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"AS-BUILT" DESIGN SPECIFICATION FOR MISMAP

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15. Supplementary Notes

16. Abstract

This document is the "As-Built" Design Specification for the MISMAP program which is part of the CLASFYT package.

The program is designed to compare classification values with ground truth values for a segment and produce a comparison map and summary table.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
Classification values Ground truth Comparison map Summary table Universal format	

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1.0 SCOPE

This document contains the description of the implementation of the MISMAP program. The purposes of the program are as follows:

(1) To compare classified pixel values for a segment with corresponding ground truth values.

(2) To produce a comparison map which shows either where the two values agree or indicates the manner of disagreement.

(3) To produce a summary table with the percentage of the scene in each category.

2.0 APPLICABLE DOCUMENTS

The following documents form a part of this specification: AD 63-2457-3308-1 Transferring Badhwar Software.

AD NAS 9-15200 Technical Memorandum Format Specification for LACIE (Phase III) and Accuracy Assessment Computer Data Products.

3.0 SYSTEM DESCRIPTION

3.1 MISMAP PROCESSOR SYSTEM FLOWCHART

The system level data flow diagram for MISMAP is shown in Figure 3.1.

3.2 HARDWARE DESCRIPTION

The MISMAP program operates on the IBM 3031 computer at Purdue, LARS.

3.3 SOFTWARE DESCRIPTION

The MISMAP program is designed to compare the classification results of CLASFYT or other classifiers with ground truth data and produce a comparison "map" via the line printer and summary information which describes the degree of agreement or disagreement of the classifier and ground truth.

Classification data is input to MISMAP via a universally formatted file which contains pixel level codes. Refer to section 3.4.1 for a more detailed description of this file.

Ground truth data is input to MISMAP via a universally formatted file which contains sub-pixel level ground truth codes corresponding to various ground truth classes. There are six sub-pixels of ground truth for each pixel; two sub-pixels across the tree sub-pixels down. Therefore, 3 lines in a sub-pixel image correspond to 1 line in a sub-pixel image.

Refer to section 3.4.2 for a more detailed description of this file.

Majority Rule Code

MISMAP compares the classification and ground truth data at the pixel level and therefore ground truth labels must be assigned to the pixels. In order to do this a concept called "pixel purity" is introduced. The purity of a pixel is defined to be the largest number of sub-pixels in that pixel having the same ground truth code. The purity can range from 6 (i.e. pure), where all the sub-pixels have the same code, to 1 where each of the sub-pixels has a different code.

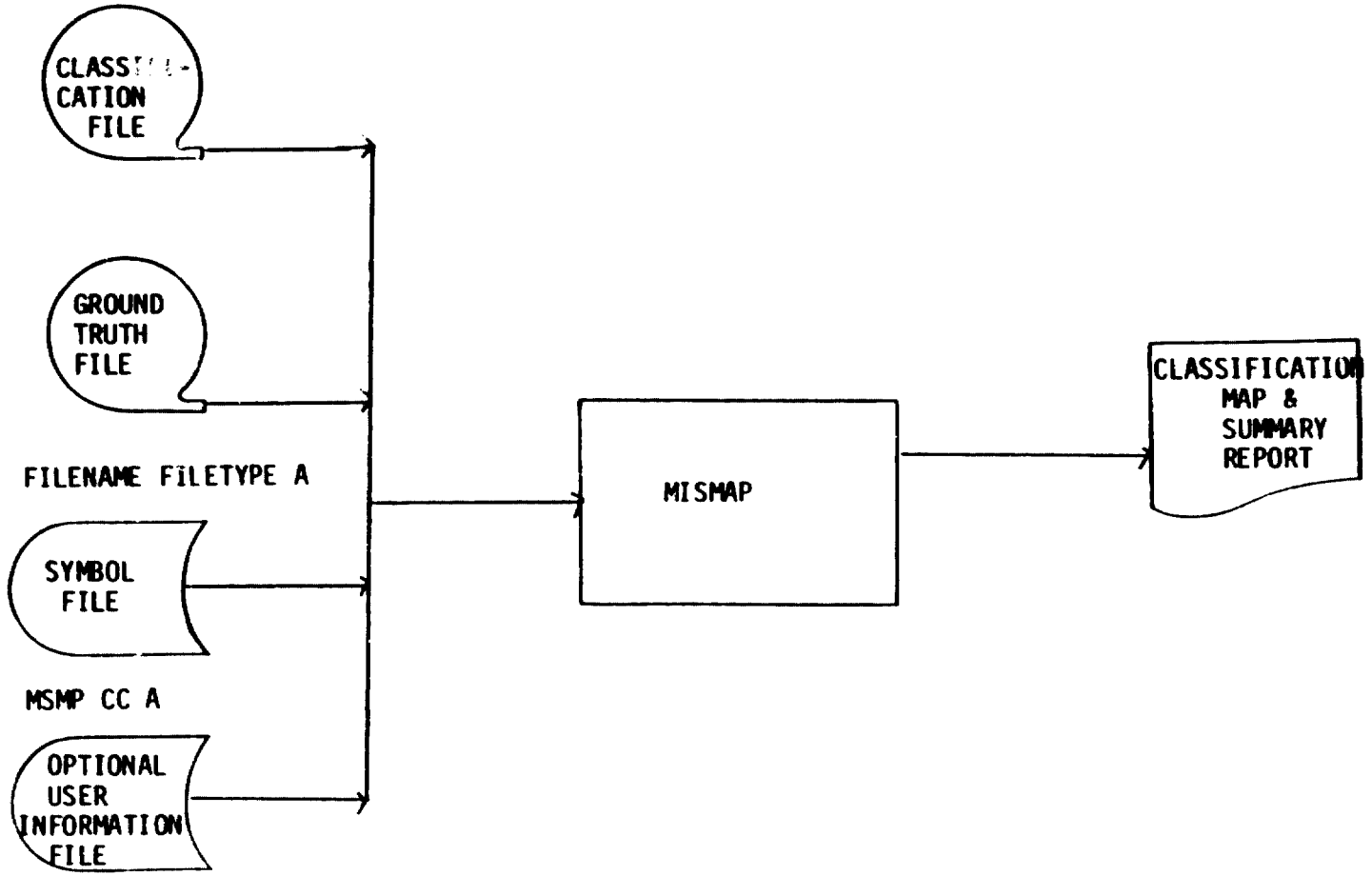

Figure 3.1 MISMAP Processor System Flowchart

A code, called the "Majority Rule Code" is assigned to each pixel whose purity is within a given, user-defined range. The code assigned is the ground truth code associated with the majority of the six ground truth sub pixels. When two or more ground truth codes are equally distributed among the six pixels, the first of these is assigned to the pixel. If the purity of the pixel is not within the specified range, no majority rule code is assigned.

Ground Truth and Classification Transformation

In order to compare the ground truth and classification data, each of the classification codes is transformed into one of six "Classification Categories" and each of the majority rule codes is transformed into one of six "Ground Truth Categories". The object of this is to reduce the total number of codes and to allow the combining of codes. For example, if one was interested in only "small grains" and "other", one might transform all the "small grains" codes into category 1 and all the "other" codes into category 2 for both the classification and ground truth data. The transformation to classification categories and ground truth categories is determined by user defined classification transformations and ground truth transformations (see section (3.4.3).

Some final points to note about the transformations:

1. If the category code is less than 1 or greater than 6, then the program will assign the value 6 (6 is usually reserved in MISMAP for unknown crop type).
2. If any of the codes between 1 and 255 are not assigned a category, then the program will assign a value of 6 as the category.

MISMAP Output and the Character Definition Matrix

As described above, each pixel having a purity within the specified purity range has two numbers associated with it, namely a classification category and a ground truth category. MISMAP outputs a line printer pixel level image composed of characters which indicate what these two numbers are for each pixel. The characters are specified by a user-defined "Character Definition Matrix" (see section 3.4.3) which specifies a particular character to represent each of the 36 combinations of the 6 classification categories and the 6 ground truth categories. On the output any pixel which was not in the specified purity range is represented by the character "?" so it would be inappropriate to choose this character for any of the positions in the character definition matrix.

3.4 FILE DESCRIPTIONS

3.4.1 INPUT DATA FILE CLASSIFICATION FILE

The Classification File output by CLASFYT and input to MISMAP is described here. For a complete description of the universal imagery file format refer to the Earth Resources Data Format Control Book, Volume 1. PHØ-TR543.

MISMAP requires a universally formatted classification file with the following characteristics:

1. A header record consisting of 3060 bytes followed by:
2. One hundred seventeen data records consisting of 360 bytes each.

Record	Type	Contents	
1	HEADER	Bytes 1-60	Computing Systems I.D.
		Bytes 2249-2285	Acquisitions used.
		Bytes 2760-2789	PFC Job Ident.
		Bytes 2941-3000	User supplied data.

Record	Type	Contents	
2-118	Data	Bytes 1-72	Ancillary data (ignored by MISMAP).
		Bytes 73-268	Classification data for 196 pixels (1/Byte).
		Bytes 269-360	Bytes of zero fill.

3.4.2 INPUT DATA FILE GROUND TRUTH FILE

The Ground Truth File input to MISMAP is described here. For a complete description of the universal imagery file format refer to the Earth Resources Data Format Control Book, Volume 1 PHØ-TR543.

MISMAP requires a universally formatted ground truth file with the following characteristics:

1. A header record consisting of 3060 bytes followed by:
2. 351 records consisting of 540 bytes.

Record	Type	Contents	
1	Header	Bytes 1-60	Computing System I.D.
		Bytes 2249-2285	Acquisitions used.
		Bytes 2760-2789	PFC job Ident.
		Bytes 2941-3000	User supplied data
2-352	Data	Bytes 1-72	Ancillary data (ignored by (MISMAP)
		Bytes 73-464	Ground truth crop codes which have been biased with-128 and stored as 8-bit two's-complement notation. (1 sub-pixel/byte).
		Bytes 465-540	
		Bytes 465-540	Unused by MISMAP (must be present).

CHARACTER DEFINITION MATRIX

GROUND TRUTH CATEGORY

		-1-	-2-	-3-	-4-	-5-	-6-
	-1-	C	+	$	#	#	#
	-2-	-		%	#	#	#
CLASSIFICATION	-3-	T	T	T	#	#	#
CATEGORY	-4-	#	#	#	#	#	#
	-5-	#	#	#	#	#	#
	-6-	#	#	#	#	#	#

Figure 3.2 Examples of Character Definition Matrix for Classification and Ground Truth Categories

CLASSIFICATION TRANSFORMATIONS

```
  1 TO  14 = 6
 15 TO  15 = 3
 16 TO  99 = 6
100 TO 199 = 2
200 TO 206 = 6
207 TO 207 = 2
208 TO 238 = 6
239 TO 239 = 1
240 TO 255 = 6
```

GROUND TRUTH TRANSFORMATIONS

```
  1 TO  10 = 1
 11 TO  79 = 2
 80 TO  80 = 3
 81 TO  91 = 2
 92 TO  92 = 1
 93 TO 116 = 2
117 TO 117 = 1
118 TO 163 = 2
164 TO 164 = 3
165 TO 255 = 2
```

Figure 3.3 Examples of Classification and Ground Truth Transformations

3.4.3 USER DEFINED FILE (SYMBOL FILENAME) (SYMBOL FILETYPE) A

This file is used to specify (1) the pixel purity range, (2) the character definition matrix, (3) the ground truth transformations, (4) the classification transformations, and (5) a skip factor.

A typical character definition matrix is shown in figure 3.2. The lines correspond to classification categories and the columns to ground truth categories. In the example shown a pixel which had a classification category of 1 and a ground truth category of 2 would be represented on the output map by the symbol + .

Typical ground truth and classification transformations are shown in figure 3.3. Each transformation gives a range of codes and the category they are to be transformed into.

The skip flag is normally set to zero. However sometimes there are 50 color records following the header record of the classification file. In this case the skip flag must be set to some non zero number. The 50 records are then read into a dummy variable before the first data record is processed.

The symbol file may be a permanent or temporary "card image" file and must have the following form.

SYMBOL FILE

Record	Columns	Format	Content
1	1	I1	Lower limit of pixel purity range.
	2	1X	Ignored.
	3	I1	Upper limit of pixel purity range.
2	1-6	6A1	Character definition matrix, row 1.
3	1-6	6A1	Character definition matrix, row 2.
.			
.			
.			
7	1-6	6A1	Character definition matrix, row 6. (last row).
8	1-5	I5	Lower limit of majority rule code range.
	6-10	I5	Upper limit of majority rule code range.
	11-15	I5	Ground truth category for the described range.
9-M	1-15	3I5	As many records as are required, in the same format as record 8, to describe the ground truth transformations.
M+1	1-15	3I5	Three zeros, right adjusted, indicating the end of ground truth transformation records.
M+2 to N	1-15	3I5	Records describing the classification transformations. Format is identical to records 8 to M+1.

Record	Column	Format	Content
N+1	1-15	3I5	Three zeros, right adjusted, indicating the end of classification transformation records.
N+2	1	I1	Skip factor. If nonzero, color records are assumed to precede the classification file data and are skipped. If no color records are present this field must be set to zero.

Default values for Ground Truth and Classification Transformations

A default category code of 6 is automatically assigned if a classification code or majority rule code is not included in any transformation. In addition, a transformation code of less than 1 or greater than 6 is changed to 6.

The following is an annotated listing of a SYMBOL file example:

Example

```
FILE:  SYMBOL  CORN  A (file name)

1 6                  (Low, high range of pixel purity)
C+$###               character definition matrix
- %###
TTT###
######
######
######
    1    10     1
   11    79     2
   80    80     3    Ground truth
   81    91     2    Transformation records
   92    92     1
   93   116     2
  117   117     1
  118   163     2
  164   164     3
  165   165     2
    0     0     0    End of ground truth transformation records
```

```
      1     14     6
     15     15     3
     16     99     6
    100    199     2    Classification transformation records.
    200    206     6
    207    207     2
    208    238     6
    239    239     1
    240    255     6
      0      0     0    End of classification transformation records.
0                       Color record skip indicator.
```

3.4.4 USER DEFINED FILE -- MSMP CC A

The user information file "MSMP" is optional, and its contents are printed in the header for informational purposes only. The contents could identify the run by analyst name, date, acquisition numbers, or other appropriate comments. The information in MSMP is entered in free field card image format and as many card images as necessary may be used. For an example, see the input summary in the output in Appendix B.

3.5 DETAILED SOFTWARE DESCRIPTION

3.5.1 MISMAP PROGRAM

Purpose

MISMAP compares the results of CLASFYT or other classifiers with ground truth data and produces a comparison "map" and summary information which describes the degree of agreement or disagreement of the classifier and ground truth.

Linkages

MISMAP calls MSMP.

Interface

Calling sequence:

Not applicable. (A description of MISMAP EXEC which loads and executes MISMAP can be found in Section 4.0).

Calling sequence parameters:

Not applicable.

Function value:

Not applicable.

Labeled COMMON parameters:

None.

Blank COMMON parameters:

None.

Inputs

Unit	Type	Description
9		Universal formatted ground truth file.
10		Universal formatted classification file .
19		Symbol file.
21		Card control file.

Outputs

Unit	Type	Description
5	Terminal	Runtime errors.
6	Printer	Program report.

Storage requirement

Not applicable.

Description

MISMAP first reads the following information from the "Symbol" file:

1. The range of pixel purity which is used for the majority rule for pixels.
2. The character definition matrix which contains the symbols printed in the map.
3. The ground truth classification transformations.
4. The color record skip factor.

Next MISMAP calls the subroutine MSMP (reference 3.5.2) to read the optional user information file (3.4.1) and print it as an "input summary" at the top of the Comparison Map.

Next MISMAP prints the following header information from the Symbol file:

1. Character definition matrix.
2. Pixel purity range.
3. Ground truth transformations.
4. Classification transformations.

Continuing, MISMAP reads the header records and prints for each input file the following information:

1. Computing system ID.
2. Acquisitions used.
3. User supplied data (from header record).
4. The segment number.

The skip factor is read and since color records are not needed, they are read into a dummy variable if they are present.

Next the main part of MISMAP is executed for each of the 117 lines of the scene. It does the following:

1. Reads a line Classificatin data.
2. Reads a line of the Ground Truth data.
3. Transforms the classification value and ground truth value for each pixel to pair of codes (each between 1 and 6) representing the particular crop. It uses these codes as indices to the 6x6 character definition matrix to determine the appropriate map symbol.
4. Keeps a count of the number of times each symbol occurs.
5. Prints the line of symbols on the comparison map.

Finally, MISMAP computes the percentages of pixels in each category and the percentage of the scene in which disagreement occurred between the two files.

Flowchart

Not applicable.

Listing

See Appendix A for program listing.

3.5.2 SOFTWARE COMPONENT NO. 1 (MSMP)

Purpose

The MSMP subroutine prints the user information file in the heading for the report.

Linkages

MSMP is called by MISMAP.
MSMP calls CPTIME, a library routine.

Interface

Calling sequence:

CALL MSMP.

Calling sequence parameters:

None.

Function value:

Not applicable.

Labeled COMMON parameters:

None.

Blank COMMON parameters:

None.

Inputs

Unit	Type	Description
21	Seq. data	Control card file (See Section 3.4.1).

Outputs

Unit	Type	Description
6	Printer	Program report.

Storage requirement

Not applicable.

Description

MSMP reads the user information file (optional on A disk) and prints the card images in the heading of the report.

Flowchart

Not applicable.

Listing

See Appendix A for routine listing.

4.0 OPERATION

4.1 OPERATING DESCRIPTION

MISMAP is operational on the IBM 3031 computer at LARS, West Lafayette, Indiana.

The MISMAP program is one of the programs of the BADHWAR SYSTEM which includes the programs CLASFYT, MISMAP, PARPLT, PARHIS, and PARCLS.

MISMAP requires the use of a D disk which is assigned as a temporary disk and an E disk which is used to temporarily store certain LARS routines. The user, therefore, must not assign a disk to his machine using either MODE E or MODE D. These disks will be assigned as needed.

Prior to executing the MISMAP program the user must (1) establish on his A disk a SYMBOL file as described in section 3.4.3 and (2) establish the optional USER INFORMATION file as described in section 3.4.4, if he wishes to use this file.

4.2 COMMANDS DESCRIPTION

To execute MISMAP the user will enter a series of commands which invoke the JOB CONTROL SOFTWARE. These commands are divided into two classes namely (1) FUNCTION commands and (2) PROGRAM commands. The FUNCTION commands, which perform all the functions except executing the program are reusable; i.e., once they are invoked they remain in effect until reentered. The PROGRAM commands, which execute the program, must be reentered each time the program is to be excuted.

The following list gives the commands required to execute the MISMAP program. They are all FUNCTION commands except the PROGRAM command MISMAP. These commands must be given in the listed order except that the order of the DEFGTRU command and the DEFCLAS command may be interchanged.

START

DEFGTRU.....

DEFCLAS.....

MISMAP .....

END

The following sections describe each of the commands in detail. Input fields are separated by blanks. If more than one word is required to describe an input field, the descriptive text is enclosed in pointed brackets <>. If an input is optional the field is enclosed in square brackets []. Do not include these explanatory characters <> [] when actually submitting input to the computer. To enter a command the user types one input per defined input field and separates each field with a blank.

4.2.1 START

The START command spools the user's console file. The use of this command, along with the END command, will provide a listing of all information appearing on the user's console file. (If running an interactive job, this is the terminal; if running a batch job, this is a system defined device.) The START command is invoked by the user typing the following:

START

4.2.2 DEFGTRU

The DEFGTRU command defines a Ground Truth File. The user can use this command to define Ground Truth files on tape, disk, or the LARS RT&E Data Base. In the latter case a series of programs are invoked to provide interface with the data base. The following diagram illustrates this software flow.

..RTEERR (LARS ROUTINE)

DEFGTRU.....GTRUINF....

..GTINFO (LARS ROUTINE)

For a detailed description of the above JOB CONTROL SOFTWARE see appendix B.

The DEFGTRU command has the following forms and is invoked by typing one of the following, according to the user's requirement.

If the file is on tape -

DEFGTRU TAPE# FILE# <TAPE DENSITY>

If the file is on disk -

DEFGTRU FILENAME FILETYPE FILEMODE

If the file is on the LARS Data Base -

DEFGTRU SEGMENT# YEAR
(year-last two digits of data generation year)

This command remains in effect for the use of any of the BADHWAR SYSTEM PROGRAM commands and does not have to be reissued unless the user wishes to redefine the input Ground Truth File.

4.2.3 DEFCLAS

The DEFCLAS command defines the input Classification or Cluster file. The user can use this command to define a Class or Cluster file on tape or disk. The DEFCLAS command has the following forms and is invoked by typing one of the following, according to the user's requirement.

If the file is on tape -

DEFCLAS TAPE# FILE# <FILE DENSITY>

If the file is on disk -

DEFCLAS FILENAME FILETYPE FILEMODE

This command remains in effect for the use of any of the BADHWAR SYSTEM PROGRAM commands and does not have to be reissued unless the user wishes to redefine the input Classification or Cluster File.

4.2.4 MISMAP

The MISMAP command is a PROGRAM command and is used to invoke the execution of the MISMAP program. This command must not be used unless the DEFCLAS

and the DEFGTRU FUNCTION commands have been previously issued. Also, as previously stated the user must have established a SYMBOL FILE on his A disk before invoking this command. The MISMAP command is invoked by the user typing the following:

MISMAP <SYMBOL FILENAME> <SYMBOL FILETYPE>

The output from the MISMAP program is spooled to the HOUSTON line printer. The output consists of a MAP and the USER INFORMATION file if this file was defined.

4.2.5 END

This command closes the user's console file and causes a spooled copy to be sent to the HOUSTON printer. This command has no effect if the START command was not previously issued. The END command is invoked by the user typing the following:

END

4.3 OPERATING EXAMPLE

For our example we will assume the following:

The symbol file is established on the user's A disk under the file description:

0882 79082 A

The user has two different Classification files which he wishes to input to the MISMAP PROGRAM. He will therefore, issue two PROGRAM commands in his command sequence.

Furthermore, the user has selected to use a ground truth file at LARS.

COMMAND	EXPLANATION OR ACTION TAKEN
START	Spools the console file.
DEFGTRU 882 79	Defines a ground truth file using data from the LARS Data Base.
DEFCLAS 088279 079 B	Defines a Class file on the users B disk. This data is on a disk which the user has previously attached to his disk using a B mode.

MISMAP 0882 79082	Executes the MISMAP PROGRAM.
DEFCLAS 2345 23 1600	Redefines the class file. This file is from a 1600 BPI tape.
MISMAP 0882 79082	Executes the MISMAP PROGRAM. The user has chosen to define his symbol file the same as in the previous execution of MISMAP.
END	Closes the user's console file and spools the file to the HOUSTON printer.

APPENDIX A
MISMAP PROGRAM LISTINGS

```
*LEVEL 2.1.0 (JUNE 78)                    OS/360  FORTRAN H EXTENDED          DATE 81.139/13.25.58        PAGE    1
REQUESTED OPTIONS: NOTEST
OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EXPDCK NOLIST NODECK OBJECT MAP NOREORDER NOGOSTMT KEEP ALC NOANSF NOTERM IHM FLAG(I)

                      CCCC      PROGRAM MISMAP                                                          M|S00010
                      C                                                                                 M|S00020
                      C       THIS PROGRAM COMPARES A CLASSIFICATION FILE WITH THE GROUND               M|S00030
                      C       TRUTH. A SYMBOL IS PRINTED OUT WHICH DEPENDS ON THE GROUND TRUTH          M|S00040
                      C       AND CLASSIFICATION LABELS. THERE ARE UP TO 6 POSSIBILITIES FOR            M|S00050
                      C       THE LABELS. THE SIXTH LABEL IS RESERVED FOR UNEXPECTED CODES. ALL         M|S00060
                      C       CODE TRANSFORMATIONS ARE SET TO 6 BY DEFAULT.                             M|S00070
                      C                                                                                 M|S00080
                      C                                                                                 M|S00090
                      C                                                                                 M|S00100
                      C       THE OPTIONAL USER INPUT INFORMATION FILE "MSMP CC" MAY CONTAIN             M|S00110
                      C       THE DATE, USER NAME, SEGMENT NUMBER FOR THE FILES,AND ANY                 M|S00120
                      C       COMMENTS WHICH THE USER WANTS.                                            M|S00130
                      C                                                                                 M|S00140
                      C       THE DATA FILE "SYMBOL (AGRICULTURAL PRODUCT)" HAS A FILE TYPE             M|S00150
                      C       SPECIFIED BY THE USER, FOR EXAMPLE ,"SYMBOL CORN". IT CONTAINS            M|S00160
                      C       THE TRANSFORMATIONS AND CHARACTERS TO BE USED IN THE RUN.                 M|S00170
                      C       THE ORDER IS:                                                             M|S00180
                      C            1. RANGE OF PIXEL PURITY - LOWER AND UPPER LIMITS ON PIXEL           M|S00190
                      C               PURITIES WHICH WILL BE CONSIDERED IN AN (I1,1X,I1) FORMAT.M|S00200
                      C               (PIXELS WITH PURITY OUTSIDE THE PRESCRIBED RANGE ARE              M|S00210
                      C               DISPLAYED AS A "?".)                                              M|S00220
                      C            2. CHARACTER MATRIX - 6 LINES WITH 6 SYMBOLS PER LINE                M|S00230
                      C               IN A (6A1) FORMAT.  (EACH LINE CORRESPONDS TO A                   M|S00240
                      C               DIFFERENT CLASSIFICATION LABEL.)                                  M|S00250
                      C            3. GROUND TRUTH TRANSFORMATIONS - 1 LINE FOR EACH                    M|S00260
                      C               TRANSFORMATION IN THE FORM STARTING CODE, ENDING CODE,            M|S00270
                      C               AND NEW CODE IN A (3I5) FORMAT.                                   M|S00280
                      C            4. CLASSIFICATION TRANSFORMATIONS - SAME FORMAT AS ABOVE.            M|S00290
                      C            5. SINCE THE CLASSIFICATION FILES MAY OR MAY NOT HAVE THE            M|S00300
                      C               COLOR RECORDS AT THE BEGINNING OF THE DATA,THERE                  M|S00310
                      C               IS A SKIP FLAG IN THE SYMBOL CORN FILE. IF THE SKIP               M|S00320
                      C               FLAG IS NOT ZERO, 50 RECORDS WILL BE SKIPPED BEFORE               M|S00330
                      C               THE FIRST RECORD IS PROCESSED.                                    M|S00340
                      C                                                                                 M|S00350
                      C       THIS PROGRAM IS BASED ON THE PROGRAM AASGMAP.  THE OUTPUT IS IN           M|S00360
                      C       THE SAME FORMAT.  AND THE DETERMINATION OF THE GROUND TRUTH LABEL         M|S00370
                      C       IS MADE IN THE SAME MANNER, EXCEPT THAT THE TRANSFORMATION IS             M|S00380
                      C       MADE BEFORE THE MAJORITY RULE IS DETERMINED.                              M|S00390
                      C                                                                                 M|S00400
                      C                                                                                 M|S00410
                      C       PROGRAM DEVELOPED BY J. CARDES,3/19/79, MODIFIED FOR IHM CMS              M|S00420
                      C       BY P. BROWN AD. CHENG, 12/1/80.                                           M|S00430
                      C                                                                                 M|S00440
ISN 0002                      IMPLICIT INTEGER (A-Q,S-Z)                                                M|S00450
ISN 0003                      DIMENSION ISITE(64,3),GI(255),OT(255),MT(6),RSUM(6,6),RTOT(6)             M|S00460
ISN 0004                      DIMENSION RTOTP(6), PSUMP(6,6), PIXNO*(10)                                M|S00470
ISN 0005                      LOGICAL*1 SYM(6,6),DTFLNM(26),GTFLNM(26),OTHBUF(360),GTHBUF(3,540),       M|S00480
                             *CHAR(94),GTHBUF(6,270),HDR(3060),QCHAR                                    M|S00490
ISN 0006                      EQUIVALENCE (GTHBUF(1),GTHBUF(1,1))                                       M|S00500
ISN 0007                      DATA QCHAR/'?'/                                                           M|S00510
ISN 0008                      DIMENSION RLDATE(3),GTDATE(3)                                             M|S00520
                      C                                                                                 M|S00530
                      C                                                                                 M|S00540
                      C SET ERROR FLAG ON RANGE CHECKING                                                M|S00550
                      C                                                                                 M|S00560
ISN 0009                      IERR = 0                                                                  M|S00570
                      C                                                                                 M|S00580
                      C       READ IN RANGE OF PIXEL PURITY                                             M|S00590
                      C                                                                                 M|S00600
ISN 0010                      READ(19,937)  NPURL,NPURU                                                 M|S00610
ISN 0011                937 FORMAT(1I1,1X,1I1)                                                          M|S00620
ISN 0012                      IF((NPURL.GE.1.AND.NPURL.LE.255).AND.                                     M|S00630
                             $    (NPURU.GE.1.AND.NPURU.LE.255).AND.                                    M|S00640
                             $    (NPURL.LE.NPURU)) GO TO 2000                                          M|S00650
ISN 0014                      WRITE(6,2000) NPURL,NPURU                                                 M|S00660
ISN 0015               2000 FORMAT(' PIXEL PURITY RANGE ',I3,I3,' - UNACCEPTABLE')                      M|S00670
ISN 0016                      IERR = 1                                                                  M|S00680
                      C                                                                                 M|S00690
                      C       READ IN CHARACTER MATRIX. (I = CLASSIFICATION, J = GROUND TRUTH)          M|S00700
                      C                                                                                 M|S00710
ISN 0017               3000 DO 1 I=1,6                                                                  M|S00720
ISN 0018                  1 READ(19,3001) (SYM(I,J),J=1,6)                                              M|S00730
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ISN 0019        900 FORMAT(7A1)                                                  MISS00740
                C                                                                MISS00750
                C     SET GROUND TRUTH TRANSFORMATION ARRAY TO ALL 6'S.          MISS00760
                C                                                                MISS00770
ISN 0020            DO 2 I=1,255                                                 MISS00780
ISN 0021          2 GT(I)=6                                                      MISS00790
                C                                                                MISS00800
                C     LOAD GROUND TRUTH TRANSFORMATION DATA FROM "SYMBOL" FILE.   MISS00810
                C                                                                MISS00820
ISN 0022          3 READ(19,901) NB,NF,NO                                        MISS00830
ISN 0023        901 FORMAT(3I5)                                                  MISS00840
ISN 0024            IF(NB.EQ.0.AND.NF.EQ.0.AND.NO.EQ.0) GO TO 5                  MISS00850
ISN 0025            IF(NB.GE.1.AND.NB.LE.255.AND.NF.GE.1.AND.NF.LE.255)GO TO 2110 MISS00860
ISN 0026            WRITE(5,2105)NB,NF,NO                                        MISS00870
ISN 0027         2105 FORMAT(' GROUND TRUTH SYMBOL TABLE RANGE',I5,I5,1X,A1,     MISS00880
                    &       ' - UNACCEPTABLE')                                   MISS00890
ISN 0028            IERR = 1                                                     MISS00900
ISN 0029            GO TO 5                                                      MISS00910
ISN 0030         2110 IF(NO.GT.6.OR.NO.LT.1) NO=6                                MISS00920
ISN 0031            DO 4 I=NB,NF                                                 MISS00930
ISN 0032          4 GT(I)=NO                                                     MISS00940
ISN 0033            GO TO 3                                                      MISS00950
                C                                                                MISS00960
                C     SET CLASSIFICATION TRANSFORMATION ARRAY TO ALL 6'S         MISS00970
                C                                                                MISS00980
ISN 0034          5 DO 6 I=1,255                                                 MISS00990
ISN 0035          6 DT(I)=6                                                      MISS01000
                C                                                                MISS01010
                C     LOAD CLASSIFICATION TRANSFORMATION DATA FROM "SYMBOL" FILE. MISS01020
                C                                                                MISS01030
ISN 0036          7 READ(19,901) NB,NF,NO                                        MISS01040
ISN 0037            IF(NB.EQ.0.AND.NF.EQ.0.AND.NO.EQ.0) GO TO 9                  MISS01050
ISN 0038            IF(NB.GE.1.AND.NB.LE.255.AND.NF.GE.1.AND.NF.LE.255)GO TO 2130 MISS01060
ISN 0039            WRITE(5,2120)NB,NF,NO                                        MISS01070
ISN 0040         2120 FORMAT(' CLASS SYMBOL TABLE RANGE',I5,I5,1X,A1,' - UNACCEPTABLE') MISS01080
ISN 0041            IERR = 1                                                     MISS01090
ISN 0042            GO TO 9                                                      MISS01100
ISN 0043         2130 IF(NO.GT.6.OR.NO.LT.1) NO=6                                MISS01110
ISN 0044            DO 8 I=NB,NF                                                 MISS01120
ISN 0045          8 DT(I)=NO                                                     MISS01130
ISN 0046            GO TO 7                                                      MISS01140
                C                                                                MISS01150
                C     READ THE COLOR RECORD'S SKIP FLAG                          MISS01160
                C                                                                MISS01170
ISN 0047          9 READ(19,902)SKIP                                             MISS01180
ISN 0048        902 FORMAT(I1)                                                   MISS01190
                C                                                                MISS01200
                C     WRITE USER'S INPUT SUMMARY FROM CONTROL CARD IMAGES IN MSMP FILE MISS01210
                C     AND PRINT OUT CURRENT TIME                                 MISS01220
                C                                                                MISS01230
ISN 0049            CALL MSMP                                                    MISS01240
                C                                                                MISS01250
                C                                                                MISS01260
                C BEFORE REPORT CAN BE PRINTED CERTAIN BYTES MUST BE READ        MISS01270
                C                                                                MISS01280
ISN 0050            READ(10,2135)(HDR(I),I = 1,3060)                             MISS01290
ISN 0051         2135 FORMAT(17(180A1))                                          MISS01300
ISN 0052            KLASEG = HDR(67)*2**8 + HDR(68)                              MISS01310
ISN 0053            KDAY = HDR(61)                                               MISS01320
ISN 0054            KMON = HDR(62)                                               MISS01330
ISN 0055            KYR  = HDR(63)                                               MISS01340
ISN 0056            REWIND 10                                                    MISS01350
                C                                                                MISS01360
                C CALL ROUTINE TO CHANGE DAY MO. YEAR TO JULIAN DATE             MISS01370
                C                                                                MISS01380
ISN 0057            CALL JULIAN(KLDATE,JERR,   KDAY,KMON,KYR)                    MISS01390
ISN 0058            IF(JERR.NE.0)IERR = 1                                        MISS01400
                C                                                                MISS01410
ISN 0059            LUN = 9                                                      MISS01420
ISN 0060            DO 3000 ISEG = 1,2                                           MISS01430
ISN 0061            READ(LUN,2135)(HDR(I),I = 1,3060)                            MISS01440
ISN 0062            IF(ISEG.EQ.2)GO TO 2180                                      MISS01450
ISN 0063            GTSEG = HDR(67)*2**8 + HDR(68)                               MISS01460
ISN 0064            TDAY = HDR(61)                                               MISS01470
ISN 0065            TMON = HDR(62)                                               MISS01480
ISN 0066            TYR = HDR(63)                                                MISS01490
                C                                                                MISS01500
                                                                                 MISS01510
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                C
                C  CALL ROUTINE TO CHANGE DAY NO. YEAR TO JULIAN DATE
                C
      ISN 0075        CALL JULIAN(GTDATE,JERR,   IDAY,IMON,IYR)
      ISN 0076        IF(JERR.NE.0)IERR = 1
                C
                CCC
                CCC     WRITE FIRST PAGE OF PRINTOUT WITH TRANSFORMATIONS AND
                CCC     CHARACTER MATRIX.
                C
      ISN 0078        WRITE(6,910)
      ISN 0079      910 FORMAT(//,10X,'COMPARISON MAP OF CLASSIFICATION RESULTS',
                     *' WITH GROUND TRUTH')
      ISN 0080        WRITE(6,2140)GTRSEG,IYR,(GTDATE(I),I = 1,3)
      ISN 0081     2140 FORMAT(//10X,'GROUND TRUTH FILE -',11X,I4,I2,I1,I1,I1)
      ISN 0082        WRITE(6,2145)KLASEG,KYR,(KLDATE(I),I = 1,3)
      ISN 0083     2145 FORMAT(10X,'CLASSIFICATION FILE -',9X,I4,I2,I1,I1,I1,
                    & //27X,'CHARACTER DEFINITION MATRIX')
      ISN 0084        WRITE(6,911) (I,I=1,6)
      ISN 0085      911 FORMAT(1H0,29X,'GROUND TRUTH CATEGORIES'/30X,6('-',I1,'- '))
      ISN 0086        DO 117 I=1,2
      ISN 0087      117 WRITE(6,912) I,(SYM(I,J),J=1,6)
      ISN 0088      912 FORMAT(1H0,25X,'-',I1,'-',6(' ',A1,'  '))
      ISN 0089        WRITE(6,913) (SYM(3,J),J=1,6)
      ISN 0090      913 FORMAT(1H0,10X,'CLASSIFICATION -3-',6(' ',A1,'  ')/11X,
                     *'CATEGORIES')
      ISN 0091        WRITE(6,914) ((SYM(I,J),J=1,6),I=4,6)
      ISN 0092      914 FORMAT(1H ,25X,'-4-',6(' ',A1,'  ')//26X,'-5-',6(' ',A1,'  ')//
                     *26X,'-6-',6(' ',A1,'  ')/)
                C
                CCC     PRINT OUT RANGE OF PIXEL PURITY.
                C
      ISN 0093        WRITE(6,938) NPURL,NPURU
      ISN 0094      938 FORMAT(1H0,10X,'PIXEL PURITY RANGE - FROM ',I1,' TO ', I1,
                     *' SUBPIXELS'//)
                C
                CCC     PRINT OUT THE GROUND TRUTH TRANSFORMATIONS.
                C
      ISN 0095        WRITE(6,915)
      ISN 0096      915 FORMAT(1H0,10X,'GROUND TRUTH TRANSFORMATIONS'/)
      ISN 0097        NO=GT(1)
      ISN 0098        NH=1
      ISN 0099        DO 109 I=2,255
      ISN 0100        IF(GT(I).EQ.NO) GO TO 109
      ISN 0102        NE=I-1
      ISN 0103        WRITE(6,916) NH,NE,NO
      ISN 0104      916 FORMAT(1H ,17X,I3,' TO ',I3,' = ',I1)
      ISN 0105        NO=GT(I)
      ISN 0106        NH=I
      ISN 0107      109 CONTINUE
      ISN 0108        NE=255
      ISN 0109        WRITE(6,916) NB,NE,NO
                C
                CCC     PRINT OUT CLASSIFICATION TRANSFORMATIONS.
                C
      ISN 0110        WRITE(6,917)
      ISN 0111      917 FORMAT(1H0,10X,'CLASSIFICATION TRANSFORMATIONS'/)
      ISN 0112        NO=DT(1)
      ISN 0113        NB=1
      ISN 0114        DO 110 I=2,255
      ISN 0115        IF(DT(I).EQ.NO) GO TO 110
      ISN 0117        NE=I-1
      ISN 0118        WRITE(6,916) NB,NE,NO
      ISN 0119        NO=DT(I)
      ISN 0120        NH=I
      ISN 0121      110 CONTINUE
      ISN 0122        NE=255
      ISN 0123        WRITE(6,916) NH,NE,NO
                C
                CCC     PRINT OUT CONTENTS OF HEADER RECORD.
                C
      ISN 0124        WRITE(6,2150)GTRSEG,IYR,(GTDATE(I),I = 1,3)
      ISN 0125     2150 FORMAT(////,11X,'HEADER INFORMATION FOR GROUND TRUTH FILE',11X,I4,
                    &          I2,I1,I1,I1)
      ISN 0126        GO TO 2190
      ISN 0127     2180 WRITE(6,2185)KLASEG,KYR,(KLDATE(I),I = 1,3)
      ISN 0128     2185 FORMAT(////,11X,'HEADER INFORMATION FOR CLASS FILE',9X,I4,I2,I1,I1
                    &          ,I1)
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ISN 0129       2190 WRITE(6,932)(HDR(I),I = 1,80)                                  M|S02300
ISN 0130        932 FORMAT(1H0,10X,'COMPUTING SYSTEM ID = ',60A1)                  M|S02310
ISN 0131            WRITE(6,933) (HDR(I),I=2249,2285)                              M|S02320
ISN 0132        933 FORMAT(1H0,10X,'ACQUISITIONS USED    = ',5(8A1,3X))            M|S02330
ISN 0133            WRITE(6,934) (HDR(I),I=2760,2789)                              M|S02340
ISN 0134        934 FORMAT(1H0,10X,'PEC JOB IDENT.       = ',30A1,/)               M|S02350
ISN 0135            IF(ISEG.EQ.2)WRITE(6,2195)                                     M|S02360
ISN 0137       2195 FORMAT(33X,'(SAMPLE LINE)')                                    M|S02370
ISN 0138        122 WRITE(6,935) (HDR(I),I=2941,3000)                              M|S02380
ISN 0139            LUN = 10                                                       M|S02390
ISN 0140       3000 CONTINUE                                                       M|S02400
                C                                                                  M|S02410
                CCC                                                                M|S02420
                C CHECK TO SEE IF TAPES ARE FOR SAME SEGMENT                       M|S02430
                C                                                                  M|S02440
ISN 0141            IF(KLASEG.EQ.GTHSEG)GO TO 3010                                 M|S02450
ISN 0143            WRITE(6,3005)KLASEG,GTHSEG                                     M|S02460
ISN 0144       3005 FORMAT(' CLASS FILE FOR SEG.',I5,' GROUND TRUTH FILE FOR SEG',I5) M|S02470
ISN 0145            IERR = 1                                                       M|S02480
ISN 0146        935 FORMAT(11X,'USER SUPPLIED DATA  = ',60A1)                      M|S02490
                C                                                                  M|S02500
                CCC     CLEAR SUMMING ARRAY.                                       M|S02510
                C                                                                  M|S02520
ISN 0147       3010 IF(IERR.NE.0)GO TO 9000                                        M|S02530
ISN 0149            DO 114 I=1,6                                                   M|S02540
ISN 0150            DO 114 J=1,6                                                   M|S02550
ISN 0151        114 WSUM(I,J)=0.                                                   M|S02560
                C                                                                  M|S02570
                CCC     PRODUCE COMPARISON MAP FROM DATA IN IMAGE FILES. PASS 1 IS FOR M|S02580
                CCC     LEFT SIDE OF SEGMENT. PASS 2 IS FOR RIGHT SIDE OF SEGEMENT M|S02590
                C                                                                  M|S02600
ISN 0152            OFFSET=-98                                                     M|S02610
ISN 0153            DO 500 PASS=1,2                                                M|S02620
ISN 0154            OFFSET=OFFSET+98                                               M|S02630
ISN 0155            REWIND 9                                                       M|S02640
ISN 0156            REWIND 10                                                      M|S02650
                C                                                                  M|S02660
                CCC                                                                M|S02670
                CCC     WRITE HEADING FOR MAP                                      M|S02680
                C                                                                  M|S02690
ISN 0157            WRITE (6,918) PASS, KLASEG                                     M|S02700
ISN 0158        918 FORMAT(1H1,10X,'PART ',I1,' OF COMPARISON MAP OF SEGMENT NUMBER', M|S02710
                   +I5)                                                            M|S02720
ISN 0159            WRITE(6,3020)GTHSEG,(GTHDATE(I),I = 1,3),KLASEG,               M|S02730
                   & KLASEG,(HDR(I),I = 1,3)                                       M|S02740
ISN 0160       3020 FORMAT( 1X,'GROUND TRUTH FILE =',11X,I4,I2,I1,I1,I1,5X,       M|S02750
                   +      'CLASSIFICATION FILE =',11X,I4,I2,I1,I1,I1,//)          M|S02760
ISN 0161            IF(PASS.EQ.1) WRITE(6,919) (I,I=1,9)                           M|S02770
ISN 0163        919 FORMAT(1H ,10X,9I10)                                           M|S02780
ISN 0164            DO 11 I=1,10                                                   M|S02790
ISN 0165         11 PIXNUM(I)=I-1                                                  M|S02800
ISN 0166            IF (PASS.EQ.2) WRITE(6,920) (PIXNUM(I),I=1,10)                 M|S02810
ISN 0168        920 FORMAT(1H ,2X,10I10)                                           M|S02820
                C                                                                  M|S02830
                CCC     READ HEADER RECORD.                                        M|S02840
                C                                                                  M|S02850
ISN 0169            READ(10,940) DUMMY                                             M|S02860
ISN 0170            READ(9,940) DUMMY                                              M|S02870
ISN 0171        940 FORMAT(1A4)                                                    M|S02880
                C                                                                  M|S02890
                CCC     READ COLOR RECORDS IF SKIP FLAG IS SET.                    M|S02900
                C                                                                  M|S02910
ISN 0172            IF(SKIP.EQ.0) GO TO 112                                        M|S02920
ISN 0174            DO 111 I=1,50                                                  M|S02930
ISN 0175        111 READ (2,941) DUMMY                                             M|S02940
ISN 0176        941 FORMAT(1A50)                                                   M|S02950
                C                                                                  M|S02960
                CCC     READ THROUGH IMAGES ONE LINE AT A TIME FOR CLASSIFICATION FILE M|S02970
                CCC     AND THREE LINES AT A TIME FOR THE GROUND TRUTH FILE.       M|S02980
                C                                                                  M|S02990
ISN 0177        112 DO 400 LINE=1,117                                              M|S03000
                C                                                                  M|S03010
                CCC     READ CLASSIFICATION FILE.                                  M|S03020
                CCC     THE FIRST 72 BYTES CONTAIN THE NUMBER OF THE PHYSICAL RECORD AND M|S03030
                CCC     ANCILLARY DATA, FOLLOWED BY 196 BYTES (A VIDEO BLOCK), PLUS AN M|S03040
                CCC     ADJUSTMENT TO A MULTIPLE OF 180.                           M|S03050
                C                                                                  M|S03060
ISN 0178            READ(10,942) (DTHUF(I),I=1,360)                                M|S03070
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ISN 0179        942 FORMAT(2(1H0A1))                                                    M|S03080
                C                                                                       M|S03090
                CC      READ GROUND TRUTH FILE INTO A 3X540 ARRAY.                      M|S03100
                CC      FOR I = 1,3  J = 1,72, GTHUF(I,J) CONTAINS ANCILLARY DATA.      M|S03110
                CC      GROUND TRUTH FILE CONTAINS 6 TIMES AS MUCH DATA AS THE          M|S03120
                CC      CLASSIFICATION FILE.  SO, CORRESPONDING TO EACH VIDEO BLOCK (196 M|S03130
                CC      BYTES) OF THE CLASSIFICATION FILE, THE GROUND TRUTH FILE IS TWICE M|S03140
                CC      AS LONG AND THREE ROWS DEEP.                                    M|S03150
                CC      SUBPIXEL DATA REQUIRE 2 COLUMNS AND 3 ROWS.                     M|S03160
                CC      READ 72 CONTROL CHARACTERS + 2*196 ADJUSTED TO A MULTIPLE       M|S03170
                CC      OF 180.                                                         M|S03180
                C                                                                       M|S03190
ISN 0180                DO 113 IREC=1,3                                                 M|S03200
ISN 0181        113     READ(9,943) (GTHUF(IREC,I),I=1,540)                             M|S03210
ISN 0182        943     FORMAT(3(180A1))                                                M|S03220
                C                                                                       M|S03230
                CC      SET OUTPUT ARRAY TO ALL "?".                                    M|S03240
                C                                                                       M|S03250
ISN 0183                DO 303 I=1,9H                                                   M|S03260
ISN 0184        303     CHAR(I)=QCHAR                                                   M|S03270
                C                                                                       M|S03280
                CC      MAKE COMPARISON ON PIXEL BY PIXEL BASIS.                        M|S03290
                C                                                                       M|S03300
ISN 0185                DO 300 SAMP=1,9H                                                M|S03310
                C                                                                       M|S03320
                CC      DETERMINE CLASSIFICATION CODE.                                  M|S03330
                C                                                                       M|S03340
ISN 0186                SS=SAMP+72+OFFSET                                               M|S03350
ISN 0187                X=QTHUF(SS)                                                     M|S03360
ISN 0188                DTCODE=DT(X)                                                    M|S03370
                C                                                                       M|S03380
                CC      DETERMINE GROUND TRUTH CODE.                                    M|S03390
                CC      GTHUF() IS A 6X270 ARRAY EQUIVALENCED TO GTHUF.  THE CONTROL    M|S03400
                CC      CHARACTERS ARE NOW STORED IN GTBUF1(I,J) FOR I = 1,6  J = 1,36  M|S03410
                CC      AND SUBPIXEL DATA REQUIRE 1 COLUMN AND 6 ROWS.                  M|S03420
                C                                                                       M|S03430
ISN 0189                DO 114 SPIX=1,6                                                 M|S03440
ISN 0190                M=GTHUF1(SPIX,SAMP+OFFSET+36)                                   M|S03450
                C                                                                       M|S03460
                CC      128 ADDED TO COMPENSATE FOR ADJUSTMENT MADE IN CARTO LAB        M|S03470
                C                                                                       M|S03480
ISN 0191                M=M+128                                                         M|S03490
ISN 0192                IF(M.GT.255) M=M-256                                            M|S03500
ISN 0194        114     MT(SPIX)=GT(M)                                                  M|S03510
                C                                                                       M|S03520
                CC      DETERMINE MAJORITY RULE CODE FOR PIXEL.                         M|S03530
                C                                                                       M|S03540
ISN 0195                NC=0                                                            M|S03550
ISN 0196                DO 116 I=1,6                                                    M|S03560
ISN 0197                CC=MT(I)                                                        M|S03570
ISN 0198                N=0                                                             M|S03580
ISN 0199                DO 115 J=1,6                                                    M|S03590
ISN 0200        115     IF(CC.EQ.MT(J)) N=N+1                                           M|S03600
ISN 0202                IF(N.LE.NC) GO TO 116                                           M|S03610
ISN 0204                NC=N                                                            M|S03620
ISN 0205                GTCODE=CC                                                       M|S03630
ISN 0206                IF(NC.GE.3) GO TO 302                                           M|S03640
ISN 0208        116     CONTINUE                                                        M|S03650
ISN 0209        302     IF(NC.LT.NPUWL.OR.NC.GT.NPUPU) GO TO 300                        M|S03660
                C                                                                       M|S03670
                CC      LOAD OUTPUT ARRAY WITH PROPER CHARACTER.                        M|S03680
                C                                                                       M|S03690
ISN 0211                PSUM(DTCODE,GTCODE)=PSUM(DTCODE,GTCODE)+1.                      M|S03700
ISN 0212                CHAR(SAMP)=SYM(DTCODE,GTCODE)                                   M|S03710
ISN 0213        300     CONTINUE                                                        M|S03720
                C                                                                       M|S03730
                CC      PRINT OUT LINE.                                                 M|S03740
                C                                                                       M|S03750
ISN 0214                IF(MOD(LINE,10).EQ.0) GO TO 301                                 M|S03760
ISN 0216                WRITE(6,921) (CHAR(I),I=1,9H)                                   M|S03770
ISN 0217        921     FORMAT(1H ,10X,9A1)                                             M|S03780
ISN 0218                GO TO 350                                                       M|S03790
ISN 0219        301     LINE1 = LINE/10                                                 M|S03800
ISN 0220                WRITE(6,922) (LINE1),(CHAR(I),I=1,9H),(LINE1)                   M|S03810
ISN 0221        922     FORMAT(1H ,6X,I2,2X,9HA1,2X,I2)                                 M|S03820
ISN 0222        350     IF(MOD(LINE,61).EQ.0) WRITE(6,950)                              M|S03830
ISN 0224        950     FORMAT(1H1,///)                                                 M|S03840
ISN 0225        400     CONTINUE                                                        M|S03850
                                                                                        M|S03860
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C
C      END OF PART OF THE MAP IS COMPLETE.
C
      IF(PASS.EQ.1) WRITE(6,914) (I,I=1,9)
      IF (PASS.EQ.2) WRITE(6,920)(PIANN(I),I=1,10)
  500 CONTINUE
C
C      CLOSE THE IMAGE FILES.
C
C
C      PRINT OUT SUMMARY OF COMPARISON.
C
      RTOT=0.
      DO 1002 I=1,6
      RTOT(I)=0.
      DO 1001 J=1,6
 1001 RTOT(I)=RTOT(I)+RSUM(I,J)
 1002 RTOT=RTOT+RTOT(I)
C     WRITE TOTAL NUMBER OF PIXELS COMPARED
      WRITE(6,3040)
 3040 FORMAT(1H1,10X,'SUMMARY OF COMPARISION RESULTS')
      WRITE(6,3050)GTDSEG,TYPE,(GTDATE(I),I = 1,3)
 3050 FORMAT(//,11X,'GROUND TRUTH FILE -',11X,I4,I2,I1,I1,I1)
      WRITE(6,3060)KLASEG,KTYE,(KLDATE(I),I = 1,3)
 3060 FORMAT(11X,'CLASSIFICATION FILE -',9X,I4,I2,I1,I1,I1)
      WRITE(6,939) RTOT
  939 FORMAT(1H0,10X,'NUMBER OF PIXELS CONSIDERED IN COMPARISON =',
     *F10.0//)
C
C      PRINT HEADER FOR PERCENTAGES OF EACH 6 BY 6 CATAGORIES
C
      WRITE(6,925) (I,I=1,6)
  925 FORMAT(1H0,10X,'PERCENTAGE OF SCENE IN EACH CATEGORY'//39X,
     *'GROUND TRUTH CATEGORIES'/28X,6(3X,'-',I,'-'),2X,'TOTAL')
      DO 1003 I=1,2
        DO 1003 J = 1, 6
        RSUMP(I,J) = RSUM(I,J)*100./RTOT
 1003 CONTINUE
      DO 1010 I = 1,2
      RTOTP(I) = RTOT(I)*100./RTOT
C
C      WRITE PERCENTAGES AND SUM OF THEM FOR 1ST & 2ND
C      CLASSIFICATION CATAGORIES
C
 1010 WRITE (6,926) I,(RSUMP(I,J), J=1,6), RTOTP(I)
  926 FORMAT(1H0,26X,I1,'-',7F6.1)
      DO 1020 J=1,6
      RSUMP(3,J)=RSUM(3,J)*100./RTOT
 1020 CONTINUE
      RTOTP(3)=RTOT(3) *100./RTOT
C
C      WRITE PERCENTAGES AND SUM OF THEM FOR THE 3RD
C      CLASSIFICATION CATAGORY
C
      WRITE(6,927) (RSUMP(3,J),J=1,6), RTOTP(3)
  927 FORMAT(1H0,10X,'CLASSIFICATION  3-',7F6.1/11X,'CATEGORIES')
      DO 1004 I=4,6
      RTOTP(I)= RTOT(I)*100./RTOT
      DO 1004 J=1,6
      RSUMP(I, J)=RSUM(I,J)*100./RTOT
 1004 CONTINUE
      DO 1030 I=4,6
C
C      WRITE PERCENTAGES AND SUM OF THEM FOR 4TH, 5TH, 6TH
C      CLASSIFICATION CATAGORIES
C
 1030 WRITE(6,928) I, (RSUMP(I,J), J=1,6), RTOTP(I)
  928 FORMAT(1H ,2X,I1,'-',7F6.1/)
C
C      CALCULATE TOTAL PERCENTAGES FOR 6 GROUND TRUTH CATAGORIES
C
      DO 1006 J=1,6
      RTOT(J)=0.
      DO 1005 I=1,6
 1005 RTOT(J)=RTOT(J)+RSUM(I,J)
 1006 CONTINUE
      DO 1040 I=1,6
      RTOTP(I)= RTOT(I)*100./RTOT
```

```
ISN 0276        1040 CONTINUE                                                  M|S04660
                C                                                              M|S04670
                C       WRITE TOTAL PERCENTAGES FOR 6 GROUND TRUTH CATAGORIES  M|S04680
                C                                                              M|S04690
ISN 0277                WRITE(6,929) (RTOTP(I), I=1,6)                         M|S04700
ISN 0278          929 FORMAT(1H ,23X,'TOTAL',6F6.1//)                          M|S04710
ISN 0279                RTOT2=0.                                               M|S04720
ISN 0280                DO 1007 I=1,6                                          M|S04730
ISN 0281        1007 RTOT2=RTOT2+RSUM(I,3)                                     M|S04740
                C                                                              M|S04750
                C       RDIFF IS (TOTAL PIXELS MINUS # PIXELS CLASSIFIED)/TOTAL PIX  M|S04760
                C                                                              M|S04770
ISN 0282                RDIFF=(RTOT1-RTOT2)*100./RTOT1                         M|S04780
ISN 0283                WRITE(6,930) RDIFF                                     M|S04790
ISN 0284          930 FORMAT(1H0,10X,'PERCENTAGE OF SCENE MISCLASSIFIED= ',F6.1)  M|S04800
                C                                                              M|S04810
ISN 0285        9000 STOP                                                      M|S04820
ISN 0286             END                                                       M|S04830
```

*****F O R T R A N C R O S S R E F E R E N C E L I S T I N G*****

SYMBOL	INTERNAL STATEMENT NUMBERS																	
I	0017	001A	0020	0021	0034	0035	0037	0038	0050	0051	0056	0056	0056	006A	0068	0068	0080	0080	0080
	0082	0082	0082	0084	0084	0084	0086	0087	0087	0091	0091	0091	0099	0100	0102	0105	0106	0114	0115
	0117	0119	0120	0124	0124	0124	0127	0127	0127	0129	0129	0129	0131	0131	0131	0133	0133	0133	0138
	0138	013A	0149	0151	0159	0159	0159	0159	0159	0159	0161	0161	0161	0164	0165	0165	0166	0166	0166
	0174	0178	0178	0178	0181	0181	0181	0183	0184	0196	0197	0216	0216	0216	0220	0220	0220	0220	0226
	0226	0228	0228	022A	0232	0233	0235	0235	0235	0236	0239	0239	0239	0241	0241	0241	0245	0245	0245
	0247	0249	0249	0251	0252	0252	0253	0253	0253	0261	0262	0262	0264	0264	0266	0267	0267	0267	0271
	0272	0274	0275	0276	0277	0277	0277	0280	0281	0281									
J	0018	001A	001A	0087	0087	0087	0089	0089	0089	0091	0091	0091	0150	0151	0199	0200	0234	0235	0248
	0249	0249	0253	0253	0253	0255	0256	0256	0259	0259	0259	0263	0264	0264	0267	0267	0267	0269	0278
	0272	0272	0272																
N	0190	0191	0191	0192	0192	0192	0194												
NN	0198	0200	0200	0202	0204														
X	0187	018A																	
CC	0197	0200	0205																
DT	0003	0034	0051	0112	0115	0119	0188												
GI	0003	0021	0035	0097	0100	0105	0194												
MI	0003	0194	0197	0200															
MA	0022	0024	0026	0026	0028	0034	0039	0040	0042	0042	0044	0050	0098	0103	0106	0109	0113	0118	0120
	0123																		
MC	0195	0202	0204	0206	0209	0209													
ME	0022	0024	0026	0026	0028	0034	0039	0040	0042	0042	0044	0050	0102	0103	0108	0109	0117	0118	0122
	0123																		
MO	0022	0024	0024	0032	0032	0032	0035	0039	0040	0044	0048	0048	0048	0051	0097	0100	0103	0105	0109
	0112	0115	0118	0119	0123														
SS	0186	0187																	
MON	0005	0056	0058	0058	0059	0060	0061	006B	0071	0071	0072	0073	0074	0129	0131	0133	0138		
KYR	0061	0063	0082	0127	0159	0241													
LIN	0066	006A	0139																
MOD	0214	0222																	
SYM	0005	001A	0087	0089	0091	0212													
TYP	0074	0075	00A0	0124	0154	0239													
CHAR	0005	01A6	0212	0216	0220														
TFOR	0009	0016	0030	0046	0064	0076	0145	0147											
IOFC	0188	018I																	
ISEG	0067	0069	0135																
JERR	0063	0066	0075	0076															
KDAY	0059	0063																	
KMON	0060	0063																	
LINE	0177	0214	0219	0222															
NSMP	0055																		
PASS	0153	0157	0161	0166	0226	0228													
RSUM	0003	0151	0211	0211	0235	0249	0256	0264	0272	0281									
RTOT	0003	0233	0235	0235	0236	0252	0258	0262	0270	0272	0272	0275							
SAMP	0185	0186	0190	0212															
SKIP	0053	0172																	
SPIX	0189	0190	0194																
TDAY	0072	0075																	
TMON	0073	0075																	
DTHUF	0005	0178	0147																
DUMMY	0169	0170	0175																
GTHUF	0005	0006	0191																
ISIIF	0003																		
LINE1	0219	0220	0220																
NPHM	0010	0012	0012	0012	0014	0091	0209												
NWHM	0010	0012	0012	0012	0014	0091	0209												

*****FORTRAN CROSS REFERENCE LISTING*****

LABEL	DEFINED	REFERENCES
935	0146	0134
937	0011	0010
938	0094	0093
939	0244	0243
940	0171	0149 0170
941	0176	0175
942	0179	0178
943	0182	0181
950	0224	0222
1001	0235	0234
1002	0236	0233
1003	0250	0247 024M
1004	0265	0261 0263
1005	0272	0271
1006	0273	0269
1007	0281	0280
1010	0253	0251
1020	0257	0255
1030	0267	0266
1040	0276	0274
2000	0015	0014
2105	0029	002M
2110	0032	0026
2120	0045	0044
2130	004A	0043
2135	0057	0056 0060
2140	0081	0080
2145	0083	0082
2150	0125	0124
2160	0127	0069
2185	0128	0127
2190	0129	0126
2195	0137	0135
3000	0140	0067
3005	0144	0143
3010	0147	0141
3020	0160	0159
3040	0238	0237
3050	0240	0239
3060	0242	0241
4000	0017	0012
9000	0285	0147

/ MAIN / SIZE OF PROGRAM 003420 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	SF	I*4	0007F4	J	SF	I*4	0007EN	M	SF	I*4	0007EC	N	SF	I*4	0007F0
K	SF	I*4	0007F4	CC	SF	I*4	0007F8	AT	SF	I*4	001698	G	SF	I*4	001A94
MT	SF	I*4	001F90	JB	SF	I*4	0007FC	NC	S	I*4	000800	NE	SF	I*4	000804
NO	SF	I*4	000A08	SS	SF	I*4	000d0C	HDR	SF	L*1	000A80	KYR	SFA	I*4	000810
LUN	SF	I*4	000A14	SYM	SF	L*1	001474	TYM	SFA	I*4	000A18	CHAR	SF	L*1	001498
IERR	S	I*4	000A1C	IREC	SF	I*4	000A20	ISEG	SF	I*4	000A24	JERR	SFA	I*4	000A28
KDAY	SFA	I*4	000A2C	KMON	SFA	I*4	000A30	LINE	SFA	I*4	000A34	MSMP	SF XF		000A38
PASS	SF	I*4	000A34	PSUM	SF	R*4	001EAM	NTOT	SF	K*4	001F3M	SAMP	SF	I*4	000A3C
SKIP	S	I*4	000A40	SPIX	SF	I*4	000A44	TDAY	SFA	I*4	000A4M	TMON	SFA	I*4	000A4C
DTHDR	SF	L*1	0014F8	DUMMY	S	I*4	000A50	GTHDF	S E	L*1	002038	ISITE		I*4	NR
LINE1	SF	I*4	000A54	NPUNU	SF	I*4	000A5M	NPUNU	SF	I*4	000A5C	QCHAR	F	L*1	0007E0
RDIFF	SF	R*4	000A60	PSUMP	SF	R*4	001F50	NTOTP	SF	K*4	001FE0	RTOTI	SF	R*4	000A64
RTOT2	SF	R*4	000A6M	DTCODE	SF	I*4	000A6C	DTFLNM		L*1	001662	GTBUF	F E	L*1	002038
GTCODE	SF	I*4	000A70	GTDATE	SFA	I*4	001FFA	GTFLNM		L*1	00167C	GTRSEG	SF	I*4	000A74
IRCOMP	F XF	I*4	000000	MLIAT	SF XF		000000	KLASEG	SF	I*4	000A78	KLDATE	SFA	I*4	002004
OFFSET	SF	I*4	000A7C	PTRNUM	SF	I*4	002010								

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
4000	17	0027E0	1	18	0027F4	2	21	002824	3	22	002842
2110	32	002AFC	4	35	002900	5	37	002928	6	38	002932
7	39	002950	2130	44	002AFM	M	51	002A14	9	53	002A3A
117	87	002C2C	1M4	107	002D7C	110	121	002E50	2140	127	002E04
2160	124	002E0C	122	134	002E36	3000	140	002F04	3010	147	00301C
118	151	003126	11	165	00314C	111	175	0031EE	112	177	00321F

113	101	003250	301	194	003292	114	194	003110	115	200	00335E
116	208	003346	302	203	003396	303	214	003416	301	219	003468
150	222	003440	400	225	003454	500	230	00355C	1001	235	00358C
1002	236	0035C0	1003	250	0035EC	1010	253	00372E	1020	257	0037AA
1004	265	003B4E	1030	267	003872	1005	272	003BE2	1006	273	003910
1040	277	003944	1007	241	003940	9000	285	003AF0			

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100000	1	002710	100001	14	002788	100004	19	002820	200001	25	002874
200002	25	0028B4	100006	26	0028BE	200003	27	002896	200004	27	002HA2
200005	27	0028AA	100007	28	002950	200006	33	002BF4	100008	33	002BFC
100009	34	002900	100010	36	00292A	200007	41	002986	200008	41	002990
100012	42	002994	200009	43	0029A2	200010	43	0029AE	200011	43	0029H6
100013	44	0029C2	200012	49	002A00	100014	49	002A08	100015	50	002A0C
100016	52	002A3A	100019	55	002AE0	100020	56	002AE4	100021	68	002AF0
100024	71	002424	100025	77	002H70	100026	78	002H74	100031	84	002C0C
100032	84	002C24	100035	88	002C72	100042	100	002D1H	100043	102	002D2C
100044	10F	002D8E	100045	115	002DEC	100046	117	002E00	100047	122	002E62
100058	136	002E90	100051	141	002EE6	100062	143	002FF2	100063	149	003028
100054	150	003020	100055	152	00304E	100066	152	00305F	100067	154	00306C
100072	162	003110	100073	162	003120	100074	162	003146	100075	164	003144
100076	166	003172	100077	167	00317E	100080	169	003148	100081	174	0031EA
100083	178	003222	100084	182	00325E	100089	185	0032H2	100090	186	0032B6
100091	190	0032E0	100092	193	003304	100093	195	00333H	100094	197	003344
100095	201	003370	100096	202	00337A	100097	202	0033H2	100098	204	00338E
200013	210	0033C2	100100	211	0033CE	100101	214	003428	100102	216	00343A
100107	223	0034C2	100104	226	0034EA	100109	227	0034F2	100110	227	003508
100111	227	003522	100112	22H	003526	100113	229	003532	100116	231	00356E
100117	233	003574	100114	237	0035E4	100124	245	003698	100135	245	0036H2
100126	24A	0036HA	100127	249	003HHC	100128	251	0036F6	100129	251	00370A
100130	252	00370E	100133	254	003740	100134	256	003780	100135	258	0037B4
100138	262	0037EC	100139	264	00381E	100140	266	003858	100141	266	003B6A
100144	26H	003HCE	100145	270	003900	100147	274	003926	10014A	275	00392A
100149	277	003950	100152	2H2	0039C0						

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
937	11	000028	2000	15	000030	900	19	00005C	901	23	000062
2105	2H	00006A	2120	45	0000A5	902	54	0000D8	2145	57	0000DF
910	74	0000EA	2140	H1	000120	2145	H3	000153	911	85	000190
912	4A	0001CA	911	90	0001E5	914	92	0001FH	918	94	000252
915	96	000249	916	104	0002HF	917	111	000207	2150	125	0002FF
2185	12H	000330	932	130	000374	933	132	000397	914	134	00038F
2195	137	0003F3	3005	144	0003F6	935	146	00042E	918	158	00044E
3020	160	000486	919	163	0004D2	920	168	000400	940	171	0004EB
941	176	0004EC	942	179	0004F0	943	1H2	0004F9	921	217	000502
922	221	000500	950	224	000520	3040	238	000528	3050	240	00054F
3060	242	000576	939	244	000590	925	246	000506	926	254	000639
927	260	000648	928	26H	000679	929	278	0006BH	930	284	0006A0

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 285, PROGRAM SIZE = 14880, SUBPROGRAM NAME = MAIN

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 216K BYTES OF CORE NOT USED

REQUESTED OPTIONS: NOTERM

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(80) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)

```
ISN 0002          SUBROUTINE JULIAN (JDATE,INERR,INDAY,INMNTH,INYEAR)                    JUL 00010
                  C                                                                      JUL 00020
                  C  PURPOSE:  TO CONVERT STANDARD DAY AND MONTH TO JULIAN DATE          JUL 00030
                  C                                                                      JUL 00040
                  C                                                                      JUL 00050
                  C  HISTORY:                                                            JUL 00060
                  C    J C CRISP        LEMSCO    82/09/81    ORIGINAL CODE            JUL 00070
                  C                                                                      JUL 00080
                  C                                                                      JUL 00090
                  C  DESCRIPTION OF ARGUMENTS:                                           JUL 00100
                  C    JDATE--ARRAY TO RETURN JULIAN DATE (1 DIGIT PER ARRAY ELEMENT)    JUL 00110
                  C    INERR--ERROR FLAG INDICATING INPUT VALUE OUT OF RANGE (ZERO      JUL 00120
                  C           RETURNED IF NO ERROR OCCURS)                               JUL 00130
                  C    INDAY--DAY OF MONTH                                               JUL 00140
                  C    INMNTH--MONTH OF YEAR AS INTEGER                                  JUL 00150
                  C    INYEAR--LAST TWO DIGITS OF YEAR                                   JUL 00160
                  C                                                                      JUL 00170
                  C                                                                      JUL 00180
                  C  DESCRIPTION OF VARIABLES:                                           JUL 00190
                  C    JTEMP--TEMPORARY STORAGE FOR JULIAN DATE                          JUL 00200
                  C                                                                      JUL 00210
                  C                                                                      JUL 00220
                  C                                                                      JUL 00230
ISN 0003          C    DIMENSION JDATE (3)                                               JUL 00240
                  C                                                                      JUL 00250
                  C  CHECK FOR INPUT VALUE OUT OF RANGE                                  JUL 00260
                  C                                                                      JUL 00270
                  C                                                                      JUL 00280
                  C                                                                      JUL 00290
ISN 0004          C    IF ((INDAY.LT.1).OR.(INDAY.GT.31)) GO TO 800                      JUL 00300
ISN 0006          C    IF ((INMNTH.LT.1).OR.(INMNTH.GT.12)) GO TO 800                    JUL 00310
                  C                                                                      JUL 00320
                  C  DETERMINE JULIAN DATE FOR INPUT MONTH                               JUL 00330
                  C                                                                      JUL 00340
                  C                                                                      JUL 00350
ISN 0008          C    IF ((INMNTH.EQ.1) JTEMP=0                                         JUL 00360
ISN 0010          C    IF ((INMNTH.EQ.2) JTEMP=31                                        JUL 00370
ISN 0012          C    IF ((INMNTH.EQ.3) JTEMP=59                                        JUL 00380
ISN 0014          C    IF ((INMNTH.EQ.4) JTEMP=90                                        JUL 00390
ISN 0016          C    IF ((INMNTH.EQ.5) JTEMP=120                                       JUL 00400
ISN 0018          C    IF ((INMNTH.EQ.6) JTEMP=151                                       JUL 00410
ISN 0020          C    IF ((INMNTH.EQ.7) JTEMP=181                                       JUL 00420
ISN 0022          C    IF ((INMNTH.EQ.8) JTEMP=212                                       JUL 00430
ISN 0024          C    IF ((INMNTH.EQ.9) JTEMP=243                                       JUL 00440
ISN 0026          C    IF ((INMNTH.EQ.10) JTEMP=273                                      JUL 00450
ISN 0028          C    IF ((INMNTH.EQ.11) JTEMP=304                                      JUL 00460
ISN 0030          C    IF ((INMNTH.EQ.12) JTEMP=334                                      JUL 00470
ISN 0032          C    JTEMP=JTEMP+INDAY                                                 JUL 00480
                  C                                                                      JUL 00490
                  C  CHECK FOR LEAP YEAR AND ADD ONE DAY IF MONTH IS 3 OR GREATER        JUL 00500
                  C                                                                      JUL 00510
ISN 0033          C    IF ((INMNTH.GE.3).AND.(MOD(INYEAR,4).EQ.0)) JTEMP=JTEMP+1         JUL 00520
                  C                                                                      JUL 00530
                  C  STORE DATE IN ARRAY, ONE DIGIT PER ARRAY ELEMENT                    JUL 00540
                  C                                                                      JUL 00550
                  C                                                                      JUL 00560
ISN 0035          C    JDATE(1)=JTEMP/100                                                JUL 00570
ISN 0036          C    JDATE(2)=(JTEMP-((JTEMP/100)*100))/10                             JUL 00580
ISN 0037          C    JDATE(3)=JTEMP-((JTEMP/10)*10)                                    JUL 00590
ISN 0038          C    INERR=0                                                           JUL 00600
ISN 0039          C    GO TO 900                                                         JUL 00610
                  C                                                                      JUL 00620
                  C  INPUT ERROR                                                         JUL 00630
                  C                                                                      JUL 00640
ISN 0040          C  800 INERR=1                                                         JUL 00650
                  C                                                                      JUL 00660
                  C                                                                      JUL 00670
ISN 0041          C  900 RETURN                                                          JUL 00680
ISN 0042          C    END                                                               JUL 00690
                                                                                         JUL 00700
                                                                                         JUL 00710
```

*****F O R T R A N C R O S S R E F E R E N C E L I S T I N G*****

SYMBOL	INTERNAL STATEMENT NUMBERS																			
MOD	0033																			
INDAY	0002	0004	0004	0032																
INERR	0002	0038	0040																	
JDATE	0002	0003	0035	0036	0037															
JTEMP	0008	0010	0012	0014	0016	0018	0020	0022	0024	0026	0028	0030	0032	0032	0033	0033	0035	0036	0036	
	0037	0037																		
INMNTH	0002	0006	0006	0008	0010	0012	0014	0016	0018	0020	0022	0024	0026	0028	0030	0033				
INYEAR	0002	0033																		
JULIAN	0002																			

*****F O R T R A N C R O S S R E F E R E N C E L I S T I N G*****

LABEL	DEFINED	REFERENCES	
800	0040	0004	0006
900	0041	0039	

/ JULIAN / SIZE OF PROGRAM 000300 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
INDAY	F	I*4	0000E4	INERR	S	I*4	0000E8	JDATE	S XR	I*4	000000	JTEMP	SF	I*4	0000EC
INMNTH		I*4	0000F0	INYEAR	A	I*4	0000F4	JULIAN		I*4	0000F8				

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
800	40	00027E	900	41	000282						

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100001	2	000110	100002	6	000148	100003	8	00016A	100004	9	000170
100005	10	000174	100006	11	00017C	100007	12	000180	100008	13	000188
100009	14	000180	100010	15	000194	100011	16	000198	100012	17	0001A0
100013	18	0001A4	100014	19	0001AC	100015	20	0001B0	100016	21	0001B8
100017	22	0001BC	100018	23	0001C4	100019	24	0001C8	100020	25	0001D0
100021	26	0001D4	100022	27	0001DC	100023	28	0001E0	100024	29	0001E8
100025	30	0001EC	100026	31	0001F4	100027	32	0001F8	100028	34	00022C
100029	35	00022E									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(80) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 41, PROGRAM SIZE = 768, SUBPROGRAM NAME =JULIAN

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF C LATION ****** 296K BYTES OF CORE NOT USED

```
*LEVEL 2.3.0 (JUNE 78)          OS/360  FORTRAN H EXTENDED          DATE 81.199/13.26.14        PAGE   1
REQUESTED OPTIONS: NOTERM
OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IMM FLAG(I)

    ISN 0002                SUBROUTINE MSMP                                                    MSM00010
                      C     THIS SUBROUTINE READS THE USER'S INPUT FILE, AND PRINT             MSM00020
                      C     THEM OUT, ALSO CALL CPTIME FOR  THE CURRENT TIME                   MSM00030
                      C     ORIGINATED BY PAT BROWN & DONALD CHENG, LEMSCO 12/24/80            MSM00040
    ISN 0003                INTEGER ACARD(20)                                                  MSM00050
                      C                                                                        MSM00060
                      C     ACARD IS 80 COLUMN CHARACTERS ARRAY FOR USER'S INPUT FILE          MSM00070
                      C                                                                        MSM00080
    ISN 0004                INTEGER*2 HMS(3)                                                   MSM00090
                      C                                                                        MSM00100
                      C     HMS IS HOURS, MINUTES AND SECONDS, DATE IS CURRENT DATE            MSM00110
                      C                                                                        MSM00120
    ISN 0005                INTEGER*4 DATE(2)                                                  MSM00130
    ISN 0006                WRITE(6,800)                                                       MSM00140
    ISN 0007          800   FORMAT(1H1,///' INPUT SUMMARY'///)                                 MSM00150
                      C     READ CARD, PRINT CARD ON SUMMARY                                   MSM00160
                      C     READ UNTIL END OF FILE                                             MSM00170
    ISN 0008           10   READ(2,999,END=99) (ACARD(I),I=1,20)                               MSM00180
    ISN 0009          999   FORMAT(20A4)                                                       MSM00190
    ISN 0010                WRITE (6,998) (ACARD(I),I=1,20)                                    MSM00200
    ISN 0011          998   FORMAT (1X,20A4)                                                   MSM00210
    ISN 0012                GO TO 10                                                           MSM00220
    ISN 0013           99   CALL CPTIME(DATE, HMS, TT,VT)                                      MSM00230
    ISN 0014                WRITE(6,1011)(DATE(I),I=1,2),(HMS(J),J=1,3)                        MSM00240
    ISN 0015         1011   FORMAT(1H1,///,' JOB INITIATED ON ',2A4,' AT ',I2,':',I2,':',I2)   MSM00250
    ISN 0016                RETURN                                                             MSM00260
    ISN 0017                END                                                                MSM00270

                      *****F O R T R A N   C R O S S   R E F E R E N C E   L I S T I N G*****
SYMBOL   INTERNAL STATEMENT NUMBERS
I        000A  0006  000A  0010  0010  0010  0014  0014  0014
J        0014  0014  0014
TT       0013
VT       0013
HMS      0004  0013  0014
DATE     0005  0013  0014
MSMP     0002
ACARD    0003  0009  0010
CPTIME   0013

                      *****F O R T R A N   C R O S S   R E F E R E N C E   L I S T I N G*****
 LABEL   DEFINED   REFERENCES
    10      000A      0012
    99      0013      000B
   800      0007      0006
   998      0011      0010
   999      0009      000A
  1011      0015      0014

                                                    /     MSMP /     SIZE OF PROGRAM 00024F HEXADECIMAL BYTES

      NAME     TAG   TYPE  ADD.      NAME     TAG   TYPE  ADD.      NAME     TAG   TYPE  ADD.      NAME     TAG   TYPE  ADD.
         I     F     I*4   0000F8       J     F     I*4   0000FC      TT   SFA   R*4   000100      VT   SFA   R*4   000104
       HMS   SFA     I*2   000100    DATE   SFA     I*4   000114    MSMP         I*4   000108    ACARD    SF     I*4   00011C
    CPTIME    SF   XF          000000  IHCOM#    F   XF    I*4   000000

  SOURCE STATEMENT LABELS

    LABEL  ISN   ADDR          LABEL  ISN   ADDR          LABEL  ISN   ADDR          LABEL  ISN   ADDR
       10    8  000190            99   13  0001EH

  COMPILER GENERATED LABELS

    LABEL  ISN   ADDR          LABEL  ISN   ADDR          LABEL  ISN   ADDR          LABEL  ISN   ADDR
   100001    2  00017C       100002    8  0001A4

  FORMAT STATEMENT LABELS

    LABEL  ISN   ADDR          LABEL  ISN   ADDR          LABEL  ISN   ADDR          LABEL  ISN   ADDR
```

```
*LEVEL 2.3.0 (JUNE 78)          MSMP          OS/360  FORTRAN H EXTENDED          DATE 81.139/13.26.18
      000    7  000028          000    9  000041          000   11  000047          0011   15  00004F
*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(80) SIZE(MAX) AUTODBL(NONE)
*OPTIONS IN EFFECT*SOURCE EXEC(C) NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)
*STATISTICS*      SOURCE STATEMENTS =       16,PROGRAM SIZE =       590,SUBPROGRAM NAME = MSMP
*STATISTICS*  NO  DIAGNOSTICS GENERATED
****** END OF COMPILATION ******                                  28HK BYTES OF CORE NOT USED
```

APPENDIX B

JOB CONTROL SOFTWARE

```
&CONTROL OFF
*
* MISMAP EXEC
* -----------
*
* HISTORY
* -------
*
*    MARY TOMPKINS     LEMSCO     02/09/81     ORIGINAL CODE
*
* PURPOSE
* -------
*
*    THIS EXEC EXCUTES THE MISMAP PROGRAM.
*
*    ARGUMENTS TO THIS EXEC ARE:
*    SYMBOL FILE NAME     SYMBOL FILE TYPE
*
*    FILE DEFINITION DESCRIPTION FOR ALL FILES USED IN HADHWAR
*    PROGRAMS AND EXECS ARE AS FOLLOWS:
*          UNIT              DESCRIPTION
*           2-4              HADHWAR SYSTEM
*           5                TERMINAL - WRITE
*           6                PRINTER FILE STORED IN FILE OUT LISTING
*           7-8              HADHWAR SYSTEM
*           9                GROUND TRUTH (MUST BE DEFINED PREVIOUSLY)
*          10                CLASS FILE  (MUST BE DEFINED PREVIOUSLY)
*          11                HADHWAR SYSTEM
*          12-18             HADHWAR SYSTEM
*          19                SYMBOL FILE STORED IN &1 &2 A
*          20                HADHWAR SYSTEM
*          21                USER DEFINED FILE STORED IN MSMP CC A
*          22                GT FILE RECALL FILE
*          23                CLASS FILE RECALL FILE
*          24-28             HADHWAR SYSTEM
*          30                REREAD UNIT
*
*    NOTE THOSE FILES USED BY HADHWAR SYSTEM CAN BE USED IN THIS
*    PROGRAM. THIS IS JUST A WARNING THAT ONE SHOULD BE CAREFUL BEFORE
*    DOING SO IF HE INTENDS TO MAKE A HADHWAR SYSTEM RUN.
*
* EXCEPTION
* ---------
*
*    THE FOLLOWING ERRORS CAUSE PROGRAM TERMINATION:
*
*        1. NO TEMPORARY DISK ASSIGNED.
*        2. INSUFFICIENT PARAMETERS INPUT TO PROGRAM
*        3. GROUND TRUTH/CLASS FILE NOT DEFINED.
*
* PROCEDURE
* ---------
*
* ASSIGN PRINTER, SPECIFY LIBRARIES
*
     &IERR = 0
     &SPACE 3
     &TYPE MISMAP &1 &2
     TAG DEV PRINTER HOUSTON
     SPOOL PRINTER CONT HOLD TO VSCS
*
* CHECK TO SEE IF TEMPORARY DISK IS ASSIGNED
*
     CP QUERY VIRTUAL 192
     SIR &RETCODE EQ 0 &GOTO -TRUE
     &TYPE GROUND TRUTH / CLASS FILE NOT YET DEFINED.
     &IERR = 1
-TRUE
*
* CHECK FOR ACCEPTABLE PARAMETERS
```

```
*
     &IF &INDEX EQ 2 &GOTO -CONT
     &TYPE TOO MANY-TOO FEW INPUTS
     &IERR = 1
-CONT &IF &IERR EQ 1 &EXIT 1
*
*
* ISSUE FILEDEFS
*
     FILEDEF FT02F001 DISK GTCLINE EXEC D (LRECL 80 BLKSIZE 80 PERM
     FILEDEF S TERMINAL (PERM
     FILEDEF FT06F001 DISK OUT LISTING D (PERM
     FILEDEF FT19F001 DISK &1 &2 A (PERM LRECL 80 BLKSIZE 80
     FILEDEF FT21F001 DISK MSMP CC A (PERM LRECL 80 BLKSIZE 80
     FILEDEF FT22F001 DISK FLGTMD FILE D (LRECL 80 BLKSIZE 80 PERM
     FILEDEF FT23F001 DISK FLCLAS FILE D (LRECL 80 BLKSIZE 80 PERM
*
*
* RECALL FILE INFO ON GT AND CLASS FILE
*
     LOAD FILRCALL (CLEAR G MAP START
*
*
* LOAD EXEC TO FILE DEF GT AND CLASS FILE
*
     EXEC GTCLINE D
     &READ VARS &IERROR
     &IF &IERROR EQ 1 &EXIT 2
*
*
* LOAD MAIN PROGRAM
*
     LOAD MISMAP (NOMAP CLEAR START
*
*
* CLOSE FILE PRINT FILES
*
     PRINT OUT LISTING *
     SPOOL PRINTER CLOSE
     &EXIT
&END
```

```
    &CONTROL OFF

DEFCLAS
-------

HISTORY
-------

    M A TOMPKINS     LEMSCO     02/04/81     ORIGINAL CODE

PURPOSE
-------

    THIS EXEC IS USED TO DEFINE CLASSIFICATION/CLUSTER FILES.

    FILENAME FILETYPE FILEMODE OF CLASS FILE OR WRITTEN
    ON A RECALL FILE (UNIT 23) BY FORTRAN ROUTINE FILWRT.
    ARGUMENTS TO THE EXEC ARE AS FOLLOWS:

    FOR SEGMENT ON DATA FILE:
       FILENAME FILETYPE FILEMODE
    FOR SEGMENT ON TAPE:
       TAPE# FILE# TAPEDENSITY

    FILE DEFINITION DESCRIPTION FOR ALL FILES USED IN THESE PROGRAMS
    AND EXECS ARE AS FOLLOWS:
          UNIT                  DESCRIPTION
           2                    GINUINFO
           3                    TERMINAL: READ
           4                    LARS GINUINF
           5                    TERMINAL: WRITE LARS ERROR MSG ROUTINE
           6                    HARDWARE SYSTEM
           7                    HARDWARE SYSTEM
           8                    HARDWARE SYSTEM
           9                    HARDWARE SYSTEM
          10                    CLASSIFICATION/CLUSTER FILE
          11 - 19               HARDWARE SYSTEM
          21                    HARDWARE SYSTEM
          22                    HARDWARE SYSTEM
          23                    RECALL FILE FOR CLASS FILE
          24-28                 HARDWARE SYSTEM
          30                    REREAD UNIT

    NOTE: THOSE FILES USED BY HARDWARE SYSTEM CAN BE USED IN THIS
    PROGRAM THIS IS JUST A WARNING THAT ONE SHOULD BE CAREFUL BEFORE
    DOING SO.

EXCEPTION
---------

    THE FOLLOWING ERRORS CAUSE PROGRAM TERMINATION:

       1. NO TEMPORARY DISK AVAILABLE.
       2. INSUFFICIENT PARAMETERS INPUT TO PROGRAM
       3. ERROR IN ACCESSING LARS DATA BASE

PROCEDURE
---------

ASSIGN A TEMP DISK, SPECIFY LIBRARIES

    &SPACE 3
    &TYPE DEFCLAS &1 &2 &3
    GLOBAL TXTLIB CMSLIB FORTMOD2
    CP QUERY VIRTUAL 192
    &IF &RETCODE NE 0 GETDISK TEMP  ZM CLEAN
    &IF &RETCODE NE 0 &TYPE NO TEMP DISK ACCESSED.
    &IF &RETCODE NE 0 &EXIT 1

    STACK UNIT NUMBER AND FILEDEF RECALL UNIT
```

```
*
     &STACK 10
     FILEDEF 3 TERM(PERM
     FILEDEF FT2 3F001 DISK FLCLAS FILE DCLRECL 80 BLKSIZE 80 PERM
*
*
* CHECK FOR ACCEPTABLE PARAMETER COUNT AND DETERMINE INPUT
* OPTION
*
     &IF &INDEX EQ 3 &GOTO -TRUE
     &TYPE TOO MANY-TOO FEW INPUTS
     &EXIT 2
*
*
-TRUE
     &IF &3 EQ 1600 &GOTO -TAPE
     &IF &3 EQ  800 &GOTO -TAPE
     &TEST = &DATATYPE &3
     &IF &TEST EQ NUM &TYPE INPUTS NOT CORRECT
     &IF &TEST EQ NUM &EXIT 3
*
*
* DATA IS ON DISK
*
 FILEDEF FT10F001 DISK &1 &2 &3( LRECL 3168 BLOCK 3168 PERM RECFM U
     &STACK &1
     &STACK &2
     &STACK &3
     LOAD FILWRT (CLEAR NOMAP START
     &EXIT 4
*
:
* DATA IS ON TAPE
*
-TAPE &NAME = &CONCAT &1 &2
     TAPMOUNT &1 TAP1 RO &3
     TAPE REW (TAP1
     &SK = &2 - 1
     &IF &SK EQ 0 &SKIP 1
     TAPE FSF &SK
     FILEDEF INMOVE TAP1(LRECL 3168 BLOCK 3168 RECFM U PERM DEN &3
     FILEDEF OUTMOVE DISK &NAME CLA D(LRECL 3168 BLOCK 3168 RECFM U PERM
     MOVEFILE
     DETACH (1)
     FILEDEF FT10F001 DISK &NAME CLA D(LRECL 3168 BLOCK 3168 RECFM U PERM
     &STACK &NAME
     &STACK CLA
     &STACK D
     LOAD FILWRT(CLEAR NOMAP START
     &EXIT
&END
```

```
    &CONTROL OFF
*
* DEFGTRU EXEC
* ------------
*
* HISTORY
* -------
*
*   M A TOMPKINS     LEMSCO     02/04/81     ORIGINAL CODE
*
* PURPOSE
* -------
*
*   THIS EXEC EXECUTES A FORTRAN PROGRAM (GTRUINF) WHICH ACCESSES
*   THE LARS RT&E DATA BASE FOR INFO ON REQUESTED GROUND TRUTH TAPES
*   GTRUINF WRITES AN EXEC (GTRUINFO) WHICH TRANSMITS TO THIS EXEC
*   THE TAPE# FILE# OF TAPE THAT CONTAINS THE REQUESTED SEGMENT.
*   IN ADDITION THE FILENAME,FILETYPE,FILEMODE, AND UNIT 9 ARE
*   ARE PASSED TO PROGRAM FILWRT WHICH WRITES THIS INFO TO A FILE
*   DEFINED TO UNIT 22.
*
*   ARGUMENTS TO THE EXEC ARE AS FOLLOWS:
*
*   FOR SEGMENT ON DATA FILE:
*      FILENAME FILETYPE FILEMODE
*   FOR SEGMENT ON TAPE:
*      TAPE# FILE# TAPEDENSITY
*   FOR SEGMENT AT LARS:
*      SEGMENT# YEAR  (YEAR IS THE LAST 2 DIGITS OF THE YEAR OF SEGMENT)
*
*   FILE DEFINITION DESCRIPTION FOR ALL FILES USED IN THESE PROGRAMS
*   AND EXECS ARE AS FOLLOWS:
*          UNIT              DESCRIPTION
*           2                GTRUINFO
*           3                TERMINAL: READ
*           4                LARS GTRUINF
*           5                TERMINAL: WRITE LARS ERROR MSG ROUTINE
*           6                HARDWARE SYSTEM
*           7                HARDWARE SYSTEM
*           8                HARDWARE SYSTEM
*           9                GROUND TRUTH FILES
*          10                HARDWARE SYSTEM
*          11 - 19           HARDWARE SYSTEM
*          21                HARDWARE SYSTEM
*          22                GROUND TRUTH FILE INFO
*          23                HARDWARE SYSTEM
*          24-29             HARDWARE SYSTEM
*          30                REREAD UNIT
*
*   NOTE: THOSE FILES USED BY HARDWARE SYSTEM CAN BE USED IN THIS
*   PROGRAM THIS IS JUST A WARNING THAT ONE SHOULD BE CAREFUL BEFORE
*   DOING SO.
*
* EXCEPTION
* ---------
*
*   THE FOLLOWING ERRORS CAUSE PROGRAM TERMINATION:
*
*      1. NO TEMPORARY DISK AVAILABLE.
*      2. INSUFFICIENT PARAMETERS INPUT TO PROGRAM
*      3. 3RD INPUT NOT AS EXPECTED
*      4. ERROR IN ACCESSING LARS DATA BASE
*
* PROCEDURE
* ---------
*
* ASSIGN A TEMP DISK, SPECIFY LIBRARIES
*
    &SPACE 1
    &TYPE DEFGTRU &1 &2 &3
    GLOBAL TXTLIB CMSLIB FORTMOD2
    CP QUERY VIRTUAL 192
```

```
     &IF &RETCODE NE 0 GETDISK TEMP 2M CLEAR
     &IF &RETCODE NE 0 &TYPE NO TEMP DISK ACCESSED.
     &IF &RETCODE NE 0 &EXIT 1
*
*
* ISSUE FILEDEFS FOR FILWRT FORTRAN PROGRAM
* CHECK FOR ACCEPTABLE PARAMETER COUNT AND DETERMINE INPUT
* OPTION
*
     FILEDEF 3 TERM(PERM
     FILEDEF FT22F001 DISK FLGTHU FILE D(LRECL 80 BLKSIZE 80 PERM
     &IF &INDEX LT 2 &GOTO -NO
     &IF &INDEX LE 3 &GOTO -TRUE
-NO  &TYPE TOO MANY-TOO FEW INPUTS
     &EXIT 2
*
*
-TRUE &UNIT = 09
     &IF &INDEX EQ 2 &GOTO -LARS
     &IF &3 EQ 1600 &GOTO -TAPE
     &IF &3 EQ 800 &GOTO -TAPE
     &TEST = &DATATYPE &3
     &IF &TEST EQ NUM &TYPE INPUTS NOT CORRECT
     &IF &TEST EQ NUM &EXIT 3
*
*
* DATA IS ON DISK
*
 FILEDEF FT09F001 DISK &1 &2 &3( LRECL 3060 BLOCK 3060 PERM RECFM U
     &STACK &UNIT
     &STACK &1
     &STACK &2
     &STACK &3
     LOAD FILWRT (CLEAR NOMAP START
     &EXIT 4
*
*
* DATA IS ON TAPE
*
-TAPE &NAME = &CONCAT &1 &2
     TAPMOUNT &1 TAP1 RO &3
     TAPE REW (TAP1
     &SK = &2 - 1
     &IF &SK EQ 0 &SKIP 1
     TAPE FSF &SK
     FILEDEF INMOVE TAP1(LRECL 3060 BLOCK 3060 RECFM U PERM DEN &3
     FILEDEF OUTMOVE DISK &NAME GTO D(LRECL 3060 BLOCK 3060 RECFM U PERM
     &STACK &UNIT
     &STACK &NAME
     &STACK GTO
     &STACK D
     LOAD FILWRT (CLEAR NOMAP START
     MOVEFILE
     DETACH (A)
     FILEDEF FT09F001 DISK &NAME GTO D(LRECL 3060 BLOCK 3060 RECFM U PERM
     &EXIT 5
*
*
* GET TAPE AND FILE NUMBER FROM LARS
*
-LARS
*
*
* CHECK FOR PROPER ARGUMENTS
*
     &TEST = &DATATYPE &1
     &IF &TEST EQ CHAR &TYPE INPUTS NOT CORRECT FOR LARS DATA BASE
     &IF &TEST EQ CHAR &EXIT 6
*
     &TEST = &DATATYPE &2
     &IF &TEST EQ CHAR &TYPE INPUTS NOT CORRECT FOR LARS DATA BASE
     &IF &TEST EQ CHAR &EXIT 7
*
*
* GET LARS DISK WHICH CONTAINS HTAE DATA BASE
*
     GETDISK JSCDISK 19A E
*
*
```

```
* FILEDEF TERMINAL AND EXEC FILE WRITTEN DURNING RUN.
*
     FILEDEF 3 TERM(PERM
     FILEDEF 5 TERM(PERM
     FILEDEF FT02F001 DISK GHOINFO EXEC D( LRECL 80 BLKSIZE 80 PERM
*
*
* IF LENGTH OF &1 (SEGMENT NUMBER) < 4 CONCATENATE 0
*
-LOOP &SEGLNG = &LENGTH &1
     &IF &SEGLNG EQ 4 &SKIP 2
     &1 = &CONCAT 0 &1
     &GOTO -LOOP
*
*
* STACK INPUTS TO ALLOW GTRUINF TO ACCESS LARS RT&E DATA BASE.
* GTRUINF WILL WRITE GTHUINFO EXEC TO ALLOW THE PASS THROUGH OF
* TAPE# FILE#.
*
     &STACK &1
     &STACK &2
*
     LOAD GTHUINF STINFOHX RTEERRMA (CLEAR NOMAP START
*
*
*
* LOAD EXEC WRITTEN BY PROGRAM.
*
     EXEC GHOINFO D
     REL E(DET
     &READ VARS &TAPE
     &READ VARS &FILE
     &1 = &TAPE
     &2 = &FILE
     &3 = 800
     &IF &1 NE 0 &GOTO -TAPE
     &EXIT
&END
```

```
     &CONTROL OFF
*
*
* END EXEC
* --------
*
*
* PURPOSE
* -------
*    THIS EXEC WILL CLOSE CONSOLE FILE AND PRINT THE FILE
*
*
* PROCEDURE
*
     SPOOL CONSOLE STOP CLOSE
     &EXIT
&END
```

```
     &CONTROL OFF
*
* START EXEC
* ----------
*
*
* PURPOSE
* -------
*    THIS EXEC WILL ALLOW THE USER TO SPOOL ALL RESPONCES TO THE
*    CONSOLE.THIS IS TO BE USED WITH END EXEC WHICH WILL PRINT THE FILE.
*
*
* PROCEDURE
* ---------
*
     TAG DEV CONS HOUSTON
     SPOOL CONS START NOHOLD TO RSCS
     &EXIT
&END
```

```
*LEVEL 2.3.0 (JUNE 78)                  05/360  FORTRAN H EXTENDED          DATE 81.140/12.33.08      PAGE   1
REQUESTED OPTIONS: NOTERM
OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALL NOANSF NOTERM IBM FLAG(I)
                C     PROGRAM FILMCALL                                                          FILC00010
                C                                                                               FILC00020
                C                     READ FILE INFO FOR GT FILE CLASS FILE.                    FILC00030
                C     ---------------------------------------------------                       FILC00040
                C                                                                               FILC00050
                C                                                                               FILC00060
                C  HISTORY                                                                      FILC00070
                C  -------                                                                      FILC00080
                C                                                                               FILC00090
                C     MARY TOMPKINS     LEMSCO     03/12/81     ORIGINAL CODE                  FILC00100
                C                                                                               FILC00110
                C                                                                               FILC00120
                C  METHOD                                                                       FILC00130
                C  ------                                                                       FILC00140
                C                                                                               FILC00150
                C     READ FROM RECALL FILE 22 FOR GT FILE INFO AND FILE 23 FOR                 FILC00160
                C     CLASSIFICATION FILE INFO. IF BOTH OR EITHER ARE EMPTY WRITE               FILC00170
                C     EXEC WITH ERROR FLAG SET TO 1.IF BOTH FILES ARE AVAILABLE                 FILC00180
                C     WRITE EXEC TO FILEDEF GT AND CLASS FILE. THIS IS NECESSARY                FILC00190
                C     ONLY BECAUSE OF THE POSSIBILITY OF THE FILE DEFINITION BEING              FILC00200
                C     LOST ON A SYSTEM ERROR ON ONE OF THE PROGRAM EXECUTIONS.                  FILC00210
                C                                                                               FILC00220
                C  EXTERNAL REFERENCES                                                          FILC00230
                C  -------------------                                                          FILC00240
                C                                                                               FILC00250
                C     NONE.                                                                     FILC00260
                C                                                                               FILC00270
                C  EXCEPTIONS                                                                   FILC00280
                C  ----------                                                                   FILC00290
                C                                                                               FILC00300
                C     1.IF RECALL FILE IS EMPTY ISSUE DIAGNOSTIC MSG                            FILC00310
                C       AND WRITE ERROR EXEC.                                                   FILC00320
                C                                                                               FILC00330
                C                                                                               FILC00340
                C  LOCAL DECLARATIONS                                                           FILC00350
                C  ------------------                                                           FILC00360
                C                                                                               FILC00370
                C                                                                               FILC00380
                C                                                                               FILC00390
ISN 0002        C     INTEGER NAMEGT(2)                                                         FILC00400
                C                       GROUND TRUTH FILE NAME                                  FILC00410
ISN 0003        C     INTEGER NAMGTY(2)                                                         FILC00420
                C                       GROUND TRUTH FILE TYPE                                  FILC00430
ISN 0004        C     INTEGER MODEGT                                                            FILC00440
                C                       GROUND TRUTH FILE MODE                                  FILC00450
ISN 0005        C     INTEGER IUNIT                                                             FILC00460
                C                       UNIT FOR GROUND TRUTH -- 9                              FILC00470
ISN 0006        C     INTEGER NAMECL(2)                                                         FILC00480
                C                       CLASS FILE NAME                                         FILC00490
ISN 0007        C     INTEGER NAMCTY(2)                                                         FILC00500
                C                       CLASS FILE TYPE                                         FILC00510
ISN 0008        C     INTEGER MODECL                                                            FILC00520
                C                       CLASS FILE MODE                                         FILC00530
ISN 0009        C     INTEGER JUNIT                                                             FILC00540
                C                       UNIT FOR GROUND TRUTH -- 10                             FILC00550
                C                                                                               FILC00560
                C  PROCEDURE                                                                    FILC00570
                C  ---------                                                                    FILC00580
                C                                                                               FILC00590
                C                                                                               FILC00600
                C  START WRITING RECALL EXEC                                                    FILC00610
                C                                                                               FILC00620
ISN 0010                WRITE(2,20)                                                             FILC00630
ISN 0011          20 FORMAT(' ACONTROL OFF')                                                    FILC00640
                C                                                                               FILC00650
                C                                                                               FILC00660
                C  READ FROM RECALL FILE FOR GROUND TRUTH DATA                                  FILC00670
                C                                                                               FILC00680
                C                                                                               FILC00690
ISN 0012                IUNIT = 9                                                               FILC00700
ISN 0013                READ(22,100,END=200)IUNIT,(NAMEGT(I),I = 1,2),                          FILC00710
                       & (NAMGTY(I),I = 1,2),MODEGT                                             FILC00720
ISN 0014          100 FORMAT(I2,2A4,2A4,A1)                                                     FILC00730
```

```
   ISN 0015        200 IF(IUNIT.NE.0)GO TO 400                                          FIL00740
   ISN 0017            WRITE(5,210)                                                     FIL00750
   ISN 0018        210 FORMAT(' GROUND TRUTH FILE IS UNDEFINED')                        FIL00760
   ISN 0019            WRITE(2,220)                                                     FIL00770
   ISN 0020        220 FORMAT(' $STACK 1')                                              FIL00780
   ISN 0021            GO TO 400                                                        FIL00790
                  C                                                                     FIL00800
                  C                                                                     FIL00810
                  C READ FROM RECALL FILE FOR CLASSIFICATION DATA                       FIL00820
                  C                                                                     FIL00830
   ISN 0022       400 JUNIT = 0                                                        FIL00840
   ISN 0023           READ(23,100,END=405)JUNIT,(NAMECL(I),I = 1,2),                   FIL00850
                     & (NAMCTY(I),I = 1,2),MODECL                                       FIL00860
   ISN 0024       405 IF(JUNIT.EQ.0)WRITE(5,410)                                       FIL00870
   ISN 0026       410 FORMAT(' CLASSIFICATION FILE IS UNDEFINED')                      FIL00880
   ISN 0027           IF(JUNIT.EQ.0.AND.IUNIT.NE.0)WRITE(2,220)                        FIL00890
   ISN 0029           IF(JUNIT.EQ.0.OR.IUNIT.EQ.0)WRITE(2,420)                         FIL00900
   ISN 0031       420 FORMAT(' $EXIT')                                                 FIL00910
   ISN 0032           IF(JUNIT.EQ.0.OR.IUNIT.EQ.0)GO TO 900                            FIL00920
                  C                                                                     FIL00930
                  C                                                                     FIL00940
                  C WRITE EXEC                                                          FIL00950
                  C                                                                     FIL00960
   ISN 0034           WRITE(2,430)                                                     FIL00970
   ISN 0035       430 FORMAT(' $STACK 0')                                              FIL00980
   ISN 0036           WRITE(2,440)(NAMEGT(I),I = 1,2),(NAMGTY(I),I = 1,2),MODEGT       FIL00990
   ISN 0037       440 FORMAT('FI FT04F001 DISK ',2A4,' ',2A4,' ',A1                    FIL01000
                     & ,' (LRECL 3060 BLOCK 3060 PERM RECFM U')                         FIL01010
                  C                                                                     FIL01020
   ISN 0038           WRITE(2,450)(NAMECL(I),I = 1,2),(NAMCTY(I),I = 1,2),MODECL       FIL01030
   ISN 0039       450 FORMAT('FI FT10F001 DISK ',2A4,' ',2A4,' ',A1                    FIL01040
                     & ,' (LRECL 3168 BLOCK 3168 PERM RECFM U')                         FIL01050
   ISN 0040           WRITE(2,420)                                                     FIL01060
                  C                                                                     FIL01070
   ISN 0041       900 STOP                                                             FIL01080
   ISN 0042           END                                                              FIL01090
```

*****F O R T H A N C R O S S R E F E R E N C E L I S T I N G*****

SYMBOL	INTERNAL STATEMENT NUMBERS																		
I	0013	0013	0013	0013	0013	0013	0023	0023	0023	0023	0023	0023	0036	0036	0036	0036	0036	0036	0038
	003B	003B	003B	003B	003B														
IUNIT	0005	0012	0013	0015	0027	0029	0032												
JUNIT	0009	0022	0023	0024	0027	0029	0032												
MODECL	000A	0023	003B																
MODEGT	0004	0013	0036																
NAMCTY	0007	0023	0038																
NAMECL	0006	0023	0038																
NAMEGT	0002	0013	0036																
NAMGTY	0003	0013	0036																

*****F O R T H A N C R O S S R E F E R E N C E L I S T I N G*****

LABEL	DEFINED	REFERENCES	
20	0011	0010	
100	0014	0013	0023
200	0015	0013	
210	0018	0017	
220	0020	0019	0027
400	0022	0015	0021
405	0024	0023	
410	0026	0024	
420	0031	0029	0040
430	0035	0034	
440	0037	0036	
450	0039	003A	
900	0041	0032	

/ MAIN / SIZE OF PROGRAM 00044C HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	F	I*4	0001AC	IUNIT	S	I*4	0001B0	JUNIT	S	I*4	0001B4	IBCOM#	F XF	I*4	000000
MODECL	SF	I*4	0001A4	MODEGT	SF	I*4	0001BC	NAMCTY	SF	I*4	0001C0	NAMECL	SF	I*4	0001C8
NAMEGT	SF	I*4	000100	NAMGTY	SF	I*4	000108								

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
200	15	000260	400	22	000294	405	24	0002EC	900	41	000420

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100000	1	0001F4	100001	13	000210	100002	13	000224	100007	17	00026A
100008	23	000296	100004	23	0002A0	100014	25	0002F6	100015	27	000306
200001	28	000316	100016	28	000320	100017	29	000334	200002	30	00033E
100018	30	00034A	100019	32	00035C	200003	33	000366	100020	34	000370

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
20	11	00002A	100	14	000039	210	18	000047	220	20	00006A
410	26	000077	420	31	00009C	430	35	0000A6	440	37	000083
450	39	0000F0									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 41, PROGRAM SIZE = 1100, SUBPROGRAM NAME = MAIN

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 292K BYTES OF CORE NOT USED

```
REQUESTED OPTIONS: NOTERM
OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)
                   SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)
```

```
                      C     PROGRAM FILWRT                                                                  FIL00010
                      C                    WRITE INPUTS TO DEFGTRU/DEFCLAS EXECS TO RECALL FILE.          FIL00020
                      C     ---------------------------------------------------------------------------     FIL00030
                      C                                                                                     FIL00040
                      C                                                                                     FIL00050
                      C     HISTORY                                                                         FIL00060
                      C     -------                                                                         FIL00070
                      C                                                                                     FIL00080
                      C         M A TOMPKINS     LEMSCO     03/12/81     ORIGINAL CODE                     FIL00090
                      C                                                                                     FIL00100
                      C                                                                                     FIL00110
                      C     METHOD                                                                          FIL00120
                      C     ------                                                                          FIL00130
                      C                                                                                     FIL00140
                      C         READ FROM INPUT OF DEFGTRU/DEFCLAS STACK AND OUTPUT TO FILE.                FIL00150
                      C                                                                                     FIL00160
                      C                                                                                     FIL00170
                      C     EXTERNAL REFERENCES                                                             FIL00180
                      C     -------------------                                                             FIL00190
                      C                                                                                     FIL00200
                      C         NONE.                                                                       FIL00210
                      C                                                                                     FIL00220
                      C                                                                                     FIL00230
                      C     EXTERNAL REFERENCES                                                             FIL00240
                      C     -------------------                                                             FIL00250
                      C                                                                                     FIL00260
                      C         NONE.                                                                       FIL00270
                      C                                                                                     FIL00280
                      C                                                                                     FIL00290
                      C     EXCEPTIONS                                                                      FIL00300
                      C     ----------                                                                      FIL00310
                      C                                                                                     FIL00320
                      C         NONE.                                                                       FIL00330
                      C                                                                                     FIL00340
                      C     LOCAL DECLARATIONS                                                              FIL00350
                      C     ------------------                                                              FIL00360
                      C                                                                                     FIL00370
ISN 0002              C         INTEGER IUNIT                                                               FIL00380
                      C                       LOGICAL UNIT NUMBER OF FILE 9-6 TRUTH 10-CLASS              FIL00390
ISN 0003              C         INTEGER NAME(2)                                                             FIL00400
                      C                       FILENAME                                                    FIL00410
ISN 0004              C         INTEGER NAMETY(2)                                                           FIL00420
                      C                       FILENAME TYPE                                               FIL00430
ISN 0005              C         INTEGER MODE                                                                FIL00440
                      C                       FILE MODE                                                   FIL00450
                      C                                                                                     FIL00460
                      C                                                                                     FIL00470
                      C     PROCEDURE                                                                       FIL00480
                      C     ---------                                                                       FIL00490
                      C                                                                                     FIL00500
                      C                                                                                     FIL00510
                      C     READ FROM EXEC STACK                                                            FIL00520
                      C                                                                                     FIL00530
ISN 0006              C         READ(3,100)IUNIT                                                            FIL00540
ISN 0007                100 FORMAT(I2)                                                                      FIL00550
                      C                                                                                     FIL00560
ISN 0008              C         READ(3,150)(NAME(I),I = 1,2)                                                FIL00570
ISN 0009                150 FORMAT(2A4)                                                                     FIL00580
                      C                                                                                     FIL00590
ISN 0010              C         READ(3,150)(NAMETY(I),I = 1,2)                                              FIL00600
                      C                                                                                     FIL00610
ISN 0011              C         READ(3,200)MODE                                                             FIL00620
ISN 0012                200 FORMAT(A1)                                                                      FIL00630
                      C                                                                                     FIL00640
                      C                                                                                     FIL00650
                      C     WRITE FILES                                                                     FIL00660
                      C                                                                                     FIL00670
ISN 0013              C         IF(IUNIT.EQ.9)WRITE(22,300)IUNIT,(NAME(I),I = 1,2),                         FIL00680
                     &(NAMETY(I),I = 1,2),MODE                                                              FIL00690
ISN 0015                300 FORMAT(I2,2A4,2A4,A1)                                                           FIL00700
ISN 0016              C         IF(IUNIT.EQ.10)WRITE(23,300)IUNIT,(NAME(I),I = 1,2),                        FIL00710
                     &(NAMETY(I),I = 1,2),MODE                                                              FIL00720
                      C                                                                                     FIL00730
```

```
      C
   ISN 0018          STOP                                                  FILL00740
   ISN 0019          END                                                   FILL00750
                                                                           FILL00760
```

*****F O R T R A N C R O S S R E F E R E N C E L I S T I N G*****

SYMBOL	INTERNAL	STATEMENT NUMBERS																	
I	0008	0008	0008	0010	0010	0010	0013	0013	0013	0013	0013	0013	0016	0016	0016	0016	0016	0016
MODE	0005	0011	0013	0016														
NAME	0003	0008	0013	0016														
IUNIT	0002	0006	0013	0013	0016	0016												
NAMETY	0004	0010	0013	0016														

*****F O R T R A N C R O S S R E F E R E N C E L I S T I N G*****

LABEL	DEFINED	REFERENCES		
100	0007	0006		
150	0009	0008	0010	
200	0012	0011		
300	0015	0013	0016	

/ MAIN / SIZE OF PROGRAM 000238 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
I	F	I*4	000040	MODE	SF	I*4	0000D4	NAME	SF	I*4	0000DC	IUNIT	SF	I*4	0000D8
IRCOMM	F XF	I*4	000000	NAMETY	SF	I*4	0000C4								

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100000	1	0000D4	100005	14	00016C	100010	16	0001B8	100011	17	0001C0
100016	18	00020C									

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100	7	00002B	150	9	00002C	200	12	000032	300	15	000036

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(60) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 19, PROGRAM SIZE = 568, SUBPROGRAM NAME = MAIN

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 296K BYTES OF CORE NOT USED

REQUESTED OPTIONS: NOTERM

OPTIONS IN EFFECT: NAME(MAIN) OPTIMIZE(1) LINECOUNT(80) SIZE(MAX) AUTODBL(NONE)
SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)

```
                      C     PROGRAM GTRUINF                                                          GTR00010
                      C                    GET GROUND TRUTH INFO FROM LARS DATA BASE               GTR00020
                      C     ------------------------------------------------------                   GTR00030
                      C                                                                              GTR00040
                      C                                                                              GTR00050
                      C     HISTORY                                                                  GTR00060
                      C     -------                                                                  GTR00070
                      C         M A TOMPKINS    LEMSCO      02/04/81      ORIGINAL CODE              GTR00080
                      C                                                                              GTR00090
                      C                                                                              GTR00100
                      C     METHOD                                                                   GTR00110
                      C     ------                                                                   GTR00120
                      C                                                                              GTR00130
                      C         READ NUMBER OF ACQS,,SEGMENT NUMBER AND LAST TWO DIGITS OF SEG       GTR00140
                      C         YEAR. ACCESS THE LARS RT&E DATA BASE. IF SUCESSFUL WRITE GTRUINFO    GTR00150
                      C         EXEC TO TRANSMIT THE TAPE# FILE# TO THE DEFGTRU EXEC.                GTR00160
                      C                                                                              GTR00170
                      C                                                                              GTR00180
                      C     EXTERNAL REFERENCES                                                      GTR00190
                      C     -------------------                                                      GTR00200
                      C                                                                              GTR00210
                      C         GTINFO      LARS ROUTINE TO ACQUIRE INFO FROM LARS RT&E DATA BASE    GTR00220
                      C         RTEERR      LARS ERROR MESSAGE ROUTINE                               GTR00230
                      C                                                                              GTR00240
                      C                                                                              GTR00250
                      C     EXCEPTIONS                                                               GTR00260
                      C     ----------                                                               GTR00270
                      C         IF IERR <> 0 OR 4 WRITE ERROR MESSAGE AND WRITE EXEC                 GTR00280
                      C         TO TERMINATE PROGRAM.                                                GTR00290
                      C                                                                              GTR00300
                      C                                                                              GTR00310
                      C     LOCAL DECLARATIONS                                                       GTR00320
                      C     ------------------                                                       GTR00330
                      C                                                                              GTR00340
                      C                                                                              GTR00350
ISN 0002              C         INTEGER INDEX(9,64)                                                  GTR00360
                      C                                 INFO ON GROUND TRUTH TAPES                   GTR00370
ISN 0003              C         INTEGER IYR                                                          GTR00380
                      C                                 LAST 2 DIGITS OF YEAR OF GROUND TRUTH        GTR00390
ISN 0004              C         INTEGER IERR                                                         GTR00400
                      C                                 LARS ERROR FLAG                              GTR00410
ISN 0005              C         INTEGER ISEGNO                                                       GTR00420
                      C                                 SEGMENT NUMBER                               GTR00430
ISN 0006              C         INTEGER IDUMMY(64)                                                   GTR00440
                      C                                 ARG THAT DOESN'T PERTAIN TO THIS APPLICA-    GTR00450
                      C                                 TION OF LARS STANDARD  ROUTINE PARAMETERS    GTR00460
                      C                                                                              GTR00470
                      C     PROCEDURE                                                                GTR00480
                      C     ---------                                                                GTR00490
                      C                                                                              GTR00500
                      C                                                                              GTR00510
                      C     READ FROM CONSOLE STACK USER INPUTS. START WRITING EXEC                  GTR00520
                      C                                                                              GTR00530
                      C                                                                              GTR00540
ISN 0007              C         WRITE(2,100)                                                         GTR00550
ISN 0008              C     100 FORMAT('  &CONTROL OFF')                                            GTR00560
                      C                                                                              GTR00570
ISN 0009              C         READ(3,110)ISEGNO                                                    GTR00580
ISN 0010              C     110 FORMAT(I4)                                                           GTR00590
                      C                                                                              GTR00600
ISN 0011              C         READ(3,120)IYR                                                       GTR00610
ISN 0012              C     120 FORMAT(I2)                                                           GTR00620
                      C                                                                              GTR00630
                      C                                                                              GTR00640
                      C     CALL LARS ROUTINE FOR INFO.                                              GTR00650
                      C                                                                              GTR00660
ISN 0013              C         CALL GTINFO(ISEGNO,IYR,IDUMMY,INDEX,IERR,4,'E')                      GTR00670
                      C                                                                              GTR00680
                      C                                                                              GTR00690
                      C     CHECK FOR ERROR                                                          GTR00700
                      C                                                                              GTR00710
ISN 0014              C         IF(IERR.EQ.0.OR.IERR.EQ.4)GO TO 160                                  GTR00720
ISN 0016              C         CALL RTEERR(IERR,5)                                                  GTR00730
```

```
ISN 0017          WRITE(2,150)                                              GTR00740
ISN 0018      150 FORMAT(' &STACK 0',/,' &EXIT')                            GTR00750
ISN 0019          GO TO 900                                                 GTR00760
ISN 0020      160 WRITE(2,180)INDEX(1,1),INDEX(2,1)                         GTR00770
ISN 0021      180 FORMAT(' &STACK',I5,/,' &STACK',I5,/,' &EXIT')            GTR00780
ISN 0022      900 STOP                                                      GTR00790
ISN 0023          END                                                       GTR00800
```

*****F O R T R A N C R O S S R E F E R E N C E L I S T I N G*****

SYMBOL	INTERNAL	STATEMENT NUMBERS			
IYR	0003	0011	0013		
IERR	0004	0013	0014	0014	0016
INDEX	0002	0013	0020	0020	
GTINFO	0013				
IDUMMY	0006	0013			
ISEGNO	0005	0009	0013		
RTEERR	0016				

*****F O R T R A N C R O S S R E F E R E N C E L I S T I N G*****

LABEL	DEFINED	REFERENCES
100	000A	0007
110	0010	0009
120	0012	0011
150	0018	0017
160	0020	0014
180	0021	0020
900	0022	0019

/ MAIN / SIZE OF PROGRAM 000C14 HEXADECIMAL BYTES

NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.	NAME	TAG	TYPE	ADD.
IYR	SFA	I*4	000118	IERR	SFA	I*4	00011C	INDEX	SFA	I*4	000124	GTINFO	SF XF		000000
IBCOM#	F XF	I*4	000000	IDUMMY	SFA	I*4	000A24	ISEGNO	SFA	I*4	000120	RTEERR	SF XF		000000

SOURCE STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
160	20	0008C4	900	22	0008E8						

COMPILER GENERATED LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100000	1	000834	200001	15	000894	100001	16	0008A0			

FORMAT STATEMENT LABELS

LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR	LABEL	ISN	ADDR
100	8	000028	110	10	000039	120	12	00003D	150	18	000041
180	21	000057									

*OPTIONS IN EFFECT*NAME(MAIN) OPTIMIZE(1) LINECOUNT(80) SIZE(MAX) AUTODBL(NONE)

*OPTIONS IN EFFECT*SOURCE EBCDIC NOLIST NODECK OBJECT MAP NOFORMAT NOGOSTMT XREF ALC NOANSF NOTERM IBM FLAG(I)

STATISTICS SOURCE STATEMENTS = 22, PROGRAM SIZE = 3092, SUBPROGRAM NAME = MAIN

STATISTICS NO DIAGNOSTICS GENERATED

****** END OF COMPILATION ****** 296K BYTES OF CORE NOT USED

APPENDIX C

MISMAP OUTPUT EXAMPLE

INPUT SUMMARY

THIS IS AN EXAMPLE OF THE OPTIONAL CC FILE USED BY MISMAP. THIS FILE IS USED AS AN INFORMATIONAL FILE.

JOB INITIATED ON 05/19/81 AT 15:13:52

COMPARISON MAP OF CLASSIFICATION RESULTS WITH GROUND TRUTH

GROUND TRUTH FILE - 12379365
CLASSIFICATION FILE - 12381064

CHARACTER DEFINITION MATRIX

CLASSIFICATION CATEGORIES	GROUND TRUTH CATEGORIES -1-	-2-	-3-	-4-	-5-	-6-
-1-	"C"	"+"	"$"	"#"	"#"	"#"
-2-	"-"	" "	"	"$"	"#"	"#"	"#"
-3-	"T"	"T"	"T"	"#"	"#"	"#"
-4-	"#"	"#"	"#"	"#"	"#"	"#"
-5-	"#"	"#"	"#"	"#"	"#"	"#"
-6-	"#"	"#"	"#"	"#"	"#"	"#"

PIXEL PURITY RANGE - FROM 1 TO 6 SUBPIXELS

GROUND TRUTH TRANSFORMATIONS

1	TO	10	= 1
11	TO	79	= 2
80	TO	80	= 3
81	TO	91	= 2
92	TO	92	= 1
93	TO	116	= 2
117	TO	117	= 1
118	TO	163	= 2
164	TO	164	= 3
165	TO	255	= 2

CLASSIFICATION TRANSFORMATIONS

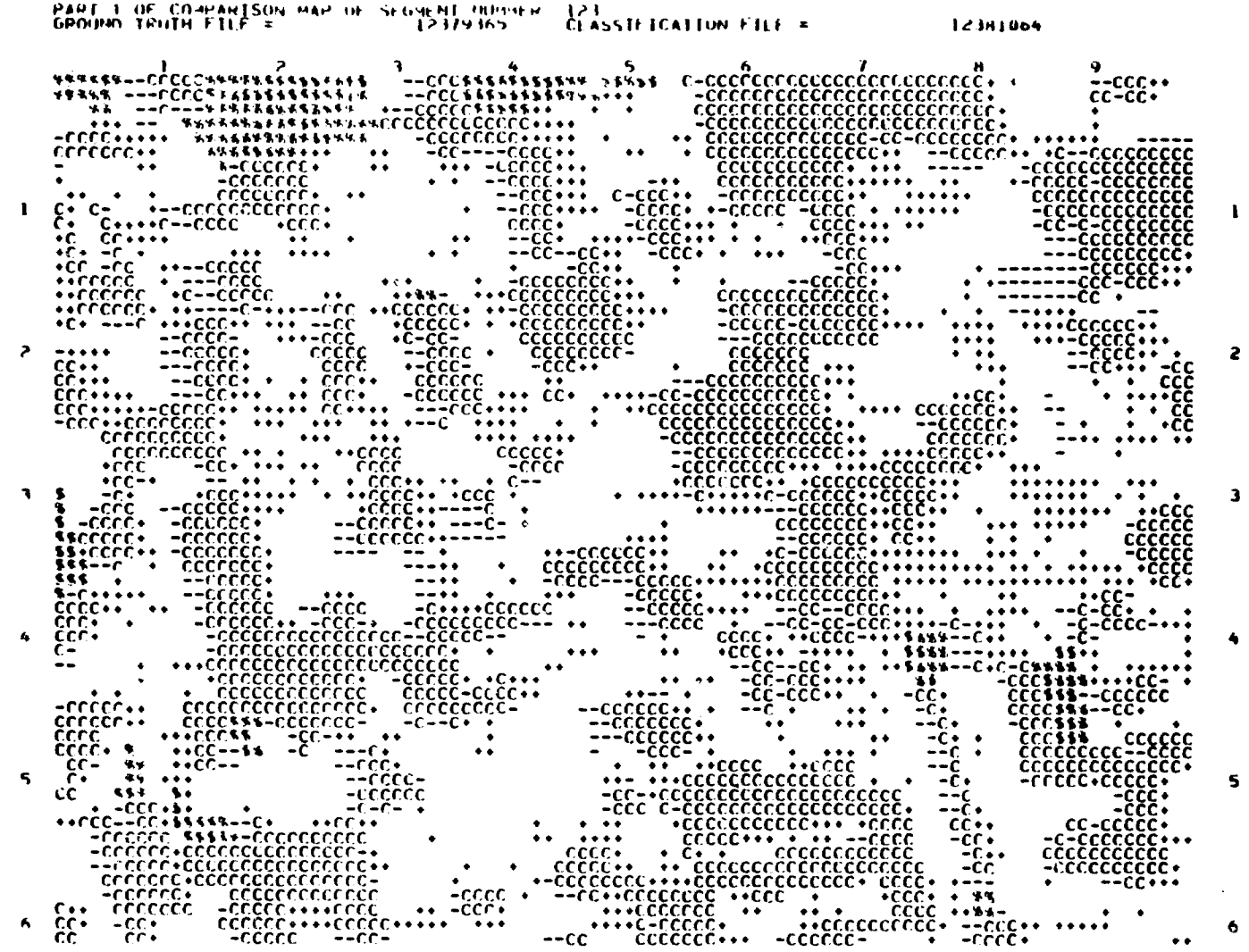
1	TO	14	= 6
15	TO	15	= 3
16	TO	77	= 6
78	TO	78	= 2
79	TO	99	= 6
100	TO	192	= 2
193	TO	194	= 6
195	TO	195	= 1
196	TO	206	= 6
207	TO	207	= 2
208	TO	225	= 6
226	TO	226	= 2
227	TO	238	= 6
239	TO	239	= 1
240	TO	255	= 6

HEADER INFORMATION FOR GROUND TRUTH FILE 12379365
COMPUTING SYSTEM ID = PDP-11/45 TAPEOUT PROGRAM
ACQUISITIONS USED =
PEC JOB IDENT. =
USER SUPPLIED DATA = FR-1979-CIK+-A+D-LINDEA+-H<I+D-LIMEL-MA&E-1-IF-2----------

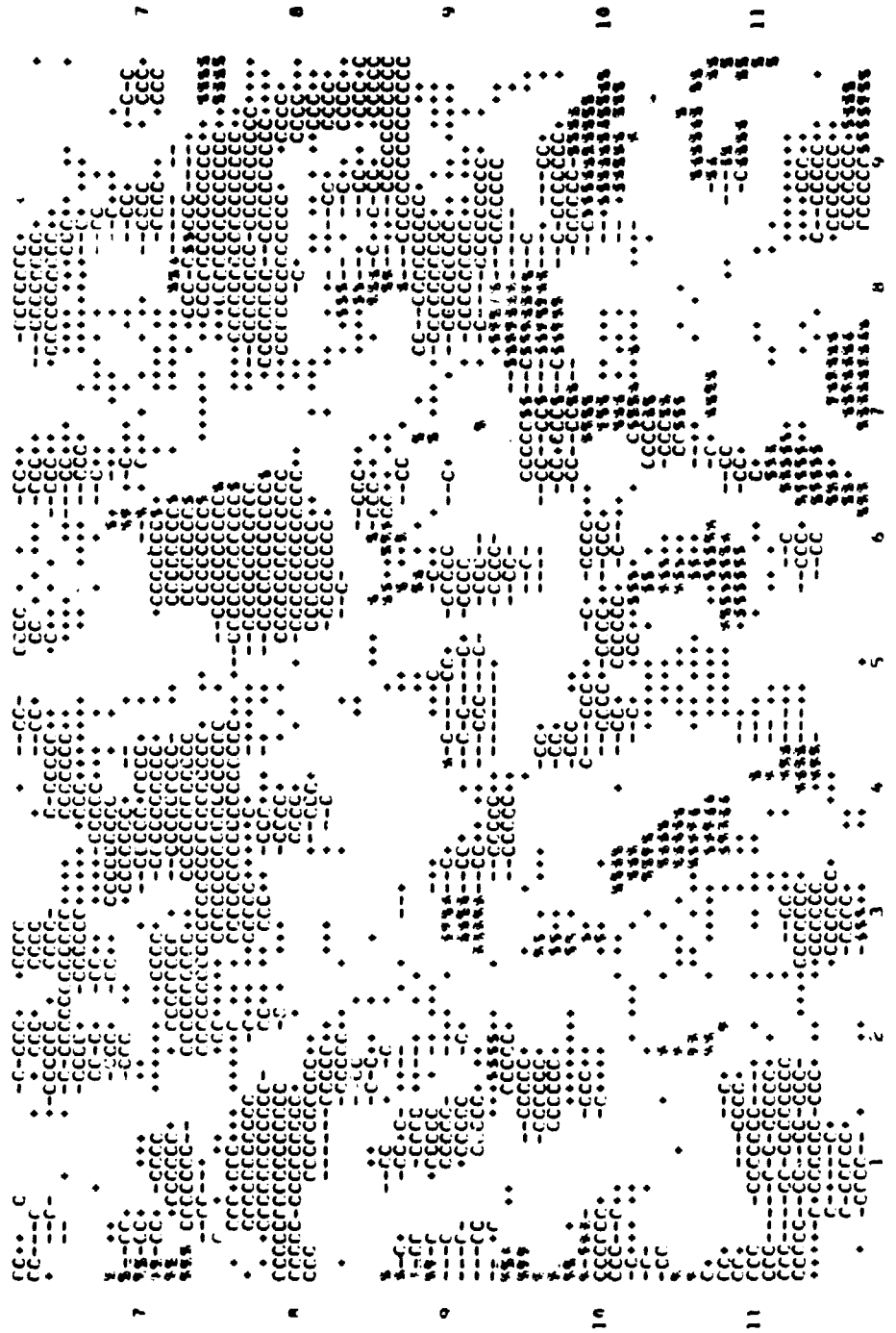
HEADER INFORMATION FOR CLASS FILE 12381064
COMPUTING SYSTEM ID = SW MULT TEMPR CLASSIFIER FROM CLASFYG

ORIGINAL PAGE IS
OF POOR QUALITY

```
                      (SAMPLE,LINE)
USER SUPPLIED DATA  = IN FLD  ( 58.,  3.),( 64.,  3.),( 66.,  8.),( 60.,  8.)
```



ORIGINAL PAGE IS
OF POOR QUALITY



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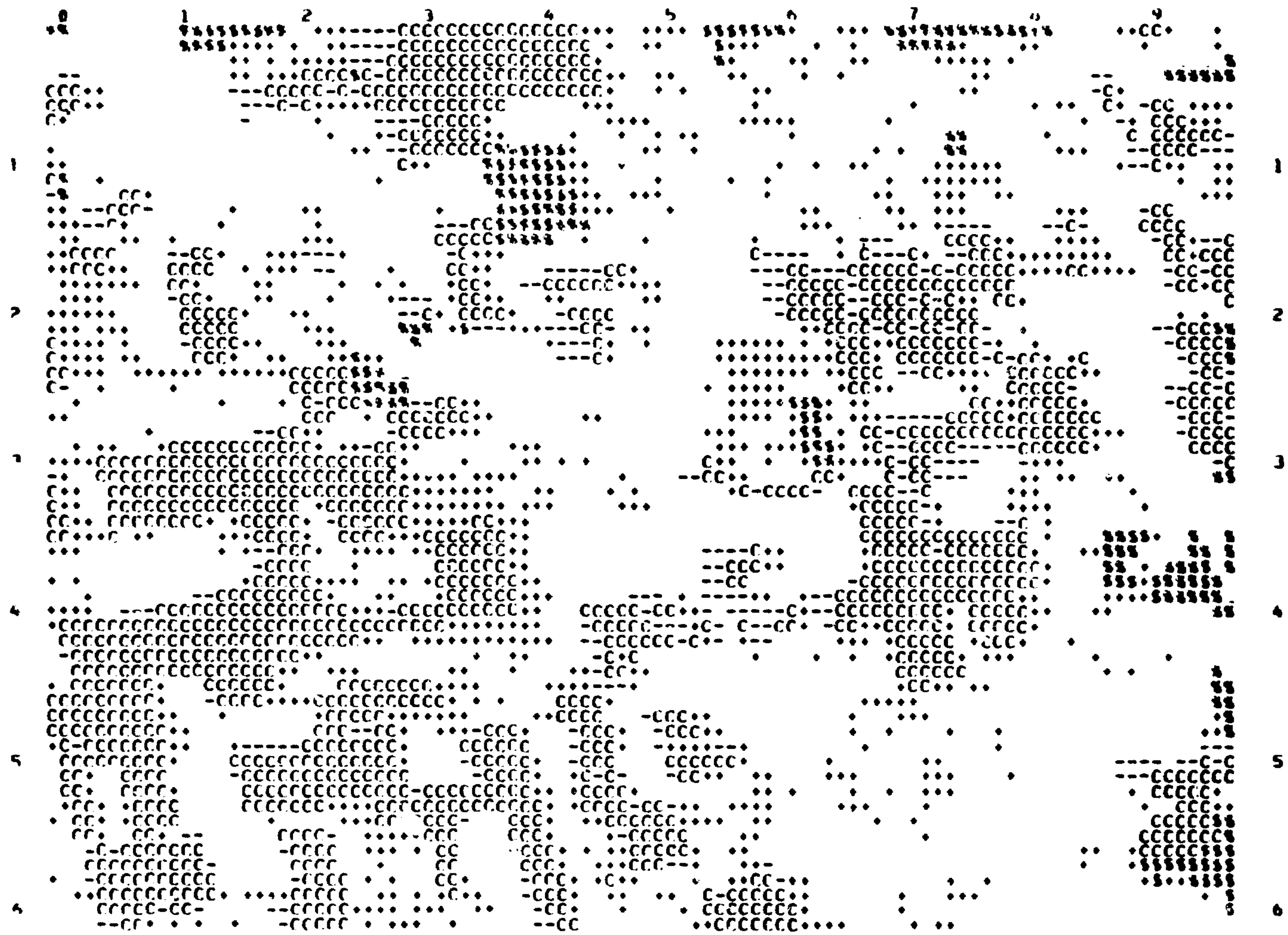
OF POOR QUALITY

PART 2 OF COMPARISON MAP OF SEGMENT NUMBER 121
GROUND TRUTH FILE = 12379365 CLASSIFICATION FILE = 12JN1864



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SUMMARY OF COMPARISION RESULTS

GROUND TRUTH FILE = 12179365
CLASSIFICATION FILE = 12181064

NUMBER OF PIXELS CONSIDERED IN COMPARISON = 22932.

PERCENTAGE OF SCENE IN EACH CATEGORY

		GROUND TRUTH CATEGORIES						
		-1-	-2-	-3-	-4-	-5-	-6-	TOTAL
CLASSIFICATION CATEGORIES	1-	24.6	16.1	1.7	0.0	0.0	0.0	42.4
	2-	6.5	47.5	3.5	0.0	0.0	0.0	57.6
	3-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	5-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	6-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TOTAL	31.2	63.6	5.2	0.0	0.0	0.0	

PERCENTAGE OF SCENE MISCLASSIFIED= 27.9