SAR850340S

IMP DATA BASE TIME STUDY PROGRAM (DBTIME)

Prepared for
Goddard Space Flight Center

Prepared by
B. S. Reddy
Science Applications Research

Under
Contract NAS 5-28200
Task 605

SCIENCE • APPLICATIONS • RESEARCH
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ABSTRACT

This document provides program documentation for the IMP Data Base Time Study (DBTIME) program. Description of software specifications, input/output details are provided in the earlier sections followed by the design details and maintenance procedures of the program. The last section is a user's guide with input data and output listings, and error messages appearing at different stages. Appendix provides listings of some relevent JCL and a sample job.

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IMP DATA BASE TIME STUDY (DBTIME) PROGRAM

1.0 Introduction

The objective of IMP data base time study (DBTIME) is to systematically scan the IMP compressed data base containing 6250-bpi tapes and report any significant data gaps observed for data analysis purposes.

2.0 Software specifications

2.1 Purpose

The primary purpose of the software DBTIME is to validate the IMP PHAS, CNTS and ENCY data bases and provide a history of time consistency, missing data (data gaps) and/or any overlap data encountered during the data scan.

2.2 Scope

The data base time study will be limited to only IMP compressed data base.

Original 1600-bpi' data base tapes that were not compressed due to tape I/O problems will be treated as missing data (or data gaps). However, if any or all of the unreadable original 1600-bpi' tapes are compressed to 6250-bpi' tapes at a later date, the software DBTIME will have the capability to individually scan the newly compressed data and provide an updated status report of the entire data base.

2.3 Requirements

The IMP data base time study (DBTIME) software is expected to have the following capabilities:

- DBTIME will be limited to processing CNTS, PHAS and ENCY tapes
- The s/w shall have the capability to scan the IMP-6, IMP-7 and IMP-8 compressed 6250-bpi' tapes
- Universal time (UT) between consecutive data records will will be compared to find the time difference
- The UT comparison will be continued at the tape boundaries
- All time differences of two or more hours (or up to user specified time limit) will be recorded as time gaps
- Any data repetition with the same time periods found within a tape will be reported as an overlap data
- A time gap outside satellite life will be reported as an

illegal time
- Options will be provide to scan one or more data tapes in one job
- The order of processing of the data base tapes need not be time sequential. This will allow the processing of the missing reel sequence number tapes in the compressed data base at a later date.
- Output will be provided as a summary table in chronological order of the reel sequence number at the end of each run, irrespective of the order of processing of the data.
- A preset allowed gap time could be different for different reel sequence numbers
- A warning will be provided if the LRECL differs

2.4 Limitations

- The software DBTIME is limited to read only the compressed data base. The required tape selections will be made using the correspondence catalogs for each satellite
- There will be a separate summary table of time (GAP) study for each type of data (CNTS, PHAS, etc.) within each satellite type (IMP-6, -7, -8)
- DBTIME software is designed to process all types of data, but the testing is limited to only CNTS, PHAS and ENCY.

3.0 Environment

3.1 Equipment Used

The DBTIME program has been developed on an IBM 3081 system under MVS/TSO. Program submission needs an SPF environment with full screen terminal. The following software packages are needed to develop, maintain and use the DBTIME.

VS FORTRAN
SPF Dialog Manager (for user input only)

During the program execution the following data sets are used:

Correspondence catalogs
SB#IM.CORRCAT6
SB#IM.CORRCAT7
SB#IM.CORRCAT8

Work Tables
SB#IM.WORKTB.SSSSDDDD where SSSS - satellite name
DDDD - data type

Summary Tables

SB#IM.SUMTAB.SSSSDDDD where SSSS - satellite name
DDDD - data type

If data sets are migrated, HSM recall will take place automatically

If work table or summary table is not a cataloged data set, the program will assume them to be new, and new data sets will be allocated.

In either case, users need not allocate any data sets (see error messages under section 6.1.1) during job submission.

4.0 DESIGN DETAILS

4.1 Input data

The user input is needed to specify the range of reel sequence numbers to scan in a given job for a particular type of data.

The following information is required:
- Satellite identification (IMP6, IMP7, IMP8)
- Data type (ENCY, PHAS, etc.)
- Starting reel sequence number
- Ending reel sequence number
- Allowed gap for data to be considered continuous

Optional data:

- An indicator to list the revised summary table at the end of a job
- Any gap time below which the listing should be suppressed (for example, a gap time of 0 will print the entire summary table irrespective of gaps selected for various reel sequence numbers)

Special case:

- A user may initiate the DBTIME to print an existing summary table without any processing by setting start and end reel sequence numbers equal to 0.

The input data will be prompted via SPF panel and appropriate error messages will be displayed for inconsistent data.

4.2 Outputs

The program generates printer outputs and updates the summay table. The first line of the summary table will have the date and time when the summary table was last updated.

4.2.1 Printer Output

- Program name, version number and date
- The user input
- Gaps found for the reel sequence numbers in the current job
- Revised summary table (optional)

4.2.2 Disk Output

- A work table used as an interim work area during the job
- A revised summary table

note: If the job ends normally, the work table and summary table will be identical. Otherwise, summary table will remain unchanged.
(see section 6.3 on Abnormal Ending of Job)

4.3 Program Logic

4.3.1 Overall Design

The DBTIME program has been designed in top down fashion with the main routine calling several subroutines to perform different tasks. The main routine checks the input data for consistency and sets up a loop to perform the time gap analysis for all the reel sequence numbers.

Step 1:

The program reads the user input data, opens all the data sets dynamically, and checks the satellite name and data type found on the summary table for consistency with the input. If any discrepency is found the job will be terminated at this point.

Using a table look-up procedure the program will find the tape DCBs for the data type requested. A routine RDTABL will be called in to make a copy of the summary table to a work area (called 'work table', or initialize a new summary table if this is the first run for this data type). This copying of the summary table will proceed till it finds a reel sequence number that is equal to or greater than the start reel sequence number of a given job. At this stage the last input record read from the old summary table will be stored in a character variable ENDREC and the control will be transferred to the main program. On the other hand, if an end of file is encountered on the summary table, the ENDREC variable will be set to "blank" and the control will be transferred to the main program.

(At the end of the job the remaining portion of the summary table (if any) will be copied to the work table and the entire contents of the work table will be copied back to the summary table as a revised table.

The above procedure of copying a summary table to a work table is followed so that a chronological order of reel sequence numbers can be maintained irrespective of the order in which they are processed. This includes inserting, replacing and/or adding reel sequence numbers at appropriate places. Also, it will safeguard against any possibilities of destroying the summary table data set due to system abends during the tape reading and so on. In addition at the end of the job there will be an automatic backup of the summary table (as work table)).

Step 2:

The main program will set up a loop for all the reel sequence numbers to process. A routine CATRD will read the correspondence catalog to find if the requested reel sequence number has been processed and if so, it will return the tape volume serial number and starting file number (and number of files associated with this reel). The tape will be mounted (or positioned if the tape is already mounted) and a routine TIMES will be called in to start the time gap study.

The routine TIMES will check the data continuity at the tape boundary and reel sequence continuity for the summary table. Appropriate warning messages will be provided for each case and it will call TPREAD to read the current tape and list the gaps. TPREAD will read each record of the tape and check for various data base consistency questions (as outlined in section 2.3 for requirements) and output will be written to the printer and to the work table. The procedure will be repeated for all the reel sequence numbers requested on input.

Step 3:

On completion of all reel sequence numbers, the main program will call a routine SUMTAB to wrap up the contents of the work table and revise the summary table. SUMTAB will copy (if there are any more records left on the old summary table) to the work table, deleting any duplicate reel numbers . That is, if a reel sequence number was already processed and the gap table is available in the old summary table, and if the current job also requests processing of the same reel sequence number (probably with/without a different gap time) the current job results will be retained and the old job entries will be deleted. A warning message will be printed during an earlier step of the job (by RDTABL). The SUMTAB in turn will call the SUMLST to copy the entire work table to the summary table and list the revised summary table upon user request. The program will close all the files and the job ends.

Special case:

The program DBTIME can be used at any time to simply list the existing summary table for a particular data type. In this case, no processing will be done, but the main program will call the SUMLST routine directly to print the summary table.

4.3.2 Module definition

The following are various modules developed for the DBTIME program. A module dependency diagram is shown in Fig. 1.

CATRD	Read correspondence catalog for tape and file #s
MAIN	DBTIME main program
OPENDT	Open all data sets
RDTABL	Read old summary table and copy to work table
SUMLST	Rewrite summary table and list the contents
SUMTAB	Complete work table and call SUMLST to revise.
STRING	Pack date and time as string variables
TIMES	Begin the time gap study
TPDATA	Find tape DCBs
TPREAD	Read each tape and list all discrepancies
UNPACK	Unpack year and deciseconds to year, month, day and, hours, minutes and seconds
YEAR	Extract year as a two-digit number

DBTIME

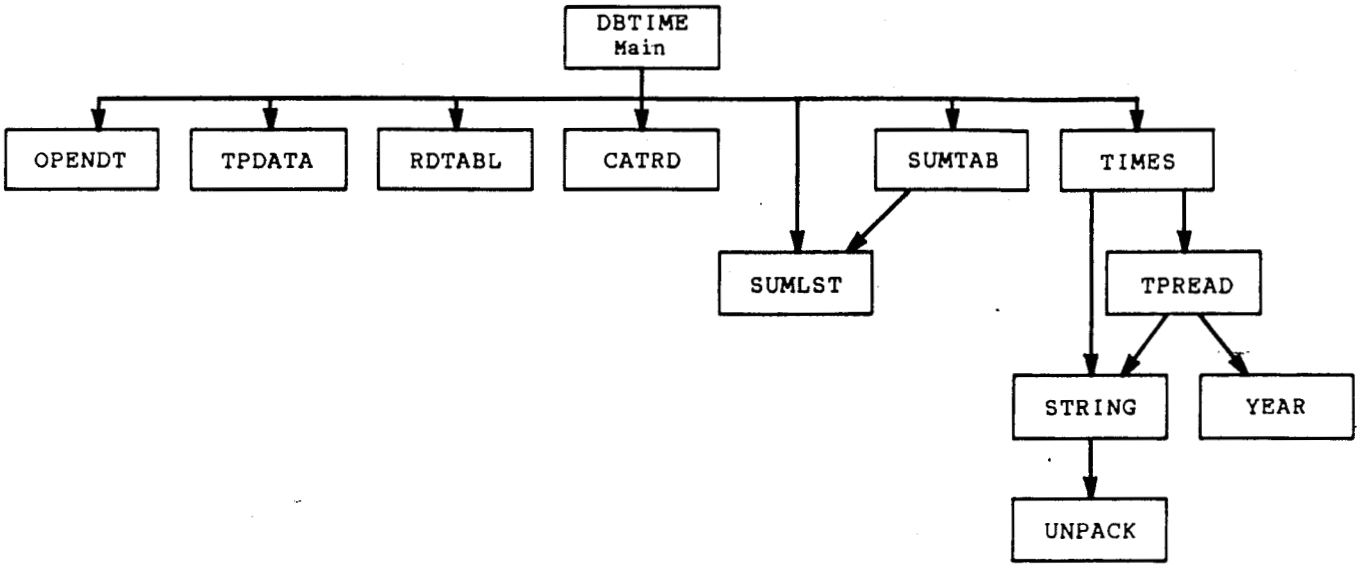

Fig. 1. DBTIME - Module dependency diagram

4.3.3 Module Logic

The source code contains required prologs and PDL for each module explaining the logic involved in each routine. Extensive in-line documentation has also been provided in the source code. For general outline of the program logic, see section 4.3.1 on overall design.

SECTION 5 - MAINTENANCE PROCEDURE

5.1 Program Rebuild Procedure:

The following data sets contain various information on DBTIME software. (It is advisable that the user make a copy of the data set(s) to his/her ID prior to making any modification).

SB#IM.DBTIME.SOURCE	Contains source code, $BUILD JCL and $RUN JCL.
SB#IM.DBTIME.CLIST	Contains job submission procedures via SPF panels
SB#IM.DBTIME.MSGS	Contains error messages used by CLIST procedure
SB#IM.DBTIME.PANELS	Contains panel input for CLIST procedure
SB#IM.DBTIME.BATCH	Contains $RUN member of the DBTIME.SOURCE for exclusive use of editing and submitting the jobs by the CLIST procedure

- Copy source code DBTIME.SOURCE to your ID (user ID)
- Make separate copy of summary table(s) to protect if you are planning to make several testings. Summary table datasets in SB#IM will be used and revised if the jobs are submitted through SPF panel input.
- Change the references of SB#IM in $BUILD member to your ID
- Make necessary corrections and/or updates
- Compile and link to produce new load module using $BUILD

5.2 Testing Procedure:

The programmer has to change the $RUN member of DBTIME.BATCH data set to point the load module to user ID where the test load module is residing. The test jobs can be submitted in the normal way (see section 6.0 on user's guide). However, note that the outputs from the test runs will be directly affecting the existing summary tables. To avoid this, make a copy of the current summary table before starting any testing.

5.3 Returning to Configuration Control:

After completing successfully all the required tests, the programmer has to make the following changes before returning the revised code to the configuration control manager.

- change the version number and last updated date in the

MAIN member of DBTIME.SOURCE.

. Update all prologs of members where the chages were made.
. Compile and link using $BUILD
. Change user ID references in $BUILD of DBTIME.SOURCE
. Change load module reference in the $RUN of DBTIME.BATCH

Note: No changes should be made in the $RUN member of the DBTIME.BATCH data set (other than load module account ID) since the CLIST procedure uses this member to edit and submit the jobs. In case of a problem, compare $RUN member of DBTIME.SOURCE with DBTIME.BATCH($RUN). These two members are expected to be identical.

6.0 USER'S GUIDE

6.1 Input Data

To provide input data for the DBTIME program, you need a full screen terminal (such as 3101 or 37xx terminals). The CLIST procedure invokes SPF dialog manager. User must be in MVS/TSO and not in SPF.

To initiate the CLIST procedure enter

```
EX 'SB#IM.DBTIME(SUBMIT)'
```

The following panel will appear to enter the data.

```
APRIL 15 1985 |********* IMP DATA BASE TIME STUDY PROGRAM *********|VERSION 1.0|

  Enter the Input Data:

    SATELLITE ID                          ===>

    DATA TYPE                             ===>

    START REEL SEQUENCE NUMBER            ===>

    END   REEL SEQUENCE NUMBER            ===>

    INTER-RECORD ALLOWED GAP TIME ===>          mins.

  Enter one of the following listing options:

    LIST THE SUMMARY TABLE with gaps beyond ===>          mins.

    DO NOT LIST THE SUMMARY TABLE at the end of the job ===>          (enter X)
```

Fig. 2. Input data panel

The required input data is self explanatory. The users may note that the inter-record allowed gap time can be different for different reel sequence numbers. However, a revised summary table listing can be obtained with a common cut-off limit below which the listing of gaps will be suppressed, but no changes are made

to the summary table. Obviously, if a user specifies 0 mins for the gap time to list the summary table, the entire table will be printed. Selected gap times for each reel sequence number will be entered in the summary table.

Enter all the required data. If any conflicting or invalid data are entered an error message will be displayed on the right hand top corner of the panel. Once the return is pressed, a second panel will be displayed to confirm the input.

```
APRIL 15 1985 |*************** CONFIRM SUBMIT PANEL ***************|VERSION 1.0

  The input data selected is:
     SATELLITE ID                    =
     DATA TYPE                       =
     START REEL SEQUENCE NUMBER      =
     END   REEL SEQUENCE NUMBER      =
     INTER-RECORD ALLOWED GAP TIME   =
     DO NOT LIST THE SUMMARY TABLE AT THE END OF THE JOB

  Do you want to submit the job with these values ? ===>        (y=yes, n=no)
```

Fig. 3. Second panel to confirm the input data

The user may decide to submit or not to submit the job at this stage. If the reply is 'yes', $RUN member of the DBTIME.BATCH will be edited and a job will be submitted automatically.

6.1.1 Error messages during job submission

The following error/warning messages may appear on the screen during input:

Error message on SPF panel	Explanation
Enter a selection	>> You pressed return before entering all the input
IMP6, IMP7, IMP8 only	>> Valid Satellite id's are IMP6, IMP7 and IMP8
Invalid selection	>> A wrong selection was made for data type (ency, phas,..)
Invalid number	>> This number must be integer
Enter an X to make this selection	>> Letter "X" expected
Enter either Y for yes and N for no	>> Letter Y or N expected

The following messages may appear if the CLIST accepts all the input and tries to submit the job:

CORRESPONDENCE CATALOG NOT AVAILABLE	- Check user id. The user id must be SB#IM for catalogs. The job will not be submitted.
SUMMARY TABLE IS ASSUMED NEW	- Cataloged summary table could not be found. A new data set is being allocated
WORK TABLE IS ASSUMED NEW	- Cataloged work table could not be found. A new data set is being allocated
JOB SUBMITTED	$RUN member has been modified and a batch job is submitted
END KEY PRESSED: PROGRAM TERMINATED	- The user pressed PF3 key

6.2 Output Listing

The output listing will consists of the following:

- Echoing of input data
- Title line of summary table describing satellite name, data type, last updated date and time
- Time gap study for each reel sequence number
  - Header title describing each column
  - Main record for the reel sequence number (contains

information obtained from the correspondence catalog on the start and stop times, and allowed gap time)
- Individual gaps listed

. Revised summary table (optional request)
. End of job message

6.2.1 Warning messages on output

Several messages printed on the output are self-explanatory. However, a few of them are discribed below:

MISSING REEL SEQUENCE NUMBER ? - Summary table does not contain any information on the previous reel sequence number. This is mainly intended to tell that there is a data discontinuity.

COMPRESSED TAPE FOR REEL SEQ NUMBER ... IS NOT AVAILABLE
The correspondence catalog does not have an entry for this reel sequence number - the program continues with the next reel #.

REEL SEQUENCE NUMBER ... WAS FLAGGED UNUSABLE
Correspondence catalog has a flag indicating that that this compressed tape differs from the original tape. The program will skip this tape to find another tape with flag = 0.

6.3 Abnormal end of a job

Case 1: Termination during tape read

If the job is aborted during the tape reading stage (that is before completing all reel sequence numbers on input)
correct the error and resubmit the job even if some of the reel sequence numbers are already processed. (Contents of the summary table are unaltered, so submit the entire job)

Case 2: Termination during summary table revision

Once the program prints "Listing of Summary Table" or "Revised Listing of Summary Table", DBTIME will start copying the Work table to summary table. A job abend will occur at this stage only due to a system failure. The user can simply copy the work table to summary table using COPY command to restore summary table

since these two tables are expected to be identical at the end of each job.

Case 3: Termination due to insufficient disk allocation for work table

Reallocate the work table (WORKTB) and summary table (SUMTAB) with additional space. Contents of summary table are not changed. Submit the job again. Work table and summary table space allocation must be the same.

The automatic allocation of summary table or work table will be made with the following DCBs:
BLKSIZE(13000) LRECL(130) RECFM(F B) DSORG(PS)

Note: Always during any job failure, check the first line of the summary table (and the work table if necessary) to find the last updated date and time, and make sure that was the last time you had a successful run.

APPENDIX A

A.1 Listing of JCL ($BUILD) for compile and link DBTIME.SOURCE($BUILD)

```
//XRBSRA JOB (SB016,BF3,2),DBTIME,MSGCLASS=A,TIME=(0,30),CLASS=O
//* THIS JCL IS USED TO RECREATE DBTIME LOAD MODULE (APRIL 1,1985)
/*JOBPARM QUEUE=FETCH
// EXEC FORTRANV
//SYSIN DD DSN=XRBSR.DBTIME.SOURCE(MAIN),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(OPENDT),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(RDTABL),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(CATRD),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(SUMTAB),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(SUMLST),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(TPREAD),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(TIMES),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(YEAR),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(TPDATA),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(UNPACK),DISP=SHR
//       DD DSN=XRBSR.DBTIME.SOURCE(STRING),DISP=SHR
//    EXEC LINKV
//SYSLMOD DD DSN=XRBSR.DBTIME.LOAD(MAIN),UNIT=SYSDA,DISP=OLD
// EXEC NOTIFYTS
```

A.2 Listing of JCL ($RUN) for job submission DBTIME.SOURCE($RUN) and DBTIME.BATCH($RUN) - Batch JCL

```
//XRBSRA   JOB (SB016,BF3,10),REDDY,MSGCLASS=A,TIME=(0,30),CLASS=N,
//  NOTIFY=XRBSR
//*  JCL TO RUN DBTIME PROGRAM     (APRIL 3,1985)
/*JOBPARM QUEUE=FETCH
//STEP1  EXEC PGM=MAIN,REGION=450K
//STEPLIB  DD DSN=XRBSR.DBTIME.LOAD,DISP=SHR
//GO.FT03F001 DD UNIT=(6250,,DEFER),DISP=(OLD,KEEP),
//  LABEL=(1,SL,,IN),DCB=(DEN=4,LRECL=7284,BLKSIZE=32592,RECFM=VB),
// VOL=SER=KCNT,DSN=IMPH
//GO.SYSUDUMP DD SYSOUT=A
//NEWCAT  DD  DSN=XRMYS.CORRCAT7,DISP=SHR
//SUMTAB  DD  DSN=XRBSR.SUMTAB.IMP7CNTS,DISP=SHR
//WORKTB  DD  DSN=XRBSR.WORKTB.IMP7CNTS,DISP=SHR
//FT06F001 DD SYSOUT=A
//FT05F001 DD *
 &INDATA SATID='IMP7',DATAID='CNTS',REEL1=10,REEL2=13,TIMINT=15,
 LIST=0,LSTINT=,&END
```

A.3 SAMPLE RUN

```
APRIL 15 1985 |********* IMP DATA BASE TIME STUDY PROGRAM *********|VERSION 1.0|

  Enter the Input Data:

    SATELLITE ID                    ===> imp8

    DATA TYPE                       ===> cnts

    START REEL SEQUENCE NUMBER      ===> 5

    END   REEL SEQUENCE NUMBER      ===> 8

    INTER-RECORD ALLOWED GAP TIME ===> 20     mins.

  Enter one of the following listing options:

    LIST THE SUMMARY TABLE with gaps beyond ===>        mins.

    DO NOT LIST THE SUMMARY TABLE at the end of the job ===> x      (enter X)
```

```
APRIL 15 1985 |*************** CONFIRM SUBMIT PANEL ***************|VERSION 1.0|

  The input data selected is:
     SATELLITE ID                    = IMP8
     DATA TYPE                       = CNTS
     START REEL SEQUENCE NUMBER      = 5
     END   REEL SEQUENCE NUMBER      = 8
     INTER-RECORD ALLOWED GAP TIME = 20
     DO NOT LIST THE SUMMARY TABLE AT THE END OF THE JOB

  Do you want to submit the job with these values ? ===> Y     (y=yes, n=no)
```

A.4 SAMPLE OUTPUT

```
                  *************************************
                 *  IMP DATA BASE TIME STUDY PROGRAM  *
                 *                                    *
                 *    VERSION 1.0      APRIL 15,1985  *
                 **************************************

INPUT DATA:

SATELLITE ID: IMP7
DATA TYPE:    CNTS
START REEL SEQUENCE NUMBER:      5
END REEL SEQUENCE NUMBER  :      8
INTER-RECORD ALLOWED GAP TIME:   20 MINS

 DO NOT LIST SUMMARY TABLE AT THE END OF JOB
IMP7   DATA TYPE: CNTS            IMP TIME STUDY - SUMMARY TABLE                        APR  30,1985    9:03:47

REEL    TAPE    FILE           START              END         TIME GAP       AT
SEQ #   VOL #    #         DATE      TIME    DATE      TIME    HH:MM      RECORDS     COMMENTS
------  ------  ---     ---------- ----   ---------- ----    =====     ===========
     5  I70001    5     DEC 12,72  0:00 -DEC 31,72 23:58                          ( 72  298944340 72  316222824  GAP:  20 MINS)
                                                                       MISSING REEL SEQUENCE NUMBER ?
                                                                       1ST RECORD TIME IS SAME AS CATALOG START TIME
                        DEC 12,72  8:44 -            10:25     1:40   (  380-  381)
                        DEC 12,72 12:23 -            14:04     1:40   (  468-  469)
                        DEC 17,72 23:37 -DEC 18,72    2:41     3:04   ( 6158- 6159)
                        DEC 18,72 20:57 -            22:26     1:28   ( 6961- 6962)
                        DEC 20,72  3:51 -             4:15     0:24   ( 8246- 8247)
                        DEC 20,72  4:34 -             5:15     0:40   ( 8252- 8253)
                        DEC 28,72 14:53 -            16:17     1:23   (17062-17063)
                        DEC 31,72 21:30 -            22:14     0:43   (20445-20446)
                                                                       END OF DATA FOR THIS REEL SEQUENCE NUMBER
                                                                       CATALOG END TIME DOES NOT MATCH WITH LAST RECORD TIME
                                                                       CATALOG END TIME: 72  316222824  LAST RECORD: 72         0


 *** ERROR ***           COMPRESSED TAPE FOR REEL SEQ NUMBER    6 IS NOT AVAILABLE
EXECUTION CONTINUES WITH THE NEXT TAPE

                         REEL SEQUENCE NUMBER:     7 WAS FLAGGED UNUSABLE


 *** ERROR ***           COMPRESSED TAPE FOR REEL SEQ NUMBER    7 IS NOT AVAILABLE
EXECUTION CONTINUES WITH THE NEXT TAPE

REEL    TAPE    FILE           START              END         TIME GAP       AT
SEQ #   VOL #    #         DATE      TIME    DATE      TIME    HH:MM      RECORDS     COMMENTS
------  ------  ---     ---------- ----   ---------- ----    =====     ===========
     8  I70002    1     FEB 10,73  0:01 -MAR 01,73 23:59                          ( 73   34560671 73   51839962  GAP:  20 MINS)
                                                                       MISSING REEL SEQUENCE NUMBER ?
                                                                       1ST RECORD TIME IS SAME AS CATALOG START TIME
                        FEB 12,73 12:06 -            12:36     0:30   ( 2637- 2638)
                        FEB 16,73  7:18 -             7:54     0:35   ( 6611- 6612)
                        FEB 23,73  6:32 -             7:14     0:42   (13913-13914)
                        FEB 23,73 20:43 -            22:35     1:51   (14497-14498)
                                                                       END OF DATA FOR THIS REEL SEQUENCE NUMBER
                                                                       LAST RECORD TIME IS SAME AS CATALOG END TIME

 PROGRAM READY TO CLOSE ALL FILES
```