

2-	3	THE RUN-TIME OVERLAY HANDLER
3-	4	#OVTAB OVERLAY TABLE
4-	2	OVERLAY HANDLER CODE

```
1      .MCALL .MODULE
2 000000 .MODULE DHANDL,RELEASE=V05,VERSION=01,COMMENT=<Overlay Handler>,IDENT=NO,LIB=YES
3
4      ;
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1      ; MAS, SHD
2
3      .SBTTL THE RUN-TIME OVERLAY HANDLER
4      .ENABL OBL
5
6      ;+
7      ; THE FOLLOWING CODE IS INCLUDED IN THE USER'S PROGRAM BY THE
8      ; LINKER WHENEVER LOW MEMORY OVERLAYS ARE REQUESTED BY THE USER.
9      ; THE RUN-TIME LOW MEMORY OVERLAY HANDLER IS CALLED BY A DUMMY
10     ; SUBROUTINE OF THE FOLLOWING FORM:
11     ;
12     ;       JSR      R5, $OVRH      ; CALL TO COMMON CODE FOR LOW MEMORY OVERLAYS
13     ;       .WORD   <OVERLAY # *6> ; # OF DESIRED SEGMENT
14     ;       .WORD   <ENTRY ADDRESS> ; ACTUAL CORE ADDRESS (VIRTUAL ADDRESS)
15     ;
16     ; ONE DUMMY ROUTINE OF THE ABOVE FORM IS STORED IN THE RESIDENT PORTION
17     ; OF THE USER'S PROGRAM FOR EACH ENTRY POINT TO A LOW MEMORY OVERLAY SEGMENT.
18     ; ALL REFERENCES TO THE ENTRY POINT ARE MODIFIED BY THE LINKER TO BE
19     ; REFERENCES TO THE APPROPRIATE DUMMY ROUTINE. EACH OVERLAY SEGMENT
20     ; IS CALLED INTO CORE AS A UNIT AND MUST BE CONTIGUOUS IN CORE. AN
21     ; OVERLAY SEGMENT MAY HAVE ANY NUMBER OF ENTRY POINTS, TO THE LIMITS
22     ; OF CORE MEMORY. ONLY ONE SEGMENT AT A TIME MAY OCCUPY AN OVERLAY REGION.
23     ;
24     ; THERE IS ONE WORD PREFIXED TO EVERY OVERLAY REGION THAT IDENTIFIES THE
25     ; SEGMENT CURRENTLY RESIDENT IN THAT OVERLAY REGION. THIS WORD IS AN INDEX
26     ; INTO THE OVERLAY TABLE AND POINTS AT THE OVERLAY SEGMENT INFORMATION.
27     ;
28     ; UNDEFINED GLOBALS IN THE OVERLAY HANDLER MUST BE NAMED "$OVDF1" TO
29     ; "$OVDFn" SUCH THAT A RANGE CHECK MAY BE DONE BY LINK TO DETERMINE IF
30     ; THE UNDEFINED GLOBAL NAME IS FROM THE OVERLAY HANDLER. A CHECK IS
31     ; DONE ON THE .RAD50 CHARACTERS "$OV", AND THEN A RANGE CHECK IS DONE ON
32     ; THE .RAD50 CHARACTERS "DF1" TO "DFn". THESE GLOBAL SYMBOLS DO NOT APPEAR
33     ; ON LINK MAPS, SINCE THEIR VALUE IS NOT KNOWN UNTIL AFTER THE MAP HAS BEEN
34     ; PRINTED. CURRENTLY $OVDF1 TO $OVDF5 ARE IN USE.
35     ;
36     ; GLOBAL SYMBOLS O$READ AND O$DONE ARE USEFUL WHEN DEBUGGING OVERLAID
37     ; PROGRAMS.
38     ;
39     ; O$READ:: WILL APPEAR IN THE LINK MAP AND LOCATES THE .READW
40     ; STATEMENT IN THE OVERLAY HANDLER.
41     ;
42     ; O$DONE:: WILL APPEAR IN THE LINK MAP AND LOCATES THE FIRST
43     ; INSTRUCTION AFTER THE .READW IN THE OVERLAY HANDLER.
44     ;-
```

```
1          .MCALL .READW,..V1..
2 000000          ..V1..          ;V1 FORMAT
3
4          .SBITL $OVTAB OVERLAY TABLE
5
6 000000          .PSECT $OTABL,D,GBL,OVR
7
8          ;+
9          ; OVERLAY TABLE STRUCTURE:
10         ;
11         ; LOC 64 ->  $OVTAB:
12         ;          .WORD  <CORE ADDR>,<RELATIVE BLK>,<WORD COUNT>  /O OVERLAYS
13         ;          DUMMY SUBROUTINES FOR ALL OVERLAY SEGMENTS
14         ; -
15
16
17 000000          $OVTAB:
```

```

1
2      .SBTTL  OVERLAY HANDLER CODE
3
4 000000      .PSECT  $OHAND, GBL
5 000000      .PSECT  ZOHAND, GBL, OVR
6
7      .ENABL  LSB
8
9      ; $OVRH IS THE ENTRY POINT TO THE OVERLAY HANDLER
10
11 000000 060502      .RAD50  /OVR/      ; THIS KEEPS HANDLER THE SAME SIZE AS V03
12 000002 010046      $OVRH:  MOV    R0, -(SP)      ; /O OVERLAY ENTRY POINT
13 000004 010146      MOV    R1, -(SP)      ; SAVE REGISTERS
14 000006 010246      MOV    R2, -(SP)
15
16 000010      1$:
17 000010 000422      BR      5$      ; FIRST CALL ONLY * * *
18      ;      MOV    @R5, R1      ; PICK UP OVERLAY NUMBER
19 000012 062701 177772'  ADD    ##OVTAB-6, R1      ; CALC TABLE ADDR
20 000016 012102      MOV    (R1)+, R2      ; GET FIRST ARG. OF OVERLAY SEG. ENTRY
21 000020 022512      2$:  CMP    (R5)+, @R2      ; IS OVERLAY ALREADY RESIDENT?
22 000022 001406      BEQ    3$      ; YES, BRANCH TO IT
23
24      ; +
25      ; THE .READW ARGUMENTS ARE AS FOLLOWS:
26      ; CHANNEL NUMBER, CORE ADDRESS, LENGTH TO READ, RELATIVE BLOCK ON DISK.
27      ; THESE ARE USED IN REVERSE ORDER FROM THAT SPECIFIED IN THE CALL.
28      ; -
29
30 000024      O$READ:  .READW 17, R2, @R1, (R1)+ ; READ FROM OVERLAY FILE
31 000036 103405      O$DONE:  BCS   4$
32 000040 012602      3$:  MOV    (SP)+, R2      ; RESTORE USERS REGISTERS
33 000042 012601      MOV    (SP)+, R1
34 000044 012600      MOV    (SP)+, R0
35 000046 011505      MOV    @R5, R5      ; GET ENTRY ADDRESS
36 000050 000205      RTS    R5      ; ENTER OVERLAY ROUTINE AND RESTORE USER'S R5
37
38 000052 104376      4$:  EMT    376      ; SYSTEM ERROR 10 (OVERLAY I/O)
39 000054 000 373      .BYTE 0, 373
40
41 000056 012767 011501 177724 5$:  MOV    #11501, 1$      ; RESTORE SWITCH INSTR (MOV @R5, R1)
42 000064 016701 000012      MOV    $ODF1, R1      ; START ADDR FOR CLEAR OPERATION
43 000070 005021      6$:  CLR    (R1)+      ; CLEAR ALL OVERLAY REGIONS
44 000072 020167 000006      CMP    R1, $ODF2      ; DONE?
45 000076 103774      BLD    6$      ; LD -> NO, REPEAT
46 000100 000743      BR     1$      ; AND RETURN TO CALL IN PROGRESS
47
48 000102 0000000      $ODF1:  .WORD  $OVDF1      ; HIGH ADDR OF ROOT SEGMENT + 2 (NXT AVAIL)
49 000104 0000000      $ODF2:  .WORD  $OVDF2      ; HIGH ADDRESS OF /O OVERLAYS +2 (NXT AVAIL)
50
51      .DSABL  LSB
52
53 000001      .END

```

Errors detected: 0

*** Assembler statistics

Work file reads: 0
Work file writes: 0
Size of work file: 10442 Words (41 Pages)
Size of core pool: 17920 Words (70 Pages)
Operating system: RT-11

Elapsed time: 00:00:04.17
DK: OHANDL, LP: OHANDL=DK: OHANDL, MAC/C/N: SYM

... CM0	3-2#	4-30	4-30	4-30
... CM1	3-2#			
... CM2	3-2#			
... CM3	3-2#			
... CM4	3-2#			
... CM5	3-2#	4-30		
... CM6	3-2#			
... CM7	3-2#	4-30		
.. V1..	3-1#	3-2		
. AUDIT	1-2#			
. MODUL	1-1#	1-2		
. NLCSI	1-2#			
. READW	3-1#	4-30		
. RMODU	1-2#			