F 7

```
BBBBBBBBBBBB        AAAAAAAAA        CCCCCCCCCCCC  KKK         KKK  UUU         UUU  PPPPPPPPPPPP
BBBBBBBBBBBB        AAAAAAAAA        CCCCCCCCCCCC  KKK         KKK  UUU         UUU  PPPPPPPPPPPP
BBBBBBBBBBBB        AAAAAAAAA        CCCCCCCCCCCC  KKK         KKK  UUU         UUU  PPPPPPPPPPPP
BBB         BBB  AAA         AAA  CCC              KKK         KKK  UUU         UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC              KKK         KKK  UUU         UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC              KKK         KKK  UUU         UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC              KKK      KKK     UUU         UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC              KKK      KKK     UUU         UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC              KKK      KKK     UUU         UUU  PPP         PPP
BBBBBBBBBBBB     AAA         AAA  CCC              KKKKKKKKK        UUU         UUU  PPPPPPPPPPPP
BBBBBBBBBBBB     AAA         AAA  CCC              KKKKKKKKK        UUU         UUU  PPPPPPPPPPPP
BBBBBBBBBBBB     AAA         AAA  CCC              KKKKKKKKK        UUU         UUU  PPPPPPPPPPPP
BBB         BBB  AAAAAAAAAAAAAAA  CCC              KKK      KKK     UUU         UUU  PPP
BBB         BBB  AAAAAAAAAAAAAAA  CCC              KKK      KKK     UUU         UUU  PPP
BBB         BBB  AAAAAAAAAAAAAAA  CCC              KKK      KKK     UUU         UUU  PPP
BBB         BBB  AAA         AAA  CCC              KKK         KKK  UUU         UUU  PPP
BBB         BBB  AAA         AAA  CCC              KKK         KKK  UUU         UUU  PPP
BBB         BBB  AAA         AAA  CCC              KKK         KKK  UUU         UUU  PPP
BBBBBBBBBBBB     AAA         AAA     CCCCCCCCCCCC  KKK         KKK  UUUUUUUUUUUUUUU  PPP
BBBBBBBBBBBB     AAA         AAA     CCCCCCCCCCCC  KKK         KKK  UUUUUUUUUUUUUUU  PPP
BBBBBBBBBBBB     AAA         AAA     CCCCCCCCCCCC  KKK         KKK  UUUUUUUUUUUUUUU  PPP
```

```
**FILE**ID**COMMON                                        D 16
```

```
  CCCCCCCC    OOOOOO    MM      MM  MM      MM    OOOOOO    NN      NN
  CCCCCCCC    OOOOOO    MM      MM  MM      MM    OOOOOO    NN      NN
CC          OO      OO  MMMM  MMMM  MMMM  MMMM  OO      OO  NN      NN
CC          OO      OO  MMMM  MMMM  MMMM  MMMM  OO      OO  NN      NN
CC          OO      OO  MM  MM  MM  MM  MM  MM  OO      OO  NNNN    NN
CC          OO      OO  MM  MM  MM  MM  MM  MM  OO      OO  NNNN    NN
CC          OO      OO  MM      MM  MM      MM  OO      OO  NN  NN  NN
CC          OO      OO  MM      MM  MM      MM  OO      OO  NN  NN  NN
CC          OO      OO  MM      MM  MM      MM  OO      OO  NN    NNNN
CC          OO      OO  MM      MM  MM      MM  OO      OO  NN    NNNN
CC          OO      OO  MM      MM  MM      MM  OO      OO  NN      NN      ....
CC          OO      OO  MM      MM  MM      MM  OO      OO  NN      NN      ....
  CCCCCCCC    OOOOOO    MM      MM  MM      MM    OOOOOO    NN      NN      ....
  CCCCCCCC    OOOOOO    MM      MM  MM      MM    OOOOOO    NN      NN      ....

RRRRRRRR    EEEEEEEEEE    QQQQQQ
RRRRRRRR    EEEEEEEEEE    QQQQQQ
RR      RR  EE          QQ      QQ
RR      RR  EE          QQ      QQ
RR      RR  EE          QQ      QQ
RR      RR  EE          QQ      QQ
RRRRRRRR    EEEEEEEE    QQ      QQ
RRRRRRRR    EEEEEEEE    QQ      QQ
RR  RR      EE          QQ  QQ  QQ
RR  RR      EE          QQ  QQ  QQ
RR    RR    EE          QQ    QQ
RR    RR    EE          QQ    QQ
RR      RR  EEEEEEEEEE    QQQQ  QQ
RR      RR  EEEEEEEEEE    QQQQ  QQ
```

```
!       COMMON.REQ - BACKUP Common Definitions
!
!       Version 'V04-000'
!
!****************************************************************************
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!****************************************************************************
!
!
!++
!
! FACILITY:
!       Backup/Restore
!
! ABSTRACT:
!       This file contains the common definitions for BACKUP.
!
! ENVIRONMENT:
!       VAX/VMS user mode.
!
!--
!
! AUTHOR: M. Jack, CREATION DATE: 27-Aug-1980
!
! MODIFIED BY:
!
!       V03-014 LY0521          Larry Yetto             14-AUG-1984 11:01
!               Change version to V4.0
!
!       V03-013 LY0510          Larry Yetto             19-JUL-1984 08:40
!               MAXRSS was increased from 252 to 255 so some structures have
!               to be adjusted so that they remain longword aligned.  Increase DEVTYP
!               in the physical volume attributes from a byte to a longword.
!               Add a new flag to output flags to indicate that the input
!               save set is nonsequential.
!
!       V03-012 LY0500          Larry Yetto             25-JUN-1984 12:38
!               Add a new flags for the [000000] directory parsing and
!               a variable to hold the journal file extend size.
!
!       V03-011 LY0487          Larry Yetto             21-MAY-1984 16:06
!               Increase size of list buffer so that
!               it will be large enough for long directory
!               names (ie. 8 levels Of 32 char names)
!
!       V03-010 LY0473          Larry Yetto              9-APR-1984 08:25
!               Add OUTPUT_DIR_OPEN flag to output flags.
!
!       V03-009 LY0459          Larry Yetto             1-FEB-1984 10:22
!               Add support for new journal file structure level.
!
!       V03-008 CWH3008         CW Hobbs                29-Oct-1983
!               Update version to "V4FT"
!
!       V03-007 JEP0004         J. Eric Pollack         7-Aug-1983   10:00
!               Extend syntax of /encrypt qualifier
!
!       V03-006 ACG0342         Andrew C. Goldstein,    29-Jun-1983  13:15
!               Use general for all externals in BACKUP
!
!       V03-005 JEP0003         J. Eric Pollack         23-Apr-1983  10:21
!               Add definitions for encrypted savesets.
!
!       V03-004 ACG0332         Andrew C. Goldstein,    19-Apr-1983  17:13
!               Add support for file highwater mark and RMS journal flags;
!               extend directory string buffer for long directory names.
!
!       V03-003 MLJ0104         Martin L. Jack,         24-Jan-1983  23:33
!               Update version number to V3.3.  Add D_WILD_TERM for execute-only
!               directory scanning.  Add D_NON_TERM for stricter directory
!               saving.  Add INPUT_SAVE_OK for /RECORD/DELETE with errors.
!               Add bitmap size field to VCB.
!
!       V03-002 LMP0044         L. Mark Pilant,         21-Oct-1982  15:40
!               Add support for saving and restoring ACL's.
!
!       V03-001 LMP0032         L. Mark Pilant          21-Jun-1982  16:00
!               Add wildcard support for listings and restore operations.
!
!       V02-019 ACG0281         Andrew C. Goldstein,    8-Apr-1982  18:35
!               Add ODS-1 multi-header index file support
!
!       V02-018 ACG0279         Andrew C. Goldstein,    1-Apr-1982  22:00
!               Remove MTL_ALLOC_xxx fields
!
!       V02-017 ACG0277         Andrew C. Goldstein,    30-Mar-1982  15:07
!               Add ALT_SSNAME cell to hold alternate save set name
!
!       V02-016 MLJ0081         Martin L. Jack, 26-Feb-1982  15:25
!               Add VSR_RETAINMIN and VSR_RETAINMAX to support new home block
!               fields.
!
!       V02-015 MLJ0077         Martin L. Jack, 8-Feb-1982  15:11
!               Implement negative version numbers.
!
!       V02-014 MLJ0075         Martin L. Jack, 28-Jan-1982  20:05
!               Add DIR_VERLIM and VERLIMIT attributes and field D_VERLIM to
!               support version limit handling.
!
!       V02-013 MLJ0073         Martin L. Jack, 19-Jan-1982  18:19
!               Implement /PROTECTION qualifier for save set protection and
!               extend /LABEL qualifier to be a list.
!
!       V02-012 MLJ0063         Martin L. Jack, 31-Dec-1981  7:30
!               Update BACKUP version number.
!
!       V02-011 MLJ0062         Martin L. Jack, 2-Dec-1981  13:29
!               Add new structures to support /INCREMENTAL.
!               Add OUTPUT_IMPLICIT flag.
!
!       V02-010 MLJ0054         Martin L. Jack, 18-Oct-1981  21:46
!               Remove COM_IMP_NOBACK.  Add INPUT_PLACEMENT, INPUT_PLACE_LEN.
!               Add definitions of data structure for INPUT_PLACEMENT.  Add
!               INPUT_ON_RVN bit.  Add /DELETE qualifier.  Add disk quota table
!               for quota file reconstruction.  Move STAACP globals to common.
!               Delete JPI_STS, add COM_INTERACT flag.
!
!       V02-009 MLJ0052         Martin L. Jack, 1-Oct-1981  13:15
!               Implement /INTERCHANGE qualifier.
!
!       V02-008 MLJ0043         Martin L. Jack, 8-Sep-1981  16:54
!               Account for RMS logical device names.  Install $GETSYI.
!
!       V02-007 MLJ0036         Martin L. Jack, 29-Aug-1981  16:02
!               Extensive rewriting to complete implementation.
!
!       V02-006 ACG0211         Andrew C. Goldstein,    16-Jul-1981  10:23
!               Add structures for sequential disk support
!
!       V02-005 MLJ0025         Martin L. Jack, 8-May-1981  11:06
!               Reorganize qualifier database.  Additions to globals area.
!
!       V02-004 MLJ0023         Martin L. Jack, 23-Apr-1981  11:23
!               Implement placement attribute.
!
!       V02-003 MLJ0021         Martin L. Jack, 20-Apr-1981  21:53
!               Implement /TRUNCATE qualifier.
!
!       V02-002 MLJ0017         Martin L. Jack, 7-Apr-1981  0:48
!               Correct inadvertent transposition of subfields of UIC
!
!       V02-001 MLJ0010         Martin L. Jack, 25-Mar-1981  17:09
!               Reorganize global storage.  Prune unnecessary parts of
!               qualifier database.  Add structures for standalone ACP.
!               Add attribute-buffer structure for file attributes.
!
!**
```

```
!                       GENERAL
!
LITERAL
        TRUE=           1,
        FALSE=          0;


STRUCTURE
        BBLOCK[O,P,S,E;N]=
            [N]
            (BBLOCK + O)<P,S,E>;


MACRO
        BUG_CHECK(CODE,MESSAGE)=
            BEGIN
            EXTERNAL LITERAL %NAME (BACKUP$_, CODE);
            SIGNAL_STOP(%NAME(BACKUP$_, CODE));
            END %;


LITERAL
        COPY_BUFF_COUNT=2,              ! Default buffer count for disk-to-disk
        COPY_BUFF_SIZE= 32768+256+16,   ! Default buffer size for disk-to-disk
        SMALL_DISK=     4096,           ! Largest disk with no bad block data
        LIST_SIZE=      256,            ! Size of listing line
        MAX_RECORD=     2048,           ! Maximum length attribute record
        MAX_ATTRS=      14,             ! Maximum number of attributes in list
        STA_IN_CHAN=    %X'1FFFF',      ! Pseudo-channel for input
        STA_OUT_CHAN=   %X'2FFFF',      ! Pseudo-channel for output
        ATR$C_EXTFID=   39,             ! Internal attribute code for
        ATR$S_EXTFID=   6,              !     extension file ID
        ATR$C_SEGNUM=   40,             ! Internal attribute code for
        ATR$S_SEGNUM=   2;              !     extension section number


SWITCHES
        ADDRESSING_MODE(
            EXTERNAL=GENERAL,
            NONEXTERNAL=WORD_RELATIVE);


PSECT
        CODE=           CODE,
        PLIT=           CODE,
        OWN=            DATA(ADDRESSING_MODE(LONG_RELATIVE)),
        GLOBAL=         DATA;
```

```
! Macros to direct QIO and QIOW services to the standalone ACP or the real
! ACP depending on the operation in progress.  The C$ forms are conditional on
! whether the output volume is in image mode.  The S$ form invokes the
! standalone ACP and is used when we already know the output volume is in
! image mode.
!
KEYWORDMACRO C$QIO(EFN=0,CHAN=0,FUNC=0,IOSB=0,ASTADR=0,ASTPRM=0,P1=0,P2=0,P3=0,P4=0,P5=0,P6=0)=
    (
    IF (CHAN) GEQU STA_IN_CHAN
    THEN
        BEGIN
        EXTERNAL ROUTINE STA_QIO;
        STA_QIO(EFN,CHAN,FUNC,IOSB,ASTADR,ASTPRM,P1,P2,P3,P4,P5,P6)
        END
    ELSE
        BEGIN
        EXTERNAL ROUTINE SYS$QIO: ADDRESSING_MODE(ABSOLUTE);
        SYS$QIO(EFN,CHAN,FUNC,IOSB,ASTADR,ASTPRM,P1,P2,P3,P4,P5,P6)
        END
    ) %;


KEYWORDMACRO C$QIOW(EFN=0,CHAN=0,FUNC=0,IOSB=0,ASTADR=0,ASTPRM=0,P1=0,P2=0,P3=0,P4=0,P5=0,P6=0)=
    (
    IF (CHAN) GEQU STA_IN_CHAN
    THEN
        BEGIN
        EXTERNAL ROUTINE STA_QIOW;
        STA_QIOW(EFN,CHAN,FUNC,IOSB,ASTADR,ASTPRM,P1,P2,P3,P4,P5,P6)
        END
    ELSE
        BEGIN
        EXTERNAL ROUTINE SYS$QIOW: ADDRESSING_MODE(ABSOLUTE);
        SYS$QIOW(EFN,CHAN,FUNC,IOSB,ASTADR,ASTPRM,P1,P2,P3,P4,P5,P6)
        END
    ) %;


KEYWORDMACRO S$QIO(EFN=0,CHAN=0,FUNC=0,IOSB=0,ASTADR=0,ASTPRM=0,P1=0,P2=0,P3=0,P4=0,P5=0,P6=0)=
    (
    EXTERNAL ROUTINE STA_QIO;
    STA_QIO(EFN,CHAN,FUNC,IOSB,ASTADR,ASTPRM,P1,P2,P3,P4,P5,P6)
    ) %;


KEYWORDMACRO S$QIOW(EFN=0,CHAN=0,FUNC=0,IOSB=0,ASTADR=0,ASTPRM=0,P1=0,P2=0,P3=0,P4=0,P5=0,P6=0)=
    (
    EXTERNAL ROUTINE STA_QIOW;
    STA_QIOW(EFN,CHAN,FUNC,IOSB,ASTADR,ASTPRM,P1,P2,P3,P4,P5,P6)
    ) %;
```

```
!                           COMMAND INTERFACE
!
MACRO
        BACKUP$VERSION=         'V4.0' %;       ! Version number of BACKUP


LITERAL
        BACKUP$K_OPSYS=         1024,           ! Operating system ID
        BACKUP$K_BACKUP=        1,              ! Subsystem ID
        BACKUP$K_DATABLOCK=     1,              ! Application ID normal blocks
        BACKUP$K_XORBLOCK=      2;              ! Application ID XOR blocks


MACRO

        ! File context area, containing FAB, RAB, NAM, RLF, RSA, ESA areas.
        ! FAB is assumed to be first.
        ! NAM$L_MAXRSS is currently is 255 so we will
        !  add 1 to longword align structures
        !
        FC_FAB=         0,0,0,0 %,
        FC_RAB=         FAB$C_BLN,0,0,0 %,
        FC_NAM=         FAB$C_BLN+RAB$C_BLN,0,0,0 %,
        FC_RLF=         FAB$C_BLN+RAB$C_BLN+NAM$C_BLN,0,0,0 %,
        FC_ESA=         FAB$C_BLN+RAB$C_BLN+2*NAM$C_BLN,0,0,0 %,
        FC_RSA=         FAB$C_BLN+RAB$C_BLN+2*NAM$C_BLN+(NAM$C_MAXRSS+1),0,0,0 %,
        FC_S_AREA=      FAB$C_BLN+RAB$C_BLN+2*NAM$C_BLN+2*(NAM$C_MAXRSS+1) %;


MACRO

        ! Field definitions for QUAL area, qualifier database.
        !
        QUAL_INPU_LIST= 0,0,32,0 %,     ! Input parameters
        QUAL_OUTP_LIST= 4,0,32,0 %,     ! Output parameters
        QUAL_ANAL=      8,0,1,0 %,      ! /ANALYZE
        QUAL_BACK=      8,1,1,0 %,      ! /BACKUP
        QUAL_BEFO=      8,2,1,0 %,      ! /BEFORE
        QUAL_BEFO_BACK= 8,3,1,0 %,      ! /BEFORE=BACKUP
        QUAL_BLOC=      8,4,1,0 %,      ! /BLOCK_SIZE
        QUAL_BUFF=      8,5,1,0 %,      ! /BUFFER_COUNT
        QUAL_COMM=      8,6,1,0 %,      ! /COMMENT
        QUAL_COMP=      8,7,1,0 %,      ! /COMPARE
        QUAL_CONF=      8,8,1,0 %,      ! /CONFIRM
        QUAL_CRC=       8,9,1,0 %,      ! /CRC
        QUAL_CREA=      8,10,1,0 %,     ! /CREATED
        QUAL_DENS=      8,11,1,0 %,     ! /DENSITY
        QUAL_EXCL=      8,12,1,0 %,     ! /EXCLUDE
        QUAL_EXPI=      8,13,1,0 %,     ! /EXPIRED
        QUAL_FAST=      8,14,1,0 %,     ! /FAST
        QUAL_FULL=      8,15,1,0 %,     ! /FULL
        QUAL_GROU=      8,16,1,0 %,     ! /GROUP_SIZE
        QUAL_IGNO_NOBA= 8,17,1,0 %,     ! /IGNORE=NOBACKUP
        QUAL_IGNO_INTE= 8,18,1,0 %,     ! /IGNORE=INTERLOCK
        QUAL_IMAG=      8,19,1,0 %,     ! /IMAGE
        QUAL_INCR=      8,20,1,0 %,     ! /INCREMENTAL
        QUAL_INIT=      8,21,1,0 %,     ! /INITIALIZE
        QUAL_JOUR=      8,22,1,0 %,     ! /JOURNAL
        QUAL_LABE=      8,23,1,0 %,     ! /LABEL
        QUAL_LIST=      8,24,1,0 %,     ! /LIST
        QUAL_LOG=       8,25,1,0 %,     ! /LOG
        QUAL_MODI=      8,26,1,0 %,     ! /MODIFIED
        QUAL_NEWV=      8,27,1,0 %,     ! /NEW_VERSION
        QUAL_OVER=      8,28,1,0 %,     ! /OVERLAY
        QUAL_I_OWNE=    8,29,1,0 %,     ! /OWNER_UIC on input
        QUAL_I_OWN_WGRP=8,30,1,0 %,     !     Wildcard group
        QUAL_I_OWN_WMEM=8,31,1,0 %,     !     Wildcard member
        QUAL_O_OWNE=    12,0,1,0 %,     ! /OWNER_UIC on output
        QUAL_O_OWN_DEFA=12,1,1,0 %,     !     =DEFAULT
        QUAL_O_OWN_ORIG=12,2,1,0 %,     !     =ORIGINAL
        QUAL_O_OWN_PARE=12,3,1,0 %,     !     =PARENT
        QUAL_O_OWN_UIC= 12,4,1,0 %,     !     =[g,m]
        QUAL_PHYS=      12,5,1,0 %,     ! /PHYSICAL
        QUAL_RECO=      12,6,1,0 %,     ! /RECORD
        QUAL_REPL=      12,7,1,0 %,     ! /REPLACE
        QUAL_REWI=      12,8,1,0 %,     ! /REWIND
        QUAL_I_SAVE=    12,9,1,0 %,     ! /SAVE_SET on input
        QUAL_O_SAVE=    12,10,1,0 %,    ! /SAVE_SET on output
        QUAL_SELE=      12,11,1,0 %,    ! /SELECT
        QUAL_SINC=      12,12,1,0 %,    ! /SINCE
        QUAL_SINC_BACK= 12,13,1,0 %,    ! /SINCE=BACKUP
        QUAL_TRUN=      12,14,1,0 %,    ! /TRUNCATE
        QUAL_VERI=      12,15,1,0 %,    ! /VERIFY
        QUAL_VOLU=      12,16,1,0 %,    ! /VOLUME
        QUAL_INTE=      12,17,1,0 %,    ! /INTERCHANGE
        QUAL_DELE=      12,18,1,0 %,    ! /DELETE
        QUAL_PROT=      12,19,1,0 %,    ! /PROTECTION on output
        QUAL_SS_ENCRYP= 12,20,1,0 %,    ! /ENCRYPT save set
        QUAL_SS_FILE=   12,27,1,0 %,    ! Save set is a disk file
        QUAL_IF11=      12,28,1,0 %,    ! Input is Files-11 or physical
        QUAL_ISAV=      12,29,1,0 %.    ! Input is save set
        QUAL_OF11=      12,30,1,0 %,    ! Output is Files-11 or physical
        QUAL_OSAV=      12,31,1,0 %,    ! Output is save set
        QUAL_BEFO_VALUE=16,0,0,0 %,     ! /BEFORE quadword time value
        QUAL_COMM_DESC= 24,0,0,0 %,     ! /COMMENT descriptor
        QUAL_SINC_VALUE=32,0,0,0 %,     ! /SINCE quadword time value
        QUAL_CMD_DESC=  40,0,0,0 %,     ! Command line descriptor
        QUAL_EXCL_LIST= 48,0,32,0 %,    ! /EXCLUDE list head
        QUAL_JOUR_FC=   52,0,32,0 %,    ! /JOURNAL file context
        QUAL_LIST_FC=   56,0,32,0 %,    ! /LIST file context
        QUAL_I_OWN_VALU=60,0,32,0 %,    ! /OWNER_UIC value on input
        QUAL_I_OWN_MEM= 60,0,16,0 %,    !     Member portion
        QUAL_I_OWN_GRP= 62,0,16,0 %,    !     Group portion
        QUAL_O_OWN_VALU=64,0,32,0 %,    ! /OWNER_UIC value on output
        QUAL_O_OWN_MEM= 64,0,16,0 %,    !     Member portion
        QUAL_O_OWN_GRP= 66,0,16,0 %,    !     Group portion
        QUAL_SELE_LIST= 68,0,32,0 %,    ! /SELECT list head
        QUAL_BLOC_VALUE=72,0,16,0 %,    ! /BLOCK_SIZE value
        QUAL_BUFF_VALUE=76,0,8,0 %,     ! /BUFFER_COUNT value
        QUAL_DENS_VALUE=77,0,8,0 %,     ! /DENSITY code
        QUAL_GROU_VALUE=78,0,8,0 %,     ! /GROUP_SIZE value
        QUAL_VOLU_VALUE=79,0,8,0 %,     ! /VOLUME value
        QUAL_LABE_LIST= 80,0,32,0 %,     ! /LABEL list head
        QUAL_PROT_VALUE=84,0,16,0 %,     ! /PROTECTION value
        QUAL_CRYP_USERKEY=88,0,0,0 %,    ! Descriptor for user specified key
        QUAL_CRYP_USERALG=96,0,0,0 %,    ! Descriptor for user specified algorithn
        QUAL_CRYP_VLIST=104,0,32,0 %;    ! Pointer to list of key values

LITERAL
        QUAL_S_AREA=    112 ;            ! Length of qualifiers block


MACRU

        ! Parameter value block.
        !
        QUAL_NEXT=      0,0,32,0 %,      ! Pointer to next block (common to all)
        QUAL_PARA_FC=   4,0,32,0 %,      ! Parameter file context
        QUAL_EXP_DESC=  8,0,0,0 %,       ! Descriptor for expanded string
        QUAL_DEV_DESC=  16,0,0,0 %,      ! Descriptor for device portion only
        QUAL_DVI_DESC=  24,0,0,0 %,      ! Descriptor for NAM$T_DVI string
        QUAL_USE_COUNT= 32,0,32,0 %,     ! Count of input files from this spec
        QUAL_USE_CHKPT= 36,0,32,0 %;     ! Cell to checkpoint QUAL_USE_COUNT


MACRO
        QUAL_EXCL_DESC= 4,0,0,0 %,       ! /EXCLUDE value
        QUAL_SELE_DESC= 4,0,0,0 %,       ! /SELECT value
        QUAL_LABE_VALUE=4,0,0,0 %;       ! /LABEL value

!
! Encrypt key value block
!
MACRO
        QUAL_ENVA_LINK= 0,0,32,0 %,      ! Link word
        QUAL_ENVA_DESC= 4,0,0,0 % ;      ! Value string descriptor

LITERAL
        QUAL_S_INPU=    40,
        QUAL_S_OUTP=    32,
        QUAL_S_EXCL=    12,
        QUAL_S_SELE=    12,
        QUAL_S_LABE=    16,
        QUAL_S_ENCV=    12;              ! Encrypt value list item
```

```
!
!                       BAD BLOCK DESCRIPTOR
!
MACRO

        ! Format of bad block descriptor returned by routine GET_BADBLOCKS.
        !
        BAD_NUMDESC=    0,0,32,0 %,             ! Number of descriptors
        BAD_SERIAL=     4,0,32,0 %,             ! Pack serial number
        BAD_DESC=       8,0,0,0 %,              ! Origin of descriptors

        BAD_LBN=        0,0,32,0 %,             ! LBN
        BAD_COUNT=      4,0,32,0 %;             ! Count


LITERAL
        BAD_S_HEADER=   8,                      ! Size of header area
        BAD_S_DESC=     8;                      ! Size of one descriptor
```

```
!
!                       PROCESSED FILE ID LIST
!
MACRO

        ! Field definitions for structure pointed to by INPUT_PROC_LIST.
        !
        REC_NEXT=       0,0,32,0 %,     ! Pointer to next block
        REC_QUAL=       4,0,32,0 %,     ! Value of INPUT_QUAL for this block
        REC_USED=       8,0,16,0 %,     ! Count of used entries in this block
        REC_VOLUME=     10,0,16,0 %,    ! Volume number
        REC_FID_BASE=   12,0,0,0 %,     ! Base of FID/DID entries

        REC_FID=        0,0,0,0 %,      ! File ID
        REC_DID=        6,0,0,0 %;      ! Directory ID

LITERAL
        REC_MAX_COUNT=  64,             ! Number of FID/DID slots
        REC_S_ENTRY=    12 + REC_MAX_COUNT*12;
```

```
!                       BUFFER CONTROL
!
MACRO

        ! Buffer control block format.
        !
        BCB_FLINK       = 00, 0, 32, 0%,        ! queue forward link
        BCB_BLINK       = 04, 0, 32, 0%,        ! queue back link
        BCB_SIZE        = 08, 0, 16, 0%,        ! buffer size
        BCB_STATE       = 10, 0, 08, 0%,        ! buffer state
        BCB_BUFFER      = 12, 0, 32, 0%,        ! buffer address
        BCB_RECORD      = 16, 0, 32, 0%,        ! current record pointer
        BCB_BLOCKNUM    = 20, 0, 32, 0%,        ! disk block number
        BCB_IOSB        = 24, 0, 00, 0%,        ! I/O status block
        BCB_STATUS      = 24, 0, 32, 0%,        ! I/O status longword
        BCB_IO_STATUS   = 24, 0, 16, 0%,        ! I/O status word
        BCB_IO_BCOUNT   = 26, 0, 16, 0%,        ! I/O status byte count
        BCB_STATUS2     = 28, 0, 32, 0%,        ! second I/O status longword
        BCB_SUCC_ACT    = 32, 0, 32, 0%,        ! success action routine
        BCB_FAIL_ACT    = 36, 0, 32, 0%;        ! failure action routine

LITERAL
        BCB_LENGTH      = 40,                   ! length of buffer control block

        ! Buffer state codes
        !
        BCB_S_IDLE      = 0,                    ! idle
        BCB_S_READ      = 1,                    ! read operation pending
        BCB_S_WRITE     = 2,                    ! write operation pending
        BCB_S_DATA      = 3,                    ! holding data, no I/O pending
        BCB_S_REREAD    = 4;                    ! read on alternate channel
```

```
!
!                       ATTRIBUTE INPUT BUFFERS
!
MACRO

        ! Backup summary record input buffer.
        !
        BSR_SSNAME=     0,0,0,0 %,          ! Descriptor for SSNAME
        BSR_COMMAND=    8,0,0,0 %,          ! Descriptor for COMMAND
        BSR_COMMENT=    16,0,0,0 %,         ! Descriptor for COMMENT
        BSR_USERNAME=   24,0,0,0 %,         ! Descriptor for USERNAME
        BSR_DATE=       36,0,0,0 %,         ! Value of DATE
        BSR_SYSVER=     44,0,0,0 %,         ! Descriptor for SYSVER
        BSR_NODENAME=   52,0,0,0 %,         ! Descriptor for NODENAME
        BSR_DRIVEID=    60,0,0,0 %,         ! Descriptor for DRIVEID
        BSR_BACKVER=    68,0,0,0 %,         ! Descriptor for BACKVER
        BSR_VOLSETNAM=  76,0,0,0 %,         ! Descriptor for VOLSETNAM
        BSR_BACKSIZE=   84,0,0,0 %,         ! Value of BACKSIZE
        BSR_USERUIC=    92,0,32,0 %,        ! Value of USERUIC
        BSR_SIR=        96,0,32,0 %,        ! Value of SIR
        BSR_BLOCKSIZE=  100,0,32,0 %,       ! Value of BLOCKSIZE
        BSR_BACKFILES=  104,0,32,0 %,       ! Value of BACKFILES
        BSR_OPSYS=      108,0,16,0 %,       ! Value of OPSYS
        BSR_XORSIZE=    110,0,16,0 %,       ! Value of XORSIZE
        BSR_BUFFERS=    112,0,16,0 %,       ! Value of BUFFERS
        BSR_NVOLS=      114,0,16,0 %,       ! Value of NVOLS
        BSR_CRYPTDATA=  116,0,0,0 %;        ! Value of CRYPTDATA
        !NEXT=          140,0,0,0;          ! Next available byte

MACRO

        ! Volume summary record input buffer.
        !
        VSR_VOLNAME=    0,0,0,0 %,          ! Descriptor for VOLNAME
        VSR_OWNERNAME=  8,0,0,0 %,          ! Descriptor for OWNERNAME
        VSR_FORMAT=     16,0,0,0 %,         ! Descriptor for FORMAT
        VSR_VOLDATE=    24,0,0,0 %,         ! Value of VOLDATE
        VSR_TOTSIZE=    32,0,0,0 %,         ! Value of TOTSIZE
        VSR_VOLOWNER=   40,0,32,0 %,        ! Value of VOLOWNER
        VSR_VOLSIZE=    44,0,32,0 %,        ! Value of VOLSIZE
        VSR_TOTFILES=   48,0,32,0 %,        ! Value of TOTFILES
        VSR_MAXFILES=   52,0,32,0 %,        ! Value of MAXFILES
        VSR_MAXFILNUM=  56,0,32,0 %,        ! Value of MAXFILNUM
        VSR_SERIALNUM=  60,0,32,0 %,        ! Value of SERIALNUM
        VSR_VOLSTRUCT=  64,0,16,0 %,        ! Value of VOLSTRUCT
        VSR_STRUCLEV=   65,0,8,0 %,         ! Structure level part of VOLSTRUCT
        VSR_RVN=        66,0,16,0 %,        ! Value of RVN
        VSR_PROTECT=    68,0,16,0 %,        ! Value of PROTECT
        VSR_FILEPROT=   70,0,16,0 %,        ! Value of FILEPROT
        VSR_RECPROT=    72,0,16,0 %,        ! Value of RECPROT
        VSR_VOLCHAR=    74,0,16,0 %,        ! Value of VOLCHAR
        VSR_EXTEND=     76,0,16,0 %,        ! Value of EXTEND
        VSR_CLUSTER=    78,0,16,0 %,        ! Value of CLUSTER
        VSR_RESFILES=   80,0,16,0 %,        ! Value of RESFILES
        VSR_WINDOW=     82,0,8,0 %,         ! Value of WINDOW
        VSR_LRU_LIM=    83,0,8,0 %,     ! Value of LRU_LIM
        VSR_INDEXLBN=   84,0,32,0 %,    ! Value of INDEXLBN
        VSR_BOOTBLOCK=  88,0,0,0 %,     ! Descriptor for BOOTBLOCK
        VSR_RETAINMIN=  96,0,0,0 %,     ! Value of RETAINMIN
        VSR_RETAINMAX=  104,0,0,0 %;    ! Value of RETAINMAX

MACRO

        ! Physical volume attribute record input buffer.
        !
        PVA_DEVNAM=     0,0,0,0 %,      ! Descriptor for DEVNAM
        PVA_LABEL=      8,0,0,0 %,      ! Descriptor for LABEL
        PVA_BADBLOCK=   16,0,0,0 %,     ! Descriptor for BADBLOCK
        PVA_MAXBLOCK=   24,0,32,0 %,    ! Value of MAXBLOCK
        PVA_SERIAL=     28,0,32,0 %,    ! Value of SERIAL
        PVA_CYLINDERS=  32,0,16,0 %,    ! Value of CYLINDERS
        PVA_SECTORS=    34,0,8,0 %,     ! Value of SECTORS
        PVA_TRACKS=     35,0,8,0 %,     ! Value of TRACKS
        PVA_DEVTYP=     36,0,32,0 %;    ! Value of DEVTYP

MACRO

        ! File attribute record input buffer.
        !
        FAR_FILENAME=   0,0,0,0 %,      ! Descriptor for FILENAME
        FAR_PLACEMENT=  8,0,0,0 %,      ! Descriptor for PLACEMENT
        FAR_RECATTR=    16,0,0,0 %,     ! Value of RECATTR
        FAR_CREDATE=    48,0,0,0 %,     ! Value of CREDATE
        FAR_REVDATE=    56,0,0,0 %,     ! Value of REVDATE
        FAR_EXPDATE=    64,0,0,0 %,     ! Value of EXPDATE
        FAR_BAKDATE=    72,0,0,0 %,     ! Value of BAKDATE
        FAR_FID=        80,0,0,0 %,     ! Value of FID
        FAR_FID_NUM=    80,0,16,0 %,    !
        FAR_FID_SEQ=    82,0,16,0 %,    !
        FAR_FID_RVNW=   84,0,16,0 %,    !
        FAR_FID_RVN=    84,0,8,0 %,     !
        FAR_FID_NMX=    85,0,8,0 %,     !
        FAR_BACKLINK=   86,0,0,0 %,     ! Value of BACKLINK
        FAR_DID_NUM=    86,0,16,0 %,    !
        FAR_DID_SEQ=    88,0,16,0 %,    !
        FAR_DID_RVNW=   90,0,16,0 %,    !
        FAR_FILESIZE=   92,0,32,0 %,    ! Value of FILESIZE
        FAR_UIC=        96,0,32,0 %,    ! Value of UIC
        FAR_UICMEMBER=  96,0,16,0 %,    ! Member part of UIC
        FAR_UICGROUP=   98,0,16,0 %,    ! Group part of UIC
        FAR_UCHAR=      100,0,32,0 %,   ! Value of UCHAR
        FAR_BOOTVBN=    104,0,32,0 %,   ! Value of BOOTVBN
        FAR_STRUCLEV=   108,0,16,0 %,   ! Value of STRUCLEV
        FAR_STRUCLEVB=  109,0,8,0 %,    ! Structure level part of STRUCLEV
        FAR_FPRO=       110,0,16,0 %,   ! Value of FPRO
        FAR_RPRO=       112,0,16,0 %,   ! Value of RPRO
        FAR_REVISION=   114,0,16,0 %,   ! Value of REVISION
        FAR_DIR_UIC=    116,0,32,0 %,   ! Value of DIR_UIC
        FAR_DIR_FPRO=   120,0,16,0 %,   ! Value of DIR_FPRO
        FAR_ACLEVEL=    122,0,8,0 %,     ! Value of ACLEVEL
        FAR_DIR_STATUS= 123,0,8,0 %,     ! Value of DIR_STATUS
        FAR_DIR_VERLIM= 124,0,16,0 %,    ! Value of DIR_VERLIM
        FAR_VERLIMIT=   126,0,16,0 %,    ! Value of VERLIMIT
        FAR_ACLSEGMENT= 128,0,32,0 %,    ! ACL segment descriptor
        FAR_HIGHWATER=  136,0,32,0 %,    ! Value of HIGHWATER
        FAR_JNL_FLAGS=  140,0,16,0 %;    ! Value of JNL_FLAGS


LITERAL
        BSR_LENGTH=     140,             ! Length of BSR area
        VSR_LENGTH=     112,             ! Length of VSR area
        PVA_LENGTH=     40,              ! Length of PVA area
        FAR_LENGTH=     144,             ! Length of FAR area
        ATTBUF_LENGTH=  MAX(BSR_LENGTH, VSR_LENGTH, PVA_LENGTH, FAR_LENGTH);
```

```
!                       STANDALONE ACP
!
!
MACRO

        ! Field definitions for RVT/MTL.
        !
        MTL_CHAN_1=     0,0,32,0 %,     ! Pointer to VCB to which each of 2
        MTL_CHAN_2=     4,0,32,0 %,     !     channels is assigned
        MTL_WINDOW=     8,0,32,0 %,     ! Pointer to WCB for accessed file
        MTL_HEADER=     12,0,32,0 %,    ! Pointer to header for accessed file
        MTL_ACLFL=      16,0,32,0 %,    ! ACL queue
        MTL_ACLBL=      20,0,32,0 %,    !   head
        MTL_FID=        24,0,0,0 %,     ! File ID of accessed file
        MTL_FID_NUM=    24,0,16,0 %,    !
        MTL_FID_SEQ=    26,0,16,0 %,    !
        MTL_FID_RVNW=   28,0,16,0 %,    !
        MTL_FID_RVN=    28,0,8,0 %,     !
        MTL_FID_NMX=    29,0,8,0 %,     !
        MTL_STRUCLEV=   30,0,8,0 %,     ! Structure level of volume set
        MTL_SETCOUNT=   31,0,8,0 %,     ! Count of volumes in volume set
        MTL_FILESIZE=   32,0,32,0 %,    ! Size of accessed file
        MTL_STRUCNAME=  36,0,0,0 %,     ! Volume set name
        MTL_RVN_BASE=   48,0,8,0 %,     ! RVN mounted on first VCB
        MTL_SEQ_DISK=   49,0,1,0 %,     ! Set if sequential disk volume set
        MTL_NEW_ACL=    49,1,1,0 %,     ! Set if ACL must be written
        MTL_NOHWM=      49,2,1,0 %,     ! Highwater marking disabled for volume set
        MTL_VCB(n)=     52+4*(n),0,32,0 %; ! Pointer to VCB for RVN n

MACRO

        ! Field definitions for VCB.
        !
        VCB_INDEXF=     0,0,32,0 %,     ! Pointer to index file window
        VCB_CLUSTER=    4,0,16,0 %,     ! Cluster factor
        VCB_RVN=        6,0,8,0 %,      ! Relative volume number
        VCB_OUTPUT=     7,0,1,0 %,      ! True if output volume
        VCB_ODS_2=      7,1,1,0 %,      ! True if ODS-2 volume
        VCB_INIT_DONE=  7,2,1,0 %,      ! True if initialization has been done
        VCB_SAVESET=    7,3,1,0 %,      ! True if saveset volume
        VCB_NOTVOLSET=  7,4,1,0 %,      ! Sequential disk volume is not in a set
        VCB_CHAN=       8,0,16,0 %,     ! Channel number assigned to this RVN
        VCB_IOCOUNT=    10,0,16,1 %,    ! Count of pending read/write QIOs
        VCB_BITMAP_LBN= 12,0,32,0 %,    ! LBN of storage bitmap
        VCB_IMAP=       16,0,32,0 %,    ! Pointer to index file bitmap image
        VCB_IMAP_LBN=   20,0,32,0 %,    ! LBN of index file bitmap
        VCB_INIT_HDRS=  24,0,16,0 %,    ! Bit mask of initialized headers
        VCB_HDR_OFFSET= 26,0,16,0 %,    ! VBN offset to file headers
        VCB_MAXFILIDX=  28,0,32,0 %,    ! Number of bits in index file bitmap
        VCB_DEVICE=     32,0,0,0 %,     ! Descriptor for device name
        VCB_ACB_FLINK=  40,0,32,0 %,    ! Queue header for ACB queue
        VCB_ACB_BLINK=  44,0,32,0 %,    !
        VCB_FAB=        48,0,32,0 %,    ! Pointer to FAB with filespec
        VCB_BITMAP_SIZE=52,0,16,0 %,    ! Storage bitmap size in blocks
        VCB_VOLNAME=    56,0,0,0 %;     ! Volume label
```

```
MACRO

        ! Field definitions for WCB.
        !
        WCB_LINK=       0,0,32,0 %,     ! Link to next block
        WCB_VBN=        4,0,32,0 %,     ! In first block only, starting VBN of window
        WCB_SIZE=       8,0,8,0 %,      ! Number of entries in window block
        WCB_FREE=       9,0,8,0 %,      ! Number of free entries in window
        WCB_RVN=        10,0,8,0 %,     ! RVN
        WCB_FLAGS=      11,0,8,0 %,     ! Flag byte
        WCB_BLACKHOLE=  11,0,1,0 %,     ! Flush write I/Os into this window
        WCB_CUR_HWM=    12,0,32,0 %,    ! Current highwater mark for open file
        WCB_SET_HWM=    16,0,32,0 %,    ! Highwater mark written for open file

        WCB_COUNT=      0,0,32,0 %,     ! Count of blocks
        WCB_LBN=        4,0,32,0 %;     ! LBN of blocks

MACRO

        ! Field definitions for ACB.
        !
        ACB_FLINK=      0,0,32,0 %,     ! Forward link
        ACB_BLINK=      4,0,32,0 %,     ! Backward link
        ACB_COUNT=      8,0,32,0 %,     ! Block count
        ACB_LBN=        12,0,32,0 %;    ! Logical block number

LITERAL
        MTL_S_ENTRY=    52,             ! Size of entry, less VCB pointers
        VCB_S_ENTRY=    68,             ! Size of entry
        WCB_S_HEADER=   20,             ! Size of header
        WCB_S_ENTRY=    8,              ! Size of each entry
        ACB_S_ENTRY=    16;             ! Size of entry
```

```
!
!                       DIRECTORY STACK ENTRY
!
!
MACRO
        D_REC=          0,0,32,0 %,       ! Pointer to current record
        D_VER=          4,0,32,0 %,       ! Pointer to current version if ODS-2
        D_BUF_LEN=      8,0,32,0 %,       ! Length of buffer in bytes
        D_BUF_ADDR=     12,0,32,0 %,      ! Pointer to buffer
        D_BUF_LIM=      16,0,32,0 %,      ! Limit of significant part of buffer
        D_VBN=          20,0,32,0 %,      ! Next VBN to be read
        D_DIR_LEN=      24,0,32,0 %,      ! Length of directory in blocks
        D_FID=          28,0,0,0 %,       ! File ID of directory
        D_SAV_LEN=      34,0,8,0 %,       ! Saved length of directory string
        D_DIR_SCAN=     35,0,1,0 %,       ! True if directory file to be scanned
        D_DIR_MATCHES=  35,1,1,0 %,       ! True if current directory matches
        D_WILD_TERM=    35,2,1,0 %,       ! True if terminator contains wildcard
        D_NON_TERM=     35,3,1,0 %,       ! True if terminator is "*"
        D_TERM_DESC=    36,0,0,0 %,       ! Termination string descriptor
        D_NAME_DESC=    44,0,0,0 %,       ! Current filename string descriptor
        D_TERM_VER=     56,0,16,0 %,      ! Termination version number
        D_FPRO=         58,0,16,0 %,      ! Directory file protection
        D_UIC=          60,0,32,0 %,      ! Directory file owner
        D_VERLIM=       64,0,16,0 %,      ! Directory default version limit
        D_VER_COUNT=    66,0,16,1 %;      ! File version counter (0, -1, ...)

LITERAL
        D_K_NLEVELS=    9,                ! Number of level stack entries
        D_S_ENTRY=      68;               ! Size of level stack entry in bytes
```

```
!
!                       DISK QUOTA TABLE
!
!
MACRO
        DQF_LLINK=      0,0,32,0 %,     ! Pointer to entry with lesser UIC
        DQF_RLINK=      4,0,32,0 %,     ! Pointer to entry with greater UIC
        DQF_UIC=        8,0,32,0 %,     ! UIC
        DQF_USAGE=      12,0,32,0 %,    ! Usage in blocks
        DQF_PERMQUOTA=  16,0,32,0 %,    ! Permanent disk quota
        DQF_OVERDRAFT=  20,0,32,0 %;    ! Overdraft limit


LITERAL
        DQF_S_ENTRY=    24;             ! Size of entry in bytes
```

```
!                       COMMON AREA
!
MACRO G$DEF[A,B]=
        OWN     A:      B  ALIGN(0) %;


! Macro to be called in each module to define the common area.
!
MACRO G$DEFINE(A)=
    PSECT OWN=COMMON(OVERLAY,ADDRESSING_MODE(LONG_RELATIVE));
    G$DEF(G$LIST);
    PSECT OWN=DATA;
    %;


! List of elements of G$AREA.  In each entry, the first parameter is the
! name, and the second parameter is null or is a structure attribute.
!
MACRO G$LIST =

        ! Marker for base of area.
        !
        GLOBAL_BASE,    VECTOR[0],


        ! Buffer queue headers.
        !
        FREE_LIST,      VECTOR[2],      ! Free queue header
        INPUT_WAIT,     VECTOR[2],      ! Input pending queue header
        REREAD_WAIT,    VECTOR[2],      ! Re-read pending queue header
        OUTPUT_WAIT,    VECTOR[2],      ! Output pending queue header


        ! Environmental values.
        !
        JPI_UIC,        LONG,           ! JPI$_UIC
        JPI_USERNAME,   VECTOR[12,BYTE],! JPI$_USERNAME
        JPI_DATE,       VECTOR[2],      ! $GETTIM
        JPI_NODE_DESC,  BBLOCK[8],      ! Translation of SYS$NODE
        JPI_CURPRIV,    BBLOCK[8],      ! Current process privileges
        SYI_VERSION,    LONG,           ! SYI$_VERSION
        SYI_SID,        LONG,           ! SYI$_SID


        ! Save set handling.
        !
        RWSV_HOLD_LIST, VECTOR[2],      ! Queue header for error rewrites
        RWSV_CRC16,     VECTOR[16],     ! CRC-16 polynomial table
        RWSV_AUTODIN,   VECTOR[16],     ! AUTODIN-II polynomial table
        RWSV_FILESET_ID,VECTOR[8,BYTE], ! File set identifier
        RWSV_VOLUME_ID, VECTOR[12,BYTE],! Volume identifier
        RWSV_VOL_NUMBER,WORD,           ! Save set volume number
        RWSV_SEG_NUMBER,WORD,           ! File section number
        RWSV_FILE_NUMBER,LONG,          ! File sequence number
        RWSV_SAVE_QUAL, REF BBLOCK,     ! Pointer to save set qualifiers block
        RWSV_SAVE_FAB,  REF BBLOCK,     ! Pointer to FAB
        RWSV_CHAN,      LONG,           ! Channel assigned to save set medium
        RWSV_XOR_BCB,   REF BBLOCK,     ! Pointer to BCB for XOR block
        RWSV_IN_SEQ,    LONG,           ! Input block sequence number
        RWSV_IN_SEQ_0,  LONG,           ! RWSV_IN_SEQ at start of reel
        RWSV_IN_XOR_SEQ,LONG,           ! Sequence number of last XOR block
        RWSV_IN_XOR_RFA,BBLOCK[6],      ! RFA of last XOR block
        RWSV_LOOKAHEAD, BYTE,           ! Buffer count from summary record
        RWSV_XORSIZE,   BYTE,           ! XOR group size from summary record
        RWSV_IN_GROUP_SIZE,LONG,        ! XOR group size of save set
        RWSV_IN_ERRORS, WORD,           ! Count of input errors
        RWSV_IN_XORUSE, WORD,           ! Count of XOR recoveries performed
        RWSV_IN_ORGERR, VECTOR[2],      ! Original STS/STV of a train of loses
        RWSV_IN_VBN,    LONG,           ! Current VBN in save set file
        RWSV_IN_VBN_0,  LONG,           ! Saved input VBN
        RWSV_ALLOC,     LONG,           ! Number of blocks available in save set file
        RWSV_EOF,       LONG,           ! End of file VBN if save set file
        RWSV_OUT_SEQ,   LONG,           ! Output block sequence number
        RWSV_OUT_VBN,   LONG,           ! Output VBN
        RWSV_OUT_BLOCK_COUNT,LONG,      ! Count of blocks on output tape
        RWSV_OUT_ERRORS,WORD,           ! Count of output errors
        RWSV_SEQ_ERRORS,WORD,           ! Count of consecutive input errors
        RWSV_OUT_GROUP_COUNT,BYTE,      ! Count of blocks in output XOR group
        RWSV_PADDING,   BBLOCK[3],      ! *** Padding ***


        !
        ! General global variables.
        !
        QUAL,           BBLOCK[QUAL_S_AREA],    ! Qualifier database
        COM_SSNAME,     BBLOCK[8],      ! Descriptor for save set name
        COM_VALID_TYPES,BITVECTOR[16],  ! Bit mask of valid input record types
        COM_FLAGS,      BBLOCK[2],      ! Common flags
        COM_PADDING,    BBLOCK[1],      ! *** Padding ***
        COM_BUFF_COUNT, BYTE,           ! Count of buffers in pool
        COM_I_SETCOUNT, BYTE,           ! Input volume set count
        COM_O_SETCOUNT, BYTE,           ! Output volume set count
        COM_I_STRUCNAME,VECTOR[12,BYTE],! Input volume set name
        COM_O_STRUCNAME,VECTOR[12,BYTE],! Output volume set name
        COM_O_BSRDATE,  VECTOR[2],      ! Date of backup from summary record
        ALT_SSNAME,     VECTOR[32,BYTE], ! Storage for alternate save set name


        INPUT_FUNC,     BYTE,           ! IO$_READVBLK or IO$_READLBLK
        INPUT_RTYPE,    BYTE,           ! BRH$K_VBN or BRH$K_LBN
        OUTPUT_FUNC,    BYTE,           ! IO$_WRITEVBLK or IO$_WRITELBLK
        FAST_STRUCLEV,  BYTE,           ! Structure level of input volume set


        !
        ! Input context.
        !
        INPUT_BEG,      VECTOR[0],      ! Beginning of input context
        INPUT_CHAN,     LONG,           ! Input channel
        INPUT_FLAGS,    BBLOCK[2],      ! Input flag bits
        INPUT_PADDING,  BBLOCK[2],      ! *** Padding ***
        INPUT_FAB,      REF BBLOCK,     ! Pointer to input FAB
        INPUT_NAM,      REF BBLOCK,     ! Pointer to input NAM block
        INPUT_BCB,      REF BBLOCK,     ! Pointer to input BCB
        INPUT_QUAL,     REF BBLOCK,   ! Pointer to input qualifiers block
        INPUT_BAD,      REF BBLOCK,   ! Pointer to input bad block data
        INPUT_BLOCK,    LONG,         ! Current input block number
        INPUT_MAXBLOCK, LONG,         ! Maximum input block number
        INPUT_MEDIA_ID, LONG,         ! Media id of input device
        INPUT_NAMEDESC, BBLOCK[8],    ! Descriptor for input file name
        INPUT_STATBLK,  BBLOCK[8],    ! Statistics block
        INPUT_HDR_BEG,  VECTOR[0],    ! Beginning of header data
        INPUT_CREDATE,  VECTOR[2],    ! Creation date
        INPUT_REVDATE,  VECTOR[2],    ! Revision date
        INPUT_EXPDATE,  VECTOR[2],    ! Expiration date
        INPUT_BAKDATE,  VECTOR[2],    ! Backup date
        INPUT_FILEOWNER,BBLOCK[4],    ! File owner UIC
        INPUT_FILECHAR, BBLOCK[4],    ! File characteristics
        INPUT_RECATTR,  BBLOCK[32],   ! Record attributes
        INPUT_HDR_END,  VECTOR[0],    ! End of header data
        INPUT_END,      VECTOR[0],    ! End of input context
        INPUT_PROC_LIST,REF BBLOCK,   ! List of processed file ID's
        INPUT_PLACEMENT,VECTOR[2],    ! List head for placement data
        INPUT_VBN_LIST, VECTOR[2],    ! List head for VBN data
        INPUT_PLACE_LEN,WORD,         ! Length of placement data as attribute
        INPUT_PADDING_2,BBLOCK[2],    ! *** Padding ***


        ! Output context.
        !
        OUTPUT_BEG,     VECTOR[0],    ! Beginning of output context
        OUTPUT_CHAN,    LONG,         ! Output channel
        OUTPUT_FLAGS,   BBLOCK[2],    ! Output flag bits
        OUTPUT_PADDING, BBLOCK[2],    ! *** Padding ***
        OUTPUT_FAB,     REF BBLOCK,   ! Pointer to output FAB
        OUTPUT_NAM,     REF BBLOCK,   ! Pointer to output NAM block
        OUTPUT_BCB,     REF BBLOCK,   ! Pointer to output BCB
        OUTPUT_QUAL,    REF BBLOCK,   ! Pointer to output qualifiers block
        OUTPUT_BAD,     REF BBLOCK,   ! Pointer to output bad block data
        OUTPUT_BLOCK,   LONG,         ! Current output block number
        OUTPUT_MAXBLOCK,LONG,         ! Maximum output block number
        OUTPUT_DEVGEOM, BBLOCK[8],    ! Output device geometry
        OUTPUT_ATTBUF,  BBLOCK[ATTBUF_LENGTH],  ! Values from attribute record
        OUTPUT_END,     VECTOR[0],    ! End of output context


        ! Listing context.
        !
        LIST_TOTFILES,  LONG,         ! Listing -- total files
        LIST_TOTSIZE,   LONG,         ! Listing -- total size


        ! Verify and compare context.
        !
        VERIFY_FAB,     REF BBLOCK,   ! Pointer to verification FAB
        VERIFY_USE_COUNT,LONG,        ! Use count for current VERIFY_QUAL
        VERIFY_QUAL,    REF BBLOCK,   ! Corresponding input qualifier block
        COMPARE_BCB,    REF BBLOCK,   ! BCB for compare buffer
        ! File scan context.
        !
        FAST_BUFFER,    REF BBLOCK,     ! Pointer to index file buffer
        FAST_BUFFER_SIZE,LONG,          ! Size of index file buffer
        FAST_RVN,       BYTE,           ! RVN of current MFD
        FAST_PADDING,   BBLOCK[1],      ! *** Padding ***
        DIR_VERLIMIT,   WORD,           ! File version limit
        FAST_VOL_BEG,   VECTOR[0],      ! Beginning of per-volume information
        FAST_IMAP_SIZE, REF VECTOR,     ! Number of blocks in index file bitmap
        FAST_IMAP,      REF VECTOR,     ! Bitmap of valid and selected files
        FAST_HDR_OFFSET,REF VECTOR,     ! VBN offset to file header
        FAST_BOOT_LBN,  REF VECTOR,     ! LBN of boot file
        FAST_VOL_END,   VECTOR[0],      ! End of per-volume information


        ! Journalling context.
        !
        JOUR_BUFFER,    REF VECTOR[,BYTE], ! Journal buffer
        JOUR_DIR,       REF VECTOR[,BYTE], ! Current directory string
        JOUR_HIBLK,     LONG,           ! Highest allocated block
        JOUR_EFBLK,     LONG,           ! End of file block
        JOUR_INBLK,     LONG,           ! Current input block
        JOUR_FFBYTE,    WORD,           ! End of file byte
        JOUR_INBYTE,    WORD,           ! Current input byte
        JOUR_STRUCT_LEV,WORD,           ! Current journal struture level
        JOUR_COUNT,     BYTE,           ! XOR byte count context
        JOUR_REVERSE,   BYTE,           ! True if reading backward
        JOUR_EXSZ,      WORD,           ! Default file extention size.
        JOUR_PADDING,   BBLOCK[2],      ! *** Padding ***


        ! Checkpointing context.
        !
        CHKPT_HIGH_SP,  LONG,           ! High value of SP for saved portion
        CHKPT_LOW_SP,   LONG,           ! Low value of SP for saved portion
        CHKPT_STACK,    REF BBLOCK,     ! Pointer to save area for stack
        CHKPT_VARS,     REF BBLOCK,     ! Pointer to save area for variables
        CHKPT_STATUS,   LONG,           ! Failure status of a re-access


        ! Directory scan context.
        !
        DIR_BEG,        VECTOR[0],      ! Beginning of context
        DIR_CHAN,       LONG,           ! Channel assigned to device
        DIR_NAM,        REF BBLOCK,     ! Pointer to name block
        DIR_DEV_DESC,   REF BBLOCK,     ! Descriptor for device
        DIR_SEL_DIR,    BBLOCK[8],      ! Descriptor for selection directory
        DIR_SEL_NTV,    BBLOCK[8],      ! Descriptor for selection n.t;v
        DIR_STRUCLEV,   BYTE,           ! Structure level of directory
        DIR_LEVELS,     BYTE,           ! Current number of active levels
        DIR_FLAGS,      BBLOCK[1],      ! Flag bits
        DIR_STATUS,     BBLOCK[1],      ! Directory status flags
        DIR_STRING,     VECTOR[39*8+7+1,BYTE],! Current directory path
        DIR_STACK,      BBLOCK[D_K_NLEVELS*D_S_ENTRY],  ! Directory level stack
        DIR_SP,         REF BBLOCK,     ! Stack pointer for DIR_STACK
        DIR_SEL_LATEST, LONG,           ! Latest version selector
        DIR_END,          VECTOR[0],        ! End of context
        DIR_SCANLIMIT,    VECTOR[D_K_NLEVELS],    ! ODS-1 directory scan limits


        ! Standalone ACP context.
        !
        INPUT_MTL,        REF BBLOCK,       ! Pointer to input MTL entry
        OUTPUT_MTL,       REF BBLOCK,       ! Pointer to output MTL entry
        CURRENT_MTL,      REF BBLOCK,       ! Pointer to MTL for current operation
        CURRENT_VCB,      REF BBLOCK,       ! Pointer to VCB for current operation
        CURRENT_WCB,      REF BBLOCK,       ! Pointer to WCB for current operation


        ! ACL context for file restoration.
        !
        ACL_FIB_DESCR,    BBLOCK [8],       ! FIB descriptor
        ACL_FIB,          BBLOCK [FIB$C_LENGTH],  ! FIB storage
        ACL_LENGTH,       LONG,             ! Size of the entire ACL
        ACL_BUFFER,       REF BBLOCK,       ! Pointer to the ACL to save


        ! Encrypted Saveset context and work area
        !
        CRYP_IN_CONTEXT,LONG,               ! Pointer to encrypt context for input ss
        CRYP_OU_CONTEXT,LONG,               ! Pointer to output encrypt context
        CRYP_DA_CONTEXT,LONG,               ! Poitner to datakey encryption context
        CRYP_DATA_ENCIV,BBLOCK [8],         ! Copy of IV for encryption of savesets
        ! Note: the following values are assumed adjacent
        CRYP_DATA_CODE, BBLOCK [4],         ! Saveset encryption algorithm code
        CRYP_DATA_KEY,  BBLOCK [8],         ! Saveset data key
        CRYP_DATA_IV,   BBLOCK [8],         ! Saveset encryption IV
        CRYP_DATA_CKSM, LONG,               ! Checksum for code,key, and iv
        ! Note: the preceding values are assumed adjacent
%;


MACRO

        ! Field definitions for COM_FLAGS.
        !
        COM_EOV=          0,0,1,0 %,        ! Output save medium is at end
        COM_STANDALONE=   0,1,1,0 %,        ! This is the standalone version
        COM_FILESEEN=     0,2,1,0 %,        ! At least one file processed
        COM_VERIFYING=    0,3,1,0 %,        ! Verify pass in progress
        COM_FAIL_RSTRT=   0,4,1,0 %,        ! Reel restart failed to find file
        COM_CONTINUE=     0,5,1,0 %,        ! Continue despite high error rate
        COM_DSBL_CHKPT=   0,6,1,0 %,        ! Checkpoint can not be requested
                                            ! since operation is not restartable
        COM_DSBL_RSTRT=   0,7,1,0 %,        ! Checkpoint was requested while
                                            ! DSBL_CHKPT was set
        COM_INTERACT=     0,8,1,0 %;        ! SYS$COMMAND is a terminal


MACRO

        ! Field definitions for INPUT_FLAGS.
        !
        INPUT_OPEN=      0,0,1,0 %,       ! Input file is open
        EOV_IN_PROG=     0,1,1,0 %,       ! EOV processing in progress
        EOV_SAVING=      0,2,1,0 %,       ! SAVE_BLOCKS in progress
        INPUT_ON_RVN=    0,3,1,0 %,       ! Blocks exist on RVN selected by
                                          ! /VOLUME qualifier
        INPUT_IGNO_INTE=0,4,1,0 %,        ! Ignore file access conflict
        INPUT_SAVE_OK=   0,5,1,0 %,       ! No errors occurred during save
        INPUT_WILDSAVE= 0,6,1,0 %,        ! Wild card save set given
        INPUT_REWOUND=   0,7,1,0 %,       ! Input tape rewound for wildcards
        INPUT_SSFOUND=   0,8,1,0 %;       ! Input save set found (only for wildcards)

MACRO

        ! Field definitions for placement data blocks pointed to
        ! by INPUT_PLACEMENT and for VBN data blocks pointed to
        ! by INPUT_VBN_LIST.  These share fields for commonality
        ! in reel restart.
        !
        PLC_FLINK=       0,0,32,0 %,      ! Forward link
        PLC_BLINK=       4,0,32,0 %,      ! Backward link
        PLC_TYPE=        8,0,8,0 %,       ! Type code
        PLC_SIZE=        9,0,8,0 %,       ! Size of block
        PLC_DATA=        10,0,0,0 %,      ! Data portion
        VBN_FIRST=       10,0,32,0 %,     ! First VBN in range
        VBN_LAST=        14,0,32,0 %;     ! Last VBN in range

LITERAL
        PLC_S_HDR=       10,              ! Length of placement block header
        VBN_S_ENTRY=     18;              ! Length of VBN data block

MACRO

        ! Field definitions for OUTPUT_FLAGS.
        !
        OUTPUT_OPEN=      0,0,1,0 %,      ! Output file is open
        OUTPUT_V_FIRST=  0,1,1,0 %,       ! Verifying first block
        OUTPUT_V_LAST=    0,2,1,0 %,      ! Verifying last block
        OUTPUT_INCR_DIR= 0,3,1,0 %,       ! Special /INCREMENTAL directory scan
        OUTPUT_IMPLICIT= 0,4,1,0 %,       ! Output file implicitly opened
        ACL_ERROR=        0,5,1,0 %,      ! Error occurred processing ACL
        ACL_FIRST_TIME=  0,6,1,0 %,       ! First time through processing ACL
        OUTPUT_DIR_OPEN= 0,7,1,0 %,       ! An output directory is open
        OUTPUT_NONSEQ_IN=1,0,1,0 %;       ! Input saveset is not sequential

MACRO

        ! Field definitions for OUTPUT_DEVGEOM.
        !
        DGM_SECTORS=     0,0,8,0 %,       ! DIB$B_SECTORS
        DGM_TRACKS=      1,0,8,0 %,       ! DIB$B_TRACKS
        DGM_CYLINDERS=   2,0,16,0 %,      ! DIB$W_CYLINDER
        DGM_MAXBLOCK=   4,0,32,0 %,      ! DIB$L_MAXBLOCK

MACRO

        ! Field definitions for DIR_FLAGS.
        !
        D_IMAGE_SCAN=   0,0,1,0 %,       ! Image mode scan
        D_SCAN_FAILED=  0,1,1,0 %,       ! Previous scan failed
        D_HARD_STOP=    0,2,1,0 %,       ! Immediate return on terminator
        D_SCANNED_DIRS= 0,3,1,0 %,       ! Return scanned directories
        D_INITIAL=      0,4,1,0 %,       ! Initial call
        D_ROOT_MFD=     0,5,1,0 %;       ! Scan root MFD only

MACRO

        ! Field definitions for DIR_STATUS.
        !
        D_STAT_VALID=   0,0,1,0 %,       ! DIR_STATUS is valid
        D_STAT_DIR_SEL= 0,1,1,0 %,       ! Directory is selected
        D_STAT_SCANNED= 0,2,1,0 %,       ! Directory was scanned
        D_STAT_FILE_SEL=0,3,1,0 %;       ! Files in directory are selected
```

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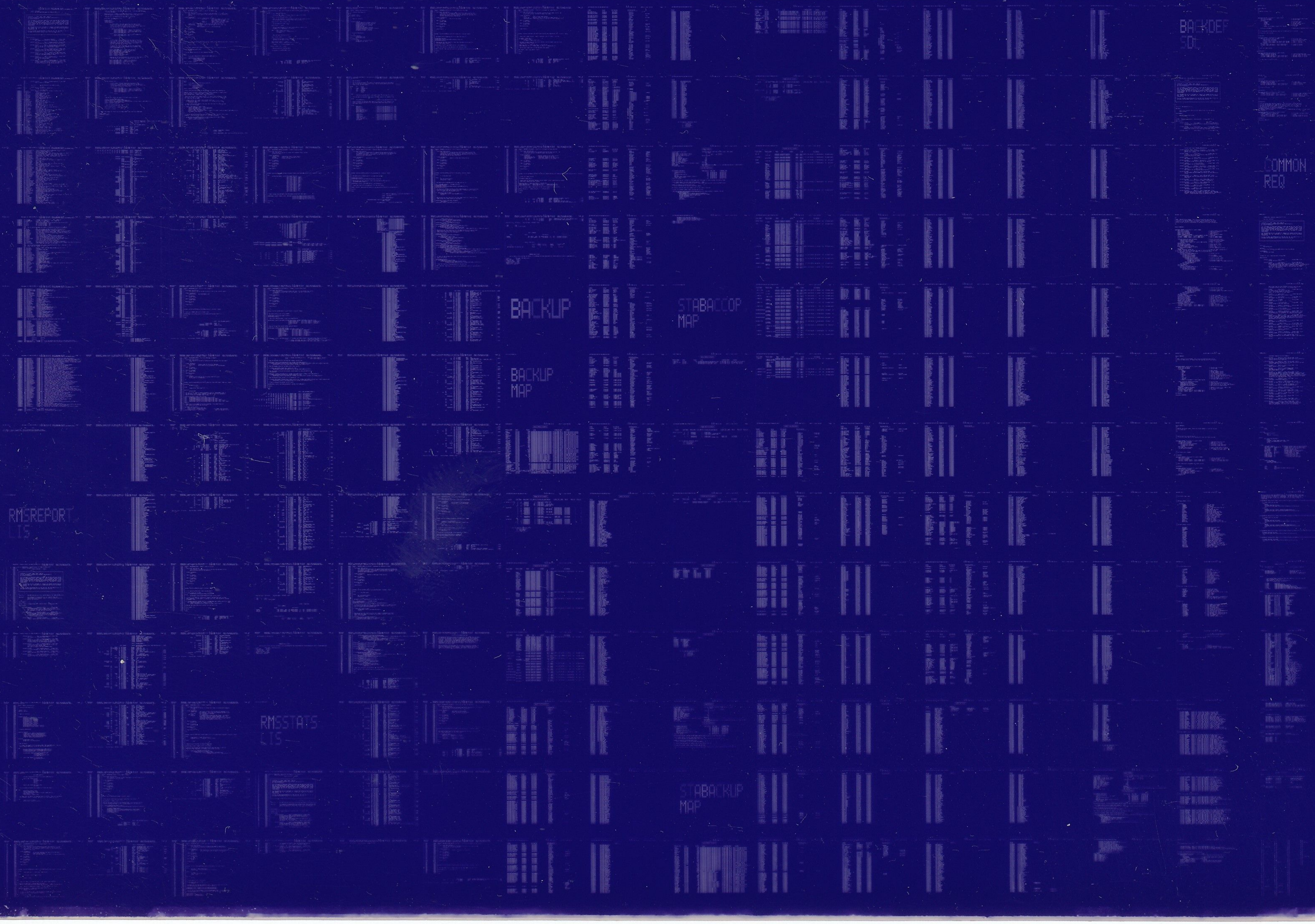

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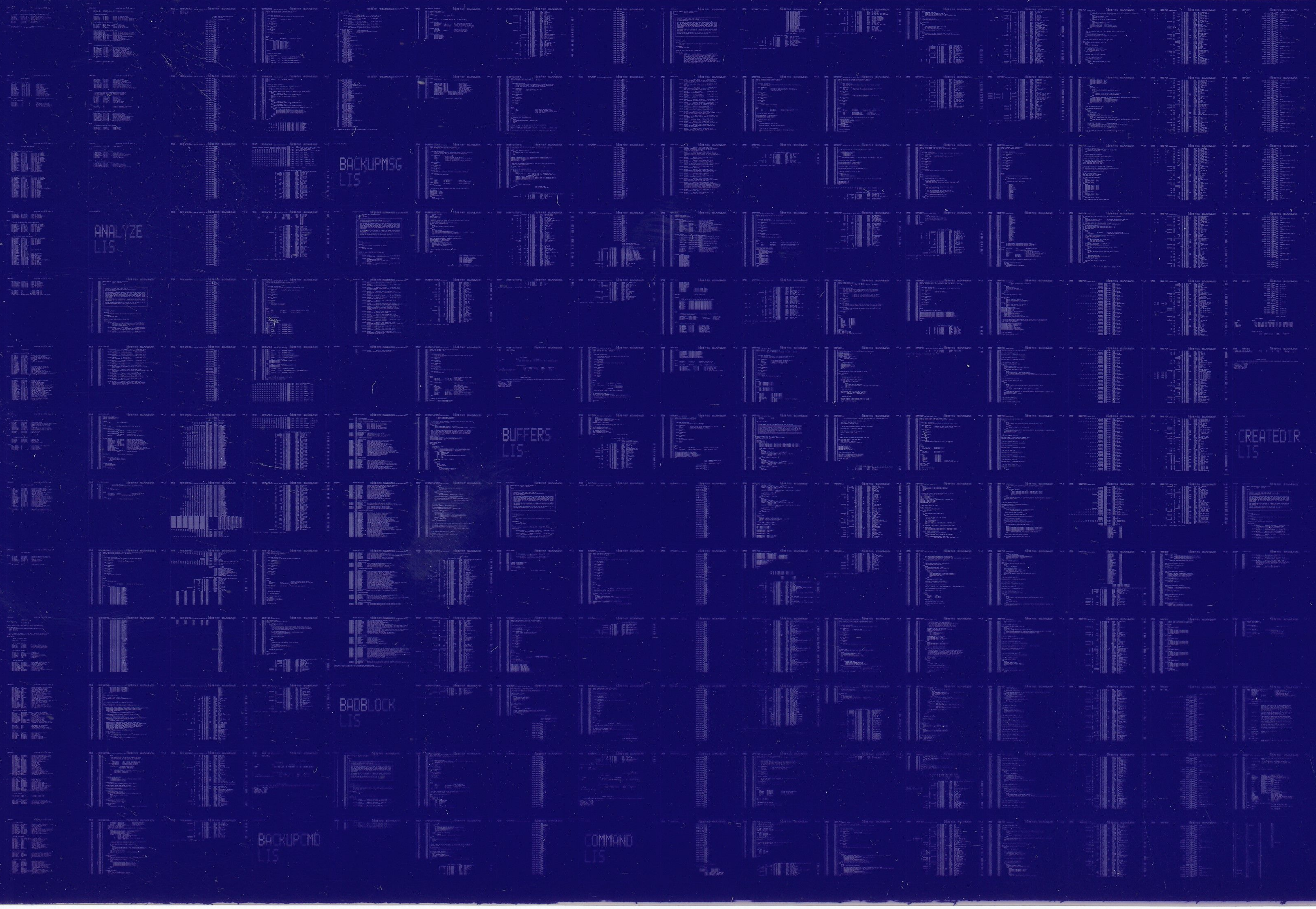

BACKUPMSG
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ANALYZE
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BUFFERS
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CREATEDIR
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BADBLOCK
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BACKUPCMD
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COMMAND
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