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PART 1

EUROPEAN ATOMIC ENERGY COMMUNITY - EURATOM

IBM 1800 PROGRAMS FOR DATA PROCESSING AT THE ACCELERATORS OF THE CENTRAL BUREAU FOR NUCLEAR MEASUREMENTS

PART 1 : OFF-LINE PROGRAMS FOR DATA HANDLING AND REDUCTION

by

H. SCHMID *, H. HORSTMANN * and H. CLAESSENS **

* EURATOM
** IBM BELGIUM

1969

Joint Nuclear Research Center
Geel Establishment - Belgium

Central Bureau for Nuclear Measurements - CBNM

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The program package described contains programs for checking the analyser data on magnetic tape, conversion of analyser spectra (tape to card, printer, and plotter; card to tape and disk; disk to card, printer and plotter), and summing of analyser spectra, especially for data reduction of transmission measurements.

Almost all programs are written in ASSEMBLER language for the Time-Sharing Executive System (TSX).

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ABSTRACT

A set of IBM 1800 programs for data handling and reduction at the Van de Graaff and the electron linear accelerator of the Central Bureau for Nuclear Measurements is described. Most of the data to be processed are neutron cross section data collected in time-of-flight multi-channel analysers. These data are either buffered on magnetic tape (off-line operation) or directly transferred to the computer and stored on disk (on-line operation).

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LINEAR ACCELERATORS
NEUTRONS
CROSS SECTIONS
TIME OF FLIGHT SPECTROMETERS
MAGNETIC TAPES
RECORDING DEVICES

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IBM 1800 PROGRAMS FOR DATA PROCESSING AT THE ACCELERATORS OF THE CENTRAL BUREAU FOR NUCLEAR MEASUREMENTS*)

1. Introduction

This report describes programs for data handling and reduction at the Van de Graaff and the electron linear accelerator of the Central Bureau for Nuclear Measurements (CBNM). The data processing system is based on an IBM 1800 computer (32 K, 2 /usec cycle time) with the following peripheral units: 3 disk drives, 4 magnetic tape units (one for 7 tracks, three for 9 tracks), printer (144 characters/line), card read-punch, and a Calcomp plotter.

Most of the data to be processed are collected in neutron time-of-flight experiments at data acquisition stations equipped with multi-channel analysers (1). These multi-channel analysers are connected to the IBM 1800 computer by interface units (2, 3), initiating interrupts according to various experimental conditions and directing the data transfers from the data acquisition stations to the computer (on-line operation). Correctly transferred data are stored on disk. In case of a computer defect or lack of disk storage the multi-channel analysers can be switched to a magnetic tape unit (7 tracks) as a back-up device for data storage (off-line operation).

This report describes in detail the program for analysing the magnetic tapes of the back-up unit and all programs used for data handling and reduction regardless if the data acquisition is done on-line or off-line. For the interrupt programs for on-line data acquisition and reduction the reader is referred to (4).

In off-line operation data collected in the multi-channel analysers are read out on a seven-track tape in BCD format with a density of 200 characters/inch. These tapes are checked by the IBM 1800 computer for tape errors and a list of identification numbers of the data together with error messages is printed (program TMAPG, cf. 4.01). In many cases the data are transformed to binary format and a new tape (9 tracks) is written to be used for further data reduction.

To facilitate the programming a general format of an analyser spectrum in the computer memory - referred to as "memory format" - has been defined. Section 2 describes the data formats on 7 and 9-track tape, on disk, in core memory, and in binary cards which are used for permanent data storage.

In section 3 all the subroutines are described which are not included in the IBM 1800 library or not yet published in the reports about the IBM 1800 utility programs (5) or about the Calcomp program package (6): mainly subroutines for various data conversions and for the transfer of a spectrum from memory to tape, to disk, to cards, and vice versa. All analyser data are stored as integer binary values in double precision format. In order to have access with FORTRAN programs to the data stored on disk or tape two subroutines FLDSK and FLTPE have been written. These subroutines search the spectra on disk or tape and transform them to FORTRAN arrays of floating point values

*) Manuscript received on 10 September 1969.

in standard precision. The inverse program to FLTPE is FLMET which is used for the transformation of a spectrum in FORTRAN format to memory format and the storage on magnetic tape.

Section 4 describes the main programs. Most of them are conversion programs for multi-channel analyser spectra:

Tape	to	card printer)	.....	program SEART
Tape	to	Calcomp	.....	program ANALT
Card	to	tape	.....	program CATAP
Card	to	disk	.....	program CADSK
Disk	to	card printer)	.....	program SEARD
Disk	to	Calcomp	.....	program ANALD

Programs SEART and SEARD can also be used for summing up single spectra.

Furthermore, analyser spectra can be processed which have been punched into cards (binary and BCD format) by an IBM 1401 computer (precourser of the present computer). Programs OCTAP and OCTA1 perform the transformation of the 1401 data formats to the present tape format.

Program SUMOF is used for specific summing procedures necessary for the data reduction of transmission measurements (cf. 4.10).

Program TBPRT prints a list of the identification numbers of all spectra stored on disk.

All programs are written in ASSEMBLER language except ANALT, ANALD, and TBPRT which are FORTRAN programs. The IBM 1800 computer is operated by the Time Sharing Executive System (TSX).

2. Data Formats

2.01 7-Track Tape Format (Original Analyser Tapes)

The analyser memory of 4096 channels (analyser words) is read out in 16 separately addressed blocks of 256 channels each. Each analyser word consists of 6 decimal digits. The data are stored on magnetic tape (7 tracks, 200 characters/inch, even parity) in the following format: Each block forms a record including a 2-digit block number (from 1 to 16) and a 4-digit identification number. The 4-digit identification number consists (left to right) of a 1-digit 1st experiment number, a 1-digit 2nd experiment number and a 2-digit serial number. The length of the record is therefore 1542 (=6.256+6) characters.

2.02 Format of Spectra in Core Storage ("Memory Format")

Spectra are stored in memory in groups of 4096 channels in the following ascending order:

Words 1-16: 16 identification words (see below)
Words 17-64: 48 words for 24 scalers (double precision integers)
Words 65-8256: 8192 words for 4096 channels (double precision integers).

The spectrum has to start at an even memory address and the two words preceding this address are reserved for the I/O operations (word count, sector address). Spectra with less than 4096 channels (number of blocks < 16) are stored as a complete spectrum of 4 K where the blocks not used contain zeroes.

Identification words

Each spectrum on tape, disk, or in memory is preceded by the following 16 identification words:

1. word: Group number of experiment (= PISW bit number in the on-line case,
   = 1st experiment number in the off-line case)
2. word: 1st experiment No. (1st word equals 2nd word in the off-line case)
3. word: 2nd experiment No. of spectrum
4. word: Serial No. of spectrum
5. word: Group No. of 4096 channels
   0: spectrum < 4 K (not possible on tape)
   1: 1st group of 4096 channels
   2: 2nd group of 4096 channels etc.
6. word: Number of blocks in the spectrum
7. word: Number of first block in the spectrum
8. word: Only used for disk storage (cf. 2.04)
   Occupation indicator:
   1: spectrum occupies 13 sectors
   0: spectrum occupies 26 sectors
9. word: Only used for disk storage (cf. 2.04)
   Overflow indicator:
   1: spectrum with overflow channels
   0: spectrum without overflow channels
10. word: Number of scaler words of 32 bits

11. word: Automatic type (cf. program SUMOF in 4.10)
    0: 4 K standard spectrum (binary format, 1 channel = 2 words)
    1: 4 K partial spectrum of transmission measurement (binary format, 1 channel = 2 words)
    2: 8 K partial spectrum of transmission measurement (binary format, 1 channel = 1 word)
    3: 12 K partial spectrum of transmission measurement (BCD format)
    4: 20 K partial spectrum of transmission measurement (BCD format)
    5: 24 K partial spectrum of transmission measurement (BCD format)
12. word: Number of groups of 4096 channels in the spectrum (0 for spectra < 4 K)
13. word: Sample changer sequence indicator (cf. 4.10 program SUMOF)
14. word:)
15. word:) Not used for off-line operation
16. word:)

2.03 Format of Spectra on 9-Track Magnetic Tape

All spectra are stored in groups of 4096 channels (cf. 2.02), each group in 17 records: 1 identification record + 16 data records. The identification record has a length of 64 computer words (16 words identification + 48 words for scaler data), the data records have a length of 512 computer words each.

2.04 Format of Spectra on Disk

Three data files of variable length for the storage of spectra of 16 blocks, spectra smaller than 16 blocks, and for overflow data, and three identification tables corresponding to the three data files (each 1 sector in length) are provided. Channels with counts greater than 65535 ($=2^{16} - 1$) are so-called overflow channels.

Data File for Spectra of 16 Blocks

Name: SPZNE
Length: About 1430 sectors (= 110 spectra)
This file is composed of 13-sector places which are used in the following way:

1 place of 13 sectors: 1 spectrum of 16 blocks with less than 1921 overflow channels
- 16 words for identification
- 48 words for scaler data
- 4096 words for 4096 channels of analyser data

4160 words = 13 sectors

2 consecutive places of 13 sectors each: 1 spectrum of 16 blocks with more than 1920 overflow channels (1 channel = 2 words on disk).
- 16 words for identification
- 48 words for scaler data
- 8192 words for 4096 channels of analyser data

8256 words = 25 sectors + 256 words

Data File for Spectra Smaller than 16 Blocks

Name: SPZN1
Length: About 40 sectors
The blocks of spectra < 16 blocks are stored in consecutive sectors in the following way:
1 channel = 1 word, if no overflow channels in the spectrum
1 channel = 2 words, if overflow channels in the spectrum.
Each spectrum starts with a new sector.

Data File for Overflow Data

Name: OVZNE
Length: About 100 sectors
Overflow data are stored sectorwise. Each sector contains 160 overflow channels (ascending channel numbers). For each overflow channel two words are used, the first one for the channel number, and the second one for the overflow count (bits 0-15 of a double word). The overflow sectors belonging to one spectrum may be at different positions in the file. In this case the sectors are stored in the order of ascending channel numbers.

Identification Table for Spectra of 16 Blocks

Name: SPTBL
Length: 1 sector
The places of 13 sectors for the storage of 16-block spectra are considered as being numbered from 1 to 110. There is an identification number of 2 words (= 32 bits) for each place of 13 sectors. These identification numbers are stored in the identification table in an one-to-one correspondance with the 13-sector places.
2-word identification number:
Bits 0 - 3: Group number of experiment
4 - 7: 1st experiment number
8 - 11: 2nd experiment number
12 - 19: Serial number of spectrum
20 - 23: Group number of 4096 channels
24 - 27: Occupation indicator
1: Spectrum occupies 13 sectors
0: Spectrum occupies 26 sectors consecutively. In this case the identification numbers for the two places are identical.
28 - 31: Overflow indicator
1: Spectrum with overflow sectors
0: Spectrum without overflow sectors.

Identification Table for Spectra with Less than 16 Blocks

Name: SPTB1
Length: 1 sector
For spectra with less than 16 blocks about 40 sectors are reserved in the corresponding data file. For each sector a 2-word identification number is stored in the identification table. The 2-word identification number is the same as that one for the spectra of 16 blocks except that bit positions 20-23, 24-27, and 28-31 have different meaning:
Bits 20 - 23: Number of 1st block in the spectrum
24 - 27: Occupation indicator
1: 1 channel = 1 word (single precision)
0: 1 channel = 2 words (double precision)
28 - 31: Number of blocks in the spectrum

Identification Table for Overflow Data

Name: OVFTB
Length: 1 sector
For each sector of the overflow data file the identification table contains a 2-word identification number specifying the spectrum to which the sector of overflow data belongs. This 2-word identification number is the same as that one explained in the description of the identification table for spectra of 16 blocks.

2.05 Format of Spectra on Binary Cards

Card 1: Title card (IBM card code)
Card 2: Header card for first block

Col. 1-16:	Low order 12 bits of the binary equivalent of the identification words (col. 8, 9, 14-16 are blank). Maximum value is 4095.
Col. 17-64:	Low order 24 bits of the binary equivalent of the scaler words (each scaler = 2 columns). Negative values are not permitted. Maximum value is $2^{24} - 1 \approx 16.10^6$.
Col. 73-74:	6-digit identification number (2-digit group number of experiment, 1-digit 1st experiment No., 1-digit 2nd experiment number, 2-digit serial number). Each digit is binary coded by 4 bits, 3 digits are punched in one column.
Col. 75-78:	Block number in IBM card code.
Col. 79-80:	Serial card number for each block (IBM card code) beginning with 00.

Card 3: Data Card

Col. 1- 2:	Blank
2-72:	35 channels, each channel 2 columns with a range of -2^{23} to $2^{23} - 1$.
73-80:	See header card.

:
: etc.
Card 10:

Col. 1- 2:	Blank
3-24:	Last 11 channels for this block
73-80:	See header card

Card 11: Header card for following block, etc.

2.06 IBM 1401 Format of 4 K Spectra in Cards (BCD and Binary)

BCD Format

Each card contains the following data:

Col. 1- 2:	Block number
3- 6:	4-digit identification number
8-13:)	
15-20:)	
:)	6-digit data words (8 channels per card)
.)	
57-63)	
77-80:	Channel numbers in steps of 8

Binary Format

The channels are punched consecutively in binary form into cards, each of them in 1 1/2 columns. Therefore, 48 channels can be punched in one card (col. 1-72).
Columns 73-76 contain the 4-digit identification number, columns 77-80 a serial card number (IBM card code).

2.07 IBM 1401 Format of 8 K Spectra (BCD Format Only)

Each card contains the following data:

Col.	1- 2:	Block number
	3- 6:	4-digit identification number
	8-10:	First channel of second group of 4 K
	11-13:	First channel of first group of 4 K
	15-17:	Second channel of second group of 4 K
	18-20:	Second channel of first group of 4 K
	:	
	:	etc.

The maximum count may not be greater than 999.

Col.	77-80:	Channel numbers in steps of 8.

3. Subroutine Set

This section contains the description of the subroutines used in the programs of this report. All subroutines save the three index registers, but do not save accumulator, Q-register and status indicators. In all cases (except for FLTPE, FLDSK, FLMET, TBBL, and EXPAN) the calling sequences differ from the standard method of IBM 1800 FORTRAN. Therefore these subroutines are only to be used by ASSEMBLER written calling programs. The subroutines FLTPE, FLDSK, and FLMET have been written for handling multi-channel analyser data with FORTRAN programs.
Some of the subroutines used in this report are already published:
USER, CDTST, BLANK, MOVE/MOVE1, CHIF (5)
FINIM/FINTR, DESNF, SYMBL, NUMBR, EIFIX (6)

The following subroutines are described:

Utility subroutines:	BNDC/BNDCX
	CDBIN
	MFLT
	MINT
Subroutines for data handling and reduction:	MTAPE
	TAPEM
	BCDBI
	SUMT
	NTEST
	PACK
	CDBIM
	MCDBI
	INTEG
	MPRNT/MPRN1
	OCRDM
	OCRD1
	SPSRC
	DISKM
	MDISK
	FLTPE
	FLDSK
	FLMET
	PROC
	TAPE1
	SUMF/SUMF1
	TBBL
	EXPAN

2.01 Utility Subroutines

BNDC

Entry points with calling sequences:

```
CALL    BNDC                CALL    BNDCX
DC      DEST                DC      DEST
```

Subroutines called by BNDC: BLANK cf. (5)

Core locations used: 160 (AO hexadec.)

Description:

BNDC The double precision integer number in the accumulator and Q-register is converted to printer code and moved to DEST through DEST+4. The positive sign and leading zeroes are suppressed.

BNDCX The contents of index register 1 is added to the address specified by DEST to form the effective address. The execution of BNDCX is as for BNDC.

CDBIN

Entry point with calling sequence:

```
CALL    CDBIN
DC      AREA
```

Subroutines called by CDBIN: MOVE cf. (5)

Core locations used: 184 (B8 hexadec.)

Description:

CDBIN Subroutine CDBIN transform the unsigned 6-digit decimal value in AREA through AREA+5 from card code to binary format. The result is returned as double precision value to the accumulator and Q-register.

MFLT

Entry point with calling sequence:

```
CALL    MFLT
DC      AREA
DC      N
```

Subroutines called by MFLT: none

Core locations used: 78 (4E hexadec.)

Description

MFLT The subroutine substitutes the N double precision integer values in the field starting at AREA by their corresponding floating point values (standard precision).

MINT

Entry point with calling sequence:

```
CALL    MINT
DC      AREA
DC      N
```

Subroutines called by MINT: EIFIX cf. (6)

Core locations used: 46 (2E hexadec.)

Description:

MINT The subroutine substitutes the N floating point values (standard precision) in the field starting at AREA by their corresponding double precision integer values. The floating point values are rounded before conversion.

Bit 12 of word 55 in the level work area is set to 1 if the integer exceeds the maximum ($2^{31}-1$) or the minimum (-2^{31}) value, cf. subroutine EIFIX described in (6).

2.02 Subroutines for Data Handling and Reduction

MTAPE

Entry point with calling sequence:

```
CALL    MTAPE
DC      SPADR
DC      n'          (tape number)
DC      ERRSW
```

Subroutines called by MTAPE: MAGT IBM 1800 library

Core locations used: 84 (54 hexadec.)

Description:

MTAPE Subroutine MTAPE writes a spectrum from memory on magnetic tape (for the formats cf. 2.02 and 2.03) with unit number n. ERRSW is set to a non-zero value if the tape is not ready. SPADR is the start address of the spectrum. Memory location SPADR-1 is used by the execution of MTAPE. The spectrum is not destroyed by MTAPE.

TAPEM

Entry point with calling sequence:

```
CALL    TAPEM
DC      SPADR
DC      ID
DC      n          (tape number)
DC      ERRSW
```

Subroutines called by TAPEM: MAGT, PRNTN, PAUSE (IBM 1800 library); USER cf. (5)

Core locations used: 158 (9E hexadec.)

Description:

TAPEM Subroutine TAPEM searches the spectrum with the identification numbers at ID through ID+4 (first 5 words of the 16 identification words, cf. 2.02) on the magnetic tape with unit number n. The spectrum is searched on tape by starting the read operation at the present position of the tape until an end-of-file mark is detected. Then the tape is rewound and read a second time. When the spectrum has been found ERRSW is set to zero, otherwise ERRSW is set unequal zero. The message "INPUT TAPE ERROR" is printed if the format does not correspond to the 9-track tape format described in 2.03.

BCDBI

Entry point with calling sequence:

```
CALL    BCDBI
DC      AREA1
DC      AREA2
DC      TYPE
```

Subroutines called by BCDBI: none

Core locations used: 138 (8A hexadec.)

Description:

BCDBI AREA1 indicates the start address of an area of 768 words length containing BCD digits packed two per word in bit 4-7 and 12-15. The data in AREA1 are regarded as 256 6-digit decimal numbers when ITYPE = 0 or 1 and as 512 3-digit decimal numbers when ITYPE = 2. These data are transformed to their binary equivalent of double precision if ITYPE = 0 or 1 or of single precision if ITYPE = 2 and stored in AREA2 through AREA2+511. The input data should be tested previously by NTEST for valid BCD digits and for changing the BCD representation of zero as a binary zero (cf. NTEST).

Furthermore, the second parameter is incremented by 512 so that it contains the address + 1 of the end of the output area after the execution of BCDBI.

SUMT

Entry point with calling sequence:

```
CALL    SUMT
DC      SUM
DC      AREA
DC      TYPE
```

Subroutines called by SUMT: none

Core locations used: 122 (7A hexadec.)

Description:

SUMT The subroutine calculates the sum over all channels of the data stored in AREA through AREA+8191 and moves it to SUM and SUM+1 as a double precision value. TYPE determines the type of spectrum stored in AREA through AREA+8191:

TYPE = 0 or 1 .... 4 K spectrum
= 2 .... 8 K "
= 3 ....12 K "
= 4 ....20 K "
= 5 ....24 K "

If an overflow occurs which is only possible for 4 K spectra a zero value is returned as sum.

NTEST

Entry point with calling sequence:

```
CALL    NTEST
DC      AREA
DC      ERRSW
```

Subroutine called by NTEST: none

Core locations used: 72 (46 hexadec.)

Description:

NTEST Subroutine NTEST tests the area at AREA through AREA+770 for valid BCD digits. It sets ERRSW = 0 if all digits are valid, otherwise ERRSW is set unequal zero. In this case unvalid characters are replaced by arbitrary valid BCD digits. Furthermore, the BCD value of zero which is a hexadecimal A is replaced by a binary 0.

The length of AREA is 771 computer words containing (256+1).6 BCD digits, packed two per word in bit 4-7 and 12-15.

PACK

Entry point with calling sequence:

```
CALL    PACK
DC      AREA1
DC      AREA2
```

Subroutines called by PACK: none

Core locations used: 60 (3C hexadec.)

Description:

PACK The input area starting at location AREA1 with a length of 768 computer words is supposed to contain 1536 BCD digits packed two per word. These digits are transformed to a new format starting at location AREA2 with a length of 512 computer words, where three digits are stored in one word:

input format	output format
0123456789012345	0123456789012345
0000xxxx0000xxxx	00xxxx0xxxx0xxxx
1. digit 2. digit	1. digit 2. digit 3. digit

CDBIM

Entry point with calling sequence:

```
CALL    CDBIM
DC      SPADR
DC      TITLE
DC      END
```

Subroutines called by CDBIM:

CARDN, PRNTN, PAUSE — IBM 1800 library

BLANK, MOVE — cf. (5)

BNDC

Core locations used: 522 (2AO hexadec.)

Description:

CDBIM Subroutine CDBIM reads a spectrum from binary cards, (for format cf. 2.05) controls the sequence of cards and the completeness of the spectrum, and stores the title card in card code in the field TITLE through TITLE+79 and the spectrum in the area starting at SPADR. Indicator END is set unequal zero if instead of a spectrum the card *END in column 1-4 has been read. Otherwise END is set to zero.

If an error of the input deck is detected a message is printed and the program waits. Execution is to be restarted with the block indicated in the error message.

MCDBI

Entry point with calling sequence:

```
CALL    MCDBI
DC      SPADR
DC      B1
DC      B2
DC      TITLE
```

Subroutines called by MCDBI:

BINDC, CARDN	IBM 1800 library
MOVE, CDTST	cf. (5)

Core locations used: 434 (1B2 hexadec.)

Description:

MCDBI Subroutine MCDBI punches the spectrum in SPADR from block B1 to B2 into cards (for format cf. 2.05). TITLE is the start address of a field of 80 characters containing an arbitrary title of the spectrum in card code. A block is a group of 256 channels.

For spectra smaller than 4 K an error message is printed if the block numbers B1 and/or B2 are outside the range of the existing blocks in this spectrum. Only the existing blocks of the spectrum are punched.

INTEG

Entry point with calling sequence:

```
CALL    INTEG
DC      SPADR
DC      B1
DC      B2
DC      OVFLW
```

Subroutines called by INTEG: PRNTN IBM 1800 library

Core locations used: 176 (B0 hexadec.)

Description:

INTEG Subroutine INTEG calculates the integral spectrum between block B1 and B2 and replaces the original spectrum by the integrated one:

$$\overline{c_i} = \sum_{j=1}^{i} c_j$$

where c_j = channel count of channel j in the original spectrum

$\overline{c_i}$ = channel count of channel i in the integrated spectrum

For spectra smaller than 4 K an error message is printed if the block numbers B1 and/or B2 are outside the range of the existing blocks in this spectrum. Only the existing blocks of the spectrum are integrated.

MPRNT

Entry points with calling sequences:

CALL	MPRNT	CALL	MPRN1
DC	SPADR	DC	SPADR
DC	B1	DC	B1
DC	B2	DC	B2
DC	TITLE	DC	TITLE

Subroutines called by MPRNT:

PRNTN, HOLPR) IBM 1800 library

BLANK, CHIF) cf. (5)

BNDC/BNDCX

Core locations used: 828 (33C hexadec.)

Description:

The subroutine prints a spectrum starting at address SPADR from block B1 to block B2.
For spectra smaller than 4 K an error message is printed if the block numbers B1 and/or B2 are outside the range of the existing blocks in this spectrum. Only the existing blocks of the spectrum are printed.

MPRNT The output format is 16 channels per line with a field length of 8 positions per channel.

MPRN1 The output format is 8 channels per line with a field length of 11 positions per channel. This format is used for printing an integral spectrum.

The channels may contain positive and negative values.

OCRDM

Entry point with calling sequence:

```
CALL    OCRDM
DC      SPADR
DC      TITLE
DC      END
```

Subroutines called by OCRDM:

CARDN, PRNTN, PAUSE) IBM 1800 library

MOVE cf. (5)

CDBIN
BNDC

Core locations used: 710 (2C6 hexadec.)

Description:

OCRDM The subroutine reads a spectrum from cards (binary or BCD) which have been punched by an IBM 1401 computer, the precourser of the present computer. If instead of a spectrum the *END in column 1-4 has been read, indicator END is set unequal zero, otherwise it is set to zero.
The subroutine requires the following input cards:

1. card col. 1-80 Title, will be stored in TITLE through TITLE+79 (IBM card code)
2. card col. 1-3 Blank
   4-5 Number of blocks, may be greater than 16
   6 Blank for a spectrum punched in binary format, not blank for a spectrum punched in BCD format.
3. Data cards in BCD or binary format (cf. 2.06). In the last case the cards must be read with 12 edge face down to prevent a //blank condition.

The input cards are checked for card order errors and missing block number card. Each spectrum is supposed to start with block number 1. For spectra greater than 4 K subroutine OCRDM has to be called several times to read the total spectrum. With each single call only 4096 channels are read and transferred. In this case title card and block number card must not be repeated in the input deck.

The 4-digit identification number is completed as in program TMAPG.

OCRD1

Entry point with calling sequence:

```
CALL    OCRD1
DC      SPAD1
DC      SPAD2
DC      TITLE
DC      END
```

Subroutines called by OCRD1:

CARDN, PRNTN, PAUSE, DCBIN) IBM 1800 library

MOVE cf. (5)

BNDC

Core locations used: 586 (24A hexadec.)

Description:

OCRD1 Subroutine OCRD1 reads data from BCD cards containing the spectra (cf. 2.07). The spectrum defined by the 3 right-most digits of the 6-digit input word is stored in SPAD1, the spectrum defined by the 3 left-most digits is SPAD2. SPAD1 gets the identification words given in the BCD cards (serial number should be $\leq$ 98), SPAD2 gets the same identification words except that the serial number is incremented by 1.

The card input is as for subroutine OCRDM, but only BCD cards are accepted. END is set unequal zero if a card *END has been read.

SPSRC

Entry point with calling sequence:

CALL	SPSRC	with	ID	BSS		16
DC	ID		BUF	BSS	E	324
DC	BUF		TABNR	DC		1, 2 or 3
DC	TABNR		NRENT	BSS		12
DC	NRENT			DC		-1
DC	ERRSW		ERRSW	DC		*-*
DC	SWITC		SWITC	DC		0 or 1

Subroutines called by SPSRC: DISKN IBM 1800 library

MOVE1 cf. (5)

Data files used: SPTBL, OVFTB, SPTB1 cf. 2.04

Core locations used: 182 (B6 hexadec.)

Description:

SPSRC Subroutine SPSRC searches identification numbers in the disk tables SPTBL, OVFTB or SPTB1 depending on TABNR.
For TABNR = 1 a search is performed in table SPTBL,
= 2 " OVTBL,
= 3 " SPTB1.
The identification number to be searched is found in the first 5 positions of a field of 16 words starting at ID. The fifth word contains the group number of 4 K for a 4 K spectrum or the number of the first block for a spectrum smaller than 4 K (TABNR = 2).
If no entry for this identification number is found ERRSW is set to 6.
If one or more entries are found ERRSW is set to zero and the entry numbers are stored in the area starting at NRENT. The maximum number of entries is 12 for one identification number, which is only possible for a spectrum smaller than 4 K stored in double precision.
Table NRENT must be followed by a negative constant.

The area ID through ID+15 is filled up by SPSRC in the following way: Occupation and overflow indicator are stored in word 8 and 9. For spectra smaller than 4 K word 5 is set to zero and the number of the first block is stored in word 6.

An entry in one of the disk tables SPTBL, OVTBL, or SPTB1 has the following format, a double word being used for each entry (cf. 2.04):

P Q R S S N O V

where each character means a hexadecimal digit:

P ... group number of experiment
Q ... 1st experiment number
R ... 2nd experiment number
SS .. serial number of the spectrum
N ... group number of 4 K for SPTBL and OVTBL or number of first block for SPTB1
O ... occupation indicator
V ... overflow indicator

DISKM

Entry point with calling sequence:

```
CALL    DISKM     with          BSS   E  2
DC      SPADR           SPADR   BSS   E  8256
DC      ERRSW           BUF     BSS   E  324
DC      BUF             ID      BSS      5
DC      ID              SWITC   DC       0 or 1
DC      SWITC           ERRSW   DC       *-*
```

Subroutines called by DISKM: DISKN IBM 1800 library

MOVE/MOVE1 cf. (5)

SPSRC

Data files used: ERFIL

SPZNE, OVZNE, SPZN1 cf. 2.04

Core locations used: 374 (176 hexadec.)

Description:

DISKM Subroutine DISKM seraches the spectrum identified by the 5 identification numbers at ID through ID+4 on disk and stores it in the area starting at SPADR. ERRSW is an indicator which is set to zero if the spectrum has been found, otherwise it is set to 6. SWITC is an input parameter which causes the spectrum to be deleted on disk if it is 1. For SWITC = 0 the spectrum is not deleted by the execution of DISKM. BUF is the start address of a field of 324 words used as input buffer. SPADR-1 and SPADR-2 will be destroyed by DISKM. BUF and SPADR must be even addresses. Because DISKM is used by interrupts and nonprocess programs, it masks all out-of-core interrupt to make sure that the data files on disk are not modified during the execution of DISKM.

ERFIL is a data file of 1 sector which contains information about the status of execution of DISKM. This information may be helpful in case of computer breakdown.

MDISK

Entry point with calling sequence:

```
CALL    MDISK     with          BSS   E  2
DC      SPADR           SPADR   BSS   E  8256
DC      ERRSW           BUF     BSS   E  646
DC      BUF             ADR     BSS      3
DC      ADR             ERRSW   DC       *-*
```

Subroutines called by MDISK: DISKN IBM 1800 library

MOVE/MOVE1 cf. (5)

Data files used: ERFIL cf. DISKM

SPTBL, OVFTB, OVZNE, SPZNE, SPZN1, SPTB1 cf. 2.04

Core locations used: 816 (330 hexadec.)

Description:

MDISK Subroutine MDISK stores on disk a spectrum starting at the even address SPADR. SPADR must be preceded by two words needed for the execution of MDISK. BUF is the even address of a field of 646 words used as buffer for reading the different tables. ERRSW is set by the subroutine MDISK indicating the different error conditions:

ERRSW = 0 Spectrum has been stored.
= 1 No place for a 4 K spectrum to be stored in single precision (table SPTBL).
= 2 No place for a 4 K spectrum to be stored in double precision (table SPTBL).
= 3 No place for a spectrum smaller than 4 K (table SPTB1).
= 4 No place for overflow channels (table OVFTB).
= 5 The same identification number has already been stored on disk.
The same identification number can never be stored twice.

ADR is the start address of 3 memory locations which are set by DISKM in the following way regardless if the spectrum has been stored or not.

ADR	contains the remaining free entries	in SPTBL
ADR+1	"	in SPTB1
ADR+2	"	in OVFTB

Note: For spectra smaller than 4 K overflow sectors are not used. If there is at least one overflow channel the total spectrum is stored in double precision.

The spectrum in memory is destroyed by the execution of MDISK.

FLTPE

Entry point with calling sequence:

```
*ONE WORD INTEGERS
   DIMENSION ID(5), SPECT(4129), SCAL(24), IDSPC(16)
   EQUIVALENCE (SPECT(4097), SCAL(1)), (SPECT(4121), IDSPC(2))
                    (equivalence card is optional)
   CALL FLTPE (ID, SPECT, SCAL, IDSPC, NR)
```

Subroutines called by FLTPE:

PAUSE, PRNTN) IBM 1800 library

MOVE cf. (5)

MFLT

TAPEM

Core locations used: 238 (CE hexadec.)

Description:

FLTPE The subroutine searches a spectrum identified by
ID(1) .... Group No. of the spectrum
ID(2) .... 1st experiment No.
ID(3) .... 2nd experiment No.
ID(4) .... Serial number of spectrum
ID(5) .... Group No. of 4 K
on the magnetic tape with unit number NR and puts the data in FORTRAN order and floating point format in SPECT(1) to SPECT(4096), the scaler data in SCAL(1) to SCAL(24) and the identification numbers in IDSPC(1) to IDSPC(16). If the spectrum cannot be found a message is given and the program waits. The operator then has the possibility to change the magnetic tape. By pressing START a new search is tried with the same ID-number.
SPECT and SCAL are floating point arrays in STANDARD PRECISION.

Note: The *ONE WORD INTEGERS control card must be used.

FLDSK

Entry point with calling sequence:

```
*ONE WORD INTEGERS
   DIMENSION ID(5), SPECT(4129), SCAL(24), IDSPC(16)
   EQUIVALENCE (SPECT(4097), SCAL(1)), (SPECT(4121), IDSPC(2))
                        (equivalence card is optional)
   CALL FLDSK (ID, SPECT, SCAL, IDSPC)
```

Subroutines called by FLDSK:

PRNTN, EXIT	IBM 1800 library
MOVE	cf. (5)
MFLT	
DISKM	

Core locations used: 526 (20E hexadec.)

Description:

FLDSK The subroutine searches the spectrum identified by ID(1) to ID(5) (see subroutine FLTPE) on disk and puts the data in FORTRAN order and floating point format in SPECT(1) to SPECT(4096), the scaler data in SCAL(1) to SCAL(24) and the identification numbers in IDSPC(1) to IDSPC(16). If the spectrum cannot be found a message is printed and the job is finished.
SPECT and SCAL are floating point arrays in STANDARD PRECISION.

Note: The *ONE WORD INTEGERS control card must be used.

FLMET

Entry point with calling sequence:

```
*ONE WORD INTEGERS
   DIMENSION SPECT(4129), SCAL(24), IDSPC(16)
   EQUIVALENCE (SPECT(4097), SCAL(1)), (SPECT(4121), IDSPC(2))
                        (equivalence card is optional)
   CALL FLMET (SPECT, SCAL, IDSPC, NR)
```

Subroutines called by FLMET:

PRNTN, PAUSE	IBM 1800 library
MOVE	cf. (5)
MINT, MTAPE	

Core locations used: 152 (98 hexadec.)

Description:

FLMET The subroutine transforms the spectrum defined by the arrays IDSPC, SCAL and SPECT to memory format and stores it on magnetic tape with unit number NR. If the tape is not ready a message is printed and the program waits. The operator then has the possibility to ready the tape.

PROC

Entry point with calling sequence:

```
CALL    PROCT          CALL    PROC1
DC      PERC
```

Subroutine called by PROC: none

Core locations used: 28 (1C hexadec.)

Description:

PROC Subroutine PROC is called by program SUMOF (cf. 4. 10) and contains the error limit for the check of the in-out ratio (floating point value in standard precision, $\leq$ 1.).

PROC1 Entry point PROC1 is used for transformation of the 2nd experiment numbers of the tape spectra (read by TAPE1) to those required by SUMF (via index register 2).

TAPE1

Entry point with calling sequence:

```
CALL    TAPE1
DC      SPADR
DC      GRNR
DC      n          tape number
DC      EOF
DC      RNBAD
DC      RNEW
```

Subroutines called by TAPE1:

PRNTN, MAGT) IBM 1800 library

CHIF, USER) cf. (5)

BNDC

PROC1

Core locations used: 232 (E8 hexadec.)

Description:

TAPE1 Subroutine TAPE1 reads the next following spectrum with group number of experiment GRNR from magnetic tape (unit number n) into the area starting at SPADR. Spectra with other group numbers than GRNR are automatically skipped.
RNBAD is the start address of a table containing in the first word the number of sequences to be suppressed and in the following words the serial numbers of these sequences. This is a possibility to suppress spectra which for one reason or another should not be summed up.
All spectra transferred to the calling program (SUMOF) are given the same serial number (RNEW).
Furthermore the 2nd experiment numbers are changed according to subroutine PROC1.
When an end-of-file mark is detected EOF is set unequal zero.

SUMF

Entry point with calling sequences:

CALL	SUMF	CALL	SUMF1
DC	PERC	DC	ID

Subroutines called by SUMF:

DISKN	)
PRNTN	)
FLD/FSTO	)
FDIV	) IBM 1800 library
FADD/FSUB	)
FMPY	)
BINDC	)
HOLPR	)
EXIT	)
MDISK	
SUMT	
MFLT	
DISKM	

Data files used:

INSU1
SAVS1
CONS1

Core locations used:

Description:

SUMF This subroutine is especially used for data reduction of transmission experiments. Spectra of 4 K or 8 K channels and for 3 different sample changer sequences can be processed (cf. 2.02, word 13 of identification number):
Sample changer sequence indicator 1:
4 run types
sample-in (2nd experiment number = 1)
sample-out (2nd experiment number = 2)
two background runs (2nd experiment number = 3 and 4)
Sample changer sequence indicator 2:
3 run types (sample-in, sample-out, background)
Sample changer sequence indicator 3:
2 run types (sample-in, sample-out)
Only one type of spectra (4 K or 8 K as specified by word 11 of the identification number, cf. 2.02) for only one sample changer sequence indicator can be handled in one execution of program SUMOF.

The spectra for the different run types of the selected sample changer sequence indicator are summed up separately. In this summation procedure it is checked if the run types follow each other in a correct sequence or not. In case of sequence errors the corresponding run types are suppressed. In the summation procedure it is also checked if the ratio of the total count of a sample-in run to the total count of the corresponding sample-out run agrees within a preset error limit (cf. PROC) with a reference value or not. In case of disagreement the corresponding run types are suppressed. The reference value for this check is calculated from the first 20 sequences (which of course are summed up without this check).

Subroutine SUMF assumes a spectrum of transmission measurements in core locations 24512 to 32767. PERC addresses a floating point number in standard precision specifying the error limit for the check of the in-out-ratio ($0 < r \leq 1$). The data file INSU1 has a length of 104 sectors (storage for four 4 K spectra in double precision or four 8 K spectra in single precision). INSU1 is used for storage of spectra for one complete sample changer sequence. Data file SAVS1 is used for intermediate storage of one spectrum in double precision (26 sectors).
Data file CONS1 (1 sector) contains control information which allow the user to perform the summation in several jobs.
The result spectra of the summing procedure are stored by subroutine MDISK using the data files described in 2.04.

SUMF1 Entry point SUMF1 is used at the end of the summation procedure to transfer the identification number of the result spectra to the main program SUMOF. Furthermore, SUMF1 lists the numbers of correct and incorrect sample changer sequences during the summation procedure.

EXPAN

Entry point with calling sequence:

```
CALL    EXPAN       with    A    DC    ID1
DC      A                        DC    ID2
DC      B                   B    BSS   7
```

Subroutines called by EXPAN: none

Core locations used: 46 (2E hexadec.)

Description:

EXPAN Subroutine EXPAN expands the packed identification number (2.04) in ID1 and ID2 into 7 computer words starting at B.

TBBL

Entry point with calling sequence:

```
CALL    TBBL
DC      I
DC      N
```

Subroutines called by TBBL: none

Core locations used: 40 (28 hexadec.)

Description:

TBBL Subroutine TBBL determines the number of entries in table SPTBL if I = 1
in table OVFTB if I = 2
in table SPTB1 if I = 3
and stores it in N.

4. Description of the Programs for Data Handling and Reduction

4.01 Tape-Map-Program for Multi-Channel Analyser Data (TMAPG)

Control Card Format:

1. card	col.	1- 2	**
		3	Input tape unit number (0, 1, 2, or 3)
		11-15	Label of 1st input tape
		17-21	Label of 2nd input tape
			etc. (max. 10 reels)
		71-80	Blank
2. card	col.	1- 2	**
		3	Output tape unit number (0, 1, 2, or 3)
		11-15	Label of output tape
3. card	col.	1	*
		2	First experiment number of spectra to be treated by program SUMOF (cf. 4.10), or blank otherwise.
		5	Automatic type of these spectra (cf. 2.02) or blank if col. 2 is blank.
		7	Sample changer sequence indicator for these spectra or blank if col. 2 is blank.
4. card	col.	1-80	Title for first input tape, will be headed on the listing.
5. card	col.	1-80	Title for second input tape, etc.

I/O Devices

1. Two magnetic tape units (one at least with 7 tracks)
2. 1443 printer
3. 1442 card read-punch

Subroutines called by TMAPG:

PRNTN, CARDN, PAUSE, HOLPR, MAGT, EXIT — IBM 1800 library

PAGE/BLANK, CHIF, USER, MOVE — cf. (5)

NTEST, SUMT, MTAPE, BNDC, PACK, BCDBI — cf. (3)

Halts and Error Messages:

1. END OF FILE. MOUNT TAPE XXXX. START
2. ERROR CONTROL CARD. START AGAIN.
   Correct the card and start again reading all cards.
3. TAPE ERROR IN BLOCK XX.
4. BLOCK XX TOO SHORT.
5. BLOCK XX TOO LONG.
6. OUTPUT TAPE NOT READY.
7. ERROR IN BLOCK NUMBERS.
8. INVALID NUMBERS IN BLOCK XX.
9. END OF FILE.

Description of TMAPG:

Program TMAPG checks the tapes with multi-channel analyser data which have been collected in off-line operation. The program starts by reading the input cards defining the tape unit numbers for input and output tapes (0, 1, 2, or 3) and specifying the necessary parameters for spectra which are to be treated with program SUMOF. Then it reads the input tape (for format cf. 2.01) and checks for tape errors (parity check), for correct record length, correct block numbering and for valid BCD digits. If errors are detected a message is printed and an automatic correction is performed. All data which are not to be treated by program SUMOF are transformed to binary double precision values. Data which are to be treated by program SUMOF are transformed to binary or packed BCD format depending on the specification for the automatic type. These spectra receive new serial numbers starting with 1 in order to avoid equal identification numbers on the output tape.

Data collected in on-line operation of the multi-channel analysers contain some additional information such as the group number of the experiment and the scaler data. For compatibility with these on-line collected data the group number of the experiment is simulated by repeating the 1st experiment number. Scaler data are also simulated (zeroes) except for the second scaler which contains the calculated total count of the spectrum, if the original spectrum has no errors, otherwise the second scaler is set to -1.

The spectra are stored in core storage in "memory format" and then written on a 9-track magnetic tape. A listing of all identification numbers and error messages is printed.

The number of input tapes is determined by the number of labels on control card 1 (max. 10). A blank label is not permitted. Each reel may contain only one file of data (one end-of-file mark).

The output tape is written in the standard data format for 9-track tapes (cf. 2.03) to be used as input tape for further data reduction.

4.02 Tape Search Program (SEART)

Control Card Format

1. card	col. 1-2	**	
	3	Input tape unit number (0, 1, 2 or 3)	
2. card	col. 1-2	**	
	3	Output tape unit number (0, 1, 2, or 3) or blank if no output tape is used.	
3. card (spectrum card)			
	col. 1	*	
	3	L	List of data to be printed.
		blank	No list of data to be printed.
	5	C	Binary cards to be punched (blank cards must follow this card).
		blank	No binary cards to be punched.
	7	T	The spectrum is written on the output tape.
		blank	No tape copy is performed.
	9	I	The integegral spectrum is printed.
		blank	No integration is performed.
	10	blank	The spectrum is treated as a single spectrum.
		+ or -	The spectrum is added or subtracted from a sum spectrum which is zero at the beginning of SEART.
		*	No spectrum is searched on tape but the sum area receives the identification number given in col. 11-17 and is handled as specified in col. 3-9. After execution the sum area is set to zero.
	11-12	Group number of spectrum	
	13	. (period)	
	14	1st experiment number	
	15	2nd experiment number	
	16-17	Serial number	
	19-22	First block of the spectrum	
	23-24	Number of blocks	
	26-29	New identification number to be written on the tape copy or punched into the binary cards. 4 positions are provided because only the 1st and 2nd experiment numbers and the serial number may be changed. If blank the identification number will not be changed.	
	31-72	Remarks, will be headed on the output listing and punched as title into the binary cards.	
For each spectrum a card No. 3 is necessary.			
Last card: col. 1-4		*END	

I/O Devices:

1. One or two magnetic tape units
2. 1443 printer
3. 1442 card read-punch

Subroutines called by SEART:

PRNTN, CARDN, PAUSE, HOLPR, MAGT, EXIT, HOLEB	IBM 1800 library
BLANK, MOVE, CDTST	cf. (5)
INTEG, TAPEM, MPRNT/MPRN1, MCDBI, MTAPE	cf. 3.

Halts and Error Messages:

1. ERROR INPUT CARD. CORRECT AND START WITH THIS CARD. If there is an error in the tape cards (card 1 and 2) these cards must be read again; if there is an error in a spectrum card the program has to be restarted with this card.
2. SPECTRUM NOT FOUND ON INPUT TAPE. Then message 1 is printed.
3. OUTPUT TAPE NOT READY. CORRECT AND PRESS START.
4. INTEGRAL SPECTRUM and
   INTEGRAL SPECTRUM - OVERFLOW IS ON.
5. INPUT TAPE ERROR.
   This message occurs when the input tape does not correspond to the 9-track tape format described in 2.03.
6. LAST BLOCK NUMBER SMALLER THAN FIRST ONE FOR SPECTRUM XX.XXXX. Then message 1 is printed.
7. ID-NUMBER XX.XXXX HAS BEEN CHANGED TO XX.XXXX.
8. FIRST AND LAST BLOCK NUMBER DO NOT BELONG TO THE SAME GROUP OF 4 K. This message occurs only if the + - * option is used.
9. BLANK CARDS NEEDED.
10. LOWER BLOCK NUMBER HAS BEEN CORRECTED.
11. UPPER BLOCK NUMBER HAS BEEN CORRECTED.
12. END PROGRAM SEART.

Description of SEART:

Program SEART serves as an output program for data stored on magnetic tape. Tape copy, listing, integral listing, binary cards of single spectra or of sums or differences of two or more spectra can be performed. The program reads and checks the first two control cards containing the tape specifications. Then it reads a spectrum card, searches the spectrum on tape, and performs the

functions defined in col. 3-10. If the sum or difference of single spectra are to be calculated only groups of 4 K can be handled.

If the integral spectrum is to be calculated and the spectrum is greater than 4 K each group of 4 K is treated separately in order to avoid an overflow condition.

For each spectrum a spectrum card must be specified, followed by blank cards if the C option is used.

4.03 Calcomp Plotting of Multi-Channel Analyser Data Stored on Tape (ANALT)

Control Card Format:

1. card	col.	1-2	**
		3	Input tape unit number (0, 1, 2, or 3)
2. card	col.	1-2	**
		3	Output tape unit number for Calomp (0, 1, 2, or 3). Card 2 is not used for direct on-line operation of the Calcomp (cf. (6)).
3. card (spectrum card)			
	col.	11-12	Group number of experiment
		13	. (period)
		14	1st experiment number
		15	2nd experiment number
		16-17	Serial number
		19-22	Number of first block
		23-24	Number of blocks
		31-40	Length of x-axis (floating point value) in cm, if blank the program assumes 100 cm.
		41-50	Length of y-axis (floating point value) in cm, if blank the program assumes 25 cm.
		51-60	Maximum count (floating point value). All counts greater than the maximum count are replaced by this limit. If blank the program assumes 10^{20}.

For each spectrum a card 3 is necessary.

4. Last card

col.	1	1

I/O Devices:

1. Two magnetic tape units (one for analyser data, one for Calcomp data)
2. Calcomp plotter
3. 1443 printer
4. 1442 card read-punch

Subroutines called by ANALT: Subroutines of the IBM 1800 library

FINIM/FINTR DESNF SYMBL NUMBR	cf. (6)
FLTPE	cf. 3.
CHAN	see below

Subroutine CHAN is used to calculate the x-coordinate (channel numbers) of the plot (the listing of CHAN follows the listing of ANALT).

Halts and Error Messages:

1. INPUT CARD IN ERROR. GO TO NEXT SPECTRUM.
2. SPECTRUM NOT FOUND ON INPUT TAPE. CHANGE TAPE.
3. END PLOTTING ANALYSER DATA.

Description of ANALT:

Program ANALT searches spectra on magnetic tape and plots the channel counts against the channel numbers on the Calcomp plotter. The lengths of the x-axis and the y-axis are given as input data. Spectra must be plotted in groups of 4 K channels.

4.04 Card to Tape Program (CATAP)

Card Input

1. card col. 1-2 **
   3 Output tape unit number (0, 1, 2, or 3)
2. Spectra in binary card format (cf. 2.05)
3. Last card
   col. 1-4 *END

I/O Devices:

1. Magnetic tape unit
2. 1443 printer
3. 1442 card read-punch

Subroutines called by CATAP:

MAGT, CARDN, PRNTN, PAUSE, HOLPR, EXIT	IBM 1800 library
BLANK, CHIF	cf. (5)
CDBIM, MTAPE, BNDC	cf. 3.

Halts and Error Messages:

1. ERROR TAPE CARD. CORRECT AND CONTINUE.
2. TAPE NOT READY. CORRECT AND START.
3. END PROGRAM CATAP.
4. SPECTRUM NOT COMPLETE. CORRECT AND CONTINUE WITH BLOCK XXXX.
5. ERROR IN HEADER CARD. CORRECT AND CONTINUE WITH BLOCK XXXX.
6. BLOCK NUMBER ERROR. CORRECT AND CONTINUE WITH BLOCK XXXX.
7. CARD ORDER ERROR. CORRECT AND CONTINUE WITH BLOCK XXXX.
8. IDENTIFICATION ERROR. CORRECT AND CONTINUE WITH BLOCK XXXX.

Description of CATAP:

Program CATAP reads a spectrum from binary cards, transforms it to "memory format" and writes it on magnetic tape. This tape may be used as input tape for program SEART or ANALT. The *END card causes an end-of-file mark to be written. A list of the identification numbers is written on the 1443 printer.

4.05 Card to Disk Program (CADSK)

Card Input:

1. Spectra in binary card format (cf. 2.05)
2. Last card: col. 1-4 *END

I/O Devices:

1. 2310 disk with data files:

SPTBL, OVFTB, SPTB1, SPZNE, OVZNE, SPZN1	cf. 2.04
ERFIL	cf. MDISK

2. 1443 printer
3. 1442 card read-punch

Subroutines called by CADSK:

PRNTN, HOLPR, EXIT	IBM 1800 library
BLANK, CHIF	cf. (5)
CDBIM, MDISK, BNDC	cf. 3.

Halts and Error Messages:

1. ID-NUMBER XX.XXXX ALREADY STORED ON DISK. SPECTRUM WILL NOT BE STORED.
2. END PROGRAM CADSK.
3. SPECTRUM NOT COMPLETE. CORRECT AND CONTINUE WITH BLOCK XXXX.
4. ERROR IN HEADER CARD. CORRECT AND CONTINUE WITH BLOCK XXXX.
5. BLOCK NUMBER ERROR. CORRECT AND CONTINUE WITH BLOCK XXXX.
6. CARD ORDER ERROR. CORRECT AND CONTINUE WITH BLOCK XXXX.
7. IDENTIFICATION ERROR. CORRECT AND CONTINUE WITH BLOCK XXXX.

Description of CADSK:

Program CADSK reads a spectrum from binary cards, transforms it to "Memory format", and stores it on disk. The card *END finishes the job. A list of the identification numbers is printed on the 1443 printer.

4.06 Card to Tape Program (OCTAP)

Card Input:

1. card col. 1-2 **
   3 Output tape unit number (0, 1, 2, or 3)
2. Spectra in binary or BCD format punched by an IBM 1401 computer. For each spectrum the following cards are necessary:
   - Title card for spectrum
   - Block number card
     col. 1-3 blank
     4-5 Number of blocks
     6 Blank for binary format
     * for BCD format
   - Data cards, must be read with 12 edge face down if format is binary.
3. Last card
   col. 1-4 *END

I/O Devices:

1. Magnetic tape unit
2. 1443 printer
3. 1442 card read-punch

Subroutines called by CATAP:

CARDN, PRNTN, PAUSE, HOLPR, MAGT, EXIT	IBM 1800 library
BLANK, CHIF	cf. (5)
OCRDM, MTAPE, BNDC	cf. 3.

Halts and Error Messages:

1. ERROR TAPE CARD. CORRECT AND CONTINUE.
2. TAPE NOT READY. CORRECT AND START.
3. END PROGRAM OCTAP.
4. CONTROL CARD FOR NUMBER OF BLOCKS MISSING. CORRECT AND CONTINUE.
5. CARD ORDER ERROR. CORRECT AND START WITH CARD NO. XXXX.
6. SPECTRUM NOT COMPLETE. CORRECT AND CONTINUE WITH CARD NO. XXXX.

Description of OCTAP:

Program OCTAP reads spectra with multi-channel analyser data from cards which have been punched by an IBM 1401 computer, the precourser of the present computer (cf. 2.06). When the format is binary the cards have to be read with 12 edge face down to prevent a //blank condition. The data are transformed to binary format and written on magnetic tape. When an *END card has been read an end-of-file mark is written on tape and the job is finished.

4.07 Card to Tape Program (OCTA1)

Card Input:

1. Card col. 1-2 **
   3 Output tape unit number (0, 1, 2, or 3)
2. Data in BCD format containing two spectra (cf. 2.07)
   - Title card
   - Block number card
     col. 1-3 blank
     4-5 Number of blocks
   - BCD data cards
3. Last card
   col. 1-4 *END

I/O Devices:

1. Magnetic tape
2. 1443 printer
3. 1442 card read-punch

Subroutines called by OCTA1:

CARDN, PRNTN, PAUSE, MAGT, EXIT, HOLPR	IBM 1800 library
BLANK, CHIF	cf. (5)
OCRD1, MTAPE, BNDC	cf. 3.

Halts and Error Messages:

1. ERROR TAPE CARD. CORRECT AND CONTINUE.
2. TAPE NOT READY. CORRECT AND CONTINUE.
3. END PROGRAM OCTA1.
4. CONTROL CARD FOR NUMBER OF BLOCKS MISSING. CORRECT AND CONTINUE.
5. CARD ORDER ERROR. CORRECT AND START WITH CARD NO. XXXX.
6. SPECTRUM NOT COMPLETE. CORRECT AND CONTINUE WITH CARD NO. XXXX.

Description of OCTA1:

Program OCTA1 reads spectra with multi-channel analyser data from BCD cards (cf. 2.07) containing two spectra. The spectrum defined by the 3 right-most digits of each 6-digit input word is stored on tape with the identification number given in the BCD cards (serial number should be ≤ 98). The 3 left-most digits define the second spectrum which will be stored on tape with the same identification number except that the serial number is incremented by 1. When an *END card has been read an end-of-file mark is written on tape and the job is finished.

4.08 Disk Search Program (SEARD)

Control Card Format:

1. Spectrum card: col.	1	*	
	3	L	List of data to be printed.
		blank	No list of data to be printed.
	5	C	Binary cards to be punched.
		blank	No binary cards to be punched.
	7	D	The spectrum is written on disk.
		blank	The spectrum is not stored on disk.
	9	I	The integral spectrum is printed.
		blank	No integral spectrum is calculated.
	10	blank	The spectrum is treated as single spectrum.
		+or-	The spectrum is added or subtracted from a sum spectrum which is zero at the start of SEARD.
		*	No spectrum is searched on disk, and the area receives the identification number in col. 11-17 and is handled as specified in col. 3-9. After the execution the sum area is set to zero.
	11-80	See spectrum card for SEART (4.02)	

Note: The I and D option must not be used in the same control card. For each spectrum a spectrum card is necessary.

2. Last card: col. 1-4 *END

I/O Devices

1. 2310 disk with data files
   SPTBL, OVTBL, SPTB1, SPZNE, OVZNE, SPZN1) cf. 2.04
   ERFIL cf. MDISK
2. 1443 printer
3. 1442 card read-punch

Subroutines called by SEARD:
PRNTN, HOLPR, PAUSE, HOLEB, EXIT) IBM 1800 library
CHIF, MOVE, BLANK, CDTST) cf. (5)

DISKM)
MPRNT/MPRN1) cf. 3.
MCDBI)
MDISK)
INTEG)

Halts and Error Messages:

1. ERROR INPUT CARD. CORRECT AND START WITH THIS CARD.
2. SPECTRUM NOT FOUND ON DISK.
3. SPECTRUM CANNOT BE STORED ON DISK. ERRSW = XX. (cf. description MDISK in 3.)
4. INTEGRAL SPECTRUM and
   INTEGRAL SPECTRUM - OVERFLOW IS ON.
5. LAST BLOCK NUMBER SMALLER THAN FIRST ONE FOR SPECTRUM XX.XXXX.
6. ID-NUMBER XX.XXXX HAS BEEN CHANGED TO XX.XXXX.
7. FIRST AND LAST BLOCK NUMBER DO NOT BELONG TO THE SAME GROUP OF 4 K.
   This message can only occur if the + - * option is used.

Description of SEARD:

Program SEARD searches a spectrum with given identification number on disk and prints a listing, punches binary cards and/or calculates the integral spectrum. Spectra can be added or subtracted and the result may be written on disk or printed or punched into cards. In this case only groups of 4 K can be handled.

4.09 Calcomp Plotting of Multi-Channel Analyser Data Stored on Disk (ANALD)

Control Card Format:

1. Card col. 1-2 **
   3 Output tape unit number (0, 1, 2, or 3) for Calcomp tape. Not used for direct on-line operation of the Calcomp (cf. (6)).
2. Spectrum card See 4.03
4. Last card:
   col. 1-4 1

I/O Devices:

1. 2310 disk with data files:
   SPTBL, OVFTB, SPTB1, SPZNE, OVZNE, SPZN1) cf. 2.04
   ERFIL cf. MDISK
2. Calcomp plotter
3. Magnetic tape unit for Calcomp data
4. 1443 printer
5. 1442 card read-punch

Subroutines called by ANALD:

Subroutines of the IBM 1800 library
FINIM/FINTR, DESNF, SYMBL, NUMBR) Plotter subroutines cf. (6)

FLDSK cf. 3.
CHAN cf. 4.03

Halts and Error Messages:

1. INPUT CARD IN ERROR. GO TO NEXT SPECTRUM.
2. SPECTRUM NOT FOUND ON DISK. CALL EXIT.
3. END PLOTTING OF ANALYSER DATA.

Description of ANALD:

Program ANALD searches a spectrum defined by the input cards on disk and plots the channel counts against the channel numbers on the Calcomp plotter. The lengths of the x-axis and the y-axis are given as input data. Spectra must be plotted in groups of 4 K.

4.10 Summation Program for Transmission Measurements (SUMOF)

Control Cards:

1. card:	col. 1-2	**	
	3	Input tape unit number	
2. card:	col. 1	*	
	2	blank	
	3-4	Serial number of result	
	6	L	List of the results is printed.
		blank	No list is printed
		C	Binary cards of the results are punched
		blank	No cards are punched.
3. card:	col. 1-3, 4-6, ., ., ., 67-69	Serial numbers of sequences to be suppressed	
	72	blank	No continuation card for serial numbers.
		X	Serial numbers are continued on the next card.

4. card: continuation card for card 3.
The maximum number of sequences to be suppressed is 100.

I/O Devices:

1. 2310 disk with data files:
   - SPTBL, SPTB1, OVTBL, SPZNE, SPZN1, OUTB1 — cf. 2.04
   - ERFIL — cf. MDISK
   - INSU1, SAVS1, CONS1 — cf. SUMF
2. Magnetic tape unit
3. 1443 printer
4. 1442 card read-punch

Subroutines called by SUMOF:
- PRNTN, CARDN, PAUSE, EXIT, DMPHX — IBM 1800 library
- MOVE, BLANK — cf. (5)

```
PROCT
TAPE1
SUMF/SUMF1        cf. 3.
DISKM
MPRNT
MCDBI
```

Halts and Error Messages:

1. BEGIN PROGRAM SUMOF.
2. ERROR CONTROL CARD. START AGAIN.
3. END SUM-OFF-LINE FOR XX SPECTRA.
4. RESULTS CANNOT BE FOUND ON DISK. CALL DUMP.
5. FORMAT OR TAPE ERROR ON INPUT TAPE. GOTO NEXT SPECTRUM.
6. NO FREE 13-SECTOR AREA
7. NO FREE 26-SECTOR AREA
8. REQUIRED NO. OF OVERFLOW SECTORS NOT FREE
9. TOTAL COUNT DIFFERENCE GREATER 10, SEQUENCE SUPPRESSED
10. NO DISK STORAGE FOR SUMS
    This message is printed if there is no disk storage to start the summing procedure or if the same identification number has already been used.
11. INCORRECT IN/OUT-RATIO, PREVIOUS SEQUENCE SUPPRESSED
12. INCORRECT SAMPLE CHANGER START, SPECTRUM SUPPRESSED
13. INCORRECT RUN TYPE, SEQUENCE SUPPRESSED
14. SAMPLE CHANGER ERROR, SEQUENCE SUPPRESSED
15. NO MORE STORAGE FOR SUMS
    This message is followed by message 6, 7,or 8.

Description of SUMOF:

Program SUMOF performs a special summation procedure for transmission measurements (group number of experiment = 1). The spectra to be summed up must be stored on 9-track magnetic tape (format 2.02). The tape may contain other spectra than those used for the summation. Spectra with group number of experiment 1 can be excluded from the summation by giving their serial numbers in control card 3. The summation procedure is performed by subroutine SUMF.

Spectra of several input tapes can be summed up by executing program SUMOF with the same identification numbers for the resulting spectra (data file CONS1 transfers the necessary information from one run to the other).

If new identification numbers for the resulting spectra are used, data file CONSC is cleared at the start of SUMOF and a new summation is performed.

The result spectra can be listed and/or punched into binary cards.

Remark:

```
* LOCAL(MPRNT, MCDBI), SUMF
```

4.11 Program for the Listing of Identification Numbers of Spectra Stored on Disk (TBPRT)

Control Cards: none

I/O Devices:

1. 2310 disk with data files: SPTBL (symbolic file number 1)
   OVFTB (" " " 2)
   SPTB1 (" " " 3)
2. 1443 printer

Subroutines called by TBPRT: Subroutines of IBM 1800 library
TBBL
EXPAN) cf. 3.

Halts and Error Messages: none

Description of TBPRT:

Program TBPRT prints a list of the identification numbers of all spectra stored on disk.

5. References

(1) A. De Keyser, Neutron Time-of-Flight Multi-Channel Analysers for the Linear Accelerators of the CBNM, Proceedings of the EANDC Conference on Automatic Acquisition and Reduction of Nuclear Data, Karlsruhe (1964).

(2) A. De Keyser, S. de Jonge, T. van der Veen, and P. ter Meer, Analyser Computer Interface, paper presented at the International Symposium of Nuclear Electronics, Versailles (1968).

(3) H. Horstmann, A. De Keyser, H. Schmid, Use of a Process Control Computer System in Analysis of Neutron Cross Section Data and the Control of Neutron Data Acquisition Facilities around a Van de Graaff and an Electron Linear Accelerator, Proceedings of the Conference on the Effective Use of Computers in the Nuclear Industry, Knoxville, Tennessee (April 1969).

(4) H. Horstmann, IBM 1800 Programs for Data Processing at the Accelerators of the Central Bureau for Nuclear Measurements, Part 2: Process Interrupt Programs for On-Line Data Acquisition and Reduction, Euratom report in preparation.

(5) H. Schmid, H. Claessens, IBM 1800 Utility Programs for Magnetic Tapes and Tele-Processing Input/Output, EUR 4263.e (1969).

(6) H. Schmid, An IBM 1800 Program Package for On-Line and Off-Line Operation of a Calcomp Digital Incremental Plotter, EUR 4225.e (1969).

```
                *****************************************************  BNDC0002
                * IBM 1800 UTILITY SUBROUTINES                      *  BNDC0003
                *****************************************************  BNDC0004
                *                                                   *  BNDC0005
                *     SUBROUTINE BNDC/BNDCX                         *  BNDC0006
                *                                                   *  BNDC0007
                *     CALLING SEQUENCE                              *  BNDC0008
                *     ----------------                              *  BNDC0009
                *     CALL    BNDC        CALL      BNDCX           *  BNDC0010
                *     DC      DEST        DC        DEST            *  BNDC0011
                *                                                   *  BNDC0012
                *  BNDC                                             *  BNDC0013
                *  THE D. PREC. NUMBER IN ACCUMULATOR AND Q-REG.    *  BNDC0014
                *  IS CONVERTED TO PRINTER CODE AND MOVED TO DEST   *  BNDC0015
                *  THROUGH DEST+4. THE POSITIVE SIGN AND LEADING    *  BNDC0016
                *  ZEROES ARE SUPPRESSED.                           *  BNDC0017
                *  BNDCX                                            *  BNDC0018
                *  THE ADDRESS DEST IS MODIFIED BY THE CONTENTS     *  BNDC0019
                *  OF INDEX REG. 1.  EXECUTION LIKE BNDC.           *  BNDC0020
                *                                                   *  BNDC0021
                *****************************************************  BNDC0022
0000     025440C0          ENT     BNDC                               BNDC0023
0006     025440E7          ENT     BNDCX                              BNDC0024
0000 0   0000      BNDC    DC      0                                  BNDC0025
0001 0   4077              BSI     SAVE        SAVE REGISTERS         BNDC0026
0002 01  65800000          LDX  I1 BNDC                               BNDC0027
0004 0   C100              LD   1  0                                  BNDC0028
0005 0   7006              MDX     C0                                 BNDC0029
0006 0   0000      BNDCX   DC      0                                  BNDC0030
0007 0   4071              BSI     SAVE        SAVE INDEX REGISTERS   BNDC0031
0008 01  65800006          LDX  I1 BNDCX                              BNDC0032
000A 0   C100              LD   1  0                                  BNDC0033
000B 0   8017              A       X1+1        MODIFY ADDRESS DEST BY XR1 BNDC0034
000C 0   697A      C0      STX  1  RETRN       SAVE RETURN ADDRESS    BNDC0035
000D 0   D003              STO     C1                                 BNDC0036
000E 00  67800067          LDX  I3 TVLOC                              BNDC0037
0010 20  024C1552          LIBF    BLANK       CLEAR DEST TIL DEST+4  BNDC0038
0011 0   0000      C1      DC      *-*                                BNDC0039
0012 0   0006              DC      6                                  BNDC0040
0013 01  74010011          MDX  L  C1,1                               BNDC0041
0015 0   C872              LDD     VALUE                              BNDC0042
0016 01  4C28002A          BSC  L  NEG,+Z      BRANCH IF NEGATIVE     BNDC0043
0018 01  BC00009E          DCM  L  D0          TEST IF ZERO           BNDC0044
001A 0   701A              MDX     C3                                 BNDC0045
001B 0   7019              MDX     C3                                 BNDC0046
001C 0   C069              LD      PRO                                BNDC0047
001D 01  65800011  C2      LDX  I1 C1          LOAD ADDRESS OF RESULT BNDC0048
001F 0   D104              STO  1  4                                  BNDC0049
                *                                                     BNDC0050
0020 01  74010087  EXIT    MDX  L  RETRN,1     INCREMENT RETURN ADDRESS BNDC0051
0022 00  65000000  X1      LDX  L1 *-*         RESTORE INDEX REGISTERS BNDC0052
0024 00  66000000  X2      LDX  L2 *-*                                BNDC0053
0026 00  67000000  X3      LDX  L3 *-*                                BNDC0054
0028 01  4C800087          BSC  I  RETRN       RETURN                 BNDC0055
                *                                                     BNDC0056
002A 0   F059      NEG     EOR     MIN1                               BNDC0057
002B 0   D05C              STO     VALUE                              BNDC0058
002C 0   1090              SLT     16                                 BNDC0059
002D 0   F056              EOR     MIN1                               BNDC0060
002E 0   D05A              STO     VALUE+1                            BNDC0061
002F 0   C858              LDD     VALUE                              BNDC0062
```

```
0030 0   8859              AD      TAB                                  BNDC0063
0031 0   D856              STD     VALUE                                BNDC0064
0032 0   C052              LD      MINUS                                BNDC0065
0033 0   D04F              STO     SIGN                                 BNDC0066
0034 0   7002              MDX     C4                                   BNDC0067
0035 0   1010      C3      SLA     16                                   BNDC0068
0036 0   D04C              STO     SIGN                                 BNDC0069
                   *                                                    BNDC0070
0037 0   6849      C4      STX     SWTC      SWTC NOT ZERO              BNDC0071
0038 0   6847              STX     SWFIR     SWFIR NOT ZERO             BNDC0072
0039 0   6214              LDX   2 20        XR2=20                     BNDC0073
003A 0   6100      C6      LDX   1 0                                    BNDC0074
003B 0   C84C              LDD     VALUE     LOAD VALUE                 BNDC0075
003C 01  9E000088  C7      SD    L2 TAB-2                               BNDC0076
003E 01  4C280042          BSC   L  C8,+Z                               BNDC0077
0040 0   7101              MDX   1 1                                    BNDC0078
0041 0   70FA              MDX     C7                                   BNDC0079
0042 01  8E000088  C8      AD    L2 TAB-2                               BNDC0080
0044 0   D843              STD     VALUE                                BNDC0081
0045 0   693C              STX   1 SAVE1                                BNDC0082
0046 0   C03B              LD      SAVE1                                BNDC0083
0047 01  4C200050          BSC   L  C95,Z                               BNDC0084
0049 01  74000080          MDX   L  SWFIR,0                             BNDC0085
004B 0   7002              MDX     C9                                   BNDC0086
004C 0   C039              LD      PRO                                  BNDC0087
004D 0   7018              MDX     C10                                  BNDC0088
004E 0   1010      C9      SLA     16                                   BNDC0089
004F 0   7016              MDX     C10                                  BNDC0090
0050 01  74000080  C95     MDX   L  SWFIR,0                             BNDC0091
0052 0   7001              MDX     *+1                                  BNDC0092
0053 0   7012              MDX     C10                                  BNDC0093
0054 0   6300              LDX   3 0                                    BNDC0094
0055 0   6B2A              STX   3 SWFIR                                BNDC0095
0056 0   D02B              STO     SAVE1                                BNDC0096
0057 0   C02B              LD      SIGN                                 BNDC0097
0058 01  74000081          MDX   L  SWTC,0                              BNDC0098
005A 0   7004              MDX     C96                                  BNDC0099
005B 0   1008              SLA     8                                    BNDC0100
005C 01  D4800011          STO   I  C1                                  BNDC0101
005E 0   7006              MDX     C97                                  BNDC0102
005F 01  74FF0011  C96     MDX   L  C1,-1                               BNDC0103
0061 01  D4800011          STO   I  C1                                  BNDC0104
0063 01  74010011          MDX   L  C1,1                                BNDC0105
0065 0   C01C      C97     LD      SAVE1                                BNDC0106
0066 01  74000081  C10     MDX   L  SWTC,0                              BNDC0107
0068 0   7008              MDX     C11                                  BNDC0108
0069 01  EC800011          OR    I  C1                                  BNDC0109
006B 01  D4800011          STO   I  C1                                  BNDC0110
006D 01  74010011          MDX   L  C1,1                                BNDC0111
006F 0   6811              STX     SWTC                                 BNDC0112
0070 0   7005              MDX     C12                                  BNDC0113
0071 0   1008      C11     SLA     8                                    BNDC0114
0072 01  D4800011          STO   I  C1                                  BNDC0115
0074 0   1010              SLA     16                                   BNDC0116
0075 0   D00B              STO     SWTC                                 BNDC0117
0076 0   72FE      C12     MDX   2 -2                                   BNDC0118
0077 0   70C2              MDX     C6                                   BNDC0119
0078 0   70A7              MDX     EXIT                                 BNDC0120
0079 0   0000      SAVE    DC      0                                    BNDC0121
007A 0   D80D              STD     VALUE                                BNDC0122
007B 0   69A7              STX   1 X1+1      SAVE INDEX REGISTERS       BNDC0123
```

```
007C 0  6AA8                STX   2 X2+1                                  BNDC0124
007D 0  6BA9                STX   3 X3+1                                  BNDC0125
007E 01 4C800079            BSC  I  SAVE                                  BNDC0126
0080 0  0000          SWFIR DC      0                                     BNDC0127
0081 0  0000          SWTC  DC      0                                     BNDC0128
0082 0  0000          SAVE1 DC      *-*                                   BNDC0129
0083 0  0000          SIGN  DC      0                                     BNDC0130
0084 0  FFFF          MIN1  DC      /FFFF                                 BNDC0131
0085 0  0020          MINUS DC      /0020                                 BNDC0132
0086 0  000A          PRO   DC      /000A       0 IN PRINTER CODE         BNDC0133
0087 0  0000          RETRN DC      0                                     BNDC0134
0088 00 00000000      VALUE DEC     0                                     BNDC0135
008A 00 00000001      TAB   DEC     1                                     BNDC0136
008C 00 0000000A            DEC     10                                    BNDC0137
008E 00 00000064            DEC     100                                   BNDC0138
0090 00 000003E8            DEC     1000                                  BNDC0139
0092 00 00002710            DEC     10000                                 BNDC0140
0094 00 000186A0            DEC     100000                                BNDC0141
0096 00 000F4240            DEC     1000000                               BNDC0142
0098 00 00989680            DEC     10000000                              BNDC0143
009A 00 05F5E100            DEC     100000000                             BNDC0144
009C 00 3B9ACA00            DEC     1000000000                            BNDC0145
009E 00 00000000      DO    DEC     0                                     BNDC0146
0067                  TVLOC EQU     103                                   BNDC0147
00A0                        END                                           BNDC0148

     NO ERRORS IN ABOVE ASSEMBLY.
BNDC  BNDCX
DUP FUNCTION COMPLETED
// END OF ALL JOBS
```

```
                                 ************************************************** CDBIN002
                                 *  IBM 1800 UTILITY SUBROUTINES                  * CDBIN003
                                 ************************************************** CDBIN004
                                 *                                                * CDBIN005
                                 *      SUBROUTINE CDBIN                          * CDBIN006
                                 *                                                * CDBIN007
                                 *      CALLING SEQUENCE                          * CDBIN008
                                 *      ----------------                          * CDBIN009
                                 *                                                * CDBIN010
                                 *      CALL     CDBIN                            * CDBIN011
                                 *      DC       AREA                             * CDBIN012
                                 *                                                * CDBIN013
                                 *  CDBIN TRANSFORMS UNSIGNED DECIMAL DATA IN CARD * CDBIN014
                                 *  CODE TO BINARY. INPUT IS A 6-DIGIT DECIMAL    * CDBIN015
                                 *  VALUE IN AREA THROUGH AREA+5, OUTPUT IS A     * CDBIN016
                                 *  DOUBLE PRECISION INTEGER IN A AND Q-REGISTER. * CDBIN017
                                 *                                                * CDBIN018
                                 ************************************************** CDBIN019
0000     03102255                     ENT      CDBIN                                CDBIN020
0000 0   0000                 CDBIN DC       0                                    CDBIN021
0001 0   692D                         STX    1 XR1+1                               CDBIN022
0002 0   6A2E                         STX    2 XR2+1                               CDBIN023
0003 0   6B2F                         STX    3 XR3+1                               CDBIN024
0004 01  65800000                     LDX   I1 CDBIN                               CDBIN025
0006 0   C100                         LD     1 0                                   CDBIN026
0007 0   D002                         STO      C1                                  CDBIN027
0008 30  145A5140                     CALL     MOVE                                CDBIN028
000A 0   0000                 C1      DC       *-*                                 CDBIN029
000B 1   0038                         DC       AREA                                CDBIN030
000C 0   0006                         DC       6                                   CDBIN031
000D 0   61FA                         LDX    1 -6                                  CDBIN032
000E 0   620C                 C2      LDX    2 12                                  CDBIN033
000F 01  C500003E                     LD    L1 AREA+6                              CDBIN034
0011 01  4C180018                     BSC   L  C3,+-                               CDBIN035
0013 0   1240                         SLCA   2 0                                   CDBIN036
0014 0   6A22                         STX    2 SAVE                                CDBIN037
0015 0   C020                         LD       K10                                 CDBIN038
0016 0   9020                         S        SAVE                                CDBIN039
0017 0   1001                         SLA      1                                   CDBIN040
0018 01  D500003E             C3      STO   L1 AREA+6                              CDBIN041
001A 0   7101                         MDX    1 1                                   CDBIN042
001B 0   70F2                         MDX      C2                                  CDBIN043
                              *                                                    CDBIN044
001C 0   6106                         LDX    1 6                                   CDBIN045
001D 0   C020                         LD       ATAB                                CDBIN046
001E 0   D006                         STO      C5+1                                CDBIN047
001F 0   C01F                         LD       ADAR                                CDBIN048
0020 0   D002                         STO      C4+1                                CDBIN049
0021 0   10A0                         SLT      32                                  CDBIN050
0022 00  66800000             C4      LDX   I2 *-*                                 CDBIN051
0024 01  8E00003F             C5      AD    L2 ADAR                                CDBIN052
0026 01  74FF0023                     MDX   L  C4+1,-1                             CDBIN053
0028 01  74140025                     MDX   L  C5+1,20                             CDBIN054
002A 0   71FF                         MDX    1 -1                                  CDBIN055
002B 0   70F6                         MDX      C4                                  CDBIN056
002C 01  74010000                     MDX   L  CDBIN,1                             CDBIN057
002E 00  65000000             XR1     LDX   L1 *-*                                 CDBIN058
0030 00  66000000             XR2     LDX   L2 *-*                                 CDBIN059
0032 00  67000000             XR3     LDX   L3 *-*                                 CDBIN060
0034 01  4C800000                     BSC   I  CDBIN                               CDBIN061
0036 0   000A                 K10     DC       10                                  CDBIN062
```

```
0037 0  0000        SAVE  DC    0                    CDBIN063
0038    0006        AREA  BSS   6                    CDBIN064
003E 1  0040        ATAB  DC    TABLE                CDBIN065
003F 1  003D        ADAR  DC    AREA+5               CDBIN066
0040 00 00000000    TABLE DEC   0                    CDBIN067
0042 00 00000001          DEC   1                    CDBIN068
0044 00 00000002          DEC   2                    CDBIN069
0046 00 00000003          DEC   3                    CDBIN070
0048 00 00000004          DEC   4                    CDBIN071
004A 00 00000005          DEC   5                    CDBIN072
004C 00 00000006          DEC   6                    CDBIN073
004E 00 00000007          DEC   7                    CDBIN074
0050 00 00000008          DEC   8                    CDBIN075
0052 00 00000009          DEC   9                    CDBIN076
0054 00 00000000          DEC   0                    CDBIN077
0056 00 0000000A          DEC   10                   CDBIN078
0058 00 00000014          DEC   20                   CDBIN079
005A 00 0000001E          DEC   30                   CDBIN080
005C 00 00000028          DEC   40                   CDBIN081
005E 00 00000032          DEC   50                   CDBIN082
0060 00 0000003C          DEC   60                   CDBIN083
0062 00 00000046          DEC   70                   CDBIN084
0064 00 00000050          DEC   80                   CDBIN085
0066 00 0000005A          DEC   90                   CDBIN086
0068 00 00000000          DEC   0                    CDBIN087
006A 00 00000064          DEC   100                  CDBIN088
006C 00 000000C8          DEC   200                  CDBIN089
006E 00 0000012C          DEC   300                  CDBIN090
0070 00 00000190          DEC   400                  CDBIN091
0072 00 000001F4          DEC   500                  CDBIN092
0074 00 00000258          DEC   600                  CDBIN093
0076 00 000002BC          DEC   700                  CDBIN094
0078 00 00000320          DEC   800                  CDBIN095
007A 00 00000384          DEC   900                  CDBIN096
007C 00 00000000          DEC   0                    CDBIN097
007E 00 000003E8          DEC   1000                 CDBIN098
0080 00 000007D0          DEC   2000                 CDBIN099
0082 00 00000BB8          DEC   3000                 CDBIN100
0084 00 00000FA0          DEC   4000                 CDBIN101
0086 00 00001388          DEC   5000                 CDBIN102
0088 00 00001770          DEC   6000                 CDBIN103
008A 00 00001B58          DEC   7000                 CDBIN104
008C 00 00001F40          DEC   8000                 CDBIN105
008E 00 00002328          DEC   9000                 CDBIN106
0090 00 00000000          DEC   0                    CDBIN107
0092 00 00002710          DEC   10000                CDBIN108
0094 00 00004E20          DEC   20000                CDBIN109
0096 00 00007530          DEC   30000                CDBIN110
0098 00 00009C40          DEC   40000                CDBIN111
009A 00 0000C350          DEC   50000                CDBIN112
009C 00 0000EA60          DEC   60000                CDBIN113
009E 00 00011170          DEC   70000                CDBIN114
00A0 00 00013880          DEC   80000                CDBIN115
00A2 00 00015F90          DEC   90000                CDBIN116
00A4 00 00000000          DEC   0                    CDBIN117
00A6 00 000186A0          DEC   100000               CDBIN118
00A8 00 00030D40          DEC   200000               CDBIN119
00AA 00 000493E0          DEC   300000               CDBIN120
00AC 00 00061A80          DEC   400000               CDBIN121
00AE 00 0007A120          DEC   500000               CDBIN122
00B0 00 000927C0          DEC   600000               CDBIN123
```

```
00B2 00 000AAE60          DEC     700000          CDBIN124
00B4 00 000C3500          DEC     800000          CDBIN125
00B6 00 000DBBA0          DEC     900000          CDBIN126
00B8                      END                     CDBIN127

     NO ERRORS IN ABOVE ASSEMBLY.
CDBIN
DUP FUNCTION COMPLETED
```

```
                         ************************************************** MFLT0002
                         * IBM 1800 UTILITY SUBROUTINES                   * MFLT0003
                         ************************************************** MFLT0004
                         *                                                * MFLT0005
                         *     SUBROUTINE MFLT                            * MFLT0006
                         *                                                * MFLT0007
                         *     CALLING SEQOENCE                           * MFLT0008
                         *      ---------------                           * MFLT0009
                         *     CALL     MFLT                              * MFLT0010
                         *     DC       AREA                              * MFLT0011
                         *     DC       N                                 * MFLT0012
                         *                                                * MFLT0013
                         *  THIS SUBROUTINE CONVERTES THE DOUBLE PRECISION * MFLT0014
                         *  INTEGER VALUES TO FLOATING POINT VALUES.      * MFLT0015
                         *                                                * MFLT0016
                         ************************************************** MFLT0017
0000     141938C0              ENT      MFLT                                MFLT0018
0000 0   0000          MFLT    DC       0                                   MFLT0019
0001 0   692A                  STX    1 X1+1        SAVE INDEX REGISTERS    MFLT0020
0002 0   6A2B                  STX    2 X2+1                                MFLT0021
0003 0   6B2C                  STX    3 X3+1                                MFLT0022
0004 01  65800000              LDX   I1 MFLT        XR1 HAS PARAMETER ADDRESS MFLT0023
0006 0   C100                  LD     1 0           GET ARRAY ADDRESS       MFLT0024
0007 0   903E                  S        K2                                  MFLT0025
0008 0   D00A                  STO      M2+1                                MFLT0026
0009 0   D014                  STO      M4+1                                MFLT0027
000A 0   D01A                  STO      M5+1                                MFLT0028
000B 00  C5800001              LD    I1 1           GET COUNT               MFLT0029
000D 0   1001                  SLA      1                                   MFLT0030
000E 0   D001                  STO      M1+1                                MFLT0031
000F 00  67000000      M1      LDX   L3 *-*         XR3 HAS AREA COUNT      MFLT0032
0011 0   6220          M15     LDX    2 32                                  MFLT0033
0012 00  CF000000      M2      LDD   L3 *-*         LOAD VALUE OF AREA      MFLT0034
0014 0   B835                  DCM      D0          COMPARE WITH 0.         MFLT0035
0015 0   7002                  MDX      M3          POSITIVE                MFLT0036
0016 0   701C                  MDX      M7          NEGATIVE                MFLT0037
0017 0   700F                  MDX      M6              EQUAL ZERO          MFLT0038
0018 0   12C0          M3      SLC    2 0           SHIFT LEFT TOTAL AND COUNT MFLT0039
0019 0   1881                  SRT      1           SAVE POSITION FOR SIGN  MFLT0040
001A 0   E02D                  AND      X7FFF                               MFLT0041
001B 00  76000080      M35     MDX   L2 128         CONSTRUCT EXPONENT      MFLT0042
001D 00  D7000000      M4      STO   L3 *-*         STORE FIRST HALF OF RESULT MFLT0043
001F 0   1088                  SLT      8                                   MFLT0044
0020 0   7301                  MDX    3 1                                   MFLT0045
0021 0   1008                  SLA      8                                   MFLT0046
0022 0   6A22                  STX    2 SAVE3       ADD EXPONENT TO MANTISSE MFLT0047
0023 0   E821                  OR       SAVE3                               MFLT0048
0024 00  D7000000      M5      STO   L3 *-*         STORE SECOND HALF       MFLT0049
0026 0   73FF                  MDX    3 -1          XR3 HAS ADDR.OF FIRST PART MFLT0050
0027 0   73FE          M6      MDX    3 -2          GO TO NEXT WORD         MFLT0051
0028 0   70E8                  MDX      M15                                 MFLT0052
                         *                                                  MFLT0053
                         *     EXIT                                         MFLT0054
                         *                                                  MFLT0055
0029 01  74020000              MDX   L  MFLT,2      INCREMENT RETURN ADDRESS MFLT0056
002B 00  65000000      X1      LDX   L1 *-*         RESTORE REGISTERS       MFLT0057
002D 00  66000000      X2      LDX   L2 *-*                                 MFLT0058
002F 00  67000000      X3      LDX   L3 *-*                                 MFLT0059
0031 01  4C800000              BSC   I  MFLT        RETURN                  MFLT0060
                         *                                                  MFLT0061
                         *     NEGATIVE NUMBERS                             MFLT0062
```

```
                        *                                                  MFLT0063
0033 0   F013           M7     EOR      XFFFF                              MFLT0064
0034 0   D010                  STO      SAVE3                              MFLT0065
0035 0   1090                  SLT      16                                 MFLT0066
0036 0   F010                  EOR      XFFFF                              MFLT0067
0037 0   1890                  SRT      16                                 MFLT0068
0038 0   C00C                  LD       SAVE3                              MFLT0069
0039 0   8812                  AD       D1                                 MFLT0070
003A 0   12C0                  SLC    2 0                                  MFLT0071
003B 0   1881                  SRT      1                                  MFLT0072
003C 0   E00B                  AND      X7FFF                              MFLT0073
003D 0   F009                  EOR      XFFFF                              MFLT0074
003E 0   D006                  STO      SAVE3                              MFLT0075
003F 0   1090                  SLT      16                                 MFLT0076
0040 0   F006                  EOR      XFFFF                              MFLT0077
0041 0   1890                  SRT      16                                 MFLT0078
0042 0   C002                  LD       SAVE3                              MFLT0079
0043 0   8808                  AD       D1                                 MFLT0080
0044 0   70D6                  MDX      M35                                MFLT0081
                        *      CONSTANTS                                   MFLT0082
                        *                                                  MFLT0083
0045 0   0000           SAVE3  DC       0                                  MFLT0084
0046 0   0002           K2     DC       2                                  MFLT0085
0047 0   FFFF           XFFFF  DC       /FFFF                              MFLT0086
0048 0   7FFF           X7FFF  DC       /7FFF                              MFLT0087
004A 00  00000000       D0     DEC      0                                  MFLT0088
004C 00  00000001       D1     DEC      1                                  MFLT0089
004E                           END                                         MFLT0090

     NO ERRORS IN ABOVE ASSEMBLY.
MFLT
DUP FUNCTION COMPLETED
```

```
                        ************************************************** MINT0002
                        * IBM 1800 UTILITY SUBROUTINES                   * MINT0003
                        ************************************************** MINT0004
                        *                                                * MINT0005
                        *     SUBROUTINE MINT                            * MINT0006
                        *                                                * MINT0007
                        *     CALLING SEQUENCE                           * MINT0008
                        *      ---------------                           * MINT0009
                        *     CALL    MINT                               * MINT0010
                        *     DC      AREA                               * MINT0011
                        *     DC      N          NUMBER OF DOUBLE WORDS  * MINT0012
                        *                                                * MINT0013
                        *     MINT TRANSFORMS AN AREA WITH FLOATING POINT * MINT0014
                        *     VALUES TO INTEGERS (WITH ROUNDING)         * MINT0015
                        *                                                * MINT0016
                        ************************************************** MINT0017
0000     142558C0               ENT     MINT                            MINT0018
0000 0   0000           MINT   DC      0                                 MINT0019
0001 0   6921                  STX   1 XR1+1                             MINT0020
0002 0   6A22                  STX   2 XR2+1                             MINT0021
0003 0   6B23                  STX   3 XR3+1                             MINT0022
0004 01  65800000              LDX   I1 MINT                             MINT0023
0006 0   C100                  LD    1 0                                 MINT0024
0007 0   D008                  STO     A+1                               MINT0025
0008 00  C5800001              LD    I1 1                                MINT0026
000A 01  4C080020              BSC   L  EXIT,+                           MINT0027
000C 0   D001                  STO     *+1                               MINT0028
000D 00  66000000              LDX   L2 *-*                              MINT0029
000F 00  65000000      A       LDX   L1 *-*                              MINT0030
0011 00  67800067              LDX   I3 103                              MINT0031
0013 0   C900          B       LDD   1 0                                 MINT0032
0014 0   8817                  AD      D1                                MINT0033
0015 0   D814                  STD     C                                 MINT0034
0016 20  064C4000              LIBF    FLD                               MINT0035
0017 1   002A                  DC      C                                 MINT0036
0018 20  05246267              LIBF    EIFIX                             MINT0037
0019 0   8812                  AD      D1                                MINT0038
001A 0   1881                  SRT     1                                 MINT0039
001B 0   D900                  STD   1 0                                 MINT0040
001C 0   7102                  MDX   1 2                                 MINT0041
001D 0   1000                  NOP                                       MINT0042
001E 0   72FF                  MDX   2 -1                                MINT0043
001F 0   70F3                  MDX     B                                 MINT0044
0020 01  74020000      EXIT    MDX   L  MINT,2                           MINT0045
0022 00  65000000      XR1     LDX   L1 *-*                              MINT0046
0024 00  66000000      XR2     LDX   L2 *-*                              MINT0047
0026 00  67000000      XR3     LDX   L3 *-*                              MINT0048
0028 01  4C800000              BSC   I  MINT                             MINT0049
002A 00  00000000      C       DEC     0                                 MINT0050
002C 00  00000001      D1      DEC     1                                 MINT0051
002E                           END                                       MINT0052

     NO ERRORS IN ABOVE ASSEMBLY.
MINT
DUP FUNCTION COMPLETED
```

```
                *****************************************************  MTAPE002
                * IBM 1800 SUBROUTINES FOR DATA REDUCTION           *  MTAPE003
                *****************************************************  MTAPE004
                *                                                   *  MTAPE005
                *     SUBROUTINE MTAPE                              *  MTAPE006
                *                                                   *  MTAPE007
                *     CALLING SEQUENCE                              *  MTAPE008
                *     ----------------                              *  MTAPE009
                *     CALL    MTAPE                                 *  MTAPE010
                *     DC      SPADR       START ADDRESS OF SPECTRUM*  MTAPE011
                *     DC      TPNR        TAPE NUMBER DIRECT        *  MTAPE012
                *     DC      ERRSW       SWITCH                    *  MTAPE013
                *                                                   *  MTAPE014
                * THIS SUBROUTINE WRITES SCALER DATA AND ANALYSER   *  MTAPE015
                * DATA FROM MEMORY ON TAPE. ERRSW IS SET TO ONE IF  *  MTAPE016
                * THE TAPE IS NOT READY.                            *  MTAPE017
                *                                                   *  MTAPE018
                *****************************************************  MTAPE019
0000    148C15C5        ENT     MTAPE                                  MTAPE020
0000 0  0000    MTAPE   DC      0                                      MTAPE021
0001 0  6919            STX   1 X1+1                                   MTAPE022
0002 0  6A1A            STX   2 X2+1                                   MTAPE023
0003 0  6B1B            STX   3 X3+1                                   MTAPE024
0004 00 67800067        LDX   I3 103                                   MTAPE025
0006 01 65800000        LDX   I1 MTAPE                                 MTAPE026
0008 0  C101            LD    1 1                                      MTAPE027
0009 0  1005            SLA     5                                      MTAPE028
000A 0  E841            OR      X7700                                  MTAPE029
000B 0  D047            STO     SEDSW+1                                MTAPE030
000C 0  0845            XIO     SEDSW     SELECT TAPE UNIT             MTAPE031
000D 0  62EF            LDX   2 -17       XR2=-17                      MTAPE032
000E 0  0843            XIO     SEDSW     SENSE DSW WITHOUT RESET      MTAPE033
000F 0  E03F            AND     K3        EXTRACT BUSY READY BITS      MTAPE034
0010 01 4C180022        BSC   L A1,+-     BRANCH IF READY AND NOT      MTAPE035
0012 0  F03C            EOR     K3        BUSY                         MTAPE036
0013 01 4C180022        BSC   L A1,+-     BRANCH IF READY AND BUSY     MTAPE037
0015 0  C038            LD      K1        SET LAST PARAMETER = 1       MTAPE038
0016 00 D5800002        STO   I1 2                                     MTAPE039
0018 01 74030000    A0  MDX   L MTAPE,3   INCREMENT RETURN ADDRESS     MTAPE040
001A 00 65000000    X1  LDX   L1 *-*      RESTORE INDEX REGISTERS      MTAPE041
001C 00 66000000    X2  LDX   L2 *-*                                   MTAPE042
001E 00 67000000    X3  LDX   L3 *-*                                   MTAPE043
0020 01 4C800000        BSC   I MTAPE                                  MTAPE044
0022 0  1010        A1  SLA     16                                     MTAPE045
0023 00 D5800002        STO   I1 2                                     MTAPE046
0025 0  C100            LD    1 0         SEARCH SPECTRUM ADDRESS      MTAPE047
0026 0  9027            S       K1                                     MTAPE048
0027 0  D008            STO     A6                                     MTAPE049
0028 0  C027            LD      K64                                    MTAPE050
0029 01 D4800030        STO   I A6                                     MTAPE051
002B 0  C101            LD    1 1                                      MTAPE052
002C 0  E820            OR      MAGTP                                  MTAPE053
002D 0  D001            STO     A5                                     MTAPE054
002E 20 140478C0    A4  LIBF    MAGT                                   MTAPE055
002F 0  0000        A5  DC      *-*                                    MTAPE056
0030 0  0000        A6  DC      *-*                                    MTAPE057
0031 1  0048            DC      SPEC                                   MTAPE058
0032 20 140478C0    A7  LIBF    MAGT                                   MTAPE059
0033 0  0000            DC      0                                      MTAPE060
0034 0  70FD            MDX     A7                                     MTAPE061
0035 0  C0FA            LD      A6                                     MTAPE062
```

```
0036 01 84800030          A     I  A6                                  MTAPE063
0038 0  1890              SRT      16                                  MTAPE064
0039 0  C018              LD       SAVE                                MTAPE065
003A 01 D4800030          STO   I  A6                                  MTAPE066
003C 0  1090              SLT      16                                  MTAPE067
003D 0  D0F2              STO      A6                                  MTAPE068
003E 0  7201              MDX    2 1                                   MTAPE069
003F 0  7001              MDX      *+1                                 MTAPE070
0040 0  70D7              MDX      A0                                  MTAPE071
0041 01 C4800030          LD    I  A6                                  MTAPE072
0043 0  D00E              STO      SAVE                                MTAPE073
0044 0  C00C              LD       K512                                MTAPE074
0045 01 D4800030          STO   I  A6                                  MTAPE075
0047 0  70E6              MDX      A4                                  MTAPE076
0048 0  0000        SPEC  DC       0          SPEC. COND. ROUTINE      MTAPE077
0049 01 4C800048          BSC   I  SPEC       RETURN TO MAG TAPE ROUT. MTAPE078
004B 0  FF0F        MASK  DC       /FF0F                               MTAPE079
004C 0  7700        X7700 DC       /7700                               MTAPE080
004D 0  3000        MAGTP DC       /3000                               MTAPE081
004E 0  0001        K1    DC       1                                   MTAPE082
004F 0  0003        K3    DC       3                                   MTAPE083
0050 0  0040        K64   DC       64                                  MTAPE084
0051 0  0200        K512  DC       512                                 MTAPE085
0052    0000              BSS   E  0                                   MTAPE086
0052 0  0000        SEDSW DC       0                                   MTAPE087
0053 0  0000              DC       0                                   MTAPE088
0052                SAVE  EQU      SEDSW                               MTAPE089
0054                      END                                          MTAPE090
```

NO ERRORS IN ABOVE ASSEMBLY.

MTAPE
DUP FUNCTION COMPLETED

```
                *****************************************************  TAPEM002
                * IBM 1800 SUBROUTINES FOR DATA REDUCTION           *  TAPEM003
                *****************************************************  TAPEM004
                *                                                   *  TAPEM005
                *     SUBROUTINE TAPEM                              *  TAPEM006
                *                                                   *  TAPEM007
                *     CALLING SEQUENCE                              *  TAPEM008
                *     ----------------                              *  TAPEM009
                *     CALL     TAPEM                                *  TAPEM010
                *     DC       SPADR       SPECTRUM                 *  TAPEM011
                *     DC       ID          ID NUMBER                *  TAPEM012
                *     DC       TPNR        TAPE NUMBER DIRECT       *  TAPEM013
                *     DC       ERRSW       ERROR SWITCH             *  TAPEM014
                *                                                   *  TAPEM015
                * THE SUBROUTINE SEARCHES THE SPECTRUM ON TAPE      *  TAPEM016
                * WITH THE 5 ID'S BEGINNING AT ID AND READS IT      *  TAPEM017
                * INTO THE AREA BEGINNING AT SPADR.                 *  TAPEM018
                *                                                   *  TAPEM019
                *****************************************************  TAPEM020
0000     23057154          ENT      TAPEM                              TAPEM021
0000 0   0000      TAPEM   DC       0                                  TAPEM022
0001 0   696B              STX    1 X1+1        SAVE INDEX REGISTERS    TAPEM023
0002 0   6A6C              STX    2 X2+1                                TAPEM024
0003 0   6B6D              STX    3 X3+1                                TAPEM025
0004 01  6C00008D          STX    L SWEOF                               TAPEM026
                *                                                      TAPEM027
0006 01  65800000          LDX    I1 TAPEM      XR1 HAS PARAMETER ADDRESS TAPEM028
0008 0   C100              LD     1 0           GET ADDRESS OF SPECTRUM TAPEM029
0009 0   D00B              STO      T1+1                                TAPEM030
000A 01  D4000087          STO    L ASPAD                               TAPEM031
000C 0   C101              LD     1 1           GET ADDRESS OF ID-NUMBERS TAPEM032
000D 0   D07A              STO      ADID                                TAPEM033
000E 0   C102              LD     1 2           GET TAPE NUMBER         TAPEM034
000F 0   E879              OR       MATP                                TAPEM035
0010 0   D00C              STO      T3                                  TAPEM036
0011 0   D035              STO      T10                                 TAPEM037
0012 0   E877              OR       REWD                                TAPEM038
0013 0   D04D              STO      T14                                 TAPEM039
0014 00  66000000  T1      LDX    L2 *-*                                TAPEM040
0016 0   72FF              MDX    2 -1                                  TAPEM041
0017 0   C073              LD       K64                                 TAPEM042
0018 0   D200              STO    2 0                                   TAPEM043
0019 0   6A04              STX    2 T4                                  TAPEM044
001A 00  67800067  T2      LDX    I3 TVLOC                              TAPEM045
001C 20  140478C0  T25     LIBF     MAGT        SEARCH ON TAPE          TAPEM046
001D 0   0000      T3      DC       *-*                                 TAPEM047
001E 0   0000      T4      DC       *-*                                 TAPEM048
001F 1   0081              DC       USER                                TAPEM049
0020 20  140478C0  T5      LIBF     MAGT        TEST OP. COMPLETE       TAPEM050
0021 0   0000              DC       *-*                                 TAPEM051
0022 0   70FD              MDX      T5                                  TAPEM052
0023 01  7400008E          MDX    L EOFSW,0     TEST EOF                TAPEM053
0025 0   7038              MDX      EOF                                 TAPEM054
0026 01  74000090          MDX    L TOLG,0      TEST TO LONG RECORDS    TAPEM055
0028 0   7001              MDX      T6          YES                     TAPEM056
0029 0   7003              MDX      T7          NO                      TAPEM057
002A 0   1010      T6      SLA      16                                  TAPEM058
002B 0   D064              STO      TOLG                                TAPEM059
002C 0   70ED              MDX      T2                                  TAPEM060
002D 01  67800088  T7      LDX    I3 ADID       COMPARE ID-NUMBERS      TAPEM061
002F 0   61FB              LDX    1 -5                                  TAPEM062
```

```
0030 01 66800087          LDX   I2 ASPAD                                  TAPEM063
0032 0  C300        T8    LD     3 0                                      TAPEM064
0033 0  9200              S      2 0                                      TAPEM065
0034 01 4C20001A          BSC   L  T2,Z                                   TAPEM066
0036 0  7201              MDX    2 1                                      TAPEM067
0037 0  7301              MDX    3 1                                      TAPEM068
0038 0  7101              MDX    1 1                                      TAPEM069
0039 0  70F8              MDX      T8                                     TAPEM070
003A 0  6852              STX      SWEOF                                  TAPEM071
003B 0  61F0              LDX    1 -16                                    TAPEM072
003C 0  1010              SLA      16                                     TAPEM073
003D 0  D053              STO      LNGTH                                  TAPEM074
003E 00 67800067          LDX   I3 TVLOC                                  TAPEM075
0040 0  723A              MDX    2 58                                     TAPEM076
0041 0  C200        T9    LD     2 0                                      TAPEM077
0042 0  D059              STO      SAVE                                   TAPEM078
0043 0  C048              LD       K512                                   TAPEM079
0044 0  D200              STO    2 0                                      TAPEM080
0045 0  6A02              STX    2 T11                                    TAPEM081
0046 20 140478C0          LIBF     MAGT       READ SPECTRUM               TAPEM082
0047 0  0000        T10   DC       *-*                                    TAPEM083
0048 0  0000        T11   DC       *-*                                    TAPEM084
0049 1  0081              DC       USER                                   TAPEM085
004A 20 140478C0          LIBF     MAGT                                   TAPEM086
004B 0  0000              DC       0                                      TAPEM087
004C 0  70FD              MDX      *-3                                    TAPEM088
004D 01 7400008E          MDX   L  EOFSW,0                                TAPEM089
004F 0  7027              MDX      ERROR                                  TAPEM090
0050 01 74000091          MDX   L  LNGTH,0                                TAPEM091
0052 0  7024              MDX      ERROR                                  TAPEM092
0053 01 74000090          MDX   L  TOLG,0                                 TAPEM093
0055 0  7021              MDX      ERROR                                  TAPEM094
0056 0  C045              LD       SAVE                                   TAPEM095
0057 0  D200              STO    2 0                                      TAPEM096
0058 00 76000200          MDX   L2 512                                    TAPEM097
005A 0  7101              MDX    1 1                                      TAPEM098
005B 0  70E5              MDX      T9                                     TAPEM099
                    *                                                     TAPEM100
                    *     END OF THE SUBROUTINE                           TAPEM101
                    *                                                     TAPEM102
005C 0  1010              SLA      16        LOAD ZERO                    TAPEM103
005D 0  7008              MDX      T12                                    TAPEM104
005E 0  1010        EOF   SLA      16        SET ALL SWITCHES TO ZERO     TAPEM105
005F 0  D02E              STO      EOFSW                                  TAPEM106
0060 20 140478C0          LIBF     MAGT                                   TAPEM107
0061 0  0000        T14   DC       *-*                                    TAPEM108
0062 01 7400008D          MDX   L  SWEOF,0                                TAPEM109
0064 0  700F              MDX      T13                                    TAPEM110
0065 0  C023        T115  LD       MATP      LOAD NOT ZERO                TAPEM111
0066 01 65800000    T12   LDX   I1 TAPEM                                  TAPEM112
0068 00 D5800003          STO   I1 3         STORE IN ERRSW               TAPEM113
006A 01 74040000          MDX   L  TAPEM,4   INCREMENT RETURN ADDRESS     TAPEM114
006C 00 65000000    X1    LDX   L1 *-*       RESTORE REGISTERS            TAPEM115
006E 00 66000000    X2    LDX   L2 *-*                                    TAPEM116
0070 00 67000000    X3    LDX   L3 *-*                                    TAPEM117
0072 01 4C800000          BSC   I  TAPEM     RETURN                       TAPEM118
0074 0  1010        T13   SLA      16                                     TAPEM119
0075 0  D017              STO      SWEOF                                  TAPEM120
0076 0  70A5              MDX      T25                                    TAPEM121
0077 20 176558D5    ERROR LIBF     PRNTN                                  TAPEM122
0078 0  2100              DC       /2100                                  TAPEM123
```

```
0079 1  0092                DC      MES1-1                          TAPEM124
007A 0  0000                DC      0                               TAPEM125
007B 20 17064885            LIBF    PAUSE                           TAPEM126
007C 1  009B                DC      A                               TAPEM127
007D 0  1010                SLA     16                              TAPEM128
007E 0  D011                STO     TOLG                            TAPEM129
007F 0  D011                STO     LNGTH                           TAPEM130
0080 0  70E4                MDX     T115                            TAPEM131
                     *                                              TAPEM132
0081 0  0000         USER   DC      0                               TAPEM133
0082 30 24885640            CALL    USER                            TAPEM134
0084 1  008E                DC      EOFSW                           TAPEM135
0085 01 4C800081            BSC  I  USER                            TAPEM136
                     *                                              TAPEM137
                     *      CONSTANTS                               TAPEM138
                     *                                              TAPEM139
0087 0  0000         ASPAD  DC      0                               TAPEM140
0088 0  0000         ADID   DC      0                               TAPEM141
0089 0  1000         MATP   DC      /1000                           TAPEM142
008A 0  5000         REWD   DC      /5000                           TAPEM143
008B 0  0040         K64    DC      64                              TAPEM144
008C 0  0200         K512   DC      512                             TAPEM145
008D 0  0000         SWEOF  DC      0                               TAPEM146
008E 0  0000         EOFSW  DC      0                               TAPEM147
008F 0  0000                DC      0                               TAPEM148
0090 0  0000         TOLG   DC      0                               TAPEM149
0091 0  0000         LNGTH  DC      0                               TAPEM150
0092 0  0008                DC      MES2-MES1                       TAPEM151
0093    0010         MES1   DMES  1 INPUT TAPE ERROR'E              TAPEM152
009B    0000         MES2   BSS     0                               TAPEM153
009B 0  FFFF         A      DC      /FFFF                           TAPEM154
009C 0  0000         SAVE   DC      0                               TAPEM155
0067                 TVLOC  EQU     103                             TAPEM156
009E                        END                                     TAPEM157

     NO ERRORS IN ABOVE ASSEMBLY.
TAPEM
DUP FUNCTION COMPLETED
```

```
                    ************************************************** BCDBI002
                    * IBM 1800 SUBROUTINES FOR DATA REDUCTION        * BCDBI003
                    ************************************************** BCDBI004
                    *                                                * BCDBI005
                    *     SUBROUTINE BCDBI                           * BCDBI006
                    *                                                * BCDBI007
                    *     CALLING SEQUENCE                           * BCDBI008
                    *     ----------------                           * BCDBI009
                    *     CALL     BCDBI                             * BCDBI010
                    *     DC       AREA1                             * BCDBI011
                    *     DC       AREA2                             * BCDBI012
                    *     DC       TYPE                              * BCDBI013
                    *                                                * BCDBI014
                    *  THIS SUBROUTINE TRANSFORMS BCD-DATA BEGINNING * BCDBI015
                    *  IN FIELD AREA1 TO BINARY VALUES OF DOUBLE PREC.* BCDBI016
                    *  IF TYPE IS ZERO OR ONE AND OF SINGLE PRECISION * BCDBI017
                    *  IF TYPE IS GR. ONE.  AREA1 IS THE INPUT FIELD, * BCDBI018
                    *  AREA2 THE OUTPUT FIELD. THE INPUT FIELD HAS   * BCDBI019
                    *  256 DATA OF 6 DIGITS OR 512 DATA OF 3 DIGITS, * BCDBI020
                    *  TWO DIGITS PER WORD.                          * BCDBI021
                    *                                                * BCDBI022
                    *          0123456789012345    NNNN  NOT USED     * BCDBI023
                    *          NNNNXXXXNNNNXXXX    XXXX  BCD DIGIT    * BCDBI024
                    *                                                * BCDBI025
                    *  THE PROGRAM SUPPOSES EACH DIGIT TO BE LESS OR * BCDBI026
                    *  EQUAL 9. AFTER EXECUTION OF BCDBI THE SECOND  * BCDBI027
                    *  PARAMETER CONTAINS THE ADDRESS + 1 OF THE END * BCDBI028
                    *  OF THE OUTPUT AREA2.                          * BCDBI029
                    *                                                * BCDBI030
                    ************************************************** BCDBI031
0000     020C4089          ENT      BCDBI                              BCDBI032
0000 0   0000       BCDBI  DC       0                                  BCDBI033
0001 0   6942              STX    1 X1+1       SAVE XR1                BCDBI034
0002 0   6A43              STX    2 X2+1       SAVE XR2                BCDBI035
0003 0   6B44              STX    3 X3+1       SAVE XR3                BCDBI036
0004 01  65800000          LDX   I1 BCDBI                              BCDBI037
0006 0   C100              LD     1 0                                  BCDBI038
0007 0   8072              A        K768                               BCDBI039
0008 0   D011              STO      A2+1                               BCDBI040
0009 0   D047              STO      A8+1                               BCDBI041
000A 0   C101              LD     1 1                                  BCDBI042
000B 0   D02C              STO      A6+1                               BCDBI043
000C 0   D062              STO      A14+1                              BCDBI044
000D 0   6869              STX      SW         SET SW NOT ZERO         BCDBI045
000E 0   6200              LDX    2 0          XR2=0                   BCDBI046
000F 00  C5800002          LD    I1 2          SEARCH THIRD PARAM.     BCDBI047
0011 0   9066              S        K1                                 BCDBI048
0012 01  4C30004B          BSC   L  A7,-Z      BRANCH FOR 8K SPECTRA   BCDBI049
0014 00  6500FD00          LDX   L1 -768       XR1=-768                BCDBI050
0016 0   630C       A1     LDX    3 12         XR3=12                  BCDBI051
0017 0   10A0              SLT      32                                 BCDBI052
0018 0   D863              STD      BIN        BIN=0                   BCDBI053
0019 00  C5000000   A2     LD    L1 *-*        GET DATA WORD           BCDBI054
001B 01  74000077          MDX   L  SW,0       TEST SW                 BCDBI055
001D 0   7006              MDX      A3                                 BCDBI056
001E 0   E056              AND      MASK1      EXTRACT RIGHT HALF      BCDBI057
001F 0   D056              STO      COUNT      COUNT HAS DECIMAL DIGIT BCDBI058
0020 0   6856              STX      SW         SET SW NOT ZERO         BCDBI059
0021 0   7101              MDX    1 1          INCREMENT XR1           BCDBI060
0022 0   7006              MDX      A4                                 BCDBI061
0023 0   7005              MDX      A4                                 BCDBI062
```

```
0024 0  E04F        A3    AND     MASK        EXTRACT LEFT HALF          BCDBI063
0025 0  1888              SRT     8                                      BCDBI064
0026 0  D04F              STO     COUNT                                  BCDBI065
0027 0  1010              SLA     16                                     BCDBI066
0028 0  D04E              STO     SW                                     BCDBI067
0029 01 74000076    A4    MDX  L  COUNT,0     TEST COUNT=0               BCDBI068
002B 0  7001              MDX     A5          NO                         BCDBI069
002C 0  7007              MDX     A55         YES, SKIP TO A55           BCDBI070
002D 0  C84E        A5    LDD     BIN                                    BCDBI071
002E 01 8F00007C    A51   AD   L3 TAB-2                                  BCDBI072
0030 01 74FF0076          MDX  L  COUNT,-1                               BCDBI073
0032 0  70FB              MDX     A51                                    BCDBI074
0033 0  D848              STD     BIN                                    BCDBI075
0034 0  73FE        A55   MDX   3 -2          XR3=XR3-2                  BCDBI076
0035 0  70E3              MDX     A2                                     BCDBI077
0036 0  C845              LDD     BIN                                    BCDBI078
0037 00 DE000000    A6    STD  L2 *-*         STORE RESULT               BCDBI079
0039 0  7202              MDX   2 2                                      BCDBI080
003A 0  7100              MDX   1 0           TEST XR1                   BCDBI081
003B 0  70DA              MDX     A1                                     BCDBI082
                    *                                                    BCDBI083
003C 01 65800000    EXIT  LDX  I1 BCDBI       XR1 HAS PARAMETER ADDRESS  BCDBI084
003E 0  C101              LD    1 1           INCREMENT SEC. PAR. ADDR.  BCDBI085
003F 0  8039              A       K512                                   BCDBI086
0040 0  D101              STO   1 1           RETURN IT TO THE MAIN PRO. BCDBI087
0041 01 74030000          MDX  L  BCDBI,3     INCREMENT RETURN ADDRESS   BCDBI088
0043 00 65000000    X1    LDX  L1 *-*                                    BCDBI089
0045 00 66000000    X2    LDX  L2 *-*                                    BCDBI090
0047 00 67000000    X3    LDX  L3 *-*                                    BCDBI091
0049 01 4C800000          BSC  I  BCDBI                                  BCDBI092
                    *                                                    BCDBI093
004B 00 6500FD00    A7    LDX  L1 -768        XR1=-768                   BCDBI094
004D 0  6306        A75   LDX   3 6           XR3=6                      BCDBI095
004E 0  1010              SLA     16                                     BCDBI096
004F 0  D02C              STO     BIN         BIN=0                      BCDBI097
0050 00 C5000000    A8    LD   L1 *-*         LOAD BCD VALUE             BCDBI098
0052 01 74000077          MDX  L  SW,0        TEST SW                    BCDBI099
0054 0  7006              MDX     A9                                     BCDBI100
0055 0  E01F              AND     MASK1       EXTRACT RIGHT HALF         BCDBI101
0056 0  D01F              STO     COUNT       PUT IT IN COUNT            BCDBI102
0057 0  681F              STX     SW          SET SW NOT ZERO            BCDBI103
0058 0  7101              MDX   1 1           XR1=XR1+1                  BCDBI104
0059 0  7006              MDX     A10         BRANCH TO A10              BCDBI105
005A 0  7005              MDX     A10                                    BCDBI106
005B 0  E018        A9    AND     MASK        EXTRACT LEFT HALF          BCDBI107
005C 0  1888              SRT     8                                      BCDBI108
005D 0  D018              STO     COUNT       PUT IT IN COUNT            BCDBI109
005E 0  1010              SLA     16                                     BCDBI110
005F 0  D017              STO     SW          SET SW ZERO                BCDBI111
0060 01 74000076    A10   MDX  L  COUNT,0     TEST COUNT=0               BCDBI112
0062 0  7001              MDX     A11         NO                         BCDBI113
0063 0  7007              MDX     A13         YES                        BCDBI114
0064 0  C017        A11   LD      BIN         LOAD BIN                   BCDBI115
0065 01 8700007D    A12   A    L3 TAB-1       ADD TABLE*COUNT            BCDBI116
0067 01 74FF0076          MDX  L  COUNT,-1                               BCDBI117
0069 0  70FB              MDX     A12                                    BCDBI118
006A 0  D011              STO     BIN         STORE VALUE IN BIN         BCDBI119
006B 0  73FE        A13   MDX   3 -2          XR3=XR3-2                  BCDBI120
006C 0  70E3              MDX     A8                                     BCDBI121
006D 0  C00E              LD      BIN                                    BCDBI122
006E 00 D6000000    A14   STO  L2 *-*         STORE RESULT               BCDBI123
```

```
0070 0  7201                MDX   2 1                    BCDBI124
0071 0  7100                MDX   1 0                    BCDBI125
0072 0  70DA                MDX     A75                  BCDBI126
0073 0  70C8                MDX     EXIT                 BCDBI127
0074 0  0F00         MASK   DC      /0F00                BCDBI128
0075 0  000F         MASK1  DC      /000F                BCDBI129
0076 0  0000         COUNT  DC      0                    BCDBI130
0077 0  0000         SW     DC      0                    BCDBI131
0078 0  0001         K1     DC      1                    BCDBI132
0079 0  0200         K512   DC      512                  BCDBI133
007A 0  0300         K768   DC      768                  BCDBI134
007C 00 00000000     BIN    DEC     0                    BCDBI135
007E 00 00000001     TAB    DEC     1                    BCDBI136
0080 00 0000000A            DEC     10                   BCDBI137
0082 00 00000064            DEC     100                  BCDBI138
0084 00 000003E8            DEC     1000                 BCDBI139
0086 00 00002710            DEC     10000                BCDBI140
0088 00 000186A0            DEC     100000               BCDBI141
008A                        END                          BCDBI142

     NO ERRORS IN ABOVE ASSEMBLY.
BCDBI
DUP FUNCTION COMPLETED
```

```
                *****************************************************  SUMT 002
                * IBM 1800 SUBROUTINES FOR DATA REDUCTION           *  SUMT 003
                *****************************************************  SUMT 004
                *                                                   *  SUMT 005
                *     SUBROUTINE SUMT                               *  SUMT 006
                *                                                   *  SUMT 007
                *     CALLING SEQUENCE                              *  SUMT 008
                *     ----------------                              *  SUMT 009
                *     CALL     SUMT                                 *  SUMT 010
                *     DC       SUM                                  *  SUMT 011
                *     DC       AREA                                 *  SUMT 012
                *     DC       TYPE                                 *  SUMT 013
                *                                                   *  SUMT 014
                *  THIS SUBROUTINE CALCULATES THE TOTAL SUM OF ALL  *  SUMT 015
                *  VALUES STORED IN AREA TO AREA+8191. THE FORMAT   *  SUMT 016
                *  OF THE DATA DEPENDS ON TYPE.  THE RESULT IS      *  SUMT 017
                *  STORED AS A DOUBLE PRECISION VALUE IN SUM AND    *  SUMT 018
                *  SUM+1. IF THE SUM EXCEEDS THE MAXIMUM POSS.      *  SUMT 019
                *  VALUE ZERO IS RETURNED AS RESULT.                *  SUMT 020
                *                                                   *  SUMT 021
                *****************************************************  SUMT 022
0000     229148C0       ENT     SUMT        ENTRY SUMT                SUMT 023
0000 0   0000     SUMT  DC      0                                     SUMT 024
0001 0   6921          STX   1 X1+1        SAVE INDEX REGISTERS      SUMT 025
0002 0   6A22          STX   2 X2+1                                  SUMT 026
0003 0   6B23          STX   3 X3+1                                  SUMT 027
0004 01  65800000      LDX   I1 SUMT       XR1=ADDR.OF FIRST PARAM.  SUMT 028
0006 00  6600E000      LDX   L2 -8192      XR2=-8192                 SUMT 029
0008 0   C101          LD    1 1           SEARCH ADDRESS OF SEC.PAR. SUMT 030
0009 0   8023          A       K8192                                 SUMT 031
000A 0   D00C          STO     E1+1                                  SUMT 032
000B 0   D02F          STO     E5+1                                  SUMT 033
000C 0   D037          STO     E7+1                                  SUMT 034
000D 0   D048          STO     E9+1                                  SUMT 035
000E 0   D04B          STO     E10+1                                 SUMT 036
000F 0   D050          STO     E11+1                                 SUMT 037
0010 00  C5800002      LD    I1 2          SEARCH THIRD PARAMETER    SUMT 038
0012 0   901B          S       K2                                    SUMT 039
0013 01  4C100032      BSC   L E4,-        BRANCH FOR 8K,12K,20K,24K SUMT 040
                *                                                   SUMT 041
                *     4K SPECTRA, DATA ARE IN BINARY FORMAT DOUBLE   SUMT 042
                *     PRECISION                                     SUMT 043
                *                                                   SUMT 044
0015 0   10A0          SLT     32          ACCUM.AND Q-REG.=0        SUMT 045
0016 00  8E000000  E1    AD    L2 *-*        BUILD SUM IN ACCUM.       SUMT 046
0018 0   2813          STS     STAT        TEST IF OVERFLOW ON       SUMT 047
0019 01  7400002C      MDX   L STAT,0                                 SUMT 048
001B 0   700E          MDX     OVLOW                                 SUMT 049
001C 0   7202          MDX   2 2           XR2=XR2+2                 SUMT 050
001D 0   70F8          MDX     E1                                    SUMT 051
                *                                                   SUMT 052
001E 00  DD800000  E2  STD   I1 0          STORE RESULT IN FIRST PAR. SUMT 053
0020 01  74030000  E3  MDX   L  SUMT,3     INCREMENT RETURN ADDRESS  SUMT 054
0022 00  65000000  X1  LDX   L1 *-*        RESTORE INDEX REGISTERS   SUMT 055
0024 00  66000000  X2  LDX   L2 *-*                                  SUMT 056
0026 00  67000000  X3  LDX   L3 *-*                                  SUMT 057
0028 01  4C800000      BSC   I  SUMT       RETURN                    SUMT 058
002A 0   10A0      OVLOW SLT     32                                  SUMT 059
002B 0   70F2          MDX     E2                                    SUMT 060
                *                                                   SUMT 061
002C 0   0000      STAT  DC      0                                   SUMT 062
```

```
002D 0  2000        K8192 DC      8192                                  SUMT 063
002E 0  0002        K2    DC      2                                     SUMT 064
002F 0  0003        K3    DC      3                                     SUMT 065
0030 00 00000000    SUMO  DEC     0                                     SUMT 066
                    *                                                   SUMT 067
0032 0  10A0        E4    SLT     32                                    SUMT 068
0033 0  D8FC              STD     SUMO        SUMO=0                    SUMT 069
0034 00 C5800002          LD   I1 2                                     SUMT 070
0036 0  B0F8              CMP     K3                                    SUMT 071
0037 0  700A              MDX     E6          TYPA=4 OR 5       20K,24K SUMT 072
0038 0  7001              MDX     E5          TYPA=2            8K      SUMT 073
0039 0  701B              MDX     E9          TYPA=3            12K     SUMT 074
                    *                                                   SUMT 075
                    *     8K SPECTRA, DATA ARE IN BINARY FORMAT SINGLE  SUMT 076
                    *     PRECISION                                     SUMT 077
                    *                                                   SUMT 078
003A 00 C6000000    E5    LD   L2 *-*                                   SUMT 079
003C 0  1890              SRT     16                                    SUMT 080
003D 0  88F2              AD      SUMO                                  SUMT 081
003E 0  D8F1              STD     SUMO                                  SUMT 082
003F 0  7201              MDX   2 1           XR2=XR2+1                 SUMT 083
0040 0  70F9              MDX     E5                                    SUMT 084
0041 0  70DC              MDX     E2                                    SUMT 085
                    *                                                   SUMT 086
                    *     20K AND 24K SPECTRA, DATA ARE IN BCD          SUMT 087
                    *                                                   SUMT 088
0042 0  63FD        E6    LDX   3 -3          XR3=-3                    SUMT 089
0043 00 C6000000    E7    LD   L2 *-*                                   SUMT 090
0045 0  E00D              AND     MASK1                                 SUMT 091
0046 0  1885        E8    SRT     5                                     SUMT 092
0047 0  D00C              STO     T                                     SUMT 093
0048 0  1010              SLA     16                                    SUMT 094
0049 0  188B              SRT     11                                    SUMT 095
004A 0  88E5              AD      SUMO                                  SUMT 096
004B 0  D8E4              STD     SUMO                                  SUMT 097
004C 0  C007              LD      T                                     SUMT 098
004D 0  7301              MDX   3 1                                     SUMT 099
004E 0  70F7              MDX     E8                                    SUMT 100
004F 0  7201              MDX   2 1                                     SUMT 101
0050 0  70F1              MDX     E6                                    SUMT 102
0051 0  C8DE              LDD     SUMO                                  SUMT 103
0052 0  70CB              MDX     E2                                    SUMT 104
0053 0  3DEF        MASK1 DC      /3DEF                                 SUMT 105
0054 0  0000        T     DC      0                                     SUMT 106
                    *                                                   SUMT 107
                    *     12K SPECTRA, DATA ARE IN BCD                  SUMT 108
                    *                                                   SUMT 109
0055 00 CE000000    E9    LDD  L2 *-*                                   SUMT 110
0057 0  1885              SRT     5                                     SUMT 111
0058 0  400D              BSI     E12                                   SUMT 112
0059 00 CE000000    E10   LDD  L2 *-*                                   SUMT 113
005B 0  1081              SLT     1                                     SUMT 114
005C 0  1801              SRA     1                                     SUMT 115
005D 0  1085              SLT     5                                     SUMT 116
005E 0  4007              BSI     E12                                   SUMT 117
005F 00 CE000000    E11   LDD  L2 *-*                                   SUMT 118
0061 0  1090              SLT     16                                    SUMT 119
0062 0  4003              BSI     E12                                   SUMT 120
0063 0  7202              MDX   2 2                                     SUMT 121
0064 0  70F0              MDX     E9                                    SUMT 122
0065 0  70B8              MDX     E2                                    SUMT 123
```

```
                    IBM 1800 SUBROUTINE SUMT                                  PAGE   3

                    *                                                         SUMT 124
0066 0  0000        E12   DC      0                                           SUMT 125
0067 0  E010              AND     MASK                                        SUMT 126
0068 0  1885              SRT     5                                           SUMT 127
0069 0  D80C              STD     M                                           SUMT 128
006A 0  A00E              M       K10                                         SUMT 129
006B 0  D808              STD     M1                                          SUMT 130
006C 0  10A0              SLT     32                                          SUMT 131
006D 0  C009              LD      M+1                                         SUMT 132
006E 0  189B              SRT     27                                          SUMT 133
006F 0  8804              AD      M1                                          SUMT 134
0070 0  88BF              AD      SUMO                                        SUMT 135
0071 0  D8BE              STD     SUMO                                        SUMT 136
0072 01 4C800066          BSC   I E12         RETURN                          SUMT 137
                    *                                                         SUMT 138
0074 00 00000000    M1    DEC     0                                           SUMT 139
0076 00 00000000    M     DEC     0                                           SUMT 140
0078 0  01FF        MASK  DC      /01FF                                       SUMT 141
0079 0  000A        K10   DC      10                                          SUMT 142
007A                      END                                                 SUMT 143

     NO ERRORS IN ABOVE ASSEMBLY.
SUMT
DUP FUNCTION COMPLETED
```

```
                *****************************************************  NTEST002
                * IBM 1800 SUBROUTINES FOR DATA REDUCTION           *  NTEST003
                *****************************************************  NTEST004
                *                                                   *  NTEST005
                *     SUBROUTINE NTEST                              *  NTEST006
                *                                                   *  NTEST007
                *     CALLING SEQUENCE                              *  NTEST008
                *     ----------------                              *  NTEST009
                *                                                   *  NTEST010
                *     CALL    NTEST                                 *  NTEST011
                *     DC      AREA                                  *  NTEST012
                *     DC      ERRSW                                 *  NTEST013
                *                                                   *  NTEST014
                *  THIS SUBROUTINE TESTS IF EACH BCD DIGIT HAS A    *  NTEST015
                *  VALUE LESS OR EQUAL 9. IT SETS ERRSW=0 IF        *  NTEST016
                *  THE RESULT IS GOOD, OTHERWISE ERRSW IS SET TO    *  NTEST017
                *  A VALUE NOT EQUAL ZERO.                          *  NTEST018
                *  EACH BCD VALUE ZERO IS REPLACED BY A BINARY 0.   *  NTEST019
                *                                                   *  NTEST020
                *****************************************************  NTEST021
0000     158C58A3          ENT     NTEST                               NTEST022
0000 0   0000      NTEST   DC      0                                   NTEST023
0001 0   6927              STX   1 X1+1        SAVE INDEX REGISTERS    NTEST024
0002 0   6A28              STX   2 X2+1                                NTEST025
0003 0   1010              SLA     16                                  NTEST026
0004 01  65800000          LDX   I1 NTEST                              NTEST027
0006 00  D5800001          STO   I1 1          ERRSW=0                 NTEST028
0008 00  6600FCFD          LDX   L2 -771       XR2=-771                NTEST029
000A 0   C100              LD    1 0           SEARCH ADDRESS OF AREA  NTEST030
000B 0   8037              A       K771                                NTEST031
000C 0   D004              STO     A1+1                                NTEST032
000D 0   D021              STO     A6+1                                NTEST033
000E 0   D026              STO     A7+1                                NTEST034
000F 0   D02C              STO     A8+1                                NTEST035
0010 00  C6000000  A1      LD    L2 *-*        GET BCD DIGIT           NTEST036
0012 0   E02E              AND     MASK                                NTEST037
0013 0   1888              SRT     8                                   NTEST038
0014 0   682F              STX     SW                                  NTEST039
0015 01  4C18002E  A2      BSC   L  A6,+-                             NTEST040
0017 0   902A              S       K10                                 NTEST041
0018 01  4C180034          BSC   L  A7,+-                             NTEST042
001A 01  4C10002E          BSC   L  A6,-                              NTEST043
001C 01  74000044  A3      MDX   L  SW,0         TEST SW               NTEST044
001E 0   7003              MDX     A4          NOT ZERO                NTEST045
001F 0   7201              MDX   2 1           XR2=XR2+1               NTEST046
0020 0   70EF              MDX     A1                                  NTEST047
0021 0   7004              MDX     A5                                  NTEST048
0022 0   1010      A4      SLA     16          SET SW=0                NTEST049
0023 0   D020              STO     SW                                  NTEST050
0024 0   1088              SLT     8                                   NTEST051
0025 0   70EF              MDX     A2                                  NTEST052
0026 01  74020000  A5      MDX   L  NTEST,2                           NTEST053
0028 00  65000000  X1      LDX   L1 *-*                               NTEST054
002A 00  66000000  X2      LDX   L2 *-*                               NTEST055
002C 01  4C800000          BSC   I  NTEST                              NTEST056
002E 00  D6000000  A6      STO   L2 *-*          ERROR                 NTEST057
0030 0   C011              LD      K10                                 NTEST058
0031 00  D5800001          STO   I1 1          ERRSW=10                NTEST059
0033 0   70E8              MDX     A3                                  NTEST060
0034 00  C6000000  A7      LD    L2 *-*                                NTEST061
0036 01  74000044          MDX   L  SW,0                              NTEST062
```

```
0038 0  7005                    MDX     A9          NTEST063
0039 0  1808                    SRA     8           NTEST064
003A 0  1008                    SLA     8           NTEST065
003B 00 D6000000        A8      STO     L2 *-*      NTEST066
003D 0  70DE                    MDX     A3          NTEST067
003E 0  1008            A9      SLA     8           NTEST068
003F 0  1808                    SRA     8           NTEST069
0040 0  70FA                    MDX     A8          NTEST070
0041 0  0F0F            MASK    DC      /0F0F       NTEST071
0042 0  000A            K10     DC      10          NTEST072
0043 0  0303            K771    DC      771         NTEST073
0044 0  0000            SW      DC      0           NTEST074
0046                            END                 NTEST075
```

NO ERRORS IN ABOVE ASSEMBLY.

NTEST
DUP FUNCTION COMPLETED

```
                                IBM 1800 SUBROUTINE PACK                                  PAGE    1

                                ***************************************************** PACK0002
                                * IBM 1800 SUBROUTINES FOR DATA REDUCTION          * PACK0003
                                ***************************************************** PACK0004
                                *                                                   * PACK0005
                                *     SUBROUTINE PACK                               * PACK0006
                                *                                                   * PACK0007
                                *     CALLING SEQUENCE                              * PACK0008
                                *     ----------------                              * PACK0009
                                *     CALL     PACK                                 * PACK0010
                                *     DC       AREA1                                * PACK0011
                                *     DC       AREA2                                * PACK0012
                                *                                                   * PACK0013
                                *  THE INPUT AREA CONTAINS 2 BCD DIGITS PER WORD    * PACK0014
                                *  AND IS TO BE PACKED TO 3 BCD DIGITS PER WORD     * PACK0015
                                *                                                   * PACK0016
                                ***************************************************** PACK0017
0000      17043480                ENT      PACK                                      PACK0018
0000 0    0000          PACK      DC       0                                         PACK0019
0001 0    692F                    STX    1 X1+1        SAVE INDEX REGISTERS         PACK0020
0002 0    6A30                    STX    2 X2+1                                     PACK0021
0003 0    6B31                    STX    3 X3+1                                     PACK0022
0004 01   65800000                LDX   I1 PACK                                     PACK0023
0006 0    C100                    LD     1 0           LOAD INPUT ADDRESS           PACK0024
0007 0    8032                    A        K768                                     PACK0025
0008 0    D00D                    STO      P2+1                                     PACK0026
0009 0    802F                    A        K1                                       PACK0027
000A 0    D008                    STO      P1+1                                     PACK0028
000B 0    C101                    LD     1 1           LOAD AREA ADDRESS            PACK0029
000C 0    D018                    STO      P5+1                                     PACK0030
000D 00   6600FD00                LDX   L2 -768        XR2=-768                     PACK0031
000F 0    6300                    LDX    3 0           XR3=0                        PACK0032
0010 0    6827                    STX      SW          SW NOT ZERO                  PACK0033
0011 0    6100                    LDX    1 0           XR1=0                        PACK0034
0012 00   C6000000      P1        LD    L2 *-*         LOAD INPUT+1                 PACK0035
0014 0    1890                    SRT      16                                       PACK0036
0015 00   C6000000      P2        LD    L2 *-*         LOAD INPUT                   PACK0037
0017 01   74000038                MDX   L  SW,0        TEST SW                      PACK0038
0019 0    7004                    MDX      P3          NOT ZERO                     PACK0039
001A 0    7201                    MDX    2 1           XR2=XR2+1                    PACK0040
001B 0    681C                    STX      SW                                       PACK0041
001C 0    1088                    SLT      8                                        PACK0042
001D 0    7001                    MDX      P4                                       PACK0043
001E 0    6919          P3        STX    1 SW          SET SW=0                     PACK0044
001F 0    1885          P4        SRT      5                                        PACK0045
0020 0    1803                    SRA      3           PACKING OF BCD DIGITS        PACK0046
0021 0    1088                    SLT      8                                        PACK0047
0022 0    1803                    SRA      3                                        PACK0048
0023 0    1085                    SLT      5                                        PACK0049
0024 00   D7000000      P5        STO   L3 *-*         AREA                         PACK0050
0026 0    7301                    MDX    3 1           XR3=XR3+1                    PACK0051
0027 0    7201                    MDX    2 1           XR2=XR2+1                    PACK0052
0028 0    70E9                    MDX      P1                                       PACK0053
0029 0    C0FB                    LD       P5+1                                     PACK0054
002A 0    8010                    A        K512                                     PACK0055
002B 01   65800000                LDX   I1 PACK                                     PACK0056
002D 0    D101                    STO    1 1                                        PACK0057
002E 01   74020000                MDX   L  PACK,2      INCREMENT RETURN ADDRESS     PACK0058
0030 00   65000000      X1        LDX   L1 *-*         RESTORE INDEX REGISTERS      PACK0059
0032 00   66000000      X2        LDX   L2 *-*                                      PACK0060
0034 00   67000000      X3        LDX   L3 *-*                                      PACK0061
0036 01   4C800000                BSC   I  PACK        RETURN                       PACK0062
```

```
0038 0  0000        SW      DC      0                   PACK0063
0039 0  0001        K1      DC      1                   PACK0064
003A 0  0300        K768    DC      768                 PACK0065
003B 0  0200        K512    DC      512                 PACK0066
003C                        END                         PACK0067

     NO ERRORS IN ABOVE ASSEMBLY.
PACK
DUP FUNCTION COMPLETED
```

```
                *****************************************************  CDBIM002
                *  IBM 1800 SUBROUTINES FOR DATA REDUCTION          *  CDBIM003
                *****************************************************  CDBIM004
                *                                                   *  CDBIM005
                *     SUBROUTINE CDBIM                              *  CDBIM006
                *                                                   *  CDBIM007
                *     CALLING SEQUENCE                              *  CDBIM008
                *     ----------------                              *  CDBIM009
                *                                                   *  CDBIM010
                *     CALL    CDBIM                                 *  CDBIM011
                *     DC      SPADR       ADDR. OF SPECTRUM         *  CDBIM012
                *     DC      TITLE                                 *  CDBIM013
                *     DC      END                                   *  CDBIM014
                *                                                   *  CDBIM015
                *  THIS SUBROUTINE READS BINARY CARDS AND PERFORMS  *  CDBIM016
                *  A SPECTRUM IN MEMORY FORMAT. INDICATUR END IS    *  CDBIM017
                *  SET UNEQUAL ZERO, IF A CARD *END HAS BEEN READ.  *  CDBIM018
                *                                                   *  CDBIM019
                *****************************************************  CDBIM020
0000     03102254       ENT     CDBIM                                  CDBIM021
0000 0   0000     CDBIM DC      0                                      CDBIM022
0001 0   6965           STX   1 XR1+1                                  CDBIM023
0002 0   6A66           STX   2 XR2+1                                  CDBIM024
0003 0   6B67           STX   3 XR3+1                                  CDBIM025
0004 01  65800000       LDX   I1 CDBIM                                 CDBIM026
0006 00  67800067       LDX   I3 TVLOC                                 CDBIM027
                *                                                      CDBIM028
                *     READ TITLE                                       CDBIM029
                *                                                      CDBIM030
0008 20  03059115       LIBF    CARDN                                  CDBIM031
0009 0   1000           DC      /1000                                  CDBIM032
000A 1   0161           DC      CARD                                   CDBIM033
000B 0   0000           DC      0                                      CDBIM034
000C 20  03059115       LIBF    CARDN                                  CDBIM035
000D 0   0000           DC      0                                      CDBIM036
000E 0   70FD           MDX     *-3                                    CDBIM037
000F 01  44000156       BSI   L ETST                                   CDBIM038
0011 0   705C           MDX     EXIT1                                  CDBIM039
0012 0   C101           LD    1 1                                      CDBIM040
0013 0   D00B           STO     CD0                                    CDBIM041
0014 0   D013           STO     CD1                                    CDBIM042
0015 0   1010           SLA     16                                     CDBIM043
0016 01  D40000BD       STO   L IND                                    CDBIM044
0018 01  CC0001B0       LDD   L CARD+79                                CDBIM045
001A 01  BC0000CC       DCM   L CA00                                   CDBIM046
001C 0   7008           MDX     CD05                                   CDBIM047
001D 0   7007           MDX     CD05                                   CDBIM048
001E 20  024C1552       LIBF    BLANK                                  CDBIM049
001F 0   0000     CD0   DC      *-*                                    CDBIM050
0020 0   0048           DC      72                                     CDBIM051
0021 0   1010           SLA     16                                     CDBIM052
0022 01  D40000BC       STO   L CONT                                   CDBIM053
0024 0   7005           MDX     CD15                                   CDBIM054
0025 30  145A5140 CD05   CALL    MOVE                                   CDBIM055
0027 1   0162           DC      CARD+1                                 CDBIM056
0028 0   0000     CD1   DC      *-*                                    CDBIM057
0029 0   0048           DC      72                                     CDBIM058
002A 0   C100     CD15  LD    1 0                                      CDBIM059
002B 0   D009           STO     SPADR                                  CDBIM060
                *                                                      CDBIM061
                *     START LOOP FOR DIFFERENT BLOCKS                  CDBIM062
```

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                        *                                                CDBIM063
002C 0  4045            CD2    BSI      SCAL                             CDBIM064
002D 01 740000BD               MDX   L  IND,0                            CDBIM065
002F 0  701A                   MDX      CD3                              CDBIM066
0030 01 6C0000BD               STX   L  IND                              CDBIM067
0032 30 145A5140               CALL     MOVE                             CDBIM068
0034 1  01B4                   DC       ID                               CDBIM069
0035 0  0000            SPADR  DC       *-*                              CDBIM070
0036 0  0040            K64    DC       64                               CDBIM071
0037 01 66800035               LDX   I2 SPADR                            CDBIM072
0039 0  C205                   LD    2  5                                CDBIM073
003A 01 D40000BE               STO   L  COUNT                            CDBIM074
003C 0  C204                   LD    2  4                                CDBIM075
003D 01 940000C4               S     L  K1                               CDBIM076
003F 0  1004                   SLA      4                                CDBIM077
0040 01 D40000C3               STO   L  B3                               CDBIM078
0042 0  C206                   LD    2  6                                CDBIM079
0043 0  D07E                   STO      BLOCK                            CDBIM080
0044 0  907E                   S        B3                               CDBIM081
0045 0  907E                   S        K1                               CDBIM082
0046 0  1009                   SLA      9                                CDBIM083
0047 0  80ED                   A        SPADR                            CDBIM084
0048 0  80ED                   A        K64                              CDBIM085
0049 0  D077                   STO      ADDR                             CDBIM086
004A 01 4400013A        CD3    BSI   L  BTEST                            CDBIM087
004C 0  7023                   MDX      ERRO4                            CDBIM088
004D 01 CC0001AA               LDD   L  CARD+73                          CDBIM089
004F 0  D87E                   STD      SAVE                             CDBIM090
0050 01 CC0001AC               LDD   L  CARD+75                          CDBIM091
0052 0  D87D                   STD      SAVE+2                           CDBIM092
0053 01 CC0001AE               LDD   L  CARD+77                          CDBIM093
0055 0  D87C                   STD      SAVE+4                           CDBIM094
0056 0  407D                   BSI      DATA                             CDBIM095
0057 0  C069                   LD       ADDR                             CDBIM096
0058 0  8070                   A        K512                             CDBIM097
0059 0  D067                   STO      ADDR                             CDBIM098
005A 01 740100C2               MDX   L  BLOCK,1                          CDBIM099
005C 01 74FF00BE               MDX   L  COUNT,-1                         CDBIM100
005E 0  70CD                   MDX      CD2                              CDBIM101
005F 0  1010                   SLA      16                               CDBIM102
0060 01 65800000        EXIT   LDX   I1 CDBIM                            CDBIM103
0062 00 D5800002               STO   I1 2                                CDBIM104
0064 01 74030000               MDX   L  CDBIM,3                          CDBIM105
0066 00 65000000        XR1    LDX   L1 *-*                              CDBIM106
0068 00 66000000        XR2    LDX   L2 *-*                              CDBIM107
006A 00 67000000        XR3    LDX   L3 *-*                              CDBIM108
006C 01 4C800000               BSC   I  CDBIM                            CDBIM109
                        *                                                CDBIM110
006E 0  C055            EXIT1  LD       K1                               CDBIM111
006F 0  70F0                   MDX      EXIT                             CDBIM112
                        *                                                CDBIM113
0070 01 4C00010D        ERRO4  BSC   L  ERRO1                            CDBIM114
                        *                                                CDBIM115
0072 0  0000            SCAL   DC       0                                CDBIM116
0073 01 740000BC               MDX   L  CONT,0                           CDBIM117
0075 0  7002                   MDX      SCALL                            CDBIM118
0076 0  6845                   STX      CONT                             CDBIM119
0077 0  7020                   MDX      SCAL1                            CDBIM120
0078 20 03059115        SCALL  LIBF     CARDN                            CDBIM121
0079 0  1000                   DC       /1000                            CDBIM122
007A 1  0161                   DC       CARD                             CDBIM123
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007B 0  0000                DC      0                       CDBIM124
007C 20 03059115            LIBF    CARDN                   CDBIM125
007D 0  0000                DC      0                       CDBIM126
007E 0  70FD                MDX     *-3                     CDBIM127
007F 01 44000156            BSI  L  ETST                    CDBIM128
0081 0  7029                MDX     ERROR                   CDBIM129
0082 01 CC0001B0            LDD  L  CARD+79                 CDBIM130
0084 0  B847                DCM     CA00                    CDBIM131
0085 0  7002                MDX     SCAL0                   CDBIM132
0086 0  7001                MDX     SCAL0                   CDBIM133
0087 0  7010                MDX     SCAL1                   CDBIM134
0088 20 176558D5    SCAL0   LIBF    PRNTN                   CDBIM135
0089 0  3D00                DC      /3D00                   CDBIM136
008A 0  C037                LD      BLOCK                   CDBIM137
008B 0  1890                SRT     16                      CDBIM138
008C 30 025440C0            CALL    BNDC                    CDBIM139
008E 1  0236                DC      MES4-6                  CDBIM140
008F 20 176558D5            LIBF    PRNTN                   CDBIM141
0090 0  2100                DC      /2100                   CDBIM142
0091 1  0218                DC      MES3-1                  CDBIM143
0092 0  0000                DC      0                       CDBIM144
0093 20 176558D5            LIBF    PRNTN                   CDBIM145
0094 0  3D00                DC      /3D00                   CDBIM146
0095 20 17064885            LIBF    PAUSE                   CDBIM147
0096 1  00C5                DC      K2                      CDBIM148
0097 0  70DB                MDX     SCAL+1                  CDBIM149
0098 0  61F0        SCAL1   LDX     1  -16                  CDBIM150
0099 01 C5000172    SCAL2   LD   L1 CARD+17                 CDBIM151
009B 0  1804                SRA     4                       CDBIM152
009C 01 D50001C4            STO  L1 ID&16                   CDBIM153
009E 0  7101                MDX     1  1                    CDBIM154
009F 0  70F9                MDX     SCAL2                   CDBIM155
                    *                                       CDBIM156
00A0 0  61D0                LDX     1  -48                  CDBIM157
00A1 01 CD0001A2    SCAL3   LDD  L1 CARD+17+48              CDBIM158
00A3 0  1804                SRA     4                       CDBIM159
00A4 0  1884                SRT     4                       CDBIM160
00A5 01 DD0001F4            STD  L1 ID&16&48                CDBIM161
00A7 0  7102                MDX     1  2                    CDBIM162
00A8 0  70F8                MDX     SCAL3                   CDBIM163
00A9 01 4C800072            BSC  I  SCAL                    CDBIM164
                    *                                       CDBIM165
00AB 20 176558D5    ERROR   LIBF    PRNTN                   CDBIM166
00AC 0  3D00                DC      /3D00                   CDBIM167
00AD 0  C014                LD      BLOCK                   CDBIM168
00AE 0  1890                SRT     16                      CDBIM169
00AF 30 025440C0            CALL    BNDC                    CDBIM170
00B1 1  0212                DC      MES2-6                  CDBIM171
00B2 20 176558D5            LIBF    PRNTN                   CDBIM172
00B3 0  2100                DC      /2100                   CDBIM173
00B4 1  01F4                DC      MES1-1                  CDBIM174
00B5 0  0000                DC      0                       CDBIM175
00B6 20 176558D5            LIBF    PRNTN                   CDBIM176
00B7 0  3D00                DC      /3D00                   CDBIM177
00B8 20 17064885            LIBF    PAUSE                   CDBIM178
00B9 1  00C4                DC      K1                      CDBIM179
00BA 01 4C00002C            BSC  L  CD2                     CDBIM180
                    *                                       CDBIM181
00BC 0  0001        CONT    DC      1                       CDBIM182
00BD 0  0000        IND     DC      0                       CDBIM183
00BE 0  0000        COUNT   DC      0                       CDBIM184
```

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00BF 0  0000          NUMB   DC       0                    CDBIM185
00C0 0  0000          CHAN   DC       0                    CDBIM186
00C1 0  0000          ADDR   DC       0                    CDBIM187
00C2 0  0000          BLOCK  DC       0                    CDBIM188
00C3 0  0000          B3     DC       0                    CDBIM189
00C4 0  0001          K1     DC       1                    CDBIM190
00C5 0  0001          K2     DC       1                    CDBIM191
00C6 0  0003          K3     DC       3                    CDBIM192
00C7 0  000A          K10    DC       10                   CDBIM193
00C8 0  FF00          KM256  DC       -256                 CDBIM194
00C9 0  0200          K512   DC       512                  CDBIM195
00CA 00 00000000      D0     DEC      0                    CDBIM196
00CC 0  2000          CA00   DC       /2000                CDBIM197
00CD 0  2000                 DC       /2000                CDBIM198
00CE    0006          SAVE   BSS   E  6                    CDBIM199
                      *                                   CDBIM200
00D4 0  0000          DATA   DC       0                    CDBIM201
00D5 01 668000C1             LDX   I2 ADDR                 CDBIM202
00D7 0  C0F0                 LD       KM256               CDBIM203
00D8 0  D0E7                 STO      CHAN                CDBIM204
00D9 0  C0EA                 LD       K1                  CDBIM205
00DA 0  D0E4                 STO      NUMB                CDBIM206
00DB 20 03059115      D1     LIBF     CARDN               CDBIM207
00DC 0  1000                 DC       /1000               CDBIM208
00DD 1  0161                 DC       CARD                CDBIM209
00DE 0  0000                 DC       0                   CDBIM210
00DF 20 03059115             LIBF     CARDN               CDBIM211
00E0 0  0000                 DC       0                   CDBIM212
00E1 0  70FD                 MDX      *-3                 CDBIM213
00E2 0  4073                 BSI      ETST                CDBIM214
00E3 0  70C7                 MDX      ERROR               CDBIM215
00E4 01 C40001B1             LD    L  CARD+80             CDBIM216
00E6 0  610C                 LDX    1 12                  CDBIM217
00E7 0  1140                 SLCA   1 0                   CDBIM218
00E8 01 6D0001B1             STX   L1 CARD+80             CDBIM219
00EA 0  C0DC                 LD       K10                 CDBIM220
00EB 01 940001B1             S     L  CARD+80             CDBIM221
00ED 0  90D1                 S        NUMB                CDBIM222
00EF 01 4C20011C             BSC   L  ERR02,Z             CDBIM223
00F0 0  61FA                 LDX    1 -6                  CDBIM224
00F1 01 CD0001B0      D15    LDD   L1 CARD+73+6           CDBIM225
00F3 01 BD0000D4             DCM   L1 SAVE+6              CDBIM226
00F5 0  7035                 MDX      ERR03               CDBIM227
00F6 0  7034                 MDX      ERR03               CDBIM228
00F7 0  7102                 MDX    1 2                   CDBIM229
00F8 0  70F8                 MDX      D15                 CDBIM230
00F9 0  61BA                 LDX    1 -70                 CDBIM231
00FA 01 CD0001AA      D2     LDD   L1 CARD+73             CDBIM232
00FC 0  1804                 SRA      4                   CDBIM233
00FD 0  1084                 SLT      4                   CDBIM234
00FE 0  1888                 SRT      8                   CDBIM235
00FF 0  DA00                 STD    2 0                   CDBIM236
0100 01 740100C0             MDX   L  CHAN,1              CDBIM237
0102 0  7001                 MDX      D3                  CDBIM238
0103 0  7007                 MDX      D4                  CDBIM239
0104 0  7202          D3     MDX    2 2                   CDBIM240
0105 0  1000                 NOP      0                   CDBIM241
0106 0  7102                 MDX    1 2                   CDBIM242
0107 0  70F2                 MDX      D2                  CDBIM243
0108 01 740100BF             MDX   L  NUMB,1              CDBIM244
010A 0  70D0                 MDX      D1                  CDBIM245
```

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010B 01 4C8000D4    D4     BSC  I   DATA                    CDBIM246
                    *                                       CDBIM247
010D 20 176558D5    ERR01  LIBF     PRNTN                   CDBIM248
010E 0  3D00               DC       /3D00                   CDBIM249
010F 0  C0B2               LD       BLOCK                   CDBIM250
0110 0  1890               SRT      16                      CDBIM251
0111 30 025440C0           CALL     BNDC                    CDBIM252
0113 1  0259               DC       MES6-6                  CDBIM253
0114 20 176558D5           LIBF     PRNTN                   CDBIM254
0115 0  2100               DC       /2100                   CDBIM255
0116 1  023C               DC       MES5-1                  CDBIM256
0117 0  0000       TEST    DC       0                       CDBIM257
0118 20 17064885           LIBF     PAUSE                   CDBIM258
0119 1  00C6               DC       K3                      CDBIM259
011A 01 4C00002C           BSC  L   CD2                     CDBIM260
                    *                                       CDBIM261
011C 20 176558D5    ERR02  LIBF     PRNTN                   CDBIM262
011D 0  3D00               DC       /3D00                   CDBIM263
011E 0  C0A3               LD       BLOCK                   CDBIM264
011F 0  1890               SRT      16                      CDBIM265
0120 30 025440C0           CALL     BNDC                    CDBIM266
0122 1  027B               DC       MES8-6                  CDBIM267
0123 20 176558D5           LIBF     PRNTN                   CDBIM268
0124 0  2100               DC       /2100                   CDBIM269
0125 1  025F               DC       MES7-1                  CDBIM270
0126 0  0000               DC       0                       CDBIM271
0127 20 17064885           LIBF     PAUSE                   CDBIM272
0128 1  00C6               DC       K3                      CDBIM273
0129 01 4C00002C           BSC  L   CD2                     CDBIM274
                    *                                       CDBIM275
012B 20 176558D5    ERR03  LIBF     PRNTN                   CDBIM276
012C 0  3D00               DC       /3D00                   CDBIM277
012D 0  C094               LD       BLOCK                   CDBIM278
012E 0  1890               SRT      16                      CDBIM279
012F 30 025440C0           CALL     BNDC                    CDBIM280
0131 1  0299               DC       MES10-6                 CDBIM281
0132 20 176558D5           LIBF     PRNTN                   CDBIM282
0133 0  2100               DC       /2100                   CDBIM283
0134 1  0281               DC       MES9-1                  CDBIM284
0135 0  0000       CD      DC       0                       CDBIM285
0136 20 17064885           LIBF     PAUSE                   CDBIM286
0137 1  00C6               DC       K3                      CDBIM287
0138 01 4C00002C           BSC  L   CD2                     CDBIM288
                    *                                       CDBIM289
013A 0  0000       BTEST   DC       0                       CDBIM290
013B 01 C40001AE           LD   L   CARD+77                 CDBIM291
013D 0  610C               LDX  1   12                      CDBIM292
013E 0  1140               SLCA 1   0                       CDBIM293
013F 0  69F5               STX  1   CD                      CDBIM294
0140 0  C086               LD       K10                     CDBIM295
0141 0  90F3               S        CD                      CDBIM296
0142 0  A084               M        K10                     CDBIM297
0143 0  1090               SLT      16                      CDBIM298
0144 0  D0F0               STO      CD                      CDBIM299
0145 01 C40001AF           LD   L   CARD+78                 CDBIM300
0147 0  610C               LDX  1   12                      CDBIM301
0148 0  1140               SLCA 1   0                       CDBIM302
0149 0  69CD               STX  1   TEST                    CDBIM303
014A 01 C40000C7           LD   L   K10                     CDBIM304
014C 0  90CA               S        TEST                    CDBIM305
014D 0  80E7               A        CD                      CDBIM306
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014E 01 940000C2          S     L  BLOCK                                    CDBIM307
0150 01 4CA0013A          BSC   I  BTEST,Z                                  CDBIM308
0152 01 7401013A          MDX   L  BTEST,1                                  CDBIM309
0154 01 4C80013A          BSC   I  BTEST                                    CDBIM310
                          *                                                 CDBIM311
0156 0  0000         ETST DC       0                                        CDBIM312
0157 0  C80A              LDD      CARD+1                                   CDBIM313
0158 0  B859              DCM      END                                      CDBIM314
0159 0  7003              MDX      E1                                       CDBIM315
015A 0  7002              MDX      E1                                       CDBIM316
015B 01 4C800156     E0   BSC   I  ETST                                     CDBIM317
015D 01 74010156     E1   MDX   L  ETST,1                                   CDBIM318
015F 0  70FB              MDX      E0                                       CDBIM319
                          *                                                 CDBIM320
0160    0001              BSS   E  1                                        CDBIM321
0161 0  0050         CARD DC       80                                       CDBIM322
0162    0050              BSS      80                                       CDBIM323
01B2 0  4220         END  DC       /4220                                    CDBIM324
01B3 0  8100              DC       /8100                                    CDBIM325
01B4    0040         ID   BSS   E  64                                       CDBIM326
                          *                                                 CDBIM327
01F4 0  0023              DC       MES2-MES1                                CDBIM328
01F5    0025         MES1 DMES  1  '4XSPECTRUM NOT COMPLETE. CORRECT AN'    CDBIM329
0207    0015              DMES  1  D CONTINUE WITH BLOCK'E                  CDBIM330
0212    0006              BSS      6                                        CDBIM331
0218    0000         MES2 BSS      0                                        CDBIM332
0218 0  0023              DC       MES4-MES3                                CDBIM333
0219    0025         MES3 DMES  1  '4XERROR IN HEADER CARD. CORRECT AND'    CDBIM334
022B    0015              DMES  1   CONTINUE WITH BLOCK'E                  CDBIM335
0236    0006              BSS      6                                        CDBIM336
023C    0000         MES4 BSS      0                                        CDBIM337
023C 0  0022              DC       MES6-MES5                                CDBIM338
023D    0024         MES5 DMES  1  '4XBLOCK NUMBER ERROR. CORRECT AND '     CDBIM339
024F    0014              DMES  1  CONTINUE WITH BLOCK'E                    CDBIM340
0259    0006              BSS      6                                        CDBIM341
025F    0000         MES6 BSS      0                                        CDBIM342
025F 0  0021              DC       MES8-MES7                                CDBIM343
0260    0025         MES7 DMES  1  '4XCARD ORDER ERROR. CORRECT AND CON'    CDBIM344
0272    0011              DMES  1  TINUE WITH BLOCK'E                       CDBIM345
027B    0006              BSS      6                                        CDBIM346
0281    0000         MES8 BSS      0                                        CDBIM347
0281 0  001D              DC       MES10-MES9                               CDBIM348
0282    0024         MES9 DMES  1  '4XIDENTIFICATION ERROR. CORRECT AN'     CDBIM349
0294    0016              DMES  1  D CONTINUE WITH BLOCK'E                  CDBIM350
029F    0000         MES10 BSS     0                                        CDBIM351
                          *                                                 CDBIM352
0067                 TVLOC EQU     103                                      CDBIM353
02A0                       END                                            CDBIM354
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NO ERRORS IN ABOVE ASSEMBLY.

CDBIM
DUP FUNCTION COMPLETED

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                                IBM 1800 SUBROUTINE MCDBI                                  PAGE    1

                                ***************************************************** MCDBI002
                                *  IBM 1800 SUBROUTINES FOR DATA REDUCTION          * MCDBI003
                                ***************************************************** MCDBI004
                                *                                                   * MCDBI005
                                *      SUBROUTINE MCDBI                             * MCDBI006
                                *                                                   * MCDBI007
                                *      CALLING SEQUENCE                             * MCDBI008
                                *      ----------------                             * MCDBI009
                                *                                                   * MCDBI010
                                *      CALL     MCDBI                               * MCDBI011
                                *      DC       SPADR                               * MCDBI012
                                *      DC       B1                                  * MCDBI013
                                *      DC       B2                                  * MCDBI014
                                *      DC       TITLE                               * MCDBI015
                                *                                                   * MCDBI016
                                *  THE SUBROUTINE PUNCHES A SPECTRUM FROM BLOCK B1* MCDBI017
                                *  TO B2 IN CARDS, BIN. FORMAT.                     * MCDBI018
                                *                                                   * MCDBI019
                                ***************************************************** MCDBI020
0000     140C4089                ENT      MCDBI                                      MCDBI021
0000 0   0000            MCDBI   DC       0                                          MCDBI022
0001 0   6974                    STX    1 X1+1                                       MCDBI023
0002 0   6A75                    STX    2 X2+1                                       MCDBI024
0003 0   6B76                    STX    3 X3+1                                       MCDBI025
0004 00  67800067                LDX   I3 TVLOC                                      MCDBI026
0006 01  65800000                LDX   I1 MCDBI                                      MCDBI027
0008 0   C100                    LD     1 0                                          MCDBI028
0009 0   D073                    STO      SPADR                                      MCDBI029
000A 00  C5800001                LD    I1 1                                          MCDBI030
000C 0   D071                    STO      B1                                         MCDBI031
000D 00  C5800002                LD    I1 2                                          MCDBI032
000F 0   D06F                    STO      B2                                         MCDBI033
0010 01  6680007D                LDX   I2 SPADR                                      MCDBI034
0012 0   C206                    LD     2 6                                          MCDBI035
0013 0   906A                    S        B1                                         MCDBI036
0014 01  44300102                BSI   L  ERR1,-Z                                    MCDBI037
0016 0   C206                    LD     2 6                                          MCDBI038
0017 0   8205                    A      2 5                                          MCDBI039
0018 0   906A                    S        K1                                         MCDBI040
0019 0   9065                    S        B2                                         MCDBI041
001A 01  44280110                BSI   L  ERR2,+Z                                    MCDBI042
001C 0   C204                    LD     2 4                                          MCDBI043
001D 0   9065                    S        K1                                         MCDBI044
001E 0   1004                    SLA      4                                          MCDBI045
001F 0   D060                    STO      B3                                         MCDBI046
0020 0   C05D                    LD       B1                                         MCDBI047
0021 0   905E                    S        B3                                         MCDBI048
0022 0   9060                    S        K1                                         MCDBI049
0023 0   1009                    SLA      9                                          MCDBI050
0024 0   8058                    A        SPADR                                      MCDBI051
0025 0   805C                    A        K64                                        MCDBI052
0026 0   D063                    STO      ADDR                                       MCDBI053
0027 0   C057                    LD       B2                                         MCDBI054
0028 0   805A                    A        K1                                         MCDBI055
0029 0   9054                    S        B1                                         MCDBI056
002A 01  4C080073                BSC   L  EXIT,+                                     MCDBI057
002C 0   D054                    STO      COUNT                                      MCDBI058
002D 0   61FC                    LDX    1 -4                                         MCDBI059
002E 0   6859                    STX      IND                                        MCDBI060
002F 0   C200            CO      LD     2 0                                          MCDBI061
0030 01  95000088                S     L1 ID+4                                       MCDBI062
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0032 01 4C200038        BSC  L  C2,Z                                    MCDBI063
0034 0  7201        C1  MDX   2 1                                       MCDBI064
0035 0  7101            MDX   1 1                                       MCDBI065
0036 0  70F8            MDX     C0                                      MCDBI066
0037 0  7006            MDX     C3                                      MCDBI067
0038 0  C200        C2  LD    2 0                                       MCDBI068
0039 01 D5000088        STO  L1 ID+4                                    MCDBI069
003B 0  1010            SLA     16                                      MCDBI070
003C 0  D04B            STO     IND                                     MCDBI071
003D 0  70F6            MDX     C1                                      MCDBI072
003E 01 74000088    C3  MDX  L  IND,0                                   MCDBI073
0040 0  700F            MDX     C5                                      MCDBI074
0041 01 440000EC        BSI  L  RTEST                                   MCDBI075
0043 01 65800000        LDX  I1 MCDBI                                   MCDBI076
0045 0  C103            LD    1 3           GET ADDRESS OF TITLE        MCDBI077
0046 0  D002            STO     C4                                      MCDBI078
0047 30 145A5140        CALL    MOVE                                    MCDBI079
0049 0  0000        C4  DC      *-*                                     MCDBI080
004A 1  0124            DC      CARD+1                                  MCDBI081
004B 0  002A            DC      42                                      MCDBI082
004C 20 03059115        LIBF    CARDN         PUNCH TITLE               MCDBI083
004D 0  2000            DC      /2000                                   MCDBI084
004E 1  0123            DC      CARD                                    MCDBI085
004F 0  0000            DC      0                                       MCDBI086
                    *                                                   MCDBI087
                    *   PREPARE ID-NUMBER                               MCDBI088
                    *                                                   MCDBI089
0050 01 6680007D    C5  LDX  I2 SPADR                                   MCDBI090
0052 0  C200            LD    2 0           GET PISW                    MCDBI091
0053 0  1890            SRT     16                                      MCDBI092
0054 0  A834            D       K10                                     MCDBI093
0055 0  108C            SLT     12                                      MCDBI094
0056 0  180C            SRA     12                                      MCDBI095
0057 0  108C            SLT     12                                      MCDBI096
0058 0  D035            STO     IDCD                                    MCDBI097
0059 0  C201            LD    2 1           GET 1. EXP. NO.           MCDBI098
005A 0  1004            SLA     4                                       MCDBI099
005B 0  E832            OR      IDCD                                    MCDBI100
005C 0  D031            STO     IDCD                                    MCDBI101
005D 0  C202            LD    2 2           GET 2. EXP. NO.           MCDBI102
005E 0  100C            SLA     12                                      MCDBI103
005F 0  D02F            STO     IDCD+1                                  MCDBI104
0060 0  C203            LD    2 3           GET SERIAL NUMBER         MCDBI105
0061 0  1890            SRT     16                                      MCDBI106
0062 0  A826            D       K10                                     MCDBI107
0063 0  108C            SLT     12                                      MCDBI108
0064 0  180C            SRA     12                                      MCDBI109
0065 0  1088            SLT     8                                       MCDBI110
0066 0  E828            OR      IDCD+1                                  MCDBI111
0067 0  D027            STO     IDCD+1                                  MCDBI112
                    *                                                   MCDBI113
                    *   START LOOP FOR DIFFERENT BLOCKS                 MCDBI114
                    *                                                   MCDBI115
0068 0  4029        C6  BSI     SCAL          PUNCH HEADER-SCALER DATA  MCDBI116
0069 0  4054            BSI     DATA          PUNCH ONE BLOCK OF DATA   MCDBI117
006A 0  C01F            LD      ADDR          BEGINNING AT ADDR         MCDBI118
006B 01 84000122        A    L  K512                                    MCDBI119
006D 0  D01C            STO     ADDR                                    MCDBI120
006E 01 7401007E        MDX  L  B1,1          INCREMENT BLOCK NUMBER    MCDBI121
0070 01 74FF0081        MDX  L  COUNT,-1      DECREASE NO. OF BLOCK COU- MCDBI122
0072 0  70F5            MDX     C6                                      MCDBI123
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0073 01 74040000     EXIT  MDX  L   MCDBI,4     INCREMENT RETURN ADDRESS    MCDBI124
0075 00 65000000     X1    LDX  L1  *-*         RESTORE INDEX REGISTERS     MCDBI125
0077 00 66000000     X2    LDX  L2  *-*                                     MCDBI126
0079 00 67000000     X3    LDX  L3  *-*                                     MCDBI127
007B 01 4C800000           BSC  I   MCDBI       RETURN                      MCDBI128
                           *                                                MCDBI129
                           *     CONSTANTS                                  MCDBI130
                           *                                                MCDBI131
007D 0  0000         SPADR DC       0                                      MCDBI132
007E 0  0000         B1    DC       0                                      MCDBI133
007F 0  0000         B2    DC       0                                      MCDBI134
0080 0  0000         B3    DC       0                                      MCDBI135
0081 0  0000         COUNT DC       0                                      MCDBI136
0082 0  0040         K64   DC       64                                     MCDBI137
0083 0  0001         K1    DC       1                                      MCDBI138
0084    0004         ID    BSS      4                                      MCDBI139
0088 0  0000         IND   DC       0                                      MCDBI140
0089 0  000A         K10   DC       10                                     MCDBI141
008A 0  0000         ADDR  DC       0                                      MCDBI142
008B 0  0000         NUMB  DC       0                                      MCDBI143
008C 0  FF00         KM256 DC       -256                                   MCDBI144
008D 0  0000         CHAN  DC       0                                      MCDBI145
008E 00 00000000     IDCD  DEC      0                                      MCDBI146
0090 0  2000         CA00  DC       /2000                                  MCDBI147
0091 0  2000               DC       /2000                                  MCDBI148
                           *                                                MCDBI149
                           *     PREPARE AND PUNCH SCALER DATA              MCDBI150
                           *                                                MCDBI151
0092 0  0000         SCAL  DC       0                                      MCDBI152
0093 01 6680007D           LDX  I2  SPADR                                   MCDBI153
0095 0  4056               BSI      RTEST                                   MCDBI154
                           *                                                MCDBI155
0096 0  61F0               LDX   1  -16                                     MCDBI156
0097 0  C200         S1    LD    2  0                                       MCDBI157
0098 0  1004               SLA      4                                       MCDBI158
0099 01 D5000134           STO  L1  CARD+17                                 MCDBI159
009B 0  7201               MDX   2  1                                       MCDBI160
009C 0  7101               MDX   1  1                                       MCDBI161
009D 0  70F9               MDX      S1                                      MCDBI162
                           *                                                MCDBI163
009E 0  C2F9               LD    2  -7                                      MCDBI164
009F 01 4C0800AF           BSC  L   S3,+                                    MCDBI165
00A1 0  1001               SLA      1                                       MCDBI166
00A2 0  D001               STO      *+1                                     MCDBI167
00A3 00 65000000           LDX  L1  *-*                                     MCDBI168
00A5 01 768000A4           MDX  I2  *-3                                     MCDBI169
00A7 0  72FE         S2    MDX   2  -2                                      MCDBI170
00A8 0  CA00               LDD   2  0                                       MCDBI171
00A9 0  1084               SLT      4                                       MCDBI172
00AA 0  1004               SLA      4                                       MCDBI173
00AB 01 DD000132           STD  L1  CARD+15                                 MCDBI174
00AD 0  71FE               MDX   1  -2                                      MCDBI175
00AE 0  70F8               MDX      S2                                      MCDBI176
00AF 0  C8E0         S3    LDD      CA00                                    MCDBI177
00B0 01 DC000172           STD  L   CARD+79                                 MCDBI178
00B2 0  C0CB               LD       B1                                      MCDBI179
00B3 20 02255103           LIBF     BINDC                                   MCDBI180
00B4 1  016C               DC       CARD+73                                 MCDBI181
00B5 0  C8D8               LDD      IDCD                                    MCDBI182
00B6 01 DC00016C           STD  L   CARD+73                                 MCDBI183
00B8 20 03059115           LIBF     CARDN                                   MCDBI184
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00B9 0  2000              DC      /2000                                  MCDBI185
00BA 1  0123              DC      CARD                                   MCDBI186
00BB 0  0000              DC      0                                      MCDBI187
00BC 01 4C800092          BSC  I  SCAL                                   MCDBI188
                          *                                              MCDBI189
                          *     PREPARE AND PUNCH DATA CARDS             MCDBI190
                          *                                              MCDBI191
00BE 0  0000              DATA DC      0                                 MCDBI192
00BF 01 6680008A          LDX  I2 ADDR                                   MCDBI193
00C1 0  C0C1              LD      K1                                     MCDBI194
00C2 0  D0C8              STO     NUMB                                   MCDBI195
00C3 0  C0C8              LD      KM256                                  MCDBI196
00C4 0  D0C8              STO     CHAN                                   MCDBI197
00C5 30 145A5140          CALL    MOVE                                   MCDBI198
00C7 1  016C              DC      CARD+73                                MCDBI199
00C8 1  0174              DC      SAVE                                   MCDBI200
00C9 0  0006              DC      6                                      MCDBI201
00CA 0  4021              D1   BSI     RTEST                             MCDBI202
00CB 0  C0BF              LD      NUMB                                   MCDBI203
00CC 20 02255103          LIBF    BINDC                                  MCDBI204
00CD 1  016E              DC      CARD+75                                MCDBI205
00CE 30 145A5140          CALL    MOVE                                   MCDBI206
00D0 1  0174              DC      SAVE                                   MCDBI207
00D1 1  016C              DC      CARD+73                                MCDBI208
00D2 0  0006              DC      6                                      MCDBI209
00D3 0  61BA              LDX  1  -70                                    MCDBI210
00D4 0  CA00              D2   LDD  2 0                                  MCDBI211
00D5 0  1084              SLT     4                                      MCDBI212
00D6 0  1004              SLA     4                                      MCDBI213
00D7 01 DD00016C          STD  L1 CARD+73                                MCDBI214
00D9 01 7401008D          MDX  L  CHAN,1                                 MCDBI215
00DB 0  7001              MDX     D3                                     MCDBI216
00DC 0  7004              MDX     D4                                     MCDBI217
00DD 0  7202              D3   MDX  2 2                                  MCDBI218
00DE 0  1000              NOP                                            MCDBI219
00DF 0  7102              MDX  1  2                                      MCDBI220
00E0 0  70F3              MDX     D2                                     MCDBI221
00E1 20 03059115          D4   LIBF    CARDN                             MCDBI222
00E2 0  2000              DC      /2000                                  MCDBI223
00E3 1  0123              DC      CARD                                   MCDBI224
00E4 0  0000              DC      0                                      MCDBI225
00E5 01 7401008B          MDX  L  NUMB,1                                 MCDBI226
00E7 01 7400008D          MDX  L  CHAN,0                                 MCDBI227
00E9 0  70E0              MDX     D1                                     MCDBI228
00EA 01 4C8000BE          BSC  I  DATA                                   MCDBI229
                          *                                              MCDBI230
00EC 0  0000              RTEST DC     0                                 MCDBI231
00ED 20 03059115          R0   LIBF    CARDN       READ A CARD           MCDBI232
00EE 0  1000              DC      /1000                                  MCDBI233
00EF 1  0123              DC      CARD                                   MCDBI234
00F0 0  0000              DC      0                                      MCDBI235
00F1 20 03059115          R1   LIBF    CARDN       TEST IF UP.COMPLETE   MCDBI236
00F2 0  0000              DC      0                                      MCDBI237
00F3 0  70FD              MDX     R1                                     MCDBI238
00F4 30 031238A3          CALL    CDTST       TEST IF BLANK              MCDBI239
00F6 1  0124              DC      CARD+1                                 MCDBI240
00F7 0  7001              MDX     *+1                                    MCDBI241
00F8 0  7002              MDX     ERROR       NO                         MCDBI242
00F9 01 4C8000EC          BSC  I  RTEST                                  MCDBI243
00FB 20 176558D5          ERROR LIBF    PRNTN       ERROR MESSAGE       MCDBI244
00FC 0  2100              DC      /2100                                  MCDBI245
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00FD 1  017A              DC      MES1-1                                  MCDBI246
00FE 0  0000              DC      0                                       MCDBI247
00FF 20 17064885          LIBF    PAUSE                                   MCDBI248
0100 0  0000              DC      0                                       MCDBI249
0101 0  70EB              MDX     R0                                      MCDBI250
0102 0  0000        ERR1  DC      0                                       MCDBI251
0103 0  C206              LD    2 6                                       MCDBI252
0104 01 D400007E          STO   L B1                                      MCDBI253
0106 20 176558D5          LIBF    PRNTN                                   MCDBI254
0107 0  3D00              DC      /3D00                                   MCDBI255
0108 20 176558D5          LIBF    PRNTN                                   MCDBI256
0109 0  2100              DC      /2100                                   MCDBI257
010A 1  0186              DC      MES5-1                                  MCDBI258
010B 0  0000              DC      0                                       MCDBI259
010C 20 176558D5          LIBF    PRNTN                                   MCDBI260
010D 0  3D00              DC      /3D00                                   MCDBI261
010E 01 4C800102          BSC   I ERR1                                    MCDBI262
0110 0  0000        ERR2  DC      0                                       MCDBI263
0111 0  C206              LD    2 6                                       MCDBI264
0112 0  8205              A     2 5                                       MCDBI265
0113 01 94000083          S     L K1                                      MCDBI266
0115 01 D400007F          STO   L B2                                      MCDBI267
0117 20 176558D5          LIBF    PRNTN                                   MCDBI268
0118 0  3D00              DC      /3D00                                   MCDBI269
0119 20 176558D5          LIBF    PRNTN                                   MCDBI270
011A 0  2100              DC      /2100                                   MCDBI271
011B 1  019C              DC      MES3-1                                  MCDBI272
011C 0  0000              DC      0                                       MCDBI273
011D 20 176558D5          LIBF    PRNTN                                   MCDBI274
011E 0  3D00              DC      /3D00                                   MCDBI275
011F 01 4C800110          BSC   I ERR2                                    MCDBI276
0122    0000              BSS   E 0                                       MCDBI277
0122 0  0200        K512  DC      512                                     MCDBI278
0123 0  0050        CARD  DC      80                                      MCDBI279
0124    0050              BSS     80                                      MCDBI280
0174    0006        SAVE  BSS     6                                       MCDBI281
017A 0  000B              DC      MES2-MES1                               MCDBI282
017B    0016        MES1  DMES  1 '4XBLANK CARDS NEEDED'E                 MCDBI283
0186    0000        MES2  BSS     0                                       MCDBI284
0186 0  0015              DC      MES6-MES5                               MCDBI285
0187    0025        MES5  DMES  1 '4XLOWER BLOCK NUMBER HAS BEEN CORRE'   MCDBI286
0199    0005              DMES  1 CTED.'E                                 MCDBI287
019C    0000        MES6  BSS     0                                       MCDBI288
019C 0  0015              DC      MES4-MES3                               MCDBI289
019D    0025        MES3  DMES  1 '4XUPPER BLOCK NUMBER HAS BEEN CORRE'   MCDBI290
01AF    0005              DMES  1 CTED.'E                                 MCDBI291
01B2    0000        MES4  BSS     0                                       MCDBI292
0067                TVLOC EQU     103                                     MCDBI293
01B2                      END                                             MCDBI294
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NO ERRORS IN ABOVE ASSEMBLY.

MCDBI
DUP FUNCTION COMPLETED

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                *****************************************************  INTEG002
                *  IBM 1800 SUBROUTINES FOR DATA REDUCTION          *  INTEG003
                *****************************************************  INTEG004
                *                                                   *  INTEG005
                *     SUBROUTINE INTEG                              *  INTEG006
                *                                                   *  INTEG007
                *     CALLING SEQUENCE                              *  INTEG008
                *     ----------------                              *  INTEG009
                *                                                   *  INTEG010
                *     CALL    INTEG                                 *  INTEG011
                *     DC      SPADR                                 *  INTEG012
                *     DC      B1                                    *  INTEG013
                *     DC      B2                                    *  INTEG014
                *     DC      OVFLW                                 *  INTEG015
                *                                                   *  INTEG016
                *  THE SUBROUTINE COMPUTES THE INTEGRAL SPECTRUM    *  INTEG017
                *  BETWEEN BLOCK B1 AND B2.                         *  INTEG018
                *                                                   *  INTEG019
                *****************************************************  INTEG020
0000     09563147       ENT     INTEG                                  INTEG021
0000 0   0000   INTEG   DC      0                                      INTEG022
0001 01  6D00004E       STX  L1 X1+1          SAVE INDEX REGISTERS     INTEG023
0003 01  6E000050       STX  L2 X2+1                                   INTEG024
0005 01  6F000052       STX  L3 X3+1                                   INTEG025
0007 01  65800000       LDX  I1 INTEG                                  INTEG026
0009 01  670000A5       LDX  L3 R                                      INTEG027
000B 0   C100           LD    1 0             SEARCH SPECTRUM ADDRESS  INTEG028
000C 0   D300           STO   3 SPADR-R                                INTEG029
000D 00  C5800001       LD   I1 1                                      INTEG030
000F 0   D305           STO   3 B1-R          GET FIRST BLOCK          INTEG031
0010 00  C5800002       LD   I1 2                                      INTEG032
0012 0   D306           STO   3 B2-R          GET LAST BLOCK           INTEG033
0013 01  668000A5       LDX  I2 SPADR                                  INTEG034
0015 0   C206           LD    2 6                                      INTEG035
0016 0   9305           S     3 B1-R                                   INTEG036
0017 01  44300055       BSI  L  ERR1,-Z                                INTEG037
0019 0   C206           LD    2 6                                      INTEG038
001A 0   8205           A     2 5                                      INTEG039
001B 0   9302           S     3 K1-R                                   INTEG040
001C 0   9306           S     3 B2-R                                   INTEG041
001D 01  44280066       BSI  L  ERR2,+Z                                INTEG042
001F 0   C204           LD    2 4                                      INTEG043
0020 0   9302           S     3 K1-R                                   INTEG044
0021 0   1004           SLA     4                                      INTEG045
0022 0   D307           STO   3 B3-R                                   INTEG046
0023 0   C305           LD    3 B1-R                                   INTEG047
0024 0   9307           S     3 B3-R                                   INTEG048
0025 0   9302           S     3 K1-R                                   INTEG049
0026 0   1009           SLA     9                                      INTEG050
0027 0   D304           STO   3 ADDR-R                                 INTEG051
0028 0   C300           LD    3 SPADR-R                                INTEG052
0029 0   8303           A     3 K64-R                                  INTEG053
002A 0   8304           A     3 ADDR-R                                 INTEG054
002B 0   D304           STO   3 ADDR-R                                 INTEG055
002C 01  668000A9       LDX  I2 ADDR                                   INTEG056
002E 0   C306           LD    3 B2-R                                   INTEG057
002F 0   8302           A     3 K1-R                                   INTEG058
0030 0   9305           S     3 B1-R                                   INTEG059
0031 01  4C08004B       BSC  L  EXIT,+                                 INTEG060
0033 0   D301           STO   3 COUNT-R                                INTEG061
0034 0   10A0           SLT     32            ACCUM AND Q-REG.=0       INTEG062
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```
0035 0  D077                STO     UVFLW                                  INTEG063
0036 00 65000100    I0      LDX  L1 256                                    INTEG064
0038 0  2000                LDS     0                                      INTEG065
0039 0  8A00        I1      AD    2 0                                      INTEG066
003A 0  2873                STS     STAT                                   INTEG067
003B 01 740000AE            MDX  L  STAT,0                                 INTEG068
003D 0  686F                STX     UVFLW                                  INTEG069
003E 0  DA00                STD   2 0                                      INTEG070
003F 0  7202                MDX   2 2                                      INTEG071
0040 0  1000                NOP                                            INTEG072
0041 0  71FF                MDX   1 -1                                     INTEG073
0042 0  70F6                MDX     I1                                     INTEG074
0043 01 74FF00A6            MDX  L  COUNT,-1                               INTEG075
0045 0  70F0                MDX     I0                                     INTEG076
0046 01 65800000            LDX  I1 INTEG                                  INTEG077
0048 0  C064                LD      UVFLW                                  INTEG078
0049 00 D5800003            STO  I1 3                                      INTEG079
004B 01 74040000    EXIT    MDX  L  INTEG,4                                INTEG080
004D 00 65000000    X1      LDX  L1 *-*          RESTORE INDEX REGISTERS   INTEG081
004F 00 66000000    X2      LDX  L2 *-*                                    INTEG082
0051 00 67000000    X3      LDX  L3 *-*                                    INTEG083
0053 01 4C800000            BSC  I  INTEG        RETURN                    INTEG084
                    *                                                      INTEG085
0055 0  0000        ERR1    DC      0                                      INTEG086
0056 00 67800067            LDX  I3 TVLOC                                  INTEG087
0058 0  C206                LD    2 6                                      INTEG088
0059 0  D050                STO     B1                                     INTEG089
005A 20 176558D5            LIBF    PRNTN                                  INTEG090
005B 0  3D00                DC      /3D00                                  INTEG091
005C 20 176558D5            LIBF    PRNTN                                  INTEG092
005D 0  2100                DC      /2100                                  INTEG093
005E 1  0079                DC      MES1-1                                 INTEG094
005F 0  0000                DC      0                                      INTEG095
0060 20 176558D5            LIBF    PRNTN                                  INTEG096
0061 0  3D00                DC      /3D00                                  INTEG097
0062 01 670000A5            LDX  L3 R                                      INTEG098
0064 01 4C800055            BSC  I  ERR1                                   INTEG099
0066 0  0000        ERR2    DC      0                                      INTEG100
0067 00 67800067            LDX  I3 TVLOC                                  INTEG101
0069 0  C206                LD    2 6                                      INTEG102
006A 0  8205                A     2 5                                      INTEG103
006B 0  903B                S       K1                                     INTEG104
006C 0  D03E                STO     B2                                     INTEG105
006D 20 176558D5            LIBF    PRNTN                                  INTEG106
006E 0  3D00                DC      /3D00                                  INTEG107
006F 20 176558D5            LIBF    PRNTN                                  INTEG108
0070 0  2100                DC      /2100                                  INTEG109
0071 1  008F                DC      MES3-1                                 INTEG110
0072 0  0000                DC      0                                      INTEG111
0073 20 176558D5            LIBF    PRNTN                                  INTEG112
0074 0  3D00                DC      /3D00                                  INTEG113
0075 01 670000A5            LDX  L3 R                                      INTEG114
0077 01 4C800066            BSC  I  ERR2                                   INTEG115
0079 0  0015                DC      MES2-MES1                              INTEG116
007A    0025        MES1    DMES  1 '4XLOWER BLOCK NUMBER HAS BEEN CORRE'  INTEG117
008C    0005                DMES  1 CTED.'E                                INTEG118
008F    0000        MES2    BSS     0                                      INTEG119
008F 0  0015                DC      MES4-MES3                              INTEG120
0090    0025        MES3    DMES  1 '4XUPPER BLOCK NUMBER HAS BEEN CORRE'  INTEG121
00A2    0005                DMES  1 CTED.'E                                INTEG122
00A5    0000        MES4    BSS     0                                      INTEG123
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                        *                                                INTEG124
                        *      CONSTANTS                                 INTEG125
                        *                                                INTEG126
00A5 0  0000            SPADR DC      0                                  INTEG127
00A6 0  0000            COUNT DC      0                                  INTEG128
00A7 0  0001            K1    DC      1                                  INTEG129
00A8 0  0040            K64   DC      64                                 INTEG130
00A9 0  0000            ADDR  DC      0                                  INTEG131
00AA 0  0000            B1    DC      0                                  INTEG132
00AB 0  0000            B2    DC      0                                  INTEG133
00AC 0  0000            B3    DC      0                                  INTEG134
00AD 0  0000            OVFLW DC      0                                  INTEG135
00AE 0  0000            STAT  DC      0                                  INTEG136
00A5                    R     EQU     SPADR                              INTEG137
0067                    TVLOC EQU     103                                INTEG138
00B0                          END                                        INTEG139

     NO ERRORS IN ABOVE ASSEMBLY.
INTEG
DUP FUNCTION COMPLETED
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0000     145D9563          ********************************************** MPRNT002
0006     145D9571          * IBM 1800 SUBROUTINES FOR DATA REDUCTION     * MPRNT003
0000 0   0000              ********************************************** MPRNT004
0001 0   1010              *                                            * MPRNT005
0002 01  D40000D2          *     SUBROUTINE MPRNT/MPRN1                 * MPRNT006
0004 0   C0FB              *                                            * MPRNT007
0005 0   7004              *     CALLING SEQUENCES                      * MPRNT008
0006 0   0000              *     ----------------                       * MPRNT009
0007 01  6C0000D2          *                                            * MPRNT010
0009 0   C0FC              *     CALL    MPRNT  OR  CALL    MPRN1       * MPRNT011
000A 01  D40000D1          *     DC      SPADR      SPECTRUM            * MPRNT012
000C 01  6D000158          *     DC      B1         FIRST BLOCK         * MPRNT013
000E 01  6E00015D          *     DC      B2         LAST BLOCK          * MPRNT014
0010 01  6F00015F          *     DC      TITLE      TITLE OF THE SPECTRUM * MPRNT015
0012 01  658000D1          *                        IN CARD CODE (80 COL.) * MPRNT016
0014 0   C100              *  THE SUBROUTINE PRINTS A SPECTRUM OR A PART OF * MPRNT017
0015 01  D40000D3          *  IT ON THE 1443 PRINTER, 16 CHANNNELS PER LINE * MPRNT018
0017 00  C5800001          *  FOR MPRNT AND 8 CHANNELS PER LINE FOR MPRN1 * MPRNT019
0019 01  D40000C4          *                                            * MPRNT020
001B 00  C5800002          ********************************************** MPRNT021
001D 01  D40000C5                 ENT     MPRNT                         MPRNT022
001F 00  67800067                 ENT     MPRN1                         MPRNT023
0021 20  176558D5          MPRNT  DC      0                             MPRNT024
0022 0   3100                     SLA     16                            MPRNT025
0023 20  024C1552                 STO  L  IND                           MPRNT026
0024 1   0192                     LD      MPRNT                         MPRNT027
0025 0   0091                     MDX     M1                            MPRNT028
0026 0   C103              MPRN1  DC      0                             MPRNT029
0027 0   D002                     STX  L  IND                           MPRNT030
0028 20  085935D9                 LD      MPRN1                         MPRNT031
0029 0   0001              M1     STO  L  RETRN                         MPRNT032
002A 0   0000                     STX  L1 X1+1       SAVE INDEX REGISTERS MPRNT033
002B 1   01A2                     STX  L2 X2+1                          MPRNT034
002C 0   0050                     STX  L3 X3+1                          MPRNT035
002D 20  176558D5                 LDX  I1 RETRN                         MPRNT036
002E 0   2100                     LD    1 0          SEARCH SPECTRUM ADDRESS MPRNT037
002F 1   0191                     STO  L  SPADR                         MPRNT038
0030 0   0000                     LD   I1 1          SEARCH FIRST BLOCK MPRNT039
0031 20  176558D5                 STO  L  B1                            MPRNT040
0032 0   2000                     LD   I1 2                             MPRNT041
0033 1   02AF                     STO  L  B2         SEARCH SECOND ADDRESS MPRNT042
                                  LDX  I3 TVLOC                         MPRNT043
                                  LIBF    PRNTN      NEW PAGE           MPRNT044
                                  DC      /3100                         MPRNT045
                                  LIBF    BLANK                         MPRNT046
                                  DC      AREA                          MPRNT047
                                  DC      145                           MPRNT048
                                  LD    1 3                             MPRNT049
                                  STO     M2                            MPRNT050
                                  LIBF    HOLPR      CHANGE TITLE TO PRINTER MPRNT051
                                  DC      1          CODE               MPRNT052
                           M2     DC      *-*                           MPRNT053
                                  DC      AREA+16                       MPRNT054
                                  DC      80                            MPRNT055
                                  LIBF    PRNTN      WRITE TITLE        MPRNT056
                                  DC      /2100                         MPRNT057
                                  DC      AREA-1                        MPRNT058
                                  DC      0                             MPRNT059
                                  LIBF    PRNTN                         MPRNT060
                                  DC      /2000                         MPRNT061
                                  DC      LINE1                         MPRNT062
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0034 0  0000              DC    0                          MPRNT063
0035 20 176558D5          LIBF  PRNTN      SKIP THREE LINES MPRNT064
0036 0  3E00              DC    /3E00                      MPRNT065
0037 20 176558D5          LIBF  PRNTN      WRITE ID-NUMBER, NO. OF MPRNT066
0038 0  2100              DC    /2100      BLOCKS ETC.     MPRNT067
0039 1  0223              DC    MES1-1                     MPRNT068
003A 0  0000              DC    0                          MPRNT069
003B 20 024C1552          LIBF  BLANK      CLEAR AREA      MPRNT070
003C 1  0192              DC    AREA                       MPRNT071
003D 0  0048              DC    72                         MPRNT072
003E 20 176558D5          LIBF  PRNTN                      MPRNT073
003F 0  2000              DC    /2000                      MPRNT074
0040 1  029E              DC    LINES                      MPRNT075
0041 0  0000              DC    0                          MPRNT076
0042 20 176558D5          LIBF  PRNTN                      MPRNT077
0043 0  3D00              DC    /3D00                      MPRNT078
0044 01 668000D3          LDX   I2 SPADR                   MPRNT079
0046 0  C200              LD    2 0          GET PISW NUMBER MPRNT080
0047 30 03209180          CALL  CHIF                       MPRNT081
0049 1  0194              DC    AREA+2                     MPRNT082
004A 01 CC000194          LDD   L AREA+2                   MPRNT083
004C 01 EC0000D0          OR    L PRIOD                    MPRNT084
004E 0  18D8              RTE   24                         MPRNT085
004F 01 DC000194          STD   L AREA+2                   MPRNT086
0051 0  C201              LD    2 1          GET 1. EXP. NUMBER MPRNT087
0052 0  A07B              M       K1000                    MPRNT088
0053 0  1090              SLT     16                       MPRNT089
0054 01 D40000D6          STO   L IDPR                     MPRNT090
0056 0  C202              LD    2 2          GET 2. EXP. NUMBER MPRNT091
0057 0  A075              M       K100                     MPRNT092
0058 0  1090              SLT     16                       MPRNT093
0059 0  807C              A       IDPR                     MPRNT094
005A 0  8203              A     2 3          GET SERIAL NUMBER MPRNT095
005B 0  8073              A       K10T                     MPRNT096
005C 0  1890              SRT     16                       MPRNT097
005D 30 025440C0          CALL  BNDC                       MPRNT098
005F 1  00D6              DC    IDPR         ID IN PRINTER CODE MPRNT099
0060 0  C879              LDD     IDPR+4                   MPRNT100
0061 01 DC000196          STD   L AREA+4                   MPRNT101
0063 0  C205              LD    2 5          LOAD NUMBER OF BLOCKS MPRNT102
0064 30 03209180          CALL  CHIF                       MPRNT103
0066 1  019C              DC    AREA+10                    MPRNT104
0067 0  C206              LD    2 6          FIRST BLOCK     MPRNT105
0068 30 03209180          CALL  CHIF                       MPRNT106
006A 1  01A4              DC    AREA+18                    MPRNT107
006B 0  C209              LD    2 9          NUMBER OF SCALERS MPRNT108
006C 0  D029              STO     SCAL                     MPRNT109
006D 30 03209180          CALL  CHIF                       MPRNT110
006F 1  01AB              DC    AREA+25                    MPRNT111
0070 0  C20A              LD    2 10         AUTOMATIC TYPE  MPRNT112
0071 01 4C28007E          BSC   L M3,+Z                    MPRNT113
0073 0  9054              S       K5                       MPRNT114
0074 01 4C30007E          BSC   L M3,-Z                    MPRNT115
0076 0  C20A              LD    2 10                       MPRNT116
0077 0  1001              SLA     1                        MPRNT117
0078 0  D001        M29   STO     *+1                      MPRNT118
0079 00 65000000          LDX   L1 *-*                     MPRNT119
007B 01 CD0000DC          LDD   L1 TAB                     MPRNT120
007D 0  7002              MDX     M31                      MPRNT121
007E 0  1010        M3    SLA     16                       MPRNT122
007F 0  70F8              MDX     M29                      MPRNT123
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0080 01 DC0001B2    M31   STD  L  AREA+32                                  MPRNT124
0082 20 176558D5          LIBF    PRNTN        WRITE A LINE               MPRNT125
0083 0  2100              DC      /2100                                   MPRNT126
0084 1  0191              DC      AREA-1                                  MPRNT127
0085 0  0000              DC      /0000                                   MPRNT128
0086 20 176558D5          LIBF    PRNTN        SKIP A LINE                MPRNT129
0087 0  3D00              DC      /3D00                                   MPRNT130
0088 01 CC000194          LDD  L  AREA+2                                  MPRNT131
008A 01 DC000266          STD  L  MES52                                   MPRNT132
008C 01 CC000196          LDD  L  AREA+4                                  MPRNT133
008E 01 DC000268          STD  L  MES52+2                                 MPRNT134
0090 20 024C1552          LIBF    BLANK                                   MPRNT135
0091 1  0192              DC      AREA                                    MPRNT136
0092 0  0048              DC      72                                      MPRNT137
0093 20 176558D5          LIBF    PRNTN        WRITE HEADING SCALER DATA  MPRNT138
0094 0  2100              DC      /2100                                   MPRNT139
0095 1  024C              DC      MES3-1                                  MPRNT140
0096 0  0000        SCAL  DC      0                                       MPRNT141
0097 20 176558D5          LIBF    PRNTN                                   MPRNT142
0098 0  2000              DC      /2000                                   MPRNT143
0099 1  02A6              DC      LINE2                                   MPRNT144
009A 0  0000              DC      0                                       MPRNT145
009B 20 176558D5          LIBF    PRNTN                                   MPRNT146
009C 0  3D00              DC      /3D00                                   MPRNT147
009D 0  681C              STX     END                                     MPRNT148
009E 0  C206              LD   2  6                                       MPRNT149
009F 0  9024              S       B1                                      MPRNT150
00A0 01 4430031D          BSI  L  ERR1,-Z                                 MPRNT151
00A2 0  C206              LD   2  6                                       MPRNT152
00A3 0  8205              A    2  5                                       MPRNT153
00A4 0  9022              S       K1                                      MPRNT154
00A5 0  901F              S       B2                                      MPRNT155
00A6 01 4428032B          BSI  L  ERR2,+Z                                 MPRNT156
00A8 0  7210              MDX  2  16                                      MPRNT157
00A9 0  61BD        M4    LDX  1  -67                                     MPRNT158
00AA 0  CA00        M5    LDD  2  0                                       MPRNT159
00AB 30 025440E7          CALL    BNDCX        PREPARE SCALER DATA        MPRNT160
00AD 1  01D5              DC      AREA+67                                 MPRNT161
00AE 0  7202              MDX  2  2                                       MPRNT162
00AF 01 74FF0096          MDX  L  SCAL,-1                                 MPRNT163
00B1 0  7001              MDX     M6                                      MPRNT164
00B2 0  7002              MDX     M65                                     MPRNT165
00B3 0  7108        M6    MDX  1  8                                       MPRNT166
00B4 0  70F5              MDX     M5                                      MPRNT167
00B5 0  1010        M65   SLA     16                                      MPRNT168
00B6 0  D003              STO     END                                     MPRNT169
00B7 20 176558D5          LIBF    PRNTN        WRITE SCALER DATA          MPRNT170
00B8 0  2100              DC      /2100                                   MPRNT171
00B9 1  0191              DC      AREA-1                                  MPRNT172
00BA 0  0000        END   DC      0                                       MPRNT173
00BB 20 176558D5          LIBF    PRNTN        SKIP A LINE                MPRNT174
00BC 0  3D00              DC      /3D00                                   MPRNT175
00BD 20 024C1552          LIBF    BLANK        CLEAR AREA                 MPRNT176
00BE 1  0192              DC      AREA                                    MPRNT177
00BF 0  0048              DC      72                                      MPRNT178
00C0 01 740000BA          MDX  L  END,0                                   MPRNT179
00C2 0  70E6              MDX     M4                                      MPRNT180
00C3 0  702C              MDX     M8                                      MPRNT181
                    *                                                     MPRNT182
                    *     CONSTANTS                                       MPRNT183
                    *                                                     MPRNT184
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00C4 0  0000       B1     DC      0                                  MPRNT185
00C5 0  0000       B2     DC      0                                  MPRNT186
00C6 0  0003       B3     DC      3                                  MPRNT187
00C7 0  0001       K1     DC      1                                  MPRNT188
00C8 0  0005       K5     DC      5                                  MPRNT189
00C9 0  0010       K16    DC      16                                 MPRNT190
00CA 0  0020       K32    DC      32                                 MPRNT191
00CB 0  0040       K64    DC      64                                 MPRNT192
00CC 0  0048       K72    DC      72                                 MPRNT193
00CD 0  0064       K100   DC      100                                MPRNT194
00CE 0  03E8       K1000  DC      1000                               MPRNT195
00CF 0  2710       K10T   DC      10000                              MPRNT196
00D0 0  3B00       PRIOD  DC      /3B00                              MPRNT197
00D1 0  0000       RETRN  DC      0                                  MPRNT198
00D2 0  0000       IND    DC      0                                  MPRNT199
00D3 0  0000       SPADR  DC      0                                  MPRNT200
00D4 0  0000       ADDR   DC      0                                  MPRNT201
00D6    0006       IDPR   BSS  E  6                                  MPRNT202
00DC    0004       TAB    DMES 1      'E                             MPRNT203
00DE    0004              DMES 1    4K'E                             MPRNT204
00E0    0004              DMES 1    8K'E                             MPRNT205
00E2    0004              DMES 1   12K'E                             MPRNT206
00E4    0004              DMES 1   20K'E                             MPRNT207
00E6    0004              DMES 1   24K'E                             MPRNT208
00E8 00 00000000   CHAN   DEC     0                                  MPRNT209
00EA 00 00000008   D8     DEC     8                                  MPRNT210
00EC 00 00000010   D16    DEC     16                                 MPRNT211
00EE 00 00000000   MAX    DEC     0                                  MPRNT212
                   *                                                 MPRNT213
                   *      WRITE SPECTRA                              MPRNT214
                   *                                                 MPRNT215
00F0 0  18A0       M8     SRT     32                                 MPRNT216
00F1 0  D8FC              STD     MAX                                MPRNT217
00F2 0  C0D1              LD      B1                                 MPRNT218
00F3 0  90D3              S       K1                                 MPRNT219
00F4 0  1888              SRT     8          CALCULATE CHANNEL COUNT MPRNT220
00F5 0  D8F2              STD     CHAN                               MPRNT221
00F6 0  C0CE              LD      B2                                 MPRNT222
00F7 0  80CF              A       K1                                 MPRNT223
00F8 0  90CB              S       B1                                 MPRNT224
00F9 01 4C080158          BSC  L  EXIT,+     BRANCH TO EXIT FOR B1  MPRNT225
00FB 0  D009              STO     COUNT      GREATER B2             MPRNT226
00FC 0  C0C7       M81    LD      B1                                 MPRNT227
00FD 30 03209180          CALL    CHIF                               MPRNT228
00FF 1  025C              DC      MES51                              MPRNT229
0100 20 176558D5          LIBF    PRNTN                              MPRNT230
0101 0  3E00              DC      /3E00                              MPRNT231
0102 20 176558D5          LIBF    PRNTN      WRITE BLOCK XXX         MPRNT232
0103 0  2100              DC      /2100                              MPRNT233
0104 1  0255              DC      MES5-1                             MPRNT234
0105 0  0000       COUNT  DC      0                                  MPRNT235
0106 20 176558D5          LIBF    PRNTN                              MPRNT236
0107 0  2000              DC      /2000                              MPRNT237
0108 1  02D8              DC      LINE3                              MPRNT238
0109 0  0000              DC      0                                  MPRNT239
010A 20 176558D5          LIBF    PRNTN                              MPRNT240
010B 0  3D00              DC      /3D00                              MPRNT241
010C 01 668000D3          LDX  I2 SPADR      CALCULATE START ADDRESS MPRNT242
010E 0  C204              LD    2 4          OF DATA                 MPRNT243
010F 0  90B7              S       K1                                 MPRNT244
0110 0  1004              SLA     4                                  MPRNT245
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0111 0  00B4              STO     B3                                  MPRNT246
0112 0  C0B1              LD      B1                                  MPRNT247
0113 0  90B2              S       B3                                  MPRNT248
0114 0  90B2              S       K1                                  MPRNT249
0115 0  1009              SLA     9                                   MPRNT250
0116 0  00BD              STO     ADDR                                MPRNT251
0117 0  C0BB              LD      SPADR                               MPRNT252
0118 0  80B2              A       K64                                 MPRNT253
0119 0  80BA              A       ADDR                                MPRNT254
011A 0  00B9              STO     ADDR                                MPRNT255
011B 01 668000D4          LDX   I2 ADDR                              MPRNT256
011D 01 740000D2          MDX   L  IND,0                            MPRNT257
011F 0  7042              MDX     M12                                 MPRNT258
0120 0  72DE              MDX     2 -34                               MPRNT259
0121 0  C0A7              LD      K16                                 MPRNT260
0122 0  D06D              STO     LCOU                                MPRNT261
0123 0  C8C4        M85   LDD     CHAN        INCREMENT CHANNEL COUNT MPRNT262
0124 0  88C7              AD      D16                                 MPRNT263
0125 0  D8C2              STD     CHAN                                MPRNT264
0126 0  7240              MDX     2 64                                MPRNT265
0127 30 025440C0          CALL    BNDC                                MPRNT266
0129 1  021D              DC      AREA1+67                            MPRNT267
012A 0  6140              LDX     1 64                                MPRNT268
012B 0  CA00        M9    LDD     2 0                                 MPRNT269
012C 0  98C1              SD      MAX                                 MPRNT270
012D 01 4C280131          BSC   L  M10,+Z                           MPRNT271
012F 0  CA00              LDD     2 0                                 MPRNT272
0130 0  D8BD              STD     MAX                                 MPRNT273
0131 0  CA00        M10   LDD     2 0                                 MPRNT274
0132 30 025440E7          CALL    BNDCX                               MPRNT275
0134 1  01D6              DC      AREA1-4                             MPRNT276
0135 0  72FE              MDX     2 -2                                MPRNT277
0136 0  71FC              MDX     1 -4                                MPRNT278
0137 0  70F3              MDX     M9                                  MPRNT279
0138 20 176558D5          LIBF    PRNTN                               MPRNT280
0139 0  0000              DC      0                                   MPRNT281
013A 0  70FD              MDX     *-3                                 MPRNT282
013B 30 145A5140          CALL    MOVE                                MPRNT283
013D 1  01DB              DC      AREA1+1                             MPRNT284
013E 1  0192              DC      AREA                                MPRNT285
013F 0  0048              DC      72                                  MPRNT286
0140 20 176558D5          LIBF    PRNTN                               MPRNT287
0141 0  2100              DC      /2100                               MPRNT288
0142 1  0191              DC      AREA-1                              MPRNT289
0143 0  0000              DC      0                                   MPRNT290
0144 01 74FF0190          MDX   L  LCOU,-1                          MPRNT291
0146 0  70DC              MDX     M85                                 MPRNT292
0147 01 740100C4    M11   MDX   L  B1,1                            MPRNT293
0149 01 74FF0105          MDX   L  COUNT,-1                         MPRNT294
014B 0  70B0              MDX     M81                                 MPRNT295
014C 20 176558D5          LIBF    PRNTN                               MPRNT296
014D 0  3D00              DC      /3D00                               MPRNT297
014E 0  C89F              LDD     MAX                                 MPRNT298
014F 30 025440C0          CALL    BNDC                                MPRNT299
0151 1  02EB              DC      MES17-6                             MPRNT300
0152 20 176558D5          LIBF    PRNTN                               MPRNT301
0153 0  2100              DC      /2100                               MPRNT302
0154 1  02E0              DC      MES16-1                             MPRNT303
0155 0  0000              DC      0                                   MPRNT304
0156 20 176558D5          LIBF    PRNTN                               MPRNT305
0157 0  3F00              DC      /3F00                               MPRNT306
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                        *                                                      MPRNT307
                        *     RESTORE REGISTERS AND RETURN                     MPRNT308
                        *                                                      MPRNT309
0158 01 740400D1        EXIT  MDX  L  RETRN,4                                  MPRNT310
015A 00 65000000        X1    LDX  L1 *-*                                      MPRNT311
015C 00 66000000        X2    LDX  L2 *-*                                      MPRNT312
015E 00 67000000        X3    LDX  L3 *-*                                      MPRNT313
0160 01 4C8000D1              BSC  I  RETRN                                    MPRNT314
                        *                                                      MPRNT315
0162 0  72EE            M12   MDX   2 -18                                      MPRNT316
0163 01 C40000CA              LD   L  K32                                      MPRNT317
0165 0  D02A                  STD     LCOU                                     MPRNT318
0166 01 CC0000E8        M13   LDD  L  CHAN        INCREMENT CHANNEL COUNT      MPRNT319
0168 01 8C0000EA              AD   L  D8                                       MPRNT320
016A 01 DC0000E8              STD  L  CHAN                                     MPRNT321
016C 0  7220                  MDX   2 32                                       MPRNT322
016D 30 025440C0              CALL    BNDC                                     MPRNT323
016F 1  021B                  DC      AREA1+65                                 MPRNT324
0170 0  6138                  LDX   1 56                                       MPRNT325
0171 0  CA00            M14   LDD   2 0                                        MPRNT326
0172 01 9C0000EE              SD   L  MAX                                      MPRNT327
0174 01 4C280179              BSC  L  M15,+Z                                   MPRNT328
0176 0  CA00                  LDD   2 0                                        MPRNT329
0177 01 DC0000EE              STD  L  MAX                                      MPRNT330
0179 0  CA00            M15   LDD   2 0                                        MPRNT331
017A 30 025440E7              CALL    BNDCX                                    MPRNT332
017C 1  01D6                  DC      AREA1-4                                  MPRNT333
017D 0  72FE                  MDX   2 -2                                       MPRNT334
017E 0  71F9                  MDX   1 -7                                       MPRNT335
017F 0  70F1                  MDX     M14                                      MPRNT336
0180 20 176558D5              LIBF    PRNTN                                    MPRNT337
0181 0  0000                  DC      0                                        MPRNT338
0182 0  70FD                  MDX     *-3                                      MPRNT339
0183 30 145A5140              CALL    MOVE                                     MPRNT340
0185 1  01DB                  DC      AREA1+1                                  MPRNT341
0186 1  0192                  DC      AREA                                     MPRNT342
0187 0  0048                  DC      72                                       MPRNT343
0188 20 176558D5              LIBF    PRNTN                                    MPRNT344
0189 0  2100                  DC      /2100                                    MPRNT345
018A 1  0191                  DC      AREA-1                                   MPRNT346
018B 0  0000                  DC      0                                        MPRNT347
018C 01 74FF0190              MDX  L  LCOU,-1                                  MPRNT348
018E 0  70D7                  MDX     M13                                      MPRNT349
018F 0  70B7                  MDX     M11                                      MPRNT350
                        *                                                      MPRNT351
                        *     CONSTANTS AND WORK AREAS                         MPRNT352
                        *                                                      MPRNT353
0190    0000                  BSS  E  0                                        MPRNT354
0190 0  0000            LCOU  DC      0                                        MPRNT355
0191 0  0048                  DC      72                                       MPRNT356
0192    0048            AREA  BSS     72                                       MPRNT357
01DA    0049            AREA1 BSS     73                                       MPRNT358
0223 0  0028                  DC      MES2-MES1                                MPRNT359
0224    0025            MES1  DMES  1 '4XID-NUMBER'4X NO. OF BLOCKS'2X FIR'    MPRNT360
0236    0023                  DMES  1 ST BLOCK    NO. OF SCALERS   AUTOMA'     MPRNT361
0248    0008                  DMES  1 TIC TYPE'E                               MPRNT362
024C    0000            MES2  BSS     0                                        MPRNT363
024C 0  0008                  DC      MES4-MES3                                MPRNT364
024D    0010            MES3  DMES  1 '4XSCALER DATA'E                         MPRNT365
0255    0000            MES4  BSS     0                                        MPRNT366
0255 0  0048                  DC      MES6-MES5                                MPRNT367
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0256     0010        MES5  DMES  1 '4XBLOCK        'E                    MPRNT368
025C                 MES51 EQU     *-2                                  MPRNT369
025E     0012              DMES  1 '5XID-NUMBER    'E                    MPRNT370
0267                       ORG     *-1                                  MPRNT371
0266 00  00000000    MES52 DEC     0                                    MPRNT372
0268 00  00000000          DEC     0                                    MPRNT373
026A     0068              DMES  1 '96XCHAN.NO.'E                       MPRNT374
029E     0000        MES6  BSS     0                                    MPRNT375
029E 0   0007        LINES DC      MES9-MES8                            MPRNT376
029F     000E        MES8  DMES  1 '4X'9F-'E                            MPRNT377
02A6     0000        MES9  BSS     0                                    MPRNT378
02A6 0   0008        LINE2 DC      MES11-MES10                          MPRNT379
02A7     0010        MES10 DMES  1 '4X'11F-'E                           MPRNT380
02AF     0000        MES11 BSS     0                                    MPRNT381
02AF 0   0028        LINE1 DC      MES13-MES12                          MPRNT382
02B0     0050        MES12 DMES  1 '32X'48F-'E                          MPRNT383
02D8     0000        MES13 BSS     0                                    MPRNT384
02D8 0   0007        LINE3 DC      MES15-MES14                          MPRNT385
02D9     000E        MES14 DMES  1 '4X'10F-'E                           MPRNT386
02E0     0000        MES15 BSS     0                                    MPRNT387
02E0 0   0010              DC      MES17-MES16                          MPRNT388
02E1     0014        MES16 DMES  1 '4XMAXIMUM COUNT ='E                 MPRNT389
02EB     0006              BSS     6                                    MPRNT390
02F1     0000        MES17 BSS     0                                    MPRNT391
02F1 0   0015              DC      MES21-MES20                          MPRNT392
02F2     0025        MES20 DMES  1 '4XLOWER BLOCK NUMBER HAS BEEN CORRE' MPRNT393
0304     0005              DMES  1 CTED.'E                              MPRNT394
0307     0000        MES21 BSS     0                                    MPRNT395
0307 0   0015              DC      MES23-MES22                          MPRNT396
0308     0025        MES22 DMES  1 '4XUPPER BLOCK NUMBER HAS BEEN CORRE' MPRNT397
031A     0005              DMES  1 CTED.'E                              MPRNT398
031D     0000        MES23 BSS     0                                    MPRNT399
                     *                                                  MPRNT400
031D 0   0000        ERR1  DC      0                                    MPRNT401
031E 0   C206              LD    2 6                                    MPRNT402
031F 01  D40000C4          STO  L  B1                                   MPRNT403
0321 20  176558D5          LIBF    PRNTN                                MPRNT404
0322 0   3D00              DC      /3D00                                MPRNT405
0323 20  176558D5          LIBF    PRNTN                                MPRNT406
0324 0   2100              DC      /2100                                MPRNT407
0325 1   02F1              DC      MES20-1                              MPRNT408
0326 0   0000              DC      0                                    MPRNT409
0327 20  176558D5          LIBF    PRNTN                                MPRNT410
0328 0   3D00              DC      /3D00                                MPRNT411
0329 01  4C80031D          BSC  I  ERR1                                 MPRNT412
032B 0   0000        ERR2  DC      0                                    MPRNT413
032C 0   C206              LD    2 6                                    MPRNT414
032D 0   8205              A     2 5                                    MPRNT415
032E 01  940000C7          S    L  K1                                   MPRNT416
0330 01  D40000C5          STO  L  B2                                   MPRNT417
0332 20  176558D5          LIBF    PRNTN                                MPRNT418
0333 0   3D00              DC      /3D00                                MPRNT419
0334 20  176558D5          LIBF    PRNTN                                MPRNT420
0335 0   2100              DC      /2100                                MPRNT421
0336 1   0307              DC      MES22-1                              MPRNT422
0337 0   0000              DC      0                                    MPRNT423
0338 20  176558D5          LIBF    PRNTN                                MPRNT424
0339 0   3D00              DC      /3D00                                MPRNT425
033A 01  4C80032B          BSC  I  ERR2                                 MPRNT426
                     *                                                  MPRNT427
0067                 TVLOC EQU     103                                  MPRNT428
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033C END

MPRNT429

NO ERRORS IN,ABOVE ASSEMBLY.
MPRNT MPRN1
DUP FUNCTION COMPLETED

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                    IBM 1800 SUBROUTINE OCRDM                                PAGE   1

                    ************************************************** OCRDM002
                    * IBM 1800 SUBROUTINES FOR DATA REDUCTION         * OCRDM003
                    ************************************************** OCRDM004
                    *                                                * OCRDM005
                    *     SUBROUTINE OCRDM                           * OCRDM006
                    *                                                * OCRDM007
                    *     CALLING SEQUENCE                           * OCRDM008
                    *     ----------------                           * OCRDM009
                    *                                                * OCRDM010
                    *     CALL    OCRDM                              * OCRDM011
                    *     DC      SPADR                              * OCRDM012
                    *     DC      TITLE                              * OCRDM013
                    *     DC      END                                * OCRDM014
                    *                                                * OCRDM015
                    *     THIS SUBROUTINE READS OLD BIN. OR OLD BCD  * OCRDM016
                    *     CARDS AND PERFORMS A SPECTRUM IN MEMORY    * OCRDM017
                    *     FORMAT.                                    * OCRDM018
                    *     INDICATOR END IS SET UNEQUAL ZERO, IF A CARD* OCRDM019
                    *     *END HAS BEEN READ                         * OCRDM020
                    *                                                * OCRDM021
                    ************************************************** OCRDM022
0000     160D9114          ENT     OCRDM                                OCRDM023
0000 0   0000        OCRDM DC      0                                    OCRDM024
0001 0   6954              STX   1 XR1+1                                OCRDM025
0002 0   6A55              STX   2 XR2+1                                OCRDM026
0003 0   6B56              STX   3 XR3+1                                OCRDM027
0004 01  65800000          LDX  I1 OCRDM                                OCRDM028
0006 00  67800067          LDX  I3 TVLOC                                OCRDM029
0008 0   C100              LD    1 0                                    OCRDM030
0009 0   D042              STO     SPADR                                OCRDM031
000A 0   D005              STO     SPAD1                                OCRDM032
000B 01  84000095          A    L  K62                                  OCRDM033
000D 01  D4000090          STO  L  ADDR                                 OCRDM034
000F 20  024C1552          LIBF    BLANK                                OCRDM035
0010 0   0000        SPAD1 DC      *-*                                  OCRDM036
0011 0   2040              DC      8256                                 OCRDM037
0012 01  74000097          MDX  L  N4K,0                                OCRDM038
0014 0   702D              MDX     CONTS                                OCRDM039
                    *                                                    OCRDM040
                    *     READ  TITLE                                    OCRDM041
                    *                                                    OCRDM042
0015 20  03059115    CD    LIBF    CARDN                                OCRDM043
0016 0   1000              DC      /1000                                OCRDM044
0017 1   01BB              DC      CARD                                 OCRDM045
0018 0   0000              DC      0                                    OCRDM046
0019 20  03059115          LIBF    CARDN                                OCRDM047
001A 0   0000              DC      0                                    OCRDM048
001B 0   70FD              MDX     *-3                                  OCRDM049
001C 01  44000126          BSI  L  ETST                                 OCRDM050
001E 0   703E              MDX     EXIT1                                OCRDM051
001F 0   C101              LD    1 1                                    OCRDM052
0020 0   D003              STO     CD0                                  OCRDM053
0021 30  145A5140          CALL    MOVE                                 OCRDM054
0023 1   01BC              DC      CARD+1                               OCRDM055
0024 0   0000        CD0   DC      *-*                                  OCRDM056
0025 0   0048              DC      72                                   OCRDM057
                    *                                                    OCRDM058
                    *     READ NUMBER OF BLOCKS                          OCRDM059
                    *                                                    OCRDM060
0026 20  03059115    CD1   LIBF    CARDN                                OCRDM061
0027 0   1000              DC      /1000                                OCRDM062
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0028 1  01BB              DC      CARD                OCRDM063
0029 0  0000              DC      0                   OCRDM064
002A 20 03059115          LIBF    CARDN               OCRDM065
002B 0  0000              DC      0                   OCRDM066
002C 0  70FD              MDX     *-3                 OCRDM067
002D 01 C40001BE          LD   L  CARD+3              OCRDM068
002F 01 4C200039          BSC  L  ERROR,Z             OCRDM069
0031 01 C40001BD          LD   L  CARD+2              OCRDM070
0033 01 4C200039          BSC  L  ERROR,Z             OCRDM071
0035 01 C40001BC          LD   L  CARD+1              OCRDM072
0037 01 4C18005F          BSC  L  CD2,+-              OCRDM073
0039 20 176558D5  ERROR   LIBF    PRNTN               OCRDM074
003A 0  3D00              DC      /3D00               OCRDM075
003B 20 176558D5          LIBF    PRNTN               OCRDM076
003C 0  2100              DC      /2100               OCRDM077
003D 1  025D              DC      MES1-1              OCRDM078
003E 0  0000              DC      0                   OCRDM079
003F 20 17064885          LIBF    PAUSE               OCRDM080
0040 0  0000              DC      0                   OCRDM081
0041 0  70E4              MDX     CD1                 OCRDM082
                          *                           OCRDM083
0042 01 4C000113  CONTS   BSC  L  CONT                OCRDM084
                          *                           OCRDM085
0044 0  7103      ENDS    MDX    1 3                  OCRDM086
0045 0  6952              STX    1 SAVE1              OCRDM087
0046 01 74FF0097          MDX  L  N4K,-1              OCRDM088
0048 0  1000              NOP                         OCRDM089
0049 30 145A5140          CALL    MOVE                OCRDM090
004B 1  00D5              DC      ID                  OCRDM091
004C 0  0000      SPADR   DC      *-*                 OCRDM092
004D 0  0010              DC      16                  OCRDM093
004E 0  1010      EXIT    SLA     16                  OCRDM094
004F 01 65800000          LDX  I1 OCRDM               OCRDM095
0051 00 D5800002          STO  I1 2                   OCRDM096
0053 01 74030000          MDX  L  OCRDM,3             OCRDM097
0055 00 65000000  XR1     LDX  L1 *-*                 OCRDM098
0057 00 66000000  XR2     LDX  L2 *-*                 OCRDM099
0059 00 67000000  XR3     LDX  L3 *-*                 OCRDM100
005B 01 4C800000          BSC  I  OCRDM               OCRDM101
                          *                           OCRDM102
005D 0  C033      EXIT1   LD      K1                  OCRDM103
005E 0  70F0              MDX     EXIT+1              OCRDM104
                          *                           OCRDM105
005F 01 C40001C1  CD2     LD   L  CARD+6              OCRDM106
0061 0  D02B              STO     IND                 OCRDM107
0062 01 C40001C0          LD   L  CARD+5              OCRDM108
0064 01 440001AB          BSI  L  TRANS               OCRDM109
0066 0  D025              STO     SAVE                OCRDM110
0067 01 C40001BF          LD   L  CARD+4              OCRDM111
0069 01 440001AB          BSI  L  TRANS               OCRDM112
006B 0  A027              M       K10                 OCRDM113
006C 0  1090              SLT     16                  OCRDM114
006D 0  801E              A       SAVE                OCRDM115
006E 0  D06B              STO     ID+5                OCRDM116
006F 0  9021              S       K1                  OCRDM117
0070 0  1804              SRA     4                   OCRDM118
0071 0  801F              A       K1                  OCRDM119
0072 0  D06D              STO     ID+11               OCRDM120
0073 0  D023              STO     N4K                 OCRDM121
0074 0  C065              LD      ID+5                OCRDM122
0075 0  901E              S       K16                 OCRDM123
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0076 01 4C08007A          BSC  L  CD3,+                    OCRDM124
0078 0  C01B              LD       K16                     OCRDM125
0079 0  D060              STO      ID+5                    OCRDM126
007A 0  C05F        CD3   LD       ID+5                    OCRDM127
007B 0  1008              SLA      8                       OCRDM128
007C 0  D012              STO      CHAN                    OCRDM129
007D 0  1010              SLA      16                      OCRDM130
007E 0  D05D              STO      ID+7                    OCRDM131
007F 0  D05D              STO      ID+8                    OCRDM132
0080 0  D05D              STO      ID+9                    OCRDM133
0081 0  D05D              STO      ID+10                   OCRDM134
0082 0  D05E              STO      ID+12                   OCRDM135
0083 0  C00D              LD       K1                      OCRDM136
0084 0  D054              STO      ID+4                    OCRDM137
0085 0  D055              STO      ID+6                    OCRDM138
0086 01 7400008D          MDX  L   IND,0                   OCRDM139
0088 0  C009              LD       K8                      OCRDM140
0089 0  D004              STO      CDNO                    OCRDM141
008A 0  7014              MDX      CD33                    OCRDM142
                    *                                     OCRDM143
008B 0  003F        MASK  DC       /003F                   OCRDM144
008C 0  0000        SAVE  DC       0                       OCRDM145
008D 0  0000        IND   DC       0                       OCRDM146
008E 0  0000        CDNO  DC       0                       OCRDM147
008F 0  0000        CHAN  DC       0                       OCRDM148
0090 0  0000        ADDR  DC       0                       OCRDM149
0091 0  0001        K1    DC       1                       OCRDM150
0092 0  0008        K8    DC       8                       OCRDM151
0093 0  000A        K10   DC       10                      OCRDM152
0094 0  0010        K16   DC       16                      OCRDM153
0095 0  003E        K62   DC       62                      OCRDM154
0096 0  1000        K4096 DC       4096                    OCRDM155
0097 0  0000        N4K   DC       0                       OCRDM156
0098 0  0000        SAVE1 DC       0                       OCRDM157
009A    0000              BSS  E   0                       OCRDM158
009A 0  4220        END   DC       /4220                   OCRDM159
009B 0  8100              DC       /8100                   OCRDM160
009C 1  0214        CC    DC       CARD1+7                 OCRDM161
009D 01 4C00019D    ERRO1 BSC  L   ERRO2                   OCRDM162
                    *                                     OCRDM163
                    *     START LOOP FOR DIFFERENT CARDS  OCRDM164
                    *                                     OCRDM165
009F 01 66800090    CD33  LDX  I2  ADDR                    OCRDM166
00A1 01 7400008D    CD34  MDX  L   IND,0                   OCRDM167
00A3 0  7041              MDX      BCD                     OCRDM168
00A4 20 03059115    CD35  LIBF     CARDN                   OCRDM169
00A5 0  1000              DC       /1000                   OCRDM170
00A6 1  01BB              DC       CARD                    OCRDM171
00A7 0  0000              DC       0                       OCRDM172
00A8 20 03059115          LIBF     CARDN                   OCRDM173
00A9 0  0000              DC       0                       OCRDM174
00AA 0  70FD              MDX      *-3                     OCRDM175
00AB 0  407A              BSI      ETST                    OCRDM176
00AC 0  70F0              MDX      ERRO1                   OCRDM177
00AD 01 44000132          BSI  L   CONVT                   OCRDM178
00AF 01 4400014F          BSI  L   CTEST                   OCRDM179
00B1 0  C0DC              LD       CDNO                    OCRDM180
00B2 0  90DE              S        K1                      OCRDM181
00B3 01 4C2000B7          BSC  L   CD39,Z                  OCRDM182
00B5 01 44000187          BSI  L   SCAL                    OCRDM183
00B7 0  61B8        CD39  LDX   1  -72                     OCRDM184
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00B8 01 C5000256    CD4   LD    L1 CARD1+73                OCRDM185
00BA 0  1890              SRT     16                       OCRDM186
00BB 01 C5000255          LD    L1 CARD1+72                OCRDM187
00BD 0  1804              SRA     4                        OCRDM188
00BE 0  188A              SRT     10                       OCRDM189
00BF 0  7202              MDX   2 2                        OCRDM190
00C0 0  DA00              STD   2 0                        OCRDM191
00C1 01 C5000257          LD    L1 CARD1+74                OCRDM192
00C3 0  1890              SRT     16                       OCRDM193
00C4 01 C5000256          LD    L1 CARD1+73                OCRDM194
00C6 0  1804              SRA     4                        OCRDM195
00C7 0  E0C3              AND     MASK                     OCRDM196
00C8 0  1884              SRT     4                        OCRDM197
00C9 0  7202              MDX   2 2                        OCRDM198
00CA 0  DA00              STD   2 0                        OCRDM199
00CB 01 74FE008F          MDX   L CHAN,-2                  OCRDM200
00CD 0  7002              MDX     CD5                      OCRDM201
00CE 01 4C000044          BSC   L ENDS                     OCRDM202
00D0 0  7103        CD5   MDX   1 3                        OCRDM203
00D1 0  70E6              MDX     CD4                      OCRDM204
00D2 01 7401008E          MDX   L CDNO,1                   OCRDM205
00D4 0  70CF              MDX     CD35                     OCRDM206
                    *                                      OCRDM207
00D5    0010        ID    BSS     16                       OCRDM208
                    *                                      OCRDM209
00E5 20 03059115    BCD   LIBF    CARDN                    OCRDM210
00E6 0  1000              DC      /1000                    OCRDM211
00E7 1  020C              DC      CARD1-1                  OCRDM212
00E8 0  0000              DC      0                        OCRDM213
00E9 20 03059115          LIBF    CARDN                    OCRDM214
00EA 0  0000              DC      0                        OCRDM215
00EB 0  70FD              MDX     *-3                      OCRDM216
00EC 30 145A5140          CALL    MOVE                     OCRDM217
00EE 1  020D              DC      CARD1                    OCRDM218
00EF 1  01BC              DC      CARD+1                   OCRDM219
00F0 0  0004              DC      4                        OCRDM220
00F1 0  4034              BSI     ETST                     OCRDM221
00F2 0  70AA              MDX     ERR01                    OCRDM222
00F3 30 145A5140          CALL    MOVE                     OCRDM223
00F5 1  020F              DC      CARD1+2                  OCRDM224
00F6 1  0255              DC      CARD1+72                 OCRDM225
00F7 0  0004              DC      4                        OCRDM226
00F8 0  4056              BSI     CTEST                    OCRDM227
00F9 0  C094              LD      CDNO                     OCRDM228
00FA 0  9097              S       K8                       OCRDM229
00FB 01 4C2000FF          BSC   L BCD1,Z                   OCRDM230
00FD 01 44000183          BSI   L SCAL1                    OCRDM231
00FF 0  C09C        BCD1  LD      CC                       OCRDM232
0100 0  D003              STO     BCD3                     OCRDM233
0101 0  61F8              LDX   1 -8                       OCRDM234
0102 30 03102255    BCD2  CALL    CDBIN                    OCRDM235
0104 0  0000        BCD3  DC      *-*                      OCRDM236
0105 0  7202              MDX   2 2                        OCRDM237
0106 0  DA00              STD   2 0                        OCRDM238
0107 01 74FF008F          MDX   L CHAN,-1                  OCRDM239
0109 0  7002              MDX     BCD4                     OCRDM240
010A 01 4C000044          BSC   L ENDS                     OCRDM241
010C 01 74070104    BCD4  MDX   L BCD3,7                   OCRDM242
010E 0  7101              MDX   1 1                        OCRDM243
010F 0  70F2              MDX     BCD2                     OCRDM244
0110 01 7408008E          MDX   L CDNO,8                   OCRDM245
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0112 0  70D2            MDX     BCD                     OCRDM246
                        *                               OCRDM247
                        *       END OF SPECTRUM         OCRDM248
                        *                               OCRDM249
                        *                               OCRDM250
0113 0  C0C5    CONT    LD      ID+4                    OCRDM251
0114 0  1004            SLA     4                       OCRDM252
0115 01 84000091        A     L K1                      OCRDM253
0117 0  D0C3            STO     ID+6                    OCRDM254
0118 01 740100D9        MDX   L ID+4,1                  OCRDM255
011A 01 66800090        LDX   I2 ADDR                   OCRDM256
011C 01 65800098        LDX   I1 SAVE1                  OCRDM257
011E 01 C4000096        LD    L K4096                   OCRDM258
0120 01 D400008F        STO   L CHAN                    OCRDM259
0122 01 7400008D        MDX   L IND,0                   OCRDM260
0124 0  70C0            MDX     BCD                     OCRDM261
0125 0  7092            MDX     CD4                     OCRDM262
                        *                               OCRDM263
                        *                               OCRDM264
                        *                               OCRDM265
0126 0  0000    ETST    DC      0                       OCRDM266
0127 01 CC0001BC        LDD   L CARD+1                  OCRDM267
0129 01 BC00009A        DCM   L END                     OCRDM268
012B 0  7003            MDX     E1                      OCRDM269
012C 0  7002            MDX     E1                      OCRDM270
012D 01 4C800126    E0  BSC   I ETST                    OCRDM271
012F 01 74010126    E1  MDX   L ETST,1                  OCRDM272
0131 0  70FB            MDX     E0                      OCRDM273
                        *                               OCRDM274
0132 0  0000    CONVT   DC      0                       OCRDM275
0133 0  6A18            STX   2 XC2+1                   OCRDM276
0134 0  61B0            LDX   1 -80                     OCRDM277
0135 0  6251            LDX   2 81                      OCRDM278
0136 0  10A0    LD      SLT     32                      OCRDM279
0137 01 C500020C        LD    L1 CARD+81                OCRDM280
0139 01 4C180143        BSC   L CHE,+-                  OCRDM281
013B 0  630C            LDX   3 12                      OCRDM282
013C 0  4828    LOOP    BSC     Z+                      OCRDM283
013D 01 EC000091        OR    L K1                      OCRDM284
013F 0  1881            SRT     1                       OCRDM285
0140 0  1002            SLA     2                       OCRDM286
0141 0  73FF            MDX   3 -1                      OCRDM287
0142 0  70F9            MDX     LOOP                    OCRDM288
0143 0  1090    CHE     SLT     16                      OCRDM289
0144 01 D600020B        STO   L2 CARD1-2                OCRDM290
0146 0  72FF            MDX   2 -1                      OCRDM291
0147 0  7101            MDX   1 1                       OCRDM292
0148 0  70ED            MDX     LD                      OCRDM293
0149 00 67800067        LDX   I3 TVLOC                  OCRDM294
014B 00 66000000    XC2 LDX   L2 *-*                    OCRDM295
014D 01 4C800132        BSC   I CONVT                   OCRDM296
                        *                               OCRDM297
                        *                               OCRDM298
                        *                               OCRDM299
014F 0  0000    CTEST   DC      0                       OCRDM300
0150 0  61F8            LDX   1 -8                      OCRDM301
0151 0  6A08            STX   2 CT2+1                   OCRDM302
0152 01 C500025D    CT1 LD    L1 CARD1+80               OCRDM303
0154 0  4056            BSI     TRANS                   OCRDM304
0155 01 D500025D        STO   L1 CARD1+80               OCRDM305
0157 0  7101            MDX   1 1                       OCRDM306
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0158 0  70F9          MDX     CT1                     OCRDM307
0159 00 66000000  CT2 LDX   L2 *-*                   OCRDM308
015B 01 C400025A      LD    L  CARD1+77               OCRDM309
015D 01 A4000093      M     L  K10                    OCRDM310
015F 0  1090          SLT      16                     OCRDM311
0160 01 8400025B      A     L  CARD1+78               OCRDM312
0162 01 A4000093      M     L  K10                    OCRDM313
0164 0  1090          SLT      16                     OCRDM314
0165 01 8400025C      A     L  CARD1+79               OCRDM315
0167 01 7400008D      MDX   L  IND,0                  OCRDM316
0169 0  7012          MDX      CT4                    OCRDM317
016A 01 9400008E  CT3 S     L  CDNO                   OCRDM318
016C 01 4C98014F      BSC   I  CTEST,+-               OCRDM319
016E 01 C400008E      LD    L  CDNO                   OCRDM320
0170 0  1890          SRT      16                     OCRDM321
0171 30 025440C0      CALL     BNDC                   OCRDM322
0173 1  029A          DC       MES4-6                 OCRDM323
0174 20 176558D5      LIBF     PRNTN                  OCRDM324
0175 0  2100          DC       /2100                  OCRDM325
0176 1  027F          DC       MES3-1                 OCRDM326
0177 0  0000          DC       0                      OCRDM327
0178 20 17064885      LIBF     PAUSE                  OCRDM328
0179 1  0093          DC       K10                    OCRDM329
017A 01 4C0000A1      BSC   L  CD34                   OCRDM330
017C 0  D03C      CT4 STO     TRSAV                  OCRDM331
017D 01 C4000259      LD    L  CARD1+76               OCRDM332
017F 0  A03A          M        K1000                  OCRDM333
0180 0  1090          SLT      16                     OCRDM334
0181 0  8037          A        TRSAV                  OCRDM335
0182 0  70E7          MDX      CT3                    OCRDM336
                  *                                   OCRDM337
0183 0  0000      SCAL1 DC       0                      OCRDM338
0184 0  4002          BSI      SCAL                   OCRDM339
0185 01 4C800183      BSC   I  SCAL1                  OCRDM340
                  *                                   OCRDM341
0187 0  0000      SCAL  DC       0                      OCRDM342
0188 01 C4000255      LD    L  CARD1+72               OCRDM343
018A 01 D40000D5      STO   L  ID                     OCRDM344
018C 01 D40000D6      STO   L  ID+1                   OCRDM345
018E 01 C4000256      LD    L  CARD1+73               OCRDM346
0190 01 D40000D7      STO   L  ID+2                   OCRDM347
0192 01 C4000257      LD    L  CARD1+74               OCRDM348
0194 01 A4000093      M     L  K10                    OCRDM349
0196 0  1090          SLT      16                     OCRDM350
0197 01 84000258      A     L  CARD1+75               OCRDM351
0199 01 D40000D8      STO   L  ID+3                   OCRDM352
019B 01 4C800187      BSC   I  SCAL                   OCRDM353
                  *                                   OCRDM354
019D 01 C400008E  ERRO2 LD    L  CDNO                 OCRDM355
019F 0  1890          SRT      16                     OCRDM356
01A0 30 025440C0      CALL     BNDC                   OCRDM357
01A2 1  02BF          DC       MES6-6                 OCRDM358
01A3 20 176558D5      LIBF     PRNTN                  OCRDM359
01A4 0  2100          DC       /2100                  OCRDM360
01A5 1  02A0          DC       MES5-1                 OCRDM361
01A6 0  0000          DC       0                      OCRDM362
01A7 20 17064885      LIBF     PAUSE                  OCRDM363
01A8 1  01A6          DC       *-3                    OCRDM364
01A9 01 4C0000A1      BSC   L  CD34                   OCRDM365
                  *                                   OCRDM366
                  *                                   OCRDM367
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01AB 0  0000          TRANS DC      0                          OCRDM368
01AC 01 4C9801AB            BSC   I TRANS,+-                   OCRDM369
01AE 0  6A07                STX   2 TR+1                       OCRDM370
01AF 0  620C                LDX   2 12                         OCRDM371
01B0 0  1240                SLCA  2 0                          OCRDM372
01B1 0  6A07                STX   2 TRSAV                      OCRDM373
01B2 01 C4000093            LD    L K10                        OCRDM374
01B4 0  9004                S       TRSAV                      OCRDM375
01B5 00 66000000    TR      LDX   L2 *-*                       OCRDM376
01B7 01 4C8001AB            BSC   I TRANS                      OCRDM377
01B9 0  0000        TRSAV   DC      0                          OCRDM378
01BA    0000                BSS   E 0                          OCRDM379
01BA 0  03E8        K1000   DC      1000                       OCRDM380
01BB 0  0050        CARD    DC      80                         OCRDM381
01BC    0050                BSS     80                         OCRDM382
020C 0  0050                DC      80                         OCRDM383
020D    0050        CARD1   BSS     80                         OCRDM384
                    *                                          OCRDM385
025D 0  0021                DC      MES2-MES1                  OCRDM386
025E    0022        MES1    DMES  1 '2XCONTROL CARD FOR NUMBER OF BLOCK' OCRDM387
026F    0020                DMES  1 S MISSING. CORRECT AND CONTINUE.'E OCRDM388
027F    0000        MES2    BSS     0                          OCRDM389
027F 0  0020                DC      MES4-MES3                  OCRDM390
0280    0022        MES3    DMES  1 '2XCARD ORDER ERROR. CORRECT AND ST' OCRDM391
0291    0012                DMES  1 ART WITH CARD NO.'E        OCRDM392
02A0    0006        MES4    BES     6                          OCRDM393
02A0 0  0024                DC      MES6-MES5                  OCRDM394
02A1    0023        MES5    DMES  1 '2XSPECTRUM NOT COMPLETE. CORRECT AN' OCRDM395
02B2    0019                DMES  1 D CONTINUE WITH CARD NO.'E  OCRDM396
02C5    0006        MES6    BES     6                          OCRDM397
0067                TVLOC   EQU     103                        OCRDM398
02C6                        END                                OCRDM399
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NO ERRORS IN ABOVE ASSEMBLY.

OCRDM
DUP FUNCTION COMPLETED

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                *****************************************************  OCRD1002
                * IBM 1800 SUBROUTINES FOR DATA REDUCTION           *  OCRD1003
                *****************************************************  OCRD1004
                *                                                   *  OCRD1005
                *     SUBROUTINE OCRD1                              *  OCRD1006
                *                                                   *  OCRD1007
                *     CALLING SEQUENCE                              *  OCRD1008
                *     ----------------                              *  OCRD1009
                *                                                   *  OCRD1010
                *     CALL    OCRD1                                 *  OCRD1011
                *     DC      SPAD1                                 *  OCRD1012
                *     DC      SPAD2                                 *  OCRD1013
                *     DC      TITLE                                 *  OCRD1014
                *     DC      END                                   *  OCRD1015
                *                                                   *  OCRD1016
                *     THIS SUBROUTINE READS OLD BCD CARDS (8K       *  OCRD1017
                *     FORMAT) AND PERFORMS TWO SPECTRA IN MEMORY    *  OCRD1018
                *     FORMAT.                                       *  OCRD1019
                *     INDICATOR END IS SET UNEQUAL ZERO, IF A CARD* OCRD1020
                *     *END HAS BEEN READ                            *  OCRD1021
                *                                                   *  OCRD1022
                *****************************************************  OCRD1023
0000     160D9131       ENT     OCRD1                                  OCRD1024
0000 0   0000   OCRD1   DC      0                                      OCRD1025
0001 0   695F           STX   1 XR1+1                                  OCRD1026
0002 0   6A60           STX   2 XR2+1                                  OCRD1027
0003 0   6B61           STX   3 XR3+1                                  OCRD1028
0004 01  65800000       LDX   I1 OCRD1                                 OCRD1029
0006 00  67800067       LDX   I3 TVLOC                                 OCRD1030
0008 0   C100           LD    1 0                                      OCRD1031
0009 0   D046           STO     SPADR                                  OCRD1032
000A 01  8400009B       A     L K62                                    OCRD1033
000C 01  D4000095       STO   L ADDR1                                  OCRD1034
000E 0   C101           LD    1 1                                      OCRD1035
000F 0   D006           STO     SPAD1                                  OCRD1036
0010 0   D046           STO     SPAD2                                  OCRD1037
0011 01  8400009B       A     L K62                                    OCRD1038
0013 01  D4000096       STO   L ADDR2                                  OCRD1039
0015 20  024C1552       LIBF    BLANK                                  OCRD1040
0016 0   0000   SPAD1   DC      *-*                                    OCRD1041
0017 0   3FBA           DC      16314                                  OCRD1042
0018 01  7400009D       MDX   L N4K,0                                  OCRD1043
001A 0   702D           MDX     CONTS                                  OCRD1044
                *                                                      OCRD1045
                *     READ  TITLE                                      OCRD1046
                *                                                      OCRD1047
001B 20  03059115   CD  LIBF    CARDN                                  OCRD1048
001C 0   1000           DC      /1000                                  OCRD1049
001D 1   0169           DC      CARD1-1                                OCRD1050
001E 0   0000           DC      0                                      OCRD1051
001F 20  03059115       LIBF    CARDN                                  OCRD1052
0020 0   0000           DC      0                                      OCRD1053
0021 0   70FD           MDX     *-3                                    OCRD1054
0022 01  440000F6       BSI   L ETST                                   OCRD1055
0024 0   7043           MDX     EXIT1                                  OCRD1056
0025 0   C102           LD    1 2                                      OCRD1057
0026 0   D003           STO     CDO                                    OCRD1058
0027 30  145A5140       CALL    MOVE                                   OCRD1059
0029 1   016A           DC      CARD1                                  OCRD1060
002A 0   0000   CDO     DC      *-*                                    OCRD1061
002B 0   0048           DC      72                                     OCRD1062
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                        *                                                  OCRD1063
                        *     READ NUMBER OF BLOCKS                        OCRD1064
                        *                                                  OCRD1065
002C 20 03059115        CD1   LIBF     CARDN                               OCRD1066
002D 0  1000                  DC       /1000                               OCRD1067
002E 1  0169                  DC       CARD1-1                             OCRD1068
002F 0  0000                  DC       0                                   OCRD1069
0030 20 03059115              LIBF     CARDN                               OCRD1070
0031 0  0000                  DC       0                                   OCRD1071
0032 0  70FD                  MDX      *-3                                 OCRD1072
0033 01 C400016C              LD   L   CARD1+2                             OCRD1073
0035 01 4C20003F              BSC  L   ERROR,Z                             OCRD1074
0037 01 C400016B              LD   L   CARD1+1                             OCRD1075
0039 01 4C20003F              BSC  L   ERROR,Z                             OCRD1076
003B 01 C400016A              LD   L   CARD1                               OCRD1077
003D 01 4C18006A              BSC  L   CD2,+-                              OCRD1078
003F 20 176558D5        ERROR LIBF     PRNTN                               OCRD1079
0040 0  3D00                  DC       /3D00                               OCRD1080
0041 20 176558D5              LIBF     PRNTN                               OCRD1081
0042 0  2100                  DC       /2100                               OCRD1082
0043 1  01E1                  DC       MES1-1                              OCRD1083
0044 0  0000                  DC       0                                   OCRD1084
0045 20 17064885              LIBF     PAUSE                               OCRD1085
0046 0  0000                  DC       0                                   OCRD1086
0047 0  70E4                  MDX      CD1                                 OCRD1087
                        *                                                  OCRD1088
0048 01 4C0000E8        CONTS BSC  L   CONT                                OCRD1089
                        *                                                  OCRD1090
004A 01 74FF009D        ENDS  MDX  L   N4K,-1                              OCRD1091
004C 0  1000                  NOP                                          OCRD1092
004D 30 145A5140              CALL     MOVE                                OCRD1093
004F 1  00A0                  DC       ID                                  OCRD1094
0050 0  0000            SPADR DC       *-*                                 OCRD1095
0051 0  0010                  DC       16                                  OCRD1096
0052 01 740100A3              MDX  L   ID+3,1                              OCRD1097
0054 30 145A5140              CALL     MOVE                                OCRD1098
0056 1  00A0                  DC       ID                                  OCRD1099
0057 0  0000            SPAD2 DC       *-*                                 OCRD1100
0058 0  0010                  DC       16                                  OCRD1101
0059 0  1010            EXIT  SLA      16                                  OCRD1102
005A 01 65800000              LDX  I1  OCRD1                               OCRD1103
005C 00 D5800003              STO  I1  3                                   OCRD1104
005E 01 74040000              MDX  L   OCRD1,4                             OCRD1105
0060 00 65000000        XR1   LDX  L1  *-*                                 OCRD1106
0062 00 66000000        XR2   LDX  L2  *-*                                 OCRD1107
0064 00 67000000        XR3   LDX  L3  *-*                                 OCRD1108
0066 01 4C800000              BSC  I   OCRD1                               OCRD1109
                        *                                                  OCRD1110
0068 0  C02E            EXIT1 LD       K1                                  OCRD1111
0069 0  70F0                  MDX      EXIT+1                              OCRD1112
                        *                                                  OCRD1113
006A 01 C400016E        CD2   LD   L   CARD1+4                             OCRD1114
006C 01 44000159              BSI  L   TRANS                               OCRD1115
006E 0  D023                  STO      SAVE                                OCRD1116
006F 01 C400016D              LD   L   CARD1+3                             OCRD1117
0071 01 44000159              BSI  L   TRANS                               OCRD1118
0073 0  A025                  M        K10                                 OCRD1119
0074 0  1090                  SLT      16                                  OCRD1120
0075 0  801C                  A        SAVE                                OCRD1121
0076 0  D02E                  STO      ID+5                                OCRD1122
0077 0  901F                  S        K1                                  OCRD1123
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0078 0  1804              SRA     4                    UCRD1124
0079 0  801D              A       K1                   UCRD1125
007A 0  D030              STO     ID+11                UCRD1126
007B 0  D021              STO     N4K                  UCRD1127
007C 0  C028              LD      ID+5                 UCRD1128
007D 0  901C              S       K16                  UCRD1129
007E 01 4C080082          BSC  L  CD3,+                UCRD1130
0080 0  C019              LD      K16                  UCRD1131
0081 0  D023              STO     ID+5                 UCRD1132
0082 0  C022        CD3   LD      ID+5                 UCRD1133
0083 0  1008              SLA     8                    UCRD1134
0084 0  D00F              STO     CHAN                 UCRD1135
0085 0  1010              SLA     16                   UCRD1136
0086 0  D020              STO     ID+7                 UCRD1137
0087 0  D020              STO     ID+8                 UCRD1138
0088 0  D020              STO     ID+9                 UCRD1139
0089 0  D020              STO     ID+10                UCRD1140
008A 0  D021              STO     ID+12                UCRD1141
008B 0  C00B              LD      K1                   UCRD1142
008C 0  D017              STO     ID+4                 UCRD1143
008D 0  D018              STO     ID+6                 UCRD1144
008E 0  C009              LD      K8                   UCRD1145
008F 0  D003              STO     CDNO                 UCRD1146
0090 0  7023              MDX     CD33                 UCRD1147
                    *                                  UCRD1148
0091 0  003F        MASK  DC      /003F                UCRD1149
0092 0  0000        SAVE  DC      0                    UCRD1150
0093 0  0000        CDNO  DC      0                    UCRD1151
0094 0  0000        CHAN  DC      0                    UCRD1152
0095 0  0000        ADDR1 DC      0                    UCRD1153
0096 0  0000        ADDR2 DC      0                    UCRD1154
0097 0  0001        K1    DC      1                    UCRD1155
0098 0  0008        K8    DC      8                    UCRD1156
0099 0  000A        K10   DC      10                   UCRD1157
009A 0  0010        K16   DC      16                   UCRD1158
009B 0  003E        K62   DC      62                   UCRD1159
009C 0  1000        K4096 DC      4096                 UCRD1160
009D 0  0000        N4K   DC      0                    UCRD1161
009E    0000              BSS  E  0                    UCRD1162
009E 0  4220        END   DC      /4220                UCRD1163
009F 0  8100              DC      /8100                UCRD1164
00A0    0010        ID    BSS     16                   UCRD1165
00B0 1  0171        CC    DC      CARD1+7              UCRD1166
00B1 0  0000        INDX  DC      0                    UCRD1167
                    *                                  UCRD1168
00B2 01 4C00014B    ERRO1 BSC  L  ERRO2                UCRD1169
                    *                                  UCRD1170
                    *     START LOOP FOR DIFFERENT CARDS UCRD1171
                    *                                  UCRD1172
00B4 01 66800095    CD33  LDX  I2 ADDR1                UCRD1173
00B6 0  7201              MDX   2 1                    UCRD1174
00B7 01 65800096          LDX  I1 ADDR2                UCRD1175
00B9 0  7101              MDX   1 1                    UCRD1176
00BA 20 03059115    BCD   LIBF    CARDN                UCRD1177
00BB 0  1000              DC      /1000                UCRD1178
00BC 1  0169              DC      CARD1-1              UCRD1179
00BD 0  0000              DC      0                    UCRD1180
00BE 20 03059115          LIBF    CARDN                UCRD1181
00BF 0  0000              DC      0                    UCRD1182
00C0 0  70FD              MDX     *-3                  UCRD1183
00C1 0  4034              BSI     ETST                 UCRD1184
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00C2 0  70EF                MDX     ERRO1                    OCRD1185
00C3 30 145A5140            CALL    MOVE                     OCRD1186
00C5 1  016C                DC      CARD1+2                  OCRD1187
00C6 1  01B2                DC      CARD1+72                 OCRD1188
00C7 0  0004                DC      4                        OCRD1189
00C8 0  4039                BSI     CTEST                    OCRD1190
00C9 0  C0C9                LD      CDNO                     OCRD1191
00CA 0  90CD                S       K8                       OCRD1192
00CB 01 4C2000CF            BSC  L  BCD1,Z                   OCRD1193
00CD 01 44000135            BSI  L  SCAL1                    OCRD1194
00CF 0  C0E0        BCD1    LD      CC                       OCRD1195
00D0 0  D004                STO     BCD3                     OCRD1196
00D1 0  C0C6                LD      K8                       OCRD1197
00D2 0  D0DE                STO     INDX                     OCRD1198
00D3 01 440001BA    BCD2    BSI  L  CDBI1                    OCRD1199
00D5 0  0000        BCD3    DC      *-*                      OCRD1200
00D6 0  7202                MDX   2 2                        OCRD1201
00D7 0  7102                MDX   1 2                        OCRD1202
00D8 0  D100                STO   1 0                        OCRD1203
00D9 0  1090                SLT     16                       OCRD1204
00DA 0  D200                STO   2 0                        OCRD1205
00DB 01 74FF0094            MDX  L  CHAN,-1                  OCRD1206
00DD 0  7002                MDX     BCD4                     OCRD1207
00DE 01 4C00004A            BSC  L  ENDS                     OCRD1208
00E0 01 740700D5    BCD4    MDX  L  BCD3,7                   OCRD1209
00E2 01 74FF00B1            MDX  L  INDX,-1                  OCRD1210
00E4 0  70EE                MDX     BCD2                     OCRD1211
00E5 01 74080093            MDX  L  CDNO,8                   OCRD1212
00E7 0  70D2                MDX     BCD                      OCRD1213
                    *                                        OCRD1214
                    *       END OF SPECTRUM                  OCRD1215
                    *                                        OCRD1216
                    *                                        OCRD1217
00E8 0  C0BB        CONT    LD      ID+4                     OCRD1218
00E9 0  1004                SLA     4                        OCRD1219
00EA 01 84000097            A    L  K1                       OCRD1220
00EC 0  D0B9                STO     ID+6                     OCRD1221
00ED 01 740100A4            MDX  L  ID+4,1                   OCRD1222
00EF 01 74FF00A3            MDX  L  ID+3,-1                  OCRD1223
00F1 01 C400009C            LD   L  K4096                    OCRD1224
00F3 01 D4000094            STO  L  CHAN                     OCRD1225
00F5 0  70BE                MDX     CD33                     OCRD1226
                    *                                        OCRD1227
                    *                                        OCRD1228
                    *                                        OCRD1229
00F6 0  0000        ETST    DC      0                        OCRD1230
00F7 01 CC00016A            LDD  L  CARD1                    OCRD1231
00F9 01 BC00009E            DCM  L  END                      OCRD1232
00FB 0  7003                MDX     E1                       OCRD1233
00FC 0  7002                MDX     E1                       OCRD1234
00FD 01 4C8000F6    E0      BSC  I  ETST                     OCRD1235
00FF 01 740100F6    E1      MDX  L  ETST,1                   OCRD1236
0101 0  70FB                MDX     E0                       OCRD1237
                    *                                        OCRD1238
                    *                                        OCRD1239
0102 0  0000        CTEST   DC      0                        OCRD1240
0103 0  6A0A                STX   2 CT2+1                    OCRD1241
0104 0  690B                STX   1 CT3+1                    OCRD1242
0105 0  61F8                LDX   1 -8                       OCRD1243
0106 01 C50001BA    CT1     LD   L1 CARD1+80                 OCRD1244
0108 0  4050                BSI     TRANS                    OCRD1245
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0109 01 D50001BA          STO  L1 CARD1+80                    OCRD1246
010B 0  7101              MDX   1 1                           OCRD1247
010C 0  70F9              MDX     CT1                         OCRD1248
010D 00 66000000   CT2     LDX  L2 *-*                       OCRD1249
010F 00 65000000   CT3     LDX  L1 *-*                       OCRD1250
0111 01 C40001B7          LD   L  CARD1+77                    OCRD1251
0113 01 A4000099          M    L  K10                         OCRD1252
0115 0  1090              SLT     16                          OCRD1253
0116 01 840001B8          A    L  CARD1+78                    OCRD1254
0118 01 A4000099          M    L  K10                         OCRD1255
011A 0  1090              SLT     16                          OCRD1256
011B 01 840001B9          A    L  CARD1+79                    OCRD1257
011D 0  D049              STO     TRSAV                       OCRD1258
011E 01 C40001B6          LD   L  CARD1+76                    OCRD1259
0120 0  A047              M       K1000                       OCRD1260
0121 0  1090              SLT     16                          OCRD1261
0122 0  8044              A       TRSAV                       OCRD1262
0123 01 94000093          S    L  CDNO                        OCRD1263
0125 01 4C980102          BSC  I  CTEST,+-                    OCRD1264
0127 01 C4000093          LD   L  CDNO                        OCRD1265
0129 0  1890              SRT     16                          OCRD1266
012A 30 025440C0          CALL    BNDC                        OCRD1267
012C 1  021E              DC      MES4-6                      OCRD1268
012D 20 176558D5          LIBF    PRNTN                       OCRD1269
012E 0  2100              DC      /2100                       OCRD1270
012F 1  0203              DC      MES3-1                      OCRD1271
0130 0  0000              DC      0                           OCRD1272
0131 20 17064885          LIBF    PAUSE                       OCRD1273
0132 1  0099              DC      K10                         OCRD1274
0133 01 4C0000BA          BSC  L  BCD                         OCRD1275
                   *                                          OCRD1276
                   *                                          OCRD1277
0135 0  0000       SCAL1  DC      0                           OCRD1278
0136 01 C40001B2          LD   L  CARD1+72                    OCRD1279
0138 01 D40000A0          STO  L  ID                          OCRD1280
013A 01 D40000A1          STO  L  ID+1                        OCRD1281
013C 01 C40001B3          LD   L  CARD1+73                    OCRD1282
013E 01 D40000A2          STO  L  ID+2                        OCRD1283
0140 01 C40001B4          LD   L  CARD1+74                    OCRD1284
0142 01 A4000099          M    L  K10                         OCRD1285
0144 0  1090              SLT     16                          OCRD1286
0145 01 840001B5          A    L  CARD1+75                    OCRD1287
0147 01 D40000A3          STO  L  ID+3                        OCRD1288
0149 01 4C800135          BSC  I  SCAL1                       OCRD1289
                   *                                          OCRD1290
014B 01 C4000093   ERRO2   LD   L  CDNO                        OCRD1291
014D 0  1890              SRT     16                          OCRD1292
014E 30 025440C0          CALL    BNDC                        OCRD1293
0150 1  0243              DC      MES6-6                      OCRD1294
0151 20 176558D5          LIBF    PRNTN                       OCRD1295
0152 0  2100              DC      /2100                       OCRD1296
0153 1  0224              DC      MES5-1                      OCRD1297
0154 0  0000              DC      0                           OCRD1298
0155 20 17064885          LIBF    PAUSE                       OCRD1299
0156 1  0154              DC      *-3                         OCRD1300
0157 01 4C0000BA          BSC  L  BCD                         OCRD1301
                   *                                          OCRD1302
                   *                                          OCRD1303
0159 0  0000       TRANS  DC      0                           OCRD1304
015A 01 4C980159          BSC  I  TRANS,+-                    OCRD1305
015C 0  6A07              STX    2 TR+1                       OCRD1306
```

```
015D 0   620C                LDX   2 12                                  OCRD1307
015E 0   1240                SLCA  2 0                                   OCRD1308
015F 0   6A07                STX   2 TRSAV                               OCRD1309
0160 01  C4000099            LD    L K10                                 OCRD1310
0162 0   9004                S       TRSAV                               OCRD1311
0163 00  66000000     TR     LDX   L2 *-*                                OCRD1312
0165 01  4C800159            BSC   I TRANS                               OCRD1313
0167 0   0000         TRSAV  DC      0                                   OCRD1314
0168     0000                BSS   E 0                                   OCRD1315
0168 0   03E8         K1000  DC      1000                                OCRD1316
0169 0   0050                DC      80                                  OCRD1317
016A     0050         CARD1  BSS     80                                  OCRD1318
                      *                                                  OCRD1319
                      *                                                  OCRD1320
01BA 0   0000         CDBI1  DC      0                                   OCRD1321
01BB 0   6918                STX   1 XRR1+1                              OCRD1322
01BC 01  658001BA            LDX   I1 CDBI1                              OCRD1323
01BE 0   C100                LD    1 0                                   OCRD1324
01BF 0   D004                STO     C1                                  OCRD1325
01C0 0   801F                A       K3                                  OCRD1326
01C1 0   D00A                STO     C2                                  OCRD1327
01C2 30  145A5140            CALL    MOVE                                OCRD1328
01C4 0   0000         C1     DC      *-*                                 OCRD1329
01C5 1   01DD                DC      TAB+3                               OCRD1330
01C6 0   0003                DC      3                                   OCRD1331
01C7 20  040C2255            LIBF    DCBIN                               OCRD1332
01C8 1   01DA                DC      TAB                                 OCRD1333
01C9 0   D00F                STO     A                                   OCRD1334
01CA 30  145A5140            CALL    MOVE                                OCRD1335
01CC 0   0000         C2     DC      *-*                                 OCRD1336
01CD 1   01DD                DC      TAB+3                               OCRD1337
01CE 0   0003                DC      3                                   OCRD1338
01CF 20  040C2255            LIBF    DCBIN                               OCRD1339
01D0 1   01DA                DC      TAB                                 OCRD1340
01D1 0   1890                SRT     16                                  OCRD1341
01D2 0   C006                LD      A                                   OCRD1342
01D3 00  65000000     XRR1   LDX   L1 *-*                                OCRD1343
01D5 01  740101BA            MDX   L CDBI1,1                             OCRD1344
01D7 01  4C8001BA            BSC   I CDBI1                               OCRD1345
01D9 0   0000         A      DC      0                                   OCRD1346
01DA 0   0000         TAB    DC      0                                   OCRD1347
01DB 0   0000                DC      0                                   OCRD1348
01DC 0   0000                DC      0                                   OCRD1349
01DD     0003                BSS     3                                   OCRD1350
01E0 0   0003         K3     DC      3                                   OCRD1351
                      *                                                  OCRD1352
01E1 0   0021                DC      MES2-MES1                           OCRD1353
01E2     0022         MES1   DMES  1 '2XCONTROL CARD FOR NUMBER OF BLOCK' OCRD1354
01F3     0020                DMES  1 S MISSING. CORRECT AND CONTINUE.'E  OCRD1355
0203     0000         MES2   BSS     0                                   OCRD1356
0203 0   0020                DC      MES4-MES3                           OCRD1357
0204     0022         MES3   DMES  1 '2XCARD ORDER ERROR. CORRECT AND ST' OCRD1358
0215     0012                DMES  1 ART WITH CARD NO.'E                 OCRD1359
0224     0006         MES4   BES     6                                   OCRD1360
0224 0   0024                DC      MES6-MES5                           OCRD1361
0225     0023         MES5   DMES  1 '2XSPECTRUM NOT COMPLETE. CORRECT AN' OCRD1362
0236     0019                DMES  1 D CONTINUE WITH CARD NO.'E          OCRD1363
0249     0006         MES6   BES     6                                   OCRD1364
0067                  TVLOC  EQU     103                                 OCRD1365
024A                         END                                         OCRD1366
```

NO ERRORS IN ABOVE ASSEMBLY.

```
                    ************************************************** SPSRC002
                    * IBM 1800 SUBROUTINES FOR DATA REDUCTION          SPSRC003
                    ************************************************** SPSRC004
                    *                                                * SPSRC005
                    *     SUBROUTINE SPSRC                           * SPSRC006
                    *                                                * SPSRC007
                    *     CALLING SEQOENCE                           * SPSRC008
                    *      ---------------                           * SPSRC009
                    *                                                * SPSRC010
                    *       CALL     SPSRC                            * SPSRC011
                    *       DC       ID                               * SPSRC012
                    *       DC       BUF                              * SPSRC013
                    *       DC       TABNR                            * SPSRC014
                    *       DC       NRENT                            * SPSRC015
                    *       DC       ERRSW                            * SPSRC016
                    *       DC       SWITC                            * SPSRC017
                    *                                                * SPSRC018
                    * ID    BSS      16                               * SPSRC019
                    * BUF   BSS   E  324                              * SPSRC020
                    * TABNR DC       1,2 OR 3                         * SPSRC021
                    * NRENT BSS      12                               * SPSRC022
                    *       DC       -1                               * SPSRC023
                    * ERRSW DC       *-*                              * SPSRC024
                    * SWITC DC       0 OR 1                           * SPSRC025
                    * THIS ROUTINE SEARCHES A SPECTRUM WITH A GIVEN   * SPSRC026
                    * ID IN A TABLE GIVEN BY TABNR (=1 FOR SPTBL, =2  * SPSRC027
                    * FOR OVFTB, =3 FOR SPTB1).  ERRSW IS SET BY THE  * SPSRC028
                    * ROUTINE DEPENDING ON WETHER THE ID HAS BEEN     * SPSRC029
                    * FOUND OR NOT. SWITC DETERMINES IF THE SPECTRUM  * SPSRC030
                    * IS TO BE DELETED OR NOT. THE ENTRY NUMBERS OF   * SPSRC031
                    * THE ID-NUMBER ARE FOUND IN THE TABLE NRENT.     * SPSRC032
                    * THE ID-NUMBER MUST CONTAIN                      * SPSRC033
                    * GROUP NO.,EXP1,EXP2, SER.NO., AND NO.4K FOR     * SPSRC034
                    * OVTPL AND SPTBL, AND NO. OF FIRST BLOCK FOR     * SPSRC035
                    * SPTB1. THE ID-NUMBER IS FILLED UP BY SPSRC.     * SPSRC036
                    *                                                * SPSRC037
                    ************************************************** SPSRC038
0000     225E2643          ENT      SPSRC                              SPSRC039
0000 0   0000        SPSRC DC       0                                  SPSRC040
0001 01  6D000095          STX   L1 SAVX1+1      SAVE INDEX            SPSRC041
0003 01  6E000097          STX   L2 SAVX2+1                            SPSRC042
0005 01  6F000099          STX   L3 SAVX3+1                            SPSRC043
0007 01  66800000          LDX   I2 SPSRC                              SPSRC044
0009 01  650000A2          LDX   L1 R                                  SPSRC045
000B 00  C6800002          LD    I2 2           LOAD TABLE NUMBER      SPSRC046
000D 0   910F              S      1 K1-R                               SPSRC047
000E 0   1001              SLA      1                                  SPSRC048
000F 0   8108              A      1 TAB1-R      PREPARE HEADER TO READ  SPSRC049
0010 0   D001              STO      SPI+1       TABLE FROM DISK        SPSRC050
0011 00  CC000000    SP1   LDD   L  *-*                                SPSRC051
0013 00  DE800001          STD   I2 1                                  SPSRC052
0015 0   C201              LD     2 1                                  SPSRC053
0016 0   D003              STO      AREA                               SPSRC054
0017 0   D05E              STO      SP8                                SPSRC055
0018 20  04262495          LIBF     DISKN       READ TABLE             SPSRC056
0019 0   1000              DC       /1000                              SPSRC057
001A 0   0000        AREA  DC       *-*                                SPSRC058
001B 0   0000        ZERO  DC       0                                  SPSRC059
001C 20  04262495          LIBF     DISKN       WAIT                   SPSRC060
001D 0   0000              DC       0                                  SPSRC061
001E 1   00A2              DC       SPTBL                              SPSRC062
```

```
001F 0  70FC              MDX     *-4                                     SPSRC063
0020 0  C200              LD    2 0           SAVE ID ADDRESS             SPSRC064
0021 0  D011              STO     SP2+1                                   SPSRC065
0022 0  C201              LD    2 1           SAVE BUFFER ADDRESS         SPSRC066
0023 0  D01D              STO     SP3+1                                   SPSRC067
0024 0  C203              LD    2 3           SAVE ADDRESS OF ENTRY TABL  SPSRC068
0025 0  D01D              STO     SP4+1                                   SPSRC069
0026 0  D009              STO     SP11                                    SPSRC070
0027 00 C6800005          LD    I2 5          SAVE DELETE SWITCH          SPSRC071
0029 0  D109              STO   1 SWITC-R                                 SPSRC072
002A 0  1010              SLA     16                                      SPSRC073
002B 00 D6800004          STO   I2 4          SET ERROR SWITCH OFF        SPSRC074
002D 30 145A5171          CALL    MOVE1       SET ENTRY TABLE ZERO        SPSRC075
002F 1  001B              DC      ZERO                                    SPSRC076
0030 0  0000        SP11  DC      *-*                                     SPSRC077
0031 0  000C              DC      12                                      SPSRC078
0032 00 66000000    SP2   LDX   L2 *-*          X2=ID TABLE               SPSRC079
0034 0  C200              LD    2 0 .     XXXPXXXX      PISW              SPSRC080
0035 0  1004              SLA     4       XXPOXXXX                        SPSRC081
0036 0  EA01              OR    2 1       XXPEXXXX      EXP1              SPSRC082
0037 0  1004              SLA     4       XPEOXXXX                        SPSRC083
0038 0  EA02              OR    2 2       XPEEXXXX      EXP2              SPSRC084
0039 0  1890              SRT     16      XXXXXPEE                        SPSRC085
003A 0  C203              LD    2 3       XXSSXPEE      SERIAL NUMBER     SPSRC086
003B 0  1004              SLA     4       XSSOXPEE                        SPSRC087
003C 0  EA04              OR    2 4       XSSNXPEE      NRU4K  OR NRFST    SPSRC088
003D 0  1004              SLA     4       SSNOXPEE                        SPSRC089
003E 0  18CC              RTE     12      PEESSNOX                        SPSRC090
003F 0  D906              STO   1 ID-R        SAVE ID                     SPSRC091
0040 00 66000000    SP3   LDX   L2 *-*          X2=BUFFER ADDRESS         SPSRC092
0042 00 67000000    SP4   LDX   L3 *-*          X3=ENTRY TABLE            SPSRC093
0044 0  C110              LD    1 K160-R      INITIALISE ENTRY COUNTER    SPSRC094
0045 0  D10A              STO   1 CTR1-R                                  SPSRC095
0046 0  1010              SLA     16                                      SPSRC096
0047 0  D10B              STO   1 CTR2-R      INITIALISI ENTRY NUMBER     SPSRC097
0048 0  D10C              STO   1 SW1-R       SET SWITCH OFF              SPSRC098
0049 0  7202        SP5   MDX   2 2           ID = NEXT ID                SPSRC099
004A 0  CA00              LDD   2 0                                       SPSRC100
004B 0  1888              SRT     8                                       SPSRC101
004C 0  1088              SLT     8         COMPARE                       SPSRC102
004D 0  9906              SD    1 ID-R        ID                          SPSRC103
004E 01 4C200067          BSC   L SP7,Z       BRANCH IF NOT EQUAL         SPSRC104
0050 0  1090              SLT     16                                      SPSRC105
0051 01 4C200067          BSC   L SP7,Z       BRANCH IF NOT EQUAL         SPSRC106
0053 0  C10C              LD    1 SW1-R       EQUAL,TEST IF FIRST TIME    SPSRC107
0054 01 4C20005F          BSC   L SP6,Z       NO,BRANCH                   SPSRC108
0056 0  CA00              LDD   2 0           YES,SAVE OCCUPATION AND     SPSRC109
0057 0  1098              SLT     24                  OVERFLOW  INDIC     SPSRC110
0058 0  18CC              RTE     12                                      SPSRC111
0059 0  D10D              STO   1 OCCUP-R                                 SPSRC112
005A 0  1010              SLA     16                                      SPSRC113
005B 0  1084              SLT     4                                       SPSRC114
005C 0  D10E              STO   1 OVERF-R                                 SPSRC115
005D 01 740100AE          MDX   L SW1,1       SET SWITCH ON               SPSRC116
005F 0  10A0        SP6   SLT     32        ERASE ENTRY IN TABLE          SPSRC117
0060 0  DA00              STD   2 0                                       SPSRC118
0061 0  C300              LD    3 0         TEST IF FREE PLACE IN         SPSRC119
0062 01 4C200067          BSC   L SP7,Z       ENTRY TABLE.NO BRANCH       SPSRC120
0064 0  C10B              LD    1 CTR2-R      SAVE ENTRY NUMBER IN ENTRY  SPSRC121
0065 0  D300              STO   3 0           TABLE                       SPSRC122
0066 0  7301              MDX   3 1           PREPARE FOR NEXT            SPSRC123
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0067 01 740100AD    SP7    MDX  L  CTR2,1       INCREMENT ENTRY NUMBER      SPSRC124
0069 01 74FF00AC           MDX  L  CTR1,-1      END OF TABLE                SPSRC125
006B 0  70DD               MDX     SP5          NO                          SPSRC126
006C 0  C10C               LD    1 SW1-R        YES,TEST IF ENTRY FOUND     SPSRC127
006D 01 4C18009C           BSC  L  ERROR,+-     BRANCH IF NOT               SPSRC128
006F 0  C109               LD    1 SWITC-R      TEST IF DELETE NECESSARY    SPSRC129
0070 01 4C18007C           BSC  L  SP9,+-       BRANCH IF NOT               SPSRC130
0072 00 67800067           LDX  I3 103                                      SPSRC131
0074 20 04262495           LIBF    DISKN        WRITE DISK                  SPSRC132
0075 0  3000               DC      /3000                                    SPSRC133
0076 0  0000       SP8     DC      *-*                                      SPSRC134
0077 0  0000               DC      0                                        SPSRC135
0078 20 04262495           LIBF    DISKN        WAIT                        SPSRC136
0079 0  0000               DC      0                                        SPSRC137
007A 1  00A2               DC      SPTBL                                    SPSRC138
007B 0  70FC               MDX     *-4                                      SPSRC139
007C 01 66800000   SP9     LDX  I2 SPSRC                                    SPSRC140
007E 0  C200               LD    2 0                                        SPSRC141
007F 0  D001               STO     *+1                                      SPSRC142
0080 00 65000000           LDX  L1 *-*          X1=ID ZONE                  SPSRC143
0082 0  C02C               LD      OCCUP                                    SPSRC144
0083 0  D107               STO   1 7                                        SPSRC145
0084 00 C6800002           LD   I2 2            TEST IF TABLE OF SPECTRA    SPSRC146
0086 0  902D               S       K2           LESS THAN 4K                SPSRC147
0087 01 4C080090           BSC  L  SP12,+       BRANCH IF 4K                SPSRC148
0089 0  C104               LD    1 4            SAVE FIRST BLOCK NUMBER     SPSRC149
008A 0  D106               STO   1 6                                        SPSRC150
008B 0  C024               LD      OVERF                                    SPSRC151
008C 0  D105               STO   1 5                SAVE NUMBER OF BLOCKS   SPSRC152
008D 0  1010               SLA     16                                       SPSRC153
008E 0  D104               STO   1 4                SET OVERFLOW INDIC      SPSRC154
008F 0  7002               MDX     SP13             ZERO                    SPSRC155
                   *                                                        SPSRC156
0090 0  C01F       SP12    LD      OVERF            SET OVERFLOW INDIC      SPSRC157
0091 0  D108               STO   1 8                                        SPSRC158
                   *                                                        SPSRC159
0092 01 74060000   SP13    MDX  L  SPSRC,6                                  SPSRC160
0094 00 65000000   SAVX1   LDX  L1 *-*                                      SPSRC161
0096 00 66000000   SAVX2   LDX  L2 *-*                                      SPSRC162
0098 00 67000000   SAVX3   LDX  L3 *-*                                      SPSRC163
009A 01 4C800000           BSC  I  SPSRC                                    SPSRC164
                   *                                                        SPSRC165
                   *                                                        SPSRC166
009C 01 66800000   ERROR   LDX  I2 SPSRC                                    SPSRC167
009E 0  C111               LD    1 K6-R                                     SPSRC168
009F 00 D6800004           STO  I2 4                                        SPSRC169
00A1 0  70F0               MDX     SP13                                     SPSRC170
                   *                                                        SPSRC171
00A2    0000               BSS  E  0                                        SPSRC172
00A2 31 225E3093   SPTBL   DSA     SPTBL                                    SPSRC173
00A5               ORG     SPTBL                                            SPSRC174
00A2 0  0140               DC      320                                      SPSRC175
00A3               ORG     SPTBL+2                                          SPSRC176
00A4 31 169468C2   OVFTB   DSA     OVFTB                                    SPSRC177
00A7               ORG     OVFTB                                            SPSRC178
00A4 0  0140               DC      320                                      SPSRC179
00A5               ORG     OVFTB+2                                          SPSRC180
00A6 31 225E30B1   SPTB1   DSA     SPTB1                                    SPSRC181
00A9               ORG     SPTB1                                            SPSRC182
00A6 0  0140               DC      320                                      SPSRC183
00A7               ORG     SPTB1+2                                          SPSRC184
```

```
00A8      0002          ID      BSS     2                    SPSRC185
00AA 1    00A2          TAB1    DC      SPTBL                SPSRC186
00AB 0    0000          SWITC   DC      *-*                  SPSRC187
00AC 0    0000          CTR1    DC      *-*                  SPSRC188
00AD 0    0000          CTR2    DC      *-*                  SPSRC189
00AE 0    0000          SW1     DC      *-*                  SPSRC190
00AF 0    0000          OCCUP   DC      *-*                  SPSRC191
00B0 0    0000          OVERF   DC      *-*                  SPSRC192
00B1 0    0001          K1      DC      1                    SPSRC193
00B2 0    00A0          K160    DC      160                  SPSRC194
00B3 0    0006          K6      DC      6                    SPSRC195
00B4 0    0002          K2      DC      2                    SPSRC196
00A2                    R       EQU     SPTBL                SPSRC197
00B6                            END                          SPSRC198

     NO ERRORS IN ABOVE ASSEMBLY.
SPSRC
DUP FUNCTION COMPLETED
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```
                    ************************************************** DISKM002
                    *  IBM 1800 SUBROUTINES FOR DATA REDUCTION       * DISKM003
                    ************************************************** DISKM004
                    *                                                * DISKM005
                    *     SUBROUTINE DISKM                           * DISKM006
                    *                                                * DISKM007
                    *     CALLING SEQUENCE                           * DISKM008
                    *     ----------------                           * DISKM009
                    *                                                * DISKM010
                    *            CALL    DISKM                       * DISKM011
                    *            DC      SPADR                       * DISKM012
                    *            DC      ERRSW                       * DISKM013
                    *            DC      BUF                         * DISKM014
                    *            DC      ID                          * DISKM015
                    *            DC      SWITC                       * DISKM016
                    *                                                * DISKM017
                    *            BSS  E  2                           * DISKM018
                    *      SPADR BSS     8256     SPECTRUM AREA      * DISKM019
                    *      ERRSW DC      *-*      0= OK  6= NOT FOUND * DISKM020
                    *      BUF   BSS  E  324      BUFFER  FOR TABLES * DISKM021
                    *      ID    BSS     5                           * DISKM022
                    *      SWITC DC      *-*      0= NO DELETE,1=DELET* DISKM023
                    *                                                * DISKM024
                    ************************************************** DISKM025
0000     04262494          ENT     DISKM                              DISKM026
0000 0   0000        DISKM DC      0                                  DISKM027
0001 01  6D0000BC          STX  L1 SAVX1+1    SAVE INDEXES            DISKM028
0003 01  6E0000BE          STX  L2 SAVX2+1                            DISKM029
0005 01  6F0000C0          STX  L3 SAVX3+1                            DISKM030
0007 01  65000130          LDX  L1 R                                  DISKM031
0009 0   6200              LDX   2 0                                  DISKM032
000A 0   0A32              XIO   2 50                                 DISKM033
000B 0   0A34              XIO   2 52                                 DISKM034
000C 0   CA6E              LDD  X2 SMASK                              DISKM035
000D 0   D90C              STD   1 SAVMK-R                            DISKM036
000E 0   C22E              LD    2 CMASK                              DISKM037
000F 0   D10E              STO   1 CAVMK-R                            DISKM038
0010 0   C230              LD    2 CMAS1                              DISKM039
0011 0   D10F              STO   1 CAVMK+1-R                          DISKM040
0012 0   C22E              LD   X2 CMASK                              DISKM041
0013 0   EA6C              OR   X2 MSK1       MASK ALL OUT OF CORE INT. DISKM042
0014 0   D22E              STO  X2 CMASK      MASK ALL                DISKM043
0015 0   C230              LD   X2 CMAS1      OUT OF                  DISKM044
0016 0   EA6D              OR   X2 MSK2                               DISKM045
0017 0   D230              STO  X2 CMAS1                              DISKM046
0018 0   C26E              LD   X2 SMASK      LEVELS                  DISKM047
0019 0   EA6C              OR   X2 MSK1                               DISKM048
001A 0   D26E              STO  X2 SMASK                              DISKM049
001B 0   C26F              LD   X2 SMAS1                              DISKM050
001C 0   EA6D              OR   X2 MSK2                               DISKM051
001D 0   D26F              STO  X2 SMAS1                              DISKM052
001E 0   0A2E              XIO  X2 CMASK                              DISKM053
001F 0   0A30              XIO  X2 CMAS1                              DISKM054
0020 01  66800000          LDX  I2 DISKM                              DISKM055
0022 0   C200              LD    2 0          SAVE PARAMETERS         DISKM056
0023 0   D122              STO   1 SPADR-R                            DISKM057
0024 0   C201              LD    2 1                                  DISKM058
0025 0   D107              STO   1 ERRSW-R                            DISKM059
0026 0   C202              LD    2 2                                  DISKM060
0027 0   D104              STO   1 BUF-R                              DISKM061
0028 0   C204              LD    2 4                                  DISKM062
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0029 0  D108              STO   1 SWITC-R                                  DISKM063
002A 0  C13B              LD    1 K1-R          PREPARE TO EXAMINE SPTBL   DISKM064
002B 0  D145              STO   1 TABNR-R                                  DISKM065
002C 0  C203              LD    2 3                                        DISKM066
002D 0  D002              STO     *+2                                      DISKM067
002E 30 145A5140          CALL    MOVE          PREPARE ERROR FILE AND     DISKM068
0030 0  0000              DC      *-*           ID ZONE                    DISKM069
0031 1  0142              DC      IDZNE                                    DISKM070
0032 0  0005              DC      5                                        DISKM071
0033 01 66800134          LDX   I2 BUF           PREPARE BUFFER             DISKM072
0035 0  C138              LD    1 KF-R                                     DISKM073
0036 00 D6000142          STO   L2 322                                     DISKM074
0038 0  C144              LD    1 H2000-R                                  DISKM075
0039 0  D120              STO   1 IDZNE+ERRST-R                            DISKM076
003A 01 4400010C          BSI   L WRDSK                                    DISKM077
003C 01 44000130          BSI   L SPSRC         SEARCH SPECTRUM IN SPTBL   DISKM078
003E 01 C4800137          LD    I ERRSW         TEST IF FOUND              DISKM079
0040 0  9139              S     1 K6-R                                     DISKM080
0041 01 4C180081          BSC   L PSP,+-        BRANCH IF NOT              DISKM081
0043 0  C11A              LD    1 IDZNE+OVERF-R                            DISKM082
0044 01 4C180074          BSC   L NOVER,+-      BRANCH IF NO OVERFLOW      DISKM083
0046 0  C141              LD    1 K4160-R                                  DISKM084
0047 01 440000F0          BSI   L RDSPC         READ  SPECTRUM FROM DISK   DISKM085
0049 01 44000115          BSI   L UNPCK         UNPACK IT                  DISKM086
004B 01 74010175          MDX   L TABNR,1                                  DISKM087
004D 01 44000130          BSI   L SPSRC         READ OVERFLOW SECTORS      DISKM088
004F 01 6600015C          LDX   L2 FNTRI        PREPARE TO READ AN         DISKM089
0051 0  C200              LD    2 0             OVERFLOW SECTOR            DISKM090
0052 0  8127        DD1   A     1 OVZNE+1-R     COMPUTE SECTOR ADDRESS     DISKM091
0053 0  D12B              STO   1 DBL+1-R       AND                        DISKM092
0054 0  C92A              LDD   1 DBL-R         PREPARE HEADER             DISKM093
0055 01 DC800134          STD   I BUF                                      DISKM094
0057 01 67800134          LDX   I3 BUF                                     DISKM095
0059 01 440000FD          BSI   L RDDSK         READ A SECTOR              DISKM096
005B 01 65800134          LDX   I1 BUF          PREPARE TO RESTORE OVERFL  DISKM097
005D 0  7102              MDX   1 2             X1=BUF                     DISKM098
005E 01 67800152          LDX   I3 SPADR        X3=CHANNEL1                DISKM099
0060 0  7340              MDX   3 64                                       DISKM100
0061 0  C100        DD2   LD    1 0             LOAD CHANNEL NUMBER        DISKM101
0062 01 4C28006D          BSC   L NXT,+Z        BRANCH IF NOT A CHANNEL    DISKM102
0064 01 9400016B          S     L K1            BUT END MARK               DISKM103
0066 0  1001              SLA     1             COMPUTE DISPLACEMENT IN    DISKM104
0067 0  D002              STO     *+2           SPECTRUM                   DISKM105
0068 0  C101              LD    1 1                                        DISKM106
0069 00 D7000000          STO   L3 *-*          STORE VALUE                DISKM107
006B 0  7102              MDX   1 2             PREPARE FOR NEXT OVERFLOW  DISKM108
006C 0  70F4              MDX     DD2           CHANNEL                    DISKM109
                    *                                                     DISKM110
006D 0  7201        NXT   MDX   2 1             GO FOR NEXT OVERFLOW SECT. DISKM111
006E 01 65000130          LDX   L1 R                                       DISKM112
0070 0  C200              LD    2 0                                        DISKM113
0071 01 4C0800A1          BSC   L COM,+                                    DISKM114
0073 0  70DE              MDX     DD1                                      DISKM115
                    *                                                     DISKM116
                    *                                                     DISKM117
0074 0  C119        NOVER LD    1 IDZNE+OCCUP-R   NO OVERFLOW SECTORS      DISKM118
0075 01 4C20007B          BSC   L NVR1,Z          BRANCH IF SINGLE           DISKM119
0077 0  C142              LD    1 K8256-R         PRECISION                  DISKM120
0078 01 440000F0          BSI   L RDSPC           READ SPECTRUM              DISKM121
007A 0  7026              MDX     COM             GO TO EXIT                 DISKM122
                    *                                                     DISKM123
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007B 0  C141        NVR1  LD    1 K4160-R          READ SINGLE PRECISION DISKM124
007C 01 440000F0          BSI   L RDSPC            SPECTRUM              DISKM125
007E 01 44000115          BSI   L UNPCK            UNPACK IT             DISKM126
0080 0  7020              MDX     COM              GO TO EXIT            DISKM127
                    *                                                    DISKM128
                    *                                                    DISKM129
0081 0  C13C        PSP   LD    1 K3-R             SPECTRUM WITH LESS THAN DISKM130
0082 0  D145              STO   1 TABNR-R          4K CHANNELS           DISKM131
0083 01 44000130          BSI   L SPSRC            SEARCH IN  SPTB1      DISKM132
0085 01 C4800137          LD    I ERRSW                                  DISKM133
0087 0  9139              S     1 K6-R                                   DISKM134
0088 01 4C1800A1          BSC   L COM,+-          BRANCH IF NOT FOUND   DISKM135
008A 0  C119              LD    1 IDZNE+OCCUP-R                          DISKM136
008B 01 4C1800C3          BSC   L PSP1,+-         BRANCH IF DOUBLE PRECISION DISKM137
008D 0  C13F              LD    1 K256-R                                 DISKM138
008E 01 440000C7          BSI   L RDSP1            READ SPECTRUM         DISKM139
0090 01 44000115          BSI   L UNPCK            UNPACK                DISKM140
0092 30 145A5140    PSP2  CALL    MOVE             MOVE IT TO ITS PLACE  DISKM141
0094 0  0000        PSP3  DC      *-*                                      DISKM142
0095 0  0000        PSP4  DC      *-*                                      DISKM143
0096 0  0000        PSP5  DC      *-*                                      DISKM144
0097 30 145A5171          CALL    MOVE1            BLANK LEFT SIDE OF PARTIAL DISKM145
0099 1  0153              DC      ZERO             SPECTRUM              DISKM146
009A 0  0000        PSP6  DC      *-*                                      DISKM147
009B 0  0000        PSP7  DC      *-*                                      DISKM148
009C 30 145A5171          CALL    MOVE1            BLANK RIGHT SIDE OF PAR- DISKM149
009E 1  0153              DC      ZERO             TIAL SPECTRUM         DISKM150
009F 0  0000        PSP8  DC      *-*                                      DISKM151
00A0 0  0000        PSP9  DC      *-*                                      DISKM152
00A1 0  1010        COM   SLA     16                                       DISKM153
00A2 01 65000130          LDX   L1 R                                       DISKM154
00A4 0  D120              STO   1 ERRST+IDZNE-R                            DISKM155
00A5 0  4066              BSI     WRDSK            SET ERROR FILE        DISKM156
00A6 20 04262495          LIBF    DISKN                                    DISKM157
00A7 0  0100              DC      /0100            WAIT                  DISKM158
00A8 1  0140              DC      ERFIL                                    DISKM159
00A9 0  70FC              MDX     *-4                                      DISKM160
00AA 0  6200              LDX   2 0                                        DISKM161
00AB 0  0A32              XIO   2 50                                       DISKM162
00AC 0  0A34              XIO   2 52                                       DISKM163
00AD 0  C90C              LDD   1 SAVMK-R                                  DISKM164
00AE 0  DA6E              STD   X2 SMASK                                   DISKM165
00AF 0  C90E              LDD   1 CAVMK-R                                  DISKM166
00B0 0  D22E              STO   X2 CMASK                                   DISKM167
00B1 0  1090              SLT   16                                         DISKM168
00B2 0  D230              STO   X2 CMAS1                                   DISKM169
00B3 0  0A2E              XIO   X2 CMASK                                   DISKM170
00B4 0  0A30              XIO   X2 CMAS1                                   DISKM171
00B5 00 0C0000A0          XIO   L IMASK                                    DISKM172
00B7 00 0C0000A2          XIO   L IMAS1                                    DISKM173
00B9 01 74050000          MDX   L DISKM,5          PREPARE RETURN        DISKM174
00BB 00 65000000    SAVX1 LDX   L1 *-*                                     DISKM175
00BD 00 66000000    SAVX2 LDX   L2 *-*                                     DISKM176
00BF 00 67000000    SAVX3 LDX   L3 *-*                                     DISKM177
00C1 01 4C800000          BSC   I DISKM                                    DISKM178
                    *                                                    DISKM179
00C3 0  C140        PSP1  LD    1 K512-R                                 DISKM180
00C4 01 440000C7          BSI   L RDSP1                                    DISKM181
00C6 0  70CB              MDX     PSP2                                     DISKM182
                    *                                                    DISKM183
                    *                                                    DISKM184
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00C7 0  0000        RDSP1 DC      0                                    DISKM185
00C8 0  A117              M     1 IDZNE+NRBLC-R  COMPUTE LENGTH        DISKM186
00C9 0  1090              SLT     16               OF SPECTRUM         DISKM187
00CA 0  813E              A     1 K64-R                                DISKM188
00CB 01 67800152          LDX  I3 SPADR                                DISKM189
00CD 0  D3FE              STO   3 -2                                   DISKM190
00CE 0  C12C              LD    1 ENTRI-R      COMPUTE SECTOR          DISKM191
00CF 0  8129              A     1 SPZN1+1-R        ADDRESS             DISKM192
00D0 0  D3FF              STO   3 -1                                   DISKM193
00D1 0  73FE              MDX   3 -2                                   DISKM194
00D2 0  402A              BSI     RDDSK            READ SPECTRUM       DISKM195
00D3 01 66800152          LDX  I2 SPADR                                DISKM196
00D5 0  7240              MDX   2 64                                   DISKM197
00D6 0  6ABD              STX   2 PSP3             PREPARE MOVE OF     DISKM198
00D7 0  6AC2              STX   2 PSP6             SPECTRUM AND BLANKING DISKM199
00D8 0  C118              LD    1 NRFST+IDZNE-R    OF FREE SPECTRUM AREA DISKM200
00D9 0  913B              S     1 K1-R                                 DISKM201
00DA 0  A140              M     1 K512-R                               DISKM202
00DB 0  1090              SLT     16                                   DISKM203
00DC 0  D001              STO     *+1                                  DISKM204
00DD 00 76000000          MDX  L2 *-*                                  DISKM205
00DF 0  6AB5              STX   2 PSP4                                 DISKM206
00E0 0  C117              LD    1 NRBLC+IDZNE-R                        DISKM207
00E1 0  A140              M     1 K512-R                               DISKM208
00E2 0  1090              SLT     16                                   DISKM209
00E3 0  D0B2              STO     PSP5                                 DISKM210
00E4 0  C0B0              LD      PSP4                                 DISKM211
00E5 0  90AE              S       PSP3                                 DISKM212
00E6 0  D0B4              STO     PSP7                                 DISKM213
00E7 01 76800096    PSP10 MDX  I2 PSP5                                 DISKM214
00E9 0  6AB5              STX   2 PSP8                                 DISKM215
00EA 0  C143              LD    1 K8192-R                              DISKM216
00EB 0  90AA              S       PSP5                                 DISKM217
00EC 0  90AE              S       PSP7                                 DISKM218
00ED 0  D0B2              STO     PSP9                                 DISKM219
00EE 01 4C8000C7          BSC  I  RDSP1                                DISKM220
                    *                                                  DISKM221
                    *                                                  DISKM222
00F0 0  0000        RDSPC DC      0                                    DISKM223
00F1 01 67800152          LDX  I3 SPADR                                DISKM224
00F3 0  D3FE              STO   3 -2                                   DISKM225
00F4 0  C12C              LD    1 ENTRI-R                              DISKM226
00F5 0  A13A              M     1 K13-R                                DISKM227
00F6 0  1090              SLT     16                                   DISKM228
00F7 0  8125              A     1 SPZNE+1-R                            DISKM229
00F8 0  D3FF              STO   3 -1                                   DISKM230
00F9 0  73FE              MDX   3 -2                                   DISKM231
00FA 0  4002              BSI     RDDSK                                DISKM232
00FB 01 4C8000F0          BSC  I  RDSPC                                DISKM233
                    *                                                  DISKM234
00FD 0  0000        RDDSK DC      0                                    DISKM235
00FE 0  6B05              STX   3 RDD1                                 DISKM236
00FF 0  6B08              STX   3 RDD2                                 DISKM237
0100 00 67800067          LDX  I3 103                                  DISKM238
0102 20 04262495          LIBF    DISKN                                DISKM239
0103 0  1000              DC      /1000                                DISKM240
0104 0  0000        RDD1  DC      *-*                                  DISKM241
0105 0  0000              DC                                           DISKM242
0106 20 04262495          LIBF    DISKN                                DISKM243
0107 0  0100              DC      /0100                                DISKM244
0108 0  0000        RDD2  DC      *-*                                  DISKM245
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0109 0  70FC              MDX     *-4                                   DISKM246
010A 01 4C8000FD          BSC  I  RDDSK                                 DISKM247
                          *                                             DISKM248
                          *                                             DISKM249
010C 0  0000      WRDSK   DC      0                                     DISKM250
010D 00 67800067          LDX  I3 103                                   DISKM251
010F 20 04262495          LIBF    DISKN                                 DISKM252
0110 0  3000              DC      /3000                                 DISKM253
0111 1  0140              DC      ERFIL                                 DISKM254
0112 0  0000              DC                                            DISKM255
0113 01 4C80010C          BSC  I  WRDSK                                 DISKM256
                          *                                             DISKM257
0115 0  0000      UNPCK   DC      0                                     DISKM258
0116 0  C143              LD    1 K8192-R                               DISKM259
0117 0  D017              STO     CTR                                   DISKM260
0118 01 65800152          LDX  I1 SPADR                                 DISKM261
011A 00 7500103F          MDX  L1 4096+63                               DISKM262
011C 01 67800152          LDX  I3 SPADR                                 DISKM263
011E 00 7700203F          MDX  L3 8192+63                               DISKM264
0120 0  C100      UNP1    LD    1 0                                     DISKM265
0121 0  D300              STO   3 0                                     DISKM266
0122 0  1010              SLA     16                                    DISKM267
0123 0  D3FF              STO   3 -1                                    DISKM268
0124 0  73FE              MDX   3 -2                                    DISKM269
0125 0  71FF              MDX   1 -1                                    DISKM270
0126 01 74FE012F          MDX   L CTR,-2                                DISKM271
0128 0  70F7              MDX     UNP1                                  DISKM272
0129 01 65000130          LDX  L1 R                                     DISKM273
012B 00 67800067          LDX  I3 103                                   DISKM274
012D 01 4C800115          BSC  I  UNPCK                                 DISKM275
012F 0  0000      CTR     DC      0                                     DISKM276
                          *                                             DISKM277
                          *                                             DISKM278
0130 0  0000      SPSRC   DC      0                                     DISKM279
0131 30 225E2643          CALL    SPSRC                                 DISKM280
0133 1  0142      IDADR   DC      IDZNE                                 DISKM281
0134 0  0000      BUF     DC      *-*                                   DISKM282
0135 1  0175              DC      TABNR                                 DISKM283
0136 1  015C      NRENT   DC      ENTRI                                 DISKM284
0137 0  0000      ERRSW   DC      *-*                                   DISKM285
0138 0  0000      SWITC   DC      *-*                                   DISKM286
0139 01 4C800130          BSC  I  SPSRC                                 DISKM287
013C    0002      SAVMK   BSS  E  2                                     DISKM288
013E    0002      CAVMK   BSS  E  2                                     DISKM289
0140    0000              BSS  E  0                                     DISKM290
0140 31 05646253  ERFIL   DSA     ERFIL                                 DISKM291
0143              .       ORG     ERFIL                                 DISKM292
0140 0  0010              DC      16                                    DISKM293
0141              .       ORG     ERFIL+2                               DISKM294
002E              CMASK   EQU     46                                    DISKM295
0030              CMAS1   EQU     48                                    DISKM296
006E              SMASK   EQU     110                                   DISKM297
006F              SMAS1   EQU     111                                   DISKM298
00A0              IMASK   EQU     160                                   DISKM299
00A2              IMAS1   EQU     162                                   DISKM300
006C              MSK1    EQU     108     OUT OF CORE INTERRUPT 0-13    DISKM301
006D              MSK2    EQU     109     OUT OF CORE INTERRUPT 14-     3ISKM302
0142    0010      IDZNE   BSS     16                                    DISKM303
0000              PISW    EQU     0                                     DISKM304
0001              EXP1    EQU     1                                     DISKM305
0002              EXP2    EQU     2                                     DISKM306
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0003                  SERNR EQU    3                          DISKM307
0004                  NRO4K EQU    4                          DISKM308
0005                  NRBLC EQU    5                          DISKM309
0006                  NRFST EQU    6                          DISKM310
0007                  OCCUP EQU    7                          DISKM311
0008                  OVERF EQU    8                          DISKM312
000E                  ERRST EQU    14                         DISKM313
0152 0   0000         SPADR DC     *-*                        DISKM314
0153 0   0000         ZERO  DC                                DISKM315
0154 31  225E9545     SPZNE DSA    SPZNE                      DISKM316
0157                        ORG    SPZNE+2                    DISKM317
0156 31  16969545     OVZNE DSA    OVZNE                      DISKM318
0159                        ORG    OVZNE+2                    DISKM319
0158 31  225E9571     SPZN1 DSA    SPZN1                      DISKM320
015B                        ORG    SPZN1+2                    DISKM321
015A 0   0140         DBL   DC     320                        DISKM322
015B 0   0000               DC     *-*                        DISKM323
015C     000C         ENTRI BSS    12                         DISKM324
0168 0   FFFF         KF    DC     -1                         DISKM325
0169 0   0006         K6    DC     6                          DISKM326
016A 0   000D         K13   DC     13                         DISKM327
016B 0   0001         K1    DC     1                          DISKM328
016C 0   0003         K3    DC     3                          DISKM329
016D 0   0002         K2    DC     2                          DISKM330
016E 0   0040         K64   DC     64                         DISKM331
016F 0   0100         K256  DC     256                        DISKM332
0170 0   0200         K512  DC     512                        DISKM333
0171 0   1040         K4160 DC     4160                       DISKM334
0172 0   2040         K8256 DC     8256                       DISKM335
0173 0   2000         K8192 DC     8192                       DISKM336
0174 0   2000         H2000 DC     /2000                      DISKM337
0175 0   0000         TABNR DC     *-*                        DISKM338
0130                  R     EQU    SPSRC                      DISKM339
0176                        END                               DISKM340

     NO ERRORS IN ABOVE ASSEMBLY.
DISKM
DUP FUNCTION COMPLETED
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                    IBM 1800 SUBROUTINE MDISK                                  PAGE    1

                    ************************************************************ MDISK002
                    *  IBM 1800 SUBROUTINES FOR DATA REDUCTION                 * MDISK003
                    ************************************************************ MDISK004
                    *       SUBROUTINE MDISK                                   * MDISK005
                    *                                                          * MDISK006
                    *       CALLING SEQUENCE                                   * MDISK007
                    *       ----------------                                   * MDISK008
                    *                                                          * MDISK009
                    *       CALL     MDISK                                     * MDISK010
                    *       DC       SPADR                                     * MDISK011
                    *       DC       BUF                                       * MDISK012
                    *       DC       ERRSW                                     * MDISK013
                    *       DC       ADR                                       * MDISK014
                    *                                                          * MDISK015
                    *       BSS   E  2                                         * MDISK016
                    * SPADR BSS      8256                                      * MDISK017
                    *                                                          * MDISK018
                    * BUF   BSS      646   BUFFER FOR TABLES                   * MDISK019
                    * ADR   DC       *-*   FREE ENTRIES IN SPTBL                * MDISK020
                    *       DC       *-*   FREE ENTRIES IN SPTB1                * MDISK021
                    *       DC       *-*   FREE ENTRIES IN OVFTB                * MDISK022
                    *                      NEGATIVE IF NOT USED                * MDISK023
                    * ERRSW DC       *-*   0 = OK                              * MDISK024
                    *                      1 = NO PLACE FOR 13 BLOCKS          * MDISK025
                    *                      2 = NO PLACE FOR 26 BLOCKS          * MDISK026
                    *                      3 = NO PLACE FOR SPECTRUM           * MDISK027
                    *                          WITH LESS THAN 16 BLOCKS        * MDISK028
                    *                      4 = NO PLACE IN OVERFLOW TBL        * MDISK029
                    *                      5 = SAME ID                         * MDISK030
                    ************************************************************ MDISK031
0000     14109892          ENT      MDISK                                       MDISK032
0000 0   0000        MDISK DC       0                                           MDISK033
0001 01  6D000112          STX   L1 SAVX1+1     SAVE REGISTERS                   MDISK034
0003 01  6E000114          STX   L2 SAVX2+1                                      MDISK035
0005 01  6F000116          STX   L3 SAVX3+1                                      MDISK036
0007 0   6200              LDX    2 0                                            MDISK037
0008 01  650002CE          LDX   L1 R           X1= RELO                         MDISK038
000A 0   0A32              XIO    2 50                                           MDISK039
000B 0   0A34              XIO    2 52                                           MDISK040
000C 0   CA6E              LDD   X2 SMASK                                        MDISK041
000D 0   D924              STD    1 SAVMK-R                                      MDISK042
000E 0   C22E              LD     2 CMASK                                        MDISK043
000F 0   D126              STO    1 CAVMK-R                                      MDISK044
0010 0   C230              LD     2 CMAS1                                        MDISK045
0011 0   D127              STO    1 CAVMK+1-R                                    MDISK046
0012 0   C22E              LD    X2 CMASK                                        MDISK047
0013 0   EA6C              OR    X2 MSK1        MASK ALL OUT OF CORE INT.        MDISK048
0014 0   D22E              STO   X2 CMASK       MASK ALL                         MDISK049
0015 0   C230              LD    X2 CMAS1       OUT OF                           MDISK050
0016 0   EA6D              OR    X2 MSK2                                         MDISK051
0017 0   D230              STO   X2 CMAS1                                        MDISK052
0018 0   C26E              LD    X2 SMASK       LEVELS                           MDISK053
0019 0   EA6C              OR    X2 MSK1                                         MDISK054
001A 0   D26E              STO   X2 SMASK                                        MDISK055
001B 0   C26F              LD    X2 SMAS1                                        MDISK056
001C 0   EA6D              OR    X2 MSK2                                         MDISK057
001D 0   D26F              STO   X2 SMAS1                                        MDISK058
001E 0   0A2E              XIO   X2 CMASK                                        MDISK059
001F 0   0A30              XIO   X2 CMAS1                                        MDISK060
0020 01  66800000          LDX   I2 MDISK                                        MDISK061
0022 0   C200              LD     2 0           SAVE SPECTRUM ADDRESS            MDISK062
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0023 0  D13E              STO   1 SPADR-R                                  MDISK063
0024 0  D01D              STO     MD1                                      MDISK064
0025 0  C201              LD    2 1             SAVE ERRORSWITCH ADDRESS   MDISK065
0026 0  D13F              STO   1 ERRSW-R                                  MDISK066
0027 0  C202              LD    2 2             SAVE BUFFER ADDRESS        MDISK067
0028 0  D13C              STO   1 TBL-R         AND PREPARE BUFFER ZONE    MDISK068
0029 01 D4000145          STO   L TBTS1                                    MDISK069
002B 0  8134              A     1 K322-R                                   MDISK070
002C 0  D13D              STO   1 BUFOV-R                                  MDISK071
002D 01 D4000148          STO   L BFTS1                                    MDISK072
002F 0  8134              A     1 K322-R                                   MDISK073
0030 0  D002              STO     *+2                                      MDISK074
0031 0  C920              LDD   1 HFFFF-R                                  MDISK075
0032 00 DC000000          STD   L *-*                                      MDISK076
0034 0  C203              LD    2 3             SAVE COUNTER ZONE ADDRESS  MDISK077
0035 0  D008              STO     CTRAD                                    MDISK078
0036 00 67800067          LDX   I3 103                                     MDISK079
0038 0  1010              SLA     16                                       MDISK080
0039 01 D480030D          STO   I ERRSW         SET ERRORSWITCH = 0        MDISK081
003B 30 145A5171          CALL    MOVE1         SET COUNTERS ON 'UNUSED'   MDISK082
003D 1  02EE                DC    HFFFF                                    MDISK083
003E 0  0000        CTRAD   DC    *-*                                      MDISK084
003F 0  0003                DC    3                                        MDISK085
0040 30 145A5140            CALL    MOVE        PREPARE ERROR FILE         MDISK086
0042 0  0000        MD1     DC    *-*                                      MDISK087
0043 1  02D0                DC    ERFIL+2                                  MDISK088
0044 0  0010                DC    16                                       MDISK089
0045 01 6680030C            LDX   I2 SPADR      X2 POINTS ON SPECTRUM.     MDISK090
0047 0  C110              LD    1 ERFIL-R+ERRST+2                          MDISK091
0048 0  1004              SLA     4                                        MDISK092
0049 0  1804              SRA     4                                        MDISK093
004A 0  E93B              OR    1 H1000-R                                  MDISK094
004B 0  D110              STO   1 ERFIL-R+ERRST+2  PREP RESRT INDIC       MDISK095
004C 0  E13A              AND   1 H00FF-R                                  MDISK096
004D 0  D20E              STO   X2 ERRST                                   MDISK097
004E 0  C14E              LD    1 ERF2-R        WRITE ERROR FILE ON DISK   MDISK098
004F 01 44000121          BSI   L WRDSK                                    MDISK099
0051 01 440002B1          BSI   L IDCON         PREPARE ID                 MDISK100
                    *                                                      MDISK101
0053 0  C205              LD    X2 NR256        TEST NR OF  BLOCKS         MDISK102
0054 0  912F              S     1 K16-R                                    MDISK103
0055 01 4C200178          BSC   L MD27,Z        NO,BRANCH TO LESS THAN     MDISK104
0057 0  C91E              LDD   1 SPTB1-R       TEST IF SAME ID            MDISK105
0058 01 DC80030A          STD   I TBL           NOT IN OTHER TABLE         MDISK106
005A 0  C13C              LD    1 TBL-R                                    MDISK107
005B 01 44000119          BSI   L RDDSK         READ IT                    MDISK108
005D 01 4400014C          BSI   L TBTST         WAIT                       MDISK109
005F 0  1010              SLA     16          PREPARE FOR FND1           MDISK110
0060 0  D148              STO   1 FNDSW-R                                  MDISK111
0061 01 6680030A          LDX   I2 TBL                                     MDISK112
0063 0  7202              MDX   2 2                                        MDISK113
0064 0  C11C              LD    1 SPZN1-R                                  MDISK114
0065 0  D146              STO   1 LGTTB-R                                  MDISK115
0066 01 440001D1          BSI   L FND1          TEST  IF ID NOT SAME       MDISK116
0068 0  0003              DC    3                                          MDISK117
0069 01 6680030C          LDX   I2 SPADR                                   MDISK118
006B 0  C914              LDD   1 SPTBL-R       16 BLOCKS  PROGRAM         MDISK119
006C 01 DC80030A          STD   I TBL                                      MDISK120
006E 0  C13C              LD    1 TBL-R         READ TABLE                 MDISK121
006F 01 44000119          BSI   L RDDSK                                    MDISK122
                    *                                                      MDISK123
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0071 01 44000130          BSI  L  OVTST      TEST OVERFLOWS                MDISK124
0073 01 6680030C          LDX  I2 SPADR                                    MDISK125
0075 01 4C1800EF          BSC  L  MD13,&-    BRANCH IF NUM OVERFLOWS       MDISK126
0077 0  9136              S     1 K1920-R                                  MDISK127
0078 01 4C300169          BSC  L  M20,-Z     BRANCH IF MORE THAN 1920      MDISK128
007A 0  C128              LD    1 K1-R                                     MDISK129
007B 0  D207              STO  X2 OCCUP                                    MDISK130
007C 0  D208              STO  X2 OVERF                                    MDISK131
007D 0  1004              SLA     4                                        MDISK132
007E 0  E928              OR    1 K1-R                                     MDISK133
007F 0  E913              OR    1 ID-R+1     SET ID-OVERFLOW INDICATOR     MDISK134
0080 0  D113              STO   1 ID-R+1                                   MDISK135
0081 0  C916              LDD   1 OVFTB-R    READ OVERFLOW TABLE           MDISK136
0082 01 DC80030B          STD  I  BUFOV                                    MDISK137
0084 0  C13D              LD    1 BUFOV-R                                  MDISK138
0085 01 44000119          BSI  L  RDDSK                                    MDISK139
0087 0  C14B              LD    1 OVFL1-R    COMPUTE NUMBER OF OVERFLOW    MDISK140
0088 0  1890              SRT     16         SECTORS REQUIRED              MDISK141
0089 0  A932              D     1 K160-R                                   MDISK142
008A 0  18D0              RTE     16         TEST IF REMAINDER ZERO        MDISK143
008B 01 4C180090          BSC  L  *+3,+-                                   MDISK144
008D 0  18D0              RTE     16                                       MDISK145
008E 0  8128              A     1 K1-R                                     MDISK146
008F 0  7001              MDX     *+1                                      MDISK147
0090 0  18D0              RTE     16                                       MDISK148
0091 0  D14D              STO   1 NRSEC-R    SAVE IN NRSEC                 MDISK149
0092 0  C118              LD    1 OVZNE-R                                  MDISK150
0093 0  D146              STO   1 LGTTB-R    INITIALISE LGTTB FOR          MDISK151
0094 01 6680030B    MD2   LDX  I2 BUFOV      SEARCH                        MDISK152
0096 01 44000143          BSI  L  BFTST      TEST IF TABLE HAS BEEN        MDISK153
0098 01 6780031D          LDX  I3 ADR1       READ                          MDISK154
009A 0  7202        MD5   MDX   2 2                                        MDISK155
009B 0  C200              LD    2 0          TEST IF FREE PLACE            MDISK156
009C 01 4C1800A7          BSC  L  MD8,+-     BRANCH IF YES                 MDISK157
009E 01 74FF0314    MD54  MDX  L  LGTTB,-1   NO                            MDISK158
00A0 0  70F9              MDX     MD5        NOT END OF TABLE-RETURN       MDISK159
00A1 0  7000              MDX     MD6        END OF TABLE-BRANCH           MDISK160
                    *                                                    MDISK161
00A2 0  C12B        MD6   LD    1 K4-R                                     MDISK162
00A3 01 D480030D          STO  I  ERRSW      SET ERROR SWITCH              MDISK163
00A5 0  7050              MDX     MD17       GO  TO ERROR EXIT             MDISK164
00A6 0  0000        MD7   DC      *-*                                      MDISK165
00A7 0  6AFE        MD8   STX   2 MD7        COMPUTE                       MDISK166
00A8 0  C0FD              LD      MD7                                      MDISK167
00A9 0  913D              S     1 BUFOV-R                                  MDISK168
00AA 0  9129              S     1 K2-R                                     MDISK169
00AB 0  1801              SRA     1          SECTOR ADDRESS                MDISK170
00AC 0  8119              A     1 OVZNE-R+1                                MDISK171
00AD 0  D300              STO   3 0          SAVE IN  TABLE                MDISK172
00AE 0  7301              MDX   3 1          PREPARE FOR NEXT ENTRY        MDISK173
00AF 0  C912              LDD   1 ID-R       PUT ID IN FREE PLACE          MDISK174
00B0 0  DA00        MD9   STD   2 0                                        MDISK175
00B1 01 74FF031B          MDX  L  NRSEC,-1   TEST IF ENUUGH SECTORS        MDISK176
00B3 0  70EA              MDX     MD54       FOUND.BRANCH IF NO            MDISK177
00B4 0  6300              LDX   3 0                                        MDISK178
00B5 0  7202        MD91  MDX   2 2          COMPUTE THE NUMBER            MDISK179
00B6 01 74FF0314          MDX  L  LGTTB,-1   OF REMAINING FREE OVERFLOW    MDISK180
00B8 0  7001              MDX     *+1        SECTORS                       MDISK181
00B9 0  7005              MDX     MD93                                     MDISK182
00BA 0  C200              LD    2 0                                        MDISK183
00BB 0  4818              BSC     +-                                       MDISK184
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00BC 0  7301              MDX   3 1                                    MDISK185
00BD 0  70F7              MDX     MD91                                 MDISK186
00BE 0  0000        MD92  DC      0                                    MDISK187
00BF 0  6BFE        MD93  STX   3 MD92                                 MDISK188
00C0 01 6780003E          LDX   I3 CTRAD                               MDISK189
00C2 0  C0FB              LD      MD92                                 MDISK190
00C3 0  D302              STO   3 2                                    MDISK191
00C4 00 67800067          LDX   I3 103                                 MDISK192
00C6 01 4400014C    MD10  BSI   L  TBTST      TEST IF TABLE IS READ    MDISK193
00C8 0  C128              LD    1 K1-R                                 MDISK194
00C9 01 44000153          BSI   L  MD40       SET X2,LGTTB,FNDSW       MDISK195
00CB 01 440001D1          BSI   L  FND1       FIND A FREE PLACE IN SPTBL MDISK196
00CD 0  0001              DC      1           ERROR INDICATOR          MDISK197
00CE 01 6680030C          LDX   I2 SPADR      SET X2                   MDISK198
00D0 0  C208              LD    X2 OVERF                               MDISK199
00D1 01 4C1800DE          BSC   L  MD12,&-                             MDISK200
00D3 0  C13D              LD    1 BUFOV-R     WRITE  OVERFLOW TABLE ON MDISK201
00D4 0  404C              BSI     WRDSK       DISK                     MDISK202
00D5 0  C110              LD    1 ERFIL-R+ERRST+2                      MDISK203
00D6 0  813B              A     1 H1000-R     SET ERREOR FILE INDIC    MDISK204
00D7 0  D110              STO   1 ERFIL-R+ERRST+2                      MDISK205
00D8 0  C14E              LD    1 ERF2-R                               MDISK206
00D9 0  4047              BSI     WRDSK       WRITE ERROR FILE         MDISK207
00DA 20 04262495          LIBF    DISKN       WAIT                     MDISK208
00DB 0  0100              DC      /0100                                MDISK209
00DC 1  02CE              DC      ERFIL                                MDISK210
00DD 0  70FC              MDX     *-4                                  MDISK211
00DE 0  C128        MD12  LD    1 K1-R        SET INCR3                MDISK212
00DF 0  D142              STO   1 INCR3-R                              MDISK213
00E0 01 44000237          BSI   L  PACK       PACK                     MDISK214
00E2 0  C137              LD    1 K4160-R     PREPARE                  MDISK215
00E3 0  407A              BSI     MD41        HEADER SPECTRUM,SECT.ADD. MDISK216
00E4 0  700C              MDX     MD16                                 MDISK217
                    *                                                  MDISK218
00E5 0  0000        MD11  DC      0                                    MDISK219
00E6 0  1010              SLA     16                                   MDISK220
00E7 0  D208              STO   X2 OVERF                               MDISK221
00E8 0  C128              LD    1 K1-R                                 MDISK222
00E9 0  D207              STO   X2 OCCUP                               MDISK223
00EA 0  1004              SLA     4                                    MDISK224
00EB 0  E913              OR    1 ID&1-R                               MDISK225
00EC 0  D113              STO   1 ID&1-R                               MDISK226
00ED 01 4C8000E5          BSC   I  MD11                                MDISK227
                    *                                                  MDISK228
00EF 0  40F5        MD13  BSI     MD11                                 MDISK229
00F0 0  70D5              MDX     MD10                                 MDISK230
                    *                                                  MDISK231
                    *                                                  MDISK232
00F1 0  C13E        MD16  LD    1 SPADR-R                              MDISK233
00F2 0  9129              S     1 K2-R                                 MDISK234
00F3 0  402D              BSI     WRDSK       WRITE SPECTRUM           MDISK235
00F4 0  C13C              LD    1 TBL-R                                MDISK236
00F5 0  402B              BSI     WRDSK       WRITE TABLE              MDISK237
00F6 0  C110        MD17  LD    1 ERFIL-R+ERRST+2                      MDISK238
00F7 0  1004              SLA     4                                    MDISK239
00F8 0  1804              SRA     4                                    MDISK240
00F9 0  D110              STO   1 ERFIL+2+ERRST-R                      MDISK241
00FA 0  C14E              LD    1 ERF2-R                               MDISK242
00FB 0  4025              BSI     WRDSK       WRITE ERROR FILE         MDISK243
00FC 20 04262495          LIBF    DISKN                                MDISK244
00FD 0  0000              DC      0                                    MDISK245
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00FE 1  011B                DC      RDDSK&2                                MDISK246
00FF 0  70FC                MDX     *-4                                    MDISK247
                     *                          PREPARE                    MDISK248
0100 01 74040000            MDX  L  MDISK,4    RETURN                      MDISK249
0102 0  6200                LDX   2 0                                      MDISK250
0103 0  0A32                XIO   2 50                                     MDISK251
0104 0  0A34                XIO   2 52                                     MDISK252
0105 0  C924                LDD   1 SAVMK-R                                MDISK253
0106 0  DA6E                STD  X2 SMASK                                  MDISK254
0107 0  C926                LDD   1 CAVMK-R                                MDISK255
0108 0  D22E                STO  X2 CMASK                                  MDISK256
0109 0  1090                SLT     16                                     MDISK257
010A 0  D230                STO  X2 CMAS1                                  MDISK258
010B 0  0A2E                XIO  X2 CMASK                                  MDISK259
010C 0  0A30                XIO  X2 CMAS1                                  MDISK260
010D 00 0C0000A0            XIO  L  IMASK                                  MDISK261
010F 00 0C0000A2            XIO  L  IMAS1                                  MDISK262
0111 00 65000000     SAVX1  LDX  L1 *-*        RESTORE REGISTERS           MDISK263
0113 00 66000000     SAVX2  LDX  L2 *-*                                    MDISK264
0115 00 67000000     SAVX3  LDX  L3 *-*                                    MDISK265
0117 01 4C800000            BSC  I  MDISK                                  MDISK266
                     *                                                     MDISK267
0119 0  0000         RDDSK  DC      0          READ  FROM DISK             MDISK268
011A 0  D002                STO     *+2                                    MDISK269
011B 20 04262495            LIBF    DISKN                                  MDISK270
011C 0  1000                DC      /1000                                  MDISK271
011D 0  0000                DC      *-*                                    MDISK272
011E 0  0000                DC                                             MDISK273
011F 01 4C800119            BSC  I  RDDSK                                  MDISK274
                     *                          WRITE  IN FILE PROTECT     MDISK275
0121 0  0000         WRDSK  DC      0          MODE                        MDISK276
0122 0  D005                STO     WRD1                                   MDISK277
0123 0  D008                STO     WRD11                                  MDISK278
0124 00 67800067            LDX  I3 103                                    MDISK279
0126 20 04262495            LIBF    DISKN                                  MDISK280
0127 0  3000                DC      /3000                                  MDISK281
0128 0  0000         WRD1   DC      *-*                                    MDISK282
0129 0  0000                DC      0                                      MDISK283
012A 20 04262495            LIBF    DISKN                                  MDISK284
012B 0  0100                DC      /0100                                  MDISK285
012C 0  0000         WRD11  DC      *-*                                    MDISK286
012D 0  70FC                MDX     *-4                                    MDISK287
012E 01 4C800121            BSC  I  WRDSK                                  MDISK288
                     *                                                     MDISK289
                     *                OVERFLOW TEST ROUTINE                MDISK290
0130 0  0000         OVTST  DC      0                                      MDISK291
0131 0  C138                LD    1 K8192-R                                MDISK292
0132 0  D14A                STO   1 OVFL-R     OVFL = LENGTH               MDISK293
0133 0  1010                SLA     16                                     MDISK294
0134 0  D14B                STO   1 OVFL1-R    OVFL1= COUNTER              MDISK295
0135 0  7240                MDX   2 64                                     MDISK296
0136 0  C200         OVT1   LD    2 0                                      MDISK297
0137 01 4C18013B            BSC  L  *+2,+-                                 MDISK298
0139 01 74010319            MDX  L  OVFL1,1                                MDISK299
013B 0  7202                MDX   2 2                                      MDISK300
013C 0  1000                NOP                                            MDISK301
013D 01 74FE0318            MDX  L  OVFL,-2                                MDISK302
013F 0  70F6                MDX     OVT1                                   MDISK303
0140 0  C14B                LD    1 OVFL1-R    RESULT IS IN ACC.           MDISK304
0141 01 4C800130            BSC  I  OVTST                                  MDISK305
                     *                                                     MDISK306
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0143 0  0000          BFTST DC      0            TEST OVERFLOW TABLE BUSY    MDISK307
0144 00 67800067            LDX   I3 103                                     MDISK308
0146 20 04262495            LIBF      DISKN                                  MDISK309
0147 0  0100                DC        /0100                                  MDISK310
0148 0  0000          BFTS1 DC        *-*                                    MDISK311
0149 0  70FC                MDX       *-4                                    MDISK312
014A 01 4C800143            BSC   I   BFTST                                  MDISK313
                      *                                                      MDISK314
014C 0  0000          TBTST DC      0            TEST  IF  TABLE BUSY        MDISK315
014D 20 04262495            LIBF      DISKN                                  MDISK316
014E 0  0100                DC        /0100                                  MDISK317
014F 0  0000          TBTS1 DC        *-*                                    MDISK318
0150 0  70FC                MDX       *-4                                    MDISK319
0151 01 4C80014C            BSC   I   TBTST                                  MDISK320
                      *                                                      MDISK321
0153 0  0000          MD40  DC      0            SET FNDSW                   MDISK322
0154 0  D148                STO    1  FNDSW-R                                MDISK323
0155 01 6680030A            LDX   I2 TBL         SET  X2                     MDISK324
0157 0  7202                MDX    2  2                                      MDISK325
0158 0  C11A                LD     1  SPZNE-R                               MDISK326
0159 0  1890                SRT      16         COMPUTE LENGTH OF TABLE     MDISK327
015A 0  A92E                D      1  K13-R                                 MDISK328
015B 0  D146                STO    1  LGTTB-R                               MDISK329
015C 01 4C800153            BSC   I   MD40                                   MDISK330
                      *                                                      MDISK331
015E 0  0000          MD41  DC      0            PREPARE LENGTH              MDISK332
015F 01 6680030C            LDX   I2 SPADR       AND                         MDISK333
0161 0  D2FE                STO    2  -2                                     MDISK334
0162 0  C144                LD     1  LOCNR-R     SECTOR ADDRESS              MDISK335
0163 0  A12E                M      1  K13-R                                  MDISK336
0164 0  1090                SLT      16                                     MDISK337
0165 0  811B                A      1  SPZNE&1-R                              MDISK338
0166 0  D2FF                STO    2  -1                                     MDISK339
0167 01 4C80015E            BSC   I   MD41                                   MDISK340
                      *                                                      MDISK341
                      *                                                      MDISK342
0169 01 6680030C      M20   LDX   I2 SPADR       SET  OCCUPATION INDICATOR   MDISK343
016B 0  1010                SLA      16                                     MDISK344
016C 0  D207                STO   X2 OCCUP                                  MDISK345
016D 0  D208                STO   X2 OVERF                                  MDISK346
016E 0  40DD                BSI      TBTST       WAIT UNTIL SPTBL IS READ    MDISK347
016F 0  C129                LD     1  K2-R                                  MDISK348
0170 0  40E2                BSI      MD40        SET X2,LGTTB,FNDSN=2        MDISK349
0171 01 4400010D            BSI   L  FND1        FIND                        MDISK350
0173 0  0002                DC       2           ERROR INDICATOR             MDISK351
0174 0  C139                LD     1  K8256-R    PREPARE HEADER  SPECTRUM    MDISK352
0175 0  40E8                BSI      MD41        AND SECTOR ADDRESS          MDISK353
0176 01 4C0000F1      MD21  BSC   L  MD16                                     MDISK354
                      *                                                      MDISK355
                      *                          PARTIAL SPECTRUM            MDISK356
0178 0  C914          MD27  LDD    1  SPTBL-R     TEST IF SAME ID NOT         MDISK357
0179 01 DC80030A            STD   I  TBL         YET IN OTHER TABLE          MDISK358
017B 0  C13C                LD     1  TBL-R                                  MDISK359
017C 0  409C                BSI      RDDSK                                  MDISK360
017D 0  1010                SLA      16                                     MDISK361
017E 0  40D4                BSI      MD40                                   MDISK362
017F 0  40CC                BSI      TBTST                                  MDISK363
0180 0  4050                BSI      FND1                                   MDISK364
0181 0  0001                DC       1                                      MDISK365
0182 01 6680030C            LDX   I2 SPADR                                  MDISK366
                      *                                                      MDISK367
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0184 0  C91E            LDD   1 SPTB1-R     PREPARE TO READ          MDISK368
0185 01 DC80030A        STD   I TBL                                  MDISK369
0187 0  C11C            LD    1 SPZN1-R     AND                      MDISK370
0188 0  D146            STO   1 LGTTB-R                            MDISK371
0189 0  C13C            LD    1 TBL-R       READ SPECTRUM TABLE      MDISK372
018A 0  408E            BSI     RDDSK                              MDISK373
018B 0  40A4            BSI     OVTST       TEST OVERFLOW .          MDISK374
018C 01 6680030C        LDX   I2 SPADR                             MDISK375
018E 01 4C2001A4        BSC   L MD31,Z      BRANCH IF YES            MDISK376
0190 01 440000E5        BSI   L MD11                               MDISK377
0192 0  C205            LD    X2 NR256                             MDISK378
0193 0  D148            STO   1 FNDSW-R     PREPARE FND1 ROUTINE     MDISK379
0194 01 6680030A        LDX   I2 TBL                               MDISK380
0196 0  7202            MDX   2 2                                  MDISK381
0197 0  40B4            BSI     TBTST                              MDISK382
0198 01 440001D1        BSI   L FND1                               MDISK383
019A 0  0003            DC      3                                  MDISK384
019B 0  C129            LD    1 K2-R                               MDISK385
019C 0  D142            STO   1 INCR3-R                            MDISK386
019D 01 6680030C        LDX   I2 SPADR                             MDISK387
019F 01 44000237        BSI   L PACK        PACK WITHOUT OVERFLOW TEST MDISK388
01A1 0  C133            LD    1 K256-R                             MDISK389
01A2 0  4010            BSI     MD42                               MDISK390
01A3 0  70D2            MDX     MD21                               MDISK391
                *                           PARTIAL SPECTRUM WITH    MDISK392
01A4 0  C205    MD31    LD    X2 NR256      OVERFLOWS                MDISK393
01A5 0  1001            SLA   1                                    MDISK394
01A6 0  D148            STO   1 FNDSW-R                            MDISK395
01A7 0  40A4            BSI     TBTST                              MDISK396
01A8 01 6680030A        LDX   I2 TBL                               MDISK397
01AA 0  7202            MDX   2 2                                  MDISK398
01AB 01 440001D1        BSI   L FND1        FIND  NR256*2 PLACES     MDISK399
01AD 0  0003            DC      3           ERROR INDICATOR          MDISK400
01AE 01 6680030C        LDX   I2 SPADR                             MDISK401
01B0 0  C135            LD    1 K512-R                             MDISK402
01B1 0  4001            BSI     MD42        PREPARE FOR WRITE        MDISK403
01B2 0  70C3            MDX     MD21                               MDISK404
                *                                                  MDISK405
01B3 0  0000    MD42    DC      0                                  MDISK406
01B4 0  D148            STO   1 FNDSW-R                            MDISK407
01B5 0  A205            M     X2 NR256                             MDISK408
01B6 0  1090            SLT     16                                 MDISK409
01B7 0  8130            A     1 K64-R                              MDISK410
01B8 0  D2FE            STO   2 -2                                 MDISK411
01B9 0  C144            LD    1 LOCNR-R                            MDISK412
01BA 0  811D            A     1 SPZN1-R+1                          MDISK413
01BB 0  D2FF            STO   2 -1                                 MDISK414
01BC 0  C205            LD    X2 NR256                             MDISK415
01BD 0  A148            M     1 FNDSW-R                            MDISK416
01BE 0  1090            SLT     16                                 MDISK417
01BF 0  D00E            STO     MD45                               MDISK418
01C0 0  C206            LD    X2 NRFST                             MDISK419
01C1 0  9128            S     1 K1-R                               MDISK420
01C2 0  A148            M     1 FNDSW-R                            MDISK421
01C3 0  1090            SLT     16                                 MDISK422
01C4 0  D003            STO     *+3                                MDISK423
01C5 0  7240            MDX   2 64                                 MDISK424
01C6 0  6A06            STX   2 MD44                               MDISK425
01C7 00 76000000        MDX   L2 *-*                               MDISK426
01C9 0  6A02            STX   2 MD43                               MDISK427
01CA 30 145A5140        CALL    MOVE                               MDISK428
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01CC 0  0000          MD43   DC       *-*                                    MDISK429
01CD 0  0000          MD44   DC       *-*                                    MDISK430
01CE 0  0000          MD45   DC       *-*                                    MDISK431
01CF 01 4C8001B3             BSC  I   MD42                                   MDISK432
                      *                                                       MDISK433
                      *                                                       MDISK434
                      *      THIS ROUTINE  FINDS N PLACES IN SEQUENCE IN      MDISK435
                      *      A TABLE  KNOWN   BY X2 AND WITH LENGTH GIVEN     MDISK436
                      *      BY LGTTB. N IS GIVEN IN FNDSW                    MDISK437
                      *              ERROR RETURNS  ERRSW =1 NO PLACE 13      MDISK438
                      *                             =2 NO PLACE 26            MDISK439
                      *                             =3 NO PLACE N             MDISK440
                      *                             =5 SAME ID                MDISK441
                      *      THE NUMBER OF REMAINING FREE ENTRIES IN THE      MDISK442
                      *      TABLE ARE SET IN ADR ,ADR+1 ,ADR+2               MDISK443
01D1 0  0000          FND1   DC       0          INITIALISE                   MDISK444
01D2 0  1010                 SLA      16                                      MDISK445
01D3 0  D143                 STO    1 LOC-R                                   MDISK446
01D4 0  D04D                 STO      LOCSP                                   MDISK447
01D5 0  D144                 STO    1 LOCNR-R                                 MDISK448
01D6 0  D145                 STO    1 NRLOC-R                                 MDISK449
01D7 0  9148                 S      1 FNDSW-R                                 MDISK450
01D8 0  D147                 STO    1 FNDS1-R                                 MDISK451
01D9 0  1001                 SLA      1                                       MDISK452
01DA 0  D149                 STO    1 FNDCT-R                                 MDISK453
01DB 0  CA00          FND15  LDD    2 0          TEST IF FREE PLACE           MDISK454
01DC 01 4C18020A             BSC  L   FND12,+-    BRANCH IF A PLACE IS FOUND   MDISK455
01DE 0  C148                 LD     1 FNDSW-R    TEST IF N PLACES FOUND       MDISK456
01DF 01 4C1801E4             BSC  L   FND25,&-    BRANCH IF YES                MDISK457
01E1 0  1010                 SLA      16                                      MDISK458
01E2 0  9147                 S      1 FNDS1-R     ELSE REINITIALISE FNDSW      MDISK459
01E3 0  D148                 STO    1 FNDSW-R                                 MDISK460
01E4 0  CA00          FND25  LDD    2 0                                       MDISK461
01E5 0  F112                 EOR    1 ID-R                                    MDISK462
01E6 01 4C2001ED             BSC  L   FND18,Z     TEST IF SAME ID              MDISK463
01E8 0  1090                 SLT      16                                      MDISK464
01E9 0  F113                 EOR    1 ID+1-R                                  MDISK465
01EA 0  1808                 SRA      8                                       MDISK466
01EB 01 4C180226             BSC  L   FND14,+-    BRANCH IF ID EXISTED         MDISK467
01ED 0  7202          FND18  MDX    2 2                                       MDISK468
01EE 01 74010311             MDX  L   LOC,1       PREPARE TO                   MDISK469
01F0 01 74FF0314             MDX  L   LGTTB,-1                                 MDISK470
01F2 0  70E8                 MDX      FND15       TEST NEXT                    MDISK471
01F3 01 C480030D      FND11  LD   I   ERRSW       WAS THERE AN ERROR           MDISK472
01F5 01 4C200201             BSC  L   FND16,Z     BRANC IF  YES                MDISK473
01F7 0  C147                 LD     1 FNDS1-R    WAS A PLACE NEEDED           MDISK474
01F8 01 4C180201             BSC  L   FND16,+-    BRANCH IF NOT                MDISK475
01FA 0  C027                 LD       LOCSP      WAS A PLACE FOUND            MDISK476
01FB 01 4C20021C             BSC  L   FND28,Z     BRANCH IF YES                MDISK477
01FD 01 C48001D1             LD   I   FND1       NO                           MDISK478
01FF 01 D480030D             STO  I   ERRSW                                    MDISK479
0201 0  4028          FND16  BSI      INFO        SET FREE PLACES INFORM.      MDISK480
0202 01 C480030D             LD   I   ERRSW       TEST IF THERE WAS AN ERROR   MDISK481
0204 01 4C2000F6             BSC  L   MD17,Z      BRANCH IF THERE WAS          MDISK482
0206 01 740101D1             MDX  L   FND1,1                                   MDISK483
0208 01 4C8001D1             BSC  I   FND1        RETURN                       MDISK484
                      *                                                       MDISK485
020A 01 74010313      FND12  MDX  L   NRLOC,1     A PLACE IS FND.IS IT FIRST   MDISK486
020C 01 74000222             MDX  L   LOCSP,0                                 MDISK487
020E 0  70DE                 MDX      FND18                                    MDISK488
020F 01 74FF0316      FND22  MDX  L   FNDSW,-1    YES,MUST NEXT BE FREE        MDISK489
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0211 0  70DB            MDX     FND18                                   MDISK490
0212 01 6E000222        STX   L2 LOCSP       SET SWITCH ON IF NOT      MDISK491
0214 0  C143            LD     1 LOC-R                                  MDISK492
0215 0  8128            A      1 K1-R                                   MDISK493
0216 0  8147            A      1 FNDS1-R                                MDISK494
0217 0  D144            STO    1 LOCNR-R     SAVE LOCATION NUMBER       MDISK495
0218 0  70D4            MDX     FND18                                   MDISK496
0219 01 74010313    FND19 MDX   L NRLOC,1     INCREMENT NUMBER OF       MDISK497
021B 0  70D1            MDX     FND18       FREE PLACES                 MDISK498
                        *                                               MDISK499
021C 01 74020222    FND28 MDX   L LOCSP,2                               MDISK500
021E 01 66800317        LDX   I2 FNDCT                                  MDISK501
0220 0  C912            LDD    1 ID-R                                   MDISK502
0221 00 DE000000    FND17 STD   L2 *-*                                  MDISK503
0222                LOCSP EQU     *-1                                   MDISK504
0223 0  7202            MDX    2 2                                      MDISK505
0224 0  70FC            MDX     FND17                                   MDISK506
0225 0  70DB            MDX     FND16                                   MDISK507
                        *                                               MDISK508
0226 0  C12C        FND14 LD     1 K5-R       SET ERROR SWITCH          MDISK509
0227 01 D480030D        STO   I ERRSW                                   MDISK510
0229 0  70C3            MDX     FND18                                   MDISK511
                        *                                               MDISK512
022A 0  0000        INFO  DC      0                                     MDISK513
022B 01 6680003E        LDX   I2 CTRAD                                  MDISK514
022D 01 C48001D1        LD    I  FND1                                   MDISK515
022F 0  912A            S      1 K3-R                                   MDISK516
0230 0  4818            BSC     +-                                      MDISK517
0231 0  7201            MDX    2 1                                      MDISK518
0232 0  C145            LD     1 NRLOC-R                                MDISK519
0233 0  8147            A      1 FNDS1-R                                MDISK520
0234 0  D200            STO    2 0                                      MDISK521
0235 01 4C80022A        BSC   I  INFO                                   MDISK522
                        *                                               MDISK523
                        *       THE  PACK ROUTINE HAS TWO POSSIBILITIES MDISK524
                        *            IF INCR3=2 THE OVERFLOWS ARE NOT   MDISK525
                        *            CONSIDERED.A PACKING OF ALL WORDS  MDISK526
                        *            OF A SPECTRUM ON ODD ADDRESSES,IS  MDISK527
                        *            PERFORMED                          MDISK528
                        *                                               MDISK529
                        *            IF INCR3=1 THE OVERFLOWS ARE SAVED MDISK530
                        *            WITH THEIR  CHANNEL NUMBER INTO THE MDISK531
                        *            OVERFLOW AREAS ON DISK.AN INDICATOR MDISK532
                        *            IS SET IN THE ERROR FILE WHEN OVER MDISK533
                        *            FLOW ENTRIES IN THE OVERFLOW TABLE MDISK534
                        *            ARE MADE. THIS INDICATOR MUST BE   MDISK535
                        *            RESET WHEN THE SPECTRUM IS FINALLY MDISK536
                        *            STORED.                            MDISK537
                        *            A TABLE OF 12 WORDS MUST CONTAIN   MDISK538
                        *            THE ADDRESSES OF THE OVERFLOW SECTORS MDISK539
0237 0  0000        PACK  DC      0                                     MDISK540
0238 0  1010            SLA     16          INITIALISE                  MDISK541
0239 0  D026            STO     INCR1       INCREMENTS                  MDISK542
023A 0  D06C            STO     INCR2                                   MDISK543
023B 0  C138            LD     1 K8192-R                                MDISK544
023C 0  D140            STO    1 LGMAX-R     MAX LENGTH                 MDISK545
023D 0  C14F            LD     1 ADR1-R                                 MDISK546
023E 0  D141            STO    1 ADROV-R     ADDRESS OF TABLE WITH      MDISK547
023F 0  C13D            LD     1 BUFOV-R     FREE OVERFLOW SECTORS      MDISK548
0240 0  8129            A      1 K2-R        ADDRESS OF FIRST FREE WORD MDISK549
0241 0  D14C            STO    1 BUF-R                                  MDISK550
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0242 0  D004          STO      PACK1                                  MDISK551
0243 0  D045          STO      PCK5                                   MDISK552
0244 30 145A5171      CALL     MOVE1                                  MDISK553
0246 1  02EF          DC       HFFFE                                  MDISK554
0247 0  0000  PACK1   DC       *-*                                    MDISK555
0248 0  0140          DC       320                                    MDISK556
0249 0  C205          LD    X2 NR256      TEST IF LESS THAN 16 BLOCS  MDISK557
024A 0  912F          S      1 K16-R                                 MDISK558
024B 01 4C100256      BSC   L  PCK1,-      BRANCH IF NOT              MDISK559
024D 0  C205          LD    X2 NR256      COMPUTE MAX LENGTH         MDISK560
024E 0  A135          M      1 K512-R                                MDISK561
024F 0  1090          SLT      16                                    MDISK562
0250 0  D140          STO    1 LGMAX-R                               MDISK563
0251 0  C206          LD    X2 NRFST      COMPUTE ENCREMENT          MDISK564
0252 0  9128          S      1 K1-R        TO HAVE THE ADDRESS        MDISK565
0253 0  A135          M      1 K512-R      OF THE FIRST CHANNEL       MDISK566
0254 0  1090          SLT      16                                    MDISK567
0255 0  D00A          STO      INCR1                                  MDISK568
0256 0  7240  PCK1    MDX    2 64          X2 POINTS AT CHANNEL 1     MDISK569
0257 0  C142          LD     1 INCR3-R     TEST IF INCR3 IS 1 OR 2    MDISK570
0258 01 4C04025C      BSC   L  PCK2,E      BRANCH IF 1 .OTHERNISE     MDISK571
025A 01 74010260      MDX   L  INCR1,1     NO OVERFLOW TEST           MDISK572
                      *                    END OF INTIALISATION       MDISK573
025C 0  C003  PCK2    LD       INCR1       ARE  WE TO PACK            MDISK574
025D 01 4C0402A2      BSC   L  PCK15,E     YES,BRANCH                 MDISK575
025F 00 C6000000      LD    L2 *-*         NO,TEST OVERFLOW           MDISK576
0260          INCR1   EQU      *-1                                    MDISK577
0261 01 4C1802AA      BSC   L  PCK18,+-    NO OVERFLOW,BRANCH         MDISK578
                      *                    OVERFLOW  HANDLING         MDISK579
0263 0  C0FC  PCK3    LD       INCR1       COMPUTE CHANNEL =          MDISK580
0264 0  D007          STO      PCK31+1                                MDISK581
0265 0  1801          SRA      1           (INCR1)/2 + 1              MDISK582
0266 0  8128          A      1 K1-R        AND                        MDISK583
0267 01 D480031A      STO    I BUF         SAVE IT IN FRST FREE PLACE MDISK584
0269 01 7401031A      MDX   L  BUF,1       ADJUST FREE ADDRESS        MDISK585
026B 00 C6000000  PCK31 LD    L2 *-*        SAVE  THE VALUE OF         MDISK586
026D 01 D480031A      STO    I BUF         THE OVERFLOW               MDISK587
026F 01 7401031A      MDX   L  BUF,1       INCREMENT FREE ADDRESS     MDISK588
0271 01 C480031A      LD     I BUF         TEST IF END OF BUFFER      MDISK589
0273 0  8128          A      1 K1-R                                   MDISK590
0274 01 4C2002AA      BSC   L  PCK18,Z     BRANCH IF NOT              MDISK591
0276 01 C480030F      LD     I ADROV       YES,TAKE SECTOR ADDRESS    MDISK592
0278 0  D123          STO    1 HD+1-R                                 MDISK593
0279 0  C922          LDD    1 HD-R                                   MDISK594
027A 01 DC80030B      STD    I BUFOV       OFF FREE OVERFLOW SECTOR   MDISK595
027C 01 7401030F      MDX   L  ADROV,1     PREPARE FOR NEXT.          MDISK596
027E 0  C13D          LD     1 BUFOV-R     INITIALISE FREE ADDRESS    MDISK597
027F 0  8129          A      1 K2-R                                   MDISK598
0280 0  D14C          STO    1 BUF-R       IN BUFFER                  MDISK599
0281 0  C13D          LD     1 BUFOV-R     ACC = AREA FOR DISK        MDISK600
0282 01 44000121      BSI   L  WRDSK                                   MDISK601
0284 01 44000143      BSI   L  BFTST       WRITE BUFFER ON DISK       MDISK602
0286 30 145A5171      CALL     MOVE1       SET BUFFER NEGATIVE        MDISK603
0288 1  02EF          DC       HFFFE                                  MDISK604
0289 0  0000  PCK5    DC       *-*                                    MDISK605
028A 0  0140          DC       320                                    MDISK606
028B 0  701E          MDX      PCK18                                  MDISK607
028C 0  C912  PCK8    LDD    1 ID-R        TEST IF OVERFLOW           MDISK608
028D 0  1090          SLT      16                                    MDISK609
028E 01 4C040294      BSC   L  PCK12,E     BRANCH IF YES              MDISK610
0290 01 6680030C  PCK9  LDX  I2 SPADR      NO, RETURN                 MDISK611
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0292 01 4C800237          BSC  I  PACK                                    MDISK612
                    *                                                     MDISK613
0294 01 C4800289    PCK12 LD   I  PCK5        TEST IF SOMETHING HAS       MDISK614
0296 01 4C280290          BSC  L  PCK9,+Z     BEEN SAVED IN BUFFER        MDISK615
0298 01 C480030F          LD   I  ADROV                                   MDISK616
029A 0  D123              STO   1 HD-R&1                                  MDISK617
029B 0  C922              LDD   1 HD-R        WRITE BUFFER IF YES         MDISK618
029C 01 DC80030B          STD  I  BUFOV                                   MDISK619
029E 0  C13D              LD    1 BUFOV-R                                 MDISK620
029F 01 44000121          BSI  L  WRDSK                                   MDISK621
02A1 0  70EE              MDX     PCK9                                    MDISK622
                    *                                                     MDISK623
                    *                                                     MDISK624
02A2 0  C0BD        PCK15 LD      INCR1                                   MDISK625
02A3 0  D001              STO     *+1                                     MDISK626
02A4 00 C6000000          LD   L2 *-*         PACK                        MDISK627
02A6 00 D6000000          STO  L2 *-*                                     MDISK628
02A7                INCR2 EQU     *-1                                     MDISK629
02A8 01 740102A7          MDX  L  INCR2,1     PREPARE NEXT                MDISK630
                    *                                                     MDISK631
02AA 0  C0B5        PCK18 LD      INCR1       PREPARE NEXT                MDISK632
02AB 0  8142              A     1 INCR3-R     CHANNEL                     MDISK633
02AC 0  D0B3              STO     INCR1                                   MDISK634
02AD 01 74FF030E          MDX  L  LGMAX,-1    TEST FOR END OF TABLE       MDISK635
02AF 0  70AC              MDX     PCK2        NO                          MDISK636
02B0 0  70DB              MDX     PCK8        YES                         MDISK637
                    *                                                     MDISK638
                    *                                                     MDISK639
                    *                IDCON  BUILDS THE ID NORD            MDISK640
                    * TWO FORMS   1   2   3   4   5   6   7   8           MDISK641
                    *NR256 = 16 * PISWTYP1TYP2SERNMBERNR4KOCCPOVER *      MDISK642
                    * IF NOT    * PISWTYP1TYP2SERNMBERNRFSOCCPNR25 *      MDISK643
02B1 0  0000        IDCON DC      0                                       MDISK644
02B2 0  10A0              SLT     32                                      MDISK645
02B3 0  C205              LD   X2 NR256                                   MDISK646
02B4 0  912F              S     1 K16-R                                   MDISK647
02B5 0  4828              BSC     Z+                                      MDISK648
02B6 0  C205              LD   X2 NR256                                   MDISK649
02B7 0  1888              SRT     8                                       MDISK650
02B8 0  C205              LD   X2 NR256                                   MDISK651
02B9 0  912F              S     1 K16-R                                   MDISK652
02BA 01 4C1002CB          BSC  L  ID2,-                                   MDISK653
02BC 0  C206              LD   X2 NRFST                                   MDISK654
02BD 0  1884        ID1   SRT     4                                       MDISK655
02BE 0  C203              LD   X2 SERNR                                   MDISK656
02BF 0  1884              SRT     4                                       MDISK657
02C0 0  D00C              STO     ID3                                     MDISK658
02C1 0  C200              LD   X2 PISW                                    MDISK659
02C2 0  1004              SLA     4                                       MDISK660
02C3 0  EA01              OR   X2 TYP1                                    MDISK661
02C4 0  1004              SLA     4                                       MDISK662
02C5 0  EA02              OR   X2 TYP2                                    MDISK663
02C6 0  1004              SLA     4                                       MDISK664
02C7 0  E805              OR      ID3                                     MDISK665
02C8 0  D912              STD   1 ID-R                                    MDISK666
02C9 01 4C8002B1          BSC  I  IDCON                                   MDISK667
                    *                                                     MDISK668
02CB 0  C204        ID2   LD   X2 NR04K                                   MDISK669
02CC 0  70F0              MDX     ID1                                     MDISK670
02CD 0  0000        ID3   DC      0                                       MDISK671
                    *                                                     MDISK672
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002E                 CMASK EQU     46                                    MDISK673
0030                 CMAS1 EQU     48                                    MDISK674
006E                 SMASK EQU     110                                   MDISK675
006F                 SMAS1 EQU     111                                   MDISK676
00A0                 IMASK EQU     160                                   MDISK677
00A2                 IMAS1 EQU     162                                   MDISK678
006C                 MSK1  EQU     108        OUT OF CORE INTERRUPT 0-13 MDISK679
006D                 MSK2  EQU     109        OUT OF CORE INTERRUPT 13-  MDISK680
                     *     DISPLACEMENTS IN  SPECTRUM ID. ZONE           MDISK681
0000                 PISW  EQU     0                                     MDISK682
0001                 TYP1  EQU     1                                     MDISK683
0002                 TYP2  EQU     2                                     MDISK684
0003                 SERNR EQU     3                                     MDISK685
0004                 NR04K EQU     4                                     MDISK686
0005                 NR256 EQU     5                                     MDISK687
0006                 NRFST EQU     6                                     MDISK688
0007                 OCCUP EQU     7                                     MDISK689
0008                 OVERF EQU     8                                     MDISK690
0009                 NRSCA EQU     9                                     MDISK691
000A                 AUTTP EQU     10                                    MDISK692
000B                 NMB4K EQU     11                                    MDISK693
000E                 ERRST EQU     14                                    MDISK694
02CE     0000                BSS   E 0                                   MDISK695
02CE 31  05646253    ERFIL DSA     ERFIL                                 MDISK696
02D1                        ORG     ERFIL                                 MDISK697
02CE 0   0010               DC      16                                    MDISK698
02CF                        ORG     ERFIL+2                               MDISK699
02D0     0010               BSS     16                                    MDISK700
02E0     0002        ID    BSS     2                                     MDISK701
02E2 31  225E3093    SPTBL DSA     SPTBL                                 MDISK702
02E5                        ORG     SPTBL                                 MDISK703
02E2 0   0140        K320  DC      320                                   MDISK704
02E3                        ORG     SPTBL+2                               MDISK705
02E4 31  169468C2    OVFTB DSA     OVFTB                                 MDISK706
02E7                        ORG     OVFTB                                 MDISK707
02E4 0   0140               DC      320                                   MDISK708
02E5                        ORG     OVFTB+2                               MDISK709
02E6 31  16969545    OVZNE DSA     OVZNE                                 MDISK710
02E9                        ORG     OVZNE+2                               MDISK711
02E8 31  225E9545    SPZNE DSA     SPZNE                                 MDISK712
02EB                        ORG     SPZNE+2                               MDISK713
02EA 31  225E9571    SPZN1 DSA     SPZN1                                 MDISK714
02ED                        ORG     SPZN1+2                               MDISK715
02EC 31  225E30B1    SPTB1 DSA     SPTB1                                 MDISK716
02EF                        ORG     SPTB1                                 MDISK717
02EC 0   0140               DC      320                                   MDISK718
02ED                        ORG     SPTB1+2                               MDISK719
02EE 0   FFFF        HFFFF DC      -1                                    MDISK720
02EF 0   FFFE        HFFFE DC      -2                                    MDISK721
02F0 0   0140        HD    DC      320                                   MDISK722
02F1 0   0000               DC      *-*                                   MDISK723
02F2     0002        SAVMK BSS   E 2                                     MDISK724
02F4     0002        CAVMK BSS   E 2                                     MDISK725
02F6 0   0001        K1    DC      1                                     MDISK726
02F7 0   0002        K2    DC      2                                     MDISK727
02F8 0   0003        K3    DC      3                                     MDISK728
02F9 0   0004        K4    DC      4                                     MDISK729
02FA 0   0005        K5    DC      5                                     MDISK730
02FB 0   0006        K6    DC      6                                     MDISK731
02FC 0   000D        K13   DC      13                                    MDISK732
02FD 0   0010        K16   DC      16                                    MDISK733
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02FE 0  0040        K64   DC    64                                  MDISK734
02FF 0  0064        K100  DC    100                                 MDISK735
0300 0  00A0        K160  DC    160                                 MDISK736
0301 0  0100        K256  DC    256                                 MDISK737
0302 0  0142        K322  DC    322                                 MDISK738
0303 0  0200        K512  DC    512                                 MDISK739
0304 0  0780        K1920 DC    1920                                MDISK740
0305 0  1040        K4160 DC    4160                                MDISK741
0306 0  2000        K8192 DC    8192                                MDISK742
0307 0  2040        K8256 DC    8256                                MDISK743
0308 0  00FF        H00FF DC    /00FF                               MDISK744
0309 0  1000        H1000 DC    /1000                               MDISK745
030A 0  0000        TBL   DC    *-*                                 MDISK746
030B 0  0000        BUFOV DC    *-*                                 MDISK747
030C 0  0000        SPADR DC    *-*   SPECTRUM ADDRESS              MDISK748
030D 0  0000        ERRSW DC    *-*   ADDRESS OF ERROR SWITCH       MDISK749
030E 0  0000        LGMAX DC    *-*                                 MDISK750
030F 0  0000        ADROV DC    *-*                                 MDISK751
0310 0  0000        INCR3 DC    *-*                                 MDISK752
0311 0  0000        LOC   DC    *-*                                 MDISK753
0312 0  0000        LOCNR DC    *-*                                 MDISK754
0313 0  0000        NRLOC DC    *-*                                 MDISK755
0314 0  0000        LGTTB DC    *-*                                 MDISK756
0315 0  0000        ENDS1 DC    *-*                                 MDISK757
0316 0  0000        ENDSW DC    *-*                                 MDISK758
0317 0  0000        ENDCT DC    *-*                                 MDISK759
0318 0  0000        OVFL  DC    *-*                                 MDISK760
0319 0  0000        OVFL1 DC    *-*                                 MDISK761
031A 0  0000        BUF   DC    *-*                                 MDISK762
031B 0  0000        NRSEC DC    *-*                                 MDISK763
031C 1  02CE        ERF2  DC    ERFIL                               MDISK764
031D 1  031E        ADR1  DC    *                                   MDISK765
031E    000C              BSS   12                                  MDISK766
02CE              R     EQU   ERFIL                                 MDISK767
032A                    END                                       MDISK768
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NO ERRORS IN ABOVE ASSEMBLY.

MDISK
DUP FUNCTION COMPLETED

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                                IBM 1800 SUBROUTINE FLTPE                                  PAGE    1

                                ***************************************************** FLTPE002
                                * IBM 1800 SUBROUTINES FOR DATA REDUCTION           * FLTPE003
                                ***************************************************** FLTPE004
                                *                                                   * FLTPE005
                                *     SUBROUTINE FLTPE                              * FLTPE006
                                *                                                   * FLTPE007
                                *     CALLING SEQUENCE (FORTRAN, ONE WORD INT.)     * FLTPE008
                                *     ----------------                              * FLTPE009
                                *                                                   * FLTPE010
                                *     DIMENSION ID(5),SPECT(4129),SCAL(24)          * FLTPE011
                                *     DIMENSION IDSPC(16)                           * FLTPE012
                                *     EQUIVALENCE (SPECT(4121),IDSPC(2))      OPT.  * FLTPE013
                                *     EQUIVALENCE (SPECT(4097),SCAL(1))       OPT.  * FLTPE014
                                *     CALL FLTPE(ID,SPECT,SCAL,IDSPC,NR)            * FLTPE015
                                *                                                   * FLTPE016
                                *  THE SUBROUTINE SEARCHES THE SPECTRUM ON DISK     * FLTPE017
                                *  AND BRINGS IT INTO A FORM COMPATIBLE WITH FORT.* FLTPE018
                                *  THE EQUIVALENCE CARD SAVES PLACE BUT IS NOT      * FLTPE019
                                *  NECESSARY.                                       * FLTPE020
                                *                                                   * FLTPE021
                                ***************************************************** FLTPE022
0000      064E35C5                ENT      FLTPE                                    FLTPE023
0000 0    0000            FLTPE   DC       0                                        FLTPE024
0001 01   6D00009D                STX   L1 X1+1                                     FLTPE025
0003 01   6E00009F                STX   L2 X2+1                                     FLTPE026
0005 01   6F0000A1                STX   L3 X3+1                                     FLTPE027
0007 01   65800000                LDX   I1 FLTPE                                    FLTPE028
0009 0    C103                    LD     1 3                                        FLTPE029
000A 01   940000A6                S     L  K15                                      FLTPE030
000C 01   D4000093                STO   L  IDSPC                                    FLTPE031
000E 0    D023                    STO      IDSP1                                    FLTPE032
000F 0    C100                    LD     1 0                                        FLTPE033
0010 0    D001                    STO      FLOO+1                                   FLTPE034
0011 00   66000000        FLOO    LDX   L2 *-*                                      FLTPE035
0013 01   67800093                LDX   I3 IDSPC                                    FLTPE036
0015 01   C40000A4                LD    L  K5                                       FLTPE037
0017 01   D40000BA                STO   L  IDPR                                     FLTPE038
0019 0    C200            FLO     LD     2 0                                        FLTPE039
001A 0    D300                    STO    3 0                                        FLTPE040
001B 0    72FF                    MDX    2 -1                                       FLTPE041
001C 0    7301                    MDX    3 1                                        FLTPE042
001D 01   74FF00BA                MDX   L  IDPR,-1                                  FLTPE043
001F 0    70F9                    MDX      FLO                                      FLTPE044
0020 0    C101                    LD     1 1                                        FLTPE045
0021 01   940000AB                S     L  K8254                                    FLTPE046
0023 0    D00D                    STO      SPADR                                    FLTPE047
0024 0    D06D                    STO      SPAD1                                    FLTPE048
0025 01   840000A7                A     L  K16                                      FLTPE049
0027 0    D06F                    STO      SPAD2                                    FLTPE050
0028 0    D032                    STO      SPAD3                                    FLTPE051
0029 0    C102                    LD     1 2                                        FLTPE052
002A 0    907D                    S        K46                                      FLTPE053
002B 0    D06C                    STO      SCAL                                     FLTPE054
002C 00   C5800004                LD    I1 4                                        FLTPE055
002E 0    D004                    STO      NR                                       FLTPE056
002F 30   23057154        CALL    CALL     TAPEM                                    FLTPE057
0031 0    0000            SPADR   DC       *-*                                      FLTPE058
0032 0    0000            IDSP1   DC       *-*                                      FLTPE059
0033 0    0000            NR      DC       *-*                                      FLTPE060
0034 1    00B2                    DC       IERR                                     FLTPE061
0035 0    C07C                    LD       IERR                                     FLTPE062
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0036 01 4C180059          BSC  L  FL1,+-                 FLTPE063
0038 00 67800067          LDX  I3 TVLOC                  FLTPE064
003A 01 66800093          LDX  I2 IDSPC                  FLTPE065
003C 0  C201              LD   2  1                      FLTPE066
003D 0  A067              M       K10                    FLTPE067
003E 0  1090              SLT     16                     FLTPE068
003F 0  8202              A    2  2                      FLTPE069
0040 0  A068              M       K100                   FLTPE070
0041 0  1090              SLT     16                     FLTPE071
0042 0  8203              A    2  3                      FLTPE072
0043 0  8068              A       K10T                   FLTPE073
0044 0  1890              SRT     16                     FLTPE074
0045 30 025440C0          CALL    BNDC                   FLTPE075
0047 1  00BA              DC      IDPR                   FLTPE076
0048 0  C200              LD   2  0                      FLTPE077
0049 30 03209180          CALL    CHIF                   FLTPE078
004B 1  00BC              DC      IDPR+2                 FLTPE079
004C 0  C86F              LDD     IDPR+2                 FLTPE080
004D 0  E863              OR      PKT                    FLTPE081
004E 0  18D8              RTE     24                     FLTPE082
004F 0  D86C              STD     IDPR+2                 FLTPE083
0050 20 176558D5          LIBF    PRNTN                  FLTPE084
0051 0  3F00              DC      /3F00                  FLTPE085
0052 20 176558D5          LIBF    PRNTN                  FLTPE086
0053 0  2100              DC      /2100                  FLTPE087
0054 1  00B3              DC      MES1-1                 FLTPE088
0055 0  0000              DC      0                      FLTPE089
0056 20 17064885          LIBF    PAUSE                  FLTPE090
0057 0  0000              DC      0                      FLTPE091
0058 0  70D6              MDX     CALL                   FLTPE092
                       *                                 FLTPE093
0059 30 141938C0     FL1  CALL    MFLT                   FLTPE094
005B 0  0000         SPAD3 DC     *-*                    FLTPE095
005C 1  00AA              DC      K4120                  FLTPE096
                       *                                 FLTPE097
005D 00 66000800          LDX  L2 2048                   FLTPE098
005F 01 65800031          LDX  I1 SPADR                  FLTPE099
0061 0  7140              MDX  1  64                     FLTPE100
0062 01 67800031          LDX  I3 SPADR                  FLTPE101
0064 00 7700203E          MDX  L3 8254                   FLTPE102
0066 0  C900         FL2  LDD  1  0                      FLTPE103
0067 0  D846              STD     SAVE                   FLTPE104
0068 0  CB00              LDD  3  0                      FLTPE105
0069 0  D900              STD  1  0                      FLTPE106
006A 0  C843              LDD     SAVE                   FLTPE107
006B 0  DB00              STD  3  0                      FLTPE108
006C 0  7102              MDX  1  2                      FLTPE109
006D 0  73FE              MDX  3  -2                     FLTPE110
006E 0  72FF              MDX  2  -1                     FLTPE111
006F 0  70F6              MDX     FL2                    FLTPE112
                       *                                 FLTPE113
0070 0  620C              LDX  2  12                     FLTPE114
0071 01 65800097          LDX  I1 SPAD2                  FLTPE115
0073 01 67800031          LDX  I3 SPADR                  FLTPE116
0075 0  733E              MDX  3  62                     FLTPE117
0076 0  C900         FL3  LDD  1  0                      FLTPE118
0077 0  D836              STD     SAVE                   FLTPE119
0078 0  CB00              LDD  3  0                      FLTPE120
0079 0  D900              STD  1  0                      FLTPE121
007A 0  C833              LDD     SAVE                   FLTPE122
007B 0  DB00              STD  3  0                      FLTPE123
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007C 0  7102              MDX   1 2                    FLTPE124
007D 0  73FE              MDX   3 -2                   FLTPE125
007E 0  72FF              MDX   2 -1                   FLTPE126
007F 0  70F6              MDX     FL3                  FLTPE127
                     *                                 FLTPE128
0080 0  6208              LDX   2 8                    FLTPE129
0081 01 65800031          LDX   I1 SPADR               FLTPE130
0083 01 67800031          LDX   I3 SPADR               FLTPE131
0085 0  730F              MDX   3 15                   FLTPE132
0086 0  C100        FL4   LD    1 0                    FLTPE133
0087 0  D026              STO     SAVE                 FLTPE134
0088 0  C300              LD    3 0                    FLTPE135
0089 0  D100              STO   1 0                    FLTPE136
008A 0  C023              LD      SAVE                 FLTPE137
008B 0  D300              STO   3 0                    FLTPE138
008C 0  7101              MDX   1 1                    FLTPE139
008D 0  73FF              MDX   3 -1                   FLTPE140
008E 0  72FF              MDX   2 -1                   FLTPE141
008F 0  70F6              MDX     FL4                  FLTPE142
                     *                                 FLTPE143
0090 30 145A5140          CALL    MOVE                 FLTPE144
0092 0  0000        SPAD1 DC      *-*                  FLTPE145
0093 0  0000        IDSPC DC      *-*                  FLTPE146
0094 0  0010              DC      16                   FLTPE147
0095 30 145A5140          CALL    MOVE                 FLTPE148
0097 0  0000        SPAD2 DC      *-*                  FLTPE149
0098 0  0000        SCAL  DC      *-*                  FLTPE150
0099 0  0030              DC      48                   FLTPE151
                     *                                 FLTPE152
009A 01 74050000          MDX   L FLTPE,5              FLTPE153
009C 00 65000000    X1    LDX   L1 *-*                 FLTPE154
009E 00 66000000    X2    LDX   L2 *-*                 FLTPE155
00A0 00 67000000    X3    LDX   L3 *-*                 FLTPE156
00A2 01 4C800000          BSC   I FLTPE                FLTPE157
                     *                                 FLTPE158
00A4 0  0005        K5    DC      5                    FLTPE160
00A5 0  000A        K10   DC      10                   FLTPE161
00A6 0  000F        K15   DC      15                   FLTPE162
00A7 0  0010        K16   DC      16                   FLTPE163
00A8 0  002E        K46   DC      46                   FLTPE164
00A9 0  0064        K100  DC      100                  FLTPE165
00AA 0  1018        K4120 DC      4120                 FLTPE166
00AB 0  203E        K8254 DC      8254                 FLTPE167
00AC 0  2710        K10T  DC      10000                FLTPE168
00AE 00 00000000    SAVE  DEC     0                    FLTPE159
00B0 0  000A        P0    DC      /000A                FLTPE169
00B1 0  3B00        PKT   DC      /3B00                FLTPE170
00B2 0  0000        IERR  DC      0                    FLTPE171
00B3 0  001A              DC      MES2-MES1            FLTPE172
00B4    000C        MES1  DMES  1 '4XIDNUMBER'E        FLTPE173
00BA    0006        IDPR  BSS   E 6                    FLTPE174
00C0    001C              DMES  1   NOT FOUND. - CHANGE TAPE.'E FLTPE175
00CE    0000        MES2  BSS     0                    FLTPE176
0067                TVLOC EQU     103                  FLTPE177
00CE                      END                          FLTPE178
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NO ERRORS IN ABOVE ASSEMBLY.
FLTPE
DUP FUNCTION COMPLETED

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                                 ************************************************** FLDSK002
                                 * IBM 1800 SUBROUTINES FOR DATA REDUCTION        * FLDSK003
                                 ************************************************** FLDSK004
                                 *                                                * FLDSK005
                                 *     SUBROUTINE FLDSK                           * FLDSK006
                                 *                                                * FLDSK007
                                 *     CALLING SEQUENCE (FORTRAN, ONE WORD INT.)  * FLDSK008
                                 *     ----------------                           * FLDSK009
                                 *                                                * FLDSK010
                                 *     DIMENSION ID(5),SPECT(4129),SCAL(24)       * FLDSK011
                                 *     DIMENSION IDSPC(16)                        * FLDSK012
                                 *     EQUIVALENCE (SPECT(4121),IDSPC(2))     OPT. * FLDSK013
                                 *     EQUIVALENCE (SPECT(4097),SCAL(1))      OPT. * FLDSK014
                                 *     CALL FLDSK(ID,SPECT,SCAL,IDSPC)            * FLDSK015
                                 *                                                * FLDSK016
                                 *  THE SUBROUTINE SEARCHES THE SPECTRUM ON DISK  * FLDSK017
                                 *  AND BRINGS IT INTO A FORM COMPATIBLE WITH FORT.* FLDSK018
                                 *  THE EQUIVALENCE CARD SAVES PLACE BUT IS NOT   * FLDSK019
                                 *  NECESSARY.                                    * FLDSK020
                                 *                                                * FLDSK021
                                 ************************************************** FLDSK022
0000     064C4892                ENT      FLDSK                                  FLDSK023
0000 0   0000          FLDSK     DC       0                                      FLDSK024
0001 01  6D00009A                STX   L1 X1+1                                   FLDSK025
0003 01  6E00009C                STX   L2 X2+1                                   FLDSK026
0005 01  6F00009E                STX   L3 X3+1                                   FLDSK027
0007 01  65800000                LDX   I1 FLDSK                                  FLDSK028
0009 0   C103                    LD     1 3                                      FLDSK029
000A 01  940000A7                S     L  K15                                    FLDSK030
000C 01  D4000090                STO   L  IDSPC                                  FLDSK031
000E 0   D022                    STO      IDSP1                                  FLDSK032
000F 0   C100                    LD     1 0                                      FLDSK033
0010 0   D001                    STO      FL00+1                                 FLDSK034
0011 00  66000000      FL00      LDX   L2 *-*                                    FLDSK035
0013 01  67800090                LDX   I3 IDSPC                                  FLDSK036
0015 01  C40000A5                LD    L  K5                                     FLDSK037
0017 01  D40000B8                STO   L  IDPR                                   FLDSK038
0019 0   C200          FL0       LD     2 0                                      FLDSK039
001A 0   D300                    STO    3 0                                      FLDSK040
001B 0   72FF                    MDX    2 -1                                     FLDSK041
001C 0   7301                    MDX    3 1                                      FLDSK042
001D 01  74FF00B8                MDX   L  IDPR,-1                                FLDSK043
001F 0   70F9                    MDX      FL0                                    FLDSK044
0020 0   C101                    LD     1 1                                      FLDSK045
0021 01  940000AD                S     L  K8254                                  FLDSK046
0023 0   D00A                    STO      SPADR                                  FLDSK047
0024 0   D06A                    STO      SPAD1                                  FLDSK048
0025 01  840000A8                A     L  K16                                    FLDSK049
0027 0   D06C                    STO      SPAD2                                  FLDSK050
0028 0   D02F                    STO      SPAD3                                  FLDSK051
0029 0   C102                    LD     1 2                                      FLDSK052
002A 0   907E                    S        K46                                    FLDSK053
002B 0   D069                    STO      SCAL                                   FLDSK054
002C 30  04262494                CALL     DISKM                                  FLDSK055
002E 0   0000          SPADR     DC       *-*                                    FLDSK056
002F 1   00B0                    DC       IERR                                   FLDSK057
0030 1   00CA                    DC       BUF                                    FLDSK058
0031 0   0000          IDSP1     DC       *-*                                    FLDSK059
0032 1   00A4                    DC       K0                                     FLDSK060
0033 0   C07C                    LD       IERR                                   FLDSK061
0034 01  4C180056                BSC   L  FL1,+-                                 FLDSK062
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0036 00 67800067          LDX   I3 TVLOC                FLDSK063
0038 01 66800090          LDX   I2 IOSPC                FLDSK064
003A 0  C201              LD     2 1                    FLDSK065
003B 0  A06A              M        K10                  FLDSK066
003C 0  1090              SLT      16                   FLDSK067
003D 0  8202              A      2 2                    FLDSK068
003E 0  A06B              M        K100                 FLDSK069
003F 0  1090              SLT      16                   FLDSK070
0040 0  8203              A      2 3                    FLDSK071
0041 0  806A              A        K10T                 FLDSK072
0042 0  1890              SRT      16                   FLDSK073
0043 30 025440C0          CALL     BNDC                 FLDSK074
0045 1  00B8              DC       IOPR                 FLDSK075
0046 0  C200              LD     2 0                    FLDSK076
0047 30 03209180          CALL     CHIF                 FLDSK077
0049 1  00BA              DC       IOPR+2               FLDSK078
004A 0  C86F              LDD      IOPR+2               FLDSK079
004B 0  E863              OR       PKT                  FLDSK080
004C 0  18D8              RTE      24                   FLDSK081
004D 0  D86C              STD      IOPR+2               FLDSK082
004E 20 176558D5          LIBF     PRNTN                FLDSK083
004F 0  3F00              DC       /3F00                FLDSK084
0050 20 176558D5          LIBF     PRNTN                FLDSK085
0051 0  2100              DC       /2100                FLDSK086
0052 1  00B1              DC       MES1-1               FLDSK087
0053 0  0000              DC       0                    FLDSK088
0054 30 059C98C0          CALL     EXIT                 FLDSK089
                          *                             FLDSK090
0056 30 141938C0    FL1   CALL     MFLT                 FLDSK091
0058 0  0000        SPAD3 DC       *-*                  FLDSK092
0059 1  00AB              DC       K4120                FLDSK093
                          *                             FLDSK094
005A 00 66000800          LDX   L2 2048                 FLDSK095
005C 01 6580002E          LDX   I1 SPADR                FLDSK096
005E 0  7140              MDX    1 64                   FLDSK097
005F 01 6780002E          LDX   I3 SPADR                FLDSK098
0061 00 7700203E          MDX   L3 8254                 FLDSK099
0063 0  C900        FL2   LDD    1 0                    FLDSK100
0064 0  D83D              STD      SAVE                 FLDSK101
0065 0  CB00              LDD    3 0                    FLDSK102
0066 0  D900              STD    1 0                    FLDSK103
0067 0  C83A              LDD      SAVE                 FLDSK104
0068 0  DB00              STD    3 0                    FLDSK105
0069 0  7102              MDX    1 2                    FLDSK106
006A 0  73FE              MDX    3 -2                   FLDSK107
006B 0  72FF              MDX    2 -1                   FLDSK108
006C 0  70F6              MDX      FL2                  FLDSK109
                          *                             FLDSK110
006D 0  620C              LDX    2 12                   FLDSK111
006E 01 65800094          LDX   I1 SPAD2                FLDSK112
0070 01 6780002E          LDX   I3 SPADR                FLDSK113
0072 0  733E              MDX    3 62                   FLDSK114
0073 0  C900        FL3   LDD    1 0                    FLDSK115
0074 0  D82D              STD      SAVE                 FLDSK116
0075 0  CB00              LDD    3 0                    FLDSK117
0076 0  D900              STD    1 0                    FLDSK118
0077 0  C82A              LDD      SAVE                 FLDSK119
0078 0  DB00              STD    3 0                    FLDSK120
0079 0  7102              MDX    1 2                    FLDSK121
007A 0  73FE              MDX    3 -2                   FLDSK122
007B 0  72FF              MDX    2 -1                   FLDSK123
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007C 0  70F6                MDX     FL3                                FLDSK124
                      *                                                FLDSK125
007D 0  6208                LDX   2 8                                  FLDSK126
007E 01 6580002E            LDX  I1 SPADR                              FLDSK127
0080 01 6780002E            LDX  I3 SPADR                              FLDSK128
0082 0  730F                MDX   3 15                                 FLDSK129
0083 0  C100          FL4   LD    1 0                                  FLDSK130
0084 0  D01D                STO     SAVE                               FLDSK131
0085 0  C300                LD    3 0                                  FLDSK132
0086 0  D100                STO   1 0                                  FLDSK133
0087 0  C01A                LD      SAVE                               FLDSK134
0088 0  D300                STO   3 0                                  FLDSK135
0089 0  7101                MDX   1 1                                  FLDSK136
008A 0  73FF                MDX   3 -1                                 FLDSK137
008B 0  72FF                MDX   2 -1                                 FLDSK138
008C 0  70F6                MDX     FL4                                FLDSK139
                      *                                                FLDSK140
008D 30 145A5140            CALL    MOVE                               FLDSK141
008F 0  0000          SPAD1 DC      *-*                                FLDSK142
0090 0  0000          IDSPC DC      *-*                                FLDSK143
0091 0  0010                DC      16                                 FLDSK144
0092 30 145A5140            CALL    MOVE                               FLDSK145
0094 0  0000          SPAD2 DC      *-*                                FLDSK146
0095 0  0000          SCAL  DC      *-*                                FLDSK147
0096 0  0030                DC      48                                 FLDSK148
                      *                                                FLDSK149
0097 01 74040000            MDX  L  FLDSK,4                            FLDSK150
0099 00 65000000      X1    LDX  L1 *-*                                FLDSK151
009B 00 66000000      X2    LDX  L2 *-*                                FLDSK152
009D 00 67000000      X3    LDX  L3 *-*                                FLDSK153
009F 01 4C800000            BSC  I  FLDSK                              FLDSK154
                      *                                                FLDSK155
00A2 00 00000000      SAVE  DEC     0                                  FLDSK156
00A4 0  0000          K0    DC      0                                  FLDSK157
00A5 0  0005          K5    DC      5                                  FLDSK158
00A6 0  000A          K10   DC      10                                 FLDSK159
00A7 0  000F          K15   DC      15                                 FLDSK160
00A8 0  0010          K16   DC      16                                 FLDSK161
00A9 0  002E          K46   DC      46                                 FLDSK162
00AA 0  0064          K100  DC      100                                FLDSK163
00AB 0  1018          K4120 DC      4120                               FLDSK164
00AC 0  2710          K10T  DC      10000                              FLDSK165
00AD 0  203E          K8254 DC      8254                               FLDSK166
00AE 0  000A          P0    DC      /000A                              FLDSK167
00AF 0  3B00          PKT   DC      /3B00                              FLDSK168
00B0 0  0000          IERR  DC      0                                  FLDSK169
00B1 0  0018                DC      MES2-MES1                          FLDSK170
00B2    000C          MES1  DMES  1 '4XIDNUMBER'E                      FLDSK171
00B8    0006          IDPR  BSS  E  6                                  FLDSK172
00BE    0018                DMES  1   NOT FOUND. - CALL EXIT'E         FLDSK173
00CA    0000          MES2  BSS     0                                  FLDSK174
00CA    0144          BUF   BSS  E  324                                FLDSK175
0067                  TVLOC EQU     103                                FLDSK176
020E                        END                                        FLDSK177
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NO ERRORS IN ABOVE ASSEMBLY.

FLDSK
DUP FUNCTION COMPLETED

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                ********************************************************* FLMET002
                * IBM 1800 SUBROUTINES FOR DATA REDUCTION                 * FLMET003
                ********************************************************* FLMET004
                *                                                       * FLMET005
                *     SUBROUTINE FLMET                                  * FLMET006
                *                                                       * FLMET007
                *     CALLING SEQUENCE (FORTRAN, ONE WORD INT.)         * FLMET008
                *     ----------------                                  * FLMET009
                *                                                       * FLMET010
                *     DIMENSION SPECT(4129),SCAL(24),DSPC(16)           * FLMET011
                *     EQUIVALENCE (SPECT(4121),IDSPC(2))      OPT.      * FLMET012
                *     EQUIVALENCE (SPECT(4097),SCAL(1))       OPT.      * FLMET013
                *     CALL FLMET (SPECT,SCAL,IDSPC,NR)                  * FLMET014
                *                                                       * FLMET015
                *                                                       * FLMET016
                *     THE SUBROUTINE TRANSFORMS  THE SPECTRUM TO        * FLMET017
                *     FIXED POINT FORMAT AND WRITES IT ON TAPE.         * FLMET018
                *                                                       * FLMET019
                ********************************************************* FLMET020
0000     064D4163       ENT      FLMET                                  FLMET021
0000 0   0000     FLMET DC       0                                      FLMET022
0001 01  6D000064       STX   L1 XR1+1                                  FLMET023
0003 01  6E000066       STX   L2 XR2+1                                  FLMET024
0005 01  6F000068       STX   L3 XR3+1                                  FLMET025
0007 01  65800000       LDX   I1 FLMET                                  FLMET026
0009 0   C102           LD     1 2                                      FLMET027
000A 01  9400007B       S     L  K15                                    FLMET028
000C 0   D014           STO      IDSPC                                  FLMET029
000D 0   C100           LD     1 0                                      FLMET030
000E 0   9071           S        K8254                                  FLMET031
000F 0   D012           STO      SPADR                                  FLMET032
0010 0   D04C           STO      SPAD1                                  FLMET033
0011 0   806A           A        K16                                    FLMET034
0012 0   D00A           STO      SPAD2                                  FLMET035
0013 0   D045           STO      SPAD3                                  FLMET036
0014 0   C101           LD     1 1                                      FLMET037
0015 0   9067           S        K46                                    FLMET038
0016 0   D005           STO      SCAL                                   FLMET039
0017 00  C5800003       LD    I1 3                                      FLMET040
0019 0   D044           STO      NR                                     FLMET041
001A 30  145A5140       CALL     MOVE                                   FLMET042
001C 0   0000     SCAL  DC       *-*                                    FLMET043
001D 0   0000     SPAD2 DC       *-*                                    FLMET044
001E 0   0030           DC       48                                     FLMET045
001F 30  145A5140       CALL     MOVE                                   FLMET046
0021 0   0000     IDSPC DC       *-*                                    FLMET047
0022 0   0000     SPADR DC       *-*                                    FLMET048
0023 0   0010           DC       16                                     FLMET049
                *                                                       FLMET050
0024 00  66000800       LDX   L2 2048                                   FLMET051
0026 01  65800022       LDX   I1 SPADR                                  FLMET052
0028 0   7140           MDX    1 64                                     FLMET053
0029 01  67800022       LDX   I3 SPADR                                  FLMET054
002B 00  7700203E       MDX   L3 8254                                   FLMET055
002D 0   C900     FL2   LDD    1 0                                      FLMET056
002E 0   D853           STD      SAVE                                   FLMET057
002F 0   CB00           LDD    3 0                                      FLMET058
0030 0   D900           STD    1 0                                      FLMET059
0031 0   C850           LDD      SAVE                                   FLMET060
0032 0   DB00           STD    3 0                                      FLMET061
0033 0   7102           MDX    1 2                                      FLMET062
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0034 0  73FE              MDX   3 -2                FLMET063
0035 0  72FF              MDX   2 -1                FLMET064
0036 0  70F6              MDX     FL2               FLMET065
                     *                              FLMET066
0037 0  620C              LDX   2 12                FLMET067
0038 01 6580001D          LDX   I1 SPAD2            FLMET068
003A 01 67800022          LDX   I3 SPADR            FLMET069
003C 0  733E              MDX   3 62                FLMET070
003D 0  C900         FL3  LDD   1 0                 FLMET071
003E 0  D843              STD     SAVE              FLMET072
003F 0  CB00              LDD   3 0                 FLMET073
0040 0  D900              STD   1 0                 FLMET074
0041 0  C840              LDD     SAVE              FLMET075
0042 0  DB00              STD   3 0                 FLMET076
0043 0  7102              MDX   1 2                 FLMET077
0044 0  73FE              MDX   3 -2                FLMET078
0045 0  72FF              MDX   2 -1                FLMET079
0046 0  70F6              MDX     FL3               FLMET080
                     *                              FLMET081
0047 0  6208              LDX   2 8                 FLMET082
0048 01 65800022          LDX   I1 SPADR            FLMET083
004A 01 67800022          LDX   I3 SPADR            FLMET084
004C 0  730F              MDX   3 15                FLMET085
004D 0  C100         FL4  LD    1 0                 FLMET086
004E 0  D033              STO     SAVE              FLMET087
004F 0  C300              LD    3 0                 FLMET088
0050 0  D100              STO   1 0                 FLMET089
0051 0  C030              LD      SAVE              FLMET090
0052 0  D300              STO   3 0                 FLMET091
0053 0  7101              MDX   1 1                 FLMET092
0054 0  73FF              MDX   3 -1                FLMET093
0055 0  72FF              MDX   2 -1                FLMET094
0056 0  70F6              MDX     FL4               FLMET095
                     *                              FLMET096
0057 30 142558C0          CALL    MINT              FLMET097
0059 0  0000         SPAD3 DC      *-*               FLMET098
005A 1  007F              DC      K4120             FLMET099
                     *                              FLMET100
005B 30 148C15C5     FL5  CALL    MTAPE             FLMET101
005D 0  0000         SPAD1 DC      *-*               FLMET102
005E 0  0000         NR    DC      *-*               FLMET103
005F 1  007A              DC      ERRSW             FLMET104
0060 01 7400007A          MDX   L ERRSW,0           FLMET105
0062 0  700A              MDX     ERROR             FLMET106
0063 00 65000000     XR1  LDX   L1 *-*               FLMET107
0065 00 66000000     XR2  LDX   L2 *-*               FLMET108
0067 00 67000000     XR3  LDX   L3 *-*               FLMET109
0069 01 74040000          MDX   L FLMET,4           FLMET110
006B 01 4C800000          BSC   I FLMET             FLMET111
                     *                              FLMET112
006D 00 67800067     ERROR LDX  I3 103              FLMET113
006F 20 176558D5          LIBF    PRNTN             FLMET114
0070 0  3F00              DC      /3F00             FLMET115
0071 20 176558D5          LIBF    PRNTN             FLMET116
0072 0  2100              DC      /2100             FLMET117
0073 1  0084              DC      MES1-1            FLMET118
0074 0  0000              DC      0                 FLMET119
0075 0  1010              SLA     16                FLMET120
0076 0  D003              STO     ERRSW             FLMET121
0077 20 17064885          LIBF    PAUSE             FLMET122
0078 0  0000              DC      0                 FLMET123
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0079 0   70E1                MDX     FL5                                  FLMET124
                      *                                                   FLMET125
                      *      CONSTANTS AND WORKAREAS                      FLMET126
                      *                                                   FLMET127
                      *                                                   FLMET128
007A 0   0000         ERRSW  DC      0                                    FLMET129
007B 0   000F         K15    DC      15                                   FLMET130
007C 0   0010         K16    DC      16                                   FLMET131
007D 0   002E         K46    DC      46                                   FLMET132
007E 0   003E         K62    DC      62                                   FLMET133
007F 0   1018         K4120  DC      4120                                 FLMET134
0080 0   203E         K8254  DC      8254                                 FLMET135
0082 00  00000000     SAVE   DEC     0                                    FLMET136
0084 0   0012                DC      MES2-MES1                            FLMET137
0085     0024         MES1   DMES  1  TAPE NOT READY - CORRECT AND START.' FLMET138
0097     0000         MES2   BSS     0                                    FLMET139
0098                         END

     NO ERRORS IN ABOVE ASSEMBLY.
FLMET
DUP FUNCTION COMPLETED
```

```
                    IBM 1800 SUBROUTINE PROCT/PROC1                          PAGE    1

                    ************************************************************ PROCT002
                    *  IBM 1800 SUBROUTINE FOR DATA REDUCTION                  * PROCT003
                    ************************************************************ PROCT004
                    *                                                          * PROCT005
                    *      SUBROUTINE PROC/PROC1                               * PROCT006
                    *                                                          * PROCT007
                    *      CALLING SEQUENCES                                   * PROCT008
                    *      -----------------                                   * PROCT009
                    *                                                          * PROCT010
                    *      CALL     PROCT          CALL     PROC1              * PROCT011
                    *      DC       PERC                                       * PROCT012
                    *      SUBROUTINE PROCT/PROC1 CONTAINS A TABLE FOR        * PROCT013
                    *      TRANSFORMATION OF THE SECOND EXP. NO. AND          * PROCT014
                    *      THE ERROR LIMIT FOR THE IN-OUT RATIO               * PROCT015
                    *                                                          * PROCT016
                    ************************************************************ PROCT017
0000     176560E3           ENT      PROCT                                      PROCT018
000C     176560F1           ENT      PROC1                                      PROCT019
0000 0   0000       PROCT   DC       0                                          PROCT020
0001 0   C0FE               LD       PROCT                                      PROCT021
0002 0   D002               STO      P1+1                                       PROCT022
0003 0   C806               LDD      DP01                                       PROCT023
0004 00  DC800000   P1      STD   I  *-*                                        PROCT024
0006 01  74010000           MDX   L  PROCT,1                                    PROCT025
0008 01  4C800000           BSC   I  PROCT                                      PROCT026
000A 00  47AE147C   DP01    DEC      0.035                                      PROCT027
000C 0   0000       PROC1   DC       0                                          PROCT028
000D 0   6906               STX    1 XR1+1                                      PROCT029
000E 0   D001               STO      *+1                                        PROCT030
000F 00  65000000           LDX   L1 *-*                                        PROCT031
0011 01  C5000017           LD    L1 TAB                                        PROCT032
0013 00  65000000   XR1     LDX   L1 *-*                                        PROCT033
0015 01  4C80000C           BSC   I  PROC1                                      PROCT034
0017 0   0001       TAB     DC       1                                          PROCT035
0018 0   0002               DC       2                                          PROCT036
0019 0   0000               DC       0                                          PROCT037
001A 0   0003               DC       3                                          PROCT038
001C                        END                                                 PROCT039

     NO ERRORS IN ABOVE ASSEMBLY.
PROCT PROC1
DUP FUNCTION COMPLETED
```

```
                        ************************************************** TAPE1002
                        *  IBM 1800 SUBROUTINES FOR DATA REDUCTION       * TAPE1003
                        ************************************************** TAPE1004
                        *                                                * TAPE1005
                        *      SUBROUTINE TAPE1                          * TAPE1006
                        *                                                * TAPE1007
                        *      CALLING SEQUENCE                          * TAPE1008
                        *      ----------------                          * TAPE1009
                        *      CALL     TAPE1                            * TAPE1010
                        *      DC       SPADR       SPECTRUM             * TAPE1011
                        *      DC       PISW        PISW NO.             * TAPE1012
                        *      DC       TPNR        TAPE NO. DIRECT      * TAPE1013
                        *      DC       EOF         END OF FILE SWITCH   * TAPE1014
                        *      DC       RNBAD       AREA OF BAD RUN NUMBERS * TAPE1015
                        *      DC       RNEW        NEW RUN NO. DIRECT   * TAPE1016
                        *                                                * TAPE1017
                        *      THE SUBROUTINE SPECTRA FROM TAPE WITH     * TAPE1018
                        *      A GIVEN EXPERIMENT NUMBER, WHICH DOES NOT * TAPE1019
                        *      BELONG TO THE BAD SPECTRA.                * TAPE1020
                        *                                                * TAPE1021
                        ************************************************** TAPE1022
0000     23057171              ENT      TAPE1                             TAPE1023
0000 0   0000          TAPE1   DC       0                                 TAPE1024
0001 01  6D000094              STX   L1 XR1+1                             TAPE1025
0003 01  6E000096              STX   L2 XR2+1                             TAPE1026
0005 01  6F000098              STX   L3 XR3+1                             TAPE1027
0007 01  65800000              LDX   I1 TAPE1                             TAPE1028
0009 0   C100                  LD     1 0                                 TAPE1029
000A 0   D00F                  STO      T1+1                              TAPE1030
000B 01  D400008E              STO   L  T19+1                             TAPE1031
000D 00  C5800001              LD    I1 1                                 TAPE1032
000F 01  D40000A3              STO   L  PISW                              TAPE1033
0011 0   C102                  LD     1 2                                 TAPE1034
0012 01  EC0000A4              OR    L  MATP                              TAPE1035
0014 0   D013                  STO      T4                                TAPE1036
0015 0   D058                  STO      T13                               TAPE1037
0016 0   C104                  LD     1 4                                 TAPE1038
0017 0   D03D                  STO      T9+1                              TAPE1039
0018 0   D03F                  STO      T10+1                             TAPE1040
0019 00  66000000      T1      LDX   L2 *-*                               TAPE1041
001B 0   72FF                  MDX    2 -1                                TAPE1042
001C 01  C400009D              LD    L  K64                               TAPE1043
001E 0   D200                  STO    2 0                                 TAPE1044
001F 0   6A09                  STX    2 T5                                TAPE1045
0020 00  67800067              LDX   I3 TVLOC                             TAPE1046
0022 0   7004                  MDX      T3                                TAPE1047
0023 20  176558D5      T25     LIBF     PRNTN                             TAPE1048
0024 0   2100                  DC       /2100                             TAPE1049
0025 1   00E3                  DC       MES3-1                            TAPE1050
0026 0   0000                  DC       0                                 TAPE1051
0027 20  140478C0      T3      LIBF     MAGT                              TAPE1052
0028 0   0000          T4      DC       *-*                               TAPE1053
0029 0   0000          T5      DC       *-*                               TAPE1054
002A 1   00B2                  DC       USER                              TAPE1055
002B 20  140478C0      T6      LIBF     MAGT                              TAPE1056
002C 0   0000                  DC       0                                 TAPE1057
002D 0   70FD                  MDX      T6                                TAPE1058
002E 01  740000A5              MDX   L  EOFSW,0                           TAPE1059
0030 0   7055                  MDX      EOF                               TAPE1060
0031 01  740000A7              MDX   L  TOLG,0                            TAPE1061
0033 0   7019                  MDX      T8                                TAPE1062
```

```
0034 0  C202                LD     2 2                                TAPE1063
0035 0  A066                M        K10                              TAPE1064
0036 0  1090                SLT      16                               TAPE1065
0037 0  8203                A      2 3                                TAPE1066
0038 0  A065                M        K100                             TAPE1067
0039 0  1090                SLT      16                               TAPE1068
003A 0  8204                A      2 4                                TAPE1069
003B 0  8064                A        K10T                             TAPE1070
003C 0  1890                SRT      16                               TAPE1071
003D 30 025440C0            CALL     BNDC                             TAPE1072
003F 1  00AC                DC       PAREA+1                          TAPE1073
0040 0  C201                LD     2 1                                TAPE1074
0041 30 03209180            CALL     CHIF                             TAPE1075
0043 1  00AE                DC       PAREA+3                          TAPE1076
0044 0  C869                LDD      PAREA+3                          TAPE1077
0045 0  E85B                OR       PKT                              TAPE1078
0046 0  18D8                RTE      24                               TAPE1079
0047 0  D866                STD      PAREA+3                          TAPE1080
0048 20 176558D5            LIBF     PRNTN                            TAPE1081
0049 0  2110                DC       /2110                            TAPE1082
004A 1  00AB                DC       PAREA                            TAPE1083
004B 0  0000                DC       0                                TAPE1084
004C 0  7003                MDX      *+3                              TAPE1085
004D 0  1010        T8      SLA      16                               TAPE1086
004E 0  D058                STO      TOLG                             TAPE1087
004F 0  70D7                MDX      T3                               TAPE1088
0050 0  C201                LD     2 1                                TAPE1089
0051 0  9051                S        PISW                             TAPE1090
0052 01 4C200023            BSC   L  T25,Z                            TAPE1091
                    *                                                 TAPE1092
0054 00 65800000    T9      LDX   I1 *-*          TEST IF BAD RUN NO.  TAPE1093
0056 0  C204                LD     2 4                                TAPE1094
0057 00 B5000000    T10     CMP   L1 *-*                              TAPE1095
0059 0  7002                MDX      T11          CONTINUE WITH TEST   TAPE1096
005A 0  7001                MDX      T11                              TAPE1097
005B 0  70C7                MDX      T25                              TAPE1098
005C 0  71FF        T11     MDX    1 -1                               TAPE1099
005D 0  70F9                MDX      T10                              TAPE1100
005E 0  C203                LD     2 3                                TAPE1101
005F 30 176560F1            CALL     PROC1                            TAPE1102
0061 0  D203                STO    2 3                                TAPE1103
0062 0  61F0                LDX    1 -16          SPECTRUM O.K.        TAPE1104
0063 0  1010                SLA      16                               TAPE1105
0064 0  D043                STO      LNGTH                            TAPE1106
0065 20 176558D5            LIBF     PRNTN                            TAPE1107
0066 0  3D00                DC       /3D00                            TAPE1108
0067 0  7240                MDX    2 64                               TAPE1109
0068 0  C200        T12     LD     2 0                                TAPE1110
0069 0  D038                STO      SAVE                             TAPE1111
006A 0  C034                LD       K512                             TAPE1112
006B 0  D200                STO    2 0                                TAPE1113
006C 0  6A02                STX    2 T14                              TAPE1114
006D 20 140478C0            LIBF     MAGT                             TAPE1115
006E 0  0000        T13     DC       *-*                              TAPE1116
006F 0  0000        T14     DC       *-*                              TAPE1117
0070 1  00B2                DC       USER                             TAPE1118
0071 20 140478C0            LIBF     MAGT                             TAPE1119
0072 0  0000                DC       0                                TAPE1120
0073 0  70FD                MDX      *-3                              TAPE1121
0074 01 740000A5            MDX   L  EOFSW,0                          TAPE1122
0076 0  700F                MDX      EOF                              TAPE1123
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0077 01 740000A6          MDX  L  ERRSW,0                TAPE1124
0079 0  703E              MDX     ERROR                  TAPE1125
007A 01 740000A8          MDX  L  LNGTH,0                TAPE1126
007C 0  703B              MDX     ERROR                  TAPE1127
007D 0  C024              LD      SAVE                   TAPE1128
007E 0  D200              STO   2 0                      TAPE1129
007F 00 76000200          MDX  L2 512                    TAPE1130
0081 0  1000              NOP                            TAPE1131
0082 0  7101              MDX   1 1                      TAPE1132
0083 0  70E4              MDX     T12                    TAPE1133
                     *                                   TAPE1134
0084 0  1010              SLA     16                     TAPE1135
0085 0  7003              MDX     T18                    TAPE1136
                     *                                   TAPE1137
0086 0  1010         EOF  SLA     16                     TAPE1138
0087 0  D01D              STO     EOFSW                  TAPE1139
0088 0  C000              LD      *                      TAPE1140
0089 01 65800000     T18  LDX  I1 TAPE1                  TAPE1141
008B 00 D5800003          STO  I1 3                      TAPE1142
008D 00 66000000     T19  LDX  L2 *-*                    TAPE1143
008F 0  C105              LD    1 5                      TAPE1144
0090 0  D203              STO   2 3                      TAPE1145
0091 01 74060000          MDX  L  TAPE1,6                TAPE1146
0093 00 65000000     XR1  LDX  L1 *-*                    TAPE1147
0095 00 66000000     XR2  LDX  L2 *-*                    TAPE1148
0097 00 67000000     XR3  LDX  L3 *-*                    TAPE1149
0099 01 4C800000          BSC  I  TAPE1                  TAPE1150
                     *                                   TAPE1151
009B 0  0004         K4   DC      4                      TAPE1152
009C 0  000A         K10  DC      10                     TAPE1153
009D 0  0040         K64  DC      64                     TAPE1154
009E 0  0064         K100 DC      100                    TAPE1155
009F 0  0200         K512 DC      512                    TAPE1156
00A0 0  2710         K10T DC      10000                  TAPE1157
00A1 0  3B00         PKT  DC      /3B00                  TAPE1158
00A2 0  0000         SAVE DC      0                      TAPE1159
00A3 0  0000         PISW DC      0                      TAPE1160
00A4 0  1000         MATP DC      /1000                  TAPE1161
00A5 0  0000         EOFSW DC     0                      TAPE1162
00A6 0  0000         ERRSW DC     0                      TAPE1163
00A7 0  0000         TOLG DC      0                      TAPE1164
00A8 0  0000         LNGTH DC     0                      TAPE1165
00AA    0001              BSS  E  1                      TAPE1166
00AB 0  0006         PAREA DC     6                      TAPE1167
00AC    0006              BSS     6                      TAPE1168
                     *                                   TAPE1169
0067                 TVLOC EQU    103                    TAPE1170
                     *                                   TAPE1171
00B2 0  0000         USER DC      0                      TAPE1172
00B3 30 24885640          CALL    USER                   TAPE1173
00B5 1  00A5              DC      EOFSW                  TAPE1174
00B6 01 4C8000B2          BSC  I  USER                   TAPE1175
                     *                                   TAPE1176
00B8 20 176558D5     ERROR LIBF   PRNTN                  TAPE1177
00B9 0  3F00              DC      /3F00                  TAPE1178
00BA 20 176558D5          LIBF    PRNTN                  TAPE1179
00BB 0  2100              DC      /2100                  TAPE1180
00BC 1  00C4              DC      MES1-1                 TAPE1181
00BD 0  0000              DC      0                      TAPE1182
00BE 0  1010              SLA     16                     TAPE1183
00BF 0  D0E7              STO     TOLG                   TAPE1184
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00C0 0  D0E5              STO     ERRSW                                    TAPE1185
00C1 0  D0E6              STO     LNGTH                                    TAPE1186
00C2 01 4C000027          BSC  L  T3                                       TAPE1187
00C4 0  001E              DC      MES2-MES1                                TAPE1188
00C5    0024      MES1    DMES  1 '4XFORMAT OR TAPE ERROR ON INPUT TA'      TAPE1189
00D7    0018              DMES  1 PE. GO TO NEXT SPECTRUM.'E               TAPE1190
00E3    0000      MES2    BSS     0                                        TAPE1191
00E3 0  0003              DC      MES4-MES3                                TAPE1192
00E4    0006      MES3    DMES  1 '5X*'E                                   TAPE1193
00E7    0000      MES4    BSS     0                                        TAPE1194
00E8                      END                                              TAPE1195
```

NO ERRORS IN ABOVE ASSEMBLY.

TAPE1
DUP FUNCTION COMPLETED

```
                                 ************************************************** SUMF0002
                                 *  IBM 1800 SUBROUTINES FOR DATA REDUCTION       * SUMF0003
                                 ************************************************** SUMF0004
                                 *                                                * SUMF0005
                                 *     SUBROUTINE SUMF/SUMF1                      * SUMF0006
                                 *                                                * SUMF0007
                                 *     CALLING SEQUENCES                          * SUMF0008
                                 *     -----------------                          * SUMF0009
                                 *                                                * SUMF0010
                                 *     CALL     SUMF          CALL     SUMF1       * SUMF0011
                                 *     DC       PERC          DC       ID          * SUMF0012
                                 *                                                * SUMF0013
                                 *  SUMF PERFORMS THE SPECIFIC SUMMATION PROCEDURE * SUMF0014
                                 *  FOR TRANSMISSION MEASUREMENTS.                * SUMF0015
                                 *                                                * SUMF0016
0000     22914180                      ENT      SUMF                                SUMF0017
04A5     229141B1                      ENT      SUMF1                               SUMF0018
                                 ************************************************** SUMF0019
                                 *     ADDRESS ASSIGNMENT FOR COMMON              * SUMF0020
                                 ************************************************** SUMF0021
E000                             SPEC  EQU      -8192                               SUMF0022
DFD0                             SCAL  EQU      -8240                               SUMF0023
DFC0                             IDEN  EQU      -8256                               SUMF0024
DFBE                             TABLE EQU      -8258                               SUMF0025
DDBE                             BLOCK EQU      -8770                               SUMF0026
DDBC                             AREA1 EQU      -8772                               SUMF0027
DDA0                             MESS  EQU      -8800                               SUMF0028
DD38                             BUFFR EQU      -8904                               SUMF0029
BD38                             SPEC1 EQU      -17096                              SUMF0030
BD08                             SCAL1 EQU      -17144                              SUMF0031
BCF8                             IDEN1 EQU      -17160                              SUMF0032
BCF6                             TABL1 EQU      -17162                              SUMF0033
BCF3                             SEQ30 EQU      -17165                              SUMF0034
BCEF                             SEQ20 EQU      -17169                              SUMF0035
BCEA                             SEQ10 EQU      -17174                              SUMF0036
                                 ************************************************** SUMF0037
                                 *     SUBROUTINE SUMF                            SUMF0038
                                 ************************************************** SUMF0039
0000 0   0000                    SUMF  DC       0                                   SUMF0040
0001 01  65000334                      LDX   L1 X                                   SUMF0041
0003 00  6600DFBE                      LDX   L2 Y                                   SUMF0042
                                 *------------------------------------------------- SUMF0043
0005 01  C4800000                      LD    I  SUMF                                SUMF0044
0007 0   D001                          STD      *+1                                 SUMF0045
0008 00  CC000000                      LDD   L  *-*                                 SUMF0046
000A 0   D91A                          STD    1 LIRAT-X                             SUMF0047
                                 *------------------------------------------------- SUMF0048
000B 01  74010000                      MDX   L  SUMF,+1                             SUMF0049
                                 *------------------------------------------------- SUMF0050
000D 0   C12B                          LD     1 SECOU-X                             SUMF0051
000E 0   D1BD                          STD    1 COSEC-X                             SUMF0052
                                 *------------------------------------------------- SUMF0053
000F 30  145A5140                      CALL     MOVE        STORE SAMPLE CHANGER INFOR SUMF0054
0011 1   0364                          DC       SEQEN       MATION INTO COMMON       SUMF0055
0012 0   BCEA                          DC       SEQ10                                SUMF0056
0013 0   000C                          DC       12                                   SUMF0057
0014 20  04262495                      LIBF     DISKN       READ CONTROL SECTOR      SUMF0058
0015 0   1000                          DC       /1000                                SUMF0059
0016 1   02F1                          DC       COSEC                                SUMF0060
0017 0   0000                          DC       0                                    SUMF0061
                                 *------------------------------------------------- SUMF0062
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0018 0  700D                MDX     A143                                    SUMF0063
                     *-------------------------------------------------------SUMF0064
0019 20 176558D5     A13    LIBF    PRNTN      ERROR MESSAGE ON 1053        SUMF0065
001A 0  2100                DC      /2100                                   SUMF0066
001B 0  0000         A17    DC      *-*                                     SUMF0067
001C 0  0000                DC      0                                       SUMF0068
                     *-------------------------------------------------------SUMF0069
001D 01 4C800000     A80    BSC  I  SUMF                                    SUMF0070
                     *-------------------------------------------------------SUMF0071
001F 00 67800067     A42    LDX  I3 103                                     SUMF0072
0021 01 7400035E            MDX  L  SKIP,0                                  SUMF0073
0023 0  7001                MDX     *+1                                     SUMF0074
0024 0  70F4                MDX     A13        ERROR MESSAGE                SUMF0075
0025 0  70F7                MDX     A80        RETURN TO MAIN PROG.         SUMF0076
                     *-------------------------------------------------------SUMF0077
0026 20 04262495     A143   LIBF    DISKN      START OF SUMMING PROCEDURE   SUMF0078
0027 0  0100                DC      /0100                                   SUMF0079
0028 1  02F1                DC      COSEC      TEST IF CONTROL SECTOR IS    SUMF0080
0029 0  70FC                MDX     A143       READ                         SUMF0081
                     *-------------------------------------------------------SUMF0082
002A 0  C202                LD    2 IDEN-Y     COMPARE PRESENT AND PREVI-   SUMF0083
002B 0  B1BF                CMP   1 INTNO-X    OUS ID                       SUMF0084
002C 0  7012                MDX     A100       ID=INTER.NO.,                SUMF0085
002D 0  7011                MDX     A100          1ST.EXP.NO.,              SUMF0086
                     *-------------------------------------------------------SUMF0087
002E 0  C203                LD    2 IDEN+1-Y      SERIAL NO.,               SUMF0088
002F 0  B1C0                CMP   1 EXNO1-X       AUTOM.TYPE,               SUMF0089
0030 0  700E                MDX     A100          SAMPLE CHANG.SEQUENCE.    SUMF0090
0031 0  700D                MDX     A100                                    SUMF0091
                     *-------------------------------------------------------SUMF0092
0032 0  C205                LD    2 IDEN+3-Y                                SUMF0093
0033 0  B1C1                CMP   1 SERNO-X                                 SUMF0094
0034 0  700A                MDX     A100                                    SUMF0095
0035 0  7009                MDX     A100                                    SUMF0096
                     *-------------------------------------------------------SUMF0097
0036 0  C20C                LD    2 IDEN+10-Y                               SUMF0098
0037 0  B1C2                CMP   1 AUTYP-X                                 SUMF0099
0038 0  7006                MDX     A100                                    SUMF0100
0039 0  7005                MDX     A100                                    SUMF0101
                     *-------------------------------------------------------SUMF0102
003A 0  C20E                LD    2 IDEN+12-Y                               SUMF0103
003B 0  B1C3                CMP   1 SACHA-X                                 SUMF0104
003C 0  7002                MDX     A100                                    SUMF0105
003D 0  7001                MDX     A100                                    SUMF0106
003E 0  7071                MDX     A114       SKIP PREPARATION OF NEW EX   SUMF0107
                     *                        PERIMENT                     SUMF0108
                     *-------------------------------------------------------SUMF0109
003F 20 024C1552     A100   LIBF    BLANK      ZERO CONTROL SECTOR          SUMF0110
0040 1  02F3                DC      INTNO                                   SUMF0111
0041 0  001F                DC      31                                      SUMF0112
                     *-------------------------------------------------------SUMF0113
0042 0  C202                LD    2 IDEN-Y     STORE PRESENT ID IN CONTR.   SUMF0114
0043 0  D1BF                STO   1 INTNO-X    SECTOR                       SUMF0115
0044 0  C203                LD    2 IDEN+1-Y                                SUMF0116
0045 0  D1C0                STO   1 EXNO1-X                                 SUMF0117
0046 0  C205                LD    2 IDEN+3-Y                                SUMF0118
0047 0  D1C1                STO   1 SERNO-X                                 SUMF0119
0048 0  C20C                LD    2 IDEN+10-Y                               SUMF0120
0049 0  D1C2                STO   1 AUTYP-X                                 SUMF0121
004A 0  C20E                LD    2 IDEN+12-Y                               SUMF0122
004B 0  D1C3                STO   1 SACHA-X                                 SUMF0123
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                        *-------------------------------------------------------
004C 00 6680DFCA              LDX  I2 IDEN+10
004E 0  63FD            A102  LDX   3 -3          CALCULATE ADDRESSES OF 4
004F 0  C1F3                  LD    1 ADRIN+1-X   AREAS IN INSUM
0050 01 D400030A              STO  L  ADDI1
0052 01 86000327        A104  A    L2 ADR4A-1
0054 01 D700030E              STO  L3 ADDI1+4
0056 0  7301                  MDX   3 1
0057 0  70FA                  MDX     A104
                        *-------------------------------------------------------
0058 00 67800067              LDX  I3 103
                        *-------------------------------------------------------
005A 20 024C1552              LIBF    BLANK       STORE 0 IN SCAL1+SPEC1
005B 0  BD08                  DC      SCAL1
005C 0  2030                  DC      8240
                        *-------------------------------------------------------
005D 30 145A5140              CALL    MOVE        MOVE IDEN TO IDEN1
005F 0  DFC0                  DC      IDEN
0060 0  BCF8                  DC      IDEN1
0061 0  0010                  DC      16
0062 0  1010                  SLA     16          AUTOM. TYPE OF SUM IS
0063 00 D400BD02              STO  L  IDEN1+10     SET TO 0
                        *-------------------------------------------------------
0065 00 6780DFCC              LDX  I3 IDEN+12     STORE ADDR.OF INFORM.ABOUT
0067 01 C700032D              LD   L3 ADRSE-1     SELECTED SAMPLE CHANGER SE
0069 0  D1DC                  STO   1 SEADR-X     QUENCE INTO SEADR AND SEA-
006A 0  D1DD                  STO   1 SEADR+1-X   DR+1
006B 00 67800067              LDX  I3 103
                        *-------------------------------------------------------
006D 01 C6000339              LD   L2 DECT2-1
006F 0  D00E                  STO     A110+1
0070 00 D400BD03              STO  L  IDEN1+11    NO. OF GROUPS OF 4K INTO
                        *                         IDEN1+11
0072 01 C4800310              LD   I  SEADR
0074 0  D001                  STO     *+1
0075 00 65000000              LDX  L1 *-*         (XR1)=NO.OF RUN TYPES IN
                        *                         SELECTED SAMPLE CHANG.SEQ.
                        *-------------------------------------------------------
0077 01 74010310        A113  MDX  L  SEADR,+1
0079 01 C4800310              LD   I  SEADR
007B 00 D400BCFA              STO  L  IDEN1+2     STORE NO. RUN TYPE
007D 00 66000000        A110  LDX  L2 *-*         (XR2)=NO.OF GROUPS OF 4K
007F 0  1010                  SLA     16
0080 00 D400BCFC              STO  L  IDEN1+4     GROUP NO.OF 4K =0
0082 00 7401BCFC        A112  MDX  L  IDEN1+4,+1
0084 00 C400BCFC              LD   L  IDEN1+4     STORE NO. OF
0086 01 94000352              S    L  ONE         1ST. BLOCK INTO
0088 0  1004                  SLA     4           IDEN1+6
0089 01 84000352              A    L  ONE
008B 00 D400BCFE              STO  L  IDEN1+6
                        *-------------------------------------------------------
008D 30 14109892              CALL    MDISK       STORE SPECTRUM WITH ALL
008F 0  BCF8                  DC      IDEN1       CHANNELS=0 ON DISK
0090 1  0342                  DC      ERIN        (INITIALIZE SUMS)
0091 0  DD38                  DC      BUFFR
0092 1  0343                  DC      FREE
                        *-------------------------------------------------------
0093 01 74000342              MDX  L  ERIN,0
0095 0  700C                  MDX     A111        ERROR EXIT
0096 0  72FF                  MDX   2 -1          NO ERROR
0097 0  70EA                  MDX     A112
```

```
0098 0  71FF              MDX   1 -1                                          SUMF0185
0099 0  70DD              MDX     A113                                        SUMF0186
                *-------------------------------------------------------      SUMF0187
009A 01 65000334          LDX   L1 X                                          SUMF0188
009C 00 6600DFBE          LDX   L2 Y                                          SUMF0189
                *-------------------------------------------------------      SUMF0190
009E 20 024C1552          LIBF    BLANK       RESET SIND,TUTC,SCI (=13        SUMF0191
009F 1  02F8              DC      SIND1       WORDS)                          SUMF0192
00A0 0  000D              DC      13                                          SUMF0193
00A1 0  700E        A203  MDX     A114                                        SUMF0194
                *-------------------------------------------------------      SUMF0195
00A2 20 024C1552    A111  LIBF    BLANK       RESET ID IN CONTROL SECTOR      SUMF0196
00A3 1  02F3              DC      INTNO       TO ZERO                         SUMF0197
00A4 0  0005              DC      5                                           SUMF0198
                *-------------------------------------------------------      SUMF0199
00A5 01 65000334          LDX   L1 X                                          SUMF0200
                *-------------------------------------------------------      SUMF0201
00A7 0  C1EC              LD     1 ADTYP+14-X PREPARE ERROR MESSAGE*NO        SUMF0202
00A8 01 D400001B          STO   L A17         DISK STORAGE FOR SUMS*          SUMF0203
                *-------------------------------------------------------      SUMF0204
00AA 20 04262495          LIBF    DISKN       STORE CONTROL SECTOR            SUMF0205
00AB 0  3000              DC      /3000                                       SUMF0206
00AC 1  02F1              DC      COSEC                                       SUMF0207
00AD 0  0000              DC      0                                           SUMF0208
                *-------------------------------------------------------      SUMF0209
00AE 01 4C00001F          BSC   L A42         EXIT                            SUMF0210
                *-------------------------------------------------------      SUMF0211
00B0 20 04262495    A114  LIBF    DISKN       STORE CONTROL SECTOR            SUMF0212
00B1 0  3000              DC      /3000                                       SUMF0213
00B2 1  02F1              DC      COSEC                                       SUMF0214
00B3 0  0000              DC      0                                           SUMF0215
                *-------------------------------------------------------      SUMF0216
00B4 20 04262495          LIBF    DISKN       TEST IF CONS1 IS STORED         SUMF0217
00B5 0  0100              DC      /0100                                       SUMF0218
00B6 1  02F1              DC      COSEC                                       SUMF0219
00B7 0  70FC              MDX     *-4                                         SUMF0220
                *-------------------------------------------------------      SUMF0221
00B8 01 44000391          BSI   L SEQU                                        SUMF0222
00BA 0  7001              MDX     *+1                                         SUMF0223
00BB 0  7002              MDX     A108                                        SUMF0224
00BC 01 4C00014A          BSC   L A129        NEW SEQUENCE                    SUMF0225
                *-------------------------------------------------------      SUMF0226
00BE 01 678002F6    A108  LDX   I3 AUTYP      INTERMEDIATE WORK               SUMF0227
00C0 01 C7000361          LD    L3 STIW-1                                     SUMF0228
00C2 0  D003              STO     *+3                                         SUMF0229
                *-------------------------------------------------------      SUMF0230
00C3 00 67800067          LDX   I3 103                                        SUMF0231
                *-------------------------------------------------------      SUMF0232
00C5 00 4C000000          BSC   L *-*         BRANCH TO 4,8,12,20 OR 24K      SUMF0233
                *-------------------------------------------------------      SUMF0234
00C7 00 6700E000    A115  LDX   L3 -8192      CALCULATION OF TOTAL COUNT      SUMF0235
00C9 0  10A0              SLT     32                                          SUMF0236
00CA 00 8F000000          AD    L3 SPEC+8192                                  SUMF0237
00CC 0  7302              MDX    3 +2                                         SUMF0238
00CD 0  70FC              MDX     *-4                                         SUMF0239
00CE 01 DC000360          STD   L SUM                                         SUMF0240
00D0 00 67800067          LDX   I3 103                                        SUMF0241
00D2 01 44000464          BSI   L TOTAL       CHECK TOTAL COUNT               SUMF0242
                *-------------------------------------------------------      SUMF0243
00D4 00 6780DFC2    A125  LDX   I3 IDEN+2                                     SUMF0244
00D6 01 C7000309          LD    L3 ADDI1-1    SECTOR ADDR.INTO TABLE+1        SUMF0245
```

```
00D8 0  D201                STO   2 TABLE+1-Y  AND TABL1+1                SUMF0246
00D9 00 D400BCF7            STO  L  TABL1+1                               SUMF0247
                      *-------------------------------------------------- SUMF0248
00DB 0  C1F9                LD    1 A8256-X    WORD COUNT INTO TABLE AND  SUMF0249
00DC 0  D200                STO   2 TABLE-Y    TABL1                      SUMF0250
00DD 00 D400BCF6            STO  L  TABL1                                 SUMF0251
                      *-------------------------------------------------- SUMF0252
00DF 01 C70002F7            LD   L3 SIND1-1                               SUMF0253
00E1 0  4820                BSC     Z                                     SUMF0254
00E2 0  700A                MDX     A119       ADD 4K SPECTRUM TO INSU1   SUMF0255
                      *-------------------------------------------------- SUMF0256
00E3 0  C11E                LD    1 ONE-X      STORE 4K SPECTR. IN INSU1  SUMF0257
00E4 01 D70002F7            STO  L3 SIND1-1                               SUMF0258
00E6 00 67800067            LDX  I3 103                                   SUMF0259
                      *-------------------------------------------------- SUMF0260
00E8 20 04262495            LIBF    DISKN                                 SUMF0261
00E9 0  3000                DC      /3000                                 SUMF0262
00EA 0  DFBE          A127  DC      TABLE      =TABL1 FOR 8K              SUMF0263
00EB 0  0000                DC      0                                     SUMF0264
00EC 0  7018                MDX     A120                                  SUMF0265
                      *-------------------------------------------------- SUMF0266
00ED 00 67800067      A119  LDX  I3 103                                   SUMF0267
00EF 20 04262495            LIBF    DISKN      ADD 4K SPECTRUM TO INSU1   SUMF0268
00F0 0  1000                DC      /1000      READ INSU1 INTO TABL1      SUMF0269
00F1 0  BCF6          A130  DC      TABL1      =TABLE FOR 8K              SUMF0270
00F2 0  0000                DC      0                                     SUMF0271
                      *-------------------------------------------------- SUMF0272
00F3 20 04262495      A121  LIBF    DISKN      TEST IF TABL1 IS FILLED UP SUMF0273
00F4 0  0100                DC      /0100                                 SUMF0274
00F5 0  BCF6                DC      TABL1                                 SUMF0275
00F6 0  70FC                MDX     A121                                  SUMF0276
                      *-------------------------------------------------- SUMF0277
00F7 00 6600E000            LDX  L2 -8192                                 SUMF0278
00F9 00 CE000000      A122  LDD  L2 SPEC+8192  SUM OF SPEC AND SPEC1 INTO SUMF0279
00FB 00 8E00DD38            AD   L2 SPEC1+8192 SPEC1                      SUMF0280
00FD 00 DE00DD38            STD  L2 SPEC1+8192                            SUMF0281
00FF 0  7202          A131  MDX   2 +2         =MDX   1 +1 FOR 8K         SUMF0282
0100 0  70F8                MDX     A122                                  SUMF0283
                      *-------------------------------------------------- SUMF0284
0101 20 04262495      A128  LIBF    DISKN      WRITE SPEC1 INTO INSU1     SUMF0285
0102 0  3000                DC      /3000                                 SUMF0286
0103 0  BCF6                DC      TABL1                                 SUMF0287
0104 0  0000                DC      0                                     SUMF0288
                      *-------------------------------------------------- SUMF0289
0105 01 7401035E      A120  MDX  L  SKIP,+1    SKIP ERROR MESSAGE         SUMF0290
                      *-------------------------------------------------- SUMF0291
0107 20 04262495            LIBF    DISKN      STORE CONTROL SECTOR       SUMF0292
0108 0  3000                DC      /3000                                 SUMF0293
0109 1  02F1                DC      COSEC                                 SUMF0294
010A 0  0000                DC      0                                     SUMF0295
                      *-------------------------------------------------- SUMF0296
010B 20 04262495            LIBF    DISKN                                 SUMF0297
010C 0  0100                DC      /0100                                 SUMF0298
010D 1  02F1                DC      COSEC                                 SUMF0299
010E 0  70FC                MDX     *-4                                   SUMF0300
                      *-------------------------------------------------- SUMF0301
010F 01 4C00001F            BSC  L  A42        RETURN TO MAIN PROG.       SUMF0302
                      *-------------------------------------------------- SUMF0303
0111 00 6500E000      A116  LDX  L1 -8192      STORE 8K CHANNELS IN ORDER SUMF0304
0113 0  6200                LDX   2 0          OF ASCENDING CHANNEL NUM-  SUMF0305
0114 00 C5000000      A123  LD   L1 SPEC+8192  BERS INTO SPEC1            SUMF0306
```

```
0116 00 D600CD38          STO  L2 SPEC1+4096                          SUMF0307
0118 0  7201              MDX   2 +1                                  SUMF0308
0119 0  7102              MDX   1 +2                                  SUMF0309
011A 0  70F9              MDX     A123                                SUMF0310
011B 00 6500E000          LDX  L1 -8192                               SUMF0311
011D 0  6200              LDX   2 0                                   SUMF0312
011E 00 C5000001  A124    LD   L1 SPEC+8193                           SUMF0313
0120 00 D600BD38          STO  L2 SPEC1                               SUMF0314
0122 0  7201              MDX   2 +1                                  SUMF0315
0123 0  7102              MDX   1 +2                                  SUMF0316
0124 0  70F9              MDX     A124                                SUMF0317
0125 30 145A5140          CALL    MOVE                                SUMF0318
0127 0  DFC0              DC      IDEN                                SUMF0319
0128 0  BCF8              DC      IDEN1                               SUMF0320
0129 0  0040              DC      64                                  SUMF0321
                  *-------------------------------------------------- SUMF0322
012A 30 229148C0          CALL    SUMT      CALCULATE TOTAL COUNT     SUMF0323
012C 1  0360              DC      SUM                                 SUMF0324
012D 0  BD38              DC      SPEC1                               SUMF0325
012E 1  0336              DC      DECT1+2                             SUMF0326
                  *-------------------------------------------------- SUMF0327
012F 01 44000464          BSI  L  TOTAL     CHECK TOTAL COUNT         SUMF0328
                  *-------------------------------------------------- SUMF0329
0131 0  C012              LD      A126      CHANGE 4K PROGRAM TO BE   SUMF0330
0132 0  D0B7              STO     A127      USED AS 8K PROGRAM        SUMF0331
0133 0  D0BD              STO     A130                                SUMF0332
0134 0  C010              LD      A126+1                              SUMF0333
0135 0  6200              LDX   2 0                                   SUMF0334
0136 0  63FC              LDX   3 -4                                  SUMF0335
0137 01 C700014A          LD   L3 A126+6                              SUMF0336
0139 01 D60000F9          STO  L2 A122                                SUMF0337
013B 0  7202              MDX   2 2                                   SUMF0338
013C 0  7301              MDX   3 1                                   SUMF0339
013D 0  70F9              MDX     *-7                                 SUMF0340
013E 01 65000334          LDX  L1 X                                   SUMF0341
0140 00 6600DFBE          LDX  L2 Y                                   SUMF0342
0142 01 4C0000D4          BSC  L  A125                                SUMF0343
                  *-------------------------------------------------- SUMF0344
0144 0  BCF6      A126    DC      TABL1     USED TO CHANGE 4K PROGRAM SUMF0345
0145 0  DFBE              DC      TABLE     TO 8K PROGRAM             SUMF0346
0146 0  C600              DC      /C600     LD  L2                    SUMF0347
0147 0  8600              DC      /8600     A   L2                    SUMF0348
0148 0  D600              DC      /D600     STO L2                    SUMF0349
0149 0  7201              MDX   2 1                                   SUMF0350
                  *-------------------------------------------------- SUMF0351
014A 01 74010308  A129    MDX  L  C,+1      SEQUENCE COUNTER INCR.BY 1 SUMF0352
                  *-------------------------------------------------- SUMF0353
014C 01 65000334          LDX  L1 X                                   SUMF0354
014E 00 67800067          LDX  I3 103                                 SUMF0355
                  *-------------------------------------------------- SUMF0356
0150 0  C1F9              LD    1 A8256-X                             SUMF0357
0151 00 D400DFBE          STO  L  TABLE                               SUMF0358
0153 0  C129              LD    1 SASPC+1-X                           SUMF0359
0154 00 D400DFBF          STO  L  TABLE+1                             SUMF0360
                  *-------------------------------------------------- SUMF0361
0156 20 04262495          LIBF    DISKN     STORE SPECTRUM INTO SAVS1 SUMF0362
0157 0  3000              DC      /3000                               SUMF0363
0158 0  DFBE              DC      TABLE                               SUMF0364
0159 0  0000              DC      0                                   SUMF0365
                  *-------------------------------------------------- SUMF0366
015A 30 141938C0          CALL    MFLT      CONVERT IN-TOT.COUNT AND  SUMF0367
```

```
015C 1  02FC              DC      TOTC1       OUT-TOT.COUNT TO STANDARD  SUMF0368
015D 1  0373              DC      TWO         PRECISION FLOATING POINT   SUMF0369
                  *-------------------------------------------------     SUMF0370
015E 0  C1D4              LD    1 C-X                                    SUMF0371
015F 0  1890              SRT     16                                     SUMF0372
0160 0  D9FE              STD   1 CFLOA-X                                SUMF0373
0161 30 141938C0          CALL    MFLT        CONVERT C TO STANDARD PRE- SUMF0374
0163 1  0332              DC      CFLOA       CISION FLOATING POINT      SUMF0375
0164 1  0352              DC      ONE                                    SUMF0376
                  *-------------------------------------------------     SUMF0377
0165 20 064C4000          LIBF    FLD                                    SUMF0378
0166 1  02FC              DC      TOTC1                                  SUMF0379
                  *-------------------------------------------------     SUMF0380
0167 20 06109940          LIBF    FDIV                                   SUMF0381
0168 1  02FE              DC      TOTC1+2                                SUMF0382
                  *-------------------------------------------------     SUMF0383
0169 20 068A3580          LIBF    FSTO                                   SUMF0384
016A 1  035A              DC      RATIO       RATIO IN/OUT THIS RUN      SUMF0385
                  *-------------------------------------------------     SUMF0386
016B 20 06044100          LIBF    FADD                                   SUMF0387
016C 1  0306              DC      INOUT                                  SUMF0388
                  *-------------------------------------------------     SUMF0389
016D 20 068A3580          LIBF    FSTO                                   SUMF0390
016E 1  0306              DC      INOUT       SUM OF RATIOS IN/OUT       SUMF0391
                  *-------------------------------------------------     SUMF0392
016F 20 06109940          LIBF    FDIV                                   SUMF0393
0170 1  0332              DC      CFLOA                                  SUMF0394
                  *-------------------------------------------------     SUMF0395
0171 20 068A3580          LIBF    FSTO                                   SUMF0396
0172 1  0332              DC      CFLOA       MEAN VAL.OF RATIO IN/OUT   SUMF0397
                  *-------------------------------------------------     SUMF0398
0173 01 C4000308          LD    L C                                      SUMF0399
0175 0  B140              CMP   1 TWENT-X                                SUMF0400
0176 0  7002              MDX     A136        C GREATER 20               SUMF0401
0177 0  7027              MDX     A134        C SMALLER 20               SUMF0402
0178 0  7026              MDX     A134        C   EQUAL 20               SUMF0403
                  *-------------------------------------------------     SUMF0404
0179 20 064C4000  A136    LIBF    FLD                                    SUMF0405
017A 1  035A              DC      RATIO                                  SUMF0406
                  *-------------------------------------------------     SUMF0407
017B 20 068A4080          LIBF    FSUB                                   SUMF0408
017C 1  0332              DC      CFLOA       MEAN VALUE                 SUMF0409
                  *-------------------------------------------------     SUMF0410
017D 20 068A3580          LIBF    FSTO                                   SUMF0411
017E 1  0340              DC      DIFFR       RATIO- MEAN VALUE          SUMF0412
                  *-------------------------------------------------     SUMF0413
017F 0  C90C              LDD   1 DIFFR-X                                SUMF0414
0180 0  4810              BSC     -                                      SUMF0415
0181 0  7002              MDX     A132                                   SUMF0416
                  *-------------------------------------------------     SUMF0417
0182 20 06517A00          LIBF    FMPY        POS.(RATIO-M.VALUE)IN FAC  SUMF0418
0183 1  0346              DC      FLMIN                                  SUMF0419
                  *-------------------------------------------------     SUMF0420
0184 20 06109940  A132    LIBF    FDIV                                   SUMF0421
0185 1  0332              DC      CFLOA       RATIO-M.VALUE/MEAN VALUE   SUMF0422
                  *-------------------------------------------------     SUMF0423
0186 20 068A4080          LIBF    FSUB                                   SUMF0424
0187 1  034E              DC      LIRAT       TOL.DIFF.RATIO-MEAN VALUE  SUMF0425
                  *-------------------------------------------------     SUMF0426
0188 20 068A3580          LIBF    FSTO                                   SUMF0427
0189 1  0332              DC      CFLOA                                  SUMF0428
```

```
                        *-------------------------------------------------------------
018A 0  C9FE                LDD    1 CFLOA-X
018B 0  4810                BSC      -
018C 0  7001                MDX      A133
018D 0  7011                MDX      A134          ADD INSU1 TO SUM
                        *-------------------------------------------------------------
018E 20 064C4000        A133 LIBF     FLD           SUBTRACT RATIO IN/OUT FROM
018F 1  0306                DC       INOUT         SUM OF RATIOS IN/OUT
                        *-------------------------------------------------------------
0190 20 068A4080            LIBF     FSUB
0191 1  035A                DC       RATIO
                        *-------------------------------------------------------------
0192 20 068A3580            LIBF     FSTO          STORE DIFFER. INTO INOUT
0193 1  0306                DC       INOUT
                        *-------------------------------------------------------------
0194 01 74FF0308            MDX   I  C,-1
0196 0  7000                MDX      *
                        *-------------------------------------------------------------
0197 01 74010309            MDX   L  SS,+1         INCREASE COUNTER FOR SUP-
                        *                          PRESSED SEQUENCES BY 1
                        *-------------------------------------------------------------
0199 20 176558D5            LIBF     PRNTN         PRINT MESSAGE*INCORR.
019A 0  2100                DC       /2100         IN/OUT-RATIO, PREVIOUS
019B 1  0297                DC       TM61-1        SEQU.SUPPR.*
019C 0  0000                DC       0
019D 01 4C0001F6            BSC   L  A300
                        *-------------------------------------------------------------
019F 01 678002F6        A134 LDX   I3 AUTYP         ADD INSUM TO SUM
01A1 01 C700036F            LD    L3 STNSE-1
01A3 0  D003                STO      *+3
01A4 00 67800067            LDX   I3 103
01A6 00 4C000000            BSC   L  *-*           BRANCH TO 4,8,12,20 OR 24K
                        *-------------------------------------------------------------
01A8 0  C1DD            A135 LD     1 SEADR+1-X
01A9 0  D1DC                STO    1 SEADR-X
01AA 01 C4800310            LD    I  SEADR
01AC 0  D001                STO      *+1
01AD 00 66000000            LDX   L2 *-*           NO.OF RUN TYPES INTO XR2
                        *-------------------------------------------------------------
01AF 0  C1F9                LD     1 A8256-X
01B0 00 D400DFBE            STO   L  TABLE
                        *-------------------------------------------------------------
01B2 01 C6000309        A175 LD    L2 ADDI1-1
01B4 00 D400DFBF            STO   L  TABLE+1
01B6 01 65000334            LDX   L1 X
                        *-------------------------------------------------------------
01B8 20 04262495            LIBF     DISKN         INSU1 SPECTRUM INTO SPEC
01B9 0  1000                DC       /1000         (START WITH LAST RUN TYPE
01BA 0  DFBE                DC       TABLE         IN SEQUENCE)
01BB 0  0000                DC       0
                        *-------------------------------------------------------------
01BC 20 04262495        A140 LIBF     DISKN         TEST IF SPEC IS FILLED UP
01BD 0  0100                DC       /0100
01BE 0  DFBE                DC       TABLE
01BF 0  70FC                MDX      A140
                        *-------------------------------------------------------------
01C0 30 145A5140            CALL     MOVE          STORE IDEN-IDEN+4 INTO ID
01C2 0  DFC0                DC       IDEN
01C3 1  0348                DC       ID
01C4 0  0005                DC       5
                        *-------------------------------------------------------------
```

```
01C5 01 C40002F6          LD    L  AUTYP                                    SUMF0490
01C7 0  B13F              CMP    1 TWO-X                                    SUMF0491
01C8 0  7001              MDX      *+1          8K                           SUMF0492
01C9 0  7005              MDX      A193         4K                           SUMF0493
01CA 0  C13F              LD     1 TWO-X        8K                           SUMF0494
01CB 0  D005              STO      A186                                      SUMF0495
01CC 0  C006              LD       A186+2                                    SUMF0496
01CD 0  D012              STO      A192+1                                    SUMF0497
01CE 0  7005              MDX      A194                                      SUMF0498
01CF 0  C002        A193  LD       A186+1                                    SUMF0499
01D0 0  70FC              MDX      *-4                                       SUMF0500
                    *-------------------------------------------------------*SUMF0501
01D1 0  0000        A186  DC       *-*          IND.FOR GROUP 1 OR 2 , 8K    SUMF0502
01D2 1  01E1              DC       A190         4K PROGRAM PART              SUMF0503
01D3 1  020D              DC       A191         8K PROGRAM PART              SUMF0504
                    *-------------------------------------------------------*SUMF0505
01D4 30 04262494    A194  CALL     DISKM        READ SUM INTO SPEC1          SUMF0506
01D6 0  BCF8              DC       IDEN1        INTO SPEC1                   SUMF0507
01D7 1  0342              DC       ERIN                                      SUMF0508
01D8 0  DD38              DC       BUFFR                                     SUMF0509
01D9 1  0348              DC       ID                                        SUMF0510
01DA 1  0372              DC       SWITC        SWITC=1, ID ON DISK DELET.   SUMF0511
                    *-------------------------------------------------------*SUMF0512
01DB 20 04262495    A141  LIBF     DISKN                                     SUMF0513
01DC 0  0100              DC       /0100                                     SUMF0514
01DD 0  BCF6              DC       TABL1                                     SUMF0515
01DE 0  70FC              MDX      A141                                      SUMF0516
                    *-------------------------------------------------------*SUMF0517
01DF 00 4C000000    A192  BSC  L   *-*                                       SUMF0518
01E1 00 6500E000    A190  LDX  L1  -8192                                     SUMF0519
01E3 00 CD000000    A142  LDD  L1  SPEC+8192  SPEC + SPEC1 = SPEC1           SUMF0520
01E5 00 8D00DD38          AD   L1  SPEC1+8192                               SUMF0521
01E7 00 DD00DD38          STD  L1  SPEC1+8192                               SUMF0522
01E9 0  7102              MDX   1  +2                                       SUMF0523
01EA 0  70F8              MDX      A142                                     SUMF0524
                    *-------------------------------------------------------*SUMF0525
01EB 30 14109892          CALL     MDISK        STORE FINAL SUM ON DISK      SUMF0526
01ED 0  BCF8              DC       IDEN1                                     SUMF0527
01EE 1  0342              DC       ERIN                                      SUMF0528
01EF 0  DD38              DC       BUFFR                                     SUMF0529
01F0 1  0343              DC       FREE                                      SUMF0530
                    *-------------------------------------------------------*SUMF0531
01F1 01 74000342          MDX  L   ERIN,0       TEST ERROR INDICATOR         SUMF0532
01F3 0  7040              MDX      A161         ERROR EXIT*NO MORE STOR.*    SUMF0533
01F4 0  72FF        A188  MDX    2 -1                                        SUMF0534
01F5 0  70BC              MDX      A175         NEXT RUN TYPE OF SEQUENCE    SUMF0535
                    *-------------------------------------------------------*SUMF0536
01F6 20 024C1552    A300  LIBF     BLANK        RESET SIND AND TOTC          SUMF0537
01F7 1  02F8              DC       SIND1                                     SUMF0538
01F8 0  000C              DC       12                                        SUMF0539
                    *-------------------------------------------------------*SUMF0540
01F9 01 65000334          LDX  L1  X                                         SUMF0541
01FB 0  C1F9              LD     1 A8256-X                                   SUMF0542
01FC 00 D400DFBE          STO  L   TABLE                                     SUMF0543
01FE 0  C129              LD     1 SASPC+1-X                                 SUMF0544
01FF 00 D400DFBF          STO  L   TABLE+1                                   SUMF0545
0201 20 04262495          LIBF     DISKN        READ 1ST.SPECTRUM OF NEXT    SUMF0546
0202 0  1000              DC       /1000        SEQUENCE FROM SAVS1 AREA     SUMF0547
0203 0  DFBE              DC       TABLE        ON DISK INTO MEMORY          SUMF0548
0204 0  0000              DC       0                                         SUMF0549
                    *-------------------------------------------------------*SUMF0550
```

```
0205 20 04262495          LIBF     DISKN                                  SUMF0551
0206 0  0100              DC       /0100                                  SUMF0552
0207 0  DFBE              DC       TABLE                                  SUMF0553
0208 0  70FC              MDX      *-4                                    SUMF0554
0209 00 6600DFBE          LDX   L2 Y                                      SUMF0555
020B 01 4C0000BE          BSC   L  A108        INTERMEDIATE WORK          SUMF0556
                     *-------------------------------------------------- SUMF0557
020D 0  C0C3         A191 LD       A186                                   SUMF0558
020E 0  B13F              CMP    1 TWO-X                                  SUMF0559
020F 0  7001              MDX      *+1         1ST. GROUP OF 4096 CHAN.   SUMF0560
0210 0  7002              MDX      A195        2ND. GROUP OF 4096 CHAN.   SUMF0561
0211 0  6300              LDX    3 0           1ST. GROUP OF 4096 CHAN.   SUMF0562
0212 0  7002              MDX      *+2                                    SUMF0563
0213 00 67001000     A195 LDX   L3 4096                                   SUMF0564
                     *-------------------------------------------------*SUMF0565
0215 00 6500E000          LDX   L1 -8192                                  SUMF0566
0217 00 C700E000     A184 LD    L3 SPEC        SPEC + SPEC1 = SPEC1       SUMF0567
0219 0  1890              SRT      16                                     SUMF0568
021A 00 8D00DD38          AD    L1 SPEC1+8192                             SUMF0569
021C 00 DD00DD38          STD   L1 SPEC1+8192                             SUMF0570
021E 0  7301              MDX    3 1                                      SUMF0571
021F 0  7102              MDX    1 2                                      SUMF0572
0220 0  70F6              MDX      A184                                   SUMF0573
                     *-------------------------------------------------*SUMF0574
0221 00 67800067          LDX   I3 103                                    SUMF0575
                     *-------------------------------------------------*SUMF0576
0223 30 14109892          CALL     MDISK       STORE FINAL SUM ON DISK    SUMF0577
0225 0  BCF8              DC       IDEN1                                  SUMF0578
0226 1  0342              DC       ERIN                                   SUMF0579
0227 0  DD38              DC       BUFFR                                  SUMF0580
0228 1  0343              DC       FREE                                   SUMF0581
                     *-------------------------------------------------*SUMF0582
0229 01 74000342          MDX   L  ERIN,0      TEST ERROR INDICATOR       SUMF0583
022B 0  7008              MDX      A161        ERROR EXIT,NO MORE STORAGE*SUMF0584
                     *-------------------------------------------------*SUMF0585
022C 01 74FF01D1          MDX   I  A186,-1                                SUMF0586
022E 0  7001              MDX      A187                                   SUMF0587
022F 0  70C4              MDX      A188        NEXT RUN TYPE              SUMF0588
0230 01 7401034C     A187 MDX   L  ID+4,1                                 SUMF0589
0232 01 4C0001D4          BSC   L  A194                                   SUMF0590
                     *-------------------------------------------------*SUMF0591
                     *-------------------------------------------------- SUMF0592
0234 01 67800342     A161 LDX   I3 ERIN        NO MORE STORAGE FOR SUMS   SUMF0593
0236 01 C7000318          LD    L3 ADTYP+6                                SUMF0594
0238 0  D008              STO      A162                                   SUMF0595
                     *-------------------------------------------------- SUMF0596
0239 00 67800067          LDX   I3 103                                    SUMF0597
                     *-------------------------------------------------- SUMF0598
023B 20 176558D5          LIBF     PRNTN       MESSAGE ON 1053*NO MORE    SUMF0599
023C 0  2100              DC       /2100       STORAGE FOR SUMS*          SUMF0600
023D 1  02E2              DC       TM69-1                                 SUMF0601
023E 0  0000              DC       0                                      SUMF0602
023F 20 176558D5          LIBF     PRNTN                                  SUMF0603
0240 0  2100              DC       /2100                                  SUMF0604
0241 0  0000         A162 DC       *-*                                    SUMF0605
0242 0  0000              DC       0                                      SUMF0606
                     *-------------------------------------------------- SUMF0607
0243 30 059C98C0          EXIT                  RESTART OF SUMOF           SUMF0608
                     ************************************************** SUMF0609
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                    ************************************************** SUMF0611
                    *     SUMF MESSAGES FOR 1443 PRINTER             SUMF0612
                    ************************************************** SUMF0613
0245 0  000C              DC      TM38-TM37                            SUMF0614
0246    0018        TM37  DMES  1 NO FREE 13-SECTOR AREA 'E            SUMF0615
0252    0000        TM38  BES     0                                    SUMF0616
                    *------------------------------------------------- SUMF0617
0252 0  000C              DC      TM40-TM39                            SUMF0618
0253    0018        TM39  DMES  1  NO FREE 26-SECTOR AREA 'E           SUMF0619
025F    0000        TM40  BES     0                                    SUMF0620
                    *------------------------------------------------- SUMF0621
025F 0  0014              DC      TM44-TM43                            SUMF0622
0260    001F        TM43  DMES  1 REQUIRED NO.OF OVERFLOW SECTORS'     SUMF0623
026F    0009              DMES  1 NOT FREE'E                           SUMF0624
0274    0000        TM44  BES     0                                    SUMF0625
                    *------------------------------------------------- SUMF0626
0274 0  0015              DC      TM56-TM55                            SUMF0627
0275    0023        TM55  DMES  1 TOT. COU. DIFFER. GREATER 10, SEQU.' SUMF0628
0286    0007              DMES  1 SUPPR.'E                             SUMF0629
028A    0000        TM56  BES     0                                    SUMF0630
                    *------------------------------------------------- SUMF0631
028A 0  000C              DC      TM60-TM59                            SUMF0632
028B    0018        TM59  DMES  1 NO DISK STORAGE FOR SUMS'E           SUMF0633
0297    0000        TM60  BES     0                                    SUMF0634
                    *------------------------------------------------- SUMF0635
0297 0  0015              DC      TM62-TM61                            SUMF0636
0298    0024        TM61  DMES  1 INCORR. IN/OUT-RATIO, PREVIOUS SEQU.' SUMF0637
02AA    0006              DMES  1 SUPPR.'E                             SUMF0638
02AD    0000        TM62  BES     0                                    SUMF0639
                    *------------------------------------------------- SUMF0640
02AD 0  0012              DC      TM64-TM63                            SUMF0641
02AE    0024        TM63  DMES  1 INCORR. SA. CH. START, SPEC. SUPPR.'E SUMF0642
02C0    0000        TM64  BES     0                                    SUMF0643
                    *------------------------------------------------- SUMF0644
02C0 0  000F              DC      TM66-TM65                            SUMF0645
02C1    001E        TM65  DMES  1 INCORR. RUN TYPE, SEQU. SUPPR.'E     SUMF0646
02D0    0000        TM66  BES     0                                    SUMF0647
                    *------------------------------------------------- SUMF0648
02D0 0  0011              DC      TM68-TM67                            SUMF0649
02D1    0022        TM67  DMES  1 SAMPLE CHANG. ERROR, SEQU. SUPPR.'E  SUMF0650
02E2    0000        TM68  BES     0                                    SUMF0651
                    *------------------------------------------------- SUMF0652
02E2 0  000C              DC      TM70-TM69                            SUMF0653
02E3    0018        TM69  DMES  1 NO MORE STORAGE FOR SUMS'E           SUMF0654
02EF    0000        TM70  BES     0                                    SUMF0655
                    ************************************************** SUMF0656
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                    ************************************************************ SUMF0658
02F0      0000              BSS   E  0                                          SUMF0659
02F0 0    0000              DC       0          NOT USED                        SUMF0660
02F1 31   035958B1   COSEC  DSA      CONS1      DEFINE SECTOR ADDR.FOR          SUMF0661
02F4                       ORG      COSEC+2    CONTROL SECTOR CONS1            SUMF0662
02F3 0    0000       INTNO  DC       *-*        INTERRUPT NO.                   SUMF0663
02F4 0    0000       EXNO1  DC       *-*        1ST.EXPER.NO.                   SUMF0664
02F5 0    0000       SERNO  DC       *-*        SERIAL NO.                      SUMF0665
02F6 0    0000       AUTYP  DC       *-*        AUTOMATIC TYPE                  SUMF0666
02F7 0    0000       SACHA  DC       *-*        SAMPLE CHANGER DEQUENCE         SUMF0667
02F8 0    0000       SIND1  DC       *-*        IN-AREA     0=FREE,1=3CCUP.     SUMF0668
02F9 0    0000              DC       *-*        OUT-AREA    0=FREE,1=3CCUP.     SUMF0669
02FA 0    0000              DC       *-*        B-IN-AREA   0=FREE,1=3CCUP.     SUMF0670
02FB 0    0000              DC       *-*        B-OUT-AREA  0=FREE,1=3CCUP.     SUMF0671
02FC 00   00000000   TOTC1  DEC      0          TOTAL COUNT FOR IN-RUN          SUMF0672
02FE 00   00000000          DEC      0          TOTAL COUNT FOR OUT-RUN         SUMF0673
0300 00   00000000          DEC      0          TOTAL COUNT FOR B-IN-RUN        SUMF0674
0302 00   00000000          DEC      0          TOTAL COUNT FOR B-OUT-RUN       SUMF0675
0304 0    0000       SCI    DC       *-*        SEQUENCE CONTROL INDICATOR      SUMF0676
                    *                          0=START WITH 1ST RUN TYPE       SUMF0677
                    *                          1=NO CHECK FOR RUN TYPE         SUMF0678
0306 00   00000000   INOUT  DEC      0          SUM OF RATIOS TOT.COUNT         SUMF0679
                    *                          FOR IN/TOT.COUNT FOR OUT        SUMF0680
0308 0    0000       C      DC       *-*        SEQUENCE COUNTER                SUMF0681
0309 0    0000       SS     DC       *-*        NO.OF SUPPRESSED SEQUENCES      SUMF0682
030A 0    0000       ADDI1  DC       *-*        INSU1,SEC.ADDR.     IN-AREA     SUMF0683
030B 0    0000              DC       *-*        INSU1,SEC.ADDR.    OUT-AREA     SUMF0684
030C 0    0000              DC       *-*        INSU1,SEC.ADDR.  B-IN-AREA      SUMF0685
030D 0    0000              DC       *-*        INSU1,SEC.ADDR. B-OUT-AREA      SUMF0686
030E 0    0000       PSN    DC       *-*        PREVIOUS SEQUENCE NO.           SUMF0687
030F 0    0000              DC       *-*        NOT USED                        SUMF0688
0310 0    0000       SEADR  DC       *-*        ADDR.SEL.SAM.CH.SEQ.,MODIF      SUMF0689
0311 0    0000              DC       *-*        ADDR.SEL.SAM.CH.SEQ.,FIX        SUMF0690
                    ************************************************************ SUMF0691
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                    ************************************************** SUMF0693
0312 0   0000       ADTYP DC      0          ADDRESSES OF MESSAGES      SUMF0694
0313 0   0000             DC      0          FOR 1053                   SUMF0695
0314 0   0000             DC      0                                     SUMF0696
0315 0   0000             DC      0                                     SUMF0697
0316 0   0000             DC      0                                     SUMF0698
0317 0   0000             DC      0                                     SUMF0699
0318 0   0000             DC      0                                     SUMF0700
0319 1   0245             DC      TM37-1                                SUMF0701
031A 1   0252             DC      TM39-1                                SUMF0702
031B 0   0000             DC      0                                     SUMF0703
031C 1   025F             DC      TM43-1                                SUMF0704
031D 0   0000             DC      0                                     SUMF0705
031E 1   0274             DC      TM55-1                                SUMF0706
031F 0   0000             DC      0                                     SUMF0707
0320 1   028A             DC      TM59-1                                SUMF0708
0321 1   0297             DC      TM61-1                                SUMF0709
0322 1   02AD             DC      TM63-1                                SUMF0710
0323 1   02C0             DC      TM65-1                                SUMF0711
0324 1   02D0             DC      TM67-1                                SUMF0712
0325 1   02E2             DC      TM69-1                                SUMF0713
0326 31  09562931   ADRIN DSA     INSU1                                 SUMF0714
0329                      ORG     ADRIN+2                               SUMF0715
0328 0   001A       ADR4A DC      26  DP     4K SECT.LEN.,AREAS INSU1   SUMF0716
0329 0   001A             DC      26  SP     8K SECT.LEN.,AREAS INSU1   SUMF0717
032A 0   0027             DC      39  SP    12K SECT.LEN.,AREAS INSU1   SUMF0718
032B 0   0041             DC      65  SP    20K SECT.LEN.,AREAS INSU1   SUMF0719
032C 0   004E             DC      78  SP    24K SECT.LEN.,AREAS INSU1   SUMF0720
032D 0   2040       A8256 DC      8256       LENGTH OF SPECTRUM AREA    SUMF0721
032E 0   BCEA       ADRSE DC      SEQ10      ADDR.OF SPECIF.FOR S.C.S.1 SUMF0722
032F 0   BCEF             DC      SEQ20      ADDR.OF SPECIF.FOR S.C.S.1 SUMF0723
0330 0   BCF3             DC      SEQ30      ADDR.OF SPECIF.FOR S.C.S.3 SUMF0724
                    *                        S.C.S.=SAMPLE CHANG.SEQU.  SUMF0725
                    *                        SPECIFICATIONS FOR S.C.S.1 SUMF0726
0332 00  00000000   CFLOA DEC     0          FLOATING POINT C           SUMF0727
0334 0   0000       DECT1 DC      0          4K,BIN.                    SUMF0728
0335 0   0001             DC      1          4K,SIGMA TOTAL,BIN.        SUMF0729
0336 0   0002             DC      2          8K,SIGMA TOTAL,BIN.,1CH=1W SUMF0730
0337 0   0003             DC      3         12K,SIGMA TOTAL,BCD         SUMF0731
0338 0   0004             DC      4         20K,SIGMA TOTAL,BCD         SUMF0732
0339 0   0005             DC      5         24K,SIGMA TOTAL,BCD         SUMF0733
033A 0   0001       DECT2 DC      1          NO.OF GROUPS OF 4K FOR AU- SUMF0734
033B 0   0002             DC      2          TOMATIC TYPE AT CORRESPON- SUMF0735
033C 0   0003             DC      3          DING PLACE IN DECT1        SUMF0736
033D 0   0005             DC      5                                     SUMF0737
033E 0   0006             DC      6                                     SUMF0738
0340 00  00000000   DIFFR DEC     0          RATIO-MEAN VALUE           SUMF0739
0342 0   0000       ERIN  DC      *-*        ERROR INDICATOR FOR MDISK  SUMF0740
0343 0   0000       FREE  DC      *-*        NO.OF FREE 13-SECTOR PLACE SUMF0741
0344 0   0000             DC      *-*        NO.OF FREE SECT.FOR SM.SPE SUMF0742
0345 0   0000             DC      *-*        NO.OF FREE SECT.IN OV.AREA SUMF0743
0346 00  C0000081   FLMIN DEC     -1.0                                  SUMF0744
0348     0005       ID    BSS     5          ID FOR DISKM-ROUTINE       SUMF0745
034E 00  51EB857A   LIRAT DEC     0.01       0/0 DIFF. RATIO-MEAN VALUE SUMF0746
0350 00  0000000A   LIMPO DEC     10         LIMIT FOR TOT.COUNT DIFF.  SUMF0747
0352 0   0001       ONE   DC      1                                     SUMF0748
0354     0006       OUTPT BSS  E  6                                     SUMF0749
035A 00  00000000   RATIO DEC     0          RATIO TOT.C.IN/TOT.C.OUT   SUMF0750
035C 31  220658B1   SASPC DSA     SAVS1      INTERMEDIATE STORAGE FOR   SUMF0751
035F                      ORG     SASPC+2    ONE DP-SPECTRUM(8256WORDS) SUMF0752
035E 0   0000       SKIP  DC      0     1=SKIP ERR.MESS.,ALARM,DISA.INT SUMF0753
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                        *                        0=NO SKIP                          SUMF0754
035F 0  001F            SECOU DC      31             WORD LENGTH OF CONTROL SECTSUMF0755
0360 00 00000000        SUM   DEC     0              STORAGE FOR TOTAL COUNT     SUMF0756
0362 1  00C7            STIW  DC      A115           4K  START ADDRESSES FOR     SUMF0757
0363 1  0111                  DC      A116           8K  PROGRAM PARTS  INTER-   SUMF0758
                        *     DC      A117           12K MEDIATE WORK            SUMF0759
                        *     DC      A118           20K                         SUMF0760
                        *     DC      A119           24K                         SUMF0761
0364 0  0004            SEQEN DC      4              NO.OF RUN TYPES             SUMF0762
0365 0  0001            SEQ11 DC      1              NO.OF 1ST RUN TYPE          SUMF0763
0366 0  0002            SEQ12 DC      2              NO.OF 2ND RUN TYPE          SUMF0764
0367 0  0003            SEQ13 DC      3              NO.OF 3RD RUN TYPE          SUMF0765
0368 0  0004            SEQ14 DC      4              NO.OF 4TH RUN TYPE          SUMF0766
                        *                            SPECIFICATIONS FOR S.C.S.2  SUMF0767
0369 0  0003                  DC      3              NO.OF RUN TYPES             SUMF0768
036A 0  0001            SEQ21 DC      1              NO.OF 1ST RUN TYPE          SUMF0769
036B 0  0002            SEQ22 DC      2              NO.OF 2ND RUN TYPE          SUMF0770
036C 0  0003            SEQ23 DC      3              NO.OF 3RD RUN TYPE          SUMF0771
                        *                            SPECIFICATIONS FOR S.C.S.3  SUMF0772
036D 0  0002                  DC      2              NO.OF RUN TYPES             SUMF0773
036E 0  0001            SEQ31 DC      1              NO.OF 1ST RUN TYPE          SUMF0774
036F 0  0002            SEQ32 DC      2              NO.OF 2ND RUN TYPE          SUMF0775
0370 1  01A8            STNSE DC      A135           4K  START ADDRESSES FOR     SUMF0776
0371 1  01A8                  DC      A135           8K  PROGRAM PARTS  ADD IN-  SUMF0777
                        *     DC      A137           12K SU1 TO ON-LINE DISK     SUMF0778
                        *     DC      A138           20K                         SUMF0779
                        *     DC      A139           24K                         SUMF0780
0372 0  0001            SWITC DC      1              DISKM,ID ON DISK DELETED    SUMF0781
0373 0  0002            TWO   DC      2                                          SUMF0782
0374 0  0014            TWENT DC      20             FOR CHECK OF RATIO IN/OUT   SUMF0783
0375 0  0000            XR2   DC      *-*            INTERM.STORAGE FOR XR2      SUMF0784
0334                    X     EQU     DECT1                                      SUMF0785
DFBE                    Y     EQU     TABLE                                      SUMF0786
0376 0  0000            ZERO  DC      0                                          SUMF0787
                        ************************************************************ SUMF0788
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                        ************************************************** SUMF0790
                        ************************************************** SUMF0791
                        *     CONVERSION OF BINARY NUMBER TO 4-DIGIT     * SUMF0792
                        *     PRINTER CODE    ( SS AND C )               * SUMF0793
                        *                                                * SUMF0794
                        *     BSI   L  CONV3                             * SUMF0795
                        *     DC       ADDR.OF PRIMTER CODE ,BSS 2       * SUMF0796
                        *     DC       ADDR.OF BINARY VALUE              * SUMF0797
                        ************************************************** SUMF0798
0377 0  0000            CONV3 DC       *-*                                SUMF0799
0378 01 6E00038E              STX   L2 A183+1                             SUMF0800
                        *-------------------------------------------------- SUMF0801
037A 01 C4800377              LD    I  CONV3                              SUMF0802
037C 0  D006                  STO      *+6          ADDR. OF BIN. VALUE   SUMF0803
037D 01 74010377              MDX   L  CONV3,+1                           SUMF0804
037F 01 C4800377              LD    I  CONV3                              SUMF0805
0381 0  D009                  STO      A182         ADDR. OF PRINTER CODE SUMF0806
                        *-------------------------------------------------- SUMF0807
0382 00 C4000000              LD    L  *-*                                SUMF0808
0384 20 02255103              LIBF     BINDC                              SUMF0809
0385 1  0354                  DC       OUTPT                              SUMF0810
                        *-------------------------------------------------- SUMF0811
0386 01 74010377              MDX   L  CONV3,+1                           SUMF0812
                        *-------------------------------------------------- SUMF0813
0388 20 085935D9              LIBF     HOLPR                              SUMF0814
0389 0  0001                  DC       /0001                              SUMF0815
038A 1  0356                  DC       OUTPT+2                            SUMF0816
038B 0  0000            A182  DC       *-*          PRINTER CODE          SUMF0817
038C 0  0004                  DC       4                                  SUMF0818
                        *-------------------------------------------------- SUMF0819
038D 00 66000000        A183  LDX   L2 *-*                                SUMF0820
                        *-------------------------------------------------- SUMF0821
038F 01 4C800377              BSC   I  CONV3                              SUMF0822
                        ************************************************** SUMF0823
                        *     CONTROL OF SAMPLE CHANGER SEQUENCE         * SUMF0824
                        *                                                * SUMF0825
                        *     BSI   L  SEQU                              * SUMF0826
                        *     BSI+1    NEW-SEQUENCE EXIT                 * SUMF0827
                        *     BSI+2    INTERMEDIATE-WORK EXIT            * SUMF0828
                        ************************************************** SUMF0829
0391 0  0000            SEQU  DC       *-*                                SUMF0830
0392 01 6D00045A              STX   L1 FIN+1                              SUMF0831
0394 01 6E00045C              STX   L2 XR22+1                             SUMF0832
0396 01 6F00045E              STX   L3 XR3+1                              SUMF0833
                        *-------------------------------------------------- SUMF0834
0398 01 66000334              LDX   L2 X                                  SUMF0835
039A 0  C0F6                  LD       SEQU                               SUMF0836
039B 01 D4000461              STO   L  NSEQU                              SUMF0837
039D 0  821E                  A     2  ONE-X                              SUMF0838
039E 01 D4000462              STO   L  IWORK                              SUMF0839
                        *-------------------------------------------------- SUMF0840
03A0 0  C2D0                  LD    2  SCI-X                              SUMF0841
03A1 0  4820                  BSC      Z                                  SUMF0842
03A2 0  7015                  MDX      A144         SCI=1,NO CHECK FOR RUN SUMF0843
                        *                           GROUP TO START WITH   SUMF0844
                        *-------------------------------------------------- SUMF0845
03A3 0  C2DD                  LD    2  SEADR+1-X                          SUMF0846
03A4 0  D2DC                  STO   2  SEADR-X                            SUMF0847
03A5 01 74010310              MDX   L  SEADR,+1     =ADDR.OF 1ST RUN TYPE SUMF0848
                        *-------------------------------------------------- SUMF0849
03A7 00 C400DFC2              LD    L  IDEN+2       2ND EXP.NO.           SUMF0850
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03A9 01 B4800310          CMP  I  SEADR                                  SUMF0851
03AB 0  7005              MDX     A145        )2ND EXP.NO.(=ACTUAL SEQU  SUMF0852
03AC 0  7004              MDX     A145        )ENCE NO.)UNEQUAL 1ST SEQ  SUMF0853
                     *                        )UENCE NO.                 SUMF0854
03AD 0  D2DA              STO   2 PSN-X       2ND EXP.NO.=PSN            SUMF0855
03AE 0  C21E              LD    2 ONE-X                                  SUMF0856
03AF 0  D2D0              STO   2 SCI-X       SEQU.CONTR.INDIC.=1        SUMF0857
03B0 0  7007              MDX     A144                                   SUMF0858
                     *-------------------------------------------------- SUMF0859
03B1 0  C2EE         A145 LD    2 ADTYP+16-X PREPARE ERROR MESSAGE,       SUMF0860
03B2 01 D400001B          STO  L  A17         INCORR.SAMPLE CHANG.START  SUMF0861
03B4 0  1010              SLA     16                                     SUMF0862
03B5 0  D22A              STO   2 SKIP-X                                 SUMF0863
03B6 01 4C00001F          BSC  L  A42                                    SUMF0864
                     *-------------------------------------------------- SUMF0865
03B8 0  C2DD         A144 LD    2 SEADR+1-X                             SUMF0866
03B9 0  D2DC              STO   2 SEADR-X                                SUMF0867
03BA 01 C4800310          LD   I  SEADR                                  SUMF0868
03BC 01 D4000463          STO  L  WORK                                   SUMF0869
03BE 01 65800463          LDX  I1 WORK                                   SUMF0870
03C0 00 C400DFC2          LD   L  IDEN+2                                 SUMF0871
03C2 01 74010310     A146 MDX  L  SEADR,+1                               SUMF0872
03C4 01 B4800310          CMP  I  SEADR                                  SUMF0873
03C6 0  7002              MDX     A147        UNEQUAL                    SUMF0874
03C7 0  7001              MDX     A147        UNEQUAL                    SUMF0875
03C8 0  7016              MDX     A148        EQUAL                      SUMF0876
03C9 0  71FF         A147 MDX   1 -1                                     SUMF0877
03CA 0  70F7              MDX     A146                                   SUMF0878
                     *-------------------------------------------------- SUMF0879
03CB 0  C2EF              LD    2 ADTYP+17-X PREPARE ERROR MESSAGE       SUMF0880
03CC 01 D400001B          STO  L  A17         *INCORRECT RUN TYPE*       SUMF0881
                     *-------------------------------------------------- SUMF0882
03CE 20 024C1552          LIBF    BLANK       RESET SIND,TUTC,SCI        SUMF0883
03CF 1  02F8              DC      SIND1                                  SUMF0884
03D0 0  000D              DC      13                                     SUMF0885
                     *-------------------------------------------------- SUMF0886
03D1 01 74010309          MDX  L  SS,+1                                  SUMF0887
                     *-------------------------------------------------- SUMF0888
03D3 20 04262495          LIBF    DISKN       STORE CONTROL SECTOR       SUMF0889
03D4 0  3000              DC      /3000                                  SUMF0890
03D5 1  02F1              DC      COSEC                                  SUMF0891
03D6 0  0000              DC      0                                      SUMF0892
03D7 20 04262495          LIBF    DISKN                                  SUMF0893
03D8 0  0100              DC      /0100                                  SUMF0894
03D9 1  02F1              DC      COSEC                                  SUMF0895
03DA 0  70FC              MDX     *-4                                    SUMF0896
                     *-------------------------------------------------- SUMF0897
03DB 0  1010              SLA     16                                     SUMF0898
03DC 0  D22A              STO   2 SKIP-X                                 SUMF0899
03DD 01 4C00001F          BSC  L  A42         RETURN TO MAIN PROGRAM     SUMF0900
                     *-------------------------------------------------- SUMF0901
03DF 0  C2DD         A148 LD    2 SEADR+1-X   CALCULATE ADDR.OF 1ST      SUMF0902
03E0 0  821E              A     2 ONE-X       RUN TYPE IN SEQUENCE       SUMF0903
03E1 0  D2DC              STO   2 SEADR-X                                SUMF0904
03E2 00 C400DFC2          LD   L  IDEN+2                                 SUMF0905
03E4 01 B4800310          CMP  I  SEADR                                  SUMF0906
03E6 0  7002              MDX     A149                                   SUMF0907
03E7 0  7001              MDX     A149                                   SUMF0908
03E8 0  700E              MDX     A151                                   SUMF0909
03E9 01 74010310     A149 MDX  L  SEADR,+1    CALCULATE ADDR.OF 2ND RUN  SUMF0910
03EB 01 B4800310          CMP  I  SEADR        TYPE                       SUMF0911
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03ED 0  7002              MDX     A150                                    SUMF0912
03EE 0  7001              MDX     A150                                    SUMF0913
03EF 0  7022              MDX     A153                                    SUMF0914
03F0 01 74010310    A150  MDX  L  SEADR,+1     CALCULATE ADDR.OF 3RD RUN  SUMF0915
03F2 01 B4800310          CMP  I  SEADR         TYPE                       SUMF0916
03F4 0  703B              MDX     A157                                    SUMF0917
03F5 0  703A              MDX     A157                                    SUMF0918
03F6 0  702A              MDX     A155                                    SUMF0919
03F7 0  C2DD        A151  LD    2 SEADR+1-X      CALCULATE ADDR OF LAST    SUMF0920
03F8 01 84800311          A     I SEADR+1        RUN TYPE IN SEQUENCE      SUMF0921
03FA 0  D2DC              STO   2 SEADR-X                                 SUMF0922
03FB 0  C2DA              LD    2 PSN-X                                   SUMF0923
03FC 01 B4800310          CMP  I  SEADR                                   SUMF0924
03FE 0  700A              MDX     A152                                    SUMF0925
03FF 0  7009              MDX     A152                                    SUMF0926
0400 00 C400DFC2          LD   L  IDEN+2                                  SUMF0927
0402 0  D2DA              STO   2 PSN-X                                   SUMF0928
0403 01 C4000461          LD   L  NSEQU                                   SUMF0929
0405 01 D4000391          STO  L  SEQU                                    SUMF0930
0407 01 4C000459          BSC  L  FIN           START OF NEW SEQUENCE     SUMF0931
                    *-------------------------------------------------    SUMF0932
0409 0  C2DD        A152  LD    2 SEADR+1-X      CALCULATE ADDR.OF 1ST     SUMF0933
040A 0  821E              A     2 ONE-X          RUN TYPE IN SEQUENCE      SUMF0934
040B 0  D2DC              STO   2 SEADR-X                                 SUMF0935
040C 0  C2DA              LD    2 PSN-X                                   SUMF0936
040D 01 B4800310          CMP  I  SEADR                                   SUMF0937
040F 0  702D              MDX     A159                                    SUMF0938
0410 0  702C              MDX     A159                                    SUMF0939
0411 0  7040              MDX     A160                                    SUMF0940
0412 01 74FF0310    A153  MDX  I  SEADR,-1                                SUMF0941
0414 0  C2DA              LD    2 PSN-X                                   SUMF0942
0415 01 B4800310          CMP  I  SEADR                                   SUMF0943
0417 0  7002              MDX     A154                                    SUMF0944
0418 0  7001              MDX     A154                                    SUMF0945
0419 0  7038              MDX     A160                                    SUMF0946
041A 01 74010310    A154  MDX  L  SEADR,+1                                SUMF0947
041C 01 B4800310          CMP  I  SEADR                                   SUMF0948
041E 0  701E              MDX     A159                                    SUMF0949
041F 0  701D              MDX     A159                                    SUMF0950
0420 0  7031              MDX     A160                                    SUMF0951
0421 01 74FF0310    A155  MDX  I  SEADR,-1                                SUMF0952
0423 0  C2DA              LD    2 PSN-X                                   SUMF0953
0424 01 B4800310          CMP  I  SEADR                                   SUMF0954
0426 0  7002              MDX     A156                                    SUMF0955
0427 0  7001              MDX     A156                                    SUMF0956
0428 0  7029              MDX     A160                                    SUMF0957
0429 01 74010310    A156  MDX  L  SEADR,+1                                SUMF0958
042B 01 B4800310          CMP  I  SEADR                                   SUMF0959
042D 0  700F              MDX     A159                                    SUMF0960
042E 0  700E              MDX     A159                                    SUMF0961
042F 0  7022              MDX     A160                                    SUMF0962
0430 0  C2DA        A157  LD    2 PSN-X                                   SUMF0963
0431 01 B4800310          CMP  I  SEADR                                   SUMF0964
0433 0  7002              MDX     A158                                    SUMF0965
0434 0  7001              MDX     A158                                    SUMF0966
0435 0  701C              MDX     A160                                    SUMF0967
0436 01 74010310    A158  MDX  L  SEADR,+1                                SUMF0968
0438 01 B4800310          CMP  I  SEADR                                   SUMF0969
043A 0  7002              MDX     A159                                    SUMF0970
043B 0  7001              MDX     A159                                    SUMF0971
043C 0  7015              MDX     A160                                    SUMF0972
```

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                        *-------------------------------------------------------
043D 0  C2F0            A159  LD    2 ADTYP+18-X PREPARE ERROR MESSAGE,
043E 01 D400001B              STO  L  A17        SAMPLE CHANGER ERROR
                        *-------------------------------------------------------
0440 20 024C1552              LIBF    BLANK      RESET SIND,TOTC,SCI
0441 1  02F8                  DC      SIND1
0442 0  000D                  DC      13
                        *-------------------------------------------------------
0443 01 74010309              MDX  L  SS,+1
                        *-------------------------------------------------------
0445 20 04262495              LIBF    DISKN      STORE CONTROL SECTOR
0446 0  3000                  DC      /3000
0447 1  02F1                  DC      COSEC
0448 0  0000                  DC      0
0449 20 04262495              LIBF    DISKN
044A 0  0100                  DC      /0100
044B 1  02F1                  DC      COSEC
044C 0  70FC                  MDX     *-4
                        *-------------------------------------------------------
044D 0  1010                  SLA     16
044E 01 D400035E              STO  L  SKIP
0450 01 4C00001F              BSC  L  A42        RETURN TO MAIN PROGRAM
                        *-------------------------------------------------------
0452 00 C400DFC2        A160  LD   L  IDEN+2
0454 0  D2DA                  STO   2 PSN-X
0455 01 C4000462              LD   L  IWORK
0457 01 D4000391              STO  L  SEQU
0459 00 65000000        FIN   LDX  L1 *-*
045B 00 66000000        XR22  LDX  L2 *-*
045D 00 67000000        XR3   LDX  L3 *-*
045F 01 4C800391              BSC  I  SEQU
0461 0  0000            NSEQU DC      *-*
0462 0  0000            IWORK DC      *-*
0463 0  0000            WORK  DC      *-*
                        ***********************************************************
                        *     COMPARISON OF ANALYSER AND COMPUTER TOTAL          *
                        *     COUNT                                              *
                        *                                                        *
                        *     BSI  L  TOTAL                                      *
                        *             BSI+1 = NO-ERROR EXIT                      *
                        *             A42 = ERROR EXIT                           *
                        ***********************************************************
0464 0  0000            TOTAL DC      *-*
                        *-------------------------------------------------------
0465 01 6D000485              STX  L1 REG1+1
0467 01 6E000487              STX  L2 REG2+1
0469 01 6F000489              STX  L3 REG3+1
                        *-------------------------------------------------------
046B 01 65000334              LDX  L1 X
046D 00 6600DFBE              LDX  L2 Y
                        *-------------------------------------------------------
046F 0  C204                  LD    2 IDEN+2-Y   2ND EXP.NO. * 2 INTO XR3
0470 0  1001                  SLA     1
0471 0  D001                  STO     *+1
0472 00 67000000              LDX  L3 *-*
                        *-------------------------------------------------------
0474 0  C92C                  LDD   1 SUM-X
0475 0  DA24                  STD   2 SCAL+18-Y  CALC.TOT.COU.INTO SCALER10
0476 0  9A14                  SD    2 SCAL+2-Y   ANAL.TOT.COU.IS IN SCAL+2
                        *-------------------------------------------------------
0477 0  4810                  BSC     -
```

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0478 0  7003              MDX     A117        DIFFERENCE IS POS.          SUMF1034
0479 0  D92C              STD   1 SUM-X       DIFFERENCE INTO SUM         SUMF1035
047A 0  10A0              SLT     32                                      SUMF1036
047B 0  992C              SD    1 SUM-X                                   SUMF1037
                  *-------------------------------------------------------SUMF1038
047C 0  B91C      A117    DCM   1 LIMPO-X                                 SUMF1039
047D 0  700E              MDX     A118        ABS.DIFF. TOO GREAT         SUMF1040
047E 0  7000              MDX     *                                       SUMF1041
047F 0  CA24              LDD   2 SCAL+18-Y   ADD TOT.COUNT OF THIS RUN   SUMF1042
0480 01 8F0002FA          AD    L3 TOTC1-2    TO TOT.COUNT FOR ALL RUNS   SUMF1043
0482 01 DF0002FA          STD   L3 TOTC1-2    OF THIS TYPE                SUMF1044
                  *-------------------------------------------------------SUMF1045
0484 00 65000000  REG1    LDX   L1 *-*                                    SUMF1046
0486 00 66000000  REG2    LDX   L2 *-*                                    SUMF1047
0488 00 67000000  REG3    LDX   L3 *-*                                    SUMF1048
048A 01 4C800464          BSC   I  TOTAL      NO-ERROR EXIT               SUMF1049
                  *-------------------------------------------------------SUMF1050
048C 00 67800067  A118    LDX   I3 103                                    SUMF1051
                  *-------------------------------------------------------SUMF1052
048E 20 024C1552          LIBF    BLANK       RESET SIND,TOTC,SCI         SUMF1053
048F 1  02F8              DC      SIND1                                   SUMF1054
0490 0  000D              DC      13                                      SUMF1055
                  *-------------------------------------------------------SUMF1056
0491 01 74010309          MDX   L  SS,+1      INCREASE NO.OF SUPPR.SEQU.  SUMF1057
                  *-------------------------------------------------------SUMF1058
0493 20 04262495          LIBF    DISKN       STORE CONTROL SECTOR        SUMF1059
0494 0  3000              DC      /3000                                   SUMF1060
0495 1  02F1              DC      COSEC                                   SUMF1061
0496 0  0000              DC      0                                       SUMF1062
                  *-------------------------------------------------------SUMF1063
0497 20 04262495          LIBF    DISKN                                   SUMF1064
0498 0  0100              DC      /0100                                   SUMF1065
0499 1  02F1              DC      COSEC                                   SUMF1066
049A 0  70FC              MDX     *-4                                     SUMF1067
                  *-------------------------------------------------------SUMF1068
049B 01 65000334          LDX   L1 X                                      SUMF1069
049D 0  1010              SLA     16                                      SUMF1070
049E 01 D400035E          STO   L  SKIP                                   SUMF1071
04A0 0  C1EA              LD    1 ADTYP+12-X                              SUMF1072
04A1 01 D400001B          STO   L  A17                                    SUMF1073
04A3 01 4C00001F          BSC   L  A42        ERROR EXIT                  SUMF1074
                  *******************************************************SUMF1075
```

```
                        ************************************************** SUMF1077
                        *     ENTRY   SUMF1    FOR MESSAGE * NO. OF SUPPR.* SUMF1078
                        *     AND NO. OF CORRECT SEQU. * AND ID-TRANSFER  * SUMF1079
                        *                                                 * SUMF1080
                        *     CALL    SUMF1                               * SUMF1081
                        *     DC      ADDR. OF BSS 16 FOR ID              * SUMF1082
                        *                                                 * SUMF1083
                        ************************************************** SUMF1084
04A5 0   0000           SUMF1 DC      *-*                                   SUMF1085
04A6 01  44000377             BSI   L CONV3      CONVERT SS TO PRINTER      SUMF1086
04A8 1   0309                 DC      SS         CODE                       SUMF1087
04A9 1   04D1                 DC      TM600                                 SUMF1088
04AA 01  44000377             BSI   L CONV3      CONVERT  C TO PRINTER      SUMF1089
04AC 1   0308                 DC      C          CODE                       SUMF1090
04AD 1   04E2                 DC      TM500                                 SUMF1091
                        *-------------------------------------------------- SUMF1092
04AE 01  C48004A5             LD    I SUMF1                                 SUMF1093
04B0 0   D003                 STO     *+3                                   SUMF1094
                        *-------------------------------------------------- SUMF1095
04B1 30  145A5140             CALL    MOVE       TRANSFER ID                SUMF1096
04B3 0   BCF8                 DC      IDEN1                                 SUMF1097
04B4 0   0000                 DC      *-*                                   SUMF1098
04B5 0   0010                 DC      16                                    SUMF1099
                        *-------------------------------------------------- SUMF1100
04B6 20  176558D5             LIBF    PRNTN      PRINT MESSAGE * NO. OF     SUMF1101
04B7 0   2100                 DC      /2100      SUPPR. SEQU. *             SUMF1102
04B8 1   04C2                 DC      TM3-1                                 SUMF1103
04B9 0   0000                 DC      0                                     SUMF1104
                        *-------------------------------------------------- SUMF1105
04BA 20  176558D5             LIBF    PRNTN      PRINT MESSAGE * NO. OF     SUMF1106
04BB 0   2100                 DC      /2100      CORRECT SEQU. *            SUMF1107
04BC 1   04D3                 DC      TM5-1                                 SUMF1108
04BD 0   0000                 DC      0                                     SUMF1109
                        *-------------------------------------------------- SUMF1110
04BE 01  740104A5             MDX   L SUMF1,+1                              SUMF1111
04C0 01  4C8004A5             BSC   I SUMF1                                 SUMF1112
04C2 0   0010                 DC      TM4-TM3                               SUMF1113
04C3     001C           TM3   DMES  1 TOT. NO. OF SUPPR. SEQU.  ='E         SUMF1114
04D1     0002           TM600 BSS     2                                     SUMF1115
04D3     0000           TM4   BES     0                                     SUMF1116
04D3 0   0010                 DC      TM6-TM5                               SUMF1117
04D4     001C           TM5   DMES  1 TOT. NO. OF CORRECT SEQU. ='E         SUMF1118
04E2     0002           TM500 BSS     2                                     SUMF1119
04E4     0000           TM6   BES     0                                     SUMF1120
                        ************************************************** SUMF1121
04E4                          END                                           SUMF1122

     NO ERRORS IN ABOVE ASSEMBLY.
SUMF  SUMF1
DUP FUNCTION COMPLETED
```

```
                *****************************************************  EXPAN002
                *  IBM 1800 SUBROUTINES FOR DATA REDUCTION          *  EXPAN003
                *****************************************************  EXPAN004
                *                                                   *  EXPAN005
                *      SUBROUTINE EXPAN                             *  EXPAN006
                *                                                   *  EXPAN007
                *      CALLING SEQUENCE                             *  EXPAN008
                *      ----------------                             *  EXPAN009
                *                                                   *  EXPAN010
                *      CALL     EXPAN                               *  EXPAN011
                *      DC       A                                   *  EXPAN012
                *      DC       B                                   *  EXPAN013
                *A     DC       ID          DOUBLE WORD CONTAINING  *  EXPAN014
                *      DC       ID          THE ID-NUMBER           *  EXPAN015
                *B     BSS      7           AREA IN WHICH THE ID    *  EXPAN016
                *                           IS EXPANDED             *  EXPAN017
                *                                                   *  EXPAN018
                *****************************************************  EXPAN019
0000     059D7055          ENT      EXPAN                              EXPAN020
0000 0   0000        EXPAN DC       0                                  EXPAN021
0001 0   6924              STX    1 EX1&1                              EXPAN022
0002 0   6A25              STX    2 EX1&3                              EXPAN023
0003 01  65800000          LDX   I1 EXPAN                             EXPAN024
0005 0   C101              LD     1 1                                  EXPAN025
0006 0   D001              STO      *+1                                EXPAN026
0007 00  66000000          LDX   L2 *-*                                EXPAN027
0009 0   10A0              SLT      32                                 EXPAN028
000A 00  CD800000          LDD   I1 0                                  EXPAN029
000C 0   188C              SRT      12                                 EXPAN030
000D 0   100C              SLA      12                                 EXPAN031
000E 0   180C              SRA      12                                 EXPAN032
000F 0   D200              STO    2 0                                  EXPAN033
0010 0   1010              SLA      16                                 EXPAN034
0011 0   1084              SLT      4                                  EXPAN035
0012 0   D2FF              STO    2 -1                                 EXPAN036
0013 0   1010              SLA      16                                 EXPAN037
0014 0   1084              SLT      4                                  EXPAN038
0015 0   D2FE              STO    2 -2                                 EXPAN039
0016 0   1010              SLA      16                                 EXPAN040
0017 0   1088              SLT      8                                  EXPAN041
0018 0   D2FD              STO    2 -3                                 EXPAN042
0019 00  CD800000          LDD   I1 0                                  EXPAN043
001B 0   1084              SLT      4                                  EXPAN044
001C 0   1010              SLA      16                                 EXPAN045
001D 0   1084              SLT      4                                  EXPAN046
001E 0   D2FC              STO    2 -4                                 EXPAN047
001F 0   1010              SLA      16                                 EXPAN048
0020 0   1084              SLT      4                                  EXPAN049
0021 0   D2FB              STO    2 -5                                 EXPAN050
0022 0   1010              SLA      16                                 EXPAN051
0023 0   1084              SLT      4                                  EXPAN052
0024 0   D2FA              STO    2 -6                                 EXPAN053
0025 00  65000000    EX1   LDX   L1 *-*                                EXPAN054
0027 00  66000000          LDX   L2 *-*                                EXPAN055
0029 01  74020000          MDX   L  EXPAN,2                            EXPAN056
002B 01  4C800000          BSC   I  EXPAN                              EXPAN057
002E                       END                                        EXPAN058

     NO ERRORS IN ABOVE ASSEMBLY.
EXPAN
DUP FUNCTION COMPLETED
```

```
                        ************************************************** TBBL0002
                        *  IBM 1800 SUBROUTINES FOR DATA REDUCTION       * TBBL0003
                        ************************************************** TBBL0004
                        *                                                * TBBL0005
                        *      SUBROUTINE TBBL                           * TBBL0006
                        *                                                * TBBL0007
                        *      CALLING SEQUENCE                          * TBBL0008
                        *      ---------------                           * TBBL0009
                        *      CALL     TBBL                             * TBBL0010
                        *      DC       I                                * TBBL0011
                        *      DC       N                                * TBBL0012
                        *  SUBROUTINE TBBL DETERMINES THE LENGTH OF TABLE * TBBL0013
                        *  SPTBL FOR I=1, OF UVFTB IF I=2,  AND OF SPTB1  * TBBL0014
                        *  IF I=3.                                       * TBBL0015
                        *                                                * TBBL0016
                        ************************************************** TBBL0017
0000     230824C0       TBBL     ENT      TBBL                            TBBL0018
0000 0   0000           TBBL     DC       0                               TBBL0019
0001 0   6917                    STX    1 TB2+1                           TBBL0020
0002 0   6A18                    STX    2 TB2+3                           TBBL0021
0003 01  65800000                LDX    I1 TBBL                           TBBL0022
0005 00  C5800000                LD     I1 0                              TBBL0023
0007 0   901E                    S        K1                              TBBL0024
0008 0   1001                    SLA      1                               TBBL0025
0009 0   D003                    STO      *+3                             TBBL0026
000A 01  66000020                LDX    L2 SPZNE                          TBBL0027
000C 00  C6000000       TB1      LD     L2 *-*                            TBBL0028
000E 00  D5800001                STO    I1 1                              TBBL0029
0010 0   1890                    SRT      16                              TBBL0030
0011 0   C0FB                    LD       TB1+1                           TBBL0031
0012 01  4C200018                BSC    L  TB2,Z                          TBBL0032
0014 0   1010                    SLA      16                              TBBL0033
0015 0   A811                    D        K13                             TBBL0034
0016 00  D5800001                STO    I1 1                              TBBL0035
0018 00  65000000       TB2      LDX    L1 *-*                            TBBL0036
001A 00  66000000                LDX    L2 *-*                            TBBL0037
001C 01  74020000                MDX    L  TBBL,2                         TBBL0038
001E 01  4C800000                BSC    I  TBBL                           TBBL0039
                        *                                                 TBBL0040
                        *                                                 TBBL0041
0020 31  225E9545       SPZNE    DSA      SPZNE                           TBBL0042
0023                             ORG      SPZNE+2                         TBBL0043
0022 31  16969545       OVZNE    DSA      OVZNE                           TBBL0044
0025                             ORG      OVZNE+2                         TBBL0045
0024 31  225E9571       SPZN1    DSA      SPZN1                           TBBL0046
0027                             ORG      SPZN1+2                         TBBL0047
0026 0   0001           K1       DC       1                               TBBL0048
0027 0   000D           K13      DC       13                              TBBL0049
0028                             END                                      TBBL0050

     NO ERRORS IN ABOVE ASSEMBLY.
TBBL
DUP FUNCTION COMPLETED
```

```
// JOB    X      X      X
// ASM TMAPG
  *LIST
  *COMMON 8258                                          TMAPG001
```

```
                                PROGRAM TMAPG                                                  PAGE    1

                                ***************************************************** TMAPG003
                                *  IBM 1800 PROGRAMS FOR DATA REDUCTION             * TMAPG004
                                ***************************************************** TMAPG005
                                *                                                   * TMAPG006
                                *  PROGRAM TMAPG                                    * TMAPG007
                                *                                                   * TMAPG008
                                *  THIS PROGRAM CHECKS THE TAPES WRITTEN BY THE     * TMAPG009
                                *  ANALYSERS IN GEEL AND WRITES A LIST OF THE       * TMAPG010
                                *  ID-NUMBERS. THE DATA ARE CHECKED FOR PARITY,     * TMAPG011
                                *  VALIDITY, RECORD LENGTH,AND BLOCK NUMBERS.       * TMAPG012
                                *  THE CORRECTED DATA ARE WRITTEN ON 9-TRACK TAPE.* TMAPG013
                                *  THE FORMAT IS BCD FOR 12K,20K AND 24K SPECTRA, * TMAPG014
                                *  BINARY SINGLE PRECISION FOR 8K AND BINARY        * TMAPG015
                                *  DOUBLE PRECISION FOR 4K SPECTRA. SPECTRA OF      * TMAPG016
                                *  SIGMA-TOTAL WILL RECEIVE NEW SEQUENCE NUMBERS.  * TMAPG017
                                *                                                   * TMAPG018
                                *  CONTROL CARDS                                    * TMAPG019
                                *  1. CC    1- 2     **                             * TMAPG020
                                *     CC    3        INPUT TAPE UNIT NUMBER          * TMAPG021
                                *     CC   11-15     1. INPUT TAPE LABEL             * TMAPG022
                                *     CC   17-21     2. INPUT TAPE LABEL             * TMAPG023
                                *                    ETC.                            * TMAPG024
                                *  2. CC    1- 2     **                             * TMAPG025
                                *     CC    3        INPUT TAPE UNIT NUMBER          * TMAPG026
                                *     CC   11-15     OUTPUT TAPE LABEL               * TMAPG027
                                *  3. CC    1-80     TITLE                           * TMAPG028
                                *  4. CC    1        *                               * TMAPG029
                                *     CC    2        EXPERIMENT NUMBER OF SPECTRA    * TMAPG030
                                *                    WHICH ARE TO BE SUMMED UP BY A * TMAPG031
                                *                    SUM-K PROGRAM (SIGMA-T)         * TMAPG032
                                *     CC    5        AUTOMATIC TYPE OF THESE SPECTRA* TMAPG033
                                *     CC    7        SAMPLE CHANGER SEQUENCE         * TMAPG034
                                *                                                   * TMAPG035
                                *                    IF THERE ARE NO SIGMA-T SPECTRA* TMAPG036
                                *                    CC 2,5 AND 7 ARE BLANK.         * TMAPG037
                                *                                                   * TMAPG038
                                ***************************************************** TMAPG039
0000 20 17047140                START LIBF     PAGE        WRITE PAGE 1                TMAPG040
0001 1  0429                          DC       PAREA                                   TMAPG041
0002 0  0032                          DC       50                                      TMAPG042
0003 20 176558D5                      LIBF     PRNTN       WRITE PROGRAM T-MAPGEEL     TMAPG043
0004 0  2100                          DC       /2100       (OLD BCD)                   TMAPG044
0005 1  029C                          DC       MES1-1                                  TMAPG045
0006 0  0000                          DC       0                                       TMAPG046
0007 0  62FE                          LDX    2 -2          XR2=-2                      TMAPG047
0008 01 6C00045D                      STX  L   SWT         SET INDICATOR SWT           TMAPG048
000A 20 176558D5                      LIBF     PRNTN       SKIP ONE LINE               TMAPG049
000B 0  3D00                          DC       /3D00                                   TMAPG050
                                *                                                       TMAPG051
                                *     READ CONTROL CARDS                                TMAPG052
                                *                                                       TMAPG053
000C 01 6E00045B                A0    STX  L2  SAVE                                    TMAPG054
000E 20 03059115                      LIBF     CARDN       READ A CARD                 TMAPG055
000F 0  1000                          DC       /1000                                   TMAPG056
0010 1  0493                          DC       CARD                                    TMAPG057
0011 0  0000                          DC       0                                       TMAPG058
0012 20 03059115                A1    LIBF     CARDN       TEST OPERATION COMPLETE     TMAPG059
0013 0  0000                          DC       0                                       TMAPG060
0014 0  70FD                          MDX      A1                                      TMAPG061
0015 01 65000492                      LDX  L1  R           XR1 HAS RELOCATION ADDRESS  TMAPG062
0017 0  C102                          LD     1 CARD+1-R                                TMAPG063
```

```
0018 0  91CC              S     1 AST-R       TEST IF FIRST CHAR. ASTER. TMAPG064
0019 01 4C180022          BSC  L  A3,+-                                  TMAPG065
001B 20 176558D5    A2    LIBF    PRNTN       ERROR IN CONTROL CARD      TMAPG066
001C 0  2100              DC      /2100                                  TMAPG067
001D 1  02A9              DC      MES3-1                                 TMAPG068
001E 0  0000              DC      0                                      TMAPG069
001F 20 17064885          LIBF    PAUSE       WAIT NO. 3                 TMAPG070
0020 1  047D              DC      A                                      TMAPG071
0021 0  70EA              MDX     A0                                     TMAPG072
0022 0  C104        A3    LD    1 CARD+3-R    SEARCH UNIT NUMBER         TMAPG073
0023 0  6206              LDX   2 6                                      TMAPG074
0024 0  1240              SLCA  2 0                                      TMAPG075
0025 01 6E00045C          STX  L2 SAVE2                                  TMAPG076
0027 0  C1F5              LD    1 K4-R                                   TMAPG077
0028 0  91CA              S     1 SAVE2-R                                TMAPG078
                    *                                                    TMAPG079
0029 01 6680045B          LDX  I2 SAVE                                   TMAPG080
002B 01 D6000461          STO  L2 CONST+2     SAVE UNIT NUMBER           TMAPG081
002D 01 7400045D          MDX  L  SWT,0       TEST SWT                   TMAPG082
002F 0  700A              MDX     A5          INPUT TAPE                 TMAPG083
0030 20 085935D9          LIBF    HOLPR       OUTPUT TAPE                TMAPG084
0031 0  0001              DC      1                                      TMAPG085
0032 1  049E        A4    DC      CARD+11                                TMAPG086
0033 1  0391              DC      TD                                     TMAPG087
0034 0  0006              DC      6                                      TMAPG088
0035 20 176558D5          LIBF    PRNTN       WRITE MESSAGE OUTPUT TAPE  TMAPG089
0036 0  2100              DC      /2100                                  TMAPG090
0037 1  0384              DC      MES15-1                                TMAPG091
0038 0  0000              DC      0                                      TMAPG092
0039 0  7027              MDX     A10                                    TMAPG093
003A 0  1010        A5    SLA     16                                     TMAPG094
003B 0  D1CB              STO   1 SWT-R       SET SWT=0                  TMAPG095
003C 0  C0F5              LD      A4                                     TMAPG096
003D 0  D009              STO     A7                                     TMAPG097
003E 0  C1D1              LD    1 TC-R                                   TMAPG098
003F 0  D008              STO     A8                                     TMAPG099
0040 01 6E00045B          STX  L2 SAVE        SAVE XR2                   TMAPG100
0042 0  6200              LDX   2 0           XR2=0                      TMAPG101
0043 01 6E000461          STX  L2 COINP                                  TMAPG102
0045 20 085935D9    A6    LIBF    HOLPR                                  TMAPG103
0046 0  0001              DC      1                                      TMAPG104
0047 0  0000        A7    DC      *-*                                    TMAPG105
0048 0  0000        A8    DC      *-*                                    TMAPG106
0049 0  0006              DC      6                                      TMAPG107
004A 01 66800048          LDX  I2 A8                                     TMAPG108
004C 0  C1F4              LD    1 K3-R                                   TMAPG109
004D 0  D1CA              STO   1 SAVE2-R                                TMAPG110
004E 0  C200        A81   LD    2 0                                      TMAPG111
004F 01 4C200056          BSC  L  A85,Z                                  TMAPG112
0051 0  7201              MDX   2 1                                      TMAPG113
0052 01 74FF045C          MDX  L  SAVE2,-1                               TMAPG114
0054 0  70F9              MDX     A81                                    TMAPG115
0055 0  7007              MDX     A9                                     TMAPG116
0056 01 74010461    A85   MDX  L  COINP,1                               TMAPG117
0058 01 74060047          MDX  L  A7,6                                   TMAPG118
005A 01 74040048          MDX  L  A8,4                                   TMAPG119
005C 0  70E8              MDX     A6                                     TMAPG120
                    *                                                    TMAPG121
005D 20 176558D5    A9    LIBF    PRNTN                                  TMAPG122
005E 0  2100              DC      /2100                                  TMAPG123
005F 1  0363              DC      MES13-1                                TMAPG124
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0060 0  0000                DC      0                                    TMAPG125
0061 01 6680045B     A10    LDX  I2 SAVE                                 TMAPG126
0063 0  7201                MDX   2 1          XR2=XR2+1                 TMAPG127
0064 0  70A7                MDX     A0                                   TMAPG128
                     *                                                   TMAPG129
                     *      PREPARE CONSTANTS FOR MAGNETIC TAPE ROUTINE  TMAPG130
                     *                                                   TMAPG131
0065 20 03059115            LIBF    CARDN      BEGIN TO READ NEXT CARD   TMAPG132
0066 0  1000                DC      /1000                                TMAPG133
0067 1  0493                DC      CARD                                 TMAPG134
0068 0  0000                DC      0                                    TMAPG135
0069 0  C1CD                LD    1 CONST-R                              TMAPG136
006A 0  E984                OR    1 X2150-R    CONSTANT FOR READ         TMAPG137
006B 0  D065                STO     A18                                  TMAPG138
006C 0  C1CD                LD    1 CONST-R                              TMAPG139
006D 0  E985                OR    1 X7000-R    CONSTANT FOR BACKSPACE    TMAPG140
006E 01 D40000F2            STO  L  A22                                  TMAPG141
0070 0  C1CD                LD    1 CONST-R                              TMAPG142
0071 0  E986                OR    1 X6000-R    CONSTANT FOR REWIND-UNLOAD TMAPG143
0072 01 D40000F7            STO  L  A25                                  TMAPG144
0074 0  C1CE                LD    1 CONST+1-R  CONSTANT FOR MTAPE        TMAPG145
0075 01 D4000144            STO  L  A30                                  TMAPG146
0077 0  E987                OR    1 X8000-R    CONSTANT FOR WRITING EOF  TMAPG147
0078 01 D4000267            STO  L  A50                                  TMAPG148
007A 0  C1CE                LD    1 CONST+1-R                            TMAPG149
007B 0  E986                OR    1 X6000-R    CONSTANT FOR REWIND-UNLOAD TMAPG150
007C 01 D4000269            STO  L  A51                                  TMAPG151
                     *                                                   TMAPG152
                     *      READ SPECIFICATIONS FOR AUTOMATIC TYPE       TMAPG153
                     *                                                   TMAPG154
007E 20 03059115     A11    LIBF    CARDN      TEST IF OPERATION COMPLETE TMAPG155
007F 0  0000                DC      0                                    TMAPG156
0080 0  70FD                MDX     A11                                  TMAPG157
0081 0  C102                LD    1 CARD+1-R                             TMAPG158
0082 0  91CC                S     1 AST-R                                TMAPG159
0083 01 4C20001B            BSC  L  A2,Z                                 TMAPG160
0085 0  C103                LD    1 CARD+2-R                             TMAPG161
0086 01 4C1800A2            BSC  L  A13,+-     TEST IF AUTOM. TYPE IS    TMAPG162
0088 0  620C                LDX   2 12         SPECIFIED                 TMAPG163
0089 0  1240                SLCA  2 0                                    TMAPG164
008A 01 6E00045C            STX  L2 SAVE2                                TMAPG165
008C 0  C1F6                LD    1 K10-R                                TMAPG166
008D 0  91CA                S     1 SAVE2-R    DETERMINE EXP. NUMBER FOR TMAPG167
008E 0  D1D0                STO   1 EXP-R      SPECTRA WITH AUTOM. TYPE  TMAPG168
008F 0  1010                SLA     16                                   TMAPG169
0090 0  D1D4                STO   1 COUNT-R    SEQUENCE NUMBER IS SET 0  TMAPG170
0091 0  C106                LD    1 CARD+5-R   GET AUTOM. TYPE           TMAPG171
0092 0  620C                LDX   2 12                                   TMAPG172
0093 0  1240                SLCA  2 0                                    TMAPG173
0094 01 6E000464            STX  L2 TYPE                                 TMAPG174
0096 0  C1F6                LD    1 K10-R                                TMAPG175
0097 0  91D2                S     1 TYPE-R                               TMAPG176
0098 0  D1D2                STO   1 TYPE-R                               TMAPG177
0099 0  620C                LDX   2 12                                   TMAPG178
009A 0  C108                LD    1 CARD+7-R                             TMAPG179
009B 0  1240                SLCA  2 0                                    TMAPG180
009C 01 6E000472            STX  L2 SCS                                  TMAPG181
009E 0  C1F6                LD    1 K10-R                                TMAPG182
009F 0  91E0                S     1 SCS-R                                TMAPG183
00A0 0  D1E0                STO   1 SCS-R                                TMAPG184
00A1 0  7002                MDX     A14                                  TMAPG185
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00A2 0  C188        A13   LD    1 XFFFF-R     NO AUTOM. TYPE IS SPECIF.  TMAPG186
00A3 0  D1D0              STO   1 EXP-R       SET EXP=FFFF               TMAPG187
                    *                                                    TMAPG188
                    *     READ AND WRITE TITLE                           TMAPG189
                    *                                                    TMAPG190
                    *                                                    TMAPG191
                    *     BEGIN LOOP FOR DIFFERENT INPUT TAPES           TMAPG192
                    *                                                    TMAPG193
00A4 0  C004        A14   LD      K80                                    TMAPG194
00A5 0  D101              STO   1 CARD-R                                 TMAPG195
00A6 20 03059115          LIBF    CARDN       BEGIN TO READ NEXT CARD    TMAPG196
00A7 0  1000              DC      /1000                                  TMAPG197
00A8 1  0493              DC      CARD                                   TMAPG198
00A9 0  0050        K80   DC      80                                     TMAPG199
00AA 20 03059115    A12   LIBF    CARDN       TEST OPERATION COMPLETE    TMAPG200
00AB 0  0000              DC      0                                      TMAPG201
00AC 0  70FD              MDX     A12                                    TMAPG202
00AD 20 176558D5          LIBF    PRNTN       SKIP ONE LINE              TMAPG203
00AE 0  3D00              DC      /3D00                                  TMAPG204
00AF 20 085935D9          LIBF    HOLPR                                  TMAPG205
00B0 0  0001              DC      1                                      TMAPG206
00B1 1  0494              DC      CARD+1                                 TMAPG207
00B2 1  02E0              DC      DEST1+10                               TMAPG208
00B3 0  0050              DC      80                                     TMAPG209
00B4 20 024C1552          LIBF    BLANK       CLEAR PRINT AREA           TMAPG210
00B5 1  0429              DC      PAREA                                  TMAPG211
00B6 0  0032              DC      50                                     TMAPG212
00B7 30 145A5140          CALL    MOVE        SEARCH INPUT TAPE NUMBER   TMAPG213
00B9 1  0370        A15   DC      TA                                     TMAPG214
00BA 1  02C8              DC      DEST0                                  TMAPG215
00BB 0  0003              DC      3                                      TMAPG216
00BC 01 740400B9          MDX   L A15,4                                 TMAPG217
00BE 20 176558D5          LIBF    PRNTN       WRITE MESSAGE TO MOUNT     TMAPG218
00BF 0  2100              DC      /2100       INPUT TAPE                 TMAPG219
00C0 1  02BC              DC      MES5-1                                 TMAPG220
00C1 0  0000              DC      0                                      TMAPG221
00C2 20 176558D5          LIBF    PRNTN       SKIP THREE LINES           TMAPG222
00C3 0  3F00              DC      /3F00                                  TMAPG223
00C4 20 17064885          LIBF    PAUSE       WAIT NO.15                 TMAPG224
00C5 1  047E              DC      B                                      TMAPG225
00C6 01 4400028A          BSI   L TESTP       TEST IF NEW PAGE           TMAPG226
00C8 0  7002              MDX     *+2         YES                        TMAPG227
00C9 01 44000272          BSI   L TITLE       WRITE HEADING              TMAPG228
00CB 01 6C000467          STX   L SWFIR       SWFIR IS NOT ZERO          TMAPG229
00CD 01 6C000468          STX   L BLERR       BLERR IS NOT ZERO          TMAPG230
                    *                                                    TMAPG231
                    *     START TO READ A RECORD                         TMAPG232
                    *                                                    TMAPG233
00CF 0  6203        A16   LDX   2 3           RETRY COUNT   XR2=3        TMAPG234
00D0 20 140478C0    A17   LIBF    MAGT        READ TAPE                  TMAPG235
00D1 0  0000        A18   DC      *-*         ----------                 TMAPG236
00D2 1  0492              DC      INP                                    TMAPG237
00D3 1  026C              DC      USER                                   TMAPG238
00D4 0  1010              SLA     16                                     TMAPG239
00D5 0  D1D8              STO   1 BLNEU-R                                TMAPG240
00D6 20 140478C0    A19   LIBF    MAGT        TEST OP. COMPLETE          TMAPG241
00D7 0  0000              DC      0                                      TMAPG242
00D8 0  70FD              MDX     A19                                    TMAPG243
00D9 01 7400046C          MDX   L EOFSW,0     TEST END OF FILE           TMAPG244
00DB 0  701A              MDX     EOF                                    TMAPG245
00DC 0  C101              LD    1 INP+1-R                                TMAPG246
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00DD 0  D1D9            STO   1 BLPR-R                                  TMAPG247
00DE 0  C902            LDD   1 INP+2-R                                 TMAPG248
00DF 0  D9FE            STD   1 IDD1-R                                  TMAPG249
00E0 30 158C58A3        CALL    NTEST                                   TMAPG250
00E2 1  0493            DC      INP+1                                   TMAPG251
00E3 1  047C            DC      ERNSW                                   TMAPG252
00E4 0  C101            LD    1 INP+1-R                                 TMAPG253
00E5 01 4400079A        BSI   L BIN                                     TMAPG254
00E7 0  D1D8            STO   1 BLNEU-R                                 TMAPG255
                *                                                       TMAPG256
                **      TEST IF TAPE ERROR                              TMAPG257
                *                                                       TMAPG258
00E8 01 7400046D        MDX   L ERRSW,0                                 TMAPG259
00EA 0  7001            MDX     ERRO                                    TMAPG260
00EB 0  700F            MDX     A26                                     TMAPG261
00EC 0  72FF    ERRO    MDX   2 -1              XR2=XR2-1               TMAPG262
00ED 0  7003            MDX     A21                                     TMAPG263
00EE 01 6C000470        STX   L TAPER                                   TMAPG264
00F0 0  700A            MDX     A26                                     TMAPG265
00F1 20 140478C0  A21   LIBF    MAGT            BACKSPACE               TMAPG266
00F2 0  0000      A22   DC      *-*                                     TMAPG267
00F3 0  1010            SLA     16                                      TMAPG268
00F4 0  D1DB            STO   1 ERRSW-R                                 TMAPG269
00F5 0  70DA            MDX     A17                                     TMAPG270
00F6 20 140478C0  EOF   LIBF    MAGT            REWIND-UNLOAD           TMAPG271
00F7 0  0000      A25   DC      *-*                                     TMAPG272
00F8 0  1010            SLA     16              BLNEU IS SET TO ZERO IF TMAPG273
00F9 01 D400046A        STO   L BLNEU           EOF                     TMAPG274
                *                                                       TMAPG275
                **      SEARCH EXPERIMENT NUMBERS, TEST IF FIRST REC.   TMAPG276
                **      SEARCH SEQUENCE NUMBER                          TMAPG277
                *                                                       TMAPG278
00FB 0  C902      A26   LDD   1 INP+2-R     SEARCH 1. AND 2. EXP. N.    TMAPG279
00FC 0  E189            AND   1 MASK-R                                  TMAPG280
00FD 0  1888            SRT     8                                       TMAPG281
00FE 0  D1E2            STO   1 ID1-R       ID1=1. EXP. NUMBER          TMAPG282
00FF 0  1010            SLA     16                                      TMAPG283
0100 0  1088            SLT     8                                       TMAPG284
0101 0  D1E3            STO   1 ID2-R       ID2=2. EXP. NUMBER          TMAPG285
0102 0  C103            LD    1 INP+3-R     SEARCH SEQUENCE NUMBER      TMAPG286
0103 01 4400079A        BSI   L BIN                                     TMAPG287
0105 0  D1E7            STO   1 SEQUN-R     SEQUN=SEQUENCE NUMBER       TMAPG288
0106 01 74000467        MDX   L SWFIR,0     TEST FIRST RECORD           TMAPG289
0108 0  704E            MDX     A315        YES                         TMAPG290
0109 0  C1D7            LD    1 BL-R        NO                          TMAPG291
010A 0  91F8            S     1 K17-R       TEST IF BL=17               TMAPG292
010B 01 4C18011F        BSC   L A29,+-                                  TMAPG293
010D 0  C9FE            LDD   1 IDD1-R      COMPARE OLD AND NEW ID-N.   TMAPG294
010E 0  B9FC            DCM   1 IDD-R                                   TMAPG295
010F 0  7005            MDX     A27         NOT EQUAL                   TMAPG296
0110 0  7004            MDX     A27                                     TMAPG297
0111 0  C1D8            LD    1 BLNEU-R     TEST BLOCKNUMBERS           TMAPG298
0112 0  91D7            S     1 BL-R                                    TMAPG299
0113 01 4C1001CB        BSC   L A36,-       BRANCH IF NEW BLOCK NUMBER  TMAPG300
0115 0  C1F8    A27     LD    1 K17-R       IS NOT SMALLER THAN OLD     TMAPG301
0116 0  91D7            S     1 BL-R        BLOCK NUMBER                TMAPG302
0117 0  1009            SLA     9           MULTIPLY BY 512             TMAPG303
0118 0  D005            STO     NN                                      TMAPG304
0119 0  C1EF            LD    1 ADR-R                                   TMAPG305
011A 0  9003            S       NN                                      TMAPG306
011B 0  D001            STO     A28                                     TMAPG307
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011C 20 024C1552          LIBF    BLANK       SET END OF SPECTRUM = 0     TMAPG308
011D 0  0000        A28   DC      *-*                                     TMAPG309
011E 0  0000        NN    DC      0                                       TMAPG310
                    *                                                     TMAPG311
                    *     CONSTRUCT IDENTIFICATION RECORD FOR DATA        TMAPG312
                    *                                                     TMAPG313
011F 00 6600DFC0    A29   LDX   L2 R1          FINISH PROCEDURE FOR A      TMAPG314
0121 0  C1E4              LD     1 IDAL1-R      COMPLETE SPECTRUM           TMAPG315
0122 0  D200              STO    2 SPADR-R1                                 TMAPG316
0123 0  D201              STO    2 SPADR+1-R1                               TMAPG317
0124 0  C1E5              LD     1 IDAL2-R                                  TMAPG318
0125 0  D202              STO    2 SPADR+2-R1                               TMAPG319
0126 0  C1D3              LD     1 TYPA-R                                   TMAPG320
0127 0  D20A              STO    2 SPADR+10-R1                              TMAPG321
0128 30 229148C0          CALL     SUMT        BUILD TOTAL COUNT           TMAPG322
012A 1  048C              DC       SUM                                      TMAPG323
012B 0  E000              DC       SPADR+64                                 TMAPG324
012C 1  0465              DC       TYPA                                     TMAPG325
012D 0  C9FA              LDD    1 SUM-R                                    TMAPG326
012E 0  DA12              STO    2 SPADR+18-R1                              TMAPG327
012F 0  C1E8              LD     1 SEQU-R                                   TMAPG328
0130 0  D203              STO    2 SPADR+3-R1                               TMAPG329
0131 0  C1D7              LD     1 BL-R                                     TMAPG330
0132 0  91F2              S      1 K1-R                                     TMAPG331
0133 0  D205              STO    2 SPADR+5-R1                               TMAPG332
0134 0  C1E1              LD     1 SCSN-R                                   TMAPG333
0135 0  D20C              STO    2 SPADR+12-R1                              TMAPG334
0136 01 74000468          MDX   L  BLERR,0                                  TMAPG335
0138 0  7001              MDX      *+1                                      TMAPG336
0139 0  7004              MDX      A295                                     TMAPG337
013A 01 74000471          MDX   L  ERROR,0                                  TMAPG338
013C 0  7001              MDX      A295                                     TMAPG339
013D 0  7003              MDX      WRITE                                    TMAPG340
013E 0  C188        A295  LD     1 XFFFF-R                                  TMAPG341
013F 0  1890              SRT      16                                       TMAPG342
0140 0  DA12              STO    2 SPADR+18-R1                              TMAPG343
                    *                                                     TMAPG344
                    *     CALL MTAPE FOR WRITING SPECTRA ON TAPE          TMAPG345
                    *                                                     TMAPG346
0141 30 148C15C5    WRITE CALL     MTAPE                                    TMAPG347
0143 0  DFC0              DC       SPADR                                    TMAPG348
0144 0  0000        A30   DC       *-*                                      TMAPG349
0145 1  046D              DC       ERRSW                                    TMAPG350
                    *                                                     TMAPG351
                    *                                                     TMAPG352
0146 0  1010              SLA      16                                       TMAPG353
0147 01 D4000047B         STO   L  RECFI                                    TMAPG354
0149 0  D1DF              STO    1 ERROR-R                                  TMAPG355
014A 01 7400046D          MDX   L  ERRSW,0    TEST IF TAPE READY          TMAPG356
014C 0  7001              MDX      A31                                      TMAPG357
014D 0  700A              MDX      A32                                      TMAPG358
014E 20 176558D5    A31   LIBF     PRNTN       PRINT MESSAGE IF TAPE IS    TMAPG359
014F 0  2100              DC       /2100       NOT READY                   TMAPG360
0150 1  03C9              DC       MES23-1                                  TMAPG361
0151 0  0000              DC       0                                        TMAPG362
0152 0  1010              SLA      16                                       TMAPG363
0153 0  D1DB              STO    1 ERRSW-R     ERRSW=0                     TMAPG364
0154 20 17064885          LIBF     PAUSE                                    TMAPG365
0155 1  047F              DC       C           WAIT NO. 31                 TMAPG366
0156 0  70EA              MDX      WRITE                                    TMAPG367
0157 0  7042        A315  MDX      A34                                      TMAPG368
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                        *                                                    TMAPG369
                        *     WRITE LIST OF ID-NUMBERS AND SCALER DATA       TMAPG370
                        *                                                    TMAPG371
0158 01 74000468        A32   MDX  L  BLERR,0     TEST IF THERE WERE WRONG   TMAPG372
015A 0  7009                  MDX     IDN         BLOCK NUMBERS              TMAPG373
015B 01 4400028A              BSI  L  TESTP                                  TMAPG374
015D 0  7000                  MDX     *                                      TMAPG375
015E 20 176558D5              LIBF    PRNTN                                  TMAPG376
015F 0  2100                  DC      /2100                                  TMAPG377
0160 1  03D7                  DC      MES25-1                                TMAPG378
0161 0  0000                  DC      0                                      TMAPG379
0162 01 6C000468              STX  L  BLERR                                  TMAPG380
0164 0  C1D7            IDN   LD    1 BL-R        PREPARE LINE FOR LIST      TMAPG381
0165 0  91F2                  S     1 K1-R                                   TMAPG382
0166 30 03209180              CALL    CHIF                                   TMAPG383
0168 1  042D                  DC      PAREA+4                                TMAPG384
0169 0  C9FC                  LDD   1 IDD-R                                  TMAPG385
016A 0  D9A2                  STD   1 PAREA+11-R                             TMAPG386
016B 0  C1E4                  LD    1 IDAL1-R                                TMAPG387
016C 0  91D0                  S     1 EXP-R                                  TMAPG388
016D 01 4C200182              BSC  L  A33,Z       TEST IF NEW SEQUENCE       TMAPG389
016F 0  C1E8                  LD    1 SEQU-R      NUMBER WAS ASSIGNED        TMAPG390
0170 30 03209180              CALL    CHIF                                   TMAPG391
0172 1  0439                  DC      PAREA+16                               TMAPG392
0173 0  C1D3                  LD    1 TYPA-R                                 TMAPG393
0174 0  1001                  SLA     1                                      TMAPG394
0175 0  D001                  STO     *+1         GET MESSAGE FOR AUT. TYPE  TMAPG395
0176 00 65000000              LDX  L1 *-*                                    TMAPG396
0178 01 CD00041C              LDD  L1 TAB                                    TMAPG397
017A 01 65000492              LDX  L1 R                                      TMAPG398
017C 0  D9B6                  STD   1 PAREA+31-R                             TMAPG399
017D 0  C1E0                  LD    1 SCS-R                                  TMAPG400
017E 30 03209180              CALL    CHIF                                   TMAPG401
0180 1  044E                  DC      PAREA+37                               TMAPG402
0181 0  7005                  MDX     A335                                   TMAPG403
0182 0  10A0            A33   SLT     32                                     TMAPG404
0183 0  D1A7                  STO   1 PAREA+16-R                             TMAPG405
0184 0  D1A8                  STO   1 PAREA+17-R                             TMAPG406
0185 0  D9B6                  STD   1 PAREA+31-R                             TMAPG407
0186 0  D9BC                  STD   1 PAREA+37-R                             TMAPG408
0187 0  C9FA            A335  LDD   1 SUM-R                                  TMAPG409
0188 30 025440C0              CALL    BNDC                                   TMAPG410
018A 1  043F                  DC      PAREA+22                               TMAPG411
018B 20 176558D5              LIBF    PRNTN       WRITE ID-NUMBERS           TMAPG412
018C 0  2100                  DC      /2100                                  TMAPG413
018D 1  0428                  DC      PAREA-1                                TMAPG414
018E 0  0000                  DC      0                                      TMAPG415
018F 20 176558D5              LIBF    PRNTN       SKIP ONE LINE              TMAPG416
0190 0  3D00                  DC      /3D00                                  TMAPG417
0191 01 4400028A              BSI  L  TESTP                                  TMAPG418
0193 0  7000                  MDX     *                                      TMAPG419
0194 01 7400046C              MDX  L  EOFSW,0     TEST IF EOF                TMAPG420
0196 0  7001                  MDX     EOF1                                   TMAPG421
0197 0  700E                  MDX     A35                                    TMAPG422
0198 01 4C00024F        EOF1  BSC  L  A46                                    TMAPG423
                        *                                                    TMAPG424
                        *     CONTINUE FOR FIRST SPECTRUM                    TMAPG425
                        *                                                    TMAPG426
019A 0  1010            A34   SLA     16                                     TMAPG427
019B 0  D1D5                  STO   1 SWFIR-R                                TMAPG428
019C 00 6600DFC0              LDX  L2 R1                                     TMAPG429
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019E 0  D207              STO   2 SPADR+7-R1                                TMAPG430
019F 0  D208              STO   2 SPADR+8-R1                                TMAPG431
01A0 0  C1F2              LD    1 K1-R                                      TMAPG432
01A1 0  D204              STO   2 SPADR+4-R1                                TMAPG433
01A2 0  D206              STO   2 SPADR+6-R1                                TMAPG434
01A3 0  D20B              STO   2 SPADR+11-R1                               TMAPG435
01A4 0  C1F3              LD    1 K2-R                                      TMAPG436
01A5 0  D209              STO   2 SPADR+9-R1                                TMAPG437
01A6 0  C1F2        A35   LD    1 K1-R                                      TMAPG438
01A7 0  D1D7              STO   1 BL-R                                      TMAPG439
01A8 0  C9FE              LDD   1 IDD1-R                                    TMAPG440
01A9 0  D9FC              STD   1 IDD-R                                     TMAPG441
01AA 0  C1E2              LD    1 ID1-R                                     TMAPG442
01AB 0  D1E4              STO   1 IDAL1-R                                   TMAPG443
01AC 0  C1E3              LD    1 ID2-R                                     TMAPG444
01AD 0  D1E5              STO   1 IDAL2-R                                   TMAPG445
01AE 0  C1E2              LD    1 ID1-R       TEST IF NEW SEQUENCE          TMAPG446
01AF 0  91D0              S     1 EXP-R       NUMBER IS NECESSARY           TMAPG447
01B0 01 4C2001C3          BSC  L  A355,Z                                    TMAPG448
01B2 0  C1D2              LD    1 TYPE-R                                    TMAPG449
01B3 0  D1D3              STO   1 TYPA-R                                    TMAPG450
01B4 0  C1E0              LD    1 SCS-R                                     TMAPG451
01B5 0  D1E1              STO   1 SCSN-R                                    TMAPG452
01B6 0  C1D4              LD    1 COUNT-R                                   TMAPG453
01B7 0  D1E8              STO   1 SEQU-R                                    TMAPG454
01B8 0  C1E6              LD    1 SEQUA-R                                   TMAPG455
01B9 0  91E7              S     1 SEQUN-R                                   TMAPG456
01BA 01 4C1801C8          BSC  L  A356,+-                                   TMAPG457
01BC 01 74010466          MDX  L  COUNT,1                                   TMAPG458
01BE 0  C1D4              LD    1 COUNT-R                                   TMAPG459
01BF 0  D1E8              STO   1 SEQU-R                                    TMAPG460
01C0 0  C1E7              LD    1 SEQUN-R                                   TMAPG461
01C1 0  D1E6              STO   1 SEQUA-R                                   TMAPG462
01C2 0  7005              MDX     A356                                      TMAPG463
01C3 0  C1E7        A355  LD    1 SEQUN-R                                   TMAPG464
01C4 0  D1E8              STO   1 SEQU-R                                    TMAPG465
01C5 0  1010              SLA     16                                        TMAPG466
01C6 0  D1D3              STO   1 TYPA-R                                    TMAPG467
01C7 0  D1E1              STO   1 SCSN-R                                    TMAPG468
                    *                                                       TMAPG469
                    *     INITIALIZE ADDRESSES FOR BCDBI AND PACK           TMAPG470
                    *                                                       TMAPG471
01C8 0  C1EE        A356  LD    1 ADR1-R                                    TMAPG472
01C9 0  D07A              STO     A42                                       TMAPG473
01CA 0  D07E              STO     A44                                       TMAPG474
                    *                                                       TMAPG475
                    *     CONTINUE FOR ALL SPECTRA WITH ERROR TESTS         TMAPG476
                    *                                                       TMAPG477
01CB 01 74000470    A36   MDX  L  TAPER,0     TEST IF TAPE ERROR            TMAPG478
01CD 0  700A              MDX     ERR                                       TMAPG479
01CE 01 7400046F    A361  MDX  L  LNGTH,0     TEST IF LNGTH=0               TMAPG480
01D0 0  701C              MDX     LNERR                                     TMAPG481
01D1 01 7400046E          MDX  L  TOLG,0                                    TMAPG482
01D3 0  7032              MDX     TOERR                                     TMAPG483
01D4 01 7400047C    A365  MDX  L  ERNSW,0                                   TMAPG484
01D6 0  7044              MDX     ERRNB                                     TMAPG485
01D7 0  7055              MDX     A38                                       TMAPG486
01D8 0  C1D9        ERR   LD    1 BLPR-R                                    TMAPG487
01D9 01 D40003A4          STO  L  MES18                                     TMAPG488
01DB 0  C9FE              LDD   1 IDD1-R                                    TMAPG489
01DC 01 D40003A5          STO  L  MES18+1                                   TMAPG490
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01DE 0  1090                SLT     16                                  TMAPG491
01DF 01 D40003A6            STO  L  MES18+2                             TMAPG492
01E1 01 4400028A            BSI  L  TESTP                               TMAPG493
01E3 0  7000                MDX     *                                   TMAPG494
01E4 20 176558D5            LIBF    PRNTN                               TMAPG495
01E5 0  2100                DC      /2100                               TMAPG496
01E6 1  0394                DC      MES17-1                             TMAPG497
01E7 0  0000                DC      0                                   TMAPG498
01E8 0  1010                SLA     16                                  TMAPG499
01E9 0  D1DE                STO   1 TAPER-R                             TMAPG500
01EA 01 6C000471            STX  L  ERROR                               TMAPG501
01EC 0  70E1                MDX     A361                                TMAPG502
01ED 0  C1DD        LNERR   LD    1 LNGTH-R                             TMAPG503
01EE 0  81F5                A     1 K4-R                                TMAPG504
01EF 01 4C1801D4            BSC  L  A365,+-                             TMAPG505
01F1 0  C1D9                LD    1 BLPR-R                              TMAPG506
01F2 01 D40003B0            STO  L  MES20       RECORD TOO SHORT        TMAPG507
01F4 0  C9FE                LDD   1 IDD1-R                              TMAPG508
01F5 01 D40003B1            STO  L  MES20+1                             TMAPG509
01F7 0  1090                SLT     16                                  TMAPG510
01F8 01 D40003B2            STO  L  MES20+2                             TMAPG511
01FA 01 4400028A            BSI  L  TESTP                               TMAPG512
01FC 0  7000                MDX     *                                   TMAPG513
01FD 20 176558D5            LIBF    PRNTN                               TMAPG514
01FE 0  2100                DC      /2100                               TMAPG515
01FF 1  03A7                DC      MES19-1                             TMAPG516
0200 0  0000                DC      0                                   TMAPG517
0201 0  1010                SLA     16                                  TMAPG518
0202 0  D1DD                STO   1 LNGTH-R                             TMAPG519
0203 01 6C000471            STX  L  ERROR                               TMAPG520
0205 0  70CE                MDX     A365                                TMAPG521
0206 0  C1D9        TOERR   LD    1 BLPR-R      WRITE MESSAGE           TMAPG522
0207 01 D40003C1            STO  L  MES22       RECORD TOO LONG         TMAPG523
0209 0  C9FE                LDD   1 IDD1-R                              TMAPG524
020A 01 D40003C2            STO  L  MES22+1                             TMAPG525
020C 0  1090                SLT     16                                  TMAPG526
020D 01 D40003C3            STO  L  MES22+2                             TMAPG527
020F 01 4400028A            BSI  L  TESTP                               TMAPG528
0211 0  7000                MDX     *                                   TMAPG529
0212 20 176558D5            LIBF    PRNTN                               TMAPG530
0213 0  2100                DC      /2100                               TMAPG531
0214 1  03B8                DC      MES21-1                             TMAPG532
0215 0  0000                DC      0                                   TMAPG533
0216 0  1010                SLA     16                                  TMAPG534
0217 0  D1DC                STO   1 TOLG-R                              TMAPG535
0218 01 6C000471            STX  L  ERROR                               TMAPG536
021A 0  70B9                MDX     A365                                TMAPG537
021B 0  C1D9        ERRNB   LD    1 BLPR-R                              TMAPG538
021C 01 D40003FB            STO  L  MES28                               TMAPG539
021E 0  C9FE                LDD   1 IDD1-R                              TMAPG540
021F 01 D40003FC            STO  L  MES28+1                             TMAPG541
0221 0  1090                SLT     16                                  TMAPG542
0222 01 D40003FD            STO  L  MES28+2                             TMAPG543
0224 01 4400028A            BSI  L  TESTP                               TMAPG544
0226 0  7000                MDX     *                                   TMAPG545
0227 20 176558D5            LIBF    PRNTN                               TMAPG546
0228 0  2100                DC      /2100                               TMAPG547
0229 1  03E8                DC      MES27-1                             TMAPG548
022A 0  0000                DC      0                                   TMAPG549
022B 01 6C000471            STX  L  ERROR                               TMAPG550
022D 0  C1D7        A38     LD    1 BL-R                                TMAPG551
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022E 0  91D8          S     1 BLNEU-R                                    TMAPG552
022F 01 4C180235      BSC   L A39,+-                                     TMAPG553
0231 0  1010          SLA     16                                         TMAPG554
0232 0  D1D6          STO   1 BLERR-R                                    TMAPG555
0233 0  C1D7          LD    1 BL-R                                       TMAPG556
0234 0  D1D8          STO   1 BLNEU-R                                    TMAPG557
                      *                                                  TMAPG558
                      *     CONVERT TO BINARY FOR 4K AND 8K SPECTRA OR   TMAPG559
                      *     TRANSFORM THE DATA IN PACKED FORMAT          TMAPG560
                      *                                                  TMAPG561
0235 01 7400047B  A39  MDX   L RECFI,0    NECESSARY TO GO TO TEST      TMAPG562
0237 0  7005          MDX     A41        MAGT - NO                    TMAPG563
0238 20 140478C0  A40  LIBF    MAGT       YES                          TMAPG564
0239 0  0000          DC      0                                        TMAPG565
023A 0  70FD          MDX     A40                                      TMAPG566
023B 01 6C00047B      STX   L RECFI                                    TMAPG567
023D 0  C1D3      A41 LD    1 TYPA-R                                   TMAPG568
023E 0  91F3          S     1 K2-R                                     TMAPG569
023F 01 4C080246      BSC   L A43,+                                    TMAPG570
0241 30 17043480      CALL    PACK                                     TMAPG571
0243 1  0496          DC      INP+4                                    TMAPG572
0244 0  0000      A42 DC      *-*                                      TMAPG573
0245 0  7005          MDX     A45                                      TMAPG574
0246 30 020C4089  A43 CALL    BCDBI                                    TMAPG575
0248 1  0496          DC      INP+4                                    TMAPG576
0249 0  0000      A44 DC      *-*                                      TMAPG577
024A 1  0465          DC      TYPA                                     TMAPG578
024B 01 74010469  A45 MDX   L BL,1       BL=BL+1                      TMAPG579
024D 01 4C0000CF      BSC   L A16        BRANCH TO READ NEXT REC.     TMAPG580
                      *                                                TMAPG581
                      *     END OF INPUT TAPE                          TMAPG582
                      *                                                TMAPG583
024F 0  1010      A46 SLA     16                                       TMAPG584
0250 01 D400046C      STO   L EOFSW                                    TMAPG585
0252 20 176558D5      LIBF    PRNTN      SKIP ONE LINE                TMAPG586
0253 0  3D00          DC      /3D00                                    TMAPG587
0254 20 176558D5      LIBF    PRNTN      WRITE END OF FILE            TMAPG588
0255 0  2100          DC      /2100                                    TMAPG589
0256 1  03FE          DC      MES29-1                                  TMAPG590
0257 0  0000          DC      0                                        TMAPG591
0258 20 176558D5      LIBF    PRNTN                                    TMAPG592
0259 0  2100          DC      /2100                                    TMAPG593
025A 1  040A          DC      MES31-1                                  TMAPG594
025B 0  0000          DC      0                                        TMAPG595
025C 20 176558D5      LIBF    PRNTN      SKIP TWO LINES               TMAPG596
025D 0  3E00          DC      /3E00                                    TMAPG597
025E 01 74FF0461      MDX   L COINP,-1   SEARCH NEXT INPUT TAPE        TMAPG598
0260 0  7001          MDX     A48                                      TMAPG599
0261 0  7004          MDX     A49        WAS ALREADY THE LAST         TMAPG600
0262 01 74040275  A48 MDX   L TIT1,4                                   TMAPG601
0264 01 4C0000A4      BSC   L A14        BRANCH TO PROCESS NEXT T.    TMAPG602
0266 20 140478C0  A49 LIBF    MAGT       WRITE EOF ON OUTPUT TAPE     TMAPG603
0267 0  0000      A50 DC      *-*                                      TMAPG604
0268 20 140478C0      LIBF    MAGT       REWIND - UNLOAD              TMAPG605
0269 0  0000      A51 DC      *-*                                      TMAPG606
026A 30 059C98C0      CALL    EXIT       END OF JOB                   TMAPG607
                      *                                                TMAPG608
026C 0  0000      USER DC     0          USER SUBROUTINE FOR MAG.     TMAPG609
026D 30 24885640      CALL    USER       TAPE                         TMAPG610
026F 1  046C          DC      EOFSW                                    TMAPG611
0270 01 4C80026C      BSC   I USER                                     TMAPG612
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                                *                                                       TMAPG613
0272 0  0000                    TITLE DC      0          WRITE HEADING                TMAPG614
0273 30 145A5140                      CALL    MOVE       MOVE TAPE NUMBER IN MESS.    TMAPG615
0275 1  0370                    TIT1  DC      TA                                      TMAPG616
0276 1  02D6                          DC      DEST1                                   TMAPG617
0277 0  0003                          DC      3                                       TMAPG618
                                *                                                       TMAPG619
0278 20 176558D5                      LIBF    PRNTN      PRINT TAPE NUMBER            TMAPG620
0279 0  2100                          DC      /2100                                   TMAPG621
027A 1  02D0                          DC      MES7-1                                  TMAPG622
027B 0  0000                          DC      0                                       TMAPG623
027C 20 176558D5                      LIBF    PRNTN      SKIP ONE LINE                TMAPG624
027D 0  3D00                          DC      /3D00                                   TMAPG625
027E 20 176558D5                      LIBF    PRNTN      PRINT HEADING FIRST LINE     TMAPG626
027F 0  2100                          DC      /2100                                   TMAPG627
0280 1  030B                          DC      MES9-1                                  TMAPG628
0281 0  0000                          DC      0                                       TMAPG629
0282 20 176558D5                      LIBF    PRNTN      PRINT HEADING SECOND LINE    TMAPG630
0283 0  2100                          DC      /2100                                   TMAPG631
0284 1  0338                          DC      MES11-1                                 TMAPG632
0285 0  0000                          DC      0                                       TMAPG633
0286 20 176558D5                      LIBF    PRNTN      SKIP ONE LINE                TMAPG634
0287 0  3D00                          DC      /3D00                                   TMAPG635
0288 01 4C800272                      BSC  I  TITLE                                   TMAPG636
                                *                                                       TMAPG637
028A 0  0000                    TESTP DC      0                                       TMAPG638
028B 20 176558D5                      LIBF    PRNTN                                   TMAPG639
028C 0  4000                          DC      /4000                                   TMAPG640
028D 0  1001                          SLA     1                                       TMAPG641
028E 01 4C100298                      BSC  L  TEST1,-                                 TMAPG642
0290 20 176558D5                      LIBF    PRNTN      SKIP TO CHANNEL 1            TMAPG643
0291 0  3100                          DC      /3100                                   TMAPG644
0292 20 17047140                      LIBF    PAGE                                    TMAPG645
0293 1  0429                          DC      PAREA                                   TMAPG646
0294 0  0032                          DC      50                                      TMAPG647
0295 0  40DC                          BSI     TITLE                                   TMAPG648
0296 01 4C80028A                      BSC  I  TESTP                                   TMAPG649
0298 01 7401028A                TEST1 MDX  L  TESTP,1                                 TMAPG650
029A 01 4C80028A                      BSC  I  TESTP                                   TMAPG651
                                *                                                       TMAPG652
                                *     MESSAGES                                          TMAPG653
                                *                                                       TMAPG654
029C 0  000C                          DC      MES2-MES1                               TMAPG655
029D    0018                    MES1  DMES  1 '5XPROGRAM T-MAP GEEL'E                 TMAPG656
02A9    0000                    MES2  BSS     0                                       TMAPG657
02A9 0  0012                          DC      MES4-MES3                               TMAPG658
02AA    0024                    MES3  DMES  1 '5XERROR CONTROL CARD START AGAIN.'E     TMAPG659
02BC    0000                    MES4  BSS     0                                       TMAPG660
02BC 0  0013                          DC      MES6-MES5                               TMAPG661
02BD    0016                    MES5  DMES  1 '10XMOUNT TAPE 'E                       TMAPG662
02C8    0003                    DEST0 BSS     3                                       TMAPG663
02CB    000A                          DMES  1  - START.'E                             TMAPG664
02D0    0000                    MES6  BSS     0                                       TMAPG665
02D0 0  003A                          DC      MES8-MES7                               TMAPG666
02D1    000A                    MES7  DMES  1 '5XTAPE 'E                              TMAPG667
02D6    0003                    DEST1 BSS     3                                       TMAPG668
02D9    0032                          BSS     50                                      TMAPG669
030B    0000                    MES8  BSS     0                                       TMAPG670
030B 0  002C                          DC      MES10-MES9                              TMAPG671
030C    0028                    MES9  DMES  1 '8XNUMBER OF'3XID-NUMBER'3XNEW SEQU'    TMAPG672
0320    0023                          DMES  1 ENCE  TOTAL COUNT'3XAUTUM.TYPE'3XSA'    TMAPG673
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0331     000D              DMES  1 MPLE CHANGER'E                          TMAPG674
0338     0000       MES10  BSS     0                                      TMAPG675
0338 0   002A              DC      MES12-MES11                             TMAPG676
0339     0054       MES11  DMES  1 '10XBLOCKS'18XNUMBER'35XSEQUENCE'E      TMAPG677
0363     0000       MES12  BSS     0                                      TMAPG678
0363 0   0020              DC      MES14-MES13                             TMAPG679
0364     0018       MES13  DMES  1 '5XINPUT TAPE(S)'6X'E                   TMAPG680
0370     0014       TA     BSS     20                                     TMAPG681
0384     0000       MES14  BSS     0                                      TMAPG682
0384 0   000F              DC      MES16-MES15                             TMAPG683
0385     0018       MES15  DMES  1 '5XOUTPUT TAPE'8X'E                     TMAPG684
0391     0003       TD     BSS     3                                      TMAPG685
0394     0000       MES16  BSS     0                                      TMAPG686
0394 0   0012              DC      MES18-MES17+3                           TMAPG687
0395     001E       MES17  DMES  1 '10XTAPE ERROR IN BLOCK 'E              TMAPG688
03A4     0003       MES18  BSS     3                                      TMAPG689
03A7 0   0010              DC      MES40-MES19                             TMAPG690
03A8     0010       MES19  DMES  1 '10XBLOCK 'E                            TMAPG691
03B0     0003       MES20  BSS     3                                      TMAPG692
03B3     000A              DMES  1  TOO SHORT'E                            TMAPG693
03B8     0000       MES40  BSS     0                                      TMAPG694
03B8 0   0010              DC      MES41-MES21                             TMAPG695
03B9     0010       MES21  DMES  1 '10XBLOCK 'E                            TMAPG696
03C1     0003       MES22  BSS     3                                      TMAPG697
03C4     000A              DMES  1  TOO LONG'E                             TMAPG698
03C9     0000       MES41  BSS     0                                      TMAPG699
03C9 0   000D              DC      MES24-MES23                             TMAPG700
03CA     001A       MES23  DMES  1 '5XOUTPUT TAPE NOT READY'E              TMAPG701
03D7     0000       MES24  BSS     0                                      TMAPG702
03D7 0   0010              DC      MES26-MES25                             TMAPG703
03D8     0020       MES25  DMES  1 '10XERROR IN BLOCK NUMBERS'E            TMAPG704
03E8     0000       MES26  BSS     0                                      TMAPG705
03E8 0   0015              DC      MES28-MES27+3                           TMAPG706
03E9     0024       MES27  DMES  1 '10XINVALID NUMBERS IN BLOCK 'E         TMAPG707
03FB     0003       MES28  BSS     3                                      TMAPG708
03FE 0   000B              DC      MES30-MES29                             TMAPG709
03FF     0016       MES29  DMES  1 '10XEND OF FILE 'E                      TMAPG710
040A     0000       MES30  BSS     0                                      TMAPG711
040A 0   000B              DC      MES32-MES31                             TMAPG712
040B     0016       MES31  DMES  1 '10X'11F-'E                             TMAPG713
0416     0000       MES32  BSS     0                                      TMAPG714
                    *                                                     TMAPG715
                    *      CONSTANTS AND WORKAREAS                        TMAPG716
                    *                                                     TMAPG717
0416 0   2150       X2150  DC      /2150                                  TMAPG718
0417 0   7000       X7000  DC      /7000                                  TMAPG719
0418 0   6000       X6000  DC      /6000                                  TMAPG720
0419 0   8000       X8000  DC      /8000                                  TMAPG721
041A 0   FFFF       XFFFF  DC      /FFFF                                  TMAPG722
041B 0   0F0F       MASK   DC      /0F0F                                  TMAPG723
041C     0000              BSS   E 0                                      TMAPG724
041C     0004       TAB    DMES  1     'E                                 TMAPG725
041E     0004              DMES  1   4K'E                                 TMAPG726
0420     0004              DMES  1   8K'E                                 TMAPG727
0422     0004              DMES  1  12K'E                                 TMAPG728
0424     0004              DMES  1  20K'E                                 TMAPG729
0426     0004              DMES  1  24K'E                                 TMAPG730
0428 0   0032              DC      50                                     TMAPG731
0429     0032       PAREA  BSS     50                                     TMAPG732
045B 0   0000       SAVE   DC      0                                      TMAPG733
045C 0   0000       SAVE2  DC      0                                      TMAPG734
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045D 0  0000        SWT    DC     0                                    TMAPG735
045E 0  4220        AST    DC     /4220                                TMAPG736
045F 0  0000        CONST  DC     0                                    TMAPG737
0460 0  0000               DC     0                                    TMAPG738
0461 0  0000        COINP  DC     0                                    TMAPG739
0462 0  0000        EXP    DC     0                                    TMAPG740
0463 1  0370        TC     DC     TA                                   TMAPG741
0464 0  0000        TYPE   DC     0                                    TMAPG742
0465 0  0000        TYPA   DC     0                                    TMAPG743
0466 0  0000        COUNT  DC     0                                    TMAPG744
0467 0  FFFF        SWFIR  DC     /FFFF                                TMAPG745
0468 0  FFFF        BLERR  DC     /FFFF                                TMAPG746
0469 0  0000        BL     DC     0                                    TMAPG747
046A 0  0000        BLNEU  DC     0                                    TMAPG748
046B 0  0000        BLPR   DC     0                                    TMAPG749
046C 0  0000        EOFSW  DC     0                                    TMAPG750
046D 0  0000        ERRSW  DC     0                                    TMAPG751
046E 0  0000        TOLG   DC     0                                    TMAPG752
046F 0  0000        LNGTH  DC     0                                    TMAPG753
0470 0  0000        TAPER  DC     0                                    TMAPG754
0471 0  0000        ERROR  DC     0                                    TMAPG755
0472 0  0000        SCS    DC     0                                    TMAPG756
0473 0  0000        SCSN   DC     0                                    TMAPG757
0474 0  0000        ID1    DC     0                                    TMAPG758
0475 0  0000        ID2    DC     0                                    TMAPG759
0476 0  0000        IDAL1  DC     0                                    TMAPG760
0477 0  0000        IDAL2  DC     0                                    TMAPG761
0478 0  0000        SEQUA  DC     0                                    TMAPG762
0479 0  0000        SEQUN  DC     0                                    TMAPG763
047A 0  0000        SEQU   DC     0                                    TMAPG764
047B 0  0001        RECFI  DC     1                                    TMAPG765
047C 0  0000        ERNSW  DC     0                                    TMAPG766
047D 0  0003        A      DC     /0003                                TMAPG767
047E 0  000F        B      DC     /000F                                TMAPG768
047F 0  001F        C      DC     /001F                                TMAPG769
0480 0  E000        ADR1   DC     SPADR+64                             TMAPG770
0481 0  0000        ADR    DC     SPADR+8256                           TMAPG771
0482 1  079A        AINPE  DC     INPE                                 TMAPG772
0483 0  FFFF        KM1    DC     -1                                   TMAPG773
0484 0  0001        K1     DC     1                                    TMAPG774
0485 0  0002        K2     DC     2                                    TMAPG775
0486 0  0003        K3     DC     3                                    TMAPG776
0487 0  0004        K4     DC     4                                    TMAPG777
0488 0  000A        K10    DC     10                                   TMAPG778
0489 0  0010        K16    DC     16                                   TMAPG779
048A 0  0011        K17    DC     17                                   TMAPG780
048C 00 00000000    SUM    DEC    0                                    TMAPG781
048E 00 00000000    IDD    DEC    0                                    TMAPG782
0490 00 00000000    IDD1   DEC    0                                    TMAPG783
0492 0  0307        INP    DC     775                                  TMAPG784
0493 0  0050        CARD   DC     80                                   TMAPG785
0494    0050               BSS    80                                   TMAPG786
04E4    02B6               BSS    775-81                               TMAPG787
079A    0000        INPE   BSS    0                                    TMAPG788
                    *                                                  TMAPG789
                    *                                                  TMAPG790
                    *                                                  TMAPG791
                    *      SUBROUTINE TO CONVERT A 2 DIGIT BCD NUMBER  TMAPG792
                    *      TO BINARY FORMAT                            TMAPG793
                    *                                                  TMAPG794
079A 0  0000        BIN    DC     0                                    TMAPG795
```

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079B 01 E400041B          AND   L   MASK          TMAPG796
079D 0  1888              SRT       8           TMAPG797
079E 0  D80B              STD       M0          TMAPG798
079F 01 A4000488          M     L   K10         TMAPG799
07A1 0  D806              STD       M1          TMAPG800
07A2 0  C807              LDD       M0          TMAPG801
07A3 0  1010              SLA       16          TMAPG802
07A4 0  1088              SLT       8           TMAPG803
07A5 0  8003              A         M1+1        TMAPG804
07A6 01 4C80079A          BSC   I   BIN         TMAPG805
07A8 00 00000000    M1    DEC       0           TMAPG806
07AA 00 00000000    M0    DEC       0           TMAPG807
                    *                           TMAPG808
0492                R     EQU       INP         TMAPG809
DFC0                SPADR EQU       -8256       TMAPG810
DFC0                R1    EQU       SPADR       TMAPG811
                    *                           TMAPG812
07AC      0000            END       START       TMAPG813
```

NO ERRORS IN ABOVE ASSEMBLY.

TMAPG
DUP FUNCTION COMPLETED

```
// JOB    X      X      X
// ASM SEART
  *LIST
  *COMMON 16450                                          SEARTOOI
```

```
*************************************************** SEART003
*  IBM 1800 PROGRAMS FUR DATA REDUCTION           * SEART004
*************************************************** SEART005
*                                                 * SEART006
*  PROGRAM SEART                                  * SEART007
*                                                 * SEART008
* THIS PROGRAM SEARCHES SPECTRA WITH GIVEN ID NUM-* SEART009
*  BER ON TAPE AND PRINTS A LIST, PUNCHES CARDS,  * SEART010
*  WRITES A COPY ON AN OTHER TAPE AND/UR PRINTS   * SEART011
*  THE INTEGRAL SPECTRUM.                         * SEART012
*                                                 * SEART013
*  CONTROL CARDS                                  * SEART014
*  1. CC   1- 2     **                            * SEART015
*     CC   3        INPUT TAPE UNIT NUMBER        * SEART016
*  2. CC   1- 2     **                            * SEART017
*     CC   3        OUTPUT TAPE UNIT NUMBER       * SEART018
*                   OR BLANK IF NO OUTPUT TAPE IS * SEART019
*                   USED.                         * SEART020
*  3. CC   1        *                             * SEART021
*     CC   3        L     LIST OF DATA IS PRINTED * SEART022
*                   BLANK NO LIST                 * SEART023
*     CC   5        C     BINARY CARDS OF DATA ARE* SEART024
*                   PUNCHED                       * SEART025
*                   BLANK NO CARDS ARE PUNCHED    * SEART026
*     CC   7        T   A TAPE COPY OF THE DATA   * SEART027
*                   MADE                          * SEART028
*                   BLANK NO TAPE COPY IS MADE    * SEART029
*     CC   9        I     A LIST WITH INTEGRAL    * SEART030
*                         IS PRINTD               * SEART031
*                   BLANK NO INTEGRAL SPECTRUM IS * SEART032
*                         PRINTED                 * SEART033
*                   THE INTEGRAL SPECTRUM DOES NOT* SEART034
*                   CARRY THE SUM OVER GROUPS OF  * SEART035
*                   4096 CHANNELS                 * SEART036
*     CC  10        BLANK IF THIS SPECTRUM IS NOT * SEART037
*                         TO BE ADDED OR SUBSTR.  * SEART038
*                         FROM AN OTHER SPECTRUM. * SEART039
*                   +     THE SPECTRUM IS ADDED TO* SEART040
*                         A SUM SPECTRUM. IF THIS * SEART041
*                         CARD CONTAINS LIST, CARD* SEART042
*                         OR TAPE OPTIONS, THE PART* SEART043
*                         TIAL SPECTRUM IS LISTED, * SEART044
*                         PUNCHED ETC.            * SEART045
*                   -     ANALOG +                * SEART046
*                   *     THE SUM AREA RECEIVES THE* SEART047
*                         ID GIVEN CC 11-17 AND IS * SEART048
*                         TREATED AS SPECIFIED IN * SEART049
*                         CC 3,5,7,9. IN THIS CASE * SEART050
*                         NO SPECTRUM IS READ FROM * SEART051
*                         TAPE.                   * SEART052
*     CC  11-12     GROUP NUMBER OF EXPERIMENT    * SEART053
*     CC  13        .                             * SEART054
*     CC  14        1. EXP. NUMBER                * SEART055
*     CC  15        2. EXP. NUMBER                * SEART056
*     CC  16-17     SERIAL NUMBER                 * SEART057
*     CC  19-22     FIRST BLOCK                   * SEART058
*     CC  23-24     NUMBER OF BLOCKS              * SEART059
*     CC  26-29     NEW ID-NUMBER FOR THE TAPE COPY* SEART060
*                   IF BLANK THE OLD NUMBER IS USED* SEART061
*     CC  31-72     REMARKS, WILL BE HEADED ON THE * SEART062
*                   OUTPUT LISTING                * SEART063
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                *     IF THE + - OPTION IS USED, THE SPECTRA MAY  * SEART064
                *     ONLY BE HANDELED IN GROUPS OF 4096 CHANNELS * SEART065
                *     OR LESS.                                    * SEART066
                *     FOR EACH SPECTRUM A CARD 3 IS NECESSARY.    * SEART067
                *  LAST CARD                                      * SEART068
                *     CC   1        *                            * SEART069
                *     CC   2- 4     END                          * SEART070
                *                                                * SEART071
                ************************************************** SEART072
0000 20 176558D5  START LIBF    PRNTN                            SEART073
0001 0  3100            DC      /3100                            SEART074
0002 20 176558D5        LIBF    PRNTN                            SEART075
0003 0  2100            DC      /2100                            SEART076
0004 1  0279            DC      MES1-1                           SEART077
0005 0  0000            DC      0                                SEART078
0006 01 66000250        LDX  L2 R            XR2 HAS RELOCATION ADDRESS SEART079
0008 0  61FE      A0    LDX   1 -2                               SEART080
0009 00 67800067        LDX  I3 TVLOC                            SEART081
000B 20 03059115  A10   LIBF    CARDN        READ TAPE CARDS     SEART082
000C 0  1000            DC      /1000                            SEART083
000D 1  01D2            DC      CARD                             SEART084
000E 0  0000            DC      0                                SEART085
000F 20 03059115  A11   LIBF    CARDN                            SEART086
0010 0  0000            DC      0                                SEART087
0011 0  70FD            MDX     A11                              SEART088
0012 0  C283            LD    2 CARD+1-R                         SEART089
0013 0  92F4            S     2 AST-R                            SEART090
0014 01 4C180019        BSC  L  A12,+-       TEST IF * IN COL 1  SEART091
0016 01 44000132        BSI  L  ERROR        NO                  SEART092
0018 0  70EF            MDX     A0                               SEART093
0019 0  C285      A12   LD    2 CARD+3-R     SEARCH TAPE NUMBER  SEART094
001A 0  6206            LDX   2 6                                SEART095
001B 0  1240            SLCA  2 0                                SEART096
001C 01 6E000243        STX  L2 SAVE2                            SEART097
001E 01 66000250        LDX  L2 R                                SEART098
0020 0  C207            LD    2 K4-R                             SEART099
0021 0  92F3            S     2 SAVE2-R                          SEART100
0022 01 D5000243        STO  L1 CONST+2                          SEART101
0024 0  7101            MDX   1 1                                SEART102
0025 0  70E5            MDX     A10                              SEART103
0026 0  C2F1            LD    2 CONST-R                          SEART104
0027 01 D40000BF        STO  L  TPNR1                            SEART105
0029 0  C2F2            LD    2 CONST+1-R                        SEART106
002A 01 D400018A        STO  L  TPNR2                            SEART107
002C 20 024C1552        LIBF    BLANK                            SEART108
002D 0  BFBE            DC      SPAD2                            SEART109
002E 0  2000            DC      8192                             SEART110
                *                                                SEART111
                *     END OF READING TAPE CARDS                  SEART112
                *     START LOOP FOR DIFFERENT SPECTRA           SEART113
                *                                                SEART114
002F 20 03059115  A13   LIBF    CARDN        READ SPECTRUM CARD  SEART115
0030 0  1000            DC      /1000                            SEART116
0031 1  01D2            DC      CARD                             SEART117
0032 0  0000            DC      0                                SEART118
0033 20 03059115  A14   LIBF    CARDN        TEST OPERATION COMPLETE SEART119
0034 0  0000            DC      0                                SEART120
0035 0  70FD            MDX     A14                              SEART121
0036 30 031238A3        CALL    CDTST                            SEART122
0038 1  01D3            DC      CARD+1                           SEART123
0039 0  7001            MDX     A146                             SEART124
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003A 0  7003                MDX     A147                                  SEART125
003B 20 03059115    A146    LIBF    CARDN                                 SEART126
003C 0  4000                DC      /4000                                 SEART127
003D 0  70F1                MDX     A13                                   SEART128
003E 20 085935D9    A147    LIBF    HOLPR                                 SEART129
003F 0  0001                DC      1                                     SEART130
0040 1  01D3                DC      CARD+1                                SEART131
0041 1  03A3                DC      OUTPT+1                               SEART132
0042 0  0050                DC      80                                    SEART133
0043 20 176558D5            LIBF    PRNTN                                 SEART134
0044 0  2100                DC      /2100                                 SEART135
0045 1  03A2                DC      OUTPT                                 SEART136
0046 0  0000                DC      0                                     SEART137
0047 0  C283                LD    2 CARD+1-R                              SEART138
0048 0  92F4                S     2 AST-R                                 SEART139
0049 01 4C18004E            BSC  L  A15,+-                                SEART140
004B 01 44000132            BSI  L  ERROR                                 SEART141
004D 0  70E1                MDX     A13                                   SEART142
004E 0  C284        A15     LD    2 CARD+2-R    TEST END CARD             SEART143
004F 0  92F5                S     2 END-R                                 SEART144
0050 01 4C1801BA            BSC  L  FIN,+-                                SEART145
0052 0  C28F                LD    2 CARD+13-R   TEST IF ID IS CORRECT     SEART146
0053 0  92FB                S     2 PTPR-R                                SEART147
0054 01 4C180059            BSC  L  A150,+-                               SEART148
0056 01 44000132            BSI  L  ERROR                                 SEART149
0058 0  70D6                MDX     A13                                   SEART150
0059 0  61ED        A150    LDX   1 -19                                   SEART151
005A 01 C50001F0    A151    LD   L1 CARD+30                               SEART152
005C 01 4C180066            BSC  L  A1515,+-                              SEART153
005E 0  620C                LDX   2 12                                    SEART154
005F 0  1240                SLCA  2 0                                     SEART155
0060 01 6E000243            STX  L2 SAVE2                                 SEART156
0062 01 66000250            LDX  L2 R                                     SEART157
0064 0  C208                LD    2 K10-R                                 SEART158
0065 0  92F3                S     2 SAVE2-R                               SEART159
0066 01 D5000270    A1515   STO  L1 ID+19                                 SEART160
0068 0  7101                MDX   1 1                                     SEART161
0069 0  70F0                MDX     A151                                  SEART162
006A 0  C20D                LD    2 ID-R                                  SEART163
006B 0  A208                M     2 K10-R                                 SEART164
006C 0  1090                SLT     16                                    SEART165
006D 0  820E                A     2 ID+1-R                                SEART166
006E 0  D20E                STO   2 ID+1-R      PISW NUMBER               SEART167
006F 0  C210                LD    2 ID+3-R                                SEART168
0070 0  D20F                STO   2 ID+2-R      1. EXP. NUMBER            SEART169
0071 0  C211                LD    2 ID+4-R                                SEART170
0072 0  D210                STO   2 ID+3-R      2. EXP. NUMBER            SEART171
0073 0  C212                LD    2 ID+5-R                                SEART172
0074 0  A208                M     2 K10-R                                 SEART173
0075 0  1090                SLT     16                                    SEART174
0076 0  8213                A     2 ID+6-R                                SEART175
0077 0  D211                STO   2 ID+4-R      SERIAL NUMBER             SEART176
0078 0  C215                LD    2 ID+8-R                                SEART177
0079 0  A208                M     2 K10-R                                 SEART178
007A 0  1090                SLT     16                                    SEART179
007B 0  8216                A     2 ID+9-R                                SEART180
007C 0  A208                M     2 K10-R                                 SEART181
007D 0  1090                SLT     16                                    SEART182
007E 0  8217                A     2 ID+10-R                               SEART183
007F 0  A208                M     2 K10-R                                 SEART184
0080 0  1090                SLT     16                                    SEART185
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0081 0  8218              A      2 ID+11-R                                SEART186
0082 0  D203              STO    2 B1-R                                   SEART187
0083 0  1804              SRA      4                                      SEART188
0084 0  8206              A      2 K1-R                                   SEART189
0085 0  D212              STO    2 ID+5-R                                 SEART190
0086 0  C219              LD     2 ID+12-R                                SEART191
0087 0  A208              M      2 K10-R                                  SEART192
0088 0  1090              SLT      16                                     SEART193
0089 0  821A              A      2 ID+13-R                                SEART194
008A 0  D205              STO    2 NB-R                                   SEART195
008B 0  8203              A      2 B1-R                                   SEART196
008C 0  9206              S      2 K1-R                                   SEART197
008D 0  D202              STO    2 BE-R                                   SEART198
008E 20 085935D9          LIBF     HOLPR       GET ID NUMBER IN PRINTER   SEART199
008F 0  0001              DC       1           CODE                       SEART200
0090 1  01DC              DC       CARD+10                                SEART201
0091 1  0270              DC       IDPR                                   SEART202
0092 0  0008              DC       8                                      SEART203
0093 0  C21C              LD     2 ID+15-R                                SEART204
0094 0  D226              STO    2 IDNEU-R                                SEART205
0095 0  C21D              LD     2 ID+16-R                                SEART206
0096 0  D227              STO    2 IDNEU+1-R                              SEART207
0097 0  C21E              LD     2 ID+17-R                                SEART208
0098 0  A208              M      2 K10-R                                  SEART209
0099 0  1090              SLT      16                                     SEART210
009A 0  821F              A      2 ID+18-R                                SEART211
009B 0  D228              STO    2 IDNEU+2-R                              SEART212
009C 20 085935D9          LIBF     HOLPR                                  SEART213
009D 0  0001              DC       1                                      SEART214
009E 1  01EC              DC       CARD+26                                SEART215
009F 1  0274              DC       IDPRN                                  SEART216
00A0 0  0004              DC       4                                      SEART217
00A1 0  C202              LD     2 BE-R                                   SEART218
00A2 0  9203              S      2 B1-R                                   SEART219
00A3 01 4C280149          BSC    L ERR2,+Z                                SEART220
00A5 0  C202      A152    LD     2 BE-R                                   SEART221
00A6 0  1804              SRA      4                                      SEART222
00A7 0  9212              S      2 ID+5-R                                 SEART223
00A8 01 4C0800B3          BSC    L A153,+                                 SEART224
00AA 0  C28C              LD     2 CARD+10-R                              SEART225
00AB 01 4C200158          BSC    L ERR3,Z                                 SEART226
00AD 0  C212              LD     2 ID+5-R                                 SEART227
00AE 0  1004              SLA      4                                      SEART228
00AF 0  D204              STO    2 B2-R                                   SEART229
00B0 01 6C00025A          STX    L IND                                    SEART230
00B2 0  7004              MDX      A155                                   SEART231
00B3 0  1010      A153    SLA      16                                     SEART232
00B4 0  D20A              STO    2 IND-R                                  SEART233
00B5 0  C202              LD     2 BE-R                                   SEART234
00B6 0  D204              STO    2 B2-R                                   SEART235
00B7 0  C28C      A155    LD     2 CARD+10-R                              SEART236
00B8 0  92F4              S      2 AST-R                                  SEART237
00B9 01 4C1800DC          BSC    L A160,+-                                SEART238
00BB 30 23057154          CALL     TAPEM                                  SEART239
00BD 0  DFC0              DC       SPADR                                  SEART240
00BE 1  025E              DC       ID+1                                   SEART241
00BF 0  0000      TPNR1   DC       0                                      SEART242
00C0 1  025B              DC       ERRSW                                  SEART243
00C1 01 7400025B          MDX    L ERRSW,0                                SEART244
00C3 0  702F              MDX      ERR                                    SEART245
00C4 0  C28C              LD     2 CARD+10-R                              SEART246
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00C5 0  92FE                 S      2 PLUS-R                  SEART247
00C6 01 4C2000D5             BSC   L  A159,Z                  SEART248
00C8 0  C2FC                 LD     2 ADD1-R                  SEART249
00C9 0  D004                 STO      A158                    SEART250
00CA 00 6500E000     A156    LDX   L1 -8192                   SEART251
00CC 00 CD00DFBE     A157    LDD   L1 SPAD2+8192              SEART252
00CE 00 8D000000     A158    AD    L1 SPADR+64+8192           SEART253
00D0 00 DD00DFBF             STD   L1 SPAD2+8192              SEART254
                     *       STD   L1 SPADR+64+8192           SEART255
00D2 0  7102                 MDX    1 2                       SEART256
00D3 0  70F8                 MDX      A157                    SEART257
00D4 0  7023                 MDX      A161                    SEART258
00D5 0  C28C         A159    LD     2 CARD+10-R               SEART259
00D6 0  92FF                 S      2 MINUS-R                 SEART260
00D7 01 4C2000F8             BSC   L  A161,Z                  SEART261
00D9 0  C2FD                 LD     2 SUB1-R                  SEART262
00DA 0  D0F3                 STO      A158                    SEART263
00DB 0  70EE                 MDX      A156                    SEART264
00DC 30 145A5140     A160    CALL     MOVE                    SEART265
00DE 0  BFBE                 DC       SPAD2                   SEART266
00DF 0  E000                 DC       SPADR+64                SEART267
00E0 0  2000                 DC       8192                    SEART268
00E1 30 145A5140             CALL     MOVE                    SEART269
00E3 1  025E                 DC       ID+1                    SEART270
00E4 0  DFC0                 DC       SPADR                   SEART271
00E5 0  0005                 DC       5                       SEART272
00E6 0  C205                 LD     2 NB-R                    SEART273
00E7 00 D400DFC5             STO   L  SPADR+5                 SEART274
00E9 0  C203                 LD     2 B1-R                    SEART275
00EA 00 D400DFC6             STO   L  SPADR+6                 SEART276
00EC 0  1010                 SLA      16                      SEART277
00ED 00 D400DFC9             STO   L  SPADR+9                 SEART278
00EF 20 024C1552             LIBF     BLANK                   SEART279
00F0 0  BFBE                 DC       SPAD2                   SEART280
00F1 0  2000                 DC       8192                    SEART281
00F2 0  7005                 MDX      A161                    SEART282
00F3 0  4049         ERR     BSI      ERR1                    SEART283
00F4 0  1010                 SLA      16                      SEART284
00F5 0  D20B                 STO    2 ERRSW-R                 SEART285
00F6 01 4C00002F             BSC   L  A13                     SEART286
00F8 0  C285         A161    LD     2 CARD+3-R                SEART287
00F9 0  92F6                 S      2 L-R                     SEART288
00FA 01 44180167             BSI   L  LIST,+-                 SEART289
00FC 0  C226                 LD     2 IDNEU-R                 SEART290
00FD 0  EA27                 OR     2 IDNEU+1-R               SEART291
00FE 0  EA28                 OR     2 IDNEU+2-R               SEART292
00FF 01 4C18010F             BSC   L  A165,+-                 SEART293
0101 0  C226                 LD     2 IDNEU-R                 SEART294
0102 00 D400DFC1             STO   L  SPADR+1                 SEART295
0104 0  C227                 LD     2 IDNEU+1-R               SEART296
0105 00 D400DFC2             STO   L  SPADR+2                 SEART297
0107 0  C228                 LD     2 IDNEU+2-R               SEART298
0108 00 D400DFC3             STO   L  SPADR+3                 SEART299
010A 0  CA24                 LDD    2 IDPRN-R                 SEART300
010B 01 DC000370     A164    STD   L  MES21+2                 SEART301
010D 01 4C000111             BSC   L  A166                    SEART302
010F 0  CA22         A165    LDD    2 IDPR+2-R                SEART303
0110 0  70FA                 MDX      A164                    SEART304
0111 0  CA20         A166    LDD    2 IDPR-R                  SEART305
0112 01 DC000360             STD   L  MES20                   SEART306
0114 01 DC00036E             STD   L  MES21                   SEART307
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0116 0  CA22              LDD   2 IDPR+2-R                    SEART308
0117 01 DC000362          STD   L MES20+2                     SEART309
0119 0  C287              LD    2 CARD+5-R                    SEART310
011A 0  92F7              S     2 C-R                         SEART311
011B 01 44180170          BSI   L CARDS,+-                    SEART312
011D 0  C289              LD    2 CARD+7-R                    SEART313
011E 0  92F8              S     2 T-R                         SEART314
011F 01 44180185          BSI   L TAPE,+-                     SEART315
0121 0  C28B              LD    2 CARD+9-R                    SEART316
0122 0  92F9              S     2 I-R                         SEART317
0123 01 4418019C          BSI   L INTEG,+-                    SEART318
0125 01 7400025A          MDX   L IND,0                       SEART319
0127 0  7002              MDX     A17                         SEART320
0128 01 4C00002F          BSC   L A13                         SEART321
012A 0  C204        A17   LD    2 B2-R                        SEART322
012B 0  8206              A     2 K1-R                        SEART323
012C 0  D203              STO   2 B1-R                        SEART324
012D 0  C212              LD    2 ID+5-R                      SEART325
012E 0  8206              A     2 K1-R                        SEART326
012F 0  D212              STO   2 ID+5-R                      SEART327
0130 01 4C0000A5          BSC   L A152                        SEART328
                    *                                         SEART329
                    *     SUBROUTINE ERROR INPUT CARD         SEART330
                    *                                         SEART331
0132 0  0000        ERROR DC      0                           SEART332
0133 20 176558D5          LIBF    PRNTN                       SEART333
0134 0  2100              DC      /2100                       SEART334
0135 1  0281              DC      MES3-1                      SEART335
0136 0  0000              DC      0                           SEART336
0137 20 176558D5          LIBF    PRNTN       SKIP THREE LINES SEART337
0138 0  3F00              DC      /3F00                       SEART338
0139 20 17064885          LIBF    PAUSE                       SEART339
013A 1  0250              DC      A                           SEART340
013B 01 4C800132          BSC   I ERROR                       SEART341
                    *                                         SEART342
                    *     SUBROUTINE IF SPECTRUM CANNOT BE FOUND SEART343
                    *                                         SEART344
013D 0  0000        ERR1  DC      0                           SEART345
013E 0  CA20              LDD   2 IDPR-R                      SEART346
013F 0  DA52              STD   2 MES51-R                     SEART347
0140 0  CA22              LDD   2 IDPR+2-R                    SEART348
0141 0  DA54              STD   2 MES51+2-R                   SEART349
0142 20 176558D5          LIBF    PRNTN                       SEART350
0143 0  2100              DC      /2100                       SEART351
0144 1  029C              DC      MES5-1                      SEART352
0145 0  0000              DC      0                           SEART353
0146 0  40EB              BSI     ERROR                       SEART354
0147 01 4C80013D          BSC   I ERR1                        SEART355
0149 0  CA20        ERR2  LDD   2 IDPR-R                      SEART356
014A 01 DC000354          STD   L MES16                       SEART357
014C 0  CA22              LDD   2 IDPR+2-R                    SEART358
014D 01 DC000356          STD   L MES16+2                     SEART359
014F 20 176558D5          LIBF    PRNTN                       SEART360
0150 0  3F00              DC      /3F00                       SEART361
0151 20 176558D5          LIBF    PRNTN                       SEART362
0152 0  2100              DC      /2100                       SEART363
0153 1  0338              DC      MES15-1                     SEART364
0154 0  0000              DC      0                           SEART365
0155 0  40DC              BSI     ERROR                       SEART366
0156 01 4C00002F          BSC   L A13                         SEART367
0158 0  CA20        ERR3  LDD   2 IDPR-R                      SEART368
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0159 00 DC00014E          STD   L  MES24-R                          SEART369
015B 0  CA22              LDD    2 IDPR+2-R                        SEART370
015C 00 DC000150          STD   L  MES24+2-R                        SEART371
015E 20 176558D5          LIBF     PRNTN                            SEART372
015F 0  3F00              DC       /3F00                            SEART373
0160 20 176558D5          LIBF     PRNTN                            SEART374
0161 0  2100              DC       /2100                            SEART375
0162 1  0372              DC       MES23-1                          SEART376
0163 0  0000              DC       0                                SEART377
0164 0  40CD              BSI      ERROR                            SEART378
0165 01 4C00002F          BSC   L  A13                              SEART379
                     *                                             SEART380
                     *    CALL SUBROUTINE MPRNT                    SEART381
                     *                                             SEART382
0167 0  0000         LIST DC       0                                SEART383
0168 30 145D9563          CALL     MPRNT                            SEART384
016A 0  DFC0              DC       SPADR                            SEART385
016B 1  0253              DC       B1                               SEART386
016C 1  0254              DC       B2                               SEART387
016D 1  01F1              DC       TITLE                            SEART388
016E 01 4C800167          BSC   I  LIST                             SEART389
                     *                                             SEART390
                     *    CALL SUBROUTINE MEMORY TO BINARY CARDS   SEART391
                     *                                             SEART392
0170 0  0000         CARDS DC      0                                SEART393
0171 0  4008              BSI      MESSG                            SEART394
0172 30 140C4089          CALL     MCDBI                            SEART395
0174 0  DFC0              DC       SPADR                            SEART396
0175 1  0253              DC       B1                               SEART397
0176 1  0254              DC       B2                               SEART398
0177 1  01F1              DC       TITLE                            SEART399
0178 01 4C800170          BSC   I  CARDS                            SEART400
                     *                                             SEART401
                     *    SUBROUTINE FOR MESSAGE NEW ID-NUMBER     SEART402
                     *                                             SEART403
017A 0  0000         MESSG DC      0                                SEART404
017B 20 176558D5          LIBF     PRNTN                            SEART405
017C 0  3D00              DC       /3D00                            SEART406
017D 20 176558D5          LIBF     PRNTN                            SEART407
017E 0  2100              DC       /2100                            SEART408
017F 1  0358              DC       MES19-1                          SEART409
0180 0  0000              DC       0                                SEART410
0181 20 176558D5          LIBF     PRNTN                            SEART411
0182 0  3D00              DC       /3D00                            SEART412
0183 01 4C80017A          BSC   I  MESSG                            SEART413
                     *                                             SEART414
                     *    CALL SUBROUTINE MEMORY TO TAPE           SEART415
                     *                                             SEART416
0185 0  0000         TAPE  DC      0                                SEART417
0186 0  40F3              BSI      MESSG                            SEART418
0187 30 148C15C5     T1   CALL     MTAPE                            SEART419
0189 0  DFC0              DC       SPADR                            SEART420
018A 0  0000         TPNR2 DC      *-*          TAPE NUMBER         SEART421
018B 1  025B              DC       ERRSW                            SEART422
018C 01 7400025B          MDX   L  ERRSW,0                          SEART423
018E 0  7002              MDX      T2                               SEART424
018F 01 4C800185          BSC   I  TAPE                             SEART425
0191 20 176558D5     T2   LIBF     PRNTN        TAPE NOT READY      SEART426
0192 0  2100              DC       /2100                            SEART427
0193 1  02B3              DC       MES7-1                           SEART428
0194 0  0000              DC       0                                SEART429
```

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0195 20 176558D5          LIBF    PRNTN                                  SEART430
0196 0  3E00              DC      /3E00                                  SEART431
0197 20 17064885          LIBF    PAUSE                                  SEART432
0198 1  0251              DC      B                                      SEART433
0199 0  1010              SLA     16                                     SEART434
019A 0  D20B              STO     2 ERRSW-R                              SEART435
019B 0  70EB              MDX     T1          TRY AGAIN TO WRITE         SEART436
                     *                                                   SEART437
                     *    CALL SUBROUTINE INTEGRAL SPECTRUM              SEART438
                     *                                                   SEART439
019C 0  0000         INTEG DC     0                                      SEART440
019D 30 09563147          CALL    INTEG                                  SEART441
019F 0  DFC0              DC      SPADR                                  SEART442
01A0 1  0253              DC      B1                                     SEART443
01A1 1  0254              DC      B2                                     SEART444
01A2 1  025C              DC      OVFLW                                  SEART445
01A3 01 7400025C          MDX  L  OVFLW,0                                SEART446
01A5 0  7012              MDX     OVER                                   SEART447
01A6 0  C209              LD    2 K17-R                                  SEART448
01A7 0  D004         IN1  STO     IN2                                    SEART449
01A8 20 08593142          LIBF    HOLEB                                  SEART450
01A9 0  0001              DC      1                                      SEART451
01AA 1  031B              DC      MES9                                   SEART452
01AB 1  02D5              DC      TITPR+10                               SEART453
01AC 0  0000         IN2  DC      *-*                                    SEART454
01AD 30 145D9571          CALL    MPRN1                                  SEART455
01AF 0  DFC0              DC      SPADR                                  SEART456
01B0 1  0253              DC      B1                                     SEART457
01B1 1  0254              DC      B2                                     SEART458
01B2 1  02CB              DC      TITPR                                  SEART459
01B3 20 024C1552          LIBF    BLANK                                  SEART460
01B4 1  02D5              DC      TITPR+10                               SEART461
01B5 0  0023         K35  DC      35                                     SEART462
01B6 01 4C80019C          BSC  I  INTEG                                  SEART463
01B8 0  C0FC         OVER LD      K35                                    SEART464
01B9 0  70ED              MDX     IN1                                    SEART465
                     *                                                   SEART466
                     *    END OF JOB                                     SEART467
                     *                                                   SEART468
01BA 20 176558D5     FIN  LIBF    PRNTN       SKIP THREE LINES           SEART469
01BB 0  3F00              DC      /3F00                                  SEART470
01BC 20 176558D5          LIBF    PRNTN                                  SEART471
01BD 0  2100              DC      /2100                                  SEART472
01BE 1  032D              DC      MES13-1                                SEART473
01BF 0  0000              DC      0                                      SEART474
01C0 20 176558D5          LIBF    PRNTN                                  SEART475
01C1 0  3100              DC      /3100                                  SEART476
01C2 0  C0C7              LD      TPNR2                                  SEART477
01C3 0  9207              S     2 K4-R                                   SEART478
01C4 01 4C1001D0          BSC  L  FIN3,-                                 SEART479
01C6 0  C0C3              LD      TPNR2                                  SEART480
01C7 0  E805              OR      FIN1                                   SEART481
01C8 0  D004              STO     FIN1                                   SEART482
01C9 0  C0C0              LD      TPNR2                                  SEART483
01CA 0  E804              OR      FIN2                                   SEART484
01CB 0  D003              STO     FIN2                                   SEART485
01CC 20 140478C0          LIBF    MAGT                                   SEART486
01CD 0  8000         FIN1 DC      /8000                                  SEART487
01CE 20 140478C0          LIBF    MAGT                                   SEART488
01CF 0  5000         FIN2 DC      /5000                                  SEART489
01D0 30 059C98C0     FIN3 CALL    EXIT                                   SEART490
```

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                        *                                                    SEART491
                        *     CONSTANTS AND WORK AREAS                       SEART492
                        *                                                    SEART493
01D2 0   0050           CARD  DC      80                                     SEART494
01D3     001E                 BSS     30                                     SEART495
01F1     0050           TITLE BSS     80                                     SEART496
0241 0   0000           CONST DC      0                                      SEART497
0242 0   0000                 DC      0                                      SEART498
0243 0   0000           SAVE2 DC      0                                      SEART499
0244 0   4220           AST   DC      /4220                                  SEART500
0245 0   8100           END   DC      /8100                                  SEART501
0246 0   4400           L     DC      /4400                                  SEART502
0247 0   8400           C     DC      /8400                                  SEART503
0248 0   2400           T     DC      /2400                                  SEART504
0249 0   8010           I     DC      /8010                                  SEART505
024A 0   4010           CR    DC      /4010                                  SEART506
024B 0   8420           PTPR  DC      /8420                                  SEART507
024C 0   8D00           ADD1  DC      /8D00                                  SEART508
024D 0   9D00           SUB1  DC      /9D00                                  SEART509
024E 0   80A0           PLUS  DC      /80A0                                  SEART510
024F 0   4000           MINUS DC      /4000                                  SEART511
0250 0   0001           A     DC      1                                      SEART512
0251 0   0002           B     DC      2                                      SEART513
0252 0   0000           BE    DC      0                                      SEART514
0253 0   0000           B1    DC      0                                      SEART515
0254 0   0000           B2    DC      0                                      SEART516
0255 0   0000           NB    DC      0                                      SEART517
0256 0   0001           K1    DC      1                                      SEART518
0257 0   0004           K4    DC      4                                      SEART519
0258 0   000A           K10   DC      10                                     SEART520
0259 0   0011           K17   DC      17                                     SEART521
025A 0   0000           IND   DC      0                                      SEART522
025B 0   0000           ERRSW DC      0                                      SEART523
025C 0   0000           OVFLW DC      0                                      SEART524
025D     0013           ID    BSS     19                                     SEART525
0270     0004           IDPR  BSS  E  4                                      SEART526
0274     0002           IDPRN BSS     2                                      SEART527
0276     0003           IDNEU BSS     3                                      SEART528
                        *                                                    SEART529
                        *     MESSAGES                                       SEART530
                        *                                                    SEART531
0279 0   0007                 DC      MES2-MES1                              SEART532
027A     000E           MES1  DMES  1 PROGRAM SEART'E                        SEART533
0281     0000           MES2  BSS     0                                      SEART534
0281 0   001A                 DC      MES4-MES3                              SEART535
0282     0023           MES3  DMES  1 ERROR INPUT CARD. CORRECT AND START'   SEART536
0293     0011                 DMES  1  WITH THIS CARD.'E                     SEART537
029C     0000           MES4  BSS     0                                      SEART538
029C 0   0016                 DC      MES6-MES5                              SEART539
029D     000A           MES5  DMES  1 SPECTRUM 'E                            SEART540
02A2     0004           MES51 BSS  E  4                                      SEART541
02A6     001A                 DMES  1  NOT FOUND ON INPUT TAPE.'E            SEART542
02B3     0000           MES6  BSS     0                                      SEART543
02B3 0   0017                 DC      MES8-MES7                              SEART544
02B4     0022           MES7  DMES  1 OUTPUT TAPE NOT READY. CORRECT AND'    SEART545
02C5     000C                 DMES  1 PRESS START.'E                         SEART546
02CB     0000           MES8  BSS     0                                      SEART547
02CB     0050           TITPR BSS     80                                     SEART548
031B     0023           MES9  EBC     .INTEGRAL SPECTRUM - OVERFLOW IS ON..  SEART549
032D 0   000A                 DC      MES14-MES13                            SEART550
032E     0014           MES13 DMES  1 END OF PROGRAM SEART'E                 SEART551
```

```
0338     0000        MES14 BSS      0                                          SEART552
0338 0   001F              DC       MES17-MES15                                SEART553
0339     0023        MES15 DMES  1 LAST BLOCK NUMBER SMALLER THAN FIRS'        SEART554
034A     0013              DMES  1 T ONE FOR SPECTRUM'E                       SEART555
0354     0004        MES16 BSS   E 4                                          SEART556
0358     0001              DMES  1 .'                                         SEART557
0358     0000        MES17 BSS      0                                          SEART558
0358 0   0019              DC       MES22-MES19                                SEART559
0359     000D        MES19 DMES  1 '4XID-NUMBER'E                             SEART560
0360     0004        MES20 BSS   E 4                                          SEART561
0364     0014              DMES  1  HAS BEEN CHANGED TO'E                     SEART562
036E     0004        MES21 BSS   E 4                                          SEART563
0372     0000        MES22 BSS      0                                          SEART564
0372 0   002F              DC       MES25-MES23                                SEART565
0373     0024        MES23 DMES  1 '4XFIRST AND LAST BLOCK NUMBER DO N'        SEART566
0385     0022              DMES  1 OT BELONG TO THE SAME GROUP OF 4 K'        SEART567
0396     000E              DMES  1  FOR SPECTRUM 'E                           SEART568
039E     0004        MES24 BSS   E 4                                          SEART569
03A2     0000        MES25 BSS      0                                          SEART570
DFC0                 SPADR EQU      -8256                                      SEART571
BFBE                 SPAD2 EQU      -16450                                     SEART572
03A2 0   0028        OUTPT DC       40                                         SEART573
03A3     0028              BSS      40                                         SEART574
0067                 TVLOC EQU      103                                        SEART575
0250                 R     EQU      A                                          SEART576
03CC     0000              END      START                                      SEART577

     NO ERRORS IN ABOVE ASSEMBLY.
SEART
DUP FUNCTION COMPLETED
```

```
// JOB   X         X
// FOR ANALT
*LIST SOURCE PROGRAM
*IOCS(CARD,1443 PRINTER)
*NONPROCESS PROGRAM
*ONE WORD INTEGERS
C*************************************************************************** ANALT001
C*     IBM 1800 PROGRAMS FOR DATA REDUCTION                                 * ANALT002
C*************************************************************************** ANALT003
C*                                                                          * ANALT004
C*     PROGRAM ANALT                                                        * ANALT005
C*                                                                          * ANALT006
C*     PROGRAM ANALT PLOTS THE MULTI-CHANNEL ANALYSER DATA ON THE           * ANALT007
C*     CALCOMP PLOTTER.                                                     * ANALT008
C*                                                                          * ANALT009
C*************************************************************************** ANALT010
      EXTERNAL CHAN                                                         ANALT011
      DIMENSION EBCX(3),EBCY(2)                                             ANALT012
      DIMENSION EBC1(3),EBC2(4)                                             ANALT013
      COMMON    SPECT(4129),ID(5),SCAL(24),IDSPC(16)                        ANALT014
      DATA EBCX/'NO. ','NEL ','CHAN'/                                       ANALT015
      DATA EBCY/'TS  ','COUN'/                                              ANALT016
      DATA EBC1/'R   ','UMBE','ID N'/                                       ANALT017
      DATA EBC2/' 4K ','. OF','P NO','GROU'/                                ANALT018
      READ(5,1) NR                                                          ANALT019
    1 FORMAT(2X,I1)                                                         ANALT020
      CALL FINIM(0.,2.)                                                     ANALT021
    2 READ (5,3) ISTOP,(ID(I),I=1,4),NFB,NB,SIZX,SIZY,CMAX                  ANALT022
    3 FORMAT (I1,9X,I2,1X,2I1,I2,1X,I4,I2,6X,3F10.0)                        ANALT023
      IF(ISTOP)4,4,100                                                      ANALT024
    4 WRITE(6,31)(ID(I),I=1,4),NFB,NB                                       ANALT025
   31 FORMAT(' ID-NUMBER = 'I2,'.',2I1,I2,',  FIRST BL = ',I4,',    NO. OANALT026
     1F BL = 'I2)                                                           ANALT027
      IF(NFB) 6,6,8                                                         ANALT028
    6 WRITE(6,7)(ID(I),I=1,4), NFB,NB,SIZX,SIZY,CMAX                        ANALT029
    7 FORMAT  (//' INPUT CARD IN ERROR '/10X,I2,'.',2I1,I2,1X,I4,I2,        ANALT030
     16X,3F10.1 //' GO TO NEXT SPECTRUM'//)                                 ANALT031
      GO TO 2                                                               ANALT032
    8 ID(5)=(NFB-1)/16+1                                                    ANALT033
      NLB=NFB+NB-1                                                          ANALT034
      NL=(NLB-1)/16+1                                                       ANALT035
      IF(ID(5)-NL)9,10,6                                                    ANALT036
    9 NLB=ID(5)*16                                                          ANALT037
   10 CALL FLTPE(ID,SPECT,SCAL,IDSPC,NR)                                    ANALT038
      N1=(NFB-1)*256+1                                                      ANALT039
      N2=NLB*256                                                            ANALT040
      IF(CMAX) 12,11,12                                                     ANALT041
   11 CMAX=1.E+20                                                           ANALT042
   12 DO 20 I=N1,N2                                                         ANALT043
      IF(SPECT(I)-CMAX)20,20,19                                             ANALT044
   19 SPECT(I)=CMAX                                                         ANALT045
   20 CONTINUE                                                              ANALT046
      SPECT(N1)=0                                                           ANALT047
      N= N2-N1+1                                                            ANALT048
      IF(SIZX)21,21,22                                                      ANALT049
   21 SIZX=100.                                                             ANALT050
   22 IF(SIZY)23,23,24                                                      ANALT051
   23 SIZY=25.                                                              ANALT052
   24 CALL DESNF(X,SPECT(N1),N,1,1,1,0,0,SIZX,SIZY,N1,0,EBCX(3),-11,        ANALT053
     1EBCY(2),6,0,CHAN)                                                     ANALT054
      X0=SIZX/2.-2.                                                         ANALT055
      Y0=SIZY+1.5                                                           ANALT056
      CALL SYMBL(X0,Y0,0.4,0.,EBC1(3),-11)                                  ANALT057
```

```
      E=ID(4)+100*ID(3)+1000*ID(2)                                      ANALT058
      E=FLOAT(ID(1))+E/10000.+0.000001                                  ANALT059
      CALL NUMBR(XO,YO,0.4,0.,E,4)                                      ANALT060
      XO=SIZX/2.-2.                                                     ANALT061
      YO=SIZY+0.5                                                       ANALT062
      CALL SYMBL(XO,YO,0.4,0.,EBC2(4),-16)                              ANALT063
      E=ID(5)                                                           ANALT064
      CALL NUMBR(XO,YO,0.4,0.,E,-1)                                     ANALT065
      CALL FINIM(SIZX+10.,0.)                                           ANALT066
      GO TO 2                                                           ANALT067
  100 WRITE(6,30)                                                       ANALT068
   30 FORMAT(' END PLOTTING ANALYSER DATA'//)                           ANALT069
      CALL FINTR                                                        ANALT070
      CALL  EXIT                                                        ANALT071
      END                                                               ANALT072

FEATURES SUPPORTED
 NONPROCESS
 ONE WORD INTEGERS
 IOCS

CORE REQUIREMENTS FOR ANALT
 COMMON    8328  INSKEL COMMON       0  VARIABLES      54  PROGRAM      630

 END OF COMPILATION
```

```
// JOB    X      X      X
// FOR
*LIST SOURCE PROGRAM
*ONE WORD INTEGERS
       SUBROUTINE CHAN(X,NI,IF)                                          CHAN0001
       X=FLOAT(NI+IF-1)                                                  CHAN0002
       RETURN                                                            CHAN0003
       END                                                               CHAN0004

FEATURES SUPPORTED
 ONE WORD INTEGERS

CORE REQUIREMENTS FOR CHAN
 COMMON       0  INSKEL COMMON        0  VARIABLES       2  PROGRAM       26

 END OF COMPILATION
```

```
// JOB    X          X
// ASM CATAP
  *LIST
  *COMMON 8258                                          CATAP001
```

```
                *****************************************************  CATAP003
                *  IBM 1800 PROGRAMS FOR DATA REDUCTION             *  CATAP004
                *****************************************************  CATAP005
                *                                                   *  CATAP006
                *      PROGRAM CATAP                                *  CATAP007
                *                                                   *  CATAP008
                *      THIS PROGRAM LOADS BINARY CARDS WITH         *  CATAP009
                *      ANALYSER DATA ON TAPE.                       *  CATAP010
                *                                                   *  CATAP011
                *      CARD INPUT                                   *  CATAP012
                *      1. CC 1-2     **                             *  CATAP013
                *            3       OUTPUT TAPE UNIT NUMBER      *  CATAP014
                *      2.            SPECTRA IN BIN. CARDS        *  CATAP015
                *      3. LAST CARD                               *  CATAP016
                *         CC 1-4     *END                          *  CATAP017
                *                                                   *  CATAP018
                *****************************************************  CATAP019
0000 20 03059115    START LIBF     CARDN                              CATAP020
0001 0  1000              DC       /1000                              CATAP021
0002 1  008D              DC       CARD                               CATAP022
0003 0  0000        SAVE  DC       0                                  CATAP023
0004 20 03059115          LIBF     CARDN                              CATAP024
0005 0  0000              DC       0                                  CATAP025
0006 0  70FD              MDX      *-3                                CATAP026
0007 01 C400008E          LD    L  CARD+1                             CATAP027
0009 0  907B              S        AST                                CATAP028
000A 01 4C180013          BSC   L  S1,+-                              CATAP029
000C 20 176558D5          LIBF     PRNTN                              CATAP030
000D 0  2100              DC       /2100                              CATAP031
000E 1  0126              DC       MES1-1                             CATAP032
000F 0  0004        K4    DC       4                                  CATAP033
0010 20 17064885          LIBF     PAUSE                              CATAP034
0011 1  007F              DC       K1                                 CATAP035
0012 0  70ED              MDX      START                              CATAP036
0013 0  C07C        S1    LD       CARD+3                             CATAP037
0014 0  6206              LDX   2  6                                  CATAP038
0015 0  1240              SLCA  2  0                                  CATAP039
0016 0  6AEC              STX   2  SAVE                               CATAP040
0017 0  C0F7              LD       K4                                 CATAP041
0018 0  90EA              S        SAVE                               CATAP042
0019 0  D013              STO      TPNR                               CATAP043
001A 20 176558D5          LIBF     PRNTN                              CATAP044
001B 0  3100              DC       /3100                              CATAP045
001C 20 176558D5          LIBF     PRNTN                              CATAP046
001D 0  2100              DC       /2100                              CATAP047
001E 1  013C              DC       MES3-1                             CATAP048
001F 0  0000              DC       0                                  CATAP049
0020 20 176558D5          LIBF     PRNTN                              CATAP050
0021 0  3D00              DC       /3D00                              CATAP051
0022 30 03102254    CALL  CALL     CDBIM                              CATAP052
0024 0  DFC0              DC       SPADR                              CATAP053
0025 1  00DE              DC       TITLE                              CATAP054
0026 1  0083              DC       END                                CATAP055
0027 01 74000083          MDX   L  END,0                              CATAP056
0029 0  7041              MDX      EXIT                               CATAP057
002A 30 148C15C5    MTAPE CALL     MTAPE                              CATAP058
002C 0  DFC0              DC       SPADR                              CATAP059
002D 0  0000        TPNR  DC       *-*                                CATAP060
002E 1  0067              DC       READY                              CATAP061
002F 01 74000067          MDX   L  READY,0                            CATAP062
0031 0  7032              MDX      ERROR                              CATAP063
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```
0032 20 024C1552          LIBF    BLANK          CATAP064
0033 1  008D              DC      PAREA+1        CATAP065
0034 0  0048              DC      72             CATAP066
0035 20 085935D9          LIBF    HULPR          CATAP067
0036 0  0001              DC      1              CATAP068
0037 1  00DE              DC      TITLE          CATAP069
0038 1  00AF              DC      PAREA+35       CATAP070
0039 0  0048              DC      72             CATAP071
003A 00 6600DFC0          LDX   L2 SPADR         CATAP072
003C 0  C200              LD      2 0            CATAP073
003D 30 03209180          CALL    CHIF           CATAP074
003F 1  008E              DC      PAREA+2        CATAP075
0040 01 CC00008E          LDD   L PAREA+2        CATAP076
0042 01 EC000084          OR    L PRIOD          CATAP077
0044 0  18D8              RTE     24             CATAP078
0045 01 DC00008E          STD   L PAREA+2        CATAP079
0047 0  C201              LD      2 1            CATAP080
0048 0  A037              M       K10            CATAP081
0049 0  1090              SLT     16             CATAP082
004A 0  8202              A       2 2            CATAP083
004B 0  A035              M       K100           CATAP084
004C 0  1090              SLT     16             CATAP085
004D 0  8203              A       2 3            CATAP086
004E 0  8033              A       K10T           CATAP087
004F 0  1890              SRT     16             CATAP088
0050 30 025440C0          CALL    BNDC           CATAP089
0052 1  0086              DC      IDPR           CATAP090
0053 0  C836              LDD     IDPR+4         CATAP091
0054 01 DC000090          STD   L PAREA+4        CATAP092
0056 0  C205              LD      2 5            CATAP093
0057 30 03209180          CALL    CHIF           CATAP094
0059 1  00A5              DC      PAREA+25       CATAP095
005A 0  C206              LD      2 6            CATAP096
005B 0  1890              SRT     16             CATAP097
005C 30 025440C0          CALL    BNDC           CATAP098
005E 1  0096              DC      PAREA+10       CATAP099
005F 20 176558D5          LIBF    PRNTN          CATAP100
0060 0  2100              DC      /2100          CATAP101
0061 1  008C              DC      PAREA          CATAP102
0062 0  0000              DC      0              CATAP103
0063 0  70BE              MDX     CALL           CATAP104
0064 20 176558D5  ERROR   LIBF    PRNTN          CATAP105
0065 0  2100              DC      /2100          CATAP106
0066 1  0170              DC      MES5-1         CATAP107
0067 0  0000      READY   DC      0              CATAP108
0068 20 17064885          LIBF    PAUSE          CATAP109
0069 1  007F              DC      K1             CATAP110
006A 0  70BF              MDX     MTAPE          CATAP111
                  *                              CATAP112
006B 0  C0C1      EXIT    LD      TPNR           CATAP113
006C 0  E802              OR      EOF            CATAP114
006D 0  D001              STO     EOF            CATAP115
006E 20 140478C0          LIBF    MAGT           CATAP116
006F 0  8000      EOF     DC      /8000          CATAP117
0070 0  C0BC              LD      TPNR           CATAP118
0071 0  E802              OR      REW            CATAP119
0072 0  D001              STO     REW            CATAP120
0073 20 140478C0          LIBF    MAGT           CATAP121
0074 0  5000      REW     DC      /5000          CATAP122
0075 20 176558D5          LIBF    PRNTN          CATAP123
0076 0  3F00              DC      /3F00          CATAP124
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0077 20 176558D5          LIBF    PRNTN                                  CATAP125
0078 0  2100              DC      /2100                                  CATAP126
0079 1  0184              DC      MES7-1                                 CATAP127
007A 0  0000              DC      0                                      CATAP128
007B 20 176558D5          LIBF    PRNTN                                  CATAP129
007C 0  3100              DC      /3100                                  CATAP130
007D 30 059C98C0          CALL    EXIT                                   CATAP131
                          *                                              CATAP132
007F 0  0001      K1      DC      1                                      CATAP133
0080 0  000A      K10     DC      10                                     CATAP134
0081 0  0064      K100    DC      100                                    CATAP135
0082 0  2710      K10T    DC      10000                                  CATAP136
0083 0  0000      END     DC      0                                      CATAP137
0084 0  3B00      PRIOD   DC      /3B00                                  CATAP138
0085 0  4220      AST     DC      /4220                                  CATAP139
0086    0006      IDPR    BSS   E 6                                      CATAP140
008C 0  0048      PAREA   DC      72                                     CATAP141
008D 0  0050      CARD    DC      80                                     CATAP142
008E    0050              BSS     80                                     CATAP143
00DE    0048      TITLE   BSS     72                                     CATAP144
0126 0  0015              DC      MES2-MES1                              CATAP145
0127    0021      MES1    DMES  1 '4XERROR TAPE CARD. CORRECT AND '       CATAP146
0137    0009              DMES  1 CONTINUE.'E                            CATAP147
013C    0000      MES2    BSS     0                                      CATAP148
013C 0  0033              DC      MES4-MES3                              CATAP149
013D    0030      MES3    DMES  1 '4XID NUMBER'10XFIRST BLOCK'10XNO. '    CATAP150
0155    0036              DMES  1 OF BLOCKS'40XTITLE'E                   CATAP151
0170    0000      MES4    BSS     0                                      CATAP152
0170 0  0013              DC      MES6-MES5                              CATAP153
0171    0026      MES5    DMES  1 '4XTAPE NOT READY. CORRECT AND START.  CATAP154
0184    0000      MES6    BSS     0                                      CATAP155
0184 0  000B              DC      MES8-MES7                              CATAP156
0185    0016      MES7    DMES  1 '4XEND PROGRAM CATAP.'E                CATAP157
0190    0000      MES8    BSS     0                                      CATAP158
DFC0              SPADR   EQU     -8256                                  CATAP159
0190    0000              END     START                                  CATAP160

     NO ERRORS IN ABOVE ASSEMBLY.
CATAP
DUP FUNCTION COMPLETED
```

```
// JOB    X      X      X
// ASM CADSK
  *LIST
  *COMMON 8806
```

```
                *****************************************************  CADSK003
                *  IBM 1800 PROGRAMS FOR DATA REDUCTION             *  CADSK004
                *****************************************************  CADSK005
                *                                                   *  CADSK006
                *     PROGRAM CADSK                                 *  CADSK007
                *                                                   *  CADSK008
                *     THIS PROGRAM LOADS BINARY CARDS WITH          *  CADSK009
                *     ANALYSER DATA ON DISK.                        *  CADSK010
                *                                                   *  CADSK011
                *     CARD INPUT                                    *  CADSK012
                *     1.              SPECTRA IN BIN. CARDS         *  CADSK013
                *     LAST CARD                                     *  CADSK014
                *     CC 1-4          *END                          *  CADSK015
                *                                                   *  CADSK016
                *****************************************************  CADSK017
0000 20 176558D5    START LIBF    PRNTN                               CADSK018
0001 0  2100              DC      /2100                               CADSK019
0002 1  0100              DC      MES3-1                              CADSK020
0003 0  0000              DC      0                                   CADSK021
0004 20 176558D5          LIBF    PRNTN                               CADSK022
0005 0  3D00              DC      /3D00                               CADSK023
0006 30 03102254    CALL  CALL    CDBIM                               CADSK024
0008 0  DFC0              DC      SPADR                               CADSK025
0009 1  00B8              DC      TITLE                               CADSK026
000A 1  005C              DC      END                                 CADSK027
000B 01 7400005C          MDX   L END,0                               CADSK028
000D 0  7040              MDX     EXIT                                CADSK029
000E 30 14109892    MDISK CALL    MDISK                               CADSK030
0010 0  DFC0              DC      SPADR                               CADSK031
0011 1  004C              DC      ERRSW                               CADSK032
0012 0  DD38              DC      BUF                                 CADSK033
0013 1  0100              DC      ADR                                 CADSK034
0014 20 024C1552          LIBF    BLANK                               CADSK035
0015 1  0067              DC      PAREA+1                             CADSK036
0016 0  0048              DC      72                                  CADSK037
0017 20 085935D9          LIBF    HOLPR                               CADSK038
0018 0  0001              DC      1                                   CADSK039
0019 1  00B8              DC      TITLE                               CADSK040
001A 1  0089              DC      PAREA+35                            CADSK041
001B 0  0048              DC      72                                  CADSK042
001C 00 6600DFC0          LDX   L2 SPADR                            CADSK043
001E 0  C200              LD    2 0                                 CADSK044
001F 30 03209180          CALL    CHIF                              CADSK045
0021 1  0068              DC      PAREA+2                             CADSK046
0022 01 CC000068          LDD   L PAREA+2                           CADSK047
0024 01 EC00005D          OR    L PRIOD                             CADSK048
0026 0  18D8              RTE     24                                  CADSK049
0027 01 DC000068          STD   L PAREA+2                           CADSK050
0029 0  C201              LD    2 1                                 CADSK051
002A 0  A02E              M       K10                               CADSK052
002B 0  1090              SLT     16                                CADSK053
002C 0  8202              A     2 2                                 CADSK054
002D 0  A02C              M       K100                              CADSK055
002E 0  1090              SLT     16                                CADSK056
002F 0  8203              A     2 3                                 CADSK057
0030 0  802A              A       K10T                              CADSK058
0031 0  1890              SRT     16                                CADSK059
0032 30 025440C0          CALL    BNDC                              CADSK060
0034 1  0060              DC      IDPR                              CADSK061
0035 0  C82E              LDD     IDPR+4                            CADSK062
0036 01 DC00006A          STD   L PAREA+4                           CADSK063
```

```
0038 0  C205                LD     2 5                                  CADSK064
0039 30 03209180            CALL     CHIF                               CADSK065
003B 1  007F                DC       PAREA+25                           CADSK066
003C 0  C206                LD     2 6                                  CADSK067
003D 0  1890                SRT      16                                 CADSK068
003E 30 025440C0            CALL     BNDC                               CADSK069
0040 1  0070                DC       PAREA+10                           CADSK070
0041 20 176558D5            LIBF     PRNTN                              CADSK071
0042 0  2100                DC       /2100                              CADSK072
0043 1  0066                DC       PAREA                              CADSK073
0044 0  0000                DC       0                                  CADSK074
0045 01 7400004C            MDX   L  ERRSW,0                            CADSK075
0047 0  7001                MDX      ERROR                              CADSK076
0048 0  70BD                MDX      CALL                               CADSK077
0049 20 176558D5     ERROR  LIBF     PRNTN                              CADSK078
004A 0  2100                DC       /2100                              CADSK079
004B 1  0134                DC       MES5-1                             CADSK080
004C 0  0000         ERRSW  DC       0                                  CADSK081
004D 0  70B8                MDX      CALL                               CADSK082
                     *                                                  CADSK083
004E 20 176558D5     EXIT   LIBF     PRNTN                              CADSK084
004F 0  3F00                DC       /3F00                              CADSK085
0050 20 176558D5            LIBF     PRNTN                              CADSK086
0051 0  2100                DC       /2100                              CADSK087
0052 1  0157                DC       MES7-1                             CADSK088
0053 0  0000                DC       0                                  CADSK089
0054 20 176558D5            LIBF     PRNTN                              CADSK090
0055 0  3100                DC       /3100                              CADSK091
0056 30 059C98C0            CALL     EXIT                               CADSK092
                     *                                                  CADSK093
0058 0  0001         K1     DC       1                                  CADSK094
0059 0  000A         K10    DC       10                                 CADSK095
005A 0  0064         K100   DC       100                                CADSK096
005B 0  2710         K10T   DC       10000                              CADSK097
005C 0  0000         END    DC       0                                  CADSK098
005D 0  3B00         PRIOD  DC       /3B00                              CADSK099
005E 0  4220         AST    DC       /4220                              CADSK100
0060    0006         IDPR   BSS   E  6                                  CADSK101
0066 0  0048         PAREA  DC       72                                 CADSK102
0067 0  0050         CARD   DC       80                                 CADSK103
0068    0050                BSS      80                                 CADSK104
00B8    0048         TITLE  BSS      72                                 CADSK105
0100    0000         ADR    BSS    3                                    CADSK106
0100 0  0033                DC       MES4-MES3                          CADSK107
0101    0030         MES3   DMES   1 '4XID NUMBER'10XFIRST BLOCK'10XNO. '  CADSK108
0119    0036                DMES   1 OF BLOCKS'40XTITLE'E                CADSK109
0134    0000         MES4   BSS      0                                  CADSK110
0134 0  0022                DC       MES6-MES5                          CADSK111
0135    0025         MES5   DMES   1 '4XID NUMBER ALREADY STORED ON DISK.' CADSK112
0147    001F                DMES   1   SPECTRUM WILL NOT BE STORED.'E    CADSK113
0157    0000         MES6   BSS      0                                  CADSK114
0157 0  000B                DC       MES8-MES7                          CADSK115
0158    0016         MES7   DMES   1 '4XEND PROGRAM CADSK.'E             CADSK116
0163    0000         MES8   BSS      0                                  CADSK117
DFC0                 SPADR  EQU      -8256                              CADSK118
DD38                 BUF    EQU      SPADR-648                          CADSK119
0164    0000                END      START                              CADSK120
```

NO ERRORS IN ABOVE ASSEMBLY.

CADSK
DUP FUNCTION COMPLETED

```
// JOB    X          X
// ASM UCTAP
  *LIST
  *COMMON 8258
```

UCTAP001

```
                *****************************************************  UCTAP003
                *  IBM 1800 PROGRAMS FOR DATA REDUCTION             *  UCTAP004
                *****************************************************  UCTAP005
                *                                                   *  UCTAP006
                *     PROGRAM UCTAP                                 *  UCTAP007
                *                                                   *  UCTAP008
                *     THIS PROGRAM LOADS BCD AND/OR BINARY CARDS    *  UCTAP009
                *     (OLD FORMAT) WITH ANALYSER DATA ON TAPE.         UCTAP010
                *                                                   *  UCTAP011
                *     CARD INPUT                                    *  UCTAP012
                *     1. CC    1 -2 **                              *  UCTAP013
                *        CC     3    OUTPUT TAPE NUMBER             *  UCTAP014
                *     2.             TITLE FOR 1. SPECTRUM         *  UCTAP015
                *     3. CC    4-5  NUMBER OF BLOCKS FOR 1. SPECTR.*  UCTAP016
                *        CC    6    BLANK FOR BIN. SPECTRUM        *  UCTAP017
                *                   *     FOR BCD SPECTRUM         *  UCTAP018
                *     4.             SPECTRUM CARDS (TURNED IF BIN.)*  UCTAP019
                *     ETC.                                          *  UCTAP020
                *     LAST CARD                                     *  UCTAP021
                *        CC    1-4  *END                            *  UCTAP022
                *****************************************************  UCTAP023
0000 20 03059115    START LIBF    CARDN                               UCTAP024
0001 0  1000              DC      /1000                               UCTAP025
0002 1  0089              DC      CARD                                UCTAP026
0003 0  0000        SAVE  DC      0                                   UCTAP027
0004 20 03059115          LIBF    CARDN                               UCTAP028
0005 0  0000              DC      0                                   UCTAP029
0006 0  70FD              MDX     *-3                                 UCTAP030
0007 01 C400008A          LD   L  CARD+1                              UCTAP031
0009 0  9076              S       AST                                 UCTAP032
000A 01 4C180013          BSC  L  S1,+-                               UCTAP033
000C 20 176558D5          LIBF    PRNTN                               UCTAP034
000D 0  2100              DC      /2100                               UCTAP035
000E 1  0122              DC      MES1-1                              UCTAP036
000F 0  0004        K4    DC      4                                   UCTAP037
0010 20 17064885          LIBF    PAUSE                               UCTAP038
0011 1  007A              DC      K1                                  UCTAP039
0012 0  70ED              MDX     START                               UCTAP040
0013 0  C078        S1    LD      CARD+3                              UCTAP041
0014 0  6206              LDX  2  6                                   UCTAP042
0015 0  1240              SLCA 2  0                                   UCTAP043
0016 0  6AEC              STX  2  SAVE                                UCTAP044
0017 0  C0F7              LD      K4                                  UCTAP045
0018 0  90EA              S       SAVE                                UCTAP046
0019 0  D013              STO     TPNR                                UCTAP047
001A 20 176558D5          LIBF    PRNTN                               UCTAP048
001B 0  3100              DC      /3100                               UCTAP049
001C 20 176558D5          LIBF    PRNTN                               UCTAP050
001D 0  2100              DC      /2100                               UCTAP051
001E 1  0138              DC      MES3-1                              UCTAP052
001F 0  0000              DC      0                                   UCTAP053
0020 20 176558D5          LIBF    PRNTN                               UCTAP054
0021 0  3D00              DC      /3D00                               UCTAP055
0022 30 160D9114    CALL  CALL    UCRDM                               UCTAP056
0024 0  DFC0              DC      SPADR                               UCTAP057
0025 1  00DA              DC      TITLE                               UCTAP058
0026 1  007E              DC      END                                 UCTAP059
0027 01 7400007E          MDX  L  END,0                               UCTAP060
0029 0  7041              MDX     EXIT                                UCTAP061
002A 30 148C15C5    MTAPE CALL    MTAPE                               UCTAP062
002C 0  DFC0              DC      SPADR                               UCTAP063
```

```
002D 0  0000          TPNR  DC       *-*                 OCTAP064
002E 1  0067                DC       READY               OCTAP065
002F 01 74000067            MDX   L  READY,0             OCTAP066
0031 0  7032                MDX      ERROR               OCTAP067
0032 20 024C1552            LIBF     BLANK               OCTAP068
0033 1  0089                DC       PAREA+1             OCTAP069
0034 0  0048                DC       72                  OCTAP070
0035 20 085935D9            LIBF     HOLPR               OCTAP071
0036 0  0001                DC       1                   OCTAP072
0037 1  00DA                DC       TITLE               OCTAP073
0038 1  00AB                DC       PAREA+35            OCTAP074
0039 0  0048                DC       72                  OCTAP075
003A 00 6600DFC0            LDX   L2 SPADR               OCTAP076
003C 0  C200                LD     2 0                   OCTAP077
003D 30 03209180            CALL     CHIF                OCTAP078
003F 1  008A                DC       PAREA+2             OCTAP079
0040 01 CC00008A            LDD   L  PAREA+2             OCTAP080
0042 01 EC00007F            OR    L  PRIOD              OCTAP081
0044 0  18D8                RTE      24                  OCTAP082
0045 01 DC00008A            STD   L  PAREA+2             OCTAP083
0047 0  C201                LD     2 1                   OCTAP084
0048 0  A032                M        K10                 OCTAP085
0049 0  1090                SLT      16                  OCTAP086
004A 0  8202                A      2 2                   OCTAP087
004B 0  A030                M        K100                OCTAP088
004C 0  1090                SLT      16                  OCTAP089
004D 0  8203                A      2 3                   OCTAP090
004E 0  802E                A        K10T                OCTAP091
004F 0  1890                SRT      16                  OCTAP092
0050 30 025440C0            CALL     BNDC                OCTAP093
0052 1  0082                DC       IDPR                OCTAP094
0053 0  C832                LDD      IDPR+4              OCTAP095
0054 01 DC00008C            STD   L  PAREA+4             OCTAP096
0056 0  C205                LD     2 5                   OCTAP097
0057 30 03209180            CALL     CHIF                OCTAP098
0059 1  00A1                DC       PAREA+25            OCTAP099
005A 0  C206                LD     2 6                   OCTAP100
005B 0  1890                SRT      16                  OCTAP101
005C 30 025440C0            CALL     BNDC                OCTAP102
005E 1  0092                DC       PAREA+10            OCTAP103
005F 20 176558D5            LIBF     PRNTN               OCTAP104
0060 0  2100                DC       /2100               OCTAP105
0061 1  0088                DC       PAREA               OCTAP106
0062 0  0000                DC       0                   OCTAP107
0063 0  70BE                MDX      CALL                OCTAP108
0064 20 176558D5      ERROR LIBF     PRNTN               OCTAP109
0065 0  2100                DC       /2100               OCTAP110
0066 1  016C                DC       MES5-1              OCTAP111
0067 0  0000          READY DC       0                   OCTAP112
0068 20 17064885            LIBF     PAUSE               OCTAP113
0069 1  007A                DC       K1                  OCTAP114
006A 0  70BF                MDX      MTAPE               OCTAP115
                      *                                  OCTAP116
006B 0  C0C1          EXIT  LD       TPNR                OCTAP117
006C 0  E802                OR       EOF                 OCTAP118
006D 0  D001                STO      EOF                 OCTAP119
006E 20 140478C0            LIBF     MAGT                OCTAP120
006F 0  8000          EOF   DC       /8000               OCTAP121
0070 20 176558D5            LIBF     PRNTN               OCTAP122
0071 0  3F00                DC       /3F00               OCTAP123
0072 20 176558D5            LIBF     PRNTN               OCTAP124
```

```
0073 0  2100                DC      /2100                                  OCTAP125
0074 1  0180                DC      MES7-1                                 OCTAP126
0075 0  0000                DC      0                                      OCTAP127
0076 20 176558D5            LIBF    PRNTN                                  OCTAP128
0077 0  3100                DC      /3100                                  OCTAP129
0078 30 059C98C0            CALL    EXIT                                   OCTAP130
                     *                                                     OCTAP131
007A 0  0001         K1     DC      1                                      OCTAP132
007B 0  000A         K10    DC      10                                     OCTAP133
007C 0  0064         K100   DC      100                                    OCTAP134
007D 0  2710         K10T   DC      10000                                  OCTAP135
007E 0  0000         END    DC      0                                      OCTAP136
007F 0  3B00         PRIOD  DC      /3B00                                  OCTAP137
0080 0  4220         AST    DC      /4220                                  OCTAP138
0082    0006         IDPR   BSS   E 6                                      OCTAP139
0088 0  0048         PAREA  DC      72                                     OCTAP140
0089 0  0050         CARD   DC      80                                     OCTAP141
008A    0050                BSS     80                                     OCTAP142
00DA    0048         TITLE  BSS     72                                     OCTAP143
0122 0  0015                DC      MES2-MES1                              OCTAP144
0123    0021         MES1   DMES  1 '4XERROR TAPE CARD. CORRECT AND '      OCTAP145
0133    0009                DMES  1 CONTINUE.'E                            OCTAP146
0138    0000         MES2   BSS     0                                      OCTAP147
0138 0  0033                DC      MES4-MES3                              OCTAP148
0139    0030         MES3   DMES  1 '4XID NUMBER'10XFIRST BLOCK'10XNO. '   OCTAP149
0151    0036                DMES  1 OF BLOCKS'40XTITLE'E                   OCTAP150
016C    0000         MES4   BSS     0                                      OCTAP151
016C 0  0013                DC      MES6-MES5                              OCTAP152
016D    0026         MES5   DMES  1 '4XTAPE NOT READY. CORRECT AND START.  OCTAP153
0180    0000         MES6   BSS     0                                      OCTAP154
0180 0  000B                DC      MES8-MES7                              OCTAP155
0181    0016         MES7   DMES  1 '4XEND PROGRAM OCTAP.'E                OCTAP156
018C    0000         MES8   BSS     0                                      OCTAP157
DFC0                 SPADR  EQU     -8256                                  OCTAP158
018C    0000                END     START                                  OCTAP159

     NO ERRORS IN ABOVE ASSEMBLY.
OCTAP
DUP FUNCTION COMPLETED
```

```
// JOB    X      X      X
// ASM_OCTA1
  *LIST
  *COMMON 16316
```

OCTA1001

```
                *****************************************************  OCTA1003
                *  IBM 1800 PROGRAMS FOR DATA REDUCTION             *  OCTA1004
                *****************************************************  OCTA1005
                *                                                   *  OCTA1006
                *     PROGRAM OCTA1                                 *  OCTA1007
                *                                                   *  OCTA1008
                *     THIS PROGRAM LOADS BCD CARDS (8K FORMAT)      *  OCTA1009
                *     WITH ANALYSER DATA ON TAPE.                   *  OCTA1010
                *                                                   *  OCTA1011
                *     CARD INPUT                                    *  OCTA1012
                *     1. CC 1-2     **                              *  OCTA1013
                *        CC 3       OUPUT TAPE NUMBER              *  OCTA1014
                *     2.            TITLE OF 1. SPECTRUM           *  OCTA1015
                *     3. CC 4-5     NO. OF BLOCKS FOR 1. SPECTRUM  *  OCTA1016
                *     4.            SPECTRUM CARDS OLD FORMAT (8K) *  OCTA1017
                *     ETC.                                          *  OCTA1018
                *     5. LAST CARD                                  *  OCTA1019
                *        CC 1-4     *END                           *  OCTA1020
                *                                                   *  OCTA1021
                *****************************************************  OCTA1022
0000 20 03059115    START LIBF      CARDN                              OCTA1023
0001 0  1000              DC        /1000                              OCTA1024
0002 1  00A3              DC        CARD                               OCTA1025
0003 0  0000        SAVE  DC        0                                  OCTA1026
0004 20 03059115          LIBF      CARDN                              OCTA1027
0005 0  0000              DC        0                                  OCTA1028
0006 0  70FD              MDX       *-3                                OCTA1029
0007 01 C40000A4          LD    L   CARD+1                             OCTA1030
0009 01 9400009A          S     L   AST                                OCTA1031
000B 01 4C180014          BSC   L   S1,+-                              OCTA1032
000D 20 176558D5          LIBF      PRNTN                              OCTA1033
000E 0  2100              DC        /2100                              OCTA1034
000F 1  013C              DC        MES1-1                             OCTA1035
0010 0  0004        K4    DC        4                                  OCTA1036
0011 20 17064885          LIBF      PAUSE                              OCTA1037
0012 1  0094              DC        K1                                 OCTA1038
0013 0  70EC              MDX       START                              OCTA1039
0014 01 C40000A6    S1    LD    L   CARD+3                             OCTA1040
0016 0  6206              LDX   2   6                                  OCTA1041
0017 0  1240              SLCA  2   0                                  OCTA1042
0018 0  6AEA              STX   2   SAVE                               OCTA1043
0019 0  C0F6              LD        K4                                 OCTA1044
001A 0  90E8              S         SAVE                               OCTA1045
001B 0  D020              STO       TPNR1                              OCTA1046
001C 0  D014              STO       TPNR                               OCTA1047
001D 20 176558D5          LIBF      PRNTN                              OCTA1048
001E 0  3100              DC        /3100                              OCTA1049
001F 20 176558D5          LIBF      PRNTN                              OCTA1050
0020 0  2100              DC        /2100                              OCTA1051
0021 1  0152              DC        MES3-1                             OCTA1052
0022 0  0000              DC        0                                  OCTA1053
0023 20 176558D5          LIBF      PRNTN                              OCTA1054
0024 0  3D00              DC        /3D00                              OCTA1055
0025 30 160D9131    CALL  CALL      OCRD1                              OCTA1056
0027 0  DFC0              DC        SPADR                              OCTA1057
0028 0  BF7E              DC        SPAD2                              OCTA1058
0029 1  00F4              DC        TITLE                              OCTA1059
002A 1  0098              DC        END                                OCTA1060
002B 01 74000098          MDX   L   END,0                              OCTA1061
002D 0  7057              MDX       EXIT                               OCTA1062
002E 30 148C15C5    MTAPE CALL      MTAPE                              OCTA1063
```

```
0030 0   DFC0                DC       SPADR                    OCTA1064
0031 0   0000        TPNR    DC       *-*                      OCTA1065
0032 1   007A                DC       READY                    OCTA1066
0033 01  7400007A            MDX   L  READY,0                  OCTA1067
0035 0   7041                MDX      ERROR                    OCTA1068
0036 00  6600DFC0            LDX   L2 SPADR                    OCTA1069
0038 0   400C                BSI      WRITE                    OCTA1070
0039 30  148C15C5    MTAP1   CALL     MTAPE                    OCTA1071
003B 0   BF7E                DC       SPAD2                    OCTA1072
003C 0   0000        TPNR1   DC       *-*                      OCTA1073
003D 1   007A                DC       READY                    OCTA1074
003E 01  7400007A            MDX   L  READY,0                  OCTA1075
0040 0   703D                MDX      ERRO1                    OCTA1076
0041 00  6600BF7E            LDX   L2 SPAD2                    OCTA1077
0043 0   4001                BSI      WRITE                    OCTA1078
0044 0   70E0                MDX      CALL                     OCTA1079
                     *                                         OCTA1080
0045 0   0000        WRITE   DC       0                        OCTA1081
0046 20  024C1552            LIBF     BLANK                    OCTA1082
0047 1   00A3                DC       PAREA+1                  OCTA1083
0048 0   0048                DC       72                       OCTA1084
0049 20  085935D9            LIBF     HOLPR                    OCTA1085
004A 0   0001                DC       1                        OCTA1086
004B 1   00F4                DC       TITLE                    OCTA1087
004C 1   00C5                DC       PAREA+35                 OCTA1088
004D 0   0048                DC       72                       OCTA1089
004E 0   C200                LD     2 0                        OCTA1090
004F 30  03209180            CALL     CHIF                     OCTA1091
0051 1   00A4                DC       PAREA+2                  OCTA1092
0052 01  CC0000A4            LDD   L  PAREA+2                  OCTA1093
0054 01  EC000099            OR    L  PRIOD                    OCTA1094
0056 0   18D8                RTE      24                       OCTA1095
0057 01  DC0000A4            STD   L  PAREA+2                  OCTA1096
0059 0   C201                LD     2 1                        OCTA1097
005A 0   A03A                M        K10                      OCTA1098
005B 0   1090                SLT      16                       OCTA1099
005C 0   8202                A      2 2                        OCTA1100
005D 0   A038                M        K100                     OCTA1101
005E 0   1090                SLT      16                       OCTA1102
005F 0   8203                A      2 3                        OCTA1103
0060 0   8036                A        K10T                     OCTA1104
0061 0   1890                SRT      16                       OCTA1105
0062 30  025440C0            CALL     BNDC                     OCTA1106
0064 1   009C                DC       IDPR                     OCTA1107
0065 0   C83A                LDD      IDPR+4                   OCTA1108
0066 01  DC0000A6            STD   L  PAREA+4                  OCTA1109
0068 0   C205                LD     2 5                        OCTA1110
0069 30  03209180            CALL     CHIF                     OCTA1111
006B 1   00BB                DC       PAREA+25                 OCTA1112
006C 0   C206                LD     2 6                        OCTA1113
006D 0   1890                SRT      16                       OCTA1114
006E 30  025440C0            CALL     BNDC                     OCTA1115
0070 1   00AC                DC       PAREA+10                 OCTA1116
0071 20  176558D5            LIBF     PRNTN                    OCTA1117
0072 0   2100                DC       /2100                    OCTA1118
0073 1   00A2                DC       PAREA                    OCTA1119
0074 0   0000                DC       0                        OCTA1120
0075 01  4C800045            BSC   I  WRITE                    OCTA1121
                     *                                         OCTA1122
0077 20  176558D5    ERROR   LIBF     PRNTN                    OCTA1123
0078 0   2100                DC       /2100                    OCTA1124
```

```
0079 1  0186                DC      MES5-1                                  OCTA1125
007A 0  0000        READY   DC      0                                       OCTA1126
007B 20 17064885            LIBF    PAUSE                                   OCTA1127
007C 1  0094                DC      K1                                      OCTA1128
007D 0  70B0                MDX     MTAPE                                   OCTA1129
                    *                                                       OCTA1130
007E 20 176558D5    ERR01   LIBF    PRNTN                                   OCTA1131
007F 0  2100                DC      /2100                                   OCTA1132
0080 1  0186                DC      MES5-1                                  OCTA1133
0081 0  0000                DC      0                                       OCTA1134
0082 20 17064885            LIBF    PAUSE                                   OCTA1135
0083 1  0094                DC      K1                                      OCTA1136
0084 0  70B4                MDX     MTAP1                                   OCTA1137
                    *                                                       OCTA1138
0085 0  C0AB        EXIT    LD      TPNR                                    OCTA1139
0086 0  E802                OR      EOF                                     OCTA1140
0087 0  D001                STO     EOF                                     OCTA1141
0088 20 140478C0            LIBF    MAGT                                    OCTA1142
0089 0  8000        EOF     DC      /8000                                   OCTA1143
008A 20 176558D5            LIBF    PRNTN                                   OCTA1144
008B 0  3F00                DC      /3F00                                   OCTA1145
008C 20 176558D5            LIBF    PRNTN                                   OCTA1146
008D 0  2100                DC      /2100                                   OCTA1147
008E 1  019A                DC      MES7-1                                  OCTA1148
008F 0  0000                DC      0                                       OCTA1149
0090 20 176558D5            LIBF    PRNTN                                   OCTA1150
0091 0  3100                DC      /3100                                   OCTA1151
0092 30 059C98C0            CALL    EXIT                                    OCTA1152
                    *                                                       OCTA1153
0094 0  0001        K1      DC      1                                       OCTA1154
0095 0  000A        K10     DC      10                                      OCTA1155
0096 0  0064        K100    DC      100                                     OCTA1156
0097 0  2710        K10T    DC      10000                                   OCTA1157
0098 0  0000        END     DC      0                                       OCTA1158
0099 0  3B00        PRIOD   DC      /3B00                                   OCTA1159
009A 0  4220        AST     DC      /4220                                   OCTA1160
009C    0006        IDPR    BSS   E 6                                       OCTA1161
00A2 0  0048        PAREA   DC      72                                      OCTA1162
00A3 0  0050        CARD    DC      80                                      OCTA1163
00A4    0050                BSS     80                                      OCTA1164
00F4    0048        TITLE   BSS     72                                      OCTA1165
013C 0  0015                DC      MES2-MES1                               OCTA1166
013D    0021        MES1    DMES  1 '4XERROR TAPE CARD. CORRECT AND '       OCTA1167
014D    0009                DMES  1 CONTINUE.'E                             OCTA1168
0152    0000        MES2    BSS     0                                       OCTA1169
0152 0  0033                DC      MES4-MES3                               OCTA1170
0153    0030        MES3    DMES  1 '4XID NUMBER'10XFIRST BLOCK'10XNO. '    OCTA1171
016B    0036                DMES  1 OF BLOCKS'40XTITLE'E                    OCTA1172
0186    0000        MES4    BSS     0                                       OCTA1173
0186 0  0013                DC      MES6-MES5                               OCTA1174
0187    0026        MES5    DMES  1 '4XTAPE NOT READY. CORRECT AND START.   OCTA1175
019A    0000        MES6    BSS     0                                       OCTA1176
019A 0  000B                DC      MES8-MES7                               OCTA1177
019B    0016        MES7    DMES  1 '4XEND PROGRAM OCTA1.'E                 OCTA1178
01A6    0000        MES8    BSS     0                                       OCTA1179
DFC0                SPADR   EQU     -8256                                   OCTA1180
BF7E                SPAD2   EQU     SPADR-8258                              OCTA1181
                    *                                                       OCTA1182
01A6    0000                END     START                                   OCTA1183
```

NO ERRORS IN ABOVE ASSEMBLY.

```
// JOB    X     X     X
// ASM SEARD
  *LIST
  *COMMON 17096                                          SEARD001
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*****************************************************  SEARD003
*  IBM 1800 PROGRAMS FOR DATA REDUCTION             *  SEARD004
*****************************************************  SEARD005
*                                                   *  SEARD006
*  PROGRAM SEARD                                    *  SEARD007
*                                                   *  SEARD008
*  THE PROGRAM SEARCHES SPECTRA WITH GIVEN ID NUM-  *  SEARD009
*  BER ON DISK AND PRINTS A LIST, PUNCHES CARDS,    *  SEARD010
*  WRITES A COPY ON DISK AND/OR PRINTS THE          *  SEARD011
*  SPECTRUM.                                        *  SEARD012
*                                                   *  SEARD013
*  CONTROL CARDS                                    *  SEARD014
*     CC   1        *                               *  SEARD015
*     CC   3        L     LIST OF DATA IS PRINTED   *  SEARD016
*                   BLANK NO LIST                   *  SEARD017
*     CC   5        C     BINARY CARDS OF DATA ARE  *  SEARD018
*                   PUNCHED                         *  SEARD019
*                   BLANK NO CARDS ARE PUNCHED      *  SEARD020
*     CC   7        D    A DISK COPY OF THE DATA    *  SEARD021
*                        IS MADE.                   *  SEARD022
*                   BLANK NO TAPE COPY IS MADE      *  SEARD023
*     CC   9        I     A LIST WITH INTEGRAL      *  SEARD024
*                         IS PRINTD                 *  SEARD025
*                   BLANK NO INTEGRAL SPECTRUM IS   *  SEARD026
*                         PRINTED                   *  SEARD027
*                   THE INTEGRAL SPECTRUM DOES NOT  *  SEARD028
*                   CARRY THE SUM OVER GROUPS OF    *  SEARD029
*                   4096 CHANNELS                   *  SEARD030
*     CC  10        BLANK IF THIS SPECTRUM IS NOT   *  SEARD031
*                         TO BE ADDED OR SUBSTR.    *  SEARD032
*                         FROM AN OTHER SPECTRUM.   *  SEARD033
*                   +     THE SPECTRUM IS ADDED TO  *  SEARD034
*                         A SUM SPECTRUM. IF THIS   *  SEARD035
*                         CARD CONTAINS LIST, CARD  *  SEARD036
*                         OR TAPE OPTIONS, THE PART*  SEARD037
*                         TIAL SP. IS LISTED, ETC   *  SEARD038
*                   -     ANALOG +                  *  SEARD039
*                   *     THE SUM AREA RECEIVES THE*  SEARD040
*                         ID GIVEN CC 11-17 AND IS  *  SEARD041
*                         TREATED AS SPECIFIED IN   *  SEARD042
*                         CC 3,5,7,9. IN THIS CASE  *  SEARD043
*                         NO SPECTRUM IS READ FROM  *  SEARD044
*                         TAPE.                     *  SEARD045
*     CC  11-12     GROUP NUMBER OF EXPERIMENT      *  SEARD046
*     CC  13        .                               *  SEARD047
*     CC  14        1. EXP. NUMBER                  *  SEARD048
*     CC  15        2. EXP. NUMBER                  *  SEARD049
*     CC  16-17     SERIAL NUMBER                   *  SEARD050
*     CC  19-22     FIRST BLOCK                     *  SEARD051
*     CC  23-24     NUMBER OF BLOCKS                *  SEARD052
*     CC  26-29     NEW ID-NUMBER FOR THE TAPE COPY*  SEARD053
*                   IF BLANK THE OLD NUMBER IS USED*  SEARD054
*     CC  31-72     REMARKS, WILL BE HEADED ON THE  *  SEARD055
*                   OUTPUT LISTING                  *  SEARD056
*     IF THE + - OPTION IS USED, THE SPECTRA MAY    *  SEARD057
*     ONLY BE HANDELED IN GROUPS OF 4096 CHANNELS   *  SEARD058
*     OR LESS.                                      *  SEARD059
*     FOR EACH SPECTRUM A CARD 3 IS NECESSARY.      *  SEARD060
*  LAST CARD                                        *  SEARD061
*     CC   1        *                               *  SEARD062
*     CC   2- 4     END                             *  SEARD063
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                        *                                                   * SEARD064
                        ***************************************************** SEARD065
0000 20 176558D5        START LIBF    PRNTN                                   SEARD066
0001 0  3100                  DC      /3100                                   SEARD067
0002 20 176558D5              LIBF    PRNTN                                   SEARD068
0003 0  2100                  DC      /2100                                   SEARD069
0004 1  0256                  DC      MES1-1                                  SEARD070
0005 0  0000                  DC      0                                       SEARD071
0006 01 66000229              LDX  L2 R          XR2 HAS RELOCATION ADDRESS   SEARD072
0008 20 024C1552              LIBF    BLANK                                   SEARD073
0009 0  BFBE                  DC      SPAD2                                   SEARD074
000A 0  2000                  DC      8192                                    SEARD075
                        *                                                     SEARD076
                        *     START LOOP FOR DIFFERENT SPECTRA                SEARD077
                        *                                                     SEARD078
000B 20 03059115        A13   LIBF    CARDN      READ SPECTRUM CARD           SEARD079
000C 0  1000                  DC      /1000                                   SEARD080
000D 1  01AB                  DC      CARD                                    SEARD081
000E 0  0000                  DC      0                                       SEARD082
000F 20 03059115        A14   LIBF    CARDN      TEST OPERATION COMPLETE      SEARD083
0010 0  0000                  DC      0                                       SEARD084
0011 0  70FD                  MDX     A14                                     SEARD085
0012 30 031238A3              CALL    CDTST                                   SEARD086
0014 1  01AC                  DC      CARD+1                                  SEARD087
0015 0  7001                  MDX     A146                                    SEARD088
0016 0  7003                  MDX     A147                                    SEARD089
0017 20 03059115        A146  LIBF    CARDN                                   SEARD090
0018 0  4000                  DC      /4000                                   SEARD091
0019 0  70F1                  MDX     A13                                     SEARD092
001A 20 085935D9        A147  LIBF    HOLPR                                   SEARD093
001B 0  0001                  DC      1                                       SEARD094
001C 1  01AC                  DC      CARD+1                                  SEARD095
001D 1  038B                  DC      OUTPT+1                                 SEARD096
001E 0  0050                  DC      80                                      SEARD097
001F 20 176558D5              LIBF    PRNTN                                   SEARD098
0020 0  2100                  DC      /2100                                   SEARD099
0021 1  038A                  DC      OUTPT                                   SEARD100
0022 0  0000                  DC      0                                       SEARD101
0023 0  C283                  LD    2 CARD+1-R                                SEARD102
0024 0  92F4                  S     2 AST-R                                   SEARD103
0025 01 4C18002A              BSC  L  A15,+-                                  SEARD104
0027 01 44000116              BSI  L  ERROR                                   SEARD105
0029 0  70E1                  MDX     A13                                     SEARD106
002A 0  C284            A15   LD    2 CARD+2-R   TEST END CARD                SEARD107
002B 0  92F5                  S     2 END-R                                   SEARD108
002C 01 4C1801A1              BSC  L  FIN,+-                                  SEARD109
002E 0  C28F                  LD    2 CARD+13-R  TEST IF ID IS CORRECT        SEARD110
002F 0  92FB                  S     2 PTPR-R                                  SEARD111
0030 01 4C180035              BSC  L  A150,+-                                 SEARD112
0032 01 44000116              BSI  L  ERROR                                   SEARD113
0034 0  70D6                  MDX     A13                                     SEARD114
0035 0  61ED            A150  LDX   1 -19                                     SEARD115
0036 01 C50001C9        A151  LD   L1 CARD+30                                 SEARD116
0038 01 4C180042              BSC  L  A1515,+-                                SEARD117
003A 0  620C                  LDX   2 12                                      SEARD118
003B 0  1240                  SLCA  2 0                                       SEARD119
003C 01 6E00021C              STX  L2 SAVE2                                   SEARD120
003E 01 66000229              LDX  L2 R                                       SEARD121
0040 0  C209                  LD    2 K10-R                                   SEARD122
0041 0  92F3                  S     2 SAVE2-R                                 SEARD123
0042 01 D500024A        A1515 STO  L1 ID+19                                   SEARD124
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0044 0  7101              MDX   1 1                                  SEARD125
0045 0  70F0              MDX     A151                               SEARD126
0046 0  C20E              LD    2 ID-R                               SEARD127
0047 0  A209              M     2 K10-R                              SEARD128
0048 0  1090              SLT     16                                 SEARD129
0049 0  820F              A     2 ID+1-R                             SEARD130
004A 0  D20F              STO   2 ID+1-R       PISW NUMBER           SEARD131
004B 0  C211              LD    2 ID+3-R                             SEARD132
004C 0  D210              STO   2 ID+2-R       1. EXP. NUMBER        SEARD133
004D 0  C212              LD    2 ID+4-R                             SEARD134
004E 0  D211              STO   2 ID+3-R       2. EXP. NUMBER        SEARD135
004F 0  C213              LD    2 ID+5-R                             SEARD136
0050 0  A209              M     2 K10-R                              SEARD137
0051 0  1090              SLT     16                                 SEARD138
0052 0  8214              A     2 ID+6-R                             SEARD139
0053 0  D212              STO   2 ID+4-R       SERIAL NUMBER         SEARD140
0054 0  C216              LD    2 ID+8-R                             SEARD141
0055 0  A209              M     2 K10-R                              SEARD142
0056 0  1090              SLT     16                                 SEARD143
0057 0  8217              A     2 ID+9-R                             SEARD144
0058 0  A209              M     2 K10-R                              SEARD145
0059 0  1090              SLT     16                                 SEARD146
005A 0  8218              A     2 ID+10-R                            SEARD147
005B 0  A209              M     2 K10-R                              SEARD148
005C 0  1090              SLT     16                                 SEARD149
005D 0  8219              A     2 ID+11-R                            SEARD150
005E 0  D203              STO   2 B1-R                               SEARD151
005F 0  1804              SRA     4                                  SEARD152
0060 0  8207              A     2 K1-R                               SEARD153
0061 0  D213              STO   2 ID+5-R                             SEARD154
0062 0  C21A              LD    2 ID+12-R                            SEARD155
0063 0  A209              M     2 K10-R                              SEARD156
0064 0  1090              SLT     16                                 SEARD157
0065 0  821B              A     2 ID+13-R                            SEARD158
0066 0  D205              STO   2 NB-R                               SEARD159
0067 0  8203              A     2 B1-R                               SEARD160
0068 0  9207              S     2 K1-R                               SEARD161
0069 0  D202              STO   2 BE-R                               SEARD162
006A 20 085935D9          LIBF    HOLPR        GET ID NUMBER IN PRINTER SEARD163
006B 0  0001              DC      1            CODE                  SEARD164
006C 1  01B5              DC      CARD+10                            SEARD165
006D 1  024A              DC      IDPR                               SEARD166
006E 0  0008              DC      8                                  SEARD167
006F 0  C21D              LD    2 ID+15-R                            SEARD168
0070 0  D227              STO   2 IDNEU-R                            SEARD169
0071 0  C21E              LD    2 ID+16-R                            SEARD170
0072 0  D228              STO   2 IDNEU+1-R                          SEARD171
0073 0  C21F              LD    2 ID+17-R                            SEARD172
0074 0  A209              M     2 K10-R                              SEARD173
0075 0  1090              SLT     16                                 SEARD174
0076 0  8220              A     2 ID+18-R                            SEARD175
0077 0  D229              STO   2 IDNEU+2-R                          SEARD176
0078 20 085935D9          LIBF    HOLPR                              SEARD177
0079 0  0001              DC      1                                  SEARD178
007A 1  01C5              DC      CARD+26                            SEARD179
007B 1  024E              DC      IDPRN                              SEARD180
007C 0  0004              DC      4                                  SEARD181
007D 0  C202              LD    2 BE-R                               SEARD182
007E 0  9203              S     2 B1-R                               SEARD183
007F 01 4C28012D          BSC   L ERR2,+Z                            SEARD184
0081 0  C202        A152  LD    2 BE-R                               SEARD185
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0082 0  1804                SRA     4                                SEARD186
0083 0  9213                S     2 ID+5-R                           SEARD187
0084 01 4C08008F            BSC   L A153,+                           SEARD188
0086 0  C28C                LD    2 CARD+10-R                        SEARD189
0087 01 4C20013C            BSC   L ERR3,Z                           SEARD190
0089 0  C213                LD    2 ID+5-R                           SEARD191
008A 0  1004                SLA     4                                SEARD192
008B 0  D204                STO   2 B2-R                             SEARD193
008C 01 6C000234            STX   L IND                              SEARD194
008E 0  7004                MDX     A155                             SEARD195
008F 0  1010        A153    SLA     16                               SEARD196
0090 0  D20B                STO   2 IND-R                            SEARD197
0091 0  C202                LD    2 BE-R                             SEARD198
0092 0  D204                STO   2 B2-R                             SEARD199
0093 0  C28C        A155    LD    2 CARD+10-R                        SEARD200
0094 0  92F4                S     2 AST-R                            SEARD201
0095 01 4C1800C0            BSC   L A160,+-                          SEARD202
0097 30 04262494            CALL    DISKM                            SEARD203
0099 0  DFC0                DC      SPADR                            SEARD204
009A 1  0235                DC      ERRSW                            SEARD205
009B 0  BD38                DC      BUF                              SEARD206
009C 1  0238                DC      ID+1                             SEARD207
009D 1  022F                DC      K0                               SEARD208
009E 01 74000235            MDX   L ERRSW,0                          SEARD209
00A0 0  7036                MDX     ERR                              SEARD210
00A1 00 C400DFC4            LD    L SPADR+4                          SEARD211
00A3 01 4C2000A8            BSC   L A1551,Z                          SEARD212
00A5 0  C207                LD    2 K1-R                             SEARD213
00A6 00 D400DFC4            STO   L SPADR+4                          SEARD214
00A8 0  C28C        A1551   LD    2 CARD+10-R                        SEARD215
00A9 0  92FE                S     2 PLUS-R                           SEARD216
00AA 01 4C2000B9            BSC   L A159,Z                           SEARD217
00AC 0  C2FC                LD    2 ADD1-R                           SEARD218
00AD 0  D004                STO     A158                             SEARD219
00AE 00 6500E000    A156    LDX   L1 -8192                           SEARD220
00B0 00 CD00DFBE    A157    LDD   L1 SPAD2+8192                      SEARD221
00B2 00 8D000000    A158    AD    L1 SPADR+64+8192                   SEARD222
00B4 00 DD00DFBE            STD   L1 SPAD2+8192                      SEARD223
                    *       STD   L1 SPADR+64+8192                   SEARD224
00B6 0  7102                MDX   1 2                                SEARD225
00B7 0  70F8                MDX     A157                             SEARD226
00B8 0  7023                MDX     A161                             SEARD227
00B9 0  C28C        A159    LD    2 CARD+10-R                        SEARD228
00BA 0  92FF                S     2 MINUS-R                          SEARD229
00BB 01 4C2000DC            BSC   L A161,Z                           SEARD230
00BD 0  C2FD                LD    2 SUB1-R                           SEARD231
00BE 0  D0F3                STO     A158                             SEARD232
00BF 0  70EE                MDX     A156                             SEARD233
00C0 30 145A5140    A160    CALL    MOVE                             SEARD234
00C2 0  BFBE                DC      SPAD2                            SEARD235
00C3 0  E000                DC      SPADR+64                         SEARD236
00C4 0  2000                DC      8192                             SEARD237
00C5 30 145A5140            CALL    MOVE                             SEARD238
00C7 1  0238                DC      ID+1                             SEARD239
00C8 0  DFC0                DC      SPADR                            SEARD240
00C9 0  0005                DC      5                                SEARD241
00CA 0  C205                LD    2 NB-R                             SEARD242
00CB 00 D400DFC5            STO   L SPADR+5                          SEARD243
00CD 0  C203                LD    2 B1-R                             SEARD244
00CE 00 D400DFC6            STO   L SPADR+6                          SEARD245
00D0 0  1010                SLA     16                               SEARD246
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00D1 00 D400DFC9          STO  L  SPADR+9                          SEARD247
00D3 20 024C1552          LIBF    BLANK                            SEARD248
00D4 0  BFBE              DC      SPAD2                            SEARD249
00D5 0  2000              DC      8192                             SEARD250
00D6 0  7005              MDX     A161                             SEARD251
00D7 0  4049        ERR   BSI     ERR1                             SEARD252
00D8 0  1010              SLA     16                               SEARD253
00D9 0  D20C              STO   2 ERRSW-R                          SEARD254
00DA 01 4C00000B          BSC  L  A13                              SEARD255
00DC 0  C285        A161  LD    2 CARD+3-R                         SEARD256
00DD 0  92F6              S     2 L-R                              SEARD257
00DE 01 4418014B          BSI  L  LIST,+-                          SEARD258
00E0 0  C227              LD    2 IDNEU-R                          SEARD259
00E1 0  EA28              OR    2 IDNEU+1-R                        SEARD260
00E2 0  EA29              OR    2 IDNEU+2-R                        SEARD261
00E3 01 4C1800F3          BSC  L  A165,+-                          SEARD262
00E5 0  C227              LD    2 IDNEU-R                          SEARD263
00E6 00 D400DFC1          STO  L  SPADR+1                          SEARD264
00E8 0  C228              LD    2 IDNEU+1-R                        SEARD265
00E9 00 D400DFC2          STO  L  SPADR+2                          SEARD266
00EB 0  C229              LD    2 IDNEU+2-R                        SEARD267
00EC 00 D400DFC3          STO  L  SPADR+3                          SEARD268
00EE 0  CA25              LDD   2 IDPRN-R                          SEARD269
00EF 01 DC000358    A164  STD  L  MES21+2                          SEARD270
00F1 01 4C0000F5          BSC  L  A166                             SEARD271
00F3 0  CA23        A165  LDD   2 IDPR+2-R                         SEARD272
00F4 0  70FA              MDX     A164                             SEARD273
00F5 0  CA21        A166  LDD   2 IDPR-R                           SEARD274
00F6 01 DC000348          STD  L  MES20                            SEARD275
00F8 01 DC000356          STD  L  MES21                            SEARD276
00FA 0  CA23              LDD   2 IDPR+2-R                         SEARD277
00FB 01 DC00034A          STD  L  MES20+2                          SEARD278
00FD 0  C287              LD    2 CARD+5-R                         SEARD279
00FE 0  92F7              S     2 C-R                              SEARD280
00FF 01 44180154          BSI  L  CARDS,+-                         SEARD281
0101 0  C289              LD    2 CARD+7-R                         SEARD282
0102 0  92F8              S     2 D-R                              SEARD283
0103 01 44180169          BSI  L  DISK,+-                          SEARD284
0105 0  C28B              LD    2 CARD+9-R                         SEARD285
0106 0  92F9              S     2 I-R                              SEARD286
0107 01 44180183          BSI  L  INTEG,+-                         SEARD287
0109 01 74000234          MDX  L  IND,0                            SEARD288
010B 0  7002              MDX     A17                              SEARD289
010C 01 4C00000B          BSC  L  A13                              SEARD290
010E 0  C204        A17   LD    2 B2-R                             SEARD291
010F 0  8207              A     2 K1-R                             SEARD292
0110 0  D203              STO   2 B1-R                             SEARD293
0111 0  C213              LD    2 ID+5-R                           SEARD294
0112 0  8207              A     2 K1-R                             SEARD295
0113 0  D213              STO   2 ID+5-R                           SEARD296
0114 01 4C000081          BSC  L  A152                             SEARD297
                    *                                              SEARD298
                    *     SUBROUTINE ERROR INPUT CARD              SEARD299
                    *                                              SEARD300
0116 0  0000        ERROR DC      0                                SEARD301
0117 20 176558D5          LIBF    PRNTN                            SEARD302
0118 0  2100              DC      /2100                            SEARD303
0119 1  025E              DC      MES3-1                           SEARD304
011A 0  0000              DC      0                                SEARD305
011B 20 176558D5          LIBF    PRNTN       SKIP THREE LINES     SEARD306
011C 0  3F00              DC      /3F00                            SEARD307
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011D 20 17064885          LIBF    PAUSE                                  SEARD308
011E 1  0229              DC      A                                      SEARD309
011F 01 4C800116          BSC  I  ERROR                                  SEARD310
                          *                                              SEARD311
                          *       SUBROUTINE IF SPECTRUM CANNOT BE FOUND SEARD312
                          *                                              SEARD313
0121 0  0000         ERR1 DC      0                                      SEARD314
0122 0  CA21              LDD   2 IDPR-R                                 SEARD315
0123 0  DA57              STD   2 MES51-R                                SEARD316
0124 0  CA23              LDD   2 IDPR+2-R                               SEARD317
0125 0  DA59              STD   2 MES51+2-R                              SEARD318
0126 20 176558D5          LIBF    PRNTN                                  SEARD319
0127 0  2100              DC      /2100                                  SEARD320
0128 1  0279              DC      MES5-1                                 SEARD321
0129 0  0000              DC      0                                      SEARD322
012A 0  40EB              BSI     ERROR                                  SEARD323
012B 01 4C800121          BSC  I  ERR1                                   SEARD324
012D 0  CA21         ERR2 LDD   2 IDPR-R                                 SEARD325
012E 01 DC000330          STD  L  MES16                                  SEARD326
0130 0  CA23              LDD   2 IDPR+2-R                               SEARD327
0131 01 DC000332          STD  L  MES16+2                                SEARD328
0133 20 176558D5          LIBF    PRNTN                                  SEARD329
0134 0  3F00              DC      /3F00                                  SEARD330
0135 20 176558D5          LIBF    PRNTN                                  SEARD331
0136 0  2100              DC      /2100                                  SEARD332
0137 1  0314              DC      MES15-1                                SEARD333
0138 0  0000              DC      0                                      SEARD334
0139 0  40DC              BSI     ERROR                                  SEARD335
013A 01 4C00000B          BSC  L  A13                                    SEARD336
013C 0  CA21         ERR3 LDD   2 IDPR-R                                 SEARD337
013D 00 DC00015D          STD  L  MES24-R                                SEARD338
013F 0  CA23              LDD   2 IDPR+2-R                               SEARD339
0140 00 DC00015F          STD  L  MES24+2-R                              SEARD340
0142 20 176558D5          LIBF    PRNTN                                  SEARD341
0143 0  3F00              DC      /3F00                                  SEARD342
0144 20 176558D5          LIBF    PRNTN                                  SEARD343
0145 0  2100              DC      /2100                                  SEARD344
0146 1  035A              DC      MES23-1                                SEARD345
0147 0  0000              DC      0                                      SEARD346
0148 0  40CD              BSI     ERROR                                  SEARD347
0149 01 4C00000B          BSC  L  A13                                    SEARD348
                          *                                              SEARD349
                          *       CALL SUBROUTINE MPRNT                  SEARD350
                          *                                              SEARD351
014B 0  0000         LIST DC      0                                      SEARD352
014C 30 145D9563          CALL    MPRNT                                  SEARD353
014E 0  DFC0              DC      SPADR                                  SEARD354
014F 1  022C              DC      B1                                     SEARD355
0150 1  022D              DC      B2                                     SEARD356
0151 1  01CA              DC      TITLE                                  SEARD357
0152 01 4C80014B          BSC  I  LIST                                   SEARD358
                          *                                              SEARD359
                          *       CALL SUBROUTINE MEMORY TO BINARY CARDS SEARD360
                          *                                              SEARD361
0154 0  0000         CARDS DC     0                                      SEARD362
0155 0  4008              BSI     MESSG                                  SEARD363
0156 30 140C4089          CALL    MCDBI                                  SEARD364
0158 0  DFC0              DC      SPADR                                  SEARD365
0159 1  022C              DC      B1                                     SEARD366
015A 1  022D              DC      B2                                     SEARD367
015B 1  01CA              DC      TITLE                                  SEARD368
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015C 01 4C800154          BSC  I  CARDS                                  SEARD369
                          *                                             SEARD370
                          *     SUBROUTINE FOR MESSAGE NEW ID-NUMBER    SEARD371
                          *                                             SEARD372
015E 0  0000        MESSG DC     0                                      SEARD373
015F 20 176558D5          LIBF   PRNTN                                  SEARD374
0160 0  3D00              DC     /3D00                                  SEARD375
0161 20 176558D5          LIBF   PRNTN                                  SEARD376
0162 0  2100              DC     /2100                                  SEARD377
0163 1  033F              DC     MES19-1                                SEARD378
0164 0  0000              DC     0                                      SEARD379
0165 20 176558D5          LIBF   PRNTN                                  SEARD380
0166 0  3D00              DC     /3D00                                  SEARD381
0167 01 4C80015E          BSC  I MESSG                                  SEARD382
                          *                                             SEARD383
                          *     CALL SUBROUTINE MEMORY TO DISK          SEARD384
                          *                                             SEARD385
0169 0  0000        DISK  DC     0                                      SEARD386
016A 0  40F3              BSI    MESSG                                  SEARD387
016B 30 14109892    T1    CALL   MDISK                                  SEARD388
016D 0  DFC0              DC     SPADR                                  SEARD389
016E 1  0235              DC     ERRSW                                  SEARD390
016F 0  BD38              DC     BUF                                    SEARD391
0170 1  0253              DC     ADR                                    SEARD392
0171 01 74000235          MDX  L ERRSW,0                                SEARD393
0173 0  7002              MDX    T2                                     SEARD394
0174 01 4C800169          BSC  I DISK                                   SEARD395
0176 0  C20C        T2    LD   2 ERRSW-R                                SEARD396
0177 30 03209180          CALL   CHIF                                   SEARD397
0179 1  02A5              DC     MES8-2                                 SEARD398
017A 20 176558D5          LIBF   PRNTN       SPECTRUM NOT STORED ON    SEARD399
017B 0  2100              DC     /2100       DISK                      SEARD400
017C 1  028E              DC     MES7-1                                 SEARD401
017D 0  0000              DC     0                                      SEARD402
017E 20 176558D5          LIBF   PRNTN                                  SEARD403
017F 0  3E00              DC     /3E00                                  SEARD404
0180 0  1010              SLA    16                                     SEARD405
0181 0  D20C              STO  2 ERRSW-R                                SEARD406
0182 0  70E8              MDX    T1          TRY AGAIN TO WRITE        SEARD407
                          *                                             SEARD408
                          *     CALL SUBROUTINE INTEGRAL SPECTRUM       SEARD409
                          *                                             SEARD410
0183 0  0000        INTEG DC     0                                      SEARD411
0184 30 09563147          CALL   INTEG                                  SEARD412
0186 0  DFC0              DC     SPADR                                  SEARD413
0187 1  022C              DC     B1                                     SEARD414
0188 1  022D              DC     B2                                     SEARD415
0189 1  0236              DC     OVFLW                                  SEARD416
018A 01 74000236          MDX  L OVFLW,0                                SEARD417
018C 0  7012              MDX    OVER                                   SEARD418
018D 0  C20A              LD   2 K17-R                                  SEARD419
018E 0  D004        IN1   STO    IN2                                    SEARD420
018F 20 08593142          LIBF   HOLEB                                  SEARD421
0190 0  0001              DC     1                                      SEARD422
0191 1  02F7              DC     MES9                                   SEARD423
0192 1  02B1              DC     TITPR+10                               SEARD424
0193 0  0000        IN2   DC     *-*                                    SEARD425
0194 30 145D9571          CALL   MPRN1                                  SEARD426
0196 0  DFC0              DC     SPADR                                  SEARD427
0197 1  022C              DC     B1                                     SEARD428
0198 1  022D              DC     B2                                     SEARD429
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0199 1  02A7                DC      TITPR                                  SEARD430
019A 20 024C1552            LIBF    BLANK                                  SEARD431
019B 1  02B1                DC      TITPR+10                               SEARD432
019C 0  0023        K35     DC      35                                     SEARD433
019D 01 4C800183            BSC  I  INTEG                                  SEARD434
019F 0  C0FC        OVER    LD      K35                                    SEARD435
01A0 0  70ED                MDX     IN1                                    SEARD436
                    *                                                      SEARD437
                    *       END OF JOB                                     SEARD438
                    *                                                      SEARD439
01A1 20 176558D5    FIN     LIBF    PRNTN       SKIP THREE LINES           SEARD440
01A2 0  3F00                DC      /3F00                                  SEARD441
01A3 20 176558D5            LIBF    PRNTN                                  SEARD442
01A4 0  2100                DC      /2100                                  SEARD443
01A5 1  0309                DC      MES13-1                                SEARD444
01A6 0  0000                DC      0                                      SEARD445
01A7 20 176558D5            LIBF    PRNTN                                  SEARD446
01A8 0  3100                DC      /3100                                  SEARD447
01A9 30 059C98C0            CALL    EXIT                                   SEARD448
                    *                                                      SEARD449
                    *       CONSTANTS AND WORK AREAS                       SEARD450
                    *                                                      SEARD451
01AB 0  0050        CARD    DC      80                                     SEARD452
01AC    001E                BSS     30                                     SEARD453
01CA    0050        TITLE   BSS     80                                     SEARD454
021A 0  0000        CONST   DC      0                                      SEARD455
021B 0  0000                DC      0                                      SEARD456
021C 0  0000        SAVE2   DC      0                                      SEARD457
021D 0  4220        AST     DC      /4220                                  SEARD458
021E 0  8100        END     DC      /8100                                  SEARD459
021F 0  4400        L       DC      /4400                                  SEARD460
0220 0  8400        C       DC      /8400                                  SEARD461
0221 0  8200        D       DC      /8200                                  SEARD462
0222 0  8010        I       DC      /8010                                  SEARD463
0223 0  4010        CR      DC      /4010                                  SEARD464
0224 0  8420        PTPR    DC      /8420                                  SEARD465
0225 0  8D00        ADD1    DC      /8D00                                  SEARD466
0226 0  9D00        SUB1    DC      /9D00                                  SEARD467
0227 0  80A0        PLUS    DC      /80A0                                  SEARD468
0228 0  4000        MINUS   DC      /4000                                  SEARD469
0229 0  0001        A       DC      1                                      SEARD470
022A 0  0002        B       DC      2                                      SEARD471
022B 0  0000        BE      DC      0                                      SEARD472
022C 0  0000        B1      DC      0                                      SEARD473
022D 0  0000        B2      DC      0                                      SEARD474
022E 0  0000        NB      DC      0                                      SEARD475
022F 0  0000        K0      DC      0                                      SEARD476
0230 0  0001        K1      DC      1                                      SEARD477
0231 0  0004        K4      DC      4                                      SEARD478
0232 0  000A        K10     DC      10                                     SEARD479
0233 0  0011        K17     DC      17                                     SEARD480
0234 0  0000        IND     DC      0                                      SEARD481
0235 0  0000        ERRSW   DC      0                                      SEARD482
0236 0  0000        OVFLW   DC      0                                      SEARD483
0237    0013        ID      BSS     19                                     SEARD484
024A    0004        IDPR    BSS  E  4                                      SEARD485
024E    0002        IDPRN   BSS     2                                      SEARD486
0250    0003        IDNEU   BSS     3                                      SEARD487
0253    0003        ADR     BSS     3                                      SEARD488
                    *                                                      SEARD489
                    *       MESSAGES                                       SEARD490
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                    *                                                    SEARD491
0256 0  0007                DC      MES2-MES1                            SEARD492
0257    000E        MES1    DMES  1 PROGRAM SEART'E                      SEARD493
025E    0000        MES2    BSS     0                                    SEARD494
025E 0  001A                DC      MES4-MES3                            SEARD495
025F    0023        MES3    DMES  1 ERROR INPUT CARD. CORRECT AND START' SEARD496
0270    0011                DMES  1  WITH THIS CARD.'E                   SEARD497
0279    0000        MES4    BSS     0                                    SEARD498
0279 0  0014                DC      MES6-MES5                            SEARD499
027A    000A        MES5    DMES  1 SPECTRUM 'E                          SEARD500
0280    0004        MES51   BSS   E 4                                    SEARD501
0284    0014                DMES  1  NOT FOUND ON DISK.'E                SEARD502
028E    0000        MES6    BSS     0                                    SEARD503
028E 0  0018                DC      MES8-MES7                            SEARD504
028F    0021        MES7    DMES  1 SPECTRUM CANNOT BE STORED ON DISK'   SEARD505
029F    000B                DMES  1 .  ERRSW ='E                         SEARD506
02A7    0002        MES8    BES     2                                    SEARD507
02A7    0050        TITPR   BSS     80                                   SEARD508
02F7    0023        MES9    EBC     .INTEGRAL SPECTRUM - OVERFLOW IS ON.. SEARD509
0309 0  000A                DC      MES14-MES13                          SEARD510
030A    0014        MES13   DMES  1 END OF PROGRAM SEARD'E               SEARD511
0314    0000        MES14   BSS     0                                    SEARD512
0314 0  002A                DC      MES17-MES15                          SEARD513
0315    0023        MES15   DMES  1 LAST BLOCK NUMBER SMALLER THAN FIRS' SEARD514
0326    0013                DMES  1 T ONE FOR SPECTRUM'E                 SEARD515
0330    0004        MES16   BSS   E 4                                    SEARD516
0334    0016                DMES  1 . GO TO NEXT SPECTRUM.'E             SEARD517
033F    0000        MES17   BSS     0                                    SEARD518
033F 0  001A                DC      MES22-MES19                          SEARD519
0340    000E        MES19   DMES  1 '4XID-NUMBER'E                       SEARD520
0348    0004        MES20   BSS   E 4                                    SEARD521
034C    0014                DMES  1  HAS BEEN CHANGED TO'E               SEARD522
0356    0004        MES21   BSS   E 4                                    SEARD523
035A    0000        MES22   BSS     0                                    SEARD524
035A 0  002F                DC      MES25-MES23                          SEARD525
035B    0024        MES23   DMES  1 '4XFIRST AND LAST BLOCK NUMBER DO N' SEARD526
036D    0022                DMES  1 OT BELONG TO THE SAME GROUP OF 4 K'  SEARD527
037E    000E                DMES  1  FOR SPECTRUM 'E                     SEARD528
0386    0004        MES24   BSS   E 4                                    SEARD529
038A    0000        MES25   BSS     0                                    SEARD530
DFC0                SPADR   EQU     -8256                                SEARD531
BFBE                SPAD2   EQU     -16450                               SEARD532
BD38                BUF     EQU     SPAD2-646                            SEARD533
038A 0  0028        OUTPT   DC      40                                   SEARD534
038B    0028                BSS     40                                   SEARD535
0067                TVLOC   EQU     103                                  SEARD536
0229                R       EQU     A                                    SEARD537
03B4    0000                END     START                                SEARD538

     NO ERRORS IN ABOVE ASSEMBLY.
SEARD
DUP FUNCTION COMPLETED
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```
// JOB   X    X    X
// FOR ANALD
*LIST SOURCE PROGRAM
*IOCS(CARD,1443 PRINTER)
*NONPROCESS PROGRAM
*ONE WORD INTEGERS
C*************************************************************************** ANALD001
C*    IBM 1800 PROGRAMS FOR DATA REDUCTION                                  * ANALD002
C*************************************************************************** ANALD003
C*                                                                          * ANALD004
C*    PROGRAM ANALD                                                         * ANALD005
C*                                                                          * ANALD006
C*    PROGRAM ANALD PLOTS THE MULTI-CHANNEL ANALYSER DATA ON THE            * ANALD007
C*    CALCOMP PLOTTER.                                                      * ANALD008
C*                                                                          * ANALD009
C*************************************************************************** ANALD010
      EXTERNAL CHAN                                                         ANALD011
      DIMENSION EBCX(3),EBCY(2)                                             ANALD012
      DIMENSION EBC1(3),EBC2(4)                                             ANALD013
      COMMON    SPECT(4129),ID(5),SCAL(24),IDSPC(16)                        ANALD014
      DATA EBCX/'NO. ','NEL ','CHAN'/                                       ANALD015
      DATA EBCY/'TS  ','COUN'/                                              ANALD016
      DATA EBC1/'R   ','UMBE','ID N'/                                       ANALD017
      DATA EBC2/' 4K ','. OF','P NO','GROU'/                                ANALD018
      CALL FINIM(0.,2.)                                                     ANALD019
    2 READ (5,3) ISTOP,(ID(I),I=1,4),NFB,NB,SIZX,SIZY,CMAX                  ANALD020
    3 FORMAT (I1,9X,I2,1X,2I1,I2,1X,I4,I2,6X,3F10.0)                        ANALD021
      IF(ISTOP)4,4,100                                                      ANALD022
    4 WRITE(6,31)(ID(I),I=1,4),NFB,NB                                       ANALD023
   31 FORMAT(' ID-NUMBER = 'I2,'.',2I1,I2,',  FIRST BL = ',I4,',    NO. UANALD024
     1F BL = 'I2)                                                           ANALD025
      IF(NFB) 6,6,8                                                         ANALD026
    6 WRITE(6,7)(ID(I),I=1,4), NFB,NB,SIZX,SIZY,CMAX                        ANALD027
    7 FORMAT  (//' INPUT CARD IN ERROR '/10X,I2,'.',2I1,I2,1X,I4,I2,        ANALD028
     16X,3F10.1 //' GO TO NEXT SPECTRUM'//)                                 ANALD029
      GO TO 2                                                               ANALD030
    8 ID(5)=(NFB-1)/16+1                                                    ANALD031
      NLB=NFB+NB-1                                                          ANALD032
      NL=(NLB-1)/16+1                                                       ANALD033
      IF(ID(5)-NL)9,10,6                                                    ANALD034
    9 NLB=ID(5)*16                                                          ANALD035
   10 CALL FLDSK(ID,SPECT,SCAL,IDSPC)                                       ANALD036
      N1=(NFB-1)*256+1                                                      ANALD037
      N2=NLB*256                                                            ANALD038
      IF(CMAX) 12,11,12                                                     ANALD039
   11 CMAX=1.E+20                                                           ANALD040
   12 DO 20 I=N1,N2                                                         ANALD041
      IF(SPECT(I)-CMAX)20,20,19                                             ANALD042
   19 SPECT(I)=CMAX                                                         ANALD043
   20 CONTINUE                                                              ANALD044
      SPECT(N1)=0                                                           ANALD045
      N= N2-N1+1                                                            ANALD046
      IF(SIZX)21,21,22                                                      ANALD047
   21 SIZX=100.                                                             ANALD048
   22 IF(SIZY)23,23,24                                                      ANALD049
   23 SIZY=25.                                                              ANALD050
   24 CALL DESNF(X,SPECT(N1),N,1,1,1,0,0,SIZX,SIZY,N1,0,EBCX(3),-11,        ANALD051
     1EBCY(2),6,0,CHAN)                                                     ANALD052
      XO=SIZX/2.-2.                                                         ANALD053
      YO=SIZY+1.5                                                           ANALD054
      CALL SYMBL(XO,YO,0.4,0.,EBC1(3),-11)                                  ANALD055
      E=ID(4)+100*ID(3)+1000*ID(2)                                          ANALD056
      E=FLOAT(ID(1))+E/10000.+0.000001                                      ANALD057
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      CALL NUMBR(XO,YO,0.4,0.,E,4)                                    ANALD058
      XO=SIZX/2.-2.                                                   ANALD059
      YO=SIZY+0.5                                                     ANALD060
      CALL SYMBL(XO,YO,0.4,0.,EBC2(4),-16)                            ANALD061
      E=ID(5)                                                         ANALD062
      CALL NUMBR(XO,YO,0.4,0.,E,-1)                                   ANALD063
      CALL FINIM(SIZX+10.,0.)                                         ANALD064
      GO TO 2                                                         ANALD065
  100 WRITE(6,30)                                                     ANALD066
   30 FORMAT(' END PLOTTING ANALYSER DATA'//)                         ANALD067
      CALL FINTR                                                      ANALD068
      CALL  EXIT                                                      ANALD069
      END                                                             ANALD070

FEATURES SUPPORTED
 NONPROCESS
 ONE WORD INTEGERS
 IOCS

CORE REQUIREMENTS FOR ANALD
 COMMON   8328  INSKEL COMMON      0  VARIABLES     54  PROGRAM     620


 END OF COMPILATION
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```
// JOB   X     X     X
// ASM SUMOF
  *LIST ALL
  *COMMON 17175
```

SUMOF001

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*****************************************************  SUMOF003
*  IBM 1800 PROGRAMS FOR DATA REDUCTION             *  SUMOF004
*****************************************************  SUMOF005
*                                                   *  SUMOF006
*     PROGRAM SUMOF                                 *  SUMOF007
*     -------------                                 *  SUMOF008
*                                                   *  SUMOF009
*     CONTROL CARDS                                 *  SUMOF010
*     1.CARD                                        *  SUMOF011
*     CC   1-2        **                            *  SUMOF012
*     CC   3          INPUT TAPE NO.                *  SUMOF013
*     2.CARD                                        *  SUMOF014
*     CC   1          *                             *  SUMOF015
*     CC   2          BLANK                         *  SUMOF016
*     CC   3-4        RUN NO. OF RESULTS            *  SUMOF017
*     CC   6          L     LIST OF RESULTS         *  SUMOF018
*                     BLANK NO LIST                 *  SUMOF019
*     CC   8          C     BINARY CARDS            *  SUMOF020
*                     BLANK NO CARDS                *  SUMOF021
*                                                   *  SUMOF022
*     3.CARD                                        *  SUMOF023
*     CC   1-3                                      *  SUMOF024
*     CC   4-6                                      *  SUMOF025
*          .          RUN NUMBERS OF BAD SPECTRA    *  SUMOF026
*          .                                        *  SUMOF027
*          .                                        *  SUMOF028
*          ETC.                                     *  SUMOF029
*     CC  67-69                                     *  SUMOF030
*         72          X     IF THERE IS A CONTINUAT.*  SUMOF031
*                           CARD FOR BAD SPECTRA    *  SUMOF032
*                           OTHERWISE BLANK.        *  SUMOF033
*                                                   *  SUMOF034
*     THE MAXIMUM NUMBER OF BAD RUN-NUMBERS IS 100  *  SUMOF035
*                                                   *  SUMOF036
*****************************************************  SUMOF037
0000 20 176558D5  START LIBF    PRNTN      PRINT  BEGIN SUM-OFF-LINE  SUMOF038
0001 0  3100            DC      /3100                                 SUMOF039
0002 20 176558D5        LIBF    PRNTN                                 SUMOF040
0003 0  2100            DC      /2100                                 SUMOF041
0004 1  0210            DC      MES1-1                                SUMOF042
0005 0  0000            DC      0                                     SUMOF043
0006 01 66000165        LDX  L2 R                                     SUMOF044
0008 20 03059115  A2    LIBF    CARDN                                 SUMOF045
0009 0  1000            DC      /1000                                 SUMOF046
000A 1  0159            DC      CARD                                  SUMOF047
000B 0  0000            DC      0                                     SUMOF048
000C 20 03059115        LIBF    CARDN                                 SUMOF049
000D 0  0000            DC      0                                     SUMOF050
000E 0  70FD            MDX     *-3                                   SUMOF051
000F 0  C2F5            LD    2 CARD+1-R                              SUMOF052
0010 0  92B2            S     2 AST-R                                 SUMOF053
0011 01 4C18001A        BSC  L  A3,+-                                 SUMOF054
0013 20 176558D5  ERROR LIBF    PRNTN                                 SUMOF055
0014 0  2100            DC      /2100                                 SUMOF056
0015 1  021B            DC      MES3-1                                SUMOF057
0016 0  0000  SAVE      DC      0                                     SUMOF058
0017 20 17064885        LIBF    PAUSE                                 SUMOF059
0018 1  0016            DC      *-3                                   SUMOF060
0019 0  70EE            MDX     A2                                    SUMOF061
001A 0  C2F7  A3        LD    2 CARD+3-R                              SUMOF062
001B 0  6206            LDX   2 6                                     SUMOF063
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001C 0  1240                SLCA  2 0                                  SUMOF064
001D 0  6AF8                STX   2 SAVE                               SUMOF065
001E 01 66000165            LDX  L2 R                                  SUMOF066
0020 0  C2B7                LD    2 K4-R                               SUMOF067
0021 0  90F4                S       SAVE                               SUMOF068
0022 01 D4000068            STO  L  TPNR1                              SUMOF069
                     *                                                 SUMOF070
                     *      READ RUN NO. OF RESULTS AND OUTPUT OPTIONS.  SUMOF071
                     *                                                 SUMOF072
0024 20 03059115            LIBF    CARDN                              SUMOF073
0025 0  1000                DC      /1000                              SUMOF074
0026 1  0159                DC      CARD                               SUMOF075
0027 0  0000                DC      0                                  SUMOF076
0028 20 03059115            LIBF    CARDN                              SUMOF077
0029 0  0000                DC      0                                  SUMOF078
002A 0  70FD                MDX     *-3                                SUMOF079
002B 0  C2F5                LD    2 CARD+1-R                           SUMOF080
002C 0  92B2                S     2 AST-R                              SUMOF081
002D 01 4C200013            BSC  L  ERROR,Z                            SUMOF082
002F 0  4281                BSI   2 TRANS-R                            SUMOF083
0030 1  015B                DC      CARD+2                             SUMOF084
0031 0  D039                STO     RUN                                SUMOF085
0032 0  C2FA                LD    2 CARD+6-R                           SUMOF086
0033 0  92B3                S     2 L-R                                SUMOF087
0034 01 4C200038            BSC  L  A4,Z                               SUMOF088
0036 0  1010                SLA     16                                 SUMOF089
0037 0  D2B0                STO   2 PIND-R                             SUMOF090
0038 0  C2FC         A4     LD    2 CARD+8-R                           SUMOF091
0039 0  92B4                S     2 C-R                                SUMOF092
003A 01 4C20003E            BSC  L  A45,Z                              SUMOF093
003C 0  1010                SLA     16                                 SUMOF094
003D 0  D2B1                STO   2 CIND-R                             SUMOF095
                     *                                                 SUMOF096
                     *      READ NO. OF BAD ID-NUMBERS                  SUMOF097
                     *                                                 SUMOF098
003E 30 176560E3     A45    CALL    PROCT                              SUMOF099
0040 1  010C                DC      PROC                               SUMOF100
0041 01 66000165            LDX  L2 R                                  SUMOF101
0043 0  619C                LDX   1 -100                               SUMOF102
0044 0  C2BA         A5     LD    2 KM23-R                             SUMOF103
0045 0  D003                STO     A6                                 SUMOF104
0046 20 03059115            LIBF    CARDN                              SUMOF105
0047 0  1000                DC      /1000                              SUMOF106
0048 1  0159                DC      CARD                               SUMOF107
0049 0  0000         A6     DC      0                                  SUMOF108
004A 20 03059115            LIBF    CARDN                              SUMOF109
004B 0  0000                DC      0                                  SUMOF110
004C 0  70FD                MDX     *-3                                SUMOF111
004D 0  C2F3                LD    2 ACARD-R                            SUMOF112
004E 0  D001                STO     A8                                 SUMOF113
004F 0  4281         A7     BSI   2 TRANS-R                            SUMOF114
0050 0  0000         A8     DC      *-*                                SUMOF115
0051 01 4C180060            BSC  L  A10,+-                             SUMOF116
0053 01 D500020F            STO  L1 RUNBD+101                          SUMOF117
0055 0  7101                MDX   1 1                                  SUMOF118
0056 0  7001                MDX     A9                                 SUMOF119
0057 0  7008                MDX     A10                                SUMOF120
0058 01 74030050     A9     MDX  L  A8,3                               SUMOF121
005A 01 74010049            MDX  L  A6,1                               SUMOF122
005C 0  70F2                MDX     A7                                 SUMOF123
005D 0  C23C                LD    2 CARD+72-R                          SUMOF124
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005E 01 4C200044          BSC  L  A5,Z                                  SUMOF125
0060 0  7164        A10   MDX    1 100                                 SUMOF126
0061 0  1000              NOP                                          SUMOF127
0062 01 6D0001AA          STX  L1 RUNBD                                SUMOF128
                    *                                                  SUMOF129
                    *     BEGIN SUMMATION                              SUMOF130
                    *                                                  SUMOF131
0064 30 23057171    A11   CALL     TAPE1      SEARCH SPECTRUM ON TAPE  SUMOF132
0066 0  5FC0              DC       SPADR                               SUMOF133
0067 1  020F              DC       PISW                                SUMOF134
0068 0  0000        TPNR1 DC       0                                   SUMOF135
0069 1  0113              DC       EOFSW                               SUMOF136
006A 1  01AA              DC       RUNBD                               SUMOF137
006B 0  0000        RUN   DC       0                                   SUMOF138
006C 01 74000113          MDX  L   EOFSW,0                             SUMOF139
006E 0  700A              MDX      EOF                                 SUMOF140
006F 00 65005FC0          LDX  L1  SPADR                               SUMOF141
0071 0  C10A              LD     1 10       SEARCH AUTOMATIC TYP AND  SUMOF142
0072 0  D2AF              STO    2 AUTYP-R   SAVE IT                   SUMOF143
                    *                                                  SUMOF144
0073 30 22914180          CALL     SUMF                                SUMOF145
0075 1  010C              DC       PROC                                SUMOF146
0076 01 66000165          LDX  L2  R                                   SUMOF147
                    *                                                  SUMOF148
0078 0  70EB              MDX      A11                                 SUMOF149
                    *                                                  SUMOF150
0079 30 229141B1    EOF   CALL     SUMF1                               SUMOF151
007B 1  0148              DC       ID                                  SUMOF152
007C 0  C2AF              LD     2 AUTYP-R                             SUMOF153
007D 0  D001              STO      *+1                                 SUMOF154
007E 00 65000000          LDX  L1  *-*                                 SUMOF155
0080 01 C5000259          LD   L1  TAB                                 SUMOF156
0082 01 D400023C          STO  L   MES51                               SUMOF157
0084 20 176558D5          LIBF     PRNTN                               SUMOF158
0085 0  3D00              DC       /3D00                               SUMOF159
0086 20 176558D5          LIBF     PRNTN                               SUMOF160
0087 0  2100              DC       /2100                               SUMOF161
0088 1  022F              DC       MES5-1                              SUMOF162
0089 0  0000              DC       0                                   SUMOF163
                    *                                                  SUMOF164
                    *     CONSTRUCT ALL ID-NUMBERS                     SUMOF165
                    *                                                  SUMOF166
008A 0  C00F              LD       K5                                  SUMOF167
008B 0  92EF              S      2 ID+12-R                             SUMOF168
008C 0  D001              STO      *+1                                 SUMOF169
008D 00 65000000          LDX  L1  *-*                                 SUMOF170
008F 0  A2AF              M      2 AUTYP-R                             SUMOF171
0090 0  1090              SLT      16                                  SUMOF172
0091 0  D018              STO      A15+1                               SUMOF173
0092 0  C2AF              LD     2 AUTYP-R                             SUMOF174
0093 0  D001              STO      *+1                                 SUMOF175
0094 00 66000000    A12   LDX  L2  *-*                                 SUMOF176
0096 30 145A5140    A13   CALL     MOVE                                SUMOF177
0098 1  0148              DC       ID                                  SUMOF178
0099 1  0120        A14   DC       IDN                                 SUMOF179
009A 0  0005        K5    DC       5                                   SUMOF180
009B 01 74020099          MDX  L   A14,2                               SUMOF181
009D 01 6D800099          STX  I1  A14                                 SUMOF182
009F 01 74020099          MDX  L   A14,2                               SUMOF183
00A1 01 6E800099          STX  I2  A14                                 SUMOF184
00A3 01 74010099          MDX  L   A14,1                               SUMOF185
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```
00A5 0  72FF              MDX   2 -1                SUMOF186
00A6 0  70EF              MDX     A13               SUMOF187
00A7 0  71FF              MDX   1 -1                SUMOF188
00A8 0  70EB              MDX     A12               SUMOF189
                  *                                 SUMOF190
                  *       SAVE RESULTS              SUMOF191
                  *                                 SUMOF192
00A9 00 65000000  A15     LDX   L1 *-*              SUMOF193
00AB 20 024C1552          LIBF    BLANK             SUMOF194
00AC 1  015A              DC      CARD+1            SUMOF195
00AD 0  0050              DC      80                SUMOF196
00AE 0  C0EA              LD      A14               SUMOF197
00AF 0  D007              STO     A16               SUMOF198
00B0 01 74FB00B7  A155    MDX   L A16,-5            SUMOF199
00B2 30 04262494          CALL    DISKM             SUMOF200
00B4 0  5FC0              DC      SPADR             SUMOF201
00B5 1  010F              DC      IERR              SUMOF202
00B6 0  5E7A              DC      BUF               SUMOF203
00B7 0  0000      A16     DC      *-*               SUMOF204
00B8 1  011A              DC      K0                SUMOF205
00B9 01 7400010F          MDX   L IERR,0            SUMOF206
00BB 0  7020              MDX     ERR01             SUMOF207
00BC 00 66005FC0          LDX   L2 SPADR            SUMOF208
00BE 0  C204              LD    2 4                 SUMOF209
00BF 0  905B              S       K1                SUMOF210
00C0 0  1004              SLA     4                 SUMOF211
00C1 0  8059              A       K1                SUMOF212
00C2 0  D04E              STO     B1                SUMOF213
00C3 0  D206              STO   2 6                 SUMOF214
00C4 0  8059              A       K15               SUMOF215
00C5 0  D04C              STO     B2                SUMOF216
00C6 01 74000115          MDX   L PIND,0            SUMOF217
00C8 0  7006              MDX     A165              SUMOF218
00C9 30 145D9563          CALL    MPRNT             SUMOF219
00CB 0  5FC0              DC      SPADR             SUMOF220
00CC 1  0111              DC      B1                SUMOF221
00CD 1  0112              DC      B2                SUMOF222
00CE 1  015A              DC      CARD+1            SUMOF223
00CF 01 74000116  A165    MDX   L CIND,0            SUMOF224
00D1 0  7006              MDX     A17               SUMOF225
00D2 30 140C4089          CALL    MCDBI             SUMOF226
00D4 0  5FC0              DC      SPADR             SUMOF227
00D5 1  0111              DC      B1                SUMOF228
00D6 1  0112              DC      B2                SUMOF229
00D7 1  015A              DC      CARD+1            SUMOF230
00D8 0  71FF      A17     MDX   1 -1                SUMOF231
00D9 0  70D6              MDX     A155              SUMOF232
00DA 30 059C98C0          CALL    EXIT              SUMOF233
                  *                                 SUMOF234
00DC 20 176558D5  ERR01   LIBF    PRNTN             SUMOF235
00DD 0  2100              DC      /2100             SUMOF236
00DE 1  0242              DC      MES9-1            SUMOF237
00DF 0  0000              DC      0                 SUMOF238
00E0 30 04517227          CALL    DMPHX             SUMOF239
00E2 0  1A00              DC      /1A00             SUMOF240
00E3 0  7FFF              DC      /7FFF             SUMOF241
00E4 30 059C98C0          CALL    EXIT              SUMOF242
                  *                                 SUMOF243
00E6 0  0000      TRANS   DC      0                 SUMOF244
00E7 0  691C              STX   1 XR1+1             SUMOF245
00E8 0  6A1D              STX   2 XR2+1             SUMOF246
```

```
00E9 0  6B1E              STX   3 XR3+1                          SUMOF247
00EA 01 658000E6          LDX  I1 TRANS                         SUMOF248
00EC 0  C100              LD    1 0                             SUMOF249
00ED 0  D001              STO     *+1                           SUMOF250
00EE 00 65000000          LDX  L1 *-*                           SUMOF251
00F0 0  6303              LDX   3 3                             SUMOF252
00F1 0  1010              SLA     16                            SUMOF253
00F2 0  A02A        TR1   M       K10                           SUMOF254
00F3 0  1090              SLT     16                            SUMOF255
00F4 0  D019              STO     SUM                           SUMOF256
00F5 0  C100              LD    1 0                             SUMOF257
00F6 01 4C1800FD          BSC  L  TR2,+-                        SUMOF258
00F8 0  620C              LDX   2 12                            SUMOF259
00F9 0  1240              SLCA  2 0                             SUMOF260
00FA 0  6A15              STX   2 SAV                           SUMOF261
00FB 0  C021              LD      K10                           SUMOF262
00FC 0  9013              S       SAV                           SUMOF263
00FD 0  8010        TR2   A       SUM                           SUMOF264
00FE 0  7101              MDX   1 1                             SUMOF265
00FF 0  73FF              MDX   3 -1                            SUMOF266
0100 0  70F1              MDX     TR1                           SUMOF267
0101 01 740100E6          MDX  L  TRANS,1                       SUMOF268
0103 00 65000000  XR1     LDX  L1 *-*                           SUMOF269
0105 00 66000000  XR2     LDX  L2 *-*                           SUMOF270
0107 00 67000000  XR3     LDX  L3 *-*                           SUMOF271
0109 01 4C8000E6          BSC  I  TRANS                         SUMOF272
                  *                                             SUMOF273
                  *       CONSTANTS AND WORKAREAS               SUMOF274
                  *                                             SUMOF275
010C 00 00000000  PROC    DEC     0                             SUMOF276
010E 0  0000      SUM     DC      0                             SUMOF277
010F 0  0000      IERR    DC      0                             SUMOF278
0110 0  0000      SAV     DC      0                             SUMOF279
0111 0  0000      B1      DC      0                             SUMOF280
0112 0  0000      B2      DC      0                             SUMOF281
0113 0  0000      EOFSW   DC      0                             SUMOF282
0114 0  0000      AUTYP   DC      0                             SUMOF283
0115 0  FFFF      PIND    DC      -1                            SUMOF284
0116 0  FFFF      CIND    DC      -1                            SUMOF285
0117 0  4220      AST     DC      /4220                         SUMOF286
0118 0  4400      L       DC      /4400                         SUMOF287
0119 0  8400      C       DC      /8400                         SUMOF288
011A 0  0000      K0      DC      0                             SUMOF289
011B 0  0001      K1      DC      1                             SUMOF290
011C 0  0004      K4      DC      4                             SUMOF291
011D 0  000A      K10     DC      10                            SUMOF292
011E 0  000F      K15     DC      15                            SUMOF293
011F 0  FFE9      KM23    DC      -23                           SUMOF294
0120    0028      IDN     BSS     40                            SUMOF295
0148    0010      ID      BSS     16                            SUMOF296
0158 1  015A      ACARD   DC      CARD+1                        SUMOF297
0159 0  0050      CARD    DC      80                            SUMOF298
015A    0050              BSS     80                            SUMOF299
01AA 0  0000      RUNBD   DC      0                             SUMOF300
01AB    0064              BSS     100                           SUMOF301
020F 0  0001      PISW    DC      1                             SUMOF302
0210 0  000A              DC      MES2-MES1                     SUMOF303
0211    0014      MES1    DMES  1 BEGIN PROGRAM SUMOF'E         SUMOF304
021B    0000      MES2    BSS     0                             SUMOF305
021B 0  0013              DC      MES4-MES3                     SUMOF306
021C    0026      MES3    DMES  1 ERROR IN CONTROL CARD. START AGAIN.  SUMOF307
```

```
022F     0000          MES4   BSS     0                                          SUMOF308
022F 0   0012                 DC      MES6-MES5                                  SUMOF309
0230     0018          MES5   DMES  1 END OF SUM-OFF-LINE FOR 'E                 SUMOF310
023C     0001          MES51  BSS     1                                          SUMOF311
023D     000A                 DMES  1  SPECTRA.'E                               SUMOF312
0242     0000          MES6   BSS     0                                          SUMOF313
0242 0   0016                 DC      MES10-MES9                                 SUMOF314
0243     0024          MES9   DMES  1 RESULTS CANNOT BE FOUND ON DISK. CAL'      SUMOF315
0255     0008                 DMES  1 L DUMP.'E                                 SUMOF316
0259     0000          MES10  BSS     0                                          SUMOF317
0259     0002          TAB    DMES  1   'E                                      SUMOF318
025A     0002                 DMES  1 4K'E                                      SUMOF319
025B     0002                 DMES  1 8K'E                                      SUMOF320
                       *                                                        SUMOF321
0165                   R      EQU     TRANS+127                                  SUMOF322
5E7A                   BUF    EQU     32768-8258-324                             SUMOF323
5FC0                   SPADR  EQU     32768-8256                                 SUMOF324
025C     0000                 END     START                                      SUMOF325
```

NO ERRORS IN ABOVE ASSEMBLY.

SUMOF
DUP FUNCTION COMPLETED

```
// JOB   X         X
// FOR TBPRT
*LIST SOURCE PROGRAM
*ONE WORD INTEGERS
*NONPROCESS PROGRAM
*IOCS(DISK, 1443 PRINTER)
C************************************************************************ TBPRT001
C*    IBM 1800 PROGRAMS FOR DATA REDUCTION                               * TBPRT002
C************************************************************************ TBPRT003
C*                                                                       * TBPRT004
C*    PROGRAM TBPRT                                                      * TBPRT005
C*                                                                       * TBPRT006
C*    PROGRAM FOR THE LISTING OF IDENTIFICATION NUMBERS OF SPECTRA       * TBPRT007
C*    STORED ON DISK.                                                    * TBPRT008
C*                                                                       * TBPRT009
C************************************************************************ TBPRT010
      DIMENSION   X(480) ,M(960),IX(7),A(12),B(6),C(6)                    TBPRT011
      EQUIVALENCE(X(1),M(2))                                              TBPRT012
      DATA A/'  4K',',  SP',',ECTR',',A   ',' OVE',',RFLO',',W TA',',BLE ',' PTBPRT013
     CAR',',TIAL',',SPE',',CTRA'/,B/'NRO ',',4K  ',',NRO ',',4K  ',',NRO ',',FRTBPRT014
     CST'/,C/'OVER',',FLOW',',OVER',',FLOW',',NMBR',',BLCK'/               TBPRT015
      DEFINE FILE  1(1,320,U,L1)                                          TBPRT016
      DEFINE FILE  2(1,320,U,L1)                                          TBPRT017
      DEFINE FILE  3(1,320,U,L1)                                          TBPRT018
      IPR = 6                                                             TBPRT019
      L1=1                                                                TBPRT020
      DO 10I=1,3                                                          TBPRT021
      I1=I*160                                                            TBPRT022
      I2=(I-1)*160+1                                                      TBPRT023
   10 READ (I'1)(X(I3),I3=I2,I1)                                          TBPRT024
      DO 20I=1,3                                                          TBPRT025
      I2=0                                                                TBPRT026
      I3=0                                                                TBPRT027
      CALL TBBL (I,N)                                                     TBPRT028
      I6=(I-1)*4+1                                                        TBPRT029
      I7=I*4                                                              TBPRT030
      WRITE (IPR,11)(A(I5),I5=I6,I7),N                                    TBPRT031
   11 FORMAT(1H1,T40,'ID LIST OF ',4A4//' NUMBER OF ENTRIES = ',I3)       TBPRT032
      WRITE (IPR,12)  B(2*I-1),B(2*I),C(2*I-1),C(2*I)                     TBPRT033
   12 FORMAT('0',T3,'LOCATION NR'T21,'   ID   'T31,'PISW    EXP1    EXP2   STBPRT034
     CERIAL NUMBER    ',2A4, '  OCCUPATION    ',2A4     ,///)            TBPRT035
      DO 18L =1,N                                                         TBPRT036
      I1=I*320-(L-1)*2                                                    TBPRT037
      IF(M(I1))14,13,14                                                   TBPRT038
   13 IF(I2)16,15,16                                                      TBPRT039
   15 I2=1                                                                TBPRT040
      WRITE(IPR,100)                                                      TBPRT041
      I3=I3+1                                                             TBPRT042
  100 FORMAT(1H )                                                         TBPRT043
   16 IF(I3-50)18,18,25                                                   TBPRT044
   18 CONTINUE                                                            TBPRT045
   20 CONTINUE                                                            TBPRT046
      CALL EXIT                                                           TBPRT047
   14 CALL EXPAN(M(I1),IX(1))                                             TBPRT048
      WRITE(IPR,101) L, (IX(I4),I4=1,4),(IX(I4),I4=1,7)                   TBPRT049
  101 FORMAT(1H ,4X,I3,11X,I2,'.',2I1,I2,3X,       3(2X,I2,3X),6X,I2,     TBPRT050
     C6X,3(5X,I2,5X))                                                     TBPRT051
      I2=0                                                                TBPRT052
      I3=I3+1                                                             TBPRT053
      GO TO 16                                                            TBPRT054
   25 WRITE(IPR,102)                                                      TBPRT055
  102 FORMAT(1H1,//)                                                      TBPRT056
      WRITE(IPR,12)   B(2*I-1),B(2*I),C(2*I-1),C(2*I)                     TBPRT057
```

```
      I3=0                                                          TBPRT058
      GO TO 18                                                      TBPRT059
      END                                                           TBPRT060

FEATURES SUPPORTED
 NONPROCESS
 ONE WORD INTEGERS
 IOCS

CORE REQUIREMENTS FOR TBPRT
 COMMON       0  INSKEL COMMON       0  VARIABLES    1050  PROGRAM     462

 END OF COMPILATION
```

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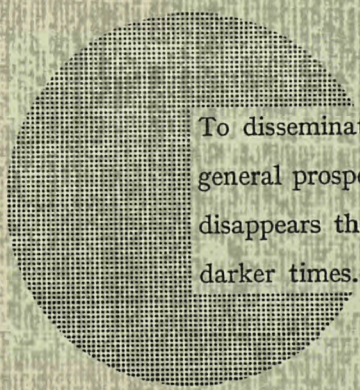

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Alfred Nobel

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