391F

R	072-000040-02	072-000041-02	1	DUMP	(ALL THE ABOVE EXCEPT RTOSGEN.AB)
---	---------------	---------------	---	------	---

SCHEDULES:

533 MAGNETIC PERIPHERAL SUPPORT FOR NOVA LINE RTOS
633 MAGNETIC PERIPHERAL SUPPORT FOR ECLIPSE LINE RTOS

MODEL NUMBERS BELOW INCLUDE SUPPORT FOR FOUR DISKS
(6038,4047,4234,6030), CASSETTE AND MAGNETIC TAPE FOR
THE NOVA AND ECLIPSE CPUs. FOR MICRONOVA ONLY
THE 6038 DRIVER IS APPROPRIATE.

STATUS	PART NUMBERS NOVA LINE	ECLIPSE LINE	FILE NO	FORMAT	NAME(S)
-----	-----	-----	----	-----	-----

PAPER TAPE MODELS
3243

3400

R	099-000064-06	099-000127-03	N/A	XFER	DSKDR.LB
R	099-000205-02	099-000208-02	N/A	XFER	DKPDR4047.LB
R	099-000206-02	099-000209-02	N/A	XFER	DKPDR4234.LB
R	099-000207-02	099-000210-02	N/A	XFER	DKPDR6030.LB
R	099-000224-01	---	N/A	XFER	DKPDR6038.LB
A	099-000228-00	099-000228-00	N/A	XFER	DKPDR6060.LB
R	099-000062-06	099-000129-03	N/A	XFER	CASDR.LB
R	099-000063-06	099-000130-03	N/A	XFER	MTADR.LB

MAG TAPE MODELS

3243M 3400M

R	071-000015-06	071-000055-04	0	DUMP	(ALL THE ABOVE)
---	---------------	---------------	---	------	-----------------

HIGH DENSITY MAG TAPE MODELS

3243H 3400H

R	071-000015-06	071-000055-04	0	DUMP	(ALL THE ABOVE)
---	---------------	---------------	---	------	-----------------

CASSETTE MODELS

3243C 3400C

R	070-000031-06	070-000091-04	0	DUMP	(ALL THE ABOVE)
---	---------------	---------------	---	------	-----------------

DISKETTE MODELS

3243F 3400F

R	072-000042-02	072-000043-02	1	DUMP	(ALL THE ABOVE)
---	---------------	---------------	---	------	-----------------

SCHEDULES:

583 MAPPED LIBRARY FOR NOVA 3 MAPPED RTOS
676 MAPPED LIBRARIES FOR MAPPED ECLIPSE RTOS

STATUS	PART NUMBERS NOVA LINE	ECLIPSE LINE	FILE NO	FORMAT	NAME(S)
-----	-----	-----	----	-----	-----
PAPER TAPE MODELS					
	3720	3721			
A	099-000225-00	---	N/A	XFER	NMAP.LB
A	---	099-000226-00	N/A	XFER	BMAP.LB
A	---	099-000227-00	N/A	XFER	BBMAP.LB
A	088-000082-07	088-000184-04	N/A	DUMP	(B)RTOSGEN.SV
A	089-000163-06	089-000178-04	N/A	XFER	(B)RTOSGEN.RB
A	089-000164-04	089-000177-02	N/A	XFER	(B)GSUBR.RB
A	090-000520-09	090-003884-04	N/A	XFER	PARR.SR
A	091-000081-09	091-000107-05	N/A	XFER	(B)RTOSGEN.AB
A	099-000060-08	099-000124-05	N/A	XFER	(N,B)RTOS1.LB
A	099-000061-07	099-000126-04	N/A	XFER	(N,B)RTOS2.LB
A	099-000222-01	---	N/A	XFER	MRTOS1.LB
A	099-000223-01	---	N/A	XFER	MRTOS2.LB

MAG TAPE MODELS

3720M 3721M

A	071-000232-01	071-000233-01	0	DUMP	(ALL THE ABOVE EXCEPT RTOSGEN.AB)
---	---------------	---------------	---	------	-----------------------------------

HIGH DENSITY MAG TAPE MODELS

3720H 3721H

A	071-000232-01	071-000233-01	0	DUMP	(ALL THE ABOVE EXCEPT RTOSGEN.AB)
---	---------------	---------------	---	------	-----------------------------------

CASSETTE MODELS
3100C

3391C

R	070-000024-07	070-000087-05	0	DUMP	(B)RTOSGEN.SV (B)RTOSGEN.RB (B)GSUBR.RB) PARR.SR
R	070-000174-01	---	0	DUMP	NRTOS1.LB NRTOS2.LB MRTOS1.LB MRTOS2.LB
R	---	070-000173-01	0	DUMP	BRTOS1.LB BRTOS2.LB

DISKETTE MODELS
3100F

3391F

R	072-000040-02	072-000041-02	1	DUMP	(ALL THE ABOVE EXCEPT RTOSGEN.AB)
---	---------------	---------------	---	------	---

SCHEDULES:

533 MAGNETIC PERIPHERAL SUPPORT FOR NOVA LINE RTOS
633 MAGNETIC PERIPHERAL SUPPORT FOR ECLIPSE LINE RTOS

MODEL NUMBERS BELOW INCLUDE SUPPORT FOR FOUR DISKS
(6038,4047,4234,6030), CASSETTE AND MAGNETIC TAPE FOR
THE NOVA AND ECLIPSE CPUs. FOR MICRONOVA ONLY
THE 6038 DRIVER IS APPROPRIATE.

STATUS	PART NUMBERS		FILE		
	NOVA LINE	ECLIPSE LINE	NO	FORMAT	NAME(S)
-----	-----	-----	-----	-----	-----

PAPER TAPE MODELS
3243

3400

R	099-000064-06	099-000127-03	N/A	XFER	DSKUR.LB
R	099-000205-02	099-000208-02	N/A	XFER	DKPDR4047.LB
R	099-000206-02	099-000209-02	N/A	XFER	DKPDR4234.LB
R	099-000207-02	099-000210-02	N/A	XFER	DKPDR6030.LB
R	099-000224-01	---	N/A	XFER	DKPDR6038.LB
A	099-000228-00	099-000228-00	N/A	XFER	DKPDR6060.LB
R	099-000262-06	099-000129-03	N/A	XFER	CASDR.LB
R	099-000263-06	099-000130-03	N/A	XFER	MTADR.LB

MAG TAPE MODELS

3243M 3400M

R 071-000015-06 071-000055-04 0 DUMP (ALL THE ABOVE)

HIGH DENSITY MAG TAPE MODELS

3243H 3400H

R 071-000015-06 071-000055-04 0 DUMP (ALL THE ABOVE)

CASSETTE MODELS

3243C 3400C

R 070-000031-06 070-000091-04 0 DUMP (ALL THE ABOVE)

DISKETTE MODELS

3243F 3400F

R 072-000042-02 072-000043-02 1 DUMP (ALL THE ABOVE)

SCHEDULES:

583 MAPPED LIBRARY FOR NOVA 3 MAPPED RTOS
676 MAPPED LIBRARIES FOR MAPPED ECLIPSE RTOS

STATUS	PART NUMBERS NOVA LINE	ECLIPSE LINE	FILE NO	FORMAT	NAME(S)
-----	-----	-----	----	-----	-----
PAPER TAPE MODELS					
	3720	3721			
A	099-000225-00	---	N/A	XFER	NMAP.LB
A	---	099-000226-00	N/A	XFER	BMAP.LB
A	---	099-000227-00	N/A	XFER	BBMAP.LB
A	088-000082-07	088-000184-04	N/A	DUMP	(B)RTOSGEN.SV
A	089-000163-06	089-000178-04	N/A	XFER	(B)RTOSGEN.RB
A	089-000164-04	089-000177-02	N/A	XFER	(B)GSUBR.RB
A	090-000520-09	090-003884-04	N/A	XFER	PARR.SR
A	091-000081-09	091-000107-05	N/A	XFER	(B)RTOSGEN.AB
A	099-000060-08	099-000124-05	N/A	XFER	(N,B)RTOS1.LB
A	099-000061-07	099-000126-04	N/A	XFER	(N,B)RTOS2.LB
A	099-000222-01	---	N/A	XFER	MRTOS1.LB
A	099-000223-01	---	N/A	XFER	MRTOS2.LB

MAG TAPE MODELS

3720M 3721M

A 071-000232-01 071-000233-01 0 DUMP (ALL THE ABOVE
EXCEPT
RTOSGEN.AB)

HIGH DENSITY MAG TAPE MODELS

3720H 3721H

A 071-000232-01 071-000233-01 0 DUMP (ALL THE ABOVE
EXCEPT
RTOSGEN.AB)

CASSETTE MODELS
3720C 3721C

A 070-000174-01 --- 0 DUMP MRNRTOS1.LB
MRNRTOS2.LB
MRTOS1.LB
MRTOS2.LB

A 070-000176-01 --- 0 DUMP NMAP.LB
RTOSGEN.SV
RTOSGEN.RB
PARR.SR
GSUBR.RB

A --- 070-000087-05 0 DUMP BRTOSGEN.SV
BRTOSGEN.RB
BGSUB.RB
PARR.SR

A --- 070-000177-01 0 DUMP BMAP.LB
BBMAP.LB
BRTOS1.LB
BRTOS2.LB

DISKETTE MODELS
3720F 3721F

A 072-000145-01 072-000146-01 DUMP (ALL THE ABOVE
EXCEPT
RTOSGEN.AB)

B. DOCUMENTATION

```

-----
STATUS  PART NUMBERS
NOVA LINE  ECLIPSE LINE  NAME(S)
-----
-      017-000003-02  017-000020-00  RDOS/RTOS BUFFERED I/O PACKAGE
-      017-000006-01  017-000019-00  USER DEVICE DRIVER
                           IMPLEMENTATION IN RTOS
-      086-000053-00  086-000054-00  RTOS DEVICE DRIVER
-      093-000056-06  093-000135-00  RTOS REFERENCE MANUAL
-      093-000093-02  093-000136-00  INTRODUCTION TO RTOS
R      085-000030-04B  085-000030-04B  RTOS RELEASE NOTICE
-----

```

3. ENVIRONMENT

A. PREREQUISITES

NOVA & ECLIPSE

MICRONOVA

```

-----
RDOS REV. 6.20 OR
DOS REV. 1.10
SOS REV. 9.01 OR LATER
OR STANDALONE UTILITIES
(SCHEDULE 503) (SOS RIOR
CANNOT LOAD VIRTUAL
OVERLAYS, HOWEVER)

```

B. SUPPORTED PRODUCTS

NOVA & ECLIPSE

MICRONOVA

```

-----
FORTRAN 5 REV 5.20          FORTRAN 4 REV 5.10
FORTRAN 4 REV 5.10
(NOTE THAT RTOS 5.0 AND LATER WILL NOT RUN WITH VERSIONS
OF FORTRAN EARLIER THAN THOSE ABOVE)
ALGOL REV 02.03

```

COMMUNICATIONS

```

-----
RSTCP  REV 1.2
CAM    REV 1.0
RJE80  REV 0.0
RTIOS  REV 1.0
SAM    REV 0.0
HAMLET REV 1.1

```


C. SPECIAL CONSIDERATIONS

-
1. THERE HAVE BEEN CHANGES MADE TO THE PARAMETER FILE PARR.SR. IT WILL THEREFORE BE NECESSARY FOR MODULES, WHICH USE ANY OF THESE PARAMETERS, TO BE RE-ASSEMBLED.
 2. WITH REV 2.0 OF DOS AND 6.2 OF RDOS, A PATCH PROGRAM WILL BE MADE AVAILABLE. THIS WILL FACILITATE THE APPLICATION OF PATCHES, USING A PATCH FILE SUPPLIED WITH UPDATES TO RTOS.
-

4. ENHANCEMENTS

-
- 1) VIRTUAL OVERLAYS--
THE SYSTEM CALLS .OVOPN AND .OVLOD AND THE TASK CALLS .TOVLD, .OVEX, .OVREL AND .OVKIL MAY NOW BE USED WITH RTOS WHEN OVERLAYS INVOLVED ARE VIRTUAL. SEE DOCUMENTATION E.
 - 2) EXTENDED WINDOW MAPPING--
THE SYSTEM CALLS .VMEM, .MAPDF AND .REMAP HAVE BEEN ADDED. SEE DOCUMENTATION F.
 - 3) EXTENDED BLOCK IO
TO GO ALONG WITH EXTENDED WINDOW MAPPING .ERDB AND .ENRB HAVE BEEN ADDED. SEE DOCUMENTATION G.
 - 4) MAPPED USER DEVICES
CHANGES HAVE BEEN MADE TO THE .IDEF CALL, AND .STMAP HAS BEEN ADDED. SEE DOCUMENTATION H.
 - 5) DISK SUPPORT
SUPPORT HAS BEEN ADDED FOR THE 6060 DISK DRIVE. ECC CORRECTION WILL BE PERFORMED IF NECESSARY. SEE DOCUMENTATION M.
-

5. FIXES

-
- 1) NULLS TERMINATING .WRL CALLS WILL NOW RESET THE COLUMN COUNT TO ZERO. FAILURE TO DO THIS CAUSED EVENTUAL "LINE TOO LONG" ERRORS.
 - 2) THE .MTDIO CALL HAS BEEN FIXED TO NOT WAIT FOR THE UNIT TO COME READY BEFORE ISSUING A "GET STATUS" COMMAND.
-

6. NOTES/WARNINGS

1) THE RTOSGEN PROGRAM WILL NOT PREVENT YOU FROM SYSGENING A PERIPHERAL DRIVER FOR A MICRONOVA SYSTEM FOR WHICH THERE IS NO SUCH DEVICE.

2) IN THE LOAD LINE USED TO BUILD RTOS SAVE FILE, THE RTOS LIBRARIES SHOULD APPEAR LAST. FOR EXAMPLE:

```
RLDR/C RTOS MYPROG MTADR, LB NRTOS1, LB NRTOS2, LB
THE NAMES OF THE LIBRARIES ARE NRTCS1, LB AND NRTOS2, LB
FOR NOVA, BRTOS1, LB AND BRTOS2, LB FOR ECLIPSE, AND
MRTOS1, LB AND MRTOS2, LB FOR MICRONOVA.
```

IF MAPPED LIBRARIES ARE TO BE INCLUDED, THEY SHOULD PRECEDE THE RTOS1 AND RTOS2 LIBRARIES BEING LOADED, IE

```
RLDR/C RTOS, RB <USER STUFF> <PERIPHERAL LIBRARIES> +MAP, LB ^
^RTOS1, LB ^RTOS2, LB
```

<USER STUFF> MAY INCLUDE VIRTUAL OVERLAYS, AS FOR [OV1, OV2]/V

WHERE * = N FOR NOVA, B FOR ECLIPSE AND M FOR MICRONOVA

WHERE + = N FOR NOVA 3, B FOR ECLIPSE AND BB FOR C330/S230.

THIS ORDER MUST BE FOLLOWED TO ENSURE CORRECT RESOLUTION OF SYSTEM SYMBOLS.

3) RTOS DOES NOT RECOGNIZE A LEAPYEAR, IN THE RTOS CALENDER, THE DAY AFTER FEB. 28 IS MARCH 1, FOR ALL YEARS.

4) RTOSGEN USES LOCATIONS 21-27 AS AUTO INCREMENT LOCATIONS.

5) THE CREATED SAVE FILE MUST BE <= 31K LONG IF MAPPED RTOS, THIS IS A RESULT OF THE FACT THAT RTOS AND THE USER PROGRAM ARE IN THE SAME ADDRESS SPACE AND BLOCK 31 MUST BE USED FOR SOME MAP FUNCTIONS.

6) THE SYMBOL DSKDC WILL BE RESOLVED, IF IT IS OMITTED FROM THE LOAD LINE BY MISTAKE, NO ERROR WILL BE GENERATED, BUT THE DEVICE WILL NOT BE PRESENT.

7. DOCUMENTATION CHANGES

RTOS MANUAL (93-000056) IS CURRENTLY BEING UPDATED.
THE FOLLOWING INFORMATION IS PROVIDED AS A TEMPORARY
DESCRIPTION OF CHANGES WHICH HAVE BEEN MADE TO RTOS.

- A. THE RTOS USER STATUS TABLE (RTOS MANUAL, PAGE 6-4),
HAS BEEN CHANGED TO BE RDOS COMPATIBLE. SEE RDOS
REFERENCE MANUAL (93-000075) PAGE 5-3 FOR EXACT
DISPLACEMENTS. SEE ALSO PARR, SR.
- B. THE TCB STRUCTURE USES OFFSETS CORRESPONDING TO PREVIOUS
VERSIONS OF RTOS, RDOS (SEE EITHER MANUAL, PAGE 6-5 RTOS), HOWEVER
A HEADER, TO BE USED BY THE SYSTEM, HAS BEEN DEFINED
AS NEGATIVE OFFSETS FOR THE TCB. THEY ARE:

TXPC	=	-1	;SYSTEM TASK PC
TXLNK	=	-2	;SYSTEM TCB CHAIN LINK
TXDCT	=	-3	;DCT ADDRESS FOR CURRENT IO HANDLER
TXUFT	=	-4	;UFT ENTRY POINTER
TXTM1	=	-5	;TASK TEMPORARY 1

FOR CONVENIENCE:

TXBEG=TXTM1 ;BEGINNING OF TCB

THE RESULTING TCB HAS A LENGTH OF $21+5=26$ OCTAL WORDS FOR ALL
VERSIONS OF RTOS. A QUICK DESCRIPTION OF THE HEADER FOLLOWS.

TXPC IS USED TO IDENTIFY A TASK AS A SYSTEM TASK.
IF $TXPC=0$, NO SYSTEM TASK EXISTS. WHEN $TXPC \neq 0$
TXPC SPECIFIES THAT A SYSTEM TASK IS ASSOCIATED
WITH A USER TASK. IF BIT 0 OF TXPC = 0
THIS IS THE PC OF A SYSTEM TASK READY TO RUN. IF BIT 0 $\neq 0$,
BITS 1-15 ARE THE PC OF A SYSTEM TASK WAITING FOR COMPLETION
OF IO BEFORE RESUMING EXECUTION.

TXLNK IS USED BY THE SYSTEM TO MAINTAIN A LIST OF ACTIVE
SYSTEM TASKS.

TXDCT CONTAINS THE DCT ADDRESS FOR A TASK CURRENTLY
RUNNING AS A SYSTEM TASK.

TXTM1 IS USED AS A TEMPORARY, AVAILABLE FOR SYSTEM TASKS

A SYSTEM TASK MAY BEST BE THOUGHT OF AS PROCESSING WHICH
MAY GO ON WHILE THE USER IS IDLE. AN EXAMPLE MIGHT BE THE CARD
READER, WHICH USES A SYSTEM TASK TO TRY TO KEEP A CARD AHEAD OF THE USER

C. THE PAGE ZERO STRUCTURE OF RTOS HAS BEEN SIGNIFICANTLY CHANGED
(SEE PAGES 6-1 TO 6-3 OF THE RTOS MANUAL), A DESCRIPTION FOLLOWS.

THE FOLLOWING PARAMETERS DESCRIBE THE PAGE ZERO LOCATIONS
USED BY THE RTOS SYSTEM AND BY THE VARIOUS CPUS THAT IT RUNS
ON. LOCATIONS 0 THRU 17 AND 376 THRU 377 ARE RESERVED FOR
RTOS AND ARE NOT TO BE USED EXCEPT BY THE OPERATING SYSTEM.
THIS PAGE ZERO LAYOUT IS INCOMPATIBLE WITH RTOS REVISIONS BEFORE
RTOS REV 05.00.

```
.IPC = 0      ; INTERRUPT PC & CARRY STORAGE
.ISV = 1      ; INTERRUPT SERVICE VECTOR
.SCL = 2      ; SYSTEM CALL PROCESSOR VECTOR - ALSO MICRO-NOVA
              ; RTC INTERRUPT VECTOR
.CSO = 3      ; NOVA3/MICRO NOVA STACK FAULT VECTOR
CTCB = 4      ; SYSTEM: CURRENT TASK CONTROL BLOCK (TCB)
.CMSK = 5     ; SYSTEM: CURRENT INTERRUPT MASK (ECLIPSE
              ; VCT ALSO)

SCHED = 6     ; SYSTEM: VECTOR TO SCHEDULER
RSCHD = 7     ; SYSTEM: VECTOR TO UNPEND USER TCB
IOEND = 10    ; SYSTEM: VECTOR TO I/O END PROCESSOR
DISMIS = 11   ; SYSTEM: INTERRUPT DISMISSAL VECTOR
USTP = 12     ; DEFINED FOR RDS/DOS COMPATIBILITY
              ; (CONTAINS UST PRT)

.SYS = 13     ; SYSTEM: FLAG, 0 => USER, <>0 => SYSTEM
RLOC = 14     ; SYSTEM: TEMPORARY RETURN LOCATION
PANIC = 15    ; SYSTEM: PANIC ROUTINE - CONTAINS HALT
USP = 16      ; USER STACK POINTER (DEFINED IN OSID.SR)
SY.ST = 17    ; VECTOR FOR .SYSTEM IN USER SCHEDULER
```

THE FOLLOWING DEFINITION DEFINES A TWO WORD RESERVED AREA TO ALLOW
EASY RESTART CAPABILITY

```
BEGIN = 376      ; LOC 376:      JMP      @,+1
                ; LOC 377:      .RTOS
```

THESE SYMBOLS ARE DEFINED IN PARR.SR. OF THE SYMBOLS DEFINED,
ONLY A FEW ARE NEW.

.SCL. IS THE VECTOR TO THE SYSTEM CALL PROCESSOR, MICRONOVA
RTC INTERRUPT HANDLING.

.CSO. IS THE ADDRESS OF THE NOVA3/MICRONOVA STACK FAULT HANDLER
PANIC CONTAINS A HALT AND IS TRANSFERRED TO ON FATAL SYSTEM ERRORS
BEGIN HAS BEEN DEFINED FOR EASY RESTART CAPABILITY.

D. CHANGES TO RTOSGEN QUESTIONS.
THE COMPUTER TYPE QUESTION #29 (RTOS MANUAL, PAGE B-9)
HAS BEEN CHANGED TO:

COMPUTER TYPE: NOVA(0), NOVA3(1), ECLIPSE(2), OR MICRONOVA(3)?

THE USER SHOULD ANSWER ACCORDING TO HIS COMPUTER TYPE. SPECIFYING
MICRONOVA SETS UP A HINT TABLE APPROPRIATE TO A MICRONOVA, WHILE
EITHER MICRONOVA OR NOVA3 WILL HAVE THE EFFECT OF PRESERVING THE STACK
INFORMATION WHEN IN THE SCHEDULER.

WITH REV 6.0 QUESTION 1 (RTOS MANUAL, PAGE B-4)
IS PRECEDED BY THE ADDITIONAL QUESTION:

MAPPED SYSTEM(0=NO,1=YES) ?

IF A MAPPED SYSTEM IS TO BE SYSGENED, THE USER SHOULD TYPE 1 (YES)
OTHERWISE 0. IF THE ANSWER WAS YES, THE NEXT QUESTION (HOW MUCH MEMORY)
IS SKIPPED. ALSO SEE FOLLOWING.

FOLLOWING QUESTION # 22 (RTOS MANUAL, PAGE B-9)

IF THE USER SPECIFIED A MAPPED SYSTEM, THE FOLLOWING ADDITIONAL QUESTIONS
WILL BE ASKED TO INQUIRE AS TO WHICH FEATURES TO LOAD:

VIRTUAL OVERLAYS ?
EXTENDED WINDOW MAPPING ?
MAPPED IDEF CALLS ?

AN ANSWER OF 1 (YES) TO THE FIRST QUESTION INCLUDES THE CODE FOR
PROCESSING THE SYSTEM CALLS .OVOPN AND .OVLOD AND FOR LOADING
VIRTUAL OVERLAYS AT STARTUP.

AN ANSWER OF 1 (YES) TO THE SECOND QUESTION INCLUDES THE CODE FOR
PROCESSING .VMEM, .MAPDF, .REMAP, .ERDB, AND .EWRB.

AN ANSWER OF 1 (YES) TO THE THIRD QUESTION INCLUDES
THE CODE TO PROCESS .IDEF, .IRMV CALLS WHEN USING MAPPED
RTOS AND DCH DEVICES AND .STMAP.

THE DISK QUESTION, # 7 (RTOS MANUAL PAGE B-5)
HAS BEEN CHANGED TO ALLOW AN ANSWER OF 7, WHICH IS APPROPRIATE
WHEN THE DISK GENNED IS A 6060 DISK.

E. VIRTUAL OVERLAYS

WITH REV 6.0 IT IS POSSIBLE TO MAKE USE OF VIRTUAL OVERLAYS AS A METHOD OF EXTENDING THE USER ADDRESS SPACE. THERE IS NO POSSIBILITY OF "NORMAL" OVERLAYS. IF THEY ARE ENCOUNTERED, A FATAL ERROR WILL BE GIVEN.

VIRTUAL OVERLAYS WILL BE ABLE TO BE LOADED FROM THE FOLLOWING DEVICES:

MTA POSITIONS 0 -> 99
 CAS POSITION 0
 PTR
 TTR
 MCA(1)
 FIXED OR MOVING HEAD DISKS SUPPORTED BY RTOS(SEE DOC N)

THE OVERLAY FILE IS ASSUMED TO COME FROM THE SAME DEVICE AS THE RTOS PROGRAM CAME FROM. IE IF RTOS CAME FROM TBOOT FROM MTA, OVERLAYS WILL BE LOADED FROM MTA.

THE USER MAY NOT BUILD AN RTOS SAVE FILE WITH VIRTUAL OVERLAYS FROM SOS RLDR. THIS MAY ONLY BE DONE WITH RDOS RLDR REV 7.0 UNLESS USER GUARANTEES EXCLUSIVENESS OF OVERLAY TABLE AND NREL CODE.

THE VIRTUAL OVERLAYS WILL BE LOADED AT INITIALIZATION TIME, BEFORE THE USER PROGRAM BEGINS EXECUTION. THIS WILL BE TRANSPARENT TO THE USER EXCEPT TO THE EXTENT THAT HE MUST ANSWER QUESTIONS AT THAT TIME AS TO THE SOURCE OF OVERLAYS (SEE SECTION I, BELOW). THE PROGRAM MAY BE PREVENTED FROM RUNNING AT ALL IF INSUFFICIENT SPACE EXISTS TO LOAD THE OVERLAYS OR IF PROBLEMS OCCUR DURING THE LOAD.

DIFFERENCES FROM RDOS

 RTOS DOES NOT USE THE ARGUMENT AC0 (POINTER TO OVERLAY FILE NAME) ON A .OVOPN CALL, BECAUSE THE OVERLAYS WERE ALREADY LOADED AT INITIALIZATION TIME.
 THE .OVOPN CALL ASSOCIATES A CHANNEL WITH THE OVERLAYS.
 NO CHECK IS MADE AS TO THE DEVICE THE OVERLAYS WERE ACTUALLY LOADED FROM.

RTOS DOES NOT USE THE ARGUMENT AC1 (CONDITIONAL/UNCONDITIONAL LOAD FLAG) ON A .OVL0D CALL, SINCE THE OVERHEAD ASSOCIATED WITH LOADING A VIRTUAL OVERLAY IS SMALL, THE OVERLAY WILL ALWAYS BE LOADED.

SEE ALSO "LOADING DISK OVERLAYS", BELOW.

F. EXTENDED WINDOW MAPPING

THESE CALLS SHOULD FUNCTION IN THE SAME MANNER AS THEIR RDOS COUNTER-PARTS.

G. EXTENDED BLOCK IO

THESE CALLS SHOULD ALSO FUNCTION IN THE SAME MANNER AS THE RDOS EQUIVALENTS.

H. CHANGES TO .IDEF SYSTEM CALL

WITH REV 6.0 RTOS IS NOW MORE COMPATIBLE WITH RDOS. BIT 0 OF THE DCT ADDRESS SUPPLIED NOW BEHAVES AS FOLLOWS: IF THE USER SETS BIT 0 TO 1, IT WILL BE CLEARED BEFORE BEING USED BY RTOS. THIS MEANS THAT THE USER MAY (AND SHOULD) SET BIT 0 TO SPECIFY A DATA CHANNEL DEVICE WHEN USING MAPPED RTOS. A LIMITATION IS PLACED ON THE NUMBER OF DEVICES WHICH MAY BE IDEFFED ON A MAPPED SYSTEM (AS IN RDOS). THE LIMIT IS 10. DATA CHANNEL IDEFFED DEVICES.

THE CALL .STMAP WAS ADDED TO ALLOW USE OF DCH DEVICES UNDER MAPPED RTOS.

I. PROCEDURAL DIFFERENCES FOR VIRTUAL OVERLAYS

AS MUCH AS POSSIBLE, THESE ARE KEPT TO A MINIMUM. WHEN THE USER IS READY TO PRODUCE A SAVE FILE, HE MUST INCLUDE IN THE LOAD LINE THE MAPPED LIBRARY FOR THE MAP WHICH WILL BE IN USE (IE THE NOVA 3/D, ECLIPSE C330, ETC, SEE NOTE 2) ONCE THE SAVE FILE HAS BEEN CREATED, THE OVERLAY FILE (IF ANY) SHOULD BE PLACED ON AN APPROPRIATE MEDIA, AND THE PROGRAM MAY BE BOOTED UP. THE OVERLAYS ARE PLACED ON THE MEDIA IN DUMP FORMAT, BY USING APPROPRIATE CLI COMMANDS. WHEN RTOS STARTS UP, IT WILL DETERMINE WHETHER VIRTUAL OVERLAYS ARE TO BE USED, AND IF SO, WILL DETERMINE THEIR SOURCE. THIS IS ASSUMED TO BE THE SAME DEVICE AS THE RTOS PROGRAM, FOR CASSETTE, TTR, PTR A MESSAGE WILL BE OUTPUT REQUESTING THE USER TO STRIKE ANY KEY WHEN THE MEDIA IS IN PLACE. FOR MAG TAPE, A FILE POSITION WILL BE REQUESTED, FOR MCA AND DISK, NO QUESTIONS WILL BE ASKED. IT WILL THEN PROCEED TO LOAD THE OVERLAYS. IF THIS PROVES TO BE IMPOSSIBLE, RTOS WILL TERMINATE, NEVER HAVING ENTERED THE USER PROGRAM. UPON SUCCESSFUL STARTUP, RTOS WILL EXECUTE AS BEFORE.

J. CHANGES TO RTOS DCTS

TO ALLOW DATA CHANNEL DEVICES TO BE ADDED TO MAPPED RTOS, THE DCT WAS EXTENDED BY TWO WORDS, WHICH ARE PRESENT ONLY FOR NON-BEAD DEVICES. (SEE USER DEVICE DRIVER IMPLEMENTATION, 17-000006-01)

DCTMP=13 THIS WORD IS USED TO STORE THE MAP WORD (LOGICAL ADDRESS) TO BE USED WHEN SETTING UP THE DATA CHANNEL MAP FOR AN IO TRANSFER. THIS IS SET UP DURING INITIALIZATION.

DCTNM=14 THIS WORD CONTAINS THE NUMBER OF DATA CHANNEL SLOTS WHICH THE DEVICE REQUIRES IN THE DATA CHANNEL MAP, AND THE NUMBER WHICH MUST BE SET UP FOR A DATA CHANNEL TRANSFER.

K. MAP VIOLATIONS, TRAPS

USER TRAPS, AND MAP VIOLATIONS WILL BE TREATED LIKE STACK OVERFLOWS, IE IF THERE IS A STACK OVERFLOW HANDLER, (LOCATION 43), IT WILL RECEIVE CONTROL. IF NO SUCH HANDLER IS PRESENT, RTOS WILL HALT. THIS OFFERS AN ALTERNATIVE TO A PANIC.

L. ERRORS ON SYSTEM CALLS

FOR THE SYSTEM CALLS WHICH WERE ADDED, THE FOLLOWING STATEMENTS ARE TRUE:

- 1) ANY OF THE RDOS ERROR CODES SHOULD BE VIEWED AS POSSIBLE
- 2) SINCE RTOS HAS NO EXTENSIVE FILE STRUCTURE, MANY OF THE FILE RELATED ERROR CODES WILL NOT BE GIVEN.
- 3) IF A MAPPED SYSTEM CALL IS ISSUED IN A NON-MAPPED SYSTEM, THE ERROR "ILLEGAL SYSTEM COMMAND", ERICM WILL BE GIVEN.

M. CHANGES RELATED TO THE SUPPORT OF THE 6060 DISK

OTHER THAN THE CHANGE IN THE RTOSGEN DISK QUESTION, THE ONLY NOTABLE CHANGE IS THAT FOR THE 6060, THE SIZE OF .PTBL(DISK FILE) ENTRIES IS 8 WORDS, AS COMPARED WITH 6 WORDS FOR OTHER MOVING HEAD DISKS, AND 5 WORDS FOR FIXED HEAD DISKS. THIS IS A RESULT OF THE FACT THAT DSTART(THE STARTING BLOCK) AND DLAST(THE ENDING BLOCK) MAY EACH BE 2 WORDS LONG.

N. LOADING VIRTUAL OVERLAYS FROM DISK

RTOS WILL LOAD VIRTUAL OVERLAYS FROM DISK, PROVIDING THAT A SET OF CONVENTIONS IS FOLLOWED. FIRST, THE USER MUST RTOSGEN THE .OL FILE. THE STARTING AND ENDING ADDRESSES NEED NOT BE VALID(SEE BELOW). THE NAME USED FOR THE OVERLAY FILE SHOULD BE THE SAME AS THE PROGRAM AND MUST BE 6 CHARACTERS LONG. THIS MEANS THAT IF THE PROGRAM IS ECHO.SV, THE OVERLAY FILE SHOULD BE GENNED AS ECHOOL.

THE SAVE FILE AND OVERLAY FILE MUST MEET ALL REQUIREMENTS SET BY HIPBOOT, SUCH AS NOT BEING IN A SUBDIRECTORY, HAVING A CONTIGUOUS .OL FILE, ETC. NOTE THAT, UNLIKE HIPBOOT OR RDOS, RTOS DOES NOT PERFORM BAD BLOCK REMAPPING. IF BLOCKS IN THE .OL FILE ARE REMAPPED, INCORRECT DATA WILL BE READ.

SINCE RTOS EXPECTS THE OVERLAYS TO BE LOADED IN A DUMP FORMAT, THE FILE ECHO.OL DESCRIBED ABOVE SHOULD BE A DUMP FILE. THIS MAY BE DONE BY THE FOLLOWING:

- 1) CREATE THE .OL FILE WITH RLDR
- 2) DUMP THE .OL FILE TO SOME OTHER FILE(DFILE, FOR EXAMPLE)
- 3) XFER THE DUMP FILE(DFILE) TO ECHO.OL, USING THE /C SWITCH TO MAKE THE FILE CONTIGUOUS, PREVIOUSLY HAVING DELETED OR RENAMED THE ORIGINAL .OL FILE

FOR EXAMPLE,

```
RLDR/C ECHO RTOS (OV1,OV2)/V CKPDR4047.LB NMAP.LB NRTOS1.LB
                                             NRTOS2.LB
```

```
DUMP DFILE ECHO.OL
RENAME ECHO.OL SAVE.OL
XFER DFILE ECHO.OL/C
```

SINCE AFTER ALL OF THIS, IT'S PRETTY HARD TO HAVE THE RIGHT STARTING ADDRESS OF THE .OL FILE, RTOS WILL USE THE ADDRESS GIVEN BY HIPBOOT AT BOOT TIME, INSTEAD OF THE VALUE RTOSGENNED IN.

O. CHANGES TO MODULE SIZES

INSTEAD OF MAINTAINING THE RTOS MANUAL WITH UP TO DATE SIZES FOR MODULES IN RTOS, THEY WILL BE DESCRIBED HERE.
(NUMBERS LISTED ARE IN OCTAL)

ITEM	NOVA SIZE	ECLIPSE SIZE	MICRONOVA SIZE
BASIC SYSTEM (INCLUDES GENIO, IOSER, INTD, RTIN, SCHED, SYSTEM, TMIN AND ONE TCB)	3336	3251	3356
MULTI-TASKING ROUTINES (TCBMON-TMIN, TXMT, TACAL, TIDC, TUMOD, ABORT, TQTAS, TOVLY, TRSCH, TPRI, TABT TSVRS)	2313	2224	2313
EACH ADDITIONAL TCB	26	26	26
EACH ADDITIONAL CHANNEL	2	2	2
POWER FAIL/AUTO RESTART (PWRDR)	231	231	241
HIGH PRIORITY INTERRUPTS (N=# OF HIGH PRIORITY DEVICES EXCEPT PWR RESTART)	11+3N	11+3N	11+3N
REAL TIME CLOCK (RTCDR)	415	415	415
FIXED HEAD DISK (DSKDR)	255	255	--
MOVING HEAD DISKS:			
DKPDR4047	551	551	--
DKPDR4234	613	613	--
DKPDR6030	551	551	--
DKPDR6038	--	--	640
DKPDR6060+ECC	1350	1350	--
EACH DISK:			
FIXED/MOVING/ZEBRA MAGNETIC TAPE DRIVER-- (MTADR)	103	103	--
EACH TAPE UNIT (MTUN)	414	414	--
CASSETTE TAPE DRIVER (CASDR)	103	103	--
EACH TAPE UNIT (CTUN)	414	414	--
TAPE SERVICE ROUTINE (MTSER)	732	732	--
BUFFERED TAPE I/O (IE MAG TAPE .RDL, .WRL) (MTBUF)	366	366	--
TELETYPE DRIVER (TTYDR)	400	400	400
EACH ADDITIONAL	125	125	125
PAPER TAPE READER (PTRDR)	215	215	215
SECOND PTR (PTR1DR)	45	45	45
PAPER TAPE PUNCH (PTPDR)	107	107	--
SECOND PTP (PTP1DR)	60	60	--
CARD READER (CDRDR)	1423	1423	--
SECOND CDR (CDR1DR)	373	373	--
LINE PRINTER (LPTDR)	73	73	73
SECOND LPT (LPT1DR)	44	44	44
PLOTTER (PLTDR)	163	163	--
SECOND PLT (PLT1DR)	134	134	--
TYPE 4060 MUX (QTYDR)	766	766	--
EACH QTY LINE	12	12	--
MULTIPROCESSOR COMM. ADAPTER (MCADR)	774	774	--
MCA DEVICE FILE TABLE (.MCTB) N=# LINES+1	20N	20N	--
DEVICE NAME TABLE (.CHTB) N=# OF DEVICES	4*N	4*N	4*N

MAPPED-ONLY SIZES

	NOVA-3 -----	S200/C300 -----	S230/C330 -----
WINDOW MAPPING (WINDOW)	340	340	340
VIRTUAL OVERLAYS (OVLOD,INIT)	3074	3052	3065
MAPPED IDEF (IDEF)	317	317	317
INITIALIZATION (INITLC,MAPSUBS)	1302	1215	1423
DATA CHANNEL SETUP (SWAMP)	75	75	101

8. PROBLEMS

1) ,RDS TO THE TTI CAUSES THE INPUT TO BE MASKED TO 7 BITS.
