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FOURIER TRANSFORM INFRARED SPECTROSCOPY

VOLUME II - USER'S MANUAL

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This is the final report ~~of a contract~~ to establish the relationship between infrared spectra and propellant aging and to determine the applicability of this relationship to the prediction of service life of propellants. → next page

Equipment for measurement of infrared spectra by both attenuated total reflectance and through transmission was identified, and procedures for sample preparation and testing were developed and demonstrated.

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The major accomplishments of this project are the establishment of methods for predicting propellant tensile properties from infrared spectral data during storage and the development of procedures and computer programs for rapidly and economically progressing large amounts of infrared data. The results of this project are a major step toward predicting the remaining shelf life of solid propellant rocket motors from infrared measurements using small amounts of propellant associated with them. Recommendations for application of these results and for improving and extending the developed methods are included in the report.

Cont'd

This document (Volume II - User's Manual) describes the two computer programs E410 and E490 that were developed in order to reduce and statistically analyze the infrared spectral data. The version of these two codes described herein was made operational on the CDC 6600 computer at the Air Force Rocket Propulsion Laboratory. With minor modifications to these two FORTRAN codes themselves, along with the appropriate job control language, both E410 and E490 can also be made operational on an IBM 360/370 computer system.

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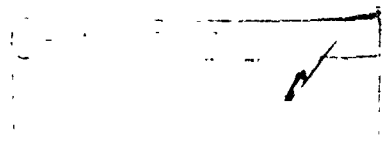

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1.0 ABSTRACT

In recent years, data have been obtained which show that changes in the chemical structure of the binder of a propellant can be correlated with changes in the mechanical properties of the propellant. It has also been demonstrated that these changes to the chemical structure of the binder can be detected using infrared spectroscopy. Therefore, the changes in the infrared absorption characteristics of the binder are directly related to changes in the chemical structure and, hence, to changes in mechanical properties of the propellant. The computer programs described in this manual were developed to demonstrate the feasibility of using Fourier transform infrared spectroscopy as a non-destructive tool to relate changes in binder structure to changes in mechanical properties of the propellant and eventually to use that correlation to predict the remaining service life of the propellant.

2.0 OVERVIEW OF THE FTIS COMPUTER PROGRAMS

The Fourier Transform Infrared Spectroscopy (FTIS) computer codes described in this manual, were written in FORTRAN IV - H EXTENDED for use on either CDC 6000 series or IBM 360/370 series digital computers. The primary purposes of these codes are to reduce infrared spectral data stored on a Digilab FTS-10 tape and correlate this spectral information with changes in propellant physical properties.

In order to accomplish this goal, the necessary two codes are:

I. E490 - Performs the Infrared data reduction and statistical analysis.

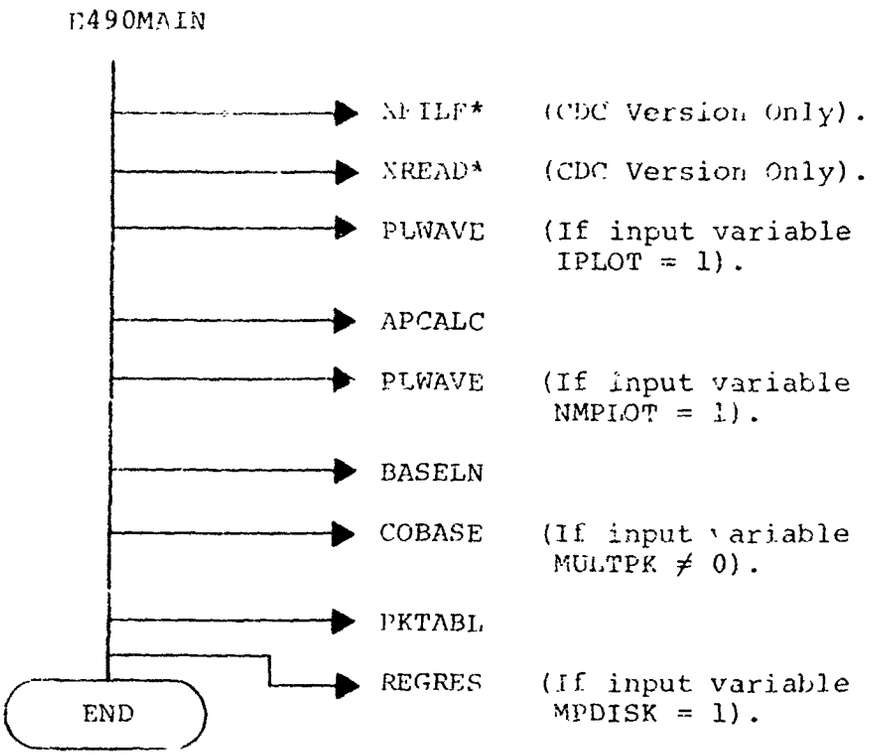
II. E410 - Generates a master file for Mechanical Property data.

2.1 ORGANIZATION OF THE E410 AND E490 COMPUTER CODES

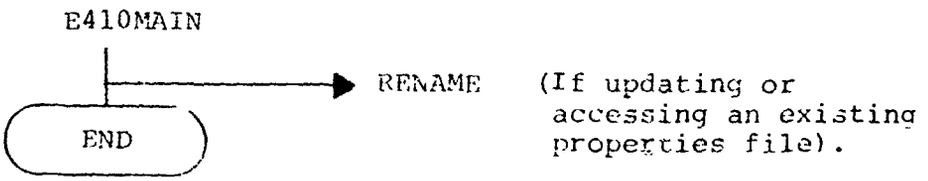
The illustration below represents a functional flowchart for both the E410 and E490 programs.

E490:

Logical Sequence in which Subroutines are called by E490MAIN.



E410:



*Please see description of E490MAIN (3.0.1).

3.0 E490 - COMPUTER PROGRAM DESCRIPTION

The following are general descriptions of both the main program plus the six (6) subroutines that comprise the E490 computer code.

3.0.1 MAIN PROGRAM - E490MAIN

The MAIN program controls the flow of calculations for this FTIS spectral analysis utilizing both the NAME-LIST input supplied by the user and a direct linkage to the six subroutines. Other key operations performed by E490MAIN are described below:

a). Printing of the input variables supplied by the NAMELIST called /FILES/.

b). Reads the Digilab FTS-10 data tape. An FTS tape file consists of two physical records...a header remarks record and a spectral data record. From the header record, the following variables are read:

IFILE()	-	The file number.
IWORDS()	-	File size in data words.
NSPR	-	Single / double precision designator.
NEXP	-	Exponent of two; (used to compute FTIS amplitude values).
II1	-	Wave number (frequency) of the first point. (Integer portion).
II2	-	Numerator of the decimal fraction for II1.
II3	-	Wave number of the last point. (Integer portion).
II4	-	Numerator of the decimal fraction for II3.

The spectral data record contains the raw spectral data in binary integer form.

NOTE: Because of the internal differences between IBM and CDC computer systems, the current method for reading this FTS-10 tape on the Air Force /RPL CDC 6600 computer is different. On the CDC system, E490MAIN calls two additional subroutines: XFILE and XREAD.

XFILE : Called at the beginning of E490MAIN, XFILE reads the entire FTS-10 input tape and copies it to a temporary file.

XREAD : By accessing the temporary file generated by XFILE, this routine will read a record from an FTS file.

c). Calculation of the wave number (WAVENO(i)) and amplitude (AMPLTD(i)) for each spectral data point i within a file.

d). Tabulation of these wave numbers and amplitudes.

e). Normalization of these amplitudes, utilizing information computed in subroutine APCALC.

f). Tabulation of these normalized amplitudes and their corresponding wave numbers.

3.0.2 SUBROUTINE APCALC

This subroutine calculates variables necessary for the normalization of the amplitude values (AMPLTD(i)) in all spectral files. The normalization of the array AMPLTD(i) is computed relative to the peak with the maximum amplitude nearest WAVNOR, a wave number value input by the user. For each individual FTIS file, the following normalization parameters are computed in APCALC then returned to the E490MAIN routine:

Variable Name	Definition
a) APMAX	Maximum amplitude nearest WAVNOR.
b) WE	Wave number at APMAX.
c) D2	Calculated amplitude at WE along the baseline of the peak.
d) AP2	Height of the peak located at WE.

3.0.3 SUBROUTINE BASELN

Subroutine BASELN searches for and records up to a maximum of fifty (50) peak heights within each individual spectrum. Due to the physical model of this project, the search for peaks is done only over certain wave number intervals, which are defined below:

I. $3200. \geqq$ Wave Numbers $\geqq 2700.$

II. $1800. \geqq$ Wave Numbers $\geqq 700.$

NOTE: For files with a last Wave Number greater than 700., the search will end at that final wave number.

Key Variables Used in BASELN:

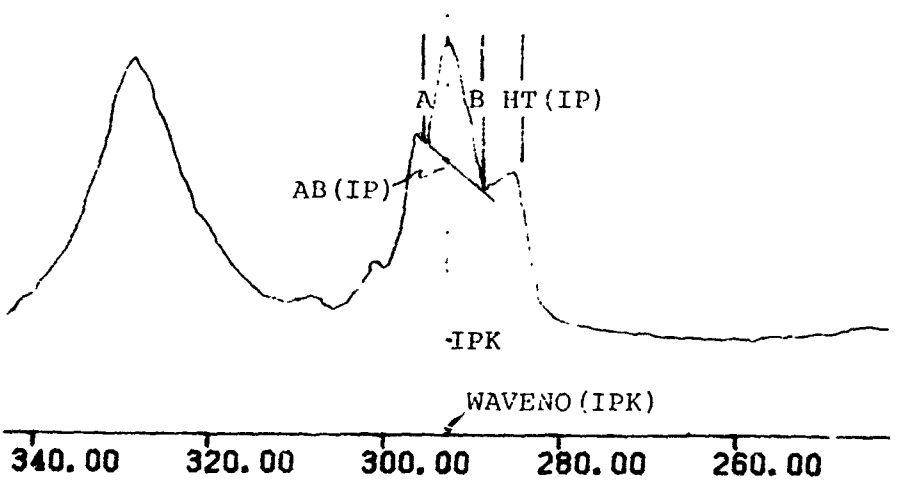
DIFF(IF) : For the IF-th file,

(Maximum normalized amplitude value) -

(Minimum normalized amplitude value).

VALUE : Equal to the input variable VALID. (The "validity" factor).

FIGURE 1 - Example of Baseline Computations.



Key Parameters Calculated by BASELN:

By referencing Figure 1, the following parameters are calculated in order to describe each individual spectral peak.

Variable Name(s)	Definition
1) A and B	(Amplitude at the apex of the peak) MINUS (Amplitude at the minimum point(s) on the peak).
2) IP	The IP-th peak in the spectrum, reading from left to right.
3) AB(IP)	The baseline amplitude at wave number WAVENO(IPK).
4) HT(IP)	The actual peak height for the IP-th peak in the spectrum. (Amplitude at the apex) - AB(IP).
5) IDWORD(IPK)	= 0 : No peak at data word IPK. = 1 : Invalid peak at data word IPK. = 2 : Valid peak at data word IPK. = 3 : Invalid peak at data word IPK, measured by the COBASE subroutine. = 4 : Valid peak at data word IPK, measured by the COBASE subroutine.

The measurement of peak "validity" is a technique utilized to try to eliminate random 'noise' within an FTIS spectrum.

The method for determining the "validity" of a peak is as follows:

a) Calculate the values for A and B.

b) From these two values, determine which variable has the maximum value, then set it equal to C.

c) Multiply DIFF(IF) by VALUE: set product equal to D22.

d) If C is greater than D22, then the peak at this wave number (WAVENO(IPK)) is a valid peak.

3.0.4 SUBROUTINE COBASE

As an optional subroutine, COBASE will only be executed when the input variable MULTPK is greater than zero and less than seven. By utilizing the same general techniques described in subroutine BASELN, the logic in this routine will establish a "common" baseline for adjacent spectral peaks.

For example, to establish the "common" baseline for the n-th set of adjacent peaks, the COBASE algorithm first searches for NPHOTO(n), the file that contains the optimum picture (or example) of these adjoining peaks. After calculating this new "common" baseline, the data words locating the newly measured peak heights in this file also become the reference locations from which to measure this "common" baselines' peak heights in all the other FTIS files.

It should be noted that the maximum allowable number of peaks per "common" baseline area is twenty-five (25).

3.0.5 SUBROUTINE PKTABL

PKTABL is an output subroutine that generates two different types of tabulations listing FTIS peak height information. The first type of tabulation, as illustrated by Figure 2 , is a "Normalized Peak Height Information" listing that is printed for every FTIS file analyzed As illustrated in Figure 3 , the second tabulation entitled "Peak Height Tabulation for all the Files" is strictly a listing, referenced by the Data Word location, of all the peak heights found in all the FTIS files examined.

A check is also made to determine whether the mechanical property correlation subroutine REGRES will be called. If so, then all the peak height values that are simultaneously located at the same Data Word location and valid in every FTIS file examined, will be stored on a temporary disk file (File 27) for use as input to the REGRES subroutine.

FOURIER TRANSFORM INFRARED SPECTROSCOPY -- NORMALIZED PEAK HEIGHT INFORMATION : FILE NUMBER 20

*** - DENOTES A VALID PEAK.
CB. - DENOTES A PEAK MEASURED FROM A "COMMON BASELINE".

	PEAK NUMBER	DATA WORD	WAVE NUMBER	PEAK HEIGHT	BASELINE AMPLITUDE
	1	120	3084.1318	0.9578886	11.7398720
***	2 CB.	130	3006.8142	3.4200430	11.4080601
***	3 CB.	136	2960.4236	12.4571257	11.2908144
***	4 CB.	141	2921.7649	18.6699829	11.1931105
***	5 CB.	146	2883.1060	9.1964798	11.0954056
***	6 CB.	150	2852.1790	10.7229776	11.0172415
	7	166	2728.4707	0.1328259	10.6185064
	9	170	2697.5437	0.2030725	10.3796721
***	9	294	1738.8047	23.0211334	14.8958855
	10	306	1646.0234	1.6773682	16.5301514
	11	312	1599.6328	0.0498047	16.0350342
***	12	323	1514.5835	0.5473633	19.5836029
***	13	336	1414.0706	49.9136200	22.3494263
	14	349	1313.5576	0.51[illegible]4430	24.3073425
	15	352	1290.3623	0.1609344	23.6483154
***	16	359	1236.2400	2.5067139	24.3601227
***	17	383	1050.6775	49.9581604	66.9271393
***	18	394	965.6282	23.0735474	79.3897858
***	19	398	934.7009	9.2646484	68.1747894
***	20	401	911.5054	13.2904053	62.8501740
	21	419	772.3340	1.0077057	37.4304047
***	22	425	725.9434	5.3882599	35.2491608

FIGURE 2

FTIS ********** PEAK HEIGHT TABULATION FOR ALL THE FILES **********

DATA WORD	FILE 16	FILE 20	FILE 24	FILE 28	FILE 0	FILE 0	FILE 0	FILE 0	FILE 0	FILE 0
113	0.0	0.0	0.0	0.191	0.0	0.0	0.0	0.0	0.0	0.0
114	0.0	0.0	0.281	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120	1.058	0.958	1.031	0.809	0.0	0.0	0.0	0.0	0.0	0.0
130	3.603	3.420	3.505	3.351	0.0	0.0	0.0	0.0	0.0	0.0
136	11.895	12.457	12.289	13.109	0.0	0.0	0.0	0.0	0.0	0.0
141	18.336	18.670	18.788	19.183	0.0	0.0	0.0	0.0	0.0	0.0
146	9.024	9.196	9.182	9.418	0.0	0.0	0.0	0.0	0.0	0.0
150	10.723	10.723	10.723	10.723	0.0	0.0	0.0	0.0	0.0	0.0
166	0.176	0.133	0.211	0.222	0.0	0.0	0.0	0.0	0.0	0.0
169	0.146	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170	0.0	0.203	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
288	0.0	0.0	0.081	0.0	0.0	0.0	0.0	0.0	0.0	0.0
294	21.621	23.021	23.274	25.219	0.0	0.0	0.0	0.0	0.0	0.0
303	0.0	0.0	0.200	0.0	0.0	0.0	0.0	0.0	0.0	0.0
306	1.972	1.677	1.402	1.702	0.0	0.0	0.0	0.0	0.0	0.0
311	0.0	0.0	0.084	0.0	0.0	0.0	0.0	0.0	0.0	0.0
312	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
314	0.143	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
316	0.368	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
323	0.796	0.547	0.602	0.0	0.0	0.0	0.0	0.0	0.0	0.0
336	45.982	49.914	48.401	50.002	0.0	0.0	0.0	0.0	0.0	0.0
349	0.513	0.513	0.449	0.570	0.0	0.0	0.0	0.0	0.0	0.0
352	0.156	0.161	0.170	0.150	0.0	0.0	0.0	0.0	0.0	0.0
359	2.465	2.507	2.523	2.515	0.0	0.0	0.0	0.0	0.0	0.0
393	44.327	49.958	48.027	44.155	0.0	0.0	0.0	0.0	0.0	0.0

FIGURE 3

FTIS ********** PEAK HEIGHT TABULATION FOR ALL THE FILES **********

DATA WORD	FILE 16	FILE 20	FILE 24	FILE 28	FILE 0	FILE 0	FILE 0	FILE 0	FILE 0	FILE 0
394	20.645	23.074	22.071	21.456	0.0	0.0	0.0	0.0	0.0	0.0
398	6.477	8.265	7.339	7.983	0.0	0.0	0.0	0.0	0.0	0.0
401	11.813	13.290	12.457	13.037	0.0	0.0	0.0	0.0	0.0	0.0
419	1.252	1.009	1.303	1.212	0.0	0.0	0.0	0.0	0.0	0.0
425	5.446	5.388	5.425	3.581	0.0	0.0	0.0	0.0	0.0	0.0

NORMAL END OF PEAK HEIGHT TABLE :
TOTAL NUMBER OF FILES LISTED = 4.

FIGURE 3

3.0.6 SUBROUTINE PLWAVE

When requested by the user, this routine plots the Wave Number versus Amplitude values for the individual FTIS spectral files. Depending upon the value of the input variables IPLOT and NMPLOT, the option is available for plotting eitner "Non-Normalized" or "Normalized" Amplitude data values or if so requested, both types of spectral plots.

3.0.7 SUBROUTINE REGRES

Subroutine REGRES is also an option that, when requested, (input variable MPDISK = 1) will determine whether there are any correlations between FTIS spectral data and corresponding propellant mechanical properties tabulated by the E410 computer program.

The primary logic in REGRES provides a multiple linear regression model that defines as its independent variables the set of "valid" peak heights written on File 27 by subroutine PKTABL. Regarding the dependent variable(s), they are determined by the input variable NPHYSP(k), the array that specifically defines what mechanical properties the user wishes to examine.

For each dependent variable, a multiple correlation coefficient (RMULT) is computed. For any dependent variable where RMULT $\geq$ .750, a non-linear regression attempt is made using that single dependent variable and those independent variables with non-zero linear regression coefficients. At the end of this attempt, a test is made comparing its multiple correlation coefficient with the linear one, thereby, determining the best "curve fit" for this particular dependent variable (or mechanical property).

4.0 E490 INPUT INSTRUCTIONS

Input variables for E490 are contained in a single NAMELIST called /FILES/. By using NAMELIST, a free form input is available requiring only that the first column on each input card be blank.

The following table, TABLE 1, presents a complete listing and description of the variables necessary to execute the E490 computer program.

VARIABLE NAME	DIMENSION	TYPE	DEFAULT VALUE	DEFINITION AND REMARKS
ITAPE	1	Integer (Literal)	None	The name of the FTIS input tape. Note: Maximum Hollerith character length for ITAPE is: (1) 4 for IBM 370 systems (2) 10 for CDC 6600 systems
ITOTAL	1	Integer	None	Total number of spectral files on the FTIS tape that will be examined.
INFILE	30	Integer	ø	The set of FTIS file numbers whose spectral data will be read from the tape. Note: Maximum of 30 files can be read per computer run.
MULTPK	1	Integer	ø	Specific number of "Common Baseline" areas per FTIS spectrum. Maximum Value = 6
NPHOTO	6	Integer	ø	NPHOTO(i) = FTIS file number in which the i th "Common Baseline" areas peaks are most definitive.
LLIMIT	6	Real	ø.ø	LLIMIT(i) = A Wave Number value within file NPHOTO(i), that defines an initial estimate for the left limit of "Common Baseline" Area i. Note: Use a Wave Number value that is approx. 2/3 the way down the left side of the left most peak

TABLE 1: E490 INPUT VARIABLES

VARIABLE NAME	DIMENSION	TYPE	DEFAULT VALUE	DEFINITION AND REMARKS
RLIMIT	6	Real	Ø.Ø	RLIMIT(i) = A Wave Number value within file NPHOTO(i), that defines an initial estimate for the right limit of "Common Baseline" Area i. Note: Use a Wave Number value that is approx. 2/3 the way down the right side of the right most peak.
VALID	1	Real	.Ø2	The Peak Height validity factor.
WAVNOR	1	Real	None	Normalizing Wave Number for all FTIS files.
MPDISK	1	Integer	Ø	Specifies whether statistical correlation of peak heights versus mechanical properties is requested. If = Ø, Correlation option is not requested. = 1, Correlation option is requested.
MPRECS	30	Integer	Ø	Record number(s) from the mechanical properties input tape that are in a one-to-one correspondence with the INFILE(i) array. Example: If INFILE(2) = 3 and MPRECS(2) = 9, then the Mechanical Properties for FTIS File No. 3 are located at the 9th record of data on the Mechanical Properties tape.

TABLE 1: E490 INPUT VARIABLES (Cont.)

VARIABLE NAME	DIMENSION	TYPE	DEFAULT VALUE	DEFINITION AND REMARKS
NPHYSP	10	Integer	ø	Column numbers corresponding to the E410 physical property listing, which identify what properties to use as dependent variables in subroutine REGRES. In the current E410 configuration, the possible dependent variables are: 1 - Modulus 2 - Strain at Break 3 - Strain at Maximum Stress 4 - Maximum Stress 5 - Strain Energy Density 6 - Strain Endurance 7 - TBD 8 - TBD 9 - TBD 10 - TBD
IPLOT	1	Integer	ø	"Non-normalized" plot designator. = 0 , No plots have been requested. = 1 , Plots have been requested.
NMPLOT	1	Integer	ø	"Normalized" plot designator. = 0 , No plots have been requested. = 1 , Plots have been requested.

TABLE 1: E490 INPUT VARIABLES (Cont.)

4.1 JOB CONTROL LANGUAGE FOR CDC SYSTEMS

The following are examples of the Job Control Language needed to execute computer program E490 on a CDC-6000 series computer.

OPTION ONE: RUN REQUESTING NO PLOTS AND NO STATISTICAL CORRELATION.

```
SEQ,THA01.
THA,T100,NT1,P4.  LA,YOURNAME,30
ATTACH,LGO,E490GO,ID=YOURNAME,MR=1.
REQUEST,TAPE1,NT,HD,S,NORING,VSN=FTISTAPENAME
FILE(TAPE1,BT=K,RT=U,RB=1,MBL=1257,MRL=1257,CM=NO,MNR=24,MNB=24)
LDSET(FILES=TAPE1)
LIBRARY,BIT8LIB.
MAP,PART.
LGO.
UNLOAD,TAPE1.
```

Card Column 1

OPTION TWO: RUN REQUESTING PLOTS BUT NO
STATISTICAL CORRELATIONS.

```
SEQ,THA01.
THA,T100,NT1,P4.   LA,YOURNAME,30
ATTACH,LGO,E490GO,ID=YOURNAME,MR=1.
REQUEST,TAPE1,NT,HD,S,NORING,VSN=FTISTAPENAME.
FILE(TAPF1,BT=K,RT=U,RB=1,MBL=1257,MRL=1257,CM=NO,MNR=24,MNB=24)
LDSET(FILES=TAPE1)
LIBRARY,BIT8LIB.
MAP,PART.
LGO.
UNLOAD,TAPE1.
REWIND,TAPE8.
REQUEST,PLOT,HD,RING,VSN=PLOT.   YOURNAME
COPYBF,TAPE8,PLOT.
RETURN,PLOT.
```

OPTION THREE: RUN REQUESTING STATISTICAL
CORRELATIONS BUT NO PLOTS.

```
SEQ,THA01.
THA,T100,NT1,P4.   LA,YOURNAME,30
ATTACH,LGO,E490GO,ID=YOURNAME,MR=1.
ATTACH,TAPE10,MECHPROFFILE,ID=YOUPNAME,MR=1.
REQUEST,TAPE1, MT,HD,S,NORING,VSN=FTISTAPENAME.
FILE(TAPE1,BT=K,RT=U,RB=1,MBL=1257,MRL=1257,CM=NO,MNR=24,MNB=24)
LDSET(FILES=TAPE1)
LIBRARY,BIT8LIB.
MAP,PART.
LGO.
UNLOAD,TAPE1.
```

OPTION FOUR: RUN REQUESTING PLOTS AND
STATISTICAL CORRELATIONS.

```
SEQ,THA01.
THA,T100,NT1,P4.  LA,YOURNAME,30
ATTACH,LGO,E490GO,ID=YOURNAME,MR=1.
ATTACH,TAPE10,MECHPROPFILE,ID=YOURNAME,MR=1.
REQUEST,TAPE1,NT,HD,S,NORING,VSN=FTISTAPENAME.
FILE(TAPE1,BT=K,RT=U,PB=1,MBL=1257,MRL=1257,CM=NO,MNR=24,MNB=24)
LOSET(FILES=TAPE1)
LIBRARY,BIT8LIB.
MAP,PART.
LGO.
UNLOAD,TAPE1.
REWIND,TAPE8.
REQUEST,PLOT,HD,RING,VSN=PLOT.  YOURNAME
COPYBF,TAPE8,PLOT.
RETURN,PLOT.
```

5.0 E490 - SAMPLE CASE

The card deck shown in Figure 4 is the Job Control Language and input data that generated the sample case illustrated in Table 2.

E490 SAMPLE CASE

```
SEQ,THA01.
THA,T100,NT1,P4.   LA,SMITHO,30
ATTACH,LGO,E490GO,ID=SMITHO,MR=1.
ATTACH,TAPE10,PROFILETP25,ID=SMITHO,MR=1.
REQUEST,TAPE1,NT,HO,S,NORING,VSN=TAPE25.
FILE(TAPE1,BT=K,RT=U,PR=1,MBL=1257,MRL=1257,CM=NO,MNR=24,MNB=24)
LOSET(FILES=TAPE1)
LIBRARY,BIT8LIB.
MAP,PART.
LGO.
UNLOAD,TAPE1.
 $FILES
 ITAPE='TP25',
 ITOTAL=4,
 INFILE=16,20,24,28,
 MULTPK=1,
 NPHOTO=24,
 LLIMIT=3030.,
 RLIMIT=2750.,
 WAVNOR=2850.,
 VALID = .02,
 MPDISK=1,
 MPRECS=17,21,25,29,
 NPHYSP=1,2,3,4,
 IPLOT = 0,
 NMPLOT = 0,
 $END
```

FIGURE 4. E490 SAMPLE CASE

```
FOURIER TRANSFORM INFRARED SPECTROSCOPY COMPUTER PROGRAM
E490 - THIOKOL CORP. / HUNTSVILLE , ALABAMA 35807

INPUT DESCRIPTION:


NAME OF FTIS INPUT TAPE : TP25

TOTAL NUMBER OF FILES (THIS RUN) :   4.

LIST OF FILES TO BE ANALYZED :  16    20    24    28     0     0     0     0     0     0
                                 0     0     0     0     0     0     0     0     0     0
                                 0     0     0     0     0     0     0     0     0     0

NUMBER OF "COMMON BASELINE" AREAS SPECIFIED : 1.
     AREA 1 IS BEST PICTURED IN FILE 24 ;
     LEFT LIMIT ESTIMATE = 3030.00
     RIGHT LIMIT ESTIMATE = 2750.00

NORMALIZING WAVE NUMBER :  2850.0.

PEAK HEIGHT VALIDITY = 2.0 PER CENT.

STATISTICAL CORRELATION WITH PHYSICAL PROPERTIES HAS BEEN REQUESTED:

PHYSICAL PROPERTY INPUT DISK : FT10F001.

PHYSICAL PROP. RECORD NUMBERS : 17    21    25    29     0     0     0     0     0     0
                                 0     0     0     0     0     0     0     0     0     0
                                 0     0     0     0     0     0     0     0     0     0

THE FOLLOWING PHYSICAL PROPERTIES WILL BE USED
AS DEPENDENT VARIABLES :
     PROP. NO. 1 - MODULUS
     PROP. NO. 2 - STRAIN AT BREAK
     PROP. NO. 3 - STRAIN AT MAXIMUM STRESS
     PROP. NO. 4 - MAXIMUM STRESS

NO SPECTRAL PLOTS HAVE BEEN REQUESTED.
```


TABLE 2: E490 SAMPLE CASE OUTPUT

16	468	0	1	4004	13902	401	13716
4004.7119		401.2092	-7.7152				

FTIS FILE NUMBER : 16 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
1	4004.2119	0.9686279E+01	53	3603.0212	0.9716797E+01	105	3201.8303	0.17858[illegible]E+02
2	3996.4966	0.9375000E+01	54	3595.3059	0.9564209E+01	106	3194.1150	0.17010[illegible]E+02
3	3988.7815	0.9161377E+01	55	3587.5908	0.9771729E+01	107	3186.3999	0.16558[illegible]E+02
4	3981.0662	0.9167480E+01	56	3579.8755	0.9649658E+01	108	3178.6846	0.15728[illegible]E+02
5	3973.3511	0.9600830E+01	57	3572.1604	0.9875488E+01	109	3170.9695	0.15051[illegible]E+02
6	3965.6357	0.8850098E+01	58	3564.4451	0.9826660E+01	110	3163.2542	0.1480103E+02
7	3957.9207	0.9155273E+01	59	3556.7300	0.1000977E+02	111	3155.5391	0.1448975E+02
8	3950.2053	0.8984375E+01	60	3549.0146	0.9826660E+01	112	3147.8237	0.1409912E+02
9	3942.4902	0.8728027E+01	61	3541.2996	0.9967041E+01	113	3140.1086	0.1368408E+02
10	3934.7749	0.8923340E+01	62	3533.5842	0.1033936E+02	114	3132.3933	0.1359253E+02
11	3927.0598	0.8612061E+01	63	3525.8691	0.9857178E+01	115	3124.6782	0.1347046E+02
12	3919.3445	0.8532715E+01	64	3518.1538	0.1015625E+02	116	3116.9629	0.1318970E+02
13	3911.6294	0.8526611E+01	65	3510.4387	0.1074829E+02	117	3109.2478	0.1309814E+02
14	3903.9141	0.9191895E+01	66	3502.7234	0.1109009E+02	118	3101.5325	0.1324463E+02
15	3896.1990	0.8441162E+01	67	3495.0083	0.1055298E+02	119	3093.8174	0.1345825E+02
16	3888.4836	0.8563232E+01	68	3487.2930	0.1006470E+02	120	3086.1021	0.1397329E+02
17	3880.7686	0.8978271E+01	69	3479.5779	0.1115112E+02	121	3078.3870	0.1353760E+02
18	3873.0532	0.8972168E+01	70	3471.8625	0.1130371E+02	122	3070.6716	0.1322632E+02
19	3865.3381	0.9326172E+01	71	3464.1475	0.1179199E+02	123	3062.9565	0.1270142E+02
20	3857.6228	0.9094238E+01	72	3456.4321	0.1231689E+02	124	3055.2412	0.1286011E+02
21	3849.9077	0.8990479E+01	73	3448.7170	0.1206055E+02	125	3047.5261	0.1318970E+02
22	3842.1924	0.9283447E+01	74	3441.0017	0.1274414E+02	126	3039.8108	0.1376953E+02
23	3834.4773	0.9375000E+01	75	3433.2866	0.1238403E+02	127	3032.0957	0.1387329E+02
24	3826.7620	0.9210205E+01	76	3425.5713	0.1329956E+02	128	3024.3804	0.1480713E+02
25	3819.0469	0.9228516E+01	77	3417.8562	0.1353149E+02	129	3016.6653	0.1586304E+02
26	3811.3315	0.9643555E+01	78	3410.1409	0.1411133E+02	130	3008.9502	0.1584473E+02
27	3803.6165	0.1052856E+02	79	3402.4258	0.1413574E+02	131	3001.2349	0.1560059E+02
28	3795.9011	0.9716797E+01	80	3394.7104	0.1496582E+02	132	2993.5198	0.1629028E+02
29	3788.1860	0.9594727E+01	81	3386.9954	0.1503296E+02	133	2985.8044	0.1732788E+02
30	3780.4707	0.9985352E+01	82	3379.2800	0.1608887E+02	134	2978.0894	0.1934204E+02
31	3772.7556	0.9948730E+01	83	3371.5649	0.1629028E+02	135	2970.3740	0.2249145E+02
32	3765.0403	0.9313965E+01	84	3363.8496	0.1697998E+02	136	2962.6589	0.2332763E+02
33	3757.3252	0.9716797E+01	85	3356.1345	0.1784668E+02	137	2954.9436	0.2260132E+02
34	3749.6099	0.1015015E+02	86	3348.4192	0.1867676E+02	138	2947.2285	0.2479858E+02
35	3741.8950	0.9600830E+01	87	3340.7041	0.1980591E+02	139	2939.5132	0.2789917E+02
36	3734.1797	0.9625244E+01	88	3332.9888	0.2111816E+02	140	2931.7981	0.2982690E+02
37	3726.4646	0.9838867E+01	89	3325.2737	0.2285767E+02	141	2924.0828	0.2913208E+02
38	3718.7493	0.9759521E+01	90	3317.5583	0.2443237E+02	142	2916.3677	0.[illegible]E+02
39	3711.0342	0.9863281E+01	91	3309.8433	0.2566528E+02	143	2909.6523	0.2465820E+02
40	3703.3188	0.9875488E+01	92	3302.1279	0.2756348E+02	144	2900.9373	0.2225952E+02
41	3695.6038	0.9991455E+01	93	3294.4128	0.2789917E+02	145	2893.2219	0.2033081E+02
42	3687.8884	0.1024780E+02	94	3286.6975	0.2855835E+02	146	2885.5068	0.2044067E+02
43	3680.1733	0.9716797E+01	95	3278.9824	0.2804565E+02	147	2877.7915	0.2027588E+02
44	3672.4580	0.9887695E+01	96	3271.2671	0.2692261E+02	148	2870.0764	0.2076416E+02
45	3664.7429	0.9564209E+01	97	3263.5520	0.2593384E+02	149	2862.3611	0.2111206E+02
46	3657.0276	0.9582520E+01	98	3255.8367	0.2440186E+02	150	2854.6460	0.2190552E+02
47	3649.3125	0.9759521E+01	99	3248.1216	0.2347412E+02	151	2846.9307	0.2039795E+02
48	3641.5972	0.9423828E+01	100	3240.4062	0.2207642E+02	152	2839.2156	0.1695557E+02
49	3633.8821	0.9655762E+01	101	3232.6912	0.2133179E+02	153	2831.5002	0.1435547E+02
50	3626.1667	0.9619141E+01	102	3224.9758	0.2017212E+02	154	2823.7852	0.1340332E+02
51	3618.4517	[illegible]E+01	103	3217.2607	0.1945801E+02	155	2816.0699	0.129[illegible]E+02
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.1810303E+02	[illegible]	[illegible]	[illegible]

FTIS FILE NUMBER : 16 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
157	2800.6394	0.1240845E+02	209	2399.4485	0.1160889E+02	261	1998.2578	0.1259766E+02
158	2792.9243	0.122 145E+02	210	2391.7334	0.1153564E+02	262	1990.5425	0.1254272E+02
159	2785.2090	0.1212769E+02	211	2384.0181	0.1152954E+02	263	1982.8274	0.1234131E+02
160	2777.4939	0.1195679E+02	212	2376.3030	0.1165771E+02	264	1975.1121	0.1215210E+02
161	2769.7786	0.1192017E+02	213	2368.5876	0.1160278E+02	265	1967.3970	0.1213379E+02
162	2762.0635	0.1189575E+02	214	2360.8726	0.1160278E+02	266	1959.6816	0.1207275E+02
163	2754.3481	0.1176758E+02	215	2353.1572	0.1156006E+02	267	1951.9666	0.1203613E+02
164	2746.6331	0.1169434E+02	216	2345.4421	0.1162720E+02	268	1944.2512	0.1200562E+02
165	2738.9177	0.1170044E+02	217	2337.7268	0.1169434E+02	269	1936.5361	0.1196899E+02
166	2731.2026	0.1171265E+02	218	2330.0117	0.1157227E+02	270	1928.8208	0.1199341E+02
167	2723.4873	0.1166382E+02	219	2322.2964	0.1156006E+02	271	1921.1057	0.1196289E+02
168	271 .7722	0.1140747E+02	220	2314.5813	0.1148682E+02	272	1913.3904	0.1207886E+02
169	2708.0569	0.1152344E+02	221	2306.8660	0.1147461E+02	273	1905.6753	0.1198120E+02
170	2700.3418	0.1145020E+02	222	2299.1509	0.1149292E+02	274	1897.9600	0.1196899E+02
171	2692.6265	0.1139526E+02	223	2291.4355	0.1154175E+02	275	1890.2449	0.1205444E+02
172	2684.9114	0.1133423E+02	224	2283.7205	0.1145630E+02	276	1882.5295	0.1210327E+02
173	2677.1960	0.1145020E+02	225	2276.0051	0.1153564E+02	277	1874.8145	0.1207275E+02
174	2669.4810	0.1131592E+02	226	2268.2900	0.1140137E+02	278	1867.0991	0.1212769E+02
175	2661.7656	0.1119385E+02	227	2260.5747	0.1138306E+02	279	1859.3840	0.1218262E+02
176	2654.0505	0.1121826E+02	228	2252.8596	0.1135254E+02	280	1851.6687	0.1213989E+02
177	2646.3352	0.1118164E+02	229	2245.1443	0.1141357E+02	281	1843.9536	0.1235352E+02
178	2638.6201	0.1114502E+02	230	2237.4292	0.1133423E+02	282	1836.2383	0.1237183E+02
179	2630.9048	0.1104736E+02	231	2229.7139	0.1137085E+02	283	1828.5232	0.1261597E+02
180	2623.1897	0.1107178E+02	232	2221.9988	0.1141968E+02	284	1820.8079	0.1245728E+02
181	2615.4744	0.1107788E+02	233	2214.2834	0.1143799E+02	285	1813.0928	0.1245728E+02
182	2607.7593	0.1106567E+02	234	2206.5684	0.1141968E+02	286	1805.3774	0.1242065E+02
183	2600.0439	0.1098022E+02	235	2198.8530	0.1139526E+02	287	1797.6624	0.1241455E+02
184	2592.3289	0.1101685E+02	236	2191.1379	0.1141357E+02	288	1789.9470	0.1251831E+02
185	2584.6135	0.1091919E+02	237	2183.4226	0.1143799E+02	289	1782.2319	0.1258545E+02
186	2576.8984	0.1091919E+02	238	2175.70 3	0.1145020E+02	290	1774.5166	0.1285400E+02
187	2569.1831	0.1093750E+02	239	2167.9922	0.1146851E+02	291	1766.8015	0.1333618E+02
188	2561.4680	0.1093140E+02	240	2160.2771	0.1149292E+02	292	1759.0862	0.1405737E+02
189	2553.7527	0.1100464E+02	241	2152.5618	0.1154175E+02	293	1751.3711	0.2424927E+02
190	2546.0376	0.1098022E+02	242	2144.8467	0.1161499E+02	294	1743.6558	0.3352661E+02
191	2538.3223	0.1089478E+02	243	2137.1313	0.1153564E+02	295	1735.9407	0.2768555E+02
192	2530.6072	0.1099243E+02	244	2129.4163	0.1154785E+02	296	1728.2253	0.2286987E+02
193	2522.8918	0.1102295E+02	245	2121.7009	0.1149902E+02	297	1720.5103	0.1984863E+02
194	2515.1768	0.1102295E+02	246	2113.9859	0.1162109E+02	298	1712.7949	0.1790161E+02
195	2507.4614	0.1108398E+02	247	2106.2705	0.1166382E+02	299	1705.0798	0.1664429E+02
196	2499.7463	0.1110840E+02	248	2098.5554	0.1172485E+02	300	1697.3645	0.1602173E+02
197	2492.0310	0.1098633E+02	249	2090.8401	0.1179810E+02	301	1689.6494	0.1509399E+02
198	2484.3159	0.1110840E+02	250	2083.1250	0.1198120E+02	302	1681.9341	0.1522217E+02
199	2476.6006	0.1121216E+02	251	2075.4097	0.1195679E+02	303	1674.2190	0.1555176E+02
200	2468.8855	0.1121826E+02	252	2067.6946	0.1208496E+02	304	1666.5037	0.1567383E+02
201	2461.1702	0.1128540E+02	253	2059.9792	0.1219482E+02	305	1658.7886	0.1596069E+02
202	2453.4551	0.1125488E+02	254	2052.2642	0.1223145E+02	306	1651.0732	0.1656494E+02
203	2445.7397	0.1134033E+02	255	2044.5488	0.1228027E+02	307	1643.3582	0.1601563E+02
204	2438.0247	0.1132813E+02	256	2036.8337	0.1222534E+02	308	1635.6428	0.1491089E+02
205	2430.3093	0.1141968E+02	257	2029.1184	0.1231689E+02	309	1627.9277	0.1450806E+02
206	2422.5942	0.1142578E+02	258	2021.4033	0.1246338E+02	310	1620.2124	0.1445313E+02
207	2414.8789	0.1142578E+02	259	2013.6882	0.1254883E+02	311	1612.4973	0.1438599E+02
208	2407.1638	0.1151733E+02	260	2005.9729	0.1258545E+02	312	1604.7820	0.1436768E+02

FTIS FILE NUMBER : 16

NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
313	1597.0669	0.1427002E+02	365	1195.8760	0.2277832E+02	417	794.6851	0.3062[illegible]
314	1589.3516	0.1441040E+02	366	1188.1606	0.2467510E+02	418	786.9700	0.3093262E+02
315	1581.6365	0.1428833E+02	367	1180.4456	0.2645874E+02	419	779.2546	0.3138428E+02
316	1573.9211	0.1478882E+02	368	1172.7302	0.2933960E+02	420	771.5396	0.3049927E+02
317	1566.2061	0.1461182E+02	369	1165.0151	0.3143311E+02	421	763.8242	0.3005371E+02
318	1558.4907	0.1563721E+02	370	1157.2998	0.3468018E+02	422	756.1091	0.3016968E+02
319	1550.7756	0.1587524E+02	371	1149.5847	0.4074707E+02	423	748.3938	0.3112793E+02
320	1543.0603	0.1665649E+02	372	1141.8694	0.4663696E+02	424	740.6787	0.3273315E+02
321	1535.3452	0.1724243E+02	373	1134.1543	0.5092773E+02	425	732.9634	0.3391113E+02
322	1527.6299	0.1760254E+02	374	1126.4390	0.5470581E+02	426	725.2483	0.3323364E+02
323	1519.9148	0.1834717E+02	375	1118.7239	0.5917358E+02	427	717.5330	0.3283691E+02
324	1512.1995	0.1811523E+02	376	1111.0085	0.6463623E+02	428	709.8179	0.3243408E+02
325	1504.4844	0.1836548E+02	377	1103.2935	0.7027588E+02	429	702.1025	0.3210449E+02
326	1496.7690	0.1858521E+02	378	1095.5781	0.7467651E+02	430	694.3875	0.3155518E+02
327	1489.0540	0.1976929E+02	379	1087.8630	0.7954712E+02	431	686.6721	0.3126831E+02
328	1481.3386	0.2127686E+02	380	1080.1477	0.8591309E+02	432	678.9570	0.3034058E+02
329	1473.6235	0.2564087E+02	381	1072.4326	0.9144897E+02	433	671.2417	0.2899780E+02
330	1465.9082	0.2857666E+02	382	1064.7173	0.9447632E+02	434	663.5266	0.2767334E+02
331	1458.1931	0.3274536E+02	383	1057.0022	0.9584961E+02	435	655.8113	0.2601318E+02
332	1450.4778	0.3718262E+02	384	1049.2869	0.9490356E+02	436	648.0962	0.2640381E+02
333	1442.7627	0.4520874E+02	385	1041.5718	0.9298096E+02	437	640.3809	0.4874268E+02
334	1435.0474	0.5422974E+02	386	1033.8567	0.9061279E+02	438	632.6658	0.8100586E+02
335	1427.3323	0.6139526E+02	387	1026.1414	0.8741455E+02	439	624.9504	0.1044434E+03
336	1419.6169	0.6190186E+02	388	1018.4263	0.9391113E+02	440	617.2354	0.9537354E+02
337	1411.9019	0.5666504E+02	389	1010.7109	0.8071289E+02	441	609.5200	0.8342896E+02
338	1404.1865	0.4954224E+02	390	1002.9958	0.7901001E+02	442	601.8049	0.7365723E+02
339	1396.4714	0.4344482E+02	391	995.2805	0.7515259E+02	443	594.0896	0.6726074E+02
340	1388.7561	0.3815308E+02	392	987.5654	0.7125244E+02	444	586.3745	0.6487427E+02
341	1381.0410	0.3274536E+02	393	979.8501	0.7406616E+02	445	578.6592	0.6238403E+02
342	1373.3257	0.2973633E+02	394	972.1350	0.8401489E+02	446	570.9441	0.6208496E+02
343	1365.6106	0.2787476E+02	395	964.4197	0.7623291E+02	447	563.2288	0.6133911E+02
344	1357.8953	0.2603149E+02	396	956.7046	0.6483154E+02	448	555.5137	0.6061401E+02
345	1350.1802	0.2437134E+02	397	949.9893	0.5566406E+02	449	547.7983	0.6056519E+02
346	1342.4648	0.2274780E+02	398	941.2742	0.6162109E+02	450	540.0833	0.6015625E+02
347	1334.7498	0.2144165E+02	399	933.5588	0.5565796E+02	451	532.3679	0.5762939E+02
348	1327.0344	0.2106323E+02	400	925.8437	0.5588379E+02	452	524.6528	0.5426636E+02
349	1319.3193	0.2122192E+02	401	918.1284	0.6194458E+02	453	516.9375	0.5261841E+02
350	1311.6040	0.2105103E+02	402	910.4133	0.5543213E+02	454	509.2224	0.4955444E+02
351	1303.8889	0.2012329E+02	403	902.6980	0.4823608E+02	455	501.5071	0.4834594E+02
352	1296.1736	0.2015991E+02	404	894.9829	0.4436035E+02	456	493.7920	0.4956359E+02
353	1288.4585	0.1990967E+02	405	887.2676	0.4190674E+02	457	486.0767	0.5027466E+02
354	1280. 432	0.1990356E+02	406	879.5525	0.3933350E+02	458	478.3616	0.5156250E+02
355	1273.0281	0.2053223E+02	407	871.8372	0.3810425E+02	459	470.6462	0.5120850E+02
356	1265.3127	0.2141724E+02	408	864.1221	0.3686523E+02	460	462.9312	0.4942627E+02
357	1257.5977	0.2194824E+02	409	856.4067	0.3526001E+02	461	455.2158	0.4687500E+02
358	1249.8823	0.2251587E+02	410	848.6917	0.3439331E+02	462	447.5007	0.4415894E+02
359	1242.1672	0.2283325E+02	411	840.9763	0.3332520E+02	463	439.7854	0.4175415E+02
360	1234.4519	0.2225952E+02	412	833.2612	0.3263550E+02	464	432.0703	0.4175415E+02
361	1226.7368	0.2192383E+02	413	825.5459	0.3190308E+02	465	424.3550	0.4175415E+02
362	1219.0215	0.2127686E+02	414	817.8308	0.3140869E+02	466	416.6399	0.4175415E+02
363	1211.3064	0.2109375E+02	415	810.1155	0.3081665E+02	467	408.9246	0.4175415E+02
364	1203.5913	0.2127686E+02	416	802.4004	0.3049927E+02	468	401.2095	0.4175415E+02

20	468	0	1	4004	13902	393	31295
4004.2119		393.4773	-7.7318				

FTIS FILE NUMBER : 20

NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
1	4004.2119	0.5373535E+02	53	3602.[illegible]02	0.6213379E+01	105	3200.1084	0.1395[illegible]+02
2	3996.4800	0.5373535E+02	54	3594.[illegible]285	0.6353760E+01	106	3192.3767	0.[illegible]E+02
3	3988.7483	0.5373535E+02	55	3586.6968	0.6414795E+01	107	3184.6448	0.[illegible]E+02
4	3981.0166	0.5373535E+02	56	3578.9648	0.6738281E+01	108	3176.9131	0.[illegible]E+02
5	3973.2847	0.5373535E+02	57	3571.2332	0.6579590E+01	109	3169.1814	0.1156616E+02
6	3965.5530	0.6408691E+01	58	3563.5015	0.6549072E+01	110	3161.4495	0.1110840E+02
7	3957.8213	0.5120850E+01	59	3555.7695	0.6518555E+01	111	3153.7178	0.1095581E+02
8	3950.0894	0.5432129E+01	60	3548.0378	0.6530762E+01	112	3145.9861	0.1041870E+02
9	3942.3577	0.4943848E+01	61	3540.3062	0.6774902E+01	113	3138.2542	0.1009521E+02
10	3934.6260	0.5004883E+01	62	3532.5742	0.6787109E+01	114	3130.5225	0.9967041E+01
11	3926.8940	0.5432129E+01	63	3524.8425	0.6378174E+01	115	3122.7908	0.9918213E+01
12	3919.1624	0.4949951E+01	64	3517.1108	0.6817627E+01	116	3115.0591	0.9765625E+01
13	3911.4307	0.4577637E+01	65	3509.3789	0.7397461E+01	117	3107.3271	0.9478760E+01
14	3903.6987	0.5407715E+01	66	3501.6472	0.7678223E+01	118	3099.5955	0.9674072E+01
15	3895.9670	0.4882813E+01	67	3493.9155	0.6805420E+01	119	3091.8638	0.9722900E+01
16	3888.2354	0.4248047E+01	68	3486.1838	0.6811523E+01	120	3084.1318	0.1011353E+02
17	3880.5037	0.4016113E+01	69	3478.4519	0.7617188E+01	121	3076.4001	0.9960938E+01
18	3872.7717	0.5285645E+01	70	3470.7202	0.7647705E+01	122	3068.6685	0.9448242E+01
19	3865.0400	0.5303955E+01	71	3462.9885	0.7910156E+01	123	3060.9365	0.9271240E+01
20	3857.3083	0.5497061E+01	72	3455.2566	0.8099365E+01	124	3053.2048	0.9179688E+01
21	3849.5764	0.5035400E+01	73	3447.5249	0.8453369E+01	125	3045.4731	0.9527588E+01
22	3841.8447	0.5145264E+01	74	3439.7932	0.8471680E+01	126	3037.7412	0.1006470E+02
23	3834.1130	0.4583740E+01	75	3432.0613	0.8782959E+01	127	3030.0095	0.1034546E+02
24	3826.3811	0.5358887E+01	76	3424.3296	0.9216309E+01	128	3022.2778	0.1087036E+02
25	3818.6494	0.5426025E+01	77	3416.5979	0.9729004E+01	129	3014.5459	0.1190186E+02
26	3810.9177	0.5578613E+01	78	3408.8660	0.9759521E+01	130	3006.8142	0.1181030E+02
27	3803.1858	0.5816650E+01	79	3401.1343	0.1024780E+02	131	2999.0825	0.1162720E+02
28	3795.4541	0.5694580E+01	80	3393.4026	0.1047363E+02	132	2991.3508	0.1229858E+02
29	3787.7224	0.5725098E+01	81	3385.6707	0.1082764E+02	133	2983.6189	0.1345215E+02
30	3779.9905	0.5474854E+01	82	3377.9390	0.1181641E+02	134	2975.8872	0.1546631E+02
31	3772.2588	0.5383301E+01	83	3370.2073	0.1211548E+02	135	2968.1555	0.1312134E+02
32	3764.5271	0.5627441E+01	84	3362.4756	0.1288452E+02	136	2960.4236	[illegible]
33	3756.7954	0.5615234E+01	85	3354.7437	0.1357422E+02	137	2952.6919	[illegible]
34	3749.0635	0.5401611E+01	86	3347.0120	0.1435547E+02	138	2944.9602	[illegible]
35	3741.3320	0.5804443E+01	87	3339.2803	0.1493530E+02	139	2937.2283	[illegible]
36	3733.6003	0.6060791E+01	88	3331.5483	0.1656494E+02	140	2929.4966	0.2398682E+02
37	3725.8684	0.6256104E+01	89	3323.8167	0.1806030E+02	141	2921.7649	0.2378540E+02
38	3718.1367	0.6121826E+01	90	3316.0850	0.1947021E+02	142	2914.0330	0.2191406E+02
39	3710.4050	0.6616211E+01	91	3308.3530	0.2105713E+02	143	2906.3013	[illegible]
40	3702.6731	0.6610107E+01	92	3300.6213	0.2.46704E+02	144	2898.5696	0.1768188E+02
41	3694.9414	0.6561279E+01	93	3292.8896	0.2327881E+02	145	2890.8376	0.1610718E+02
42	3687.2097	0.6231689E+01	94	3285.1577	0.2318115E+02	146	2883.1060	0.1516211E+02
43	3679.4778	0.6451416E+01	95	3277.4260	0.2282104E+02	147	2875.3743	0.1624756E+02
44	3671.7461	0.6365967E+01	96	3269.6943	0.2230225E+02	148	2867.6426	0.1626636E+02
45	3664.0144	0.6127930E+01	97	3261.9624	0.2097285E+02	149	2859.9106	0.1498608E+02
46	3656.2825	0.6134033E+01	98	3254.2307	0.2020374E+02	150	2852.1790	0.1731567E+02
47	3648.5508	0.6357760E+01	99	3246.4990	0.1902466E+02	151	2844.4473	0.1590576E+02
48	3640.8191	0.6530762E+01	100	3238.7673	0.1817627E+02	152	2836.7153	0.1293335E+02
49	3633.0872	0.6498413E+01	101	3231.0354	0.1685791E+02	153	2828.9836	0.1079712E+02
50	3625.3555	0.6567383E+01	102	3223.3037	0.1610107E+02	154	2821.2520	0.9997559E+01
51	3617.6238	0.6433105E+01	103	3215.5720	0.1517944E+02	155	2813.5200	0.9606934E+01
52	3609.8921	0.6414[illegible]E+01	104	3207.8401	0.1454299E+02	156	2805.7883	[illegible]

FTIS FILE NUMBER : 20

NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
157	2798.0566	0.9252930E+01	209	2396.0046	0.8959961E+01	261	1993.9529	0.1051025E+02
158	2790.3247	0.9075928E+01	210	2388.2729	0.8886719E+01	262	1986.2212	0.1051025E+02
159	2782.5930	0.8898926E+01	211	2380.5413	0.8898926E+01	263	1978.4895	0.1033325E+02
160	2774.8613	0.8862305E+01	212	2372.8096	0.8978271E+01	264	1970.7576	0.1012573E+02
161	2767.1294	0.8697510E+0.	213	2365.0776	0.9020996E+01	265	1963.0259	0.1003418E+02
162	2759.3977	0.8666992E+01	214	2357.3459	0.8929443E+01	266	1955.2942	0.1007690E+02
163	2751.6660	0.8630371E+01	215	2349.6143	0.8935547E+01	267	1947.5623	0.1002808E+02
164	2743.9343	0.8557129E+01	216	2341.8823	0.9020996E+01	268	1939.8306	0.9997559E+01
165	2736.2024	0.8551025E+01	217	2334.1506	0.9002686E+01	269	1932.0989	0.9985352E+01
166	2728.4707	0.8563232E+01	218	2326.4189	0.8990479E+01	270	1924.3669	0.9936523E+01
167	2720.7390	0.9416748E+01	219	2318.6870	0.8947754E+01	271	1916.6353	0.9979248E+01
168	2713.0071	0.8270264E+01	220	2310.9553	0.8941650E+01	272	1908.9036	0.9997559E+01
169	2705.2754	0.8325195E+01	221	2303.2236	0.8966064E+01	273	1901.1716	0.1004028E+02
170	2697.5437	0.8428955E+01	222	2295.4917	0.8984375E+01	274	1893.4399	0.1005249E+02
171	2689.8119	0.8343506E+01	223	2287.7600	0.8990479E+01	275	1885.7083	0.1001587E+02
172	2682.0801	0.8264160E+01	224	2280.0283	0.8917236E+01	276	1877.9766	0.1011963E+02
173	2674.3484	0.8386230E+01	225	2272.2964	0.8984375E+01	277	1870.2446	0.1010132E+02
174	2666.6165	0.8331299E+01	226	2264.5647	0.9002686E+01	278	1862.5129	0.1014404E+02
175	2658.8848	0.8264160E+01	227	2256.8330	0.8996582E+01	279	1854.7812	0.1024170E+02
176	2651.1531	0.8312988E+01	228	2249.1013	0.8966064E+01	280	1847.0493	0.1029053E+02
177	2643.4211	0.8203125E+01	229	2241.3694	0.9027100E+01	281	1839.3176	0.1043701E+02
178	2635.6895	0.8239746E+01	230	2233.6377	0.8996582E+01	282	1831.5859	0.1050415E+02
179	2627.9578	0.8190918E+01	231	2225.9060	0.9002686E+01	283	1823.8540	0.1060181E+02
180	2620.2261	0.8251953E+01	232	2218.1741	0.9106445E+01	284	1816.1223	0.1063843E+02
181	2612.4941	0.8306885E+01	233	2210.4424	0.9155273E+01	285	1808.3906	0.1063843E+02
182	2604.7625	0.8258057E+01	234	2202.7107	0.9173584E+01	286	1800.6587	0.1062622E+02
183	2597.0308	0.8227539E+01	235	2194.9788	0.9197998E+01	287	1792.9270	0.1070557E+02
184	2589.2988	0.8203125E+01	236	2187.2471	0.9246826E+01	288	1785.1953	0.1085205E+02
185	2581.5671	0.8154297E+01	237	2179.5154	0.9277344E+01	289	1777.4634	0.1086426E+02
186	2573.8354	0.8337402E+01	238	2171.7834	0.9240723E+01	290	1769.7317	0.1119385E+02
187	2566.1035	0.8325195E+01	239	2164.0518	0.9350586E+01	291	1762.0000	0.1163940E+02
188	2558.3718	0.8294678E+01	240	2156.3201	0.9411621E+01	292	1754.2683	0.1331177E+02
189	2550.6401	0.8374023E+01	241	2148.5881	0.9490967E+01	293	1746.5364	0.2147827E+02
190	2542.9082	0.8337402E+01	242	2140.8564	0.9594727E+01	294	1738.8047	0.3020020E+02
191	2535.1765	0.8367920E+01	243	2133.1248	0.9600830E+01	295	1731.0730	0.2465210E+02
192	2527.4448	0.8404541E+01	244	2125.3931	0.9527588E+01	296	1723.3411	0.2027588E+02
193	2519.7129	0.8508301E+01	245	2117.6611	0.9527588E+01	297	1715.6094	0.1746216E+02
194	2511.9812	0.8465576E+01	246	2109.9294	0.9643555E+01	298	1707.8777	0.1563110E+02
195	2504.2495	0.8417 783E+01	247	2102.1978	0.9661865E+01	299	1700.1458	0.1473999E+02
196	2496.5178	0.8471680E+01	248	2094.4658	0.9796143E+01	300	1692.4141	0.1410522E+02
197	2488.7859	0.8563232E+01	249	2086.7341	0.9924316E+01	301	1684.6824	0.1350708E+02
198	2481.0542	0.8532715E+01	250	2079.0024	0.9960938E+01	302	1676.9504	0.1346436E+02
199	2473.3225	0.8593750E+01	251	2071.2705	0.1005859E+02	303	1669.2187	0.1376343E+02
200	2465.5906	0.8721924E+01	252	2063.5388	0.1015625E+02	304	1661.4871	0.1388550E+02
201	2457.8589	0.8709717E+01	253	2055.8071	0.1021118E+02	305	1653.7551	0.1413574E+02
202	2450.1272	0.8752441E+01	254	2048.0752	0.1024780E+02	306	1646.0234	0.1450195E+02
203	2442.3953	0.8782959E+01	255	2040.3435	0.1026001E+02	307	1638.2917	0.1428833E+02
204	2434.6636	0.8782959E+01	256	2032.6118	0.1032104E+02	308	1630.5601	0.1326294E+02
205	2426.9319	0.8868409E+01	257	2024.8799	0.1033936E+02	309	1622.8281	0.1299438E+02
206	2419.2000	0.8905029E+01	258	2017.1482	0.1041870E+02	310	1615.0964	0.1297231E+02
207	2411.4683	0.8874512E+01	259	2009.4165	0.1054688E+02	311	1607.3647	0.1279297E+02
208	2403.7366	0.8850098E+01	260	2001.6848	0.1051025E+02	312	1599.6328	0.1281128E+02

FTIS FILE NUMBER : 20 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
313	1591.9011	0.1275024E+02	365	1189.8494	0.2153320E+02	417	787.7974	0.3029785E+02
314	1584.1694	0.1282959E+02	366	1182.1174	0.2312012E+02	418	780.0657	0.3051758E+02
315	1576.4375	0.1287842E+02	367	1174.3857	0.2507935E+02	419	772.3340	0.3061[illegible]E+02
316	1568.7058	0.1311646E+02	368	1166.6541	0.2789307E+02	420	764.6023	0.2979126E+02
317	1560.9741	0.1316528E+02	369	1158.9221	0.2970581E+02	421	756.8704	0.2932739E+02
318	1553.2422	0.1378784E+02	370	1151.1904	0.3254395E+02	422	749.1387	0.2949829E+02
319	1545.5105	0.1417236E+02	371	1143.4587	0.3806763E+02	423	741.4070	0.3012085E+02
320	1537.7788	0.1473999E+02	372	1135.7271	0.4339600E+02	424	733.6750	0.3139038E+02
321	1530.0469	0.1526489E+02	373	1127.9951	0.4783325E+02	425	725.9434	0.3236694E+02
322	1522.3152	0.1558228E+02	374	1120.2634	0.5202637E+02	426	718.2117	0.3186646E+02
323	1514.5835	0.1603394E+02	375	1112.5317	0.5635376E+02	427	710.4797	0.3145752E+02
324	1506.8518	0.1600342E+02	376	1104.7998	0.6143188E+02	428	702.7480	0.3094482E+02
325	1499.1199	0.1618652E+02	377	1097.0681	0.6658936E+02	429	695.0164	0.3073120E+02
326	1491.3882	0.1655884E+02	378	1089.3364	0.7095947E+02	430	687.2844	0.3013916E+02
327	1483.6565	0.1749268E+02	379	1081.6045	0.7546387E+02	431	679.5527	0.2991333E+02
328	1475.9246	0.1904297E+02	380	1073.8728	0.8153076E+02	432	671.8210	0.2913818E+02
329	1468.1929	0.2283936E+02	381	1066.1411	0.8737183E+02	433	664.0891	0.2799072E+02
330	1460.4612	0.2564087E+02	382	1058.4092	0.9091187E+02	434	656.3574	0.2676392E+02
331	1452.7292	0.2924194E+02	383	1050.6775	0.9309692E+02	435	648.6257	0.2494507E+02
332	1444.9976	0.3341675E+02	384	1042.9458	0.9219360E+02	436	640.8940	0.2517090E+02
333	1437.2659	0.4090576E+02	385	1035.2139	0.9004517E+02	437	633.1621	0.4610596E+02
334	1429.5339	0.4971924E+02	386	1027.4822	0.8770142E+02	438	625.4304	0.7730103E+02
335	1421.8022	0.5692139E+02	387	1019.7505	0.8499146E+02	439	617.6987	0.1032715E+03
336	1414.0706	0.5755615E+02	388	1012.0188	0.8167114E+02	440	609.9668	0.9425049E+02
337	1406.3386	0.5264893E+02	389	1004.2869	0.7813721E+02	441	602.2351	0.8040771E+02
338	1398.6069	0.4588623E+02	390	996.5552	0.7688599E+02	442	594.5034	0.7049561E+02
339	1390.8752	0.4008179E+02	391	988.8235	0.7308960E+02	443	586.7715	0.6503906E+02
340	1383.1436	0.3516235E+02	392	981.0916	0.6928711E+02	444	579.0398	0.6221313E+02
341	1375.4116	0.3010254E+02	393	973.3599	0.7201538E+02	445	571.3081	0.5988159E+02
342	1367.6799	0.2743530E+02	394	965.6282	0.8161011E+02	446	563.5762	0.5961304E+02
343	1359.9482	0.2559509E+02	395	957.8962	0.7413939E+02	447	555.8445	0.5921631E+02
344	1352.2163	0.2405090[illegible]E+02	396	950.1646	0.6328125E+02	448	548.1128	0.5937500E+02
345	1344.4846	0.2250366E+02	397	942.4329	0.5415039E+02	449	540.3809	0.6055908E+02
346	1336.7529	0.2110596E+02	398	934.7009	0.6088257E+02	450	532.6492	0.6099243E+02
347	1329.0210	0.1996460E+02	399	926.9692	0.5444946E+02	451	524.9175	0.5914917E+02
348	1321.2893	0.1954345E+02	400	919.2375	0.5490723E+02	452	517.1858	0.5675659E+02
349	1313.5576	0.1976562E+02	401	911.5056	0.6064453E+02	453	509.4539	0.5531616E+02
350	1305.8257	0.1959229E+02	402	903.7739	0.5421753E+02	454	501.7222	0.5344238E+02
351	1298.0940	0.1934204E+02	403	896.0422	0.4785156E+02	455	493.9905	0.5192261E+02
352	1290.3623	0.1895752E+02	404	888.3105	0.4418335E+02	456	486.2585	0.5094604E+02
353	1282.6304	0.1882324E+02	405	880.5786	0.4127808E+02	457	478.5269	0.5119629E+02
354	1274.8987	0.1873779E+02	406	872.8469	0.3984375E+02	458	470.7952	0.5050354E+02
355	1267.1670	0.1933594E+02	407	865.1152	0.3814697E+02	459	463.0632	0.6065674E+02
356	1259.4353	0.2022705E+02	408	857.3833	0.3666992E+02	460	455.3315	0.5991[illegible]E+02
357	1251.7034	0.2068481E+02	409	849.6516	0.3538208E+02	461	447.5999	0.5[illegible]E+02
358	1243.9717	0.2110[illegible]E+02	410	841.9199	0.3427124E+02	462	439.8679	0.5515137E+02
359	1236.2400	0.2133[illegible]E+02	411	834.1880	0.3339233E+02	463	432.1362	0.5373535E+02
360	1228.5081	0.2[illegible]E+02	412	826.4563	0.3265381E+02	464	424.4045	0.5373535E+02
361	1220.7764	0.2064941E+02	413	818.7246	0.3176880E+02	465	416.6726	0.5373535E+02
362	1213.0447	0.2023315E+02	414	810.9927	0.3129883E+02	466	408.9409	0.5373535E+02
363	1205.3127	0.1993408E+02	415	803.2610	0.3062134E+02	467	401.2092	0.5373535E+02
364	1197.[illegible]811	0.2050781E+02	416	795.5293	0.3040161E+02	468	393.4775	0.5373535E+02

24	468	0	1	4004	13902	393	31295
4004.2119		393.4773	-7.7318				

FTIS FILE NUMBER : 24 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
1	4004.2119	0.3995361E+02	53	3602.1602	0.4986572E+01	105	3200.1084	0.1311035E+02
2	3996.4800	0.3995361E+02	54	3594.4285	0.4919434E+01	106	3192.3767	0.1226807E+02
3	3988.7483	0.3995361E+02	55	3586.6968	0.4888916E+01	107	3184.6448	0.1194[illegible]E+02
4	3981.0166	0.5194092E+01	56	3578.9648	0.4833984E+01	108	3176.9131	0.1174[illegible]E+02
5	3973.2847	0.5126953E+01	57	3571.2332	0.5096436E+01	109	3169.1814	0.1086426E+02
6	3965.5530	0.5438232E+01	58	3563.5015	0.5267334E+01	110	3161.4495	0.1035767E+02
7	3957.8213	0.4742432E+01	59	3555.7695	0.4943848E+01	111	3153.7178	0.9973145E+01
8	3950.0894	0.4931641E+01	60	3548.0378	0.4919434E+01	112	3145.9961	0.9716797E+01
9	3942.3577	0.4321289E+01	61	3540.3062	0.5340576E+01	113	3138.2542	0.9295654E+01
10	3934.6260	0.3784180E+01	62	3532.5742	0.5413818E+01	114	3130.5225	0.9405518E+01
11	3926.8940	0.3717041E+01	63	3524.8425	0.4949951E+01	115	3122.7908	0.9143066E+01
12	3919.1624	0.4669189E+01	64	3517.1108	0.5535889E+01	116	3115.0591	0.8929443E+01
13	3911.4307	0.4675293E+01	65	3509.3789	0.6317139E+01	117	3107.3271	0.8959961E+01
14	3903.6987	0.4705811E+01	66	3501.6472	0.6365967E+01	118	3099.5955	0.9002686E+01
15	3895.9670	0.3967285E+01	67	3493.9155	0.5786133E+01	119	3091.8638	0.9112549E+01
16	3888.2354	0.3668213E+01	68	3486.1838	0.5560303E+01	120	3084.1318	0.9564209E+01
17	3880.5037	0.3649902E+01	69	3478.4519	0.6597900E+01	121	3076.4001	0.9338379E+01
18	3872.7717	0.4577637E+01	70	3470.7202	0.6451416E+01	122	3068.6685	0.8764648E+01
19	3865.0400	0.4498291E+01	71	3462.9885	0.7257080E+01	123	3060.9365	0.8551025E+01
20	3857.3083	0.4272461E+01	72	3455.2566	0.7360840E+01	124	3053.2048	0.8526611E+01
21	3849.5764	0.4028320E+01	73	3447.5249	0.7641602E+01	125	3045.4731	0.8996582E+01
22	3841.8447	0.4174805E+01	74	3439.7932	0.7995605E+01	126	3037.7412	0.9399414E+01
23	3834.1130	0.4736328E+01	75	3432.0613	0.8374023E+01	127	3030.0095	0.9649658E+01
24	3826.3811	0.4693604E+01	76	3424.3296	0.8679199E+01	128	3022.2778	0.1030884E+02
25	3818.6494	0.4638672E+01	77	3416.5979	0.8978271E+01	129	3014.5459	0.1130371E+02
26	3810.9177	0.5316162E+01	78	3408.8660	0.9179688E+01	130	3006.8142	0.1132813E+02
27	3803.1858	0.5603027E+01	79	3401.1343	0.9594727E+01	131	2999.0825	0.1083984E+02
28	3795.4541	0.4943848E+01	80	3393.4026	0.1034546E+02	132	2991.3508	0.1165161E+02
29	3787.7224	0.4840088E+01	81	3385.6707	0.1068115E+02	133	2983.6189	0.1274414E+02
30	3779.9905	0.5029297E+01	82	3377.9390	0.1114502E+02	134	2975.8872	0.1475830E+02
31	3772.2588	0.5187988E+01	83	3370.2073	0.1155396E+02	135	2968.1555	0.1768188E+02
32	37 4.5271	0.4937744E+01	84	3362.4756	0.1204834E+02	136	2960.4236	0.1948242E+02
33	3756.7954	0.5541992E+01	85	3354.7437	0.1311646E+02	137	2952.6919	0.1750488E+02
34	3749.0635	0.5377197E+01	86	3347.0120	0.1372070E+02	138	2944.9602	0.1987305E+02
35	3741.3320	0.5346680E+01	87	3339.2803	0.1474609E+02	139	2937.2283	0.2256469E+02
36	3733.6003	0.5450439E+01	88	3331.5483	0.1608276E+02	140	2929.4966	0.2311[illegible]E+02
37	3725.8684	0.5627441E+01	89	3323.8167	0.1765137E+02	141	2921.7649	0.2376[illegible]E+02
38	3718.1367	0.5419922E+01	90	3316.0850	0.1877441E+02	142	2914.0330	0.2186[illegible]E+02
39	3710.4050	0.5493164E+01	91	3308.3530	0.2014771E+02	143	2906.3013	0.1951904E+02
40	3702.6731	0.5316162E+01	92	3300.6213	0.2187500E+02	144	2898.5696	0.1735840E+02
41	3694.9414	0.5413818E+01	93	3292.8896	0.2223633E+02	145	2890.8376	0.1566895E+02
42	3687.2097	0.5493164E+01	94	3285.1577	0.2273560E+02	146	2883.1060	0.1575928E+02
43	3679.4778	0.5364990E+01	95	3277.4260	0.2216797E+02	147	2875.3743	0.1572876E+02
44	3671.7461	0.5523682E+01	96	3269.6943	0.2144775E+02	148	2867.6426	0.1612854E+02
45	3664.0144	0.5187988E+01	97	3261.9624	0.2033691E+02	149	2859.9106	0.1460571E+02
46	3656.2825	0.5297852E+01	98	3254.2307	0.1898804E+02	150	2852.1790	0.1696777E+02
47	3648.5508	0.5352783E+01	99	3246.4990	0.1794434E+02	151	2844.4473	0.1551514E+02
48	3640.8191	0.5047607E+01	100	3238.7673	0.1715698E+02	152	2836.7153	0.1243286E+02
49	3633.0872	0.5169678E+01	101	3231.0354	0.1611938E+02	153	2828.9836	0.1021729E+02
50	3625.3555	0.5114746E+01	102	3223.3037	0.1538696E+02	154	2821.2520	0.9375000E+01
51	3617.6238	0.5157471E+01	103	3215.5720	0.1420288E+02	155	2813.5200	0.8935547E+01
52	3609.8921	0.5017090E+01	104	3207.8401	0.1360474E+02	156	2805.7883	0.8901270E+01

FTIS FILE NUMBER : 24 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
157	2798.0566	0.8483887E+01	209	2396.0046	0.8251953E+01	261	1993.9529	0.9729004E+01
158	2790.3247	0.8422952E+01	210	2388.2729	0.8251953E+01	262	1986.2212	0.9625244E+01
159	2782.5930	0.8306885E+01	211	2380.5413	0.8209229E+01	263	1978.4895	0.9527588E+01
160	2774.8613	0.8190918E+01	212	2372.8096	0.8306885E+01	264	1970.7576	0.9417725E+01
161	2767.1294	0.8135986E+01	213	2365.0776	0.8300781E+01	265	1963.0259	0.9300..58E+01
162	2759.3977	0.8068848E+01	214	2357.3459	0.8215332E+01	266	1955.2942	0.9295654E+01
163	2751.6660	0.8007813E+01	215	2349.6143	0.8239746E+01	267	1947.5623	0.9301758E+01
164	2743.9343	0.7916260E+01	216	2341.8823	0.8264160E+01	268	1939.8306	0.9283447E+01
165	2736.2024	0.7879639E+01	217	2334.1506	0.8325195E+01	269	1932.0989	0.9307861E+01
166	2728.4707	0.7995605E+01	218	2326.4189	0.8276367E+01	270	1924.3669	0.9344482E+01
167	2720.7390	0.7922363E+01	219	2318.6870	0.8227539E+01	271	1916.6353	0.9393311E+01
168	2713.0071	0.7714844E+01	220	2310.9553	0.8209229E+01	272	1908.9036	0.9490967E+01
169	2705.2754	0.7647705E+01	221	2303.2236	0.8245850E+01	273	1901.1716	0.9478760E+01
170	2697.5437	0.7659912E+01	222	2295.4917	0.8227539E+01	274	1893.4399	0.9509277E+01
171	2689.8118	0.7666016E+01	223	2287.7600	0.8264160E+01	275	1885.7083	0.9598623E+01
172	2682.0801	0.7550049E+01	224	2280.0283	0.8245850E+01	276	1877.9766	0.9637451E+01
173	2674.3484	0.7666016E+01	225	2272.2964	0.8276367E+01	277	1870.2446	0.9649658E+01
174	2666.6165	0.7501221E+01	226	2264.5647	0.8325195E+01	278	1862.5129	0.9735107E+01
175	2658.8848	0.7348633E+01	227	2256.8330	0.8276367E+01	279	1854.7812	0.9802246E+01
176	2651.1531	0.7464600E+01	228	2249.1013	0.8239746E+01	280	1847.0493	0.9863281E+01
177	2643.4211	0.7427979E+01	229	2241.3694	0.8367920E+01	281	1839.3176	0.9967041E+01
178	2635.6895	0.7458496E+01	230	2233.6377	0.8312988E+01	282	1831.5859	0.1011963E+02
179	2627.9578	0.7336426E+01	231	2225.9060	0.8398438E+01	283	1823.8540	0.1018677E+02
180	2620.2261	0.7373047E+01	232	2218.1741	0.8453369E+01	284	1816.1223	0.1015015E+02
181	2612.4941	0.7379150E+01	233	2210.4424	0.8477783E+01	285	1808.3906	0.1004639E+02
182	2604.7625	0.7373047E+01	234	2202.7107	0.8453369E+01	286	1800.6587	0.1010742E+02
183	2597.0308	0.7287598E+01	235	2194.9788	0.8447266E+01	287	1792.9270	0.1013184E+02
184	2589.2988	0.7299805E+01	236	2187.2471	0.8587646E+01	288	1785.1953	0.1026001E+02
185	2581.5671	0.7360840E+01	237	2179.5154	0.8526611E+01	289	1777.4634	0.1025391E+02
186	2573.8354	0.7415771E+01	238	2171.7834	0.8599854E+01	290	1769.7317	0.1044312E+02
187	2566.1035	0.7409668E+01	239	2164.0518	0.8660889E+01	291	1762.0000	0.1098633E+02
188	2558.3718	0.7427979E+01	240	2156.3201	0.8660889E+01	292	1754.2683	0.1279907E+02
189	2550.6401	0.7464600E+01	241	2148.5881	0.8709717E+01	293	1746.5364	0.2150879E+02
190	2542.9082	0.7562256E+01	242	2140.8564	0.8740234E+01	294	1738.8047	0.3041382E+02
191	2535.1765	0.7531738E+01	243	2133.1248	0.8740234E+01	295	1731.0730	0.2438965E+02
192	2527.4448	0.7623291E+01	244	2125.3931	0.8703613E+01	296	1723.3411	0.1975708E+02
193	2519.7129	0.7635498E+01	245	2117.6611	0.8679199E+01	297	1715.6094	0.1687012E+02
194	2511.9812	0.7623291E+01	246	2109.9294	0.8819580E+01	298	1707.8777	0.1590244E+02
195	2504.2495	0.7672119E+01	247	2102.1978	0.8843994E+01	299	1700.1458	0.1403809E+02
196	2496.5178	0.7727051E+01	248	2094.4658	0.8941650E+01	300	1692.4141	0.1316528E+02
197	2488.7859	0.7781982E+01	249	2086.7341	0.8996582E+01	301	1684.6824	0.1253052E+02
198	2481.0542	0.7806396E+01	250	2079.0024	0.9082031E+01	302	1676.9504	0.1254104E+02
199	2473.3225	0.7873535E+01	251	2071.2705	0.9094238E+01	303	1669.2187	0..297231E+02
200	2465.5906	0.7928467E+01	252	2063.5388	0.9149170E+01	304	1661.4871	0.1285400E+02
201	2457.8589	0.7946777E+01	253	2055.8071	0.9246826E+01	305	1653.7551	0.1324463E+02
202	2450.1272	0.8087158E+01	254	2048.0752	0.9301758E+01	306	1646.0234	0.1364746E+02
203	2442.3953	0.8062744E+01	255	2040.3435	0.9332275E+01	307	1638.2917	0.1342773E+02
204	2434.6636	0.8007813E+01	256	2032.6118	0.9362793E+01	308	1630.5601	0.1223755E+02
205	2426.9319	0.8148193E+01	257	2024.8799	0.9466553E+01	309	1622.8281	0.1194458E+02
206	2419.2000	0.8197021E+01	258	2017.1482	0.9509277E+01	310	1615.0964	0.1188354E+02
207	2411.4683	0.8111572E+01	259	2009.4165	0.9588623E+01	311	1607.3647	0.1196899E+02
208	2403.7366	0.8233643E+01	260	2001.6848	0.9637451E+01	312	1599.6329	0.1194458E+02

FTIS FILE NUMBER : 24 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
313	1591.9011	0.1193237E+02	365	1189.8494	0.2113037E+02	417	787.7974	0.2842407E+02
314	1584.1694	0.1212769E+02	366	1182.1174	0.2290039E+02	418	780.0657	0.2971704E+02
315	1576.4375	0.1221093E+02	367	1174.3857	0.2499390E+02	419	772.3340	0.2898560E+02
316	1568.7058	0.1253052E+02	368	1166.6541	0.2781372E+02	420	764.6023	0.2811890E+02
317	1560.9741	0.1287842E+02	369	1158.9221	0.2968140E+02	421	756.8704	0.2759789E+02
318	1553.2422	0.1345825E+02	370	1151.1904	0.3272705E+02	422	749.1387	0.2775269E+02
319	1545.5105	0.1400757E+02	371	1143.4587	0.3836670E+02	423	741.4070	0.2852173E+02
320	1537.7788	0.1461182E+02	372	1135.7271	0.4386597E+02	424	733.6750	0.3009644E+02
321	1530.0469	0.1518555E+02	373	1127.9951	0.4793701E+02	425	725.9434	0.3110352E+02
322	1522.3152	0.1563721E+02	374	1120.2634	0.5162964E+02	426	718.2117	0.3048706E+02
323	1514.5835	0.1617432E+02	375	1112.5317	0.5573120E+02	427	710.4797	0.3008423E+02
324	1506.8518	0.1614380E+02	376	1104.7998	0.6076660E+02	428	702.7480	0.2968140E+02
325	1499.1199	0.1629639E+02	377	1097.0681	0.6571655E+02	429	695.0164	0.2932129E+02
326	1491.3882	0.1657104E+02	378	1089.3364	0.6986694E+02	430	687.2844	0.2894897E+02
327	1483.6565	0.1753540E+02	379	1081.6045	0.7434082E+02	431	679.5527	0.2858042E+02
328	1475.9246	0.1931152E+02	380	1073.8728	0.8053589E+02	432	671.8210	0.2779931E+02
329	1468.1929	0.2328491E+02	381	1066.1411	0.8615723E+02	433	664.0891	0.2661133E+02
330	1460.4612	0.2615356E+02	382	1058.4092	0.8936768E+02	434	656.3574	0.2545166E+02
331	1452.7292	0.2967529E+02	383	1050.6775	0.9150391E+02	435	648.6257	0.2421875E+02
332	1444.9976	0.3386230E+02	384	1042.9458	0.9044800E+02	436	640.8940	0.2519531E+02
333	1437.2659	0.4130859E+02	385	1035.2139	0.8842163E+02	437	633.1621	0.4729614E+02
334	1429.5339	0.4979248E+02	386	1027.4822	0.8633423E+02	438	625.4304	0.7920532E+02
335	1421.8022	0.5675659E+02	387	1019.7505	0.8330078E+02	439	617.6987	0.1045593E+03
336	1414.0706	0.5723267E+02	388	1012.0188	0.8001099E+02	440	609.9668	0.9459839E+02
337	1406.3386	0.5231934E+02	389	1004.2869	0.7644653E+02	441	602.2351	0.8071709E+02
338	1398.6069	0.4536133E+02	390	996.5552	0.7481079E+02	442	594.5034	0.7080078E+02
339	1390.8752	0.3952637E+02	391	988.9235	0.7105713E+02	443	586.7715	0.6486816E+02
340	1383.1436	0.3449707E+02	392	981.0916	0.6722412E+02	444	579.0398	0.6137695E+02
341	1375.4116	0.2935181E+02	393	973.3599	0.6988525E+02	445	571.3081	0.5937500E+02
342	1367.6799	0.2642212E+02	394	965.6282	0.7915649E+02	446	563.5762	0.5921396E+02
343	1359.9482	0.2470093E+02	395	957.8962	0.7140503E+02	447	555.8445	0.5910034E+02
344	1352.2163	0.2299805E+02	396	950.1646	0.6033325E+02	448	548.1128	0.5856934E+02
345	1344.4846	0.2143555E+02	397	942.4329	0.5150757E+02	449	540.3809	0.5807227E+02
346	1336.7529	0.1989136E+02	398	934.7009	0.5769653E+02	450	532.6492	0.5850220E+02
347	1329.0210	0.1872559E+02	399	926.9692	0.5177002E+02	451	524.9175	0.5556030E+02
348	1321.2893	0.1841431E+02	400	919.2375	0.5205688E+02	452	517.1858	0.5277710E+02
349	1313.5576	0.1851807E+02	401	911.5056	0.5769653E+02	453	509.4539	0.5119629E+02
350	1305.8257	0.1837769E+02	402	903.7739	0.5120239E+02	454	501.7222	0.4942017E+02
351	1298.0940	0.1761475E+02	403	896.0422	0.4464722E+02	455	493.9905	0.4772339E+02
352	1290.3623	0.1775513E+02	404	888.3105	0.4102173E+02	456	486.2585	0.4705396E+02
353	1282.6304	0.1762085E+02	405	880.5786	0.3870239E+02	457	478.5269	0.4695825E+02
354	1274.8987	0.1761475E+02	406	872.8469	0.3693237E+02	458	470.7952	0.4657373E+02
355	1267.1670	0.1834106E+02	407	865.1152	0.3561401E+02	459	463.0632	0.4561646E+02
356	1259.4353	0.1925049E+02	408	857.3833	0.3410645E+02	460	455.3315	0.4482727E+02
357	1251.7034	0.1975098E+02	409	849.6516	0.3290405E+02	461	447.5999	0.4456177E+02
358	1243.9717	0.2041016E+02	410	841.9199	0.3208008E+02	462	439.8679	0.4334717E+02
359	1236.2400	0.2069092E+02	411	834.1880	0.3114624E+02	463	432.1362	0.4295361E+02
360	1228.5081	0.2022095E+02	412	826.4563	0.3027954E+02	464	424.4045	0.4295361E+02
361	1220.7764	0.2003784E+02	413	818.7246	0.2977905E+02	465	416.6726	0.4295361E+02
362	1213.0447	0.1959839E+02	414	810.9927	0.2911377E+02	466	408.9409	0.4295361E+02
363	1205.3127	0.1940308E+02	415	803.2610	0.2866821E+02	467	401.2092	0.4295361E+02
364	1197.5811	0.2000732E+02	416	795.5293	0.2839355E+02	468	393.4775	0.4295361E+02

28	468	0	1	4004	13902	393	31295
4004.2119		393.7773	-7.7318				

FTIS FILE NUMBER : 28 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
1	4004.2119	0.5039063E+02	53	3602.1602	0.4962158E+01	105	3200.1084	0.1465454E+02
2	3996.4800	0.5039063E+02	54	3594.4285	0.4809570E+01	106	3192.3767	0.1389771E+02
3	3988.7483	0.5039063E+02	55	3586.6968	0.5059814E+01	107	3184.6448	0.1307373E+02
4	3981.0166	0.5039063E+02	56	3578.9648	0.5017090E+01	108	3176.9131	0.1249390E+02
5	3973.2847	0.5039063E+02	57	3571.2332	0.5139160E+01	109	3169.1814	0.1190186E+02
6	3965.5530	0.5039063E+02	58	3563.5015	0.5194092E+01	110	3161.4495	0.1135864E+02
7	3957.8213	0.5039063E+02	59	3555.7695	0.5157471E+01	111	3153.7178	0.1082153E+02
8	3950.0894	0.5039063E+02	60	3548.0379	0.5169678E+01	112	3145.9861	0.1024170E+02
9	3942.3577	0.5039063E+02	61	3540.3062	0.5267334E+01	113	3138.2542	0.1029663E+02
10	3934.6260	0.5039063E+02	62	3532.5742	0.5145264E+01	114	3130.5225	0.1006470E+02
11	3926.8940	0.5039063E+02	63	3524.8425	0.5120850E+01	115	3122.7908	0.9906006E+01
12	3919.1624	0.5039063E+02	64	3517.1108	0.5725098E+01	116	3115.0591	0.9898486E+01
13	3911.4307	0.5039063E+02	65	3509.3789	0.6384277E+01	117	3107.3271	0.9564209E+01
14	3903.6987	0.5039063E+02	66	3501.6472	0.6298828E+01	118	3099.5955	0.9729004E+01
15	3895.9670	0.3363037E+01	67	3493.9155	0.5450439E+01	119	3091.8638	0.9975488E+01
16	3888.2354	0.3472900E+01	68	3486.1838	0.5627441E+01	120	3084.1318	0.1021729E+02
17	3880.5037	0.2954102E+01	69	3478.4519	0.6341553E+01	121	3076.4001	0.1003418E+02
18	3872.7717	0.3527832E+01	70	3470.7202	0.7055664E+01	122	3068.6685	0.9399414E+01
19	3865.0400	0.4235840E+01	71	3462.9885	0.7391357E+01	123	3060.9365	0.9252930E+01
20	3857.3083	0.3698730E+01	72	3455.2566	0.7965088E+01	124	3053.2048	0.9283447E+01
21	3849.5764	0.3417969E+01	73	3447.5249	0.8276367E+01	125	3045.4731	0.9527588E+01
22	3841.8447	0.3283691E+01	74	3439.7932	0.8502197E+01	126	3037.7412	0.1019897E+02
23	3834.1130	0.3669113E+01	75	3432.0613	0.8795166E+01	127	3030.0095	0.1040649E+02
24	3826.3811	0.4034424E+01	76	3424.3296	0.9155273E+01	128	3022.2778	0.1122437E+02
25	3818.6494	0.4461670E+01	77	3416.5979	0.9771729E+01	129	3014.5459	0.1250610E+02
26	3810.9177	0.4882813E+01	78	3408.8660	0.1015015E+02	130	3006.8142	0.1232910E+02
27	3803.1858	0.4809570E+01	79	3401.1343	0.1046143E+02	131	2999.0825	0.1211548E+02
28	3795.4541	0.4449463E+01	80	3393.4026	0.1117554E+02	132	2991.3508	0.1198218E+02
29	3787.7224	0.4449463E+01	81	3385.6707	0.1175537E+02	133	2983.6189	0.1159351E+02
30	3779.9905	0.4144287E+01	82	3377.9390	0.1236572E+02	134	2975.8872	0.1732788E+02
31	3772.2588	0.4296875E+01	83	3370.2073	0.1289063E+02	135	2968.1555	0.2109375E+02
32	3764.5271	0.4754639E+01	84	3362.4756	0.1373901E+02	136	2960.4238	0.2185059E+02
33	3756.7954	0.4779053E+01	85	3354.7437	0.1461792E+02	137	2952.6919	0.2094727E+02
34	3749.0635	0.4797363E+01	86	3347.0120	0.1583862E+02	138	2944.9602	0.2353992E+02
35	3741.3320	0.4833984E+01	87	3339.2803	0.1694946E+02	139	2937.2283	0.2701416E+02
36	3733.6003	0.5249023E+01	88	3331.5483	0.1860962E+02	140	2929.4966	0.2816772E+02
37	3725.8684	0.5230713E+01	89	3323.8167	0.2047729E+02	141	2921.7649	0.2772827E+02
38	3718.1367	0.5407715E+01	90	3316.0850	0.2222290E+02	142	2914.0330	0.2504883E+02
39	3710.4050	0.5529785E+01	91	3308.3530	0.2406616E+02	143	2906.3013	0.2219238E+02
40	3702.6731	0.5749512E+01	92	3300.6213	0.2554932E+02	144	2898.5696	0.1952515E+02
41	3694.9414	0.5682373E+01	93	3292.8896	0.2655029E+02	145	2890.8376	0.1747437E+02
42	3687.2097	0.5084229E+01	94	3285.1577	0.2684326E+02	146	2883.1060	0.1776733E+02
43	3679.4778	0.5541992E+01	95	3277.4260	0.2598877E+02	147	2875.3743	0.1790161E+02
44	3671.7461	0.5645752E+01	96	3269.6943	0.2523193E+02	148	2867.6426	0.1960352E+02
45	3664.0144	0.5371094E+01	97	3261.9624	0.2366943E+02	149	2859.9106	0.1876831E+02
46	3656.2825	0.5053711E+01	98	3254.2307	0.2247925E+02	150	2852.1790	0.1591479E+02
47	3648.5508	0.4693604E+01	99	3246.4990	0.2105713E+02	151	2844.4473	0.1691895E+02
48	3640.8191	0.5230713E+01	100	3238.7673	0.1966553E+02	152	2836.7153	0.1393204E+02
49	3633.0872	0.5102539E+01	101	3231.0354	0.1864014E+02	153	2828.9836	0.1046143E+02
50	3625.3555	0.5242920E+01	102	3223.3037	0.1746216E+02	154	2821.2520	0.9356689E+01
51	3617.6238	0.5169678E+01	103	3215.5720	0.1600342E+02	155	2813.5200	0.9874512E+01
52	3609.8921	0.5133057E+01	104	3207.8401	0.1553345E+02	156	2805.7883	0.9673096E+01

FTIS FILE NUMBER : 29 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
157	2798.0566	0.8386230E+01	209	2396.0046	0.8221436E+01	261	1993.9529	0.9875488E+01
158	2790.3247	0.8135986E+01	210	2388.2729	0.8154297E+01	262	1986.2212	0.9838867E+01
159	2782.5930	0.8081055E+01	211	2380.5413	0.8050537E+01	263	1978.4895	0.9631348E+01
160	2774.8613	0.8038330E+01	212	2372.8096	0.8123779E+01	264	1970.7576	0.9509277E+01
161	2767.1294	0.7928467E+01	213	2365.0776	0.8190918E+01	265	1963.0259	0.9399414E+01
162	2759.3977	0.7857432E+01	214	2357.3459	0.8105469E+01	266	1955.2942	0.9490967E+01
163	2751.6660	0.7727051E+01	215	2349.6143	0.8074951E+01	267	1947.5623	0.9484863E+01
164	2743.9343	0.7641602E+01	216	2341.8823	0.8129883E+01	268	1939.8306	0.9503174E+01
165	2736.2024	0.7617188E+01	217	2334.1506	0.8233643E+01	269	1932.0989	0.9509277E+01
166	2728.4707	0.7751465E+01	218	2326.4189	0.8099365E+01	270	1924.3669	0.9490967E+01
167	2720.7390	0.7525635E+01	219	2318.6870	0.8044434E+01	271	1916.6353	0.9649658E+01
168	2713.0071	0.7354736E+01	220	2310.9553	0.8050537E+01	272	1908.9036	0.9580176E+01
169	2705.2754	0.7330322E+01	221	2303.2236	0.8062744E+01	273	1901.1716	0.9729004E+01
170	2697.5437	0.7360840E+01	222	2295.4917	0.8142090E+01	274	1893.4399	0.9759521E+01
171	2689.8118	0.7244873E+01	223	2287.7600	0.8166504E+01	275	1885.7083	0.9826660E+01
172	2682.0801	0.7159424E+01	224	2280.0283	0.8087158E+01	276	1877.9766	0.9960938E+01
173	2674.3484	0.7244873E+01	225	2272.2964	0.8099365E+01	277	1870.2446	0.1001587E+02
174	2666.6165	0.7122803E+01	226	2264.5647	0.8166504E+01	278	1862.5129	0.1010742E+02
175	2658.8848	0.7110596E+01	227	2256.8330	0.8117676E+01	279	1854.7812	0.1016846E+02
176	2651.1531	0.7128906E+01	228	2249.1013	0.8074951E+01	280	1847.0493	0.1021118E+02
177	2643.4211	0.7092285E+01	229	2241.3694	0.8178711E+01	281	1839.3176	0.1043091E+02
178	2635.6895	0.7037354E+01	230	2233.6377	0.8221436E+01	282	1831.5859	0.1054077E+02
179	2627.9578	0.6964111E+01	231	2225.9060	0.8251953E+01	283	1823.8540	0.1065674E+02
180	2620.2261	0.7057871E+01	232	2218.1741	0.8337402E+01	284	1816.1223	0.1064453E+02
181	2612.4941	0.7086182E+01	233	2210.4424	0.8337402E+01	285	1808.3906	0.1059570E+02
182	2604.7625	0.7104492E+01	234	2202.7107	0.8312988E+01	286	1800.6587	0.1059570E+02
183	2597.0308	0.6996629E+01	235	2194.9788	0.8398438E+01	287	1792.9270	0.1071167E+02
184	2589.2988	0.7031250E+01	236	2187.2471	0.8520508E+01	288	1785.1953	0.1088257E+02
185	2581.5671	0.6958008E+01	237	2179.5154	0.8544922E+01	289	1777.4634	0.1094360E+02
186	2573.8354	0.7104492E+01	238	2171.7834	0.8551025E+01	290	1769.7317	0.1130981E+02
187	2566.1035	0.7128906E+01	239	2164.0518	0.8636475E+01	291	1762.0000	0.1201172E+02
188	2558.3718	0.7135010E+01	240	2156.3201	0.8655785E+01	292	1754.2683	0.1449585E+02
189	2550.6401	0.7214355E+01	241	2148.5881	0.8691406E+01	293	1746.5364	0.2595825E+02
190	2542.9082	0.7281494E+01	242	2140.8564	0.8770752E+01	294	1738.8047	0.3718872E+02
191	2535.1765	0.7281494E+01	243	2133.1248	0.8673096E+01	295	1731.0730	0.2921143E+02
192	2527.4448	0.7409668E+01	244	2125.3931	0.8648682E+01	296	1723.3411	0.2297363E+02
193	2519.7129	0.7489014E+01	245	2117.6611	0.8715820E+01	297	1715.6094	0.1916504E+02
194	2511.9812	0.7434082E+01	246	2109.9294	0.8801270E+01	298	1707.8777	0.1665039E+02
195	2504.2495	0.7495117E+01	247	2102.1978	0.8831787E+01	299	1700.1458	0.1536255E+02
196	2496.5178	0.7531738E+01	248	2094.4658	0.8941650E+01	300	1692.4141	0.1447430E+02
197	2488.7859	0.7623291E+01	249	2086.7341	0.9045410E+01	301	1684.6824	0.1361694E+02
198	2481.0542	0.7684326E+01	250	2079.0024	0.9112549E+01	302	1676.9504	0.1361084E+02
199	2473.3225	0.7757568E+01	251	2071.2705	0.9216309E+01	303	1669.2187	0.1400146E+02
200	2465.5906	0.7781982E+01	252	2063.5388	0.9368896E+01	304	1661.4871	0.1406250E+02
201	2457.8589	0.7928467E+01	253	2055.8071	0.9478760E+01	305	1653.7551	0.1441650E+02
202	2450.1272	0.7885742E+01	254	2048.0752	0.9405518E+01	306	1646.0234	0.1497803E+02
203	2442.3953	0.8001709E+01	255	2040.3435	0.9509277E+01	307	1638.2917	0.1459351E+02
204	2434.6636	0.7971191E+01	256	2032.6118	0.9578105E+01	308	1630.5601	0.1334229E+02
205	2426.9319	0.7965088E+01	257	2024.8799	0.9619141E+01	309	1622.8281	0.1302490E+02
206	2419.2000	0.8074951E+01	258	2017.1482	0.9710693E+01	310	1615.0964	0.1301270E+02
207	2411.4683	0.8007813E+01	259	2009.4165	0.9887695E+01	311	1607.3647	0.1299438E+02
208	2403.7366	0.8087158E+01	260	2001.6848	0.9942627E+01	312	1599.6329	0.1309204E+02

FTIS FILE NUMBER : 28 NON-NORMALIZED (PURE) SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
313	1591.9011	0.1311646E+02	365	1189.8494	0.2593384E+02	417	787.7974	0.3139038E+02
314	1584.1694	0.1336670E+02	366	1182.1174	0.2826538E+02	418	790.0657	0.3188477E+02
315	1576.4375	0.1356201E+02	367	1174.3857	0.3090820E+02	419	772.3340	0.3223877E+02
316	1568.7058	0.1397705E+02	368	1166.6541	0.3435669E+02	420	764.6023	0.3139038E+02
317	1560.9741	0.1431885E+02	369	1158.9221	0.3646240E+02	421	756.8704	0.3066406E+02
318	1553.2422	0.1512451E+02	370	1151.1904	0.3979492E+02	422	749.1387	0.3104858E+02
319	1545.5105	0.1586914E+02	371	1143.4587	0.4609985E+02	423	741.4070	0.3214111E+02
320	1537.7788	0.1673584E+02	372	1135.7271	0.5200195E+02	424	733.6750	0.3393555E+02
321	1530.0469	0.1743164E+02	373	1127.9951	0.5616455E+02	425	725.9434	0.3521118E+02
322	1522.3152	0.1804810E+02	374	1120.2634	0.5993042E+02	426	718.2117	0.3447876E+02
323	1514.5835	0.1866455E+02	375	1112.5317	0.6455078E+02	427	710.4797	0.3411865E+02
324	1506.8518	0.1868896E+02	376	1104.7998	0.7031860E+02	428	702.7480	0.3353271E+02
325	1499.1199	0.1898193E+02	377	1097.0681	0.7661133E+02	429	695.0164	0.3323364E+02
326	1491.3882	0.1943359E+02	378	1089.3364	0.8308008E+02	430	687.2844	0.3273691E+02
327	1483.6565	0.2074585E+02	379	1081.6045	0.8706055E+02	431	679.5527	0.3291626E+02
328	1475.9246	0.2301636E+02	380	1073.8728	0.9419556E+02	432	671.8210	0.3178711E+02
329	1468.1929	0.2823486E+02	381	1066.1411	0.1004578E+03	433	664.0891	0.3051147E+02
330	1460.4612	0.3175659E+02	382	1058.4092	0.1043823E+03	434	656.3574	0.2948608E+02
331	1452.7292	0.3595581E+02	383	1050.6775	0.1070068E+03	435	648.6257	0.2853394E+02
332	1444.9976	0.4088745E+02	384	1042.9458	0.1067078E+03	436	640.8940	0.3001099E+02
333	1437.2659	0.4932251E+02	385	1035.2139	0.1040466E+03	437	633.1621	0.3444946E+02
334	1429.5339	0.5913696E+02	386	1027.4822	0.1014832E+03	438	625.4304	0.3900244E+02
335	1421.8022	0.6744385E+02	387	1019.7505	0.9910889E+02	439	617.6987	0.4212769E+03
336	1414.0706	0.6826172E+02	388	1012.0188	0.9580688E+02	440	609.9668	0.4152832E+03
337	1406.3386	0.6273804E+02	389	1004.2869	0.9193726E+02	441	602.2351	0.3993896E+03
338	1398.6069	0.5459984E+02	390	996.5552	0.9035645E+02	442	594.5034	0.3822437E+02
339	1390.8752	0.4732666E+02	391	988.8235	0.8608398E+02	443	586.7715	0.3787683E+03
340	1383.1436	0.4111328E+02	392	981.0916	0.8131104E+02	444	579.0398	0.3735913E+03
341	1375.4116	0.3436279E+02	393	973.3599	0.8460693E+02	445	571.3081	0.3716089E+03
342	1367.6799	0.3082886E+02	394	965.6282	0.9476929E+02	446	563.5762	0.3704834E+03
343	1359.9482	0.2860718E+02	395	957.8962	0.8590088E+02	447	555.8445	0.3694214E+03
344	1352.2163	0.2651367E+02	396	950.1646	0.7290273E+02	448	548.1128	0.3691162E+03
345	1344.4846	0.2455444E+02	397	942.4329	0.6131592E+02	449	540.3809	0.3694702E+03
346	1336.7529	0.2263184E+02	398	934.7009	0.6964111E+02	450	532.6492	0.3687988E+03
347	1329.0210	0.2127686E+02	399	926.9692	0.6199951E+02	451	524.9175	0.3653442E+03
348	1321.2893	0.2094116E+02	400	919.2375	0.6254272E+02	452	517.1858	0.3625244E+02
349	1313.5576	0.2126465E+02	401	911.5056	0.6911011E+02	453	509.4539	0.3592666E+03
350	1305.8257	0.2101440E+02	402	903.7739	0.6063843E+02	454	501.7222	0.3573547E+02
351	1298.0940	0.2020264E+02	403	896.0422	0.5233154E+02	455	493.9905	0.3559876E+02
352	1290.3623	0.2043457E+02	404	888.3105	0.4765015E+02	456	486.2585	0.3545850E+02
353	1282.6304	0.2036743E+02	405	880.5786	0.4421997E+02	457	478.5269	0.3520410E+02
354	1274.8987	0.2045898E+02	406	872.8469	0.4230957E+02	458	470.7952	0.3496143E+02
355	1267.1670	0.2145996E+02	407	865.1152	0.4039307E+02	459	463.0632	0.3490906E+02
356	1259.4353	0.2282104E+02	408	857.3833	0.3849487E+02	460	455.3315	0.3481934E+02
357	1251.7034	0.2348022E+02	409	849.6516	0.3703003E+02	461	447.5999	0.3433152E+02
358	1243.9717	0.2420654E+02	410	841.9199	0.3562622E+02	462	439.8679	0.3403931E+02
359	1236.2400	0.2467651E+02	411	834.1880	0.3468018E+02	463	432.1362	0.3399963E+02
360	1228.5081	0.2427368E+02	412	826.4563	0.3371582E+02	464	424.4045	0.3399963E+02
361	1220.7764	0.2407227E+02	413	818.7246	0.3287964E+02	465	416.6726	0.3399963E+02
362	1213.0447	0.2362061E+02	414	810.9927	0.3220825E+02	466	408.9409	0.3399963E+02
363	1205.3127	0.2352295E+02	415	803.2610	0.3153687E+02	467	401.2092	0.3399963E+02
364	1197.5811	0.2441406E+02	416	795.5293	0.3141479E+02	468	393.4775	0.3399963E+02

SUMMARY OF "AMPLITUDE" NORMALIZATION :

	FILE NO 16	FILE NO 20	FILE NO 24	FILE NO 29
MAXIMUM AMPLITUDE NEAREST 2850.0 WN. =	0.2190552E+02	0.1731567E+02	0.1694777E+02	0.1891479E+02
WAVE NUMBER AT MAX. AMPLITUDE = (WNMAX) =	2854.6460	2852.1790	2852.1790	2852.1790
BASELINE AMPLITUDE AT (WNMAX) =	0.1203822E+02	0.8775024E+01	0.8116336E+01	0.8191813E+01
PEAK HEIGHT AT (WNMAX) =	0.9867301E+01	0.8540649E+01	0.8801438E+01	0.1072299E+02
NORMALIZING FACTOR FOR THIS FILE =	0.1086719E+01	0.1255523E+01	0.1211435E+01	0.1000000E+01

FTIS FILE NUMBER : 16 NORMALIZED SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
1	4004.2119	0.1052626E+02	53	3603.0212	0.1055942E+02	105	3201.8303	0.1940758E+02
2	3996.4966	0.1018799E+02	54	3595.3059	0.1039360E+02	106	3194.1150	0.1848561E+02
3	3988.7815	0.9955838E+01	55	3587.5908	0.1061912E+02	107	3186.3999	0.1799478E+02
4	3981.0662	0.9962471E+01	56	3579.8755	0.1048646E+02	108	3178.6846	0.1709273E+02
5	3973.3511	0.1043340E+02	57	3572.1604	0.1073188E+02	109	3170.9695	0.1635649E+02
6	3965.6357	0.9617565E+01	58	3564.4451	0.1067881E+02	110	3163.2542	0.1608455E+02
7	3957.9207	0.9949205E+01	59	3556.7300	0.1087780E+02	111	3155.5391	0.1574628E+02
8	3950.2053	0.9763487E+01	60	3549.0146	0.1067881E+02	112	3147.8237	0.1532178E+02
9	3942.4902	0.9484909E+01	61	3541.2996	0.1083137E+02	113	3140.1086	0.1487075E+02
10	3934.7749	0.9697159E+01	62	3533.5842	0.1123597E+02	114	3132.393	0.1477125E+02
11	3927.0598	0.9358886E+01	63	3525.8691	0.1071198E+02	115	3124.6786	0.1463860E+02
12	3919.3445	0.9272659E+01	64	3518.1538	0.1103698E+02	116	3116.9629	0.1433349E+02
13	3911.6294	0.9266026E+01	65	3510.4387	0.1168037E+02	117	3109.2478	0.1423400E+02
14	3903.9141	0.9989002E+01	66	3502.7234	0.1205180E+02	118	3101.5325	0.1439319E+02
15	3896.1990	0.9173[illegible]E+01	67	3495.0083	0.1146812E+02	119	3093.8174	0.1462533E+02
16	3888.4836	0.9305823E+01	68	3487.2930	0.1093749E+02	120	3086.1021	0.1507636E+02
17	3880.7686	0.9756854E+01	69	3479.5779	0.1211813E+02	121	3078.3870	0.1471156E+02
18	3873.0532	0.9750221E+01	70	3471.8625	0.1228395E+02	122	3070.6716	0.1437329E+02
19	3865.3381	0.1013492E+02	71	3464.1475	0.1281458E+02	123	3062.9565	0.1390286E+02
20	3857.6228	0.9882877E+01	72	3456.4321	0.1338500E+02	124	3055.2412	0.1397532E+02
21	3849.9077	0.9770120E+01	73	3448.7170	0.1310642E+02	125	3047.5261	0.1433349E+02
22	3842.1924	0.1008849E+02	74	3441.0017	0.1384929E+02	126	3039.8108	0.1496360E+02
23	3834.4773	0.1018799E+02	75	3433.2866	0.1345796E+02	127	3032.0957	0.1507636E+02
24	3826.7620	0.1000890E+02	76	3425.5713	0.1445288E+02	128	3024.3804	0.1609117E+02
25	3819.0469	0.1002880E+02	77	3417.8562	0.1470493E+02	129	3016.6653	0.1713865E+02
26	3811.3315	0.1047983E+02	78	3410.1409	0.1533504E+02	130	3008.9502	0.1721875E+02
27	3803.6165	0.1144159E+02	79	3402.4258	0.1536157E+02	131	3001.2349	0.1695345E+02
28	3795.9011	0.1055942E+02	80	3394.7104	0.1626363E+02	132	2993.5198	0.1770294E+02
29	3788.1860	0.1042677[illegible]+02	81	3386.9954	0.1633659E+02	133	2985.8044	0.1883052E+02
30	3780.4707	0.1085127E+0[illegible]	82	3379.2800	0.1748407E+02	134	2978.0894	0.2101935E+02
31	3772.7556	0.1081147E+0	83	3371.5649	0.1770294E+02	135	2970.3740	0.2444188E+02
32	3765.0403	0.1012166F+0[illegible]	84	3363.8496	0.1845245E+02	136	2962.6589	0.2535057E+02
33	3757.3252	0.1055942E+02	85	3356.1345	0.1939432E+02	137	2954.9436	0.2456126E+02
34	3749.6099	0.1103045E+02	86	3348.4192	0.2029637E+02	138	2947.2285	0.2694908E+02
35	3741.8950	0.1043340E+02	87	3340.7041	0.2152344E+02	139	2939.5132	0.3031854E+02
36	3734.1797	0.1045993E+02	88	3332.9888	0.2294949E+02	140	2931.7981	0.3132672E+02
37	3726.4646	0.1069209E+02	89	3325.2737	0.2483934E+02	141	2924.0828	0.3165827E+02
38	3718.7493	0.1060585E+02	90	3317.5583	0.2655110E+02	142	2916.3677	0.2964862E+02
39	3711.0342	0.1071861E+02	91	3309.8433	0.2789093E+02	143	2908.6523	0.2679652E+02
40	3703.3188	0.1073188E+02	92	3302.1279	0.2995374E+02	144	2900.9373	0.2418983E+02
41	3695.6038	0.1085790E+02	93	3294.4128	0.3031854E+02	145	2893.2219	0.2209386E+02
42	3687.8884	0.1113648E+02	94	3286.6975	0.3103488E+02	146	2885.5068	0.2221326E+02
43	3680.1733	0.1055942E+02	95	3278.9824	0.3047772E+02	147	2877.7915	0.2203416E+02
44	3672.4580	0.1074514E+02	96	3271.2671	0.2925729E+02	148	2870.0764	0.2256479E+02
45	3664.7429	0.1039360E+02	97	3263.5520	0.2818777E+02	149	2862.3611	0.2294286E+02
46	3657.0276	0.1041350E+02	98	3255.8367	0.2651794E+02	150	2854.6460	0.2330513E+02
47	3649.3125	0.1060585E+02	99	3248.1216	0.2550975E+02	151	2846.9307	0.2216692E+02
48	3641.5972	0.1024105E+02	100	3240.4062	0.2399044E+02	152	2839.2156	0.1842592E+02
49	3633.8821	0.1049310E+02	101	3232.6912	0.2318164E+02	153	2831.5002	0.1560335E+02
50	3626.1667	0.1045330E+02	102	3224.9759	0.2192140E+02	154	2823.7852	0.1456564E+02
51	3618.4517	0.1030074E+02	103	3217.2607	0.2114537E+02	155	2816.0698	0.1406918E+02
52	3610.7363	0.1052626E+02	104	3209.5454	0.1967288E+02	156	2808.3547	0.1377653E+02

FTIS FILE NUMBER : 16 NORMALIZED SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
157	2800.6394	0.1348449E+02	209	2399.4485	0.1261559E+02	261	1998.2578	0.1369011E+02
158	2792.9243	0.1329214E+02	210	2391.7334	0.1253600E+02	262	1990.5425	0.1363041E+02
159	2785.2090	0.1317938E+02	211	2384.0181	0.1252937E+02	263	1982.8274	0.1341153E+02
160	2777.4939	0.1299366E+02	212	2376.3030	0.1266065E+02	264	1975.1121	0.1320591E+02
161	2769.7786	0.1295387E+02	213	2368.5876	0.1260896E+02	265	1967.3970	0.1318601E+02
162	2762.0635	0.1292733E+02	214	2360.8726	0.1260896E+02	266	1959.6816	0.1311969E+02
163	2754.3481	0.1278904E+02	215	2353.1572	0.1256253E+02	267	1951.9666	0.1307989E+02
164	2746.6331	0.1270845E+02	216	2345.4421	0.1263549E+02	268	1944.2512	0.1304672E+02
165	2738.9177	0.1271508E+02	217	2337.7268	0.1270845E+02	269	1936.5361	0.1300693E+02
166	2731.2026	0.1272835E+02	218	2330.0117	0.1257580E+02	270	1928.8208	0.1303346E+02
167	2723.4873	0.1267529E+02	219	2322.2964	0.1256253E+02	271	1921.1057	0.1300029E+02
168	2715.7722	0.1239671E+02	220	2314.5813	0.1248294E+02	272	1913.3904	0.1312632E+02
169	2708.0569	0.1252273E+02	221	2306.8660	0.1246967E+02	273	1905.6753	0.1302019E+02
170	2700.3418	0.1244314E+02	222	2299.1509	0.1248957E+02	274	1897.9600	0.1300693E+02
171	2692.6265	0.1238344E+02	223	2291.4355	0.1254263E+02	275	1890.2449	0.1309979E+02
172	2684.9114	0.1231712E+02	224	2283.7205	0.1244977E+02	276	1882.5295	0.1315285E+02
173	2677.1960	0.1244314E+02	225	2276.0051	0.1253600E+02	277	1874.8145	0.1311969E+02
174	2669.4810	0.1229722E+02	226	2268.2900	0.1239008E+02	278	1867.0991	0.1317938E+02
175	2661.7656	0.1216456E+02	227	2260.5747	0.1237018E+02	279	1859.3840	0.1323908E+02
176	2654.0505	0.1219109E+02	228	2252.8596	0.1233701E+02	280	1851.6687	0.1319265E+02
177	2646.3352	0.1215130E+02	229	2245.1443	0.1240334E+02	281	1843.9536	0.1342479E+02
178	2638.6201	0.1211150E+02	230	2237.4292	0.1231712E+02	282	1836.2383	0.1344469E+02
179	2630.9048	0.1200537E+02	231	2229.7139	0.1235691E+02	283	1828.5232	0.1371000E+02
180	2623.1897	0.1203191E+02	232	2221.9988	0.1240998E+02	284	1820.8079	0.1353755E+02
181	2615.4744	0.1203854E+02	233	2214.2834	0.1242987E+02	285	1813.0928	0.1353755E+02
182	2607.7593	0.1202527E+02	234	2206.5684	0.1240998E+02	286	1805.3774	0.1349776E+02
183	2600.0439	0.1193241E+02	235	2198.8530	0.1238344E+02	287	1797.6624	0.1349112E+02
184	2592.3289	0.1197221E+02	236	2191.1379	0.1240334E+02	288	1789.9470	0.1360388E+02
185	2584.6135	0.1186609E+02	237	2183.4226	0.1242987E+02	289	1782.2319	0.1367684E+02
186	2576.8984	0.1186609E+02	238	2175.7075	0.1244314E+02	290	1774.5166	0.1396868E+02
187	2569.1831	0.1188598E+02	239	2167.9922	0.1244304E+02	291	1766.8015	0.1449769E+02
188	2561.4680	0.1187935E+02	240	2160.2771	0.1248957E+02	292	1759.0862	0.1636311E+02
189	2553.7527	0.1195894E+02	241	2152.5618	0.1254263E+02	293	1751.3711	0.2635213E+02
190	2546.0376	0.1193241E+02	242	2144.8467	0.1262227E+02	294	1743.6558	0.3643399E+02
191	2538.3223	0.1183955E+02	243	2137.1313	0.1253600E+02	295	1735.9407	0.3008640E+02
192	2530.6072	0.1194568E+02	244	2129.4163	0.1254926E+02	296	1728.2253	0.2485310E+02
193	2522.8918	0.1197884E+02	245	2121.7009	0.1249620E+02	297	1720.5103	0.2156987E+02
194	2515.1768	0.1197884E+02	246	2113.9858	0.1262886E+02	298	1712.7949	0.1945401E+02
195	2507.4614	0.1204517E+02	247	2106.2705	0.1267529E+02	299	1705.0798	0.1808765E+02
196	2499.7463	0.1207170E+02	248	2098.5554	0.1274162E+02	300	1697.3645	0.1741110E+02
197	2492.0310	0.1193905E+02	249	2090.8401	0.1282121E+02	301	1689.6494	0.1640291E+02
198	2 84.3159	0.1207170E+02	250	2083.1250	0.1302019E+02	302	1681.9341	0.1654221E+02
199	2476.6006	0.1218446E+02	251	2075.4097	0.1299366E+02	303	1674.2190	0.1690039E+02
200	2468.8855	0.1219109E+02	252	2067.6946	0.1313295E+02	304	1666.5037	0.1703304E+02
201	2461.1702	0.1226405E+02	253	2059.9792	0.1325234E+02	305	1658.7886	0.1734477E+02
202	2453.4551	0.1223089E+02	254	2052.2642	0.1329214E+02	306	1651.0732	0.1800142E+02
203	2445.7397	0.1232375E+02	255	2044.5488	0.1334520E+02	307	1643.3582	0.1740446E+02
204	2438.0247	0.1231048E+02	256	2036.8337	0.1328551E+02	308	1635.6428	0.1520393E+02
205	2430.3093	0.1240998E+02	257	2029.1184	0.1339509E+02	309	1627.9277	0.1576617E+02
206	2422.5942	0.1241661E+02	258	2021.4033	0.1354418E+02	310	1620.2124	0.1570648E+02
207	2414.8789	0.1241661E+02	259	2013.6882	0.1363704E+02	311	1612.4973	0.1563352E+02
208	2407.1638	0.1251410E+02	260	2005.9729	0.1367684E+02	312	1604.7820	0.1561362E+02

FTIS FILE NUMBER : 16 NORMALIZED SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
313	1597.0669	0.1550749E+02	365	1195.8760	0.2475362E+02	417	794.6851	0.3328340E+02
314	1589.3516	0.1566005E+02	366	1189.1606	0.2659753E+02	418	786.9700	0.3361504E+02
315	1581.6365	0.1552739E+02	367	1180.4456	0.2875319E+02	419	779.2546	0.3410587E+02
316	1573.9211	0.1607127E+02	368	1172.7302	0.3188388E+02	420	771.5396	0.3314412E+02
317	1566.2061	0.1587893E+02	369	1165.0151	0.3415894E+02	421	763.8242	0.3265991E+02
318	1558.4907	0.1699324E+02	370	1157.2998	0.3768758E+02	422	756.1091	0.3278593E+02
319	1550.7756	0.1725191E+02	371	1149.5847	0.4428059E+02	423	748.3938	0.3382729E+02
320	1543.0603	0.1810091E+02	372	1141.8694	0.5068124E+02	424	740.6787	0.3557172E+02
321	1535.3452	0.1873766E+02	373	1134.1543	0.5534410E+02	425	732.9634	0.3685185E+02
322	1527.6299	0.1912900E+02	374	1126.4390	0.5944981E+02	426	725.2483	0.3611562E+02
323	1519.9148	0.1993820E+02	375	1118.7239	0.6430502E+02	427	717.5330	0.3568448E+02
324	1512.1995	0.1968616E+02	376	1111.0085	0.7024138E+02	428	709.8179	0.3524670E+02
325	1504.4844	0.1995810E+02	377	1103.2935	0.7637005E+02	429	702.1025	0.3498853E+02
326	1496.7690	0.2019638E+02	378	1095.5781	0.8115234E+02	430	694.3875	0.3429158E+02
327	1489.0540	0.2148354E+02	379	1087.8630	0.8644533E+02	431	686.6721	0.3397984E+02
328	1481.3386	0.2312195E+02	380	1080.1477	0.9336334E+02	432	678.9570	0.3297166E+02
329	1473.6235	0.2786440E+02	381	1072.4326	0.9937929E+02	433	671.2417	0.3151244E+02
330	1465.9082	0.3105478E+02	382	1064.7173	0.1025692E+03	434	663.5266	0.3007312E+02
331	1458.1931	0.3558499E+02	383	1057.0022	0.1041515E+03	435	655.8113	0.2826900E+02
332	1450.4778	0.4040703E+02	384	1049.2869	0.1031335E+03	436	648.0962	0.2869350E+02
333	1442.7627	0.4912917E+02	385	1041.5718	0.1010441E+03	437	640.3809	0.5296956E+02
334	1435.0474	0.5893245E+02	386	1033.8567	0.9847060E+02	438	632.6658	0.8803056E+02
335	1427.3323	0.6671936E+02	387	1026.1414	0.9499501E+02	439	624.9504	0.1135005E+03
336	1419.6169	0.6726988E+02	388	1018.4263	0.9119777E+02	440	617.2354	0.1036442E+03
337	1411.9019	0.6157895E+02	389	1010.7109	0.8771219E+02	441	609.5200	0.9066379E+02
338	1404.1865	0.5383846E+02	390	1002.9958	0.8586163E+02	442	601.8049	0.8004466E+02
339	1396.4714	0.4721230E+02	391	995.2805	0.8166971E+02	443	594.0896	0.7309349E+02
340	1388.7561	0.4146165E+02	392	987.5654	0.7743134E+02	444	586.3745	0.7050006E+02
341	1381.0410	0.3559499E+02	393	979.8501	0.8048906E+02	445	578.6592	0.6774388E+02
342	1373.3257	0.3231502E+02	394	972.1350	0.9130054E+02	446	570.9441	0.6746887E+02
343	1365.6106	0.3029201E+02	395	964.4197	0.8284370E+02	447	563.2288	0.6662651E+02
344	1357.8953	0.2828889E+02	396	956.7046	0.7045363E+02	448	555.5137	0.6587036E+02
345	1350.1802	0.2648477E+02	397	948.9893	0.6049117E+02	449	547.7983	0.6581731E+02
346	1342.4648	0.2472046E+02	398	941.2742	0.6696478E+02	450	540.0833	0.6538617E+02
347	1334.7498	0.2330103E+02	399	933.5589	0.6048453E+02	451	532.3679	0.6262692E+02
348	1327.0344	0.2288980E+02	400	925.8437	0.6072995E+02	452	524.6528	0.5897224E+02
349	1319.3193	0.2306226E+02	401	918.1284	0.6731631E+02	453	516.9375	0.5718140E+02
350	1311.6040	0.2287653E+02	402	910.4133	0.6023912E+02	454	509.2224	0.5385173E+02
351	1303.8889	0.2186835E+02	403	902.6980	0.5241904E+02	455	501.5071	0.5265712E+02
352	1296.1736	0.2190814E+02	404	894.9829	0.4820721E+02	456	493.7920	0.5385835E+02
353	1288.4585	0.2163620E+02	405	887.2676	0.4554082E+02	457	486.0767	0.5463440E+02
354	1280.7432	0.2162956E+02	406	879.5525	0.4339842E+02	458	478.3615	0.5633392E+02
355	1273.0281	0.2231274E+02	407	871.8372	0.4140858E+02	459	470.6462	0.5554922E+02
356	1265.3127	0.2327451E+02	408	864.1221	0.4006213E+02	460	462.9312	0.5371243E+02
357	1257.5977	0.2385155E+02	409	856.4067	0.3831770E+02	461	455.2159	0.5093393E+02
358	1249.8823	0.2446840E+02	410	848.6917	0.3737584E+02	462	447.5007	0.4788435E+02
359	1242.1672	0.2481331E+02	411	840.9763	0.3621510E+02	463	439.7854	0.4537500E+02
360	1234.4519	0.2418793E+02	412	833.2612	0.3546559E+02	464	432.0703	0.4537500E+02
361	1226.7368	0.2382503E+02	413	825.5459	0.3466966E+02	465	424.3550	0.4537500E+02
362	1219.0215	0.2312115E+02	414	817.8308	0.3413240E+02	466	416.6399	0.4537500E+02
363	1211.3064	0.2292293E+02	415	810.1155	0.3348901E+02	467	408.9246	0.4537500E+02
364	1203.5911	0.2348576E+02	416	802.4004	0.3314412E+02	468	401.2095	0.4537500E+02

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DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
1	4004.2119	0.6746594E+02	53	3602.1602	0.7801038E+01	105	3200.1084	0.1751784E+02
2	3996.4800	0.6746594E+02	54	3594.4285	0.7977289E+01	106	3192.3767	0.1653697E+02
3	3988.7483	0.6746594E+02	55	3586.6968	0.8053921E+01	107	3184.6448	0.1610793E+02
4	3981.0166	0.6746594E+02	56	3578.9648	0.8460065E+01	108	3176.9131	0.1502734E+02
5	3973.2847	0.6746594E+02	57	3571.2332	0.8260824E+01	109	3169.1814	0.1452158E+02
6	3965.5530	0.8046257E+01	58	3563.5015	0.8222508E+01	110	3161.4495	0.1394635E+02
7	3957.8213	0.6429342E+01	59	3555.7695	0.8184193E+01	111	3153.7178	0.1375527E+02
8	3950.0894	0.6820161E+01	60	3548.0378	0.8199519E+01	112	3145.9861	0.1308092E+02
9	3942.3577	0.6207112E+01	61	3540.3062	0.8506043E+01	113	3138.2542	0.1267477E+02
10	3934.6260	0.6283744E+01	62	3532.5742	0.8521370E+01	114	3130.5225	0.1251385E+02
11	3926.8940	0.6820161E+01	63	3524.8425	0.8007942E+01	115	3122.7908	0.1245254E+02
12	3919.1624	0.6214776E+01	64	3517.1108	0.8559685E+01	116	3115.0591	0.1226096E+02
13	3911.4307	0.5747327E+01	65	3509.3789	0.9287680E+01	117	3107.3271	0.1190080E+02
14	3903.6987	0.6789509E+01	66	3501.6472	0.9640182E+01	118	3099.5955	0.1214602E+02
15	3895.9670	0.6130482E+01	67	3493.9155	0.8544359E+01	119	3091.8638	0.1220732E+02
16	3888.2354	0.5333519E+01	68	3486.1838	0.8552022E+01	120	3084.1318	0.1269776E+02
17	3880.5037	0.5042321E+01	69	3478.4519	0.9563552E+01	121	3076.4001	0.1250618E+02
18	3872.7717	0.6636247E+01	70	3470.7202	0.9601867E+01	122	3068.6685	0.1196248E+02
19	3865.0400	0.6659236E+01	71	3462.9885	0.9931380E+01	123	3060.9365	0.1164025E+02
20	3857.3083	0.6889129E+01	72	3455.2566	0.1016894E+02	124	3053.2048	0.1152531E+02
21	3849.5764	0.6322060E+01	73	3447.5249	0.1061340E+02	125	3045.4731	0.1196210E+02
22	3841.8447	0.6459995E+01	74	3439.7932	0.1063639E+02	126	3037.7412	0.1263646E+02
23	3834.1130	0.5754990E+01	75	3432.0613	0.1102720E+02	127	3030.0095	0.1298896E+02
24	3826.3811	0.6728204E+01	76	3424.3296	0.1157128E+02	128	3022.2778	0.1364799E+02
25	3818.6494	0.6812498E+01	77	3416.5979	0.1221498E+02	129	3014.5459	0.1494305E+02
26	3810.9177	0.7004075E+01	78	3408.8660	0.1225330E+02	130	3006.8142	0.1482810E+02
27	3803.1858	0.7302937E+01	79	3401.1343	0.1286635E+02	131	2999.0825	0.1459821E+02
28	3795.4541	0.7149674E+01	80	3393.4026	0.1314988E+02	132	2991.3508	0.1541816E+02
29	3787.7224	0.7187990E+01	81	3385.6707	0.1359434E+02	133	2983.6189	0.1698947E+02
30	3779.9905	0.6873802E+01	82	3377.9390	0.1483577E+02	134	2975.8872	0.1941829E+02
31	3772.2588	0.6758856E+01	83	3370.2073	0.1521126E+02	135	2968.1555	0.2275174E+02
32	3764.5271	0.7065390E+01	84	3362.4756	0.1617690E+02	136	2960.4236	0.2374794E+02
33	3756.7954	0.7050054E+01	85	3354.7437	0.1704274E+02	137	2952.6919	0.2282071E+02
34	3749.0635	0.6781845E+01	86	3347.0120	0.1802161E+02	138	2944.9602	0.2530356E+02
35	3741.3320	0.7287610E+01	87	3339.2803	0.1875160E+02	139	2937.2283	0.2884392E+02
36	3733.6003	0.7609461E+01	88	3331.5483	0.2079765E+02	140	2929.4966	0.3011598E+02
37	3725.8684	0.7854680E+01	89	3323.8167	0.2267511E+02	141	2921.7649	0.2986310E+02
38	3718.1367	0.7696091E+01	90	3316.0850	0.2444530E+02	142	2914.0330	0.2739792E+02
39	3710.4050	0.8306802E+01	91	3308.3530	0.2643770E+02	143	2906.3013	0.2485144E+02
40	3702.6731	0.8239140E+01	92	3300.6213	0.2820797E+02	144	2898.5696	0.2330000E+02
41	3694.9414	0.8237835E+01	93	3292.9896	0.2922707E+02	145	2890.8376	0.2022292E+02
42	3687.2097	0.7824027E+01	94	3285.1577	0.2910446E+02	146	2883.1060	0.2029189E+02
43	3679.4778	0.8099899E+01	95	3277.4260	0.2865233E+02	147	2875.3743	0.2038017E+02
44	3671.7461	0.7992616E+01	96	3269.6943	0.2800099E+02	148	2867.6426	0.2105054E+02
45	3664.0144	0.7693754E+01	97	3261.9624	0.2626910E+02	149	2859.9106	0.2132640E+02
46	3656.2825	0.7701418E+01	98	3254.2307	0.2537253E+02	150	2852.1790	0.2174032E+02
47	3648.5508	0.7977289E+01	99	3246.4990	0.2388588E+02	151	2844.4473	0.1997303E+02
48	3640.8191	0.8199519E+01	100	3238.7673	0.2292071E+02	152	2836.7153	0.1623811E+02
49	3633.0872	0.8046257E+01	101	3231.0354	0.2116548E+02	153	2829.9836	0.1455603E+02
50	3625.3555	0.8245498E+01	102	3223.3037	0.2021526E+02	154	2821.2520	0.1255216E+02
51	3617.6238	0.8076910E+01	103	3215.5720	0.1905814E+02	155	2813.5200	0.1206172E+02
52	3609.8921	0.8053921E+01	104	3207.8401	0.1828415E+02	156	2805.7883	0.1180884E+02

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DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
157	2798.0566	0.1161726E+02	209	2396.0046	0.1124943E+02	261	1993.9529	0.1319586E+02
158	2790.3247	0.1139503E+02	210	2388.2729	0.1115748E+02	262	1986.2212	0.1319586E+02
159	2782.5930	0.1127280E+02	211	2380.5413	0.1117280E+02	263	1978.4895	0.1297363E+02
160	2774.8613	0.1112682E+02	212	2372.8096	0.1127242E+02	264	1970.7576	0.1271309E+02
161	2767.1294	0.1091992E+02	213	2365.0776	0.1132607E+02	265	1963.0259	0.1259914E+02
162	2759.3977	0.1088161E+02	214	2357.3459	0.1121112E+02	266	1955.2942	0.1265178E+02
163	2751.6660	0.1083563E+02	215	2349.6143	0.1121878E+02	267	1947.5623	0.1259048E+02
164	2743.9343	0.1074367E+02	216	2341.8823	0.1132607E+02	268	1939.8306	0.1255216E+02
165	2736.2024	0.1073601E+02	217	2334.1506	0.1130308E+02	269	1932.0989	0.1253684E+02
166	2728.4707	0.1075133E+02	218	2326.4189	0.1128775E+02	270	1924.3669	0.1247553E+02
167	2720.7390	0.1056742E+02	219	2318.6870	0.1123411E+02	271	1916.6353	0.1252917E+02
168	2713.0071	0.1038350E+02	220	2310.9553	0.1122645E+02	272	1908.9036	0.1255216E+02
169	2705.2754	0.1045247E+02	221	2303.2236	0.1125710E+02	273	1901.1716	0.1260580E+02
170	2697.5437	0.1058274E+02	222	2295.4917	0.1128009E+02	274	1893.4399	0.1262113E+02
171	2689.8118	0.1047546E+02	223	2287.7600	0.1128775E+02	275	1885.7083	0.1257515E+02
172	2682.0801	0.1037584E+02	224	2280.0283	0.1119579E+02	276	1877.9766	0.1270542E+02
173	2674.3484	0.1052910E+02	225	2272.2964	0.1128009E+02	277	1870.2446	0.1268243E+02
174	2666.6165	0.1046013E+02	226	2264.5647	0.1130308E+02	278	1862.5129	0.1273608E+02
175	2658.8848	0.1037584E+02	227	2256.8330	0.1129541E+02	279	1854.7812	0.1285869E+02
176	2651.1531	0.1043715E+02	228	2249.1013	0.1125710E+02	280	1847.0493	0.1291999E+02
177	2643.4211	0.1029921E+02	229	2241.3694	0.1133373E+02	281	1839.3176	0.1310390E+02
178	2635.6895	0.1034519E+02	230	2233.6377	0.1129541E+02	282	1831.5859	0.1318920E+02
179	2627.9578	0.1028388E+02	231	2225.9060	0.1130309E+02	283	1823.8540	0.1331081E+02
180	2620.2261	0.1036051E+02	232	2218.1741	0.1143335E+02	284	1816.1223	0.1335679E+02
181	2612.4941	0.1042948E+02	233	2210.4424	0.1149465E+02	285	1808.3906	0.1335679E+02
182	2604.7625	0.1036818E+02	234	2202.7107	0.1151764E+02	286	1800.6587	0.1334146E+02
183	2597.0308	0.1032986E+02	235	2194.9788	0.1154830E+02	287	1792.9270	0.1344108E+02
184	2589.2988	0.1029921E+02	236	2187.2471	0.1160960E+02	288	1785.1953	0.1342500E+02
185	2581.5671	0.1023790E+02	237	2179.5154	0.1164792E+02	289	1777.4634	0.1364032E+02
186	2573.8354	0.1046780E+02	238	2171.7834	0.1160194E+02	290	1769.7317	0.1405413E+02
187	2566.1035	0.1045247E+02	239	2164.0518	0.1173987E+02	291	1762.0000	0.1461354E+02
188	2558.3718	0.1041416E+02	240	2156.3201	0.1181650E+02	292	1754.2683	0.1671323E+02
189	2550.6401	0.1051378E+02	241	2148.5881	0.1191612E+02	293	1746.5364	0.2696645E+02
190	2542.9082	0.1046780E+02	242	2140.8564	0.1204640E+02	294	1738.8047	0.3791702E+02
191	2535.1765	0.1050611E+02	243	2133.1248	0.1205406E+02	295	1731.0730	0.3095126E+02
192	2527.4448	0.1055209E+02	244	2125.3931	0.1196210E+02	296	1723.3411	0.2545682E+02
193	2519.7129	0.1068236E+02	245	2117.6611	0.1196210E+02	297	1715.6094	0.2192413E+02
194	2511.9812	0.1062872E+02	246	2109.9294	0.1210770E+02	298	1707.8777	0.1962520E+02
195	2504.2495	0.1064405E+02	247	2102.1978	0.1213069E+02	299	1700.1458	0.1850638E+02
196	2496.5178	0.1063639E+02	248	2094.4658	0.1229929E+02	300	1692.4141	0.1770943E+02
197	2488.7859	0.1075133E+02	249	2086.7341	0.1246020E+02	301	1684.6824	0.1695844E+02
198	2481.0542	0.1071302E+02	250	2079.0024	0.1250618E+02	302	1676.9504	0.1690480E+02
199	2473.3225	0.1078965E+02	251	2071.2705	0.1262879E+02	303	1669.2187	0.1728029E+02
200	2465.5906	0.1095057E+02	252	2063.5388	0.1275146E+02	304	1661.4871	0.1743355E+02
201	2457.8589	0.1093525E+02	253	2055.8071	0.1282031E+02	305	1653.7551	0.1774774E+02
202	2450.1272	0.1098889E+02	254	2048.0752	0.1296635E+02	306	1646.0234	0.1820752E+02
203	2442.3953	0.1102720E+02	255	2040.3435	0.1284167E+02	307	1638.2917	0.1793932E+02
204	2434.6636	0.1102720E+02	256	2032.6118	0.1295931E+02	308	1630.5601	0.1665192E+02
205	2426.9319	0.1113449E+02	257	2024.8799	0.1298130E+02	309	1622.8281	0.1631474E+02
206	2419.2000	0.1118047E+02	258	2017.1482	0.1308092E+02	310	1615.0964	0.1616147E+02
207	2411.4683	0.1114215E+02	259	2009.4165	0.1324184E+02	311	1607.3647	0.1606196E+02
208	2403.7366	0.1111150E+02	260	2001.6848	0.1319586E+02	312	1599.6329	0.1608434E+02

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DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
313	1591.9011	0.1600821E+02	365	1189.8494	0.2703542E+02	417	787.7974	0.3903963E+02
314	1584.1694	0.1610793E+02	366	1182.1174	0.2902783E+02	418	780.0657	0.3831551E+02
315	1576.4375	0.1616914E+02	367	1174.3857	0.3148769E+02	419	772.3340	0.3843811E+02
316	1568.7058	0.1646800E+02	368	1166.6541	0.3502037E+02	420	764.6023	0.3740359E+02
317	1560.9741	0.1652931E+02	369	1158.9221	0.3729631E+02	421	756.8704	0.3682120E+02
318	1553.2422	0.1731094E+02	370	1151.1904	0.4085965E+02	422	749.1387	0.3703577E+02
319	1545.5105	0.1779377E+02	371	1143.4587	0.4779477E+02	423	741.4070	0.3781740E+02
320	1537.7788	0.1850632E+02	372	1135.7271	0.5448465E+02	424	733.6750	0.3941133E+02
321	1530.0469	0.1916541E+02	373	1127.9951	0.6005573E+02	425	725.9434	0.4063742E+02
322	1522.3152	0.1956389E+02	374	1120.2634	0.6532028E+02	426	718.2117	0.4000905E+02
323	1514.5835	0.2013097E+02	375	1112.5317	0.7075342E+02	427	710.4797	0.3949562E+02
324	1506.8518	0.2009265E+02	376	1104.7998	0.7712912E+02	428	702.7480	0.3885193E+02
325	1499.1199	0.2032254E+02	377	1097.0681	0.8360445E+02	429	695.0164	0.3859371E+02
326	1491.3882	0.2079999E+02	378	1089.3364	0.8909122E+02	430	687.2844	0.3784039E+02
327	1483.6565	0.2196245E+02	379	1081.6045	0.9474660E+02	431	679.5527	0.3755685E+02
328	1475.9246	0.2390887E+02	380	1073.8728	0.1023637E+03	432	671.8210	0.3658365E+02
329	1468.1929	0.2867532E+02	381	1066.1411	0.1096973E+03	433	664.0891	0.3514297E+02
330	1460.4612	0.3219269E+02	382	1058.4092	0.1141419E+03	434	656.3574	0.3360269E+02
331	1452.7292	0.3671391E+02	383	1050.6775	0.1169853E+03	435	648.6257	0.3131909E+02
332	1444.9976	0.4195547E+02	384	1042.9458	0.1157512E+03	436	640.8940	0.3160763E+02
333	1437.2659	0.5135811E+02	385	1035.2139	0.1130537E+03	437	633.1621	0.3788707E+02
334	1429.5339	0.6242363E+02	386	1027.4822	0.1101111E+03	438	625.4304	0.9705319E+02
335	1421.8022	0.7146608E+02	387	1019.7505	0.1067087E+03	439	617.6987	0.1296597E+03
336	1414.0706	0.7226305E+02	388	1012.0188	0.1025400E+03	440	609.9668	0.1183336E+03
337	1406.3386	0.6610191E+02	389	1004.2869	0.9810303E+02	441	602.2351	0.1009537E+03
338	1398.6069	0.5761119E+02	390	996.5552	0.9653209E+02	442	594.5034	0.8850983E+02
339	1390.8752	0.5032359E+02	391	988.8235	0.9176564E+02	443	586.7715	0.8165802E+02
340	1383.1436	0.4414713E+02	392	981.0916	0.8699153E+02	444	579.0398	0.7811000E+02
341	1375.4116	0.3779442E+02	393	973.3599	0.9041695E+02	445	571.3081	0.7518269E+02
342	1367.6799	0.3444563E+02	394	965.6282	0.1024633E+03	446	563.5762	0.7484552E+02
343	1359.9482	0.3226166E+02	395	957.8962	0.9304539E+02	447	555.8445	0.7434741E+02
344	1352.2163	0.3020795E+02	396	950.1646	0.7945103E+02	448	548.1128	0.7454666E+02
345	1344.4846	0.2825380E+02	397	942.4329	0.6798705E+02	449	540.3809	0.7603329E+02
346	1336.7529	0.2649901E+02	398	934.7009	0.7643944E+02	450	532.6492	0.7657738E+02
347	1329.0210	0.2506599E+02	399	926.9692	0.6836253E+02	451	524.9175	0.7426712E+02
348	1321.2893	0.2460622E+02	400	919.2375	0.6893726E+02	452	517.1858	0.7125919E+02
349	1313.5576	0.2482079E+02	401	911.5056	0.7614058E+02	453	509.4539	0.6945068E+02
350	1305.8257	0.2459854E+02	402	903.7739	0.6807133E+02	454	501.7222	0.6709811E+02
351	1298.0940	0.2370963E+02	403	896.0422	0.6007872E+02	455	493.9905	0.6519000E+02
352	1290.3623	0.2380425E+02	404	888.3105	0.5547319E+02	456	486.2585	0.6766519E+02
353	1282.6304	0.2363300E+02	405	880.5786	0.5182556E+02	457	478.5269	0.7169598E+02
354	1274.9987	0.2352571E+02	406	872.8469	0.5002472E+02	458	470.7952	0.7508307E+02
355	1267.1670	0.2427670E+02	407	865.1152	0.4789438E+02	459	463.0632	0.7615590E+02
356	1259.4353	0.2539551E+02	408	857.3833	0.4603992E+02	460	455.3315	0.7514438E+02
357	1251.7034	0.2592427E+02	409	849.6516	0.4442300E+02	461	447.5999	0.7319795E+02
358	1243.9717	0.2561395E+02	410	841.9199	0.4302852E+02	462	439.8679	0.6974373E+02
359	1236.2400	0.2685684E+02	411	834.1880	0.4192482E+02	463	432.1362	0.6746594E+02
360	1228.5081	0.2629976E+02	412	826.4563	0.4099759E+02	464	424.4045	0.6746594E+02
361	1220.7764	0.2593959E+02	413	818.7246	0.3988644E+02	465	416.6726	0.6746594E+02
362	1213.0447	0.2540318E+02	414	810.9927	0.3929639E+02	466	408.9409	0.6746594E+02
363	1205.3127	0.2502768E+02	415	803.2610	0.3844579E+02	467	401.2092	0.6746594E+02
364	1197.5811	0.2574802E+02	416	795.5293	0.3816991E+02	468	393.4775	0.6746594E+02

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DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
1	4004.2119	0.4840137E+02	53	3602.1602	0.6040928E+01	105	3200.1084	0.1588239E+02
2	3996.4800	0.4840137E+02	54	3594.4285	0.5959594E+01	106	3192.3767	0.1486202E+02
3	3988.7483	0.4840137E+02	55	3586.6968	0.5923624E+01	107	3184.6448	0.1451450E+02
4	3981.0166	0.6292326E+01	56	3578.9648	0.5856077E+01	108	3176.9131	0.1360503E+02
5	3973.2847	0.6210991E+01	57	3571.2332	0.6174021E+01	109	3169.1814	0.1316139E+02
6	3965.5530	0.6588087E+01	58	3563.5015	0.6381054E+01	110	3161.4495	0.1254768E+02
7	3957.8213	0.5745167E+01	59	3555.7695	0.5989170E+01	111	3153.7178	0.1208186E+02
8	3950.0894	0.5974382E+01	60	3548.0378	0.5959594E+01	112	3145.9861	0.1177131E+02
9	3942.3577	0.5234978E+01	61	3540.3062	0.6469783E+01	113	3138.2542	0.1126112E+02
10	3934.6260	0.4584303E+01	62	3532.5742	0.6558511E+01	114	3130.5225	0.1139421E+02
11	3926.3940	0.4502969E+01	63	3524.8425	0.5996564E+01	115	3122.7908	0.1107627E+02
12	3919.1624	0.5656438E+01	64	3517.1108	0.6706391E+01	116	3115.0591	0.1081749E+02
13	3911.4307	0.5663833E+01	65	3509.3789	0.7652878E+01	117	3107.3271	0.1085445E+02
14	3903.6987	0.5700803E+01	66	3501.6472	0.7711981E+01	118	3099.5955	0.1090621E+02
15	3895.9670	0.4806124E+01	67	3493.9155	0.7009547E+01	119	3091.8638	0.1103930E+02
16	3888.2354	0.4443816E+01	68	3486.1838	0.6735968E+01	120	3084.1318	0.1158646E+02
17	3880.5037	0.4421634E+01	69	3478.4519	0.7992954E+01	121	3076.4001	0.1131288E+02
18	3872.7717	0.5545527E+01	70	3470.7202	0.7815497E+01	122	3068.6685	0.1061784E+02
19	3865.0400	0.5449406E+01	71	3462.9885	0.8791511E+01	123	3060.9365	0.1035905E+02
20	3857.3083	0.5175826E+01	72	3455.2566	0.8917209E+01	124	3053.2048	0.1032947E+02
21	3849.5764	0.4880064E+01	73	3447.5249	0.9257335E+01	125	3045.4731	0.1089881E+02
22	3841.8447	0.5057521E+01	74	3439.7932	0.9686169E+01	126	3037.7412	0.1138682E+02
23	3834.1130	0.5737773E+01	75	3432.0613	0.1014462E+02	127	3030.0095	0.1168997E+02
24	3826.3811	0.5686014E+01	76	3424.3296	0.1051432E+02	128	3022.2778	0.1248853E+02
25	3818.6494	0.5619468E+01	77	3416.5979	0.1087663E+02	129	3014.5459	0.1369376E+02
26	3810.9177	0.6440207E+01	78	3408.8660	0.1112064E+02	130	3006.8142	0.1372333E+02
27	3803.1858	0.6787726E+01	79	3401.1343	0.1162343E+02	131	2999.0825	0.1313181E+02
28	3795.4541	0.5999170E+01	80	3393.4026	0.1253289E+02	132	2991.3508	0.1411522E+02
29	3787.7224	0.5863471E+01	81	3385.6707	0.1293957E+02	133	2983.6189	0.1543875E+02
30	3779.9905	0.6092697E+01	82	3377.9390	0.1350151E+02	134	2975.8872	0.1787877E+02
31	3772.2588	0.6284931E+01	83	3370.2073	0.1399691E+02	135	2968.1555	0.2142052E+02
32	3764.5271	0.5981776E+01	84	3362.4756	0.1459583E+02	136	2960.4236	0.2238914E+02
33	3756.7954	0.6713786E+01	85	3354.7437	0.1588979E+02	137	2952.6919	0.2169409E+02
34	3749.0635	0.6514147E+01	86	3347.0120	0.1662180E+02	138	2944.9602	0.2407498E+02
35	3741.3320	0.6477177E+01	87	3339.2803	0.1786398E+02	139	2937.2283	0.2762411E+02
36	3733.6003	0.6602875E+01	88	3331.5483	0.1948378E+02	140	2929.4966	0.2873322E+02
37	3725.8684	0.6817303E+01	89	3323.8167	0.2138354E+02	141	2921.7649	0.2879237E+02
38	3718.1367	0.6565905E+01	90	3316.0850	0.2274405E+02	142	2914.0330	0.2648543E+02
39	3710.4050	0.6654634E+01	91	3308.3530	0.2440771E+02	143	2906.3013	0.2364612E+02
40	3702.6731	0.6440207E+01	92	3300.6213	0.2650023E+02	144	2898.5696	0.2102864E+02
41	3694.9414	0.6558511E+01	93	3292.8896	0.2701041E+02	145	2890.8379	0.1991748E+02
42	3687.2097	0.6654634E+01	94	3285.1577	0.2754279E+02	146	2883.1060	0.1939140E+02
43	3679.4778	0.6499358E+01	95	3277.4260	0.2685513E+02	147	2875.3743	0.1905443E+02
44	3671.7461	0.6691604E+01	96	3269.6943	0.2598264E+02	148	2867.6426	0.1961638E+02
45	3664.0144	0.6284931E+01	97	3261.9624	0.2463693E+02	149	2859.9105	0.2011917E+02
46	3656.2825	0.6418024E+01	98	3254.2307	0.2300294E+02	150	2852.1790	0.2056542E+02
47	3648.5508	0.6484571E+01	99	3246.4990	0.2173946E+02	151	2844.4473	0.1879564E+02
48	3640.8191	0.6114869E+01	100	3238.7673	0.2078464E+02	152	2836.7153	0.1536165E+02
49	3633.0872	0.6262750E+01	101	3231.0354	0.1952765E+02	153	2829.9836	0.1237762E+02
50	3625.3555	0.6196203E+01	102	3223.3037	0.1864037E+02	154	2821.2520	0.1135724E+02
51	3617.6238	0.6247961E+01	103	3215.5720	0.1720592E+02	155	2813.5200	0.1084487E+02
52	3609.8921	0.6077898E+01	104	3207.8401	0.1648131E+02	156	2805.7883	0.1064220E+02

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DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
157	2798.0566	0.1027771E+02	209	2396.0146	0.9996738E+01	261	1993.9529	0.1178610E+02
158	2790.3247	0.1020377E+02	210	2388.2729	0.9996738E+01	262	1986.2212	0.1166040E+02
159	2782.5930	0.1006328E+02	211	2380.5413	0.9944981E+01	263	1978.4895	0.1154209E+02
160	2774.8613	0.9922798E+01	212	2372.8096	0.1006328E+02	264	1970.7576	0.1140900E+02
161	2767.1294	0.9856252E+01	213	2365.0776	0.1005589E+02	265	1963.0259	0.1176851E+02
162	2759.3977	0.9774918E+01	214	2357.3459	0.9952374E+01	266	1955.2942	0.1126112E+02
163	2751.6660	0.9700977E+01	215	2349.6143	0.9981951E+01	267	1947.5623	0.1126851E+02
164	2743.9343	0.9590066E+01	216	2341.8823	0.1001153E+02	268	1939.8306	0.1124633E+02
165	2736.2024	0.9545702E+01	217	2334.1506	0.1008547E+02	269	1932.0989	0.1127591E+02
166	2728.4707	0.9686189E+01	218	2326.4189	0.1002631E+02	270	1924.3669	0.1132027E+02
167	2720.7390	0.9597461E+01	219	2318.6870	0.9967162E+01	271	1916.6353	0.1137942E+02
168	2713.0071	0.9346064E+01	220	2310.9553	0.9944981E+01	272	1909.9036	0.1149773E+02
169	2705.2754	0.9264729E+01	221	2303.2236	0.9989345E+01	273	1901.1716	0.1148296E+02
170	2697.5437	0.9279517E+01	222	2295.4917	0.9967162E+01	274	1893.4399	0.1151991E+02
171	2689.8119	0.9286911E+01	223	2287.7600	0.1001153E+02	275	1885.7083	0.1161603E+02
172	2682.0801	0.9146424E+01	224	2280.0283	0.9989345E+01	276	1877.9766	0.1167519E+02
173	2674.3484	0.9286911E+01	225	2272.2964	0.1002631E+02	277	1870.2446	0.1168997E+02
174	2666.6165	0.9087272E+01	226	2264.5647	0.1008547E+02	278	1862.5129	0.1179349E+02
175	2658.8848	0.8902421E+01	227	2256.8330	0.1002631E+02	279	1854.7812	0.1187482E+02
176	2651.1531	0.9042908E+01	228	2249.1013	0.9981951E+01	280	1847.0493	0.1194876E+02
177	2643.4211	0.8998544E+01	229	2241.3694	0.1013723E+02	281	1839.3176	0.1207446E+02
178	2635.6895	0.9035514E+01	230	2233.6377	0.1007063E+02	282	1831.5859	0.1225831E+02
179	2627.9578	0.8887632E+01	231	2225.9060	0.1017420E+02	283	1823.8540	0.1234065E+02
180	2620.2261	0.8931997E+01	232	2218.1741	0.1024074E+02	284	1816.1223	0.1229628E+02
181	2612.4941	0.8933391E+01	233	2210.4424	0.1027032E+02	285	1808.3906	0.1217059E+02
182	2604.7625	0.8931997E+01	234	2202.7107	0.1024074E+02	286	1800.6587	0.1224453E+02
183	2597.0308	0.8828481E+01	235	2194.9788	0.1023335E+02	287	1792.9270	0.1227410E+02
184	2589.2988	0.8843268E+01	236	2187.2471	0.1040341E+02	288	1785.1953	0.1242938E+02
185	2581.5671	0.8917209E+01	237	2179.5154	0.1032947E+02	289	1777.4634	0.1242198E+02
186	2573.8354	0.8983755E+01	238	2171.7834	0.1041820E+02	290	1769.7317	0.1265120E+02
187	2566.1035	0.8976361E+01	239	2164.0518	0.1049214E+02	291	1762.0000	0.1330927E+02
188	2558.3718	0.8998544E+01	240	2156.3201	0.1049214E+02	292	1754.2683	0.1550530E+02
189	2550.6401	0.9042908E+01	241	2148.5881	0.1055129E+02	293	1746.5364	0.2605658E+02
190	2542.9082	0.9161212E+01	242	2140.8564	0.1058826E+02	294	1738.8047	0.3684449E+02
191	2535.1765	0.9124242E+01	243	2133.1248	0.1058826E+02	295	1731.0730	0.2954657E+02
192	2527.4448	0.9235152E+01	244	2125.3931	0.1054390E+02	296	1723.3411	0.2393449E+02
193	2519.7129	0.9249941E+01	245	2117.6611	0.1051432E+02	297	1715.6094	0.2043712E+02
194	2511.9812	0.9235152E+01	246	2109.9294	0.1068438E+02	298	1707.8777	0.1817453E+02
195	2504.2495	0.9294305E+01	247	2102.1978	0.1071396E+02	299	1700.1458	0.1700629E+02
196	2496.5178	0.9360851E+01	248	2094.4659	0.1083226E+02	300	1692.4141	0.1594894E+02
197	2488.7859	0.9427398E+01	249	2086.7341	0.1089821E+02	301	1684.6824	0.1517036E+02
198	2481.0542	0.9456974E+01	250	2079.0024	0.1100233E+02	302	1676.9504	0.1521693E+02
199	2473.3225	0.9538308E+01	251	2071.2705	0.1101712E+02	303	1669.2187	0.1559402E+02
200	2465.5906	0.9604855E+01	252	2063.5388	0.1108366E+02	304	1661.4871	0.1557184E+02
201	2457.8589	0.9627037E+01	253	2055.8071	0.1120197E+02	305	1653.7551	0.1604506E+02
202	2450.1272	0.9797099E+01	254	2048.0752	0.1126851E+02	306	1646.0234	0.1653307E+02
203	2442.3953	0.9767524E+01	255	2040.3435	0.1130549E+02	307	1638.2917	0.1626689E+02
204	2434.6636	0.9700977E+01	256	2032.6118	0.1134245E+02	308	1630.5601	0.1482504E+02
205	2426.9319	0.9871039E+01	257	2024.8799	0.1146915E+02	309	1622.8281	0.1447013E+02
206	2419.2000	0.9930192E+01	258	2017.1482	0.1151091E+02	310	1615.0964	0.1439619E+02
207	2411.4683	0.9826675E+01	259	2009.4165	0.1161603E+02	311	1607.3647	0.1442971E+02
208	2403.7366	0.9974556E+01	260	2001.6848	0.1167519E+02	312	1599.6328	0.1447013E+02

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DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
313	1591.9011	0.1445534E+02	365	1189.8494	0.2559814E+02	417	787.7974	0.3443402E+02
314	1584.1694	0.1469195E+02	366	1182.1174	0.2774242E+02	418	780.0657	0.3478894E+02
315	1576.4375	0.1478068E+02	367	1174.3857	0.3027858E+02	419	772.3340	0.3511427E+02
316	1568.7058	0.1517996E+02	368	1166.6541	0.3369463E+02	420	764.6023	0.3406433E+02
317	1560.9741	0.1560142E+02	369	1158.9221	0.3595720E+02	421	756.8704	0.3342104E+02
318	1553.2422	0.1630385E+02	370	1151.1904	0.3964682E+02	422	749.1387	0.3362068E+02
319	1545.5105	0.1696931E+02	371	1143.4587	0.4647891E+02	423	741.4070	0.3455234E+02
320	1537.7788	0.1770132E+02	372	1135.7271	0.5314095E+02	424	733.6750	0.3645999E+02
321	1530.0469	0.1849636E+02	373	1127.9951	0.5807277E+02	425	725.9434	0.3769001E+02
322	1522.3152	0.1894351E+02	374	1120.2634	0.6254616E+02	426	718.2117	0.3693321E+02
323	1514.5835	0.1959419E+02	375	1112.5317	0.6751495E+02	427	710.4797	0.3644521E+02
324	1506.8518	0.1955722E+02	376	1104.7998	0.7361504E+02	428	702.7480	0.3595720E+02
325	1499.1199	0.1974207E+02	377	1097.0681	0.7961160E+02	429	695.0164	0.3552095E+02
326	1491.3882	0.2007460E+02	378	1089.3364	0.8463954E+02	430	687.2844	0.3506992E+02
327	1483.6565	0.2124306E+02	379	1081.6045	0.9005937E+02	431	679.5527	0.3474457E+02
328	1475.9246	0.2339473E+02	380	1073.8728	0.9756432E+02	432	671.8210	0.3366504E+02
329	1468.1929	0.2820825E+02	381	1066.1411	0.1043742E+03	433	664.0891	0.3223799E+02
330	1460.4612	0.3168344E+02	382	1058.4092	0.1082635E+03	434	656.3574	0.3083313E+02
331	1452.7292	0.3594980E+02	383	1050.6775	0.1108514E+03	435	648.6257	0.2933954E+02
332	1444.9976	0.4102211E+02	384	1042.9458	0.1095722E+03	436	640.8940	0.3052258E+02
333	1437.2659	0.5074285E+02	385	1035.2139	0.1071174E+03	437	633.1621	0.3229639E+02
334	1429.5339	0.6032056E+02	386	1027.4822	0.1045887E+03	438	625.4304	0.3695242E+02
335	1421.8022	0.6875714E+02	387	1019.7505	0.1009138E+03	439	617.6987	0.1266673E+03
336	1414.0706	0.6733389E+02	388	1012.0188	0.9692844E+02	440	609.9668	0.1146902E+03
337	1406.3386	0.6338168E+02	389	1004.2869	0.9261032E+02	441	602.2351	0.9693582E+02
338	1398.6069	0.5495248E+02	390	996.5552	0.9062871E+02	442	594.5034	0.8577083E+02
339	1390.8752	0.4788377E+02	391	988.8235	0.8608138E+02	443	586.7715	0.7859383E+02
340	1383.1436	0.4179109E+02	392	981.0916	0.8143793E+02	444	579.0398	0.7499160E+02
341	1375.4116	0.3555792E+02	393	973.3599	0.8466173E+02	445	571.3081	0.7192918E+02
342	1367.6799	0.3200879E+02	394	965.6282	0.9589326E+02	446	563.5762	0.7195526E+02
343	1359.9482	0.2992366E+02	395	957.8962	0.9650284E+02	447	555.8445	0.7156443E+02
344	1352.2163	0.2786073E+02	396	950.1646	0.7309006E+02	448	548.1128	0.7095217E+02
345	1344.4846	0.2596785E+02	397	942.4329	0.6239827E+02	449	540.3809	0.7144118E+02
346	1336.7529	0.2409717E+02	398	934.7009	0.6989583E+02	450	532.6492	0.7027184E+02
347	1329.0210	0.2268491E+02	399	926.9692	0.6271622E+02	451	524.9175	0.6730792E+02
348	1321.2893	0.2230780E+02	400	919.2375	0.6306374E+02	452	517.1858	0.6353623E+02
349	1313.5576	0.2243150E+02	401	911.5056	0.5989583E+02	453	509.4539	0.6202118E+02
350	1305.8257	0.2276344E+02	402	903.7739	0.6207858E+02	454	501.7222	0.5986952E+02
351	1298.0940	0.2133919E+02	403	896.0422	0.5408737E+02	455	493.9905	0.5721394E+02
352	1290.3623	0.2150925E+02	404	888.3105	0.4963531E+02	456	486.2585	0.5942537E+02
353	1282.6304	0.2134657E+02	405	880.5786	0.4688559E+02	457	478.5269	0.6173282E+02
354	1274.8987	0.2137919E+02	406	872.8469	0.4474132E+02	458	470.7952	0.6125633E+02
355	1267.1670	0.2221903E+02	407	865.1152	0.4314420E+02	459	463.0632	0.6131874E+02
356	1259.4353	0.2320079E+02	408	857.3833	0.4131787E+02	460	455.3315	0.5989222E+02
357	1251.7034	0.2392709E+02	409	849.6516	0.3986125E+02	461	447.5998	0.5908396E+02
358	1243.9717	0.2472565E+02	410	841.9199	0.3886305E+02	462	439.8679	0.5791245E+02
359	1236.2400	0.2560578E+02	411	834.1880	0.3773177E+02	463	432.1362	0.5641127E+02
360	1228.5081	0.2449634E+02	412	826.4563	0.3668181E+02	464	424.4045	0.5484013E+02
361	1220.7764	0.2427461E+02	413	818.7246	0.3607550E+02	465	416.6726	0.5349137E+02
362	1213.0447	0.2374225E+02	414	810.9927	0.3526955E+02	466	408.9409	0.5284137E+02
363	1205.3127	0.2350565E+02	415	803.2610	0.3472979E+02	467	401.2092	0.5284137E+02
364	1197.5811	0.2423764E+02	416	795.5293	0.3439705E+02	468	393.4775	0.5284137E+02

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DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
1	4004.2119	0.5039063E+02	53	3602.1602	0.4962158E+01	105	3200.1084	0.1465454E+02
2	3996.4800	0.5039063E+02	54	3594.4285	0.4809570E+01	106	3192.3767	0.1389771E+02
3	3988.7483	0.5039063E+02	55	3586.6968	0.5059814E+01	107	3184.6448	0.1307373E+02
4	3981.0166	0.5039063E+02	56	3578.9648	0.5017090E+01	108	3176.9131	0.1249390E+02
5	3973.2847	0.5039063E+02	57	3571.2332	0.5139160E+01	109	3169.1814	0.1190186E+02
6	3965.5530	0.5039063E+02	58	3563.5015	0.5194092E+01	110	3161.4495	0.1135864E+02
7	3957.8213	0.5039063E+02	59	3555.7695	0.5157471E+01	111	3153.7178	0.1082153E+02
8	3950.0894	0.5039063E+02	60	3548.0378	0.5169678E+01	112	3145.9861	0.1024170E+02
9	3942.3577	0.5039063E+02	61	3540.3062	0.5267334E+01	113	3138.2542	0.1029663E+02
10	3934.6260	0.5039063E+02	62	3532.5742	0.5145264E+01	114	3130.5225	0.1006470E+02
11	3926.8940	0.5039063E+02	63	3524.8425	0.5120850E+01	115	3122.7908	0.9906006E+01
12	3919.1624	0.5039063E+02	64	3517.1108	0.5725098E+01	116	3115.0591	0.9698486E+01
13	3911.4307	0.5039063E+02	65	3509.3789	0.6384277E+01	117	3107.3271	0.9564209E+01
14	3903.6987	0.5039063E+02	66	3501.6472	0.6298828E+01	118	3099.5955	0.9729004E+01
15	3895.9670	0.3363037E+01	67	3493.9155	0.5450439E+01	119	3091.8638	0.9375488E+01
16	3888.2354	0.3472900E+01	68	3486.1838	0.5627441E+01	120	3084.1318	0.1021729E+02
17	3880.5037	0.2954102E+01	69	3478.4519	0.6341553E+01	121	3076.4001	0.1003418E+02
18	3872.7717	0.3527832E+01	70	3470.7202	0.7055664E+01	122	3068.6685	0.9399414E+01
19	3865.0400	0.4235840E+01	71	3462.9885	0.7391357E+01	123	3060.9365	0.9252930E+01
20	3857.3083	0.3698730E+01	72	3455.2566	0.7965088E+01	124	3053.2048	0.9283447E+01
21	3849.5764	0.3417969E+01	73	3447.5249	0.8276367E+01	125	3045.4731	0.9527588E+01
22	3841.8447	0.3283691E+01	74	3439.7932	0.8502197E+01	126	3037.7412	0.1019897E+02
23	3834.1130	0.3668213E+01	75	3432.0613	0.8795166E+01	127	3030.0095	0.1040649E+02
24	3826.3811	0.4034424E+01	76	3424.3296	0.9155273E+01	128	3022.2778	0.1122437E+02
25	3818.6494	0.4461670E+01	77	3416.5979	0.9[illegible]129E+01	129	3014.5459	0.1250610E+02
26	3810.9177	0.4882813E+01	78	3408.8660	0.1015015E+02	130	3006.8142	0.1232910E+02
27	3803.1858	0.4809570E+01	79	3401.1343	0.1046143E+02	131	2999.0825	0.1211548E+02
28	3795.4541	0.4449463E+01	80	3393.4026	0.1117554E+02	132	2991.3508	0.1298218E+02
29	3787.7224	0.4449463E+01	81	3385.6707	0.1175537E+02	133	2983.6189	0.1459351E+02
30	3779.9905	0.4144287E+01	82	3377.9390	0.1236572E+02	134	2975.8872	0.1732788E+02
31	3772.2588	0.4296875E+01	83	3370.2073	0.1289063E+02	135	2968.1555	0.2109375E+02
32	3764.5271	0.4754639E+01	84	3362.4756	0.1373901E+02	136	2960.4236	0.2185059E+02
33	3756.7954	0.4779053E+01	85	3354.7437	0.1461792E+02	137	2952.6919	0.2094727E+02
34	3749.0635	0.4797363E+01	86	3347.0120	0.1583862E+02	138	2944.9602	0.2363892E+02
35	3741.3320	0.4833984E+01	87	3339.2803	0.1694946E+02	139	2937.2283	0.2701416E+02
36	3733.6003	0.5249023E+01	88	3331.5483	0.1860962E+02	140	2929.4966	0.2816772E+02
37	3725.8684	0.5230713E+01	89	3323.8167	0.2047729E+02	141	2921.7649	0.2772827E+02
38	3718.1367	0.5407715E+01	90	3316.0850	0.2222290E+02	142	2914.0330	0.2504883E+02
39	3710.4050	0.5529785E+01	91	3308.3530	0.2406616E+02	143	2906.3013	0.2219238E+02
40	3702.6731	0.5749512E+01	92	3300.6213	0.2554932E+02	144	2898.5696	0.1953515E+02
41	3694.9414	0.5682373E+01	93	3292.8896	0.2655029E+02	145	2890.8376	0.1747437E+02
42	3687.2097	0.5084229E+01	94	3285.1577	0.2684326E+02	146	2883.1060	0.1776733E+02
43	3679.4778	0.5541992E+01	95	3277.4260	0.2599877E+02	147	2875.3743	0.1790161E+02
44	3671.7461	0.5645752E+01	96	3269.6943	0.2523193E+02	148	2867.6426	0.1860352E+02
45	3664.0144	0.5371094E+01	97	3261.9624	0.2366943E+02	149	2859.9106	0.1876831E+02
46	3656.2825	0.5053711E+01	98	3254.2307	0.2247925E+02	150	2852.1790	0.1891479E+02
47	3648.5508	0.4633606E+01	99	3246.4990	0.2105713E+02	151	2844.4473	0.1691895E+02
48	3640.8191	0.5231713E+01	100	3238.7673	0.1966553E+02	152	2836.7156	0.1309204E+02
49	3633.0872	0.5102539E+01	101	3231.0354	0.1864014E+02	153	2829.9836	0.1046143E+02
50	3625.3555	0.5242920E+01	102	3223.3037	0.1743216E+02	154	2821.2520	0.9356689E+01
51	3617.6238	0.5169678E+01	103	3215.5720	0.1600342E+02	155	2813.5200	0.8874512E+01
52	3609.8921	0.5133057E+01	104	3207.8401	0.1553345E+02	156	2805.7883	0.8473096E+01

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DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
157	2798.0566	0.8396230E+01	209	2396.0046	0.8221436E+01	261	1993.9529	0.9875498E+01
158	2790.3247	0.8135986E+01	210	2388.2729	0.8154297E+01	262	1986.2212	0.9838867E+01
159	2782.5930	0.8081055E+01	211	2380.5413	0.8050537E+01	263	1978.4895	0.9831349E+01
160	2774.8613	0.8039330E+01	212	2372.9096	0.8123779E+01	264	1970.7576	0.9509277E+01
161	2767.1294	0.7924467E+01	213	2365.0776	0.8190918E+01	265	1963.0259	0.9399414E+01
162	2759.3977	0.7967432E+01	214	2357.3459	0.8105469E+01	266	1955.2942	0.9490967E+01
163	2751.6660	0.7727051E+01	215	2349.6143	0.8074951E+01	267	1947.5623	0.9484863E+01
164	2743.9343	0.7641602E+01	216	2341.8823	0.8129883E+01	268	1939.8306	0.9503174E+01
165	2736.2024	0.7617188E+01	217	2334.1506	0.8233643E+01	269	1932.0989	0.9509277E+01
166	2728.4707	0.7751465E+01	218	2326.4189	0.8099365E+01	270	1924.3669	0.9490967E+01
167	2720.7390	0.7525635E+01	219	2318.6870	0.8044434E+01	271	1916.6353	0.9649658E+01
168	2713.0071	0.7354736E+01	220	2310.9553	0.8050537E+01	272	1908.9036	0.9690176E+01
169	2705.2754	0.7330322E+01	221	2303.2236	0.8062744E+01	273	1901.1716	0.9729004E+01
170	2697.5437	0.7360940E+01	222	2295.4917	0.8142090E+01	274	1893.4399	0.9759521E+01
171	2689.8118	0.7244873E+01	223	2287.7600	0.8166504E+01	275	1885.7083	0.9826660E+01
172	2682.0801	0.7159424E+01	224	2280.0283	0.8087158E+01	276	1877.9766	0.9960938E+01
173	2674.3484	0.7244873E+01	225	2272.2964	0.8099365E+01	277	1870.2446	0.1001587E+02
174	2666.6165	0.7122803E+01	226	2264.5647	0.8166504E+01	278	1862.5129	0.1010742E+02
175	2658.8848	0.7110596E+01	227	2256.8330	0.8117676E+01	279	1854.7812	0.1016846E+02
176	2651.1531	0.7128906E+01	228	2249.1013	0.8074951E+01	280	1847.0493	0.1021118E+02
177	2643.4211	0.7092285E+01	229	2241.3694	0.8178711E+01	281	1839.3176	0.1043091E+02
178	2635.6895	0.7037354E+01	230	2233.6377	0.8221436E+01	282	1831.5859	0.1054077E+02
179	2627.9578	0.6964111E+01	231	2225.9060	0.8251953E+01	283	1823.8540	0.1065674E+02
180	2620.2261	0.7067871E+01	232	2218.1741	0.8337402E+01	284	1816.1223	0.1064453E+02
181	2612.4941	0.7086182E+01	233	2210.4424	0.8337402E+01	285	1808.3906	0.1059570E+02
182	2604.7625	0.7104492E+01	234	2202.7107	0.8312988E+01	286	1800.6587	0.1059570E+02
183	2597.0308	0.6994629E+01	235	2194.9788	0.8398438E+01	287	1792.9270	0.1071167E+02
184	2589.2988	0.7031250E+01	236	2187.2471	0.8520508E+01	288	1785.1953	0.1088257E+02
185	2581.5671	0.6958008E+01	237	2179.5154	0.8544922E+01	289	1777.4634	0.1094360E+02
186	2573.8354	0.7104492E+01	238	2171.7834	0.8551025E+01	290	1769.7317	0.1130981E+02
187	2566.1035	0.7128906E+01	239	2164.0518	0.8636475E+01	291	1762.0000	0.1201172E+02
188	2558.3718	0.7135010E+01	240	2156.3201	0.8654785E+01	292	1754.2683	0.1449585E+02
189	2550.6401	0.7214355E+01	241	2148.5881	0.8691406E+01	293	1746.5364	0.2593325E+02
190	2542.9082	0.7281494E+01	242	2140.8564	0.8770752E+01	294	1738.8047	0.3718872E+02
191	2535.1765	0.7281494E+01	243	2133.1248	0.8673096E+01	295	1731.0730	0.2921143E+02
192	2527.4448	0.7409668E+01	244	2125.3931	0.8648682E+01	296	1723.3411	0.2297363E+02
193	2519.7129	0.7489014E+01	245	2117.6611	0.8715820E+01	297	1715.6094	0.1916504E+02
194	2511.9812	0.7434082E+01	246	2109.9294	0.8801270E+01	298	1707.8777	0.1665039E+02
195	2504.2495	0.7495117E+01	247	2102.1978	0.8831787E+01	299	1700.1458	0.1536255E+02
196	2496.5178	0.7531738E+01	248	2094.4658	0.8941650E+01	300	1692.4141	0.1440430E+02
197	2488.7859	0.7623291E+01	249	2086.7341	0.9045410E+01	301	1684.6824	0.1361694E+02
198	2481.0542	0.7684326E+01	250	2079.0024	0.9112549E+01	302	1676.9504	0.1361084E+02
199	2473.3225	0.7757568E+01	251	2071.2705	0.9216309E+01	303	1669.2187	0.1400146E+02
200	2465.5906	0.7781982E+01	252	2063.5388	0.9368896E+01	304	1661.4871	0.1406250E+02
201	2457.8589	0.7928467E+01	253	2055.8071	0.9478760E+01	305	1653.7551	0.1441650E+02
202	2450.1272	0.7885742E+01	254	2048.0752	0.9405518E+01	306	1646.0234	0.1497803E+02
203	2442.3953	0.8001709E+01	255	2040.3435	0.9509277E+01	307	1638.2917	0.1459351E+02
204	2434.6636	0.7971191E+01	256	2032.6118	0.9558105E+01	308	1630.5601	0.1334229E+02
205	2426.9319	0.7965088E+01	257	2024.8799	0.9619141E+01	309	1622.8281	0.1302490E+02
206	2419.2000	0.8074951E+01	258	2017.1482	0.9710693E+01	310	1615.0964	0.1301270E+02
207	2411.4683	0.8037813E+01	259	2009.4165	0.9887695E+01	311	1607.3647	0.1299438E+02
208	2403.7366	0.8087158E+01	260	2001.6848	0.9942627E+01	312	1599.6328	0.1309204E+02

FTIS FILE NUMBER : 28 NORMALIZED SPECTRAL DATA

DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE	DATA WORD	WAVE NUMBER	AMPLITUDE
313	1591.9011	0.1311646E+02	365	1199.8494	0.2593384E+02	417	787.7974	0.3139038E+02
314	1584.1694	0.1336670E+02	366	1192.1174	0.2826538E+02	418	780.0657	0.3188477E+02
315	1576.4375	0.1356201E+02	367	1184.3857	0.3090820E+02	419	772.3340	0.3223877E+02
316	1568.7058	0.1397705E+02	368	1176.6541	0.3435669E+02	420	764.6023	0.3139038E+02
317	1560.9741	0.1431885E+02	369	1158.9221	0.3646240E+02	421	756.8704	0.3066406E+02
318	1553.2422	0.1512451E+02	370	1151.1904	0.3979492E+02	422	749.1387	0.3104858E+02
319	1545.5105	0.1586914E+02	371	1143.4587	0.4609985E+02	423	741.4070	0.3214111E+02
320	1537.7788	0.1673584E+02	372	1135.7271	0.5200195E+02	424	733.6750	0.3393555E+02
321	1530.0469	0.1743164E+02	373	1127.9951	0.5616455E+02	425	725.9434	0.3521118E+02
322	1522.3152	0.1804810E+02	374	1120.2634	0.5993042E+02	426	718.2117	0.3447876E+02
323	1514.5835	0.1866455E+02	375	1112.5317	0.6455078E+02	427	710.4797	0.3411865E+02
324	1506.8518	0.1868896E+02	376	1104.7998	0.7031860E+02	428	702.7480	0.3353271E+02
325	1499.1199	0.1898193E+02	377	1097.0681	0.7661133E+02	429	695.0164	0.3323364E+02
326	1491.3882	0.1943359E+02	378	1089.3364	0.8208008E+02	430	687.2844	0.3283691E+02
327	1483.6565	0.2074585E+02	379	1081.6045	0.8706055E+02	431	679.5527	0.3291626E+02
328	1475.9246	0.2301636E+02	380	1073.8728	0.9419556E+02	432	671.8210	0.3178711E+02
329	1468.1929	0.2823486E+02	381	1066.1411	0.1004578E+03	433	664.0891	0.3051147E+02
330	1460.4612	0.3175659E+02	382	1058.4092	0.1043823E+03	434	656.3574	0.2948608E+02
331	1452.7292	0.3595581E+02	383	1050.6775	0.1070068E+03	435	648.6257	0.2853394E+02
332	1444.9976	0.4088745E+02	384	1042.9458	0.1067078E+03	436	640.9940	0.3001099E+02
333	1437.2659	0.4932251E+02	385	1035.2139	0.1040466E+03	437	633.1621	0.5444946E+02
334	1429.5339	0.5913696E+02	386	1027.4822	0.1014832E+03	438	625.4304	0.9009246E+02
335	1421.8022	0.6744385E+02	387	1019.7505	0.9910889E+02	439	617.6987	0.1212769E+03
336	1414.0706	0.6826172E+02	388	1012.0188	0.9580688E+02	440	609.9668	0.1152832E+03
337	1406.3386	0.6273804E+02	389	1004.2869	0.9193726E+02	441	602.2351	0.9993896E+02
338	1398.6069	0.5458984E+02	390	996.5552	0.9035645E+02	442	594.5034	0.8622437E+02
339	1390.8752	0.4732666E+02	391	988.8235	0.8608398E+02	443	586.7715	0.7970483E+02
340	1383.1436	0.4111328E+02	392	981.0916	0.8131104E+02	444	579.0398	0.7435913E+02
341	1375.4116	0.3436279E+02	393	973.3599	0.8460693E+02	445	571.3081	0.7116089E+02
342	1367.6799	0.3082886E+02	394	965.6282	0.9476929E+02	446	563.5762	0.7048340E+02
343	1359.9482	0.2860718E+02	395	957.8962	0.8590088E+02	447	555.8445	0.6942139E+02
344	1352.2163	0.2651367E+02	396	950.1646	0.7280273E+02	448	548.1128	0.6911621E+02
345	1344.4846	0.2455444E+02	397	942.4329	0.6131592E+02	449	540.3809	0.6947021E+02
346	1336.7529	0.2263184E+02	398	934.7009	0.6964111E+02	450	532.6492	0.6878052E+02
347	1329.0210	0.2127686E+02	399	926.9692	0.6199951E+02	451	524.9175	0.6534424E+02
348	1321.2893	0.2094116E+02	400	919.2375	0.6254272E+02	452	517.1858	0.6252441E+02
349	1313.5576	0.2126465E+02	401	911.5056	0.6911011E+02	453	509.4539	0.5982666E+02
350	1305.8257	0.2101440E+02	402	903.7739	0.6063843E+02	454	501.7222	0.5735474E+02
351	1298.0940	0.2020264E+02	403	896.0422	0.5233154E+02	455	493.9905	0.5599976E+02
352	1290.3623	0.2043457E+02	404	888.3105	0.4765015E+02	456	486.2585	0.5745850E+02
353	1282.6304	0.2053743E+02	405	880.5786	0.4421997E+02	457	478.5269	0.5920410E+02
354	1274.8987	0.2045898E+02	406	872.8469	0.4230957E+02	458	470.7952	0.6046143E+02
355	1267.1670	0.2145996E+02	407	865.1152	0.4039307E+02	459	463.0632	0.6007080E+02
356	1259.4353	0.2292104E+02	408	857.3833	0.3849487E+02	460	455.3315	0.5817871E+02
357	1251.7034	0.2348022E+02	409	849.6516	0.3703003E+02	461	447.5999	0.5333252E+02
358	1243.9717	0.2420654E+02	410	841.9199	0.3562622E+02	462	439.8679	0.5039063E+02
359	1236.2400	0.2477661E+02	411	834.1880	0.3468018E+02	463	432.1362	0.5039063E+02
360	1228.5081	0.2427368E+02	412	826.4563	0.3371582E+02	464	424.4045	0.5039063E+02
361	1220.7764	0.2407227E+02	413	818.7246	0.3287964E+02	465	416.6726	0.5039063E+02
362	1213.0447	0.2382061E+02	414	810.9927	0.3220825E+02	466	408.9409	0.5039063E+02
363	1205.3127	0.2352295E+02	415	803.2610	0.3153687E+02	467	401.2092	0.5039063E+02
364	1197.5811	0.2441406E+02	416	795.5293	0.3141479E+02	468	393.4775	0.5039063E+02
120	0.1507636E+02	0.1423400E+02						
129	0.1723965E+02	0.1380286E+02						
136	0.2535057E+02	0.1655345E+02						
141	0.3165837E+02	0.2456126E+02						
146	0.2221326E+02	0.2209396E+02						

1	0.2380513E+02	0.[illegible]E+02
165	0.1272835E+02	0.1270845E+02
169	0.1252273E+02	0.1239671E+02
294	0.3643399E+02	0.1349112E+02
306	0.1800142E+02	0.1640291E+02
314	0.1566005E+02	0.1550749E+02
316	0.1607127E+02	0.1552739E+02
323	0.1993820E+02	0.1597893E+02
336	0.6726998E+02	0.1968616E+02
349	0.2306226E+02	0.2288080E+02
352	0.2190814E+02	0.2186835E+02
359	0.2481331E+02	0.2162956E+02
383	0.1041615E+03	0.2292296E+02
394	0.9130054E+02	0.7743134E+02
398	0.6696478E+02	0.6049117E+02
401	0.6731631E+02	0.6048453E+02
419	0.3410587E+02	0.3314412E+02
425	0.3685185E+02	0.3265991E+02

1

120	0.1269776E+02	0.1190080E+02
129	0.1494305E+02	0.1152531E+02
136	0.2374794E+02	0.1459821E+02
140	0.3011598E+02	0.2282071E+02
150	0.2174022E+02	0.2022292E+02
166	0.1075133E+02	0.1073601E+02
170	0.1058274E+02	0.1038350E+02
294	0.3791702E+02	0.1344108E+02
306	0.1820752E+02	0.1690480E+02
312	0.1608484E+02	0.1606186E+02
323	0.2013097E+02	0.1600821E+02
336	0.7226305E+02	0.2009265E+02
349	0.2482079E+02	0.2460622E+02
352	0.2380925E+02	0.2370963E+02
359	0.2686684E+02	0.2352571E+02
383	0.1168853E+03	0.2502768E+02
394	0.1024633E+03	0.8699153E+02
398	0.7643944E+02	0.6798705E+02
401	0.7614058E+02	0.6836253E+02
419	0.3843811E+02	0.3803963E+02
425	0.4063742E+02	0.3682120E+02

2

114	0.1139421E+02	0.1126112E+02
120	0.1158646E+02	0.1081748E+02
130	0.1372333E+02	0.1032947E+02
136	0.2238914E+02	0.1313191E+02
141	0.2879237E+02	0.2169409E+02
146	0.1909140E+02	0.1901746E+02
150	0.2055542E+02	0.1905443E+02
166	0.9686189E+01	0.9545702E+01
298	0.1242938E+02	0.1227410E+02
294	0.3684448E+02	0.1242198E+02
303	0.1559402E+02	0.1517996E+02
306	0.1653207E+02	0.1557184E+02

32[illegible]	0.1959[illegible]E+02	[illegible]E+02
336	0.6933388E+02	0.1955722E+02
349	0.2243350E+02	0.2230780E+02
352	0.2150925E+02	0.2133919E+02
359	0.2506578E+02	0.2133919E+02
383	0.1108514E+03	0.2350565E+02
394	0.9589326E+02	0.8143793E+02
398	0.6989583E+02	0.6239827E+02
401	0.6989583E+02	0.6271622E+02
419	0.3511427E+02	0.3439705E+02
425	0.3768001E+02	0.3342104E+02

3

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113	0.1029663E+02	0.1024170E+02
120	0.1021729E+02	0.9564209E+01
129	0.1250610E+02	0.9252930E+01
136	0.2185059E+02	0.1211548E+02
140	0.2816772E+02	0.2094727E+02
150	0.1891479E+02	0.1747437E+02
166	0.7751465E+01	0.7617188E+01
294	0.3718872E+02	0.1071167E+02
306	0.1497803E+02	0.1361084E+02
336	0.6826172E+02	0.1299438E+02
349	0.2126465E+02	0.2094116E+02
352	0.2043457E+02	0.2020264E+02
359	0.2467651E+02	0.2036743E+02
383	0.1070068E+03	0.2352295E+02
394	0.9476929E+02	0.8131104E+02
398	0.6964111E+02	0.6131592E+02
401	0.6911011E+02	0.6199951E+02
419	0.3223877E+02	0.3139038E+02
425	0.3521118E+02	0.3066406E+02

4

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0000010000000000000000000000000000020000000000001001000000200000000000000000000000000000000000000200000
2000000000000000001000002000000000000000000000000000000000000000000000000000200000000002000200
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130136141145150

10.21	10.10	10.00	9.91	9.83					
11.11	10.56	12.73	20.13	20.36	19.04	15.72	9.48	12.35	13.57
15.39	15.13	14.42	18.99	20.93	21.98	21.34	22.54	62.82	73.82
62.56	57.44	33.81	32.25	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

124165

130136141146150

13.62	13.46	13.32	13.19	13.08					
14.02	16.08	23.13	23.33	22.06	18.82	12.55	12.38	14.81	16.03
15.52	15.70	19.14	21.29	22.55	21.75	22.35	59.94	70.56	60.49
55.50	32.85	31.41	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

123164

130136141146150

11.41	11.29	11.19	11.10	11.02	10.62	10.38	14.90	16.53	16.04
11.74	13.72	21.34	21.85	15.96	66.93	79.39	68.17	62.35	37.43
19.68	22.35	24.31	23.65	24.36	0.0	0.0	0.0	0.0	0.0
35.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

124164

13013614114	6150								
8.98	8.74	8.55	8.35	8.19	12.95	7.53	11.97	13.28	18.26
10.11	9.41	11.25	19.35	19.64	61.66	56.07	31.03	31.63	0.0
20.69	20.29	22.16	62.85	73.31	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

123164

FOURIER TRANSFORM INFRARED SPECTROSCOPY -- NORMALIZED PEAK HEIGHT INFORMATION : FILE NUMBER 16

*** - DENOTES A VALID PEAK.
CB. - DENOTES A PEAK MEASURED FROM A "COMMON BASELINE".

PEAK NUMBER	DATA WORD	WAVE NUMBER	PEAK HEIGHT	BASELINE AMPLITUDE
1	120	3096.1021	1.0579338	14.0184288
*** 2 CB.	130	3008.9502	3.6027365	13.6160135
*** 3 CB.	136	2962.6589	11.8947153	13.4558554
*** 4 CB.	141	2924.0828	18.3359680	13.3223896
*** 5 CB.	146	2885.5068	9.0243320	13.1889248
*** 6 CB.	150	2854.6460	10.7229767	13.0821533
7	166	2731.2026	0.1757698	12.5525799
8	169	2708.0569	0.1459227	12.3769101
*** 9	294	1743.6558	21.6212769	14.8127050
*** 10	306	1651.0732	1.9715034	16.0298157
11	314	1589.3516	0.1426058	15.5174437
12	316	1573.9211	0.3681087	15.7031651
*** 13	323	1519.9148	0.7959442	19.1422577
*** 14	336	1419.6169	45.9919183	21.2879639
15	349	1319.3193	0.5129395	22.5493164
16	352	1296.1736	0.1556939	21.7522583
*** 17	359	1242.1672	2.4651947	22.3481140
*** 18	393	1057.0022	44.3265228	59.8350220
*** 19	394	972.1350	20.6452484	70.4552887
*** 20	398	941.2742	6.4769440	60.4878387
*** 21	401	918.1284	11.9130341	55.5032806
22	419	779.2544	1.2522734	32.9535919
*** 23	425	732.9634	5.4464474	31.4053650

FOURIER TRANSFORM INFRARED SPECTROSCOPY -- NORMALIZED PEAK HEIGHT INFORMATION : FILE NUMBER 20

*** - DENOTES A VALID PEAK.
CB. - DENOTES A PEAK MEASURED FROM A "COMMON BASELINE".

PEAK NUMBER	DATA WORD	WAVE NUMBER	PEAK HEIGHT	BASELINE AMPLITUDE
1	120	3084.1318	0.9578886	11.7398720
*** 2 CB.	130	3006.8142	3.4200430	11.4080601
*** 3 CB.	136	2960.4236	12.4571257	11.2908144
*** 4 CB.	141	2921.7649	18.6699829	11.1931105
*** 5 CB.	146	2883.1060	9.1964798	11.0954056
*** 6 CB.	150	2852.1790	10.7229776	11.0172415
7	166	2728.4707	0.2328259	10.6185064
8	170	2697.5437	0.2030725	10.3796721
*** 9	294	1738.8047	23.0211334	14.8958855
10	306	1646.0234	1.6773682	16.5301514
11	312	1599.6328	0.0398047	16.0350342
*** 12	323	1514.5835	0.5473633	19.5836029
*** 13	336	1414.0706	49.9136200	22.3494263
14	349	1313.5576	0.5134430	24.3073425
15	352	1290.3623	0.1609344	23.6483154
*** 16	359	1236.2400	2.5067139	24.3601227
*** 17	383	1050.6775	49.9581604	66.9271393
*** 18	394	965.6287	23.0735474	79.3897858
*** 19	398	934.7009	9.2644484	68.1747894
*** 20	401	911.5054	13.2904053	62.8501740
21	419	772.3340	1.0077057	37.4304047
*** 22	425	725.9434	5.3483[illegible]39	35.2491608

FOURIER TRANSFORM INFRARED SPECTROSCOPY -- NORMALIZED PEAK HEIGHT INFORMATION : FILE NUMBER 24

*** - DENOTES A VALID PEAK.
CB. - DENOTES A PEAK MEASURED FROM A "COMMON BASELINE".

PEAK NUMBER	DATA WORD	WAVE NUMBER	PEAK HEIGHT	BASELINE AMPLITUDE
1	114	3130.5225	0.2809744	11.1132374
2	120	3084.1318	1.0309410	10.5555153
*** 3 CB.	130	3006.8142	3.5085621	10.2147713
*** 4 CB.	136	2960.4236	12.2890711	10.1000738
*** 5 CB.	141	2921.7649	18.7878723	10.0044928
*** 6 CB.	146	2983.1060	9.1824894	9.9089108
*** 7 CB.	150	2852.1790	10.7229738	9.8324461
9	166	2728.4707	0.2107296	9.4754591
9	288	1785.1953	0.0813360	12.3480406
*** 10	294	1738.8047	23.2737274	13.5707464
11	303	1669.2187	0.1996393	15.3943853
12	306	1646.0234	1.4019089	15.1311569
13	311	1607.3647	0.0837994	14.4159079
*** 14	323	1514.5835	0.6020966	18.9920959
*** 15	336	1414.0706	48.4013824	20.9324951
16	345	1313.5576	0.4485779	21.9849243
17	352	1290.3623	0.1700592	21.3391876
*** 18	359	1236.2400	2.5230255	22.5427551
*** 19	393	1050.6775	49.0267639	62.6246460
*** 20	394	965.6292	22.0711517	73.8221130
*** 21	398	934.7009	7.3385925	62.5572357
*** 22	401	911.5056	12.4565277	57.4393005
23	419	772.3340	1.3028412	33.9114319
*** 24	425	725.9434	5.4251251	32.2548828

FOURIER TRANSFORM INFRARED SPECTROSCOPY -- NORMALIZED PEAK HEIGHT INFORMATION : FILE NUMBER 28

*** - DENOTES A VALID PEAK.
CB. - DENOTES A PEAK MEASURED FROM A "COMMON BASELINE".

PEAK NUMBER	DATA WORD	WAVE NUMBER	PEAK HEIGHT	BASELINE AMPLITUDE
1	113	3138.2542	0.1907387	10.1058922
2	120	3084.1318	0.8087158	9.4085693
*** 3 CB.	130	3006.8142	3.3512774	8.9778242
*** 4 CB.	136	2960.4236	13.1085663	8.7420197
*** 5 CB.	141	2921.7649	19.1827545	8.5455170
*** 6 CB.	146	2883.1060	9.4183207	8.3490133
*** 7 CB.	150	2852.1790	10.7229824	8.1918125
8	166	2728.4707	0.2217607	7.5297041
*** 9	294	1738.8047	25.2192535	11.9694595
10	306	1646.0234	1.7020082	13.2760191
*** 11	336	1414.0706	50.0033264	18.2583923
12	349	1313.5076	0.5696716	20.6949768
13	352	1290.3623	0.1495514	20.2850189
*** 14	359	1236.2400	2.5153351	22.1611786
*** 15	383	1050.6775	44.1548920	62.8519440
*** 16	394	965.4282	21.4562531	73.3130341
*** 17	398	934.7009	7.9833984	61.6577148
*** 18	401	911.5056	13.0371399	56.0729675
19	419	772.3340	1.2115479	31.0272217
*** 20	424	735.7434	3.3814392	31.6297607

FFTS ********** PEAK HEIGHT TABULATION FOR ALL THE FILES **********

DATA WORD	FILE 16	FILE 20	FILE 24	FILE 28	FILE 0	FILE 0	FILE 0	FILE 0	FILE 0	FILE 0
113	0.0	0.0	0.0	0.191	0.0	0.0	0.0	0.0	0.0	0.0
114	0.0	0.0	0.281	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120	1.058	0.958	1.031	0.909	0.0	0.0	0.0	0.0	0.0	0.0
130	3.603	3.420	3.505	3.351	0.0	0.0	0.0	0.0	0.0	0.0
136	11.895	12.457	12.289	13.109	0.0	0.0	0.0	0.0	0.0	0.0
141	18.336	18.670	18.788	19.183	0.0	0.0	0.0	0.0	0.0	0.0
146	9.024	9.196	9.182	9.418	0.0	0.0	0.0	0.0	0.0	0.0
150	10.723	10.723	10.723	10.723	0.0	0.0	0.0	0.0	0.0	0.0
166	0.176	0.133	0.211	0.222	0.0	0.0	0.0	0.0	0.0	0.0
169	0.146	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170	0.0	0.203	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
288	0.0	0.0	0.081	0.0	0.0	0.0	0.0	0.0	0.0	0.0
294	21.621	23.021	23.274	25.219	0.0	0.0	0.0	0.0	0.0	0.0
303	0.0	0.0	0.200	0.0	0.0	0.0	0.0	0.0	0.0	0.0
306	1.972	1.677	1.402	1.702	0.0	0.0	0.0	0.0	0.0	0.0
311	0.0	0.0	0.084	0.0	0.0	0.0	0.0	0.0	0.0	0.0
312	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
314	0.143	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
316	0.368	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
323	0.796	0.547	0.602	0.0	0.0	0.0	0.0	0.0	0.0	0.0
336	45.982	49.914	48.401	50.003	0.0	0.0	0.0	0.0	0.0	0.0
349	0.513	0.513	0.449	0.570	0.0	0.0	0.0	0.0	0.0	0.0
352	0.154	0.161	0.170	0.150	0.0	0.0	0.0	0.0	0.0	0.0
356	2.465	2.507	2.523	2.515	0.0	0.0	0.0	0.0	0.0	0.0
393	44.327	49.958	48.027	44.155	0.0	0.0	0.0	0.0	0.0	0.0

FTIS ********** PEAK HEIGHT TABULATION FOR ALL THE FILES **********

DATA WORD	FILE 16	FILE 20	FILE 24	FILE 28	FILE 0	FILE 0	FILE 0	FILE 0	FILE 0	FILE 0
394	20.645	23.074	22.071	21.456	0.0	0.0	0.0	0.0	0.0	0.0
398	6.477	8.265	7.339	7.983	0.0	0.0	0.0	0.0	0.0	0.0
401	11.813	13.290	12.457	13.037	0.0	0.0	0.0	0.0	0.0	0.0
419	1.252	1.008	1.303	1.212	0.0	0.0	0.0	0.0	0.0	0.0
425	5.446	5.388	5.425	5.581	0.0	0.0	0.0	0.0	0.0	0.0

NORMAL END OF PEAK HEIGHT TABLE :
TOTAL NUMBER OF FILES LISTED = 4.

F490 - FTIS REGRESSION ANALYSIS

NO. OF VARIABLES 16 NO. OF DEPENDENT VARIABLES 4

NO. OF OBSERVATIONS 4

F LEVEL TO ENTER VARIABLE 4.060 F LEVEL TO REMOVE VARIABLE 3.780

TRANSFORMED DATA VALUES.

OBSERVATION / FTIS FILE NO.

1/16

3.60274 VAR(1)	11.89472 VAR(2)	18.33597 VAR(3)	9.02433 VAR(4)	21.62128 VAR(5)
45.98192 VAR(6)	2.46519 VAR(7)	44.32652 VAR(8)	20.64525 VAR(9)	6.47694 VAR(10)
11.81303 VAR(11)	5.44649 VAR(12)	1284.00000 VAR(13)	0.21400 VAR(14)	0.21100 VAR(15)
237.00000 VAR(16)				

2/20

3.42004 VAR(1)	12.45713 VAR(2)	18.66998 VAR(3)	9.19648 VAR(4)	23.02113 VAR(5)
49.91362 VAR(6)	2.50671 VAR(7)	49.95816 VAR(8)	23.07355 VAR(9)	8.26465 VAR(10)
13.29041 VAR(11)	5.38926 VAR(12)	1467.00000 VAR(13)	0.23100 VAR(14)	0.22900 VAR(15)
265.00000 VAR(16)				

3/24

3.50856 VAR(1)	12.28907 VAR(2)	18.78787 VAR(3)	9.18249 VAR(4)	23.27373 VAR(5)
48.40138 VAR(6)	2.52303 VAR(7)	48.02676 VAR(8)	22.07115 VAR(9)	7.33859 VAR(10)
12.45653 VAR(11)	5.42513 VAR(12)	1437.00000 VAR(13)	0.25100 VAR(14)	0.25100 VAR(15)
272.00000 VAR(16)				

4/28

3.35128 VAR(1)	13.10857 VAR(2)	19.18275 VAR(3)	9.41832 VAR(4)	25.21925 VAR(5)
50.00333 VAR(6)	2.51534 VAR(7)	44.15489 VAR(8)	21.45625 VAR(9)	7.99340 VAR(10)
13.03714 VAR(11)	3.59142 VAR(12)	1619.00000 VAR(13)	0.21500 VAR(14)	0.20900 VAR(15)
274.00000 VAR(16)				

MEAN	STD. DEV.	VARIABLE	DATA WORD / PHYS. PROP.
3.4707	0.1090E+00	1	130
12.4374	0.5058E+00	2	136
18.7441	0.3496E+00	3	141
9.2054	0.1624E+00	4	146
23.2838	0.1481E+01	5	294
48.5751	0.1878E+01	6	336
2.5026	0.2581E-01	7	359
46.6166	0.2855E+01	8	383
21.8115	0.1024E+01	9	394
7.5159	0.7937E+00	10	398
12.6493	0.6577E+00	11	401
4.9603	0.9196E+00	12	425
1451.7500	0.1373E+03	13	MODULUS
0.2277	0.1735E-01	14	STRAIN AT BREAK
0.2247	0.1947E-01	15	STRAIN AT MAXIMUM STRESS
262.0000	0.1711E+02	16	MAXIMUM STRESS

SIMPLE CORRELATION COEFFICIENTS. (ROW BY COL.)

1.0000	R(1, 1)	-0.9571	R(1, 2)	-0.8816	R(1, 3)	-0.9358	R(1, 4)	-0.9030	R(1, 5)
-0.9560	R(1, 6)	-0.6975	R(1, 7)	-0.1330	R(1, 8)	-0.4932	R(1, 9)	-0.9153	R(1,10)
-0.9133	R(1,11)	0.7472	R(1,12)	-0.9676	R(1,13)	0.0744	R(1,14)	0.1405	R(1,15)
-0.9054	R(1,16)								
1.0000	R(2, 2)	0.9581	R(2, 3)	0.9928	R(2, 4)	0.9780	R(2, 5)	0.8465	R(2, 6)
0.6615	R(2, 7)	-0.1275	R(2, 8)	0.7453	R(2, 9)	0.7627	R(2,10)	0.7568	R(2,11)
-0.8956	R(2,12)	0.9877	R(2,13)	-0.1700	R(2,14)	-0.2348	R(2,15)	0.7779	R(2,16)
1.0000	R(3, 3)	0.9819	R(3, 4)	0.9959	R(3, 5)	0.8014	R(3, 6)	0.7924	R(3, 7)
-0.1103	R(3, 8)	0.2225	R(3, 9)	0.6798	R(3,10)	0.6600	R(3,11)	-0.8447	R(3,12)
0.9725	R(3,13)	0.0444	R(3,14)	-0.0187	R(3,15)	0.8738	R(3,16)		
1.0000	R(4, 4)	0.9926	R(4, 5)	0.8376	R(4, 6)	0.7160	R(4, 7)	-0.1230	R(4, 8)
0.2383	R(4, 9)	0.7375	R(4,10)	0.7262	R(4,11)	-0.8841	R(4,12)	0.9897	R(4,13)
-0.0927	R(4,14)	-0.1574	R(4,15)	0.8193	R(4,16)				
1.0000	R(5, 5)	0.8062	R(5, 6)	0.7459	R(5, 7)	-0.1460	R(5, 8)	0.2019	R(5, 9)
0.6912	R(5,10)	0.6757	R(5,11)	-0.8798	R(5,12)	0.9815	R(5,13)	-0.0376	R(5,14)
-0.1009	R(5,15)	0.9408	R(5,16)						
1.0000	R(6, 6)	0.9041	R(6, 7)	0.4133	R(6, 8)	0.7215	R(6, 9)	0.9827	R(6,10)
0.9751	R(6,11)	-0.5285	R(6,12)	0.9007	R(6,13)	0.1816	R(6,14)	0.1181	R(6,15)
0.9740	R(6,16)								
1.0000	R(7, 7)	0.4384	R(7, 8)	0.6263	R(7, 9)	0.7199	R(7,10)	0.6851	R(7,11)
-0.3439	R(7,12)	0.7674	R(7,13)	0.6247	R(7,14)	0.5719	R(7,15)	0.9845	R(7,16)
1.0000	R(8, 8)	0.9267	R(8, 9)	0.5119	R(8,10)	0.5025	R(8,11)	0.5543	R(8,12)
0.0922	R(8,13)	0.7169	R(8,14)	0.7084	R(8,15)	0.3537	R(8,16)		
1.0000	R(9, 9)	0.7972	R(9,10)	0.7999	R(9,11)	0.2066	R(9,12)	0.3595	R(9,13)
0.5762	R(9,14)	0.5443	R(9,15)	0.5350	R(9,16)				
1.0000	R(10,10)	0.9997	R(10,11)	-0.4164	R(10,12)	0.8151	R(10,13)	0.1606	R(10,14)
0.1014	R(10,15)	0.7869	R(10,16)						
1.0000	R(11,11)	-0.4170	R(11,12)	0.8037	R(11,13)	0.1214	R(11,14)	0.0628	R(11,15)
0.7569	R(11,16)								

1.0000	R(12,12)	-0.8250	R(12,13)	0.4826	R(12,14)	0.5330	R(12,15)	-0.4825	R(12,16)
1.0000	R(13,13)	-0.0167	R(13,14)	-0.0830	R(13,15)	0.8655	R(13,16)		
1.0000	R(14,14)	0.9978	R(14,15)	0.4864	R(14,16)				
1.0000	R(15,15)	0.4274	R(15,16)						
1.0000	R(16,16)								

TRIAL NUMBER 1 FOR VARIABLE (13)

PURE CONST. B(0) = 0.1452E+04

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

STANDARD ERROR OF COEFFICIENTS

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0			

STANDARD ERROR OF ESTIMATE

0.1373E+03

TRIAL NUMBER 2

VARIABLE GOING IN = 4

F LEVEL 143.0815

PURE CONST. B(0) = -0.6252E+04

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.8369E+03	B(4)	0.0	B(5)
0.0	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

STANDARD ERROR OF COEFFICIENTS

0.0	0.0	0.0	0.8569E+02	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0			

STANDARD ERROR OF ESTIMATE

0.2410E+02

TRIAL NUMBER 3

VARIABLE GOING IN = 6

F LEVEL 10.3992

PURE CONST. B(0) = -0.5539E+04

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.6667E+03	B(4)	0.0	B(5)
0.1756E+02	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)

0.0 B(11) 0.0 B(12)

STANDARD ERROR OF COEFFICIENTS

0.0		0.0			
0.7707E+01		0.0	0.0	0.8914E+02	0.0
0.0		0.0	0.0	0.0	0.0

STANDARD ERROR OF ESTIMATE

0.1369E+02

MULTIPLE CORRELATION COEFFICIENT

0.99834

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.6667E+03	B(4)	0.0	B(5)
0.1756E+02	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

ACTUAL VS. PREDICTED RESULTS FOR VARIABLE (13)

OBSERVATION	ACTUAL	PREDICTED	DEVIATION
1	1284.0000	1285.4805	-1.4805
2	1467.0000	1469.3125	-2.3125
3	1437.0000	1433.4219	3.5781
4	1619.0000	1618.7930	0.2070

MEAN = 1451.75000 STD. DEV. = 137.311081 COEFFICIENT OF VARIATION = 0.094583

TRIAL NUMBER 1 FOR VARIABLE (14)

PURE CONST. B(0) = 0.2277E+00

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

STANDARD ERROR OF COEFFICIENTS

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0			

STANDARD ERROR OF ESTIMATE

0.1735E-01

MULTIPLE CORRELATION COEFFICIENT

0.0

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

ACTUAL VS. PREDICTED RESULTS FOR VARIABLE (14)

OBSERVATION	ACTUAL	PREDICTED	DEVIATION
1	0.2140	0.2277	-0.0137
2	0.2310	0.2277	0.0033
3	0.2510	0.2277	0.0233
4	0.2150	0.2277	-0.0127

MEAN = 0.227750 STD. DEV. = 0.017347 COEFFICIENT OF VARIATION = 0.076165

TRIAL NUMBER 1 FOR VARIABLE (15)

PURE CONST. B(0) = 0.2247E+00

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

STANDARD ERROR OF COEFFICIENTS

0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	
0.0	0.0				

STANDARD ERROR OF ESTIMATE

0.1947E-01

MULTIPLE CORRELATION COEFFICIENT

0.0

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

ACTUAL VS. PREDICTED RESULTS FOR VARIABLE (15)

OBSERVATION	ACTUAL	PREDICTED	DEVIATION
1	0.2110	0.2247	-0.0137
2	0.2280	0.2247	0.0033
3	0.2510	0.2247	0.0263
4	0.2090	0.2247	-0.0157

MEAN = 0.224750 STD. DEV. = 0.019466 COEFFICIENT OF VARIATION = 0.086610

TRIAL NUMBER 1 FOR VARIABLE (16)

PURE CONST. B(0) = 0.2620E+03

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.0	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

STANDARD ERROR OF COEFFICIENTS

0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0			

STANDARD ERROR OF ESTIMATE

0.1711E+02

TRIAL NUMBER 2

VARIABLE GOING IN = 7

F LEVEL 94.3252

PURE CONST. B(0) = -0.1371E+04

COEFFICIENTS

0.0	B(1)	0.0	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.6525E+03	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

STANDARD ERROR OF COEFFICIENTS

0.0	0.0	0.0	0.0	0.0
0.0	0.8228E+02	0.0	0.0	0.0
0.0	0.0			

STANDARD ERROR OF ESTIMATE

0.3679E+01

TRIAL NUMBER 3

VARIABLE GOING IN = 2

F LEVEL 25.2573

PURE CONST. B(0) = -0.1219E+04

COEFFICIENTS

0.0	B(1)	0.7621E+01	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.5537E+03	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)

0.0 B(11) 0.0 B(12)

STANDARD ERROR OF COEFFICIENTS

0.0	0.2145E+01	0.0	0.0	0.0
0.0	0.4203E+02	0.0	0.0	0.0
0.0	0.0			

STANDARD ERROR OF ESTIMATE

0.1409E+01

MULTIPLE CORRELATION COEFFICIENT

0.99987

COEFFICIENTS

0.0	B(1)	0.7621E+01	B(2)	0.0	B(3)	0.0	B(4)	0.0	B(5)
0.0	B(6)	0.5537E+03	B(7)	0.0	B(8)	0.0	B(9)	0.0	B(10)
0.0	B(11)	0.0	B(12)						

ACTUAL VS. PREDICTED RESULTS FOR VARIABLE (16)

OBSERVATION	ACTUAL	PREDICTED	DEVIATION
1	237.0000	237.1721	-0.1721
2	265.0000	264.4463	0.5537
3	272.0000	272.1968	-0.1968
4	274.0000	274.1846	-0.1846

MEAN = 262.000000 STD. DEV. = 17.107498 COEFFICIENT OF VARIATION = 0.065296

***** FTIS - NONLINEAR REGRESSION MODE FOR *****
DEPENDENT VARIABLE = VAR(13)

NO. OF VARIABLES 5 NO. OF DEPENDENT VARIABLES 1

NO. OF OBSERVATIONS 4

F LEVEL TO ENTER VARIABLE 8.530 F LEVEL TO REMOVE VARIABLE 5.540

TRANSFORMED DATA VALUES.

OBSERVATION / FTIS FILE NO.

1/16	9.02433 VAR(1)	81.43857 VAR(2)	45.98192 VAR(3)	2114.33667 VAR(4)	1284.00000 VAR(5)
2/20	9.19648 VAR(1)	84.57523 VAR(2)	49.91362 VAR(3)	2491.36938 VAR(4)	1467.00000 VAR(5)
3/24	9.18249 VAR(1)	84.31810 VAR(2)	49.40138 VAR(3)	2342.69360 VAR(4)	1437.00000 VAR(5)
4/28	9.41832 VAR(1)	88.70476 VAR(2)	50.00333 VAR(3)	2500.33252 VAR(4)	1619.00000 VAR(5)

MEAN	STD. DEV.	VARIABLE
9.2054	0.1024E+00	1
84.7592	0.2990E+01	2
48.5751	0.1878E+01	3
2362.1816	0.1804E+03	4
1451.7500	0.1375E+03	5

SIMPLE CORRELATION COEFFICIENTS. (ROW BY COL.)

1.0000	R(1, 1)	0.9982	R(1, 2)	0.8376	R(1, 3)	0.8379	R(1, 4)	0.9897	R(1, 5)
1.0000	R(2, 2)	0.8352	R(2, 3)	0.8365	R(2, 4)	0.9910	R(2, 5)		
1.0000	R(3, 3)	1.0003	R(3, 4)	0.9007	R(3, 5)				
1.0000	R(4, 4)	0.9010	R(4, 5)						
1.0000	R(5, 5)								

TRIAL NUMBER 1 FOR VARIABLE (5)

PURE CONST. B(0) = 0.1452E+04

COEFFICIENTS

0.0 B(1) 0.0 B(2) 0.0 B(3) 0.0 B(4)

STANDARD ERROR OF COEFFICIENTS

0.0 0.0 0.0 0.0

STANDARD ERROR OF ESTIMATE

0.1373E+03

TRIAL NUMBER 2

VARIABLE GOING IN = 2

F LEVEL 163.9341

PURE CONST. B(0) = -0.2406E+04

COEFFICIENTS

0.0 B(1) 0.4551E+02 B(2) 0.0 B(3) 0.0 B(4)

STANDARD ERROR OF COEFFICIENTS

0.0 0.4353E+01 0.0 0.0

STANDARD ERROR OF ESTIMATE

0.2254E+02

TRIAL NUMBER 3

VARIABLE GOING IN = 3

F LEVEL 102.2383

PURE CONST. B(0) = -0.2478E+04

COEFFICIENTS

0.0 B(1) 0.3625E+02 B(2) 0.1765E+02 B(3) 0.0 B(4)

STANDARD ERROR OF COEFFICIENTS

0.0 0.1551E+01 0.2469E+01 0.0

STANDARD ERROR OF ESTIMATE

0.4416E+01

MULTIPLE CORRELATION COEFFICIENT

0.99983

**** CONCLUSION . NON-LINEAR REGRESSION MODEL PROVIDES THE BEST FIT FOR VARIABLE (13) .
****

ACTUAL VS. PREDICTED RESULTS FOR VARIABLE (5)

OBSERVATION	ACTUAL	PREDICTED	DEVIATION
1	1284.0000	1285.6121	-1.6121
2	1467.0000	1468.7078	-1.7078
3	1437.0000	1432.6968	4.3032
4	1619.0000	1619.9836	-0.9836

MEAN = 1451.75000 STD. DEV. = 137.311081 COEFFICIENT OF VARIATION = 0.094583

***** FTIS - NONLINEAR REGRESSION MODE FOR *****
DEPENDENT VARIABLE = VAR(16)

NO. OF VARIABLES 5 NO. OF DEPENDENT VARIABLES 1

NO. OF OBSERVATIONS 4

F LEVEL TO ENTER VARIABLE 8.530 F LEVEL TO REMOVE VARIABLE 5.540

TRANSFORMED DATA VALUES.

OBSERVATION / FTIS FILE NO.

1/16
11.82472 VAR(1) 141.48424 VAR(2) 2.46519 VAR(3) 6.07718 VAR(4) 237.00000 VAR(5)

2/20
12.45713 VAR(1) 155.17998 VAR(2) 2.50671 VAR(3) 6.28361 VAR(4) 265.00000 VAR(5)

3/24
12.28907 VAR(1) 151.02126 VAR(2) 2.52303 VAR(3) 6.36566 VAR(4) 272.00000 VAR(5)

4/28
13.10857 VAR(1) 171.83450 VAR(2) 2.51534 VAR(3) 6.32691 VAR(4) 274.00000 VAR(5)

MEAN	STD. DEV.	VARIABLE
12.4374	0.5058E+00	1
154.8799	0.1267E+02	2
2.5026	0.2581E-01	3
6.2633	0.1286E+00	4
262.0000	0.1711E+02	5

SIMPLE CORRELATION COEFFICIENTS. (ROW BY COL.)

1.0000	R(1, 1)	1.0001	R(1, 2)	0.6615	R(1, 3)	0.6619	R(1, 4)	0.7779	R(1, 5)
1.0000	R(2, 2)	0.6515	R(2, 3)	0.6514	R(2, 4)	0.7698	R(2, 5)		
1.0000	R(3, 3)	0.9991	R(3, 4)	0.9845	R(3, 5)				
1.0000	R(4, 4)	0.9849	R(4, 5)						
1.0000	R(5, 5)								

```
TRIAL NUMBER      1   FOR VARIABLE ( 5)
PURE CONST. B(0) =    0.2620E+03
COEFFICIENTS
  0.0         B( 1)      0.0         B( 2)      0.0         B( 3)      0.0         B( 4)
STANDARD ERROR OF COEFFICIENTS
  0.0                    0.0                    0.0                    0.0
STANDARD ERROR OF ESTIMATE
         0.1711E+02

TRIAL NUMBER      2
VARIABLE GOING IN  =      4
F LEVEL                  97.1742
PURE CONST. B(0) =  -0.5587E+03
COEFFICIENTS
  0.0         B( 1)      0.0         B( 2)      0.0         B( 3)      0.1310E+03 B( 4)
STANDARD ERROR OF COEFFICIENTS
  0.0                    0.0                    0.0                    0.1628E+02
STANDARD ERROR OF ESTIMATE
         0.3626E+01

TRIAL NUMBER      3
VARIAB   GOING IN  =      2
F LEVEL                  41.1636
PURE CONST. B(0) =  -0.4844E+03
COEFFICIENTS
  0.0         B( 1)      0.3006E+00 B( 2)      0.0         B( 3)      0.1117E+03 B( 4)
STANDARD ERROR OF COEFFICIENTS
  0.0                    0.6627E-01             0.0                    0.6531E+01
STANDARD ERROR OF ESTIMATE
         0.1104E+01
```

MULTIPLE CORRELATION COEFFICIENT

0.99931

**** CONCLUSION : NON-LINEAR REGRESSION MODEL PROVIDES THE BEST FIT FOR VARIABLE (16) .
****

ACTUAL VS. PREDICTED RESULTS FOR VARIABLE (5)

OBSERVATION	ACTUAL	PREDICTED	DEVIATION
1	237.0000	237.1731	-0.1731
2	265.0000	264.3555	0.6445
3	272.0000	272.2717	-0.2717
4	274.0000	274.2000	-0.2000

MEAN = 262.000000 STD. DEV. = 17.107498 COEFFICIENT OF VARIATION = 0.065296

6.0 E410 - COMPUTER PROGRAM DESCRIPTION

E410 is designed to create and maintain a permanent file for solid propellant mechanical properties. Once established, this file will be utilized for optional input to the E490 computer program.

This FORTRAN code consists of two parts, a main and a subroutine called RENAME. The main program creates the initial file and prints out data contained in the file. RENAME is designed strictly for updating or accessing an existing propellant file.

7.0 E410 - INPUT INSTRUCTIONS

E410 is always executed utilizing one of two possible run modes; the CREATE mode for building a new propellant file or the UPDATE mode designed to update or access an existing file.

7.0.1 CREATE MODE

The first card in the input deck must have CREATE in the first six columns. This tells the computer to stay in the main program.

The second card is the title of the chart that is printed when the data set is established. The title can be 40 alphanumeric characters long. It is read in on a 10A4 format.

The next sequence of three cards is repeated for each set of data. The first 15 columns on data card type 1 are ignored. Any comments with alphanumeric data can be placed here. The next five columns are allocated to the specimens age and the next two sets of ten columns are allocated for the aging temperature and test temperature respectively. This card is read with an (A8,7X,I5,2I10) format.

Data cards 2 & 3 are used to input the values for modulus, strain at break, strain at maximum stress, maximum stress, strain energy density and strain endurance respectively. Ten columns are allocated for each of these plus four extra variables that can be allocated later. Five variables are read from each of

these cards. Only the first 50 columns are read on each. All five fields are end to end. The format is (5(F10.3)) for both cards.

7.0.2 UPDATE MODE

In this mode, the first card in the input deck must have UPDATE in the first six columns. Also, tht title card is eliminated and the first of the three data cards is changed. Data card 1 in this mode should contain the action to be performed in the first 8 columns, skip the next two columns, and have the line number that the action is to be performed on in the next five columns. These two new inputs replace the columns ignored on the first data card in the CREATE mode. The remainder of this card and the two following data cards are the same as in the CREATE mode.

All actions should be nested together by type, and these groups then input ONLY in the following sequence;

1. All CHANGE cards.
2. All ADD cards.
3. All DELETE cards.

If there are no CHANGE cards in the input, then the proper input sequence should be all the ADD cards first, then any DELETE cards next. This correct sequencing of the input cards is mandatory in order to maintain the integrity of the existing properties file. Care should also be taken to put the proper data cards after the CHANGE and ADD action cards; the other action cards do not require any data other than the action and line number. All strings of actions need to be followed by either ENDLIST or ENDNOLST.

Action	Purpose
CHANGE - -	Changes data on specified line to the data following this action. [Requires data and line number]
ADD - -	Adds a line to data set. It will place the data on the line specified and move everything else down one record number. [Requires data and line number]
DELETE - -	Deletes line from data. [Requires line number only]
ENDLIST - -	Marks the end of all update actions and specifies that a listing of the data is desired. This action can be used as the only member in the string of actions if only a listing is desired. [Requires no other information]
ENDNOLST - -	Marks the end of all update actions and specifies no listing of data desired. [Requires no other information]

TABLE 3: TYPES OF ACTIONS PERFORMED ON PROPELLANT FILE DATA.

8.0 E410 - SAMPLE CASE

The card deck shown in Figure 5 is the CDC Job Control Language and input data that was used to create the propellant properties file listed in Table 4.

Card Column 1

```
                         E410 SAMPLE CASE
                         ----------------
SEQ,THA01.
THA,T100,P4.  IA,SMITHO,39
ATTACH,LGO,E410GO,ID=SMITHO,MR=1.
MAP,PART.
REQUEST,TAPE8,*PF.
LGO.
CATALOG,TAPE8,TPH8156V613,ID=SMITHO,RP=999.
CREATE
TEST CASE --- SEPT. 27, 1979.
ADD
                    2         77            77
     1119.0     0.0       24.00    165.4         0.0
        0.0         0.0      0.0      0.0        0.0
ADD
                    2         190           77
     0843.0     0.0       21.00    126.7         0.0
        0.0         0.0      0.0      0.0        0.0
ADD
                    2         170           77
      774.0     0.0       22.6     121.2         0.0
        0.0         0.0      0.0        0.0        0.0
ADD
                    2         150           77
      845.0     0.00      21.00    116.1      0.
        0.0         0.0      0.0        0.0        0.0
ADD
                    2         130           77
      773.0     0.0       23.3     117.8         0.0
        0.0         0.0      0.0        0.0        0.0
ADD
                    2         110           77
      932.0     0.0       24.3     144.9         0.0
        0.0         0.0      0.0        0.0        0.0
ADD
                    2         75            77
     1171.0     0.0       21.3     151.8         0.0
        0.0         0.0      0.0        0.0        0.0
ADD
                    4         190           77
     1428.      0.0       15.8     155.2         0.0
        0.0         0.0      0.0        0.0        0.0
ADD
                    4         170           77
     1041.0     0.0       15.0     134.0         0.0
        0.0         0.0      0.0        0.0        0.0
```

Figure 5. E410 - SAMPLE CASE

ADD		4	150	77	
	767.0	0.0	22.7	120.55	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		4	130	77	
	787.0	0.0	23.8	122.3	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		4	110	77	
	912.	0.0	24.9	150.2	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		4	75	77	
	1187.	0.0	24.1	163.4	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		8	190	77	
	2939.0	0.0	5.6	214.6	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		8	170	77	
	1401.0	0.0	15.1	149.6	0.00
	0	0.0	0.0	0.0	0.0
ADD		8	150	77	
	994.	0.0	19.0	122.6	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		8	130	77	
	764.0	0.0	23.2	121.8	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		8	110	77	
	1042.0	0.0	21.7	146.0	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		8	75	77	
	985.	0.0	25.5	152.7	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		13	190	77	
	3496.	0.0	8.3	225.5	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		13	170	77	
	1788.0	0.0	13.5	171.0	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		13	150	77	
	1017.	0.0	19.4	132.1	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		13	130	77	
	729.0	0.0	25.7	124.4	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		13	110	77	
	972.0	0.0	21.8	136.0	0.0
	0.0	0.0	0.0	0.0	0.0
ADD		13	75	77	
	1058.0	0.0	23.6	159.8	0.0
	0.0	0.0	0.0	0.0	0.0

Figure 5: E410 - SAMPLE CASE (Cont.)

FOURIER TRANSFORM INFRARED SPECTROSCOPY - E410 PHYSICAL PROPERTIES MASTER TAPE GENERATOR
(AFRPL/PCO - THIOKOL/HUNTSVILLE)

PROPERTIES FOR SOLID PROPELLANT TEST CASE --- SEPT. 27, 1970.

REC NO.	AGE	AGE TEMP	TEST TEMP	MODULUS	STRAIN AT BREAK	STRAIN AT MAXIMUM STRESS	MAXIMUM STRESS	STRAIN ENERGY DENSITY	STRAIN ENDURANCE				
	(WK)	(F)	(F)	(PSI)	(%)	(%)	(PSI)	(TRO)	(%)				
1	0	77	77	1119.000	0.0	24.000	165.400	0.0	0.0	0.0	0.0	0.0	0.0
2	2	190	77	943.000	0.0	21.000	126.700	0.0	0.0	0.0	0.0	0.0	0.0
3	2	170	77	774.000	0.0	22.600	121.200	0.0	0.0	0.0	0.0	0.0	0.0
4	2	150	77	845.000	0.0	21.000	116.100	0.0	0.0	0.0	0.0	0.0	0.0
5	2	130	77	773.000	0.0	23.300	117.800	0.0	0.0	0.0	0.0	0.0	0.0
6	2	110	77	932.000	0.0	24.300	144.900	0.0	0.0	0.0	0.0	0.0	0.0
7	2	75	77	1171.000	0.0	21.300	151.800	0.0	0.0	0.0	0.0	0.0	0.0
8	4	190	77	1428.000	0.0	15.900	155.200	0.0	0.0	0.0	0.0	0.0	0.0
9	4	170	77	1041.000	0.0	15.000	134.000	0.0	0.0	0.0	0.0	0.0	0.0
10	4	150	77	767.000	0.0	22.700	129.550	0.0	0.0	0.0	0.0	0.0	0.0
11	4	130	77	787.000	0.0	23.800	122.300	0.0	0.0	0.0	0.0	0.0	0.0
12	4	110	77	912.000	0.0	24.900	150.200	0.0	0.0	0.0	0.0	0.0	0.0
13	4	75	77	1187.000	0.0	24.100	163.400	0.0	0.0	0.0	0.0	0.0	0.0
14	8	90	77	2036.000	0.0	9.600	214.600	0.0	0.0	0.0	0.0	0.0	0.0
15	8	170	77	1401.000	0.0	15.100	140.600	0.0	0.0	0.0	0.0	0.0	0.0
16	8	150	77	904.000	0.0	19.300	127.600	0.0	0.0	0.0	0.0	0.0	0.0
17	8	130	77	764.000	0.0	23.200	121.800	0.0	0.0	0.0	0.0	0.0	0.0
18	8	110	77	1042.000	0.0	21.700	146.000	0.0	0.0	0.0	0.0	0.0	0.0
19		75	77	985.000	0.0	25.500	152.700	0.0	0.0	0.0	0.0	0.0	0.0
20	13	190	77	3464.000	0.0	8.800	225.000	0.0	0.0	0.0	0.0	0.0	0.0
21	13	170	77	1793.000	0.0	13.500	171.000	0.0	0.0	0.0	0.0	0.0	0.0
22	13	150	77	1317.000	0.0	19.400	132.100	0.0	0.0	0.0	0.0	0.0	0.0
23	13	130	77	720.000	0.0	25.700	134.400	0.0	0.0	0.0	0.0	0.0	0.0
24	13	110	77	973.000	0.0	21.800	135.000	0.0	0.0	0.0	0.0	0.0	0.0
25	13	75	77	1054.000	0.0	23.600	153.800	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 4: E410 SAMPLE CASE OUTPUT

APPENDIX A

FORTRAN SOURCE LISTINGS

```
      PROGRAM F490FIN(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE1,TAPE20
     X,TAPE21,TAPE22,TAPE23,TAPE24,TAPE25,TAPE26,TAPE27,TAPE11,TAPE12,TA
     XPE13,TAPE14,TAPE15,TAPE10)
C***********************************************************************
C***********************************************************************
C
C        F490 - FOURIER TRANSFORM INFRARED SPECTROSCOPY PROGRAM.
C
C              THIOKOL CORPORATION / HUNTSVILLE , ALABAMA 35807
C
C        PRINCIPAL INVESTIGATOR   W. W. SCHWARZ
C                                 TELEPHONE (205) - 882 - 8380
C
C        SCIENTIFIC  PROGRAMMER   O. C. SMITH
C                                 TELEPHONE (205)   882 - 8215
C
C***********************************************************************
C***********************************************************************
C
C        READS RPLMS FTIS DATA TAPES.
C
C        SEPTEMBER , 1979.
C
C        FORTRAN IV - B EXTENDED LANGUAGE
C
C        CDC 6600     - (AFRPL)
C
C***********************************************************************
C***********************************************************************
      COMMON /COPFIL/ COEFF(60),MPFILE(30),
     X                NUMSYS(10),NUMDEP,NUMEND,NUMOBS,IREG
      COMMON /SPECTR/ IFILE(30),NPT29(30)
      COMMON /POINTS/ NWORDS(30)
      COMMON /PTINF/  EMAX,EMIN,NORM
      COMMON /EWINPK/ ULIMIT(6),ZLIMIT(6),PFILE(6),NUMBER0,NUMBER
C
C$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
      DIMENSION AMPLTD(468),WAVENO(468),PRNAME(60),FACE(30)
      DIMENSION SPNORM(30),ATL(30),BNA(30),WW(30),DIFF(30)
      DIMENSION ZLIMIT(6),INFILE(30),MPRECS(30),NPHOTO(6),NPHYSP(10)
      DIMENSION WSA(132),IHEAD(101),IDATA(471)
      REAL LLIMIT(6)
      NAMELIST /FILES/ ITAPE,ITOTAL,INFILE,MULTPK,NPHOTO,LLIMIT,RLIMIT,
     X                 VALID,WAVNOR,MPDISK,MPRECS,NPHYSP,IPLOT,NMPLOT
      DATA INFILE /30*0/,
     X     NPHOTO /6*0/,
     X     IPLOT  /0/,
     X     LLIMIT /6*0.0/,
     X     MPDISK /0/,
     X     MPRECS /30*0/,
```

```
      -     MULTPK /0/,                                                       0000054
      -     NMPLOT /0/,                                                       0000055
      -     NPHYSP /10*0/,                                                    0000056
      -     RLIMIT /6*0.0/,                                                   0000057
      -     VALID /.02/                                                       0000058
            DATA PRNAME /"MODU","LUS ","    ","    ","    ","    ",          0000059
           A             "STRA","IN A","T BR","EAK ","    ","    ",          0000060
           B             "STRA","IN A","T MA","XIMU","M ST","RESS",          0000061
           C             "MAXI","MUM ","STRE","SS  ","    ","    ",          0000062
           D             "STRA","IN E","NERG","Y DE","NSIT","Y   ",          0000063
           E             "STRA","IN E","NDUR","ANCE","    ","    ",          0000064
           F             "PHYS","ICAL"," PRO","PERT","Y NO","."  7 ",        0000065
           G             "PHYS","ICAL"," PRO","PERT","Y NO","."  8 ",        0000066
           H             "PHYS","ICAL"," PRO","PERT","Y NO","."  9 ",        0000067
           I             "PHYS","ICAL"," PRO","PERT","Y NO","." 10"/         0000068
      C
      C        CALL XFILE (PPL ,PROGRAM).
      C
            CALL XFILE(1,WSA,"(FT=T,USE=R,RECFM=U,BLKSIZE=942,LRECL=942)",1,2)0000069
            LLOC=0                                                          0000070
            JAX = 0                                                         0000071
            NORM=0                                                          0000072
            NORMCO = 0                                                      0000073
            READ(5,FILES)                                                   0000074
            N2=6                                                            0000075
            PKLOC = 65535.0E0                                               0000076
            NUMBER = ITOTAL                                                 0000077
            VALUE = VALID                                                   0000078
            DO 3 J8=1,463                                                   0000079
            AMPLTD(J8) = 0.0E0                                              0000080
            WAVENO(J8) = 0.0E0                                              0000081
          3 CONTINUE                                                        0000082
            DO 8 J7=1,40                                                    0000083
            DTL(J7) = 0.0E0                                                 0000084
            NPTS(J7) = 0                                                    0000085
            APNORM(J7) = 0.0E0                                              0000086
            ATL(J7) = 0.0E0                                                 0000087
            BNA(J7) = 0.0E0                                                 0000088
            X(J7) = 0.0E0                                                   0000089
          8 CONTINUE                                                        0000090
            IF (IPLOT.EQ.1.OR.NMPLOT.EQ.1) CALL PLOTS (0,0,8)               0000091
      C                                                                     0000092
      C        PRINT INPUT VARIABLES.                                       0000093
      C                                                                     0000094
            WRITE(N2,970)                                                   0000095
            WRITE(N2,972) ITAPE                                             0000096
            WRITE(N2,975) ITOTAL                                            0000097
            WRITE(N2,980) INFILE                                            0000098
            IF (MULTPK.NE.0) GO TO 20                                       0000099
            WRITE (N2,720)                                                  0000100
```

```
      GO TO 25                                                          0000091
   20 WRITE(N2,725) MULTPK                                              0000092
      DO 22 KK=1,MULTPK                                                 0000093
      WRITE (N2,730) KK,NPHOTO(KK),LLIMIT(KK),RLIMIT(KK)                0000100
   22 CONTINUE                                                          0000101
   25 WRITE(N2,981) WAVNOR                                              0000102
      V = VALID * 100.                                                  0000103
      WRITE (N2,995) V                                                  0000104
      IF (MPDISK.NE.0) GO TO 26                                         0000105
      WRITE (N2,735)                                                    0000106
      GO TO 27                                                          0000107
   26 MPDISK = MPDISK * 10                                              0000108
      WRITE (N2,740) MPDISK                                             0000109
      WRITE (N2,745) MPRECS                                             0000110
      WRITE (N2,750)                                                    0000111
C                                                                       0000112
      IS8 = 1                                                           0000113
      DO 28 IS1=1,10                                                    0000114
      IF (NPHYSP(IS1).EQ.0) GO TO 28                                    0000115
      IS2 = NPHYSP(IS1)                                                 0000116
      IS3 = IS2 * 6                                                     0000117
      IS4 = IS3 - 5                                                     0000118
      IS7 = IS8 + 5                                                     0000119
      ID = 0                                                            0000120
      DO 29 IS6 = IS8,IS7                                               0000121
      PRNAME(IS6) = PRNAME(IS4+ID)                                      0000122
      ID = ID + 1                                                       0000123
   29 CONTINUE                                                          0000124
      IS8 = IS8 + 5                                                     0000125
      WRITE (N2,760) IS3,(PRNAME(IS5),IS5=IS4,IS3)                      0000126
   28 CONTINUE                                                          0000127
C                                                                       0000128
   27 IREC = MPDISK                                                     0000129
      IF (IPLOT.EQ.1)  WRITE(N2,982)                                    0000130
      IF (NMPLOT.EQ.1) WRITE(N2,983)                                    0000131
      IF (IPLOT.EQ.0.AND.NMPLOT.EQ.0) WRITE(N2,984)                     0000132
      WRITE(N2,490)                                                     0000133
  490 FORMAT(1H1)                                                       AUG. 79
C                                                                       0000135
C        READ HEADER RECORD FROM FTIS FILE.                             0000136
C                                                                       0000137
      CALL XREAD(WSA,IHEAD,"(10I8I6I)",STATUS)                          0000459
C                                                                       AUG. 79
C        TEST FOR MATCHING FILE NUMBER.
C
      IF (IHEAD(1).EQ.INFILE(LLOC+1)) GO TO 9
      CALL XREAD(WSA,IDATA,"(47I8I6I)",STATUS)
      CALL XREAD(WSA,IHEAD,"(10I8I6I)",STATUS)
      IF (STATUS.NE.-2) STOP "EOF MARKER NOT FOUND."
      WRITE(6,985)
```

```
  995 FORMAT(/,2X,"EOF ENCOUNTERED",/)
      GO TO 5
    9 LLOC = LLOC + 1                                                    00001410
      WRITE(6,1000) IHEAD(1),STATUS,IHEAD
 1000 FORMAT(1HI,3X,"FILE ",I3,27X,"STATUS = ",F4.1,/,26(1X,4(I20,5X),/)
     X)
C                                                                        00001430
C         CALCULATION OF CONSTANTS.                                      00001440
C                                                                        00001450
      IFILE(LLOC) = IHEAD(1)
      NWORDS(LLOC) = IHEAD(5)
      NSPR = IHEAD(6)
      NEXP = IHEAD(7)
      NW = NWORDS(LLOC)                                                  00001500
C                                                                        00001510
      TEP1 = IHEAD(10)
      TEP2 = IHEAD(11)
      TEP3 = IHEAD(12)
      TEP4 = IHEAD(13)
      F=(2.**NEXP)/32768.0                                               00001520
      X1 = TEP1 + (TEP2/PKLOC)
      X2 = TEP3 + (TEP4/PKLOC)
      DELTA=(X2-X1)/(NW-1)                                               00001590
      WRITE(N2,900) X1,X2,DELTA                                          00001600
C                                                                        00001610
      CALL XREAD(NSA,IDATA,"(47I8)",STATUS)
C                                                                        00001670
C         CALCULATION OF WAVE NUMBER AND AMPLITUDE.                      00001680
C                              (X)              (Y)                     00001690
C                                                                        00001700
      DO 40 MI=1,NW                                                      00001710
      WAVENO(MI) = X1 + (MI-1) * DELTA                                   00001720
      AMPLTD(MI) = F * IDATA(MI+2)
   40 CONTINUE                                                           00001740
      WRITE(N2,940) IFILE(LLOC)                                          00001750
      K=0                                                                00001760
   50 K=K+1                                                              00001770
      K1=K+52                                                            00001780
      K2=K1+52                                                           00001790
      WRITE(N2,910) K,WAVENO(K),AMPLTD(K),K1,WAVENO(K1),AMPLTD(K1),K2,WA00001800
     1VENO(K2),AMPLTD(K2)                                                00001810
      IF (K.EQ.52) GO TO 55                                              00001820
      IF (K.EQ.208) GO TO 55                                             00001830
      IF (K.EQ.364) GO TO 70                                             00001840
      GO TO 50                                                           00001850
   55 WRITE(N2,940) IFILE(LLOC)                                          00001860
      K=K+104                                                            00001870
      GO TO 50                                                           00001880
C                                                                        00001890
   70 IF (AMOD(PK,2.0) GO TO 65                                          00001900
```

```
      DO 68 M6=1,6                                                      0000191
      ALIMIT(M6) = LLIMIT(M6)                                           0000192
      ZLIMIT(M6) = RLIMIT(M6)                                           0000193
      MFILE(M6)  = NPHOTO(M6)                                           0000194
   68 CONTINUE                                                          0000195
C                                                                       0000196
      DO 69 K=1,MULTPK                                                  0000197
      IF (ALIMIT(K).GT.WAVNOR.AND.ZLIMIT(K).LT.WAVNOR) GO TO 69         0000198
      GO TO 60                                                          0000199
   69 JAX = K                                                           0000200
      NORM(I) = 1                                                       0000201
   60 CONTINUE                                                          0000202
C                                                                       0000203
C.....                                                                  0000204
C                                                                       0000205
C.....WRITE INFORMATION FOR THIS FILE (IFILE()) TO PRIMARY FILE 20.     0000206
C                                                                       0000207
C.....                                                                  0000208
C                                                                       0000209
   6  WRITE(20) LLOC,AMPLTD,WAVENO                                      0000210
      IF (IPLOT.NE.1) GO TO 400                                         0000211
C        PLWAVE SUBROUTINE RESIDES HERE...
      CALL PLWAVE(ITAPE,IFILE(LLOC),NW,WAVENO,AMPLTD)
C                                                                       0000214
  400 CALL APCALC(AMPLTD,WAVENO,WAVNOR,LLOC,JAX,AM,W,BA,AP22)           0000215
C                                                                       0000216
      ILOC(LLOC) = AM                                                   0000217
      W(LLOC) = W                                                       0000218
      BNA(LLOC) = BA                                                    0000219
      APNORM(LLOC) = AP                                                 0000220
      DO(LLOC.GE.ITOTAL) GO TO 420                                      0000221
       CALL XREAD(WSS,IHEAD,"(I3,I6)",STATUS)                           AUG. 79
      IF (STATUS.NE.-2) STOP "EOF MARKER NOT FOUND."
      GO TO 5
  420 APMX = APNORM(1)                                                  0000230
      DO 430 K3=2,ITOTAL                                                0000240
      IF (APNORM(K3).LT.APMX) GO TO 430                                 0000250
      APMX = APNORM(K3)                                                 0000260
  430 CONTINUE                                                          0000270
C                                                                       0000280
C        CALCULATE THE  NORMALIZING  FACTOR FOR EVERY SPECTRUM.         0000290
C                                                                       0000300
      DO 440 MEM=1,ITOTAL                                               0000310
      FACTOR(MEM) = APMX / APNORM(MEM)                                  0000320
  440 CONTINUE                                                          0000330
C                                                                       0000340
      REWIND 20                                                         0000350
C                                                                       0000360
C        NORMALIZE ALL SPECTRAL FILES FROM ETIS TAPE.                   0000370
C                                                                       0000380
```

```
  445 READ(20) LI,AMPLTD,WAVENO                                          0000239
      XMIN = AMPLTD(1) * FACT(LI)                                        0000240
      XMAX = XMIN                                                        0000241
      NWWW = NWORDS(LI)                                                  0000242
      DO 460 L2=1,NWWW                                                   0000243
      AMPLTD(L2) = AMPLTD(L2) * FACT(LI)                                 0000244
      IF (AMPLTD(L2).GE.XMAX)  XMAX = AMPLTD(L2)                         0000245
      IF (AMPLTD(L2).LE.XMIN)  XMIN = AMPLTD(L2)                         0000246
  460 CONTINUE                                                           0000247
      DIFF(LI) = XMAX - XMIN                                             0000248
      IF (LI.EQ.1) FMIN = XMIN                                           0000249
      IF (LI.EQ.1) FMAX = XMAX                                           0000250
      IF (XMAX.GE.FMAX) FMAX = XMAX                                      0000251
      IF (XMIN.LE.FMIN) FMIN = XMIN                                      0000252
C                                                                        0000253
C........WRITE NEW DATA TO SECONDARY DISK FILE 21.                       0000254
C........(NORMALIZED AMPLITUDE = AMPLTD).                                0000255
C                                                                        0000256
      WRITE(21) LI,AMPLTD,WAVENO                                         0000257
C                                                                        0000258
      IF (LI.GE.ITOTAL) GO TO 450                                        0000259
      GO TO 445                                                          0000260
C                                                                        0000261
C         PRINT OUT NORMALIZATION INFORMATION.                           0000262
C                                                                        0000263
  450 LH = 1                                                             0000264
      LL=4                                                               0000265
                                                                         0000266
      REWIND 20                                                          0000267
      REWIND 21                                                          0000268
C                                                                        0000269
  460 WRITE(N2,860)                                                      0000270
      WRITE(N2,880) (IFILE(LW),LW=LH,LL)                                 0000271
      WRITE(N2,882) (VNDR(LW),LW=LH,LL)                                  0000272
      WRITE(N2,883) (WW(LW),LW=LH,LL)                                    0000273
      WRITE(N2,884) (BNA(LW),LW=LH,LL)                                   0000274
      WRITE(N2,885) (APNORM(LW),LW=LH,LL)                                0000275
      WRITE(N2,950) (FACT(LW),LW=LH,LL)                                  0000276
      IF (LL.EQ.ITOTAL) GO TO 470                                        0000277
        LH = LH + 4                                                      0000278
        LL = LL + 4                                                      0000279
      GO TO 480                                                          0000280
  470 NORM = 1                                                           0000281
C                                                                        0000282
C     LISTING OF NORMALIZED DATA.                                        0000283
C                                                                        0000284
  475 READ(21) M,AMPLTD,WAVENO                                           0000285
      WRITE(N2,941) IFILE(M)                                             0000286
      K=0                                                                0000287
  482 K=K+1                                                              0000288
```

```
      K1=K+52
      K2=K1+52
      WRITE(N2,930) K,WAVENO(K),AMPLTD(K),K1,WAVENO(K1),AMPLTD(K1),K2,WA
     1VENO(K2),AMPLTD(K2)
      IF (K.EQ.52)  GO TO 551
      IF (K.EQ.208) GO TO 551
      IF (K.EQ.364) GO TO 800
      GO TO 52
  551 WRITE(N2,941) IFILE(M)
      K=K+104
      GO TO 52
C
  800 IF (M.GE.ITOTAL) GO TO 300
      GO TO 475
  300 CONTINUE
      REWIND 21
      IF (NMPLOT.EQ.0) GO TO 500
  510 READ(21) L5,AMPLTD,WAVENO
      I65 = IFILE(L5)
      I75 = NWORDS(L5)
C
      CALL PLCURVE(ITAPE,I65,I75,WAVENO,AMPLTD)
      IF (L5.GE.ITOTAL) GO TO 500
      GO TO 510
C
  500 CONTINUE
      REWIND 21
      DO 600 I=1,ITOTAL
      CALL BASELN(DIFF,VALUE)
  600 CONTINUE
      REWIND 21
      REWIND 22
      REWIND 24
C
C.....      COMMON BASELINE SUBROUTINE.
C
      IF (MULPK.EQ.0) GO TO 700
C
      DO 610 I=1,MULPK
      CALL COBASE(DIFF,VALUE,IX)
  610 CONTINUE
C
  700 CALL PKTABL(IREG,ITOTAL,KOUNT)
C
C.........CHECK IF CORRELATION OPTION IS REQUESTED   (MPDISK.NE.0).
C
      IF (MPDISK.EQ.0) GO TO 650
C
C*********************************************************************
C.......CHECK HOW MANY PHYSICAL PROPERTIES ARE BEING EXAMINED.
```

```
C                                                                       0000349
      NUMDEP = 0                                                        0000350
      NUMIND = KOUNT                                                    0000351
      DO 625 I3=1,10                                                    0000352
      IF (NPHYSP(I3).NE.0) NUMDEP = NUMDEP + 1                          0000353
      NPHYS1(I3) = NPHYSP(I3)                                           0000354
  625 CONTINUE                                                          0000355
      NUMOBS = ITOTAL                                                   0000356
      DO 630 LL=1,NUMOBS                                                0000357
      MPFILE(LL) = MPRECS(LL)                                           0000358
  630 CONTINUE                                                          0000359
C                                                                       0000360
C.....CALL THE MULTIPLE LINEAR REGRESSION ROUTINE;                      0000361
C                                                                       0000362
      CALL REGRES                                                       0000363
C                                                                       0000364
C*****0000365
C                                                                       0000366
  650 IF (IPLOT.EQ.1.OR.NMPLOT.EQ.1)  CALL PLOT(0.,0.,999)
C                                                                       0000369
C.....FORMAT STATEMENTS.                                                0000370
C                                                                       0000371
  715 FORMAT(A2,6A,3A2,4X,4A2)                                          0000372
  720 FORMAT(/5X,"NUMBER OF  COMMON BASELINE  AREAS SPECIFIED   0.")     0000373
  725 FORMAT(//5X,"NUMBER OF  COMMON BASELINE  AREAS SPECIFIED   ",I1,"."0000374
     1)                                                                 0000375
  730 FORMAT(10X,"AREA ",I1," IS BEST PICTURED IN FILE ",I2," :",/,10X,"
     1EFT LIMIT ESTIMATE = ",F7.2,/,10X,"RIGHT LIMIT ESTIMATE = ",F7.2)
  735 FORMAT(/5X,"NO STATISTICAL CORRELATION WITH PHYSICAL PROPERTIES WI0000378
     1LL BE PERFORMED.    (NPDISK=0).")                                 0000379
  740 FORMAT(/5X,"STATISTICAL CORRELATION WITH PHYSICAL PROPERTIES HAS B0000380
     1EEN REQUESTED"//5X,"PHYSICAL PROPERTY INPUT DISK   FT",I2,"F001."0000381
     2)                                                                 0000382
  745 FORMAT(//5X,"PHYSICAL PROP. RECORD NUMBERS  ",10(I3,5X)/36X,10(I3,50000383
     1,/36X,10(I3,5X))                                                  0000384
  750 FORMAT(5X,"THE FOLLOWING PHYSICAL PROPERTIES WILL BE USED"/5X,"AS0000385
     1 DEPENDENT VARIABLES ")                                           0000386
  760 FORMAT(10X,"PROP. NO. ",I1," - ",6A4)                             0000387
  860 FORMAT(1H1,4X,"SUMMARY OF  AMPLITUDE  NORMALIZATION  "//          0000388
     1 4X,3("FILE",15X),"FILE"/5X,3("NO",18X),"NO")                     0000389
  870 FORMAT(4X,3(I3,17X),I3/)                                          0000390
  882 FORMAT(///7X,"MAXIMUM AMPLITUDE NEAREST ",F6.1,"  WN. = ",4(F15.7,50000391
     1X)/)                                                              0000392
  883 FORMAT(7X,"AVE NUMBER AT MAX. AMPLITUDE = (WNMAX) =  ",F10.4,3(100000393
     1X,F10.4)/)                                                        0000394
  884 FORMAT(7X,"BASELINE AMPLITUDE AT (WNMAX) = ",8X,4(E15.7,5X)/)     0000395
  885 FORMAT(7X,"PEAK HEIGHT AT (WNMAX) = ",15X,4(E15.7,5X)/)           0000396
  890 FORMAT(1H1,/(1X8I10))                                             0000397
  900 FORMAT(1X,3(5X,F10.4))                                            0000398
  930 FORMAT(6X,I3,4X,F10.4,2X,E15.7,2(7X,I3,4X,F10.4,2X,E15.7))        0000399
```

```
940 FORMAT(1H1,4X,"FTIS FILE NUMBER  ",I3,20X,"NON-NORMALIZED (PURE) S00004
   1PECTRAL DATA"//5X,3("DATA",8X,"WAVE",8X,"AMPLITUDE",8X)/          00004
   25X,3("WORD",7X,"NUMBER",24X)/)                                    00004
941 FORMAT(1H1,4X,"FTIS FILE NUMBER  ",I3,20X,"NORMALIZED SPECTRAL DAT00004
   1A"//5X,3("DATA",8X,"WAVE",8X,"AMPLITUDE",8X)/                     00004
   25X,3("WORD",7X,"NUMBER",24X)/)                                    00004
950 FORMAT(7X,"NORMALIZING FACTOR FOR THIS FILE = ",5X,4(E15.7,5X))    00004
970 FORMAT(1H1,4X,"FOURIER TRANSFORM INFRARED SPECTROSCOPY COMPUTER PR00004
   1OGRAM"/5X,"E490 - THIOKOL CORP. / HUNTSVILLE , ALABAMA 35807"///5X00004
   2,"INPUT DESCRIPTION "//)                                          00004
972 FORMAT(/5X,"NAME OF FTIS INPUT TAPE   ",A4)                       00004
975 FORMAT(/5X,"TOTAL NUMBER OF FILES (THIS RUN)   ",I3,".")          00004
980 FORMAT(/5X,"LIST OF FILES TO BE ANALYZED   ",10(I3,5X)/36X,10(I3,500004
   1X)/36X,10(I3,5X))                                                 00004
981 FORMAT(/5X,"NORMALIZING WAVE NUMBER    ",F6.1,".")                00004
982 FORMAT(/5X,"NON-NORMALIZED SPECTRAL PLOT HAS BEEN REQUESTED.")    00004
983 FORMAT(/5X,"NORMALIZED SPECTRAL PLOT HAS BEEN REQUESTED.")        00004
984 FORMAT(/5X,"NO SPECTRAL PLOTS HAVE BEEN REQUESTED.")              00004
985 FORMAT(/5X,"PEAK HEIGHT VALIDITY =",F4.1," PER CENT.")            00000
    STOP 0                                                           00004
    END                                                              00004
```

```
      SUBROUTINE APCAL(AMPLTD,WAVENO,WAVNOR,...M,JAX,APMAX,WE,D2,AP2)
C
C.....SEPTEMBER 4, 1972 - CDC REVISION.
C
C.....LOGIC WILL CALCULATE THE NORMALIZATION AMPLITUDE VALUE (APNORM)
C.....FOR THE PEAK NEAREST WAVE NUMBER (WAVNOR) CM-1.
C
      COMMON /SPECTR/ IFILE(30),NPT29(30)
      COMMON /TWINPK/ ALIMIT(6),ZLIMIT(6),MFILE(6),NORMCO,NUMBER
      DIMENSION AMPLTD(468),WAVENO(468),A(25)
      I=0
      J=0
      DO 1 JJ=1,25
    1 A(JJ) = 0.0E0
C
C.....SEARCH FOR MAXIMUM AMPLITUDE NEAREST TO WAVNOR.
C
    5 I=I+1
      IF (WAVENO(I).GT.(WAVNOR+20.0)) GO TO 5
      IF (WAVENO(I).LT.(WAVNOR-20.0)) GO TO 10
      IF (J.EQ.0) II=I-1
      J=J+1
      A(J) = AMPLTD(I)
      GO TO 5
C
   10 APMAX = A(1)
      DO 15 JJ=2,J
      IF (A(JJ).LT.APMAX) GO TO 15
      APMAX = A(JJ)
      IREF = JJ
   15 CONTINUE
      MK = II+IREF
      NPT29(IFN) = MK
C
C.....CHECK TO SEE IF A *COMMON BASELINE* IS TO BE USED
C.....AS THE NORMALIZATION AMPLITUDE.
C
      IF (NORMCO.EQ.1) GO TO 45
C
C.....NOW LOCATE *MINIMUM* POINTS ON BOTH SIDES OF APMAX PEAK.
C
      K=MK-1
   20 IF (AMPLTD(K).GT.AMPLTD(K-1)) GO TO 30
      K=K-1
      GO TO 20
   30 RMIN = AMPLTD(K+1)
      KMIN = K+1
C
      K = MK
   40 IF (AMPLTD(K+1).GT.AMPLTD(K)) GO TO 40
```

```
      K = K+1
      GO TO 35
   40 BMAX = AMPLTD(K)
      KMAX = K
      GO TO 100
C
C.........I  = THE I-TH DATA WORD IN THE SPECTRUM FILE.
C
   45 I=0
  200 I=I+1
      IF (WAVENO(I).GT.ALIMIT(JAX))GO TO 200
      IS = I
  210 IF (AMPLTD(I-1).GT.AMPLTD(I)) GO TO 220
      BMIN = AMPLTD(I-1)
      KMIN = I-1
      I=I-1
      GO TO 210
  220 I=IS
  230 IF (WAVENO(I+1).LE.ZLIMIT(JAX))GO TO 240
      I=I+1
      GO TO 230
  240 I=I+1
  245 IF (AMPLTD(I+1).GT.AMPLTD(I)) GO TO 250
      I=I+1
      GO TO 245
  250 BMAX = AMPLTD(I)
      KMAX = I
C
  100 CHGX = WAVENO(KMAX) - WAVENO(KMIN)
      CHGY = BMAX   B MIN
C
C.........CHECK FOR CHGY = 0.0.
C
      IF (CHGY.EQ.0.0E0) GO TO 110
C
C.........'MULTIPLE' TANGENTIAL CHECK.
C
      IF (BMIN.GT.BMAX) GO TO 80
C
C.........RIGHT = SHORT SIDE OF THE PEAK(S).
C
   75 SLOPE1 = (CHGY/CHGX)
      CY = BMAX - AMPLTD(KMIN+1)
      CX = WAVENO(KMAX) - WAVENO(KMIN+1)
      SLOPE2 = (CY/CX)
      SIGN = SLOPE1 * SLOPE2
      ZZ1 = ABS(SLOPE1)
      ZZ2 = ABS(SLOPE2)
      IF (SIGN.LT.0.0E0.OR.ZZ2.LT.ZZ1) GO TO 110
      BMIN = AMPLTD(KMIN+1)
```

```
      CHGX = CX
      CHGY = CY
      KMIN = KMIN + 1
      GO TO 75
C
C.........LEFT = SHORT SIDE OF THE PEAK(S).
C
   80 SLOPE1 = (CHGY/CHGX)
      CY = AMPLTD(KMAX-1) - BMIN
      CX = WAVENO(KMAX-1) - WAVENO(KMIN)
      SLOPE2 = (CY/CX)
      SIGN = SLOPE1 * SLOPE2
      ZZA = ABS(SLOPE1)
      ZZB = ABS(SLOPE2)
      IF (SIGN.LT.0.0E0.OR.ZZB.LT.ZZA) GO TO 110
      BMAX = AMPLTD(KMAX-1)
      CHGX = CX
      CHGY = CY
      KMAX = KMAX - 1
      GO TO 80
C
  110 D1 = (CHGY*(WAVENO(MK)-WAVENO(KMIN)))/CHGX
      D2 = D1 + BMIN
      AP2 = APMAX - D2
      WE = WAVENO(MK)
C
C.........SEND THE VALUES FOR (APMAX,WE,D2,AP2) BACK TO MAIN.
C
      RETURN
      END
```

```
      SUBROUTINE BASELN(DIFF,VALUE)                                          0000006
C                                                                            0000007
C     ...SEPTEMBER 13,1979 - REVISION FOR CDC 6600.                          0000008
C                                                                            0000009
      COMMON /POINTS/ NWORDS(30)                                             0000010
      DIMENSION AMPLTD(468),WAVENO(468),IDWORD(468)                          0000011
      DIMENSION CMIN1(50),CMIN2(50),PEAK(50),AB(50),HT(50),DIFF(30)          0000012
C**   ***********************************************************************0000013
C                                                                            0000014
C...  ...THIS SUBROUTINE SEARCHES FOR AND RECORDS VALID PEAKS                 0000015
C...  ...WITHIN EACH INDIVIDUAL SPECTRUM.                                    0000016
C                                                                            0000017
C***  ***********************************************************************0000018
C                                                                            0000019
C...  ...ALLOW FOR MAX. 50 PEAKS PER INDIVIDUAL SPECTRUM.                    0000020
C                                                                            0000021
C...  ...I  = THE I-TH DATA WORD IN THE SPECTRUM FILE.                       0000022
C                                                                            0000023
C...  ...IP = THE IP-TH VALID PEAK IN THE SPECTRUM (LEFT-RIGHT).            0000024
C                                                                            0000025
C...  ...IDWORD(IPK) =     0   NO PEAK AT DATA WORD "IPK".                  0000026
C                          1   INVALID PEAK AT DATA WORD "IPK".             0000027
C                          2   VALID PEAK AT DATA WORD "IPK".               0000028
C                          3   INVALID PEAK AT DATA WORD "IPK" , MEASURED   0000029
C                              BY THE  COBASE  SUBROUTINE.                  0000030
C                          4   VALID PEAK AT DATA WORD "IPK" , MEASURED     0000031
C                              BY THE  COBASE  SUBROUTINE.                  0000032
C                                                                            0000033
C***  ***********  ***********************************************************0000034
C                                                                            0000035
C...  ...INITIALIZE SOME VARIABLES.                                          0000036
C                                                                            0000037
      J = 0                                                                  0000038
      IP=0                                                                   0000039
      IPK=1                                                                  0000040
      DO 100 I=1,468                                                         0000041
      IDWORD(I) = 0                                                          0000042
  100 CONTINUE                                                               0000043
      DO 110 I= 1,50                                                         0000044
      AB(I) =  0.0                                                           0000045
      HT(I) = 0.0                                                            0000046
  110 CONTINUE                                                               0000047
      I = 0                                                                  0000048
C                                                                            0000049
C**********************************************************************      0000050
C                                                                            0000051
      READ(21) IF,AMPLTD,WAVENO                                              0000052
      NW = NWORDS(IF)                                                        0000053
C                                                                            0000054
   60 I=I+1                                                                  0000055
```

```
      IF (WAVENO(I).GT.3200.E0) GO TO 10                                00000560
   15 IF (WAVENO(I).LT.2700.E0) GO TO 90                                00000570
      IF (J.NE.0) GO TO 20                                              00000580
      CMIN1(IP) = AMPLTD(I)                                             00000590
      N1=I                                                              00000600
   20 IF (WAVENO(I+1).LT.700.E0.OR.(I+1).GE.NW) GO TO 130               00000610
      IF (AMPLTD(I+1).GT.AMPLTD(I)) GO TO 30                            00000620
      IF (J.NE.0) GO TO 40                                              00000630
      CMIN1(IP) = AMPLTD(I+1)                                           00000640
      N1=I+1                                                            00000650
      I=I+1                                                             00000660
      GO TO 20                                                          00000670
   30 J=1                                                               00000680
      I=I+1                                                             00000690
      GO TO 20                                                          00000700
   40 IOWEN=I                                                           00000710
      WRITE(6,400) IOWEN,AMPLTD(I),CMIN1(IP)                            00000720
  400 FORMAT(3X,I5,3X,F15.7,3X,E15.7)                                   00000730
      A = AMPLTD(I) - CMIN1(IP)                                         00000740
      PEAK(IP) = AMPLTD(I)                                              00000750
      IPK = I                                                           00000760
   50 IF (AMPLTD(I+1).GT.AMPLTD(I)) GO TO 60                            00000770
      I=I+1                                                             00000780
      GO TO 50                                                          00000790
   60 CMIN2(IP)= AMPLTD(I)                                              00000800
      N2=I                                                              00000810
      IMIN2 = N2                                                        00000820
      AMP2 = CMIN2(IP)                                                  00000830
      B = PEAK(IP) - AMP2                                               00000840
      C = AMAX1(A,B)                                                    00000850
      D22 = DIFF(IP) * VALUE                                            00000860
      IF (C.GT.D22) IOWORD(IPK) = 2                                     00000870
C                                                                       00000880
C        ****VALID PEAK BELOW ****                                      00000890
C        CALCULATE EQUATION FOR LINE CONNECTING TWO MINIMUM POINTS.     00000900
C                                                                       00000910
C        ADJUST BASELINE FOR THE TANGENTIAL CONDITION;                  00000920
C        THUS BASELINE MINIMUM POINTS WILL LIE ON THE TANGENT.          00000930
C                                                                       00000940
      CHGX = WAVENO(N2) - WAVENO(N1)                                    00000950
      CHGY = CMIN2(IP) - CMIN1(IP)                                      00000960
C                                                                       00000970
C        CHECK FOR A = B = C.                                           00000980
C                                                                       00000990
      IF (CHGY.EQ.0.0E0) GO TO 110                                      00001000
      IF (C.EQ.B)GO TO 80                                               00001010
C                                                                       00001020
C        B = SHORT SIDE OF THE IP-TH PEAK.                              00001030
C                                                                       00001040
   75 SLOPE1 = (CHGY/CHGX)                                              00001050
```

```
      CY = CMIN2(IP) - AMPLTD(N1+1)                                     00001060
      CX = WAVENO(N2) - WAVENO(N1+1)                                    00001070
      SLOPE2 = (CY/CX)                                                  00001080
      SIGN = SLOPE1 * SLOPE2                                            00001090
      ZZ1 = ABS(SLOPE1)                                                 00001100
      ZZ2 = ABS(SLOPE2)                                                 00001110
      IF (SIGN.LT.0.0E0.OR.ZZ2.LT.ZZ1) GO TO 110                        00001120
      CMIN1(IP) = AMPLTD(N1+1)                                          00001130
      CHGX = CX                                                         00001140
      CHGY = CY                                                         00001150
      N1 = N1 + 1                                                       00001160
      GO TO 75                                                          00001170
C                                                                       00001180
C        A = SHORT SIDE OF THE IP-TH PEAK.                              00001190
C                                                                       00001200
   80 SLOPE1 = (CHGY/CHGX)                                              00001210
      CY = AMPLTD(N2-1) - CMIN1(IP)                                     00001220
      CX = WAVENO(N2-1) - WAVENO(N1)                                    00001230
      SLOPE2 = (CY/CX)                                                  00001240
      SIGN = SLOPE1 * SLOPE2                                            00001250
      ZZ1 = ABS(SLOPE1)                                                 00001260
      ZZ2 = ABS(SLOPE2)                                                 00001270
      IF (SIGN.LT.0.0E0.OR.ZZ2.LT.ZZ1) GO TO 110                        00001280
      CMIN2(IP) = AMPLTD(N2-1)                                          00001290
      CHGX = CX                                                         00001300
      CHGY = CY                                                         00001310
      N2 = N2 - 1                                                       00001320
      GO TO 80                                                          00001330
C                                                                       00001340
      XX = (CHGY*(WAVENO(IPK)-WAVENO(N1)))/CHGX                         00001350
C                                                                       00001360
C        AB(IP) = AMPLITUDE OF THE BASELINE FOR THE IP TH PEAK.         00001370
C        HT(IP) = HEIGHT OF THE IP-TH PEAK.                             00001380
C                                                                       00001390
      AB(IP) = XX+CMIN1(IP)                                             00001400
      HT(IP) = PEAK(IP) - AB(IP)                                        00001410
      IF (IDWORD(IPK).EQ.2) GOTO 120                                    00001420
      IDWORD(IPK) = 1                                                   00001430
      IP = IP+1                                                         00001440
C                                                                       00001450
C        (AMP2,IMIN2) THE TRUE MINIMUM POINT ON THE RIGHT SIDE.         00001460
C                                                                       00001470
      CMIN1(IP) = AMP2                                                  00001480
      N1=IMIN2                                                          00001490
      I=I+1                                                             00001500
      GO TO 15                                                          00001510
C                                                                       00001520
   90 IF (WAVENO(I).LE.1800.E0) GO TO 100                               00001530
      I=I+1                                                             00001540
      GO TO 90                                                          00001550
```

```
  100 IF (WAVENO(I).LT.700.EQ.OR.I.GE.NW) GO TO 130                    0000156C
      IF (K.NE.0) GO TO 20                                             0000157C
      J=0                                                              0000158C
      CMINI(IP) = AMPLTD(I)                                            0000159C
      N1=I                                                             0000160C
      K=1                                                              0000161C
      GO TO 20                                                         0000162C
C                                                                      0000163C
C**********************************************************************0000164C
C                                                                      0000165C
C.....WRITE IDWORD INFORMATION TO THE DISK FILE 22.                    0000166C
C                                                                      0000167C
C**********************************************************************0000168C
C                                                                      0000169C
  130 WRITE(6,5000) IF                                                 0000170C
      WRITE(6,5001) IDWORD                                             0000171C
 5000 FORMAT (5X,I5)                                                   0000172C
 5001 FORMAT (5(/5X,100I1))                                            0000173C
      WRITE (22) IF,IDWORD                                             0000174C
      WRITE (24) IF,AB,H                                               0000175C
      RETURN                                                           0000176C
      END                                                              0000177C
```

```
      SUBROUTINE COBASE(DIFF,VALUE,JX)                                  000000
C                                                                       000000
C.........SEPTEMBER 28, 1979.   (CHANGED AT AF/RPL : OCT. 24, 1979).
C.........                                                              000000
C.........CDC REVISION.                                                 000000
C                                                                       000000
      COMMON /SPECTR/ IFILE(30),NPT29(30)                               000000
      COMMON /TWINPK/ ALIMIT(6),ZLIMIT(6),MFILE(6),NORMCO,NUMBER        000000
      DIMENSION AMPLTD(468),WAVENO(468),IDWORD(468),AB(50),HT(50)       000000
      DIMENSION EDGE1(25),EDGE2(25),ISPEC(29),JWORD(25),MASTER(25)      000000
      DIMENSION A(25),Y(50),Z(50),DIFF(30)                              000000
C     ------------------------------------------------------------------000000
C                                                                       000000
C.........COMMON BASELINE ROUTINE / MARCH 19, 1979.   (OCS)             000000
C                                                                       000000
C.........THIS SUBROUTINE IS A USER REQUESTED OPTION.                   000000
C.........THIS LOGIC IS UTILIZED TO ESTABLISH A  COMMON BASELINE        000000
C.........FOR ADJACENT SPECTRAL PEAKS.                                  000000
C                                                                       000000
C-------------------- ------------------------------------------------000000
C                                                                       000000
C.........I  = THE I-TH DATA WORD IN THE SPECTRUM FILE.                 000000
C                                                                       000000
C.........IP = THE IP-TH PEAK IN THE COMMON BASELINE (LEFT-TO-RIGHT).   000000
C                                                                       000000
C.........MAXIMUM NUMBER OF PEAKS PER BASELINE = 25.                    000000
C                                                                       000000
C.........MAXIMUM NUMBER OF  COMMON BASELINES  PER COMPUTER RUN = 6.    000000
C                                                                       000000
C - - - - ---- -------- ------------------------------------------------000000
C                                                                       000000
      DO 2 J2=1,29                                                      000000
      ISPEC(J2) = 0                                                     000000
    2 CONTINUE                                                          000000
C                                                                       000000
C.........BEGIN BY SEARCHING FOR THE FILE (MFILE(JX)) WITH THE OPTIMUM  000000
C.........PICTURE OF THE MULTIPLE PEAKS.                                000000
C                                                                       000000
      IB = 1                                                            000000
      DO 5 I = 1,NUMBER                                                 000000
      IF (IFILE(I).EQ.MFILE(JX)) GO TO 4                                000000
      ISPEC(IB) = I                                                     000000
      IB = IB + 1                                                       000000
      GO TO 5                                                           000000
    4 IF = I                                                            000000
    5 CONTINUE                                                          000000
      MAXX=NUMBER - 1                                                   000000
      LOOP = 1                                                          000000
C                                                                       000000
C     READ FROM THE NORMALIZED FILE   21.                               000000
```

```
C                                                                       00000
     6 READ (21) IX,AMPLTD,WAVENO                                       00000
       READ (22) IX,IDWORD                                              00000
       READ (24) IX,AB,HT                                               00000
       IF (IX.EQ.IF) GOTO 7                                             00000
C                                                                       00000
C      WRITE TO UPDATED IDWORD FILE   23.                               00000
C                                                                       00000
       WRITE (23) IX,IDWORD                                             00000
       WRITE (25) IX,AB,HT                                              00000
       GO TO 6                                                          00000
C                                                                       00000
     7 I=0                                                              00000
       IP=1                                                             00000
       IVALID = 0                                                       00000
    10 I=I+1                                                            00000
       IF (WAVENO(I).GT.ALIMIT(JX)) GO TO 10                            00000
       IS = I                                                           00000
    20 IF (AMPLTD(I-1).GT.AMPLTD(I)) GO TO 30                           00000
       EDGE1(IP) = AMPLTD(I-1)                                          00000
       NI=I-1                                                           00000
       I=I-1                                                            00000
       GO TO 20                                                         00000
    30 I=IS                                                             00000
    35 IF (AMPLTD(I+1).LT.AMPLTD(I)) GO TO 40                           00000
       I=I+1                                                            00000
       GO TO 35                                                         00000
    40 JWORD(IP) = I                                                    00000
       ALEFT = AMPLTD(I) - EDGE1(IP)                                    00000
    55 IF (AMPLTD(I+1).GT.AMPLTD(I)) GO TO 60                           00000
       I=I+1                                                            00000
       GO TO 55                                                         00000
C                                                                       00000
C.........TAKE INTO ACCOUNT THE POSSIBILITY OF A DISAPPEARING 2-ND PEAK. 00000
C.........JULY , 1979.                                                  00000
C                                                                       00000
    60 IF (WAVENO(I).LE.ZLIMIT(JX)) GO TO 600                           00000
       EDGE2(IP)= AMPLTD(I)                                             00000
C                                                                       00000
C.........FINISHED DEFINING THE FIRST PEAK.                             00000
C                                                                       00000
    62 IP=IP+1                                                          00000
       EDGE1(IP)=EDGE2(IP-1)                                            00000
C                                                                       00000
    65 IF (AMPLTD(I+1).LT.AMPLTD(I)) GO TO 70                           00001
       I=I+1                                                            00001
       GO TO 65                                                         00001
    70 JWORD(IP) = I                                                    00001
    71 IF (AMPLTD(I+1).GT.AMPLTD(I)) GO TO 75                           00001
       I=I+1                                                            00001
```

```
      GO TO 85
   75 EDGE2(IP) = AMPLTD(I)
      N2 = I
      IF (WAVENO(I).LE.LIMIT(JX)) GO TO 80
      GO TO 62
C
   80 EDGE2(NPEAK) = AMPLTD(I)
      N2 = I
      IP = NPEAK
      I2 = MASTER(IP)
      GO TO 65

C     ......CALCULATE THE LENGTH OF THE RIGHT SIDE.
C
      I2 = IWORD(IP)
   85 RIGHT = AMPLTD(I2) - EDGE2(IP)
      HSV = AMAX1(ALEFT,RIGHT)
      DDD = DIFF(IF) * VALUE
      IF (HSV.LE.DDD) GO TO 100
C
      ...ID ...
C
C     ......CALCULATE EQUATION FOR LINE CONNECTING TWO MINIMUM POINTS.
C
C     ......ADJUST BASELINE FOR THE TANGENTIAL CONDITION ;
C     ......SO BASELINE MINIMUM POINTS WILL LIE ON THE TANGENT.

  100 CHGX = WAVENO(N2)-WAVENO(N1)
      CHGY = EDGE2(IP) - EDGE1(I)
C
C     ......CHECK FOR CHGY = 0.0.
C
      IF (CHGY.EQ.0.0E0) GO TO 110
C
C     ...."MULTIPLE" TANGENTIAL CHECK.
C
      IF (EDGE1(I).GT.EDGE2(IP)) GO TO 120

C     ......RAISE ... SIDE OF THE PEAK(S).
C
  120 SLOPE1 = (CHGY/CHGX)
      CY = EDGE2(IP) - AMPLTD(N1+1)
      CX = WAVENO(N2) - WAVENO(N1+1)
      SLOPE2 = (CY/CX)
      SIGN = SLOPE1 * SLOPE2
      ZZ1 = ABS(SLOPE1)
      ZZ2 = ABS(SLOPE2)
      IF (SIGN.LT.0.0E0.OR.ZZ2.LT.ZZ1) GO TO 110
      EDGE1(I) = AMPLTD(N1+1)
      CHGX = CX
```

```
      CHGY = CY                                                          000019
      N1 = N1 + 1                                                        00001
      GO TO 110                                                          00001
C                                                                        00001
C.....ALEFT = SHORT SIDE OF THE PEAK(S).                                 00001
C                                                                        00001
  120 SLOPE1 = (CHGY/CHGX)                                               00001
      CY = AMPLTD(N2-1) - EDGE1(1)                                       00001
      CX = WAVENO(N2-1) - WAVENO(N1)                                     00001
      SLOPE2 = (CY/CX)                                                   00001
      SIGN = SLOPE1 * SLOPE2                                             00001
      ZZ1 = ABS(SLOPE1)                                                  00001
      ZZ2 = ABS(SLOPE2)                                                  00001
      IF (SIGN.LT.0.0E0.OR.ZZ2.LT.ZZ1) GO TO 130                         00001
      EDGE2(IP) = AMPLTD(N2-1)                                           00001
      CHGX = CX                                                          00001
      CHGY = CY                                                          00001
      N2 = N2 - 1                                                        00001
      GO TO 120                                                          00001
C                                                                        00001
C.....ZERO-OUT PREVIOUS PEAK HEIGHT INFORMATION THAT WAS                 00001
C.....CALCULATED IN THE "BASELN" SUBROUTINE.                             00001
C                                                                        00001
C.....ISUM = NO. OF PEAKS FOUND IN BASELINE INTERVAL BETWEEN             00001
C.....       N1 + N2 BY BASELN SUBROUTINE.                               00001
C                                                                        00001
  130 ISUM = 0                                                           00001
      IF (LOOP.NE.1) GO TO 111
      MASN1=N1
      MASN2=N2
  110 DO 105 LAX=MASN1,MASN2
      IF (IDWORD(LAX).NE.0) ISUM = ISUM + 1                              00001
      IDWORD(LAX) = 0                                                    00001
  105 CONTINUE                                                           00001
      IF (LOOP.NE.1) GO TO 115                                           00001
C                                                                        00001
      DO 116 NZ=1,IP                                                     00001
      MASTER(NZ) = JWORD(NZ)                                             00001
  116 CONTINUE                                                           00001
                                                                         00001
      NPEAK = IP                                                         00001
  115 ISHIFT=NPEAK-ISUM
C                                                                        00001
      DO 150 J=1,NPEAK                                                   00001
      IAD = MASTER(J)                                                    00001
      DEN = (CHGY*(WAVENO(IAD)-WAVENO(N1)))/CHGX                         00001
C                                                                        00002
C.....AB(IP) = AMPLITUDE OF THE BASELINE FOR THE IP-TH PEAK.             00002
C                                                                        00002
      AB(J) = DEN + EDGE1(1)                                             00002
```

```
      IDWORD(IAD) = 3                                                    000020
      IF (IVALID.EQ.1) IDWORD(IAD) = 4                                   000020
  150 CONTINUE                                                           000020
C                                                                        000020
C.....MASTER(X) IS THE ARRAY FOR THE REFERENCE DATA WORDS.               000020
C                                                                        000020
C.....CHANGE THE FILE NUMBER(S); THEN RETURN TO CALCULATE THE            000021
C.....'COMMON BASELINE' PEAK HEIGHTS FOR THE OTHER FILE(S).              000021
C                                                                        000021
  200 WRITE(6,666) (MASTER(L),L=1,NPEAK)                                 000021
      WRITE(6,700) (A(JJ),JJ=1,NPEAK)                                    000021
  700 FORMAT (10(5X,F6.2))                                               000021
  666 FORMAT(1HO,5X,5I3)                                                 000021
C                                                                        000021
      K=0                                                                000021
      K1 = 0                                                             000022
      IC = 0                                                             000022
      DO 220 IR = 1,468                                                  000022
      IF (IDWORD(IR).EQ.0) GOTO 220                                      C00022
      K = K + 1                                                          000022
      L = K                                                              000022
      IF (IR.GE.MASN1.AND.IR.LE.MASN2) GO TO 225
      IF (IC.EQ.1) L = K-ISHIFT
      Y(K) = AB(L)                                                       000022
      Z(K) = HT(L)                                                       000022
      GO TO 220                                                          000023
  225 K1 = K1 + 1                                                        000023
      Y(K) = A(K1)                                                       000023
      Z(K)=AMPLTD(IR) - Y(K)                                             000023
      IC = 1                                                             000023
  220 CONTINUE                                                           000023
C-***********************************************************************000023
      WRITE (25) IF-Y,Z                                                  000023
      WRITE (23) IF,IDWORD                                               000023
      IF (IF.GE.NUMBER) GOTO 230                                         000023
      IH = IF + 1                                                        000024
      DO 300 I1 = IH,NUMBER                                              000024
      READ (22) IY,IDWORD                                                000024
      WRITE (23) IY,IDWORD                                               000024
      READ (24) IZ,AB,HT                                                 000024
      WRITE (25) IZ,AB,HT                                                000024
  300 CONTINUE                                                           000024
  230 CONTINUE                                                           000024
      REWIND 21                                                          000024
      REWIND 22                                                          000024
      REWIND 23                                                          000025
      REWIND 24                                                          000025
      REWIND 25                                                          000025
C                                                                        000025
      DO 310 I1=1,NUMBER                                                 000025
```

```
      READ (23) IY,IDWORD                                              00002
      WRITE (22) IY,IDWORD                                             00002
      READ (25) III,AB,HT                                              00002
      WRITE (24) III,AB,HT                                             00002
  310 CONTINUE                                                         00002
C                                                                      00002
      REWIND 22                                                        00002
      REWIND 23                                                        00002
      REWIND 24                                                        00002
      REWIND 25                                                        00002
      IF (LOOP.GT.MAXX) GO TO 400                                      00002
      IF = ISPEC(LOOP)                                                 00002
      LOOP = LOOP + 1                                                  00002
      GO TO 6                                                          00002
C.....END OF THE CYCLE.                                                00002
  400 CONTINUE                                                         00002
      RETURN                                                           00002
      END                                                              00002
```

```
      SUBROUTINE PKTABL(IREG,ITOTAL,IKOUNT)
C*****************************************************************************
C
C........SEPTEMBER 24, 1979.   (UPDATED AT AF/RPL : OCT. 24, 1979).
C
C           THIS SUBROUTINE CROSS-REFERENCES ALL THE PEAK HEIGHTS
C           WITH THEIR RESPECTIVE  DATA WORD  LOCATIONS.
C
C*****************************************************************************
C
      COMMON /SPECTR/ IFILE(30),NPT29(30)
      COMMON /POINTS/ NWORDS(30)
      DIMENSION AMPLTD(468),WAVENO(468),IDWORD(468),AB(50),HT(50)
      DIMENSION T(30),IPRINT(30),LEA(30)
C
C           WRITE PEAK HEIGHT INFO.
C
    1 READ (21) IF,AMPLTD,WAVENO
      READ (22) IF,IDWORD
      READ (24) IF,AB,HT
C
      WRITE(6,200) IFILE(IF)
      MIA = 0
      NW = NWORDS(IF)
C
      DO 2 J4=1,NW
      IF (IDWORD(J4).EQ.0) GO TO 2
      MIA=MIA+1
      IF (MIA.EQ.26) WRITE(6,200) IFILE(IF)
      IF (IDWORD(J4).EQ.2) GO TO 15
      IF (IDWORD(J4).EQ.3) GO TO 25
      IF (IDWORD(J4).EQ.4) GO TO 110
      WRITE(6,300) MIA,J4,WAVENO(J4),HT(MIA),AB(MIA)
      GO TO 4
   25 WRITE(6,320) MIA,J4,WAVENO(J4),HT(MIA),AB(MIA)
      GO TO 4
   15 WRITE(6,310) MIA,J4,WAVENO(J4),HT(MIA),AB(MIA)
      GO TO 4
  110 WRITE(6,350) MIA,J4,WAVENO(J4),HT(MIA),AB(MIA)
    4 IPRINT(IF) = J4
    2 CONTINUE
C
      IF (IF.GE.ITOTAL) GOTO 3
      GO TO 1
C
    3 MXDW= IPRINT(1)
C
      DO 230 KAN=2,ITOTAL
      IF (IPRINT(KAN).GE.MXDW) MXDW=IPRINT(KAN)
  230 CONTINUE
```

```
C
      REWIND 21
      REWIND 22
      REWIND 24
C
C
C*****   PRINT-OUT PEAK HEIGHT TABLE.
C
C
    5 ICOUNT = 0
      IKOUNT = 0
      DO 500 I8=1,30
      IPRINT(I8) = 0
  500 CONTINUE

      DO 10 II=1,MXDW
      DO 35 M=1,30
      LEA(M) = 0
      T(M) = 0.0
   35 CONTINUE
      N = 0
      ISTOP = 0
   45 READ (22) JJ,IDWORD
      READ (24) JJ,AR,HT
      IF (IDWORD(II).NE.0) GO TO 50
      IF (JJ.GE.ITOTAL) GO TO 60
      GO TO 45
   50 N = 1
C
      IPRINT(JJ) = IPRINT(JJ) + 1
      JPL = IPRINT(JJ)
      T(JJ) = HT(JPL)
      IF (IDWORD(II).EQ.2.OR.IDWORD(II).EQ.4) LEA(JJ) = 1
C
      IF (JJ.GE.ITOTAL) GO TO 60
      GO TO 45
   60 IF (N.EQ.0) GO TO 65
C
C.....WRITE PEAK HEIGHTS TO FILE 26 , FOR LATER PRINTING.
C
      WRITE(26) II,T
      ICOUNT = ICOUNT + 1
C
C.....CHECK IF  REGRES  WILL BE CALLED.
C
      IF (IREG.EQ.0) GOTO 65
C.....TO PREPARE FOR CORRELATION OF PEAK HEIGHTS AND MECHANICAL
C.....PROPERTIES ; SEARCH FOR ONLY THOSE PEAKS THAT ARE VALID IN
C.....ALL THE FILES.
C
```

```
C.........DO NOT INCLUDE THE  WAVNOR  PEAK IN THE REGRESSION ANALYSIS.   000036
C.........(THE REASON FOR THE  NPT29  CHECK BELOW  SD(II)-SD(KK) = 0.0).  000034
C
      IF(II.EQ.NPT29(1)) GO TO 65
      DO 210 KAY = 1,ITOTAL                                              000009
      IF (LEA(KAY).EQ.1) GOTO 210                                        000009
      ISTOP = 1                                                          000009
  210 CONTINUE                                                           000010
      IF (ISTOP.EQ.1) GOTO 65                                            000010
C     FILE 27 ++++++ VALID PEAKS IN ALL THE FILES.                       000010
      WRITE (27) II,T                                                    000010
      IKOUNT = IKOUNT + 1                                                000010
   65 CONTINUE                                                           000010
      REWIND 22                                                          000010
      REWIND 24                                                          000010
   10 CONTINUE                                                           000010
C****                                                                   000010
      REWIND 26                                                          000011
      IF (IREG.EQ.10) REWIND 27                                          000011
C                                                                        000011
      N1 = 1                                                             000011
      N2 = 10                                                            000011
C                                                                        000011
  250 WRITE(6,410) (IFILE(I),I=N1,N2)                                    000011
      DO 240 N3 = 1,ICOUNT                                               000011
      READ (26) N4,(T(K),K=N1,N2)                                        000011
      WRITE (6,400) N4,(T(K),K=N1,N2)                                    000011
      IF (N3.EQ.25.OR.N3.EQ.50) WRITE(6,410) (IFILE(I),I=N1,N2)          000012
  240 CONTINUE                                                           000012
C                                                                        000012
      REWIND 26                                                          000012
      IF (N2.GE.ITOTAL) GO TO 70                                         000012
      IF (N2.EQ.20) GO TO 20                                             000012
      N1 = 11                                                            000012
      N2 = 20                                                            000012
      GO TO 250                                                          000012
   20 N1 = 21                                                            000012
      N2 = 30                                                            000013
      GO TO 250                                                          000013
C                                                                        000013
C***********************************************************************000013
C                                                                        000013
   70 WRITE(6,420) ITOTAL                                                000013
C                                                                        000013
C***********************************************************************000013
C                                                                        000013
C                                                                        000013
C*****   FORMATS.                                                       000014
C                                                                        000014
C***********************************************************************000014
```

```
C                                                                       000014
  200 FORMAT(1H0,4X,"FOURIER TRANSFORM INFRARED SPECTROSCOPY  --  NORMAI000014
     1IZED PEAK HEIGHT INFORMATION   FILE NUMBER",I3,//5X               000014
     2,"**** - DENOTES A VALID PEAK."/5X,"CB. - DENOTES A PEAK MEASURED F000014
     3ROM A  COMMON BASELINE ."//5X                                     000014
     4,"PEAK NUMBER     DATA WORD     WAVE NUMBER     PEAK HEIGHT     BA000014
     5SELINE AMPLITUDE"/5X,"----- ------     ---- - --     ---- ------  000014
     6  ---- ------     -------- ---------")                            000015
  300 FORMAT(1HO,8X,I2,13X,I3,8X,F10.4,5X,F12.7,5X,F12.7)               000015
  310 FORMAT(1HO,4X,"*** ",I2,13X,I3,8X,F10.4,5X,F12.7,5X,F12.7)        000015
  320 FORMAT(1HO,8X,I2," CB.",9X,I3,8X,F10.4,5X,F12.7,5X,F12.7)         000015
  330 FORMAT(1HO,4X,"*** ",I2," CB.",9X,I3,8X,F10.4,5X,F12.7,5X,F12.7)  000015
  400 FORMAT(/8X,I3,7X,10(F7.3,4X))                                     000015
  410 FORMAT(1H1,7X,"FTIS ***************************  PEAK HEIGHT TABUL000015
     1ATION FOR ALL THE FILES  ***************************************"000015
     2//8X,"DATA",8X,                                                   000015
     310("FILE",7X),/8X,"WORD",9X,10(I2,9X)/8X,"-------------------------000015
     4-------------------------------------------------------------------000015
     5-------------------------"/)                                      000016
  420 FORMAT(1HO,4X,"NORMAL END OF PEAK HEIGHT TABLE  "/5X,"TOTAL NUMBER000016
     1 OF FILES LISTED = ",I3,".")                                      000016
      RETURN                                                            000016
      END                                                               000015
```

```
      SUBROUTINE PLWAVE(ITAPE,IF,NPTS,WN,AP)                                00005871
C(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((00005880
C                                                                           00005890
C.........PLOTS AN INDIVIDUAL FILE SPECTRUM FROM THE FTIS TAPE.             00005900
C                                                                           00005910
C.........THEOKOL / OWEN C. SMITH.  -  AUGUST 4, 1978.                      00005920
C                                                                           00005930
C.........................UPDATED      AUGUST 23, 1979.                     00005940
C                                                                           00005950
C(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((00005960
C                                                                           00005970
      COMMON /PLINE / FMAX,FMIN,NORM                                        00005980
      DIMENSION AP(470),WN(470),TEST(3)
      DATA TEST/"FILE"," NUM","BER "/                                       00006010
      FILE=IF                                                               00006020
      CALL PLOT(0.,0.,-3)
      YTIT=9.75                                                             00006040
      YTIT2=YTIT-.20                                                        00006050
      YTIT3=YTIT2-.20                                                       00006060
      YTIT4=YTIT3-.20                                                       00006070
      CALL SYMBOL (.5,YTIT,.1,"AIR FORCE - RPL",0.,15)
      CALL SYMBOL (.5,YTIT2,.1,"FOURIER TRANSFORM INFRARED SPECTRUM",0.,0000620
     1,35)                                                                  00006210
      CALL SYMBOL (.5,YTIT3,.1,"TAPE = ",0.,7)                              00006220
      CALL SYMBOL (999.,999.,.1,ITAPE,0.,4)                                 00006230
      CALL SYMBOL (999.,999.,.1,"  ",0.,2)                                 00006240
      CALL SYMBOL (999.,999.,.1,TEST,0.,12)                                 00006250
      CALL SYMBOL (999.,999.,.1,2H= ,0.,2)                                  00006260
      CALL NUMBER (999.,999.,.1,FILE,0.,-1)                                 00006270
      IF (NORM.EQ.1) CALL SYMBOL (.5,YTIT4,.1,"NORMALIZED SPECTRAL DATA"0000628
     1,0.,24)                                                               00006290
      IF (NORM.EQ.0) GO TO 20                                               00006300
      AMAX=FMAX                                                             00006310
      AMIN=FMIN                                                             00006320
      GO TO 40                                                              00006330
                                                                            00006340
C         SCALING OF  Y  AXIS.                                              00006350
C                                                                           00006360
      AMAX=AP(1)                                                            00006370
      AMIN=AP(1)                                                            00006380
      DO 10 J=2,NPTS                                                        00006390
      IF (AP(J).GE.AMAX)  AMAX=AP(J)                                        00006400
      IF (AP(J).LE.AMIN)  AMIN=AP(J)                                        00006410
   10 CONTINUE                                                              00006420
   20 AINCR=(AMAX-AMIN)/10.0E0                                              00006430
      AP(NPTS+1) = AMIN                                                     00006440
      AP(NPTS+2) = AINCR                                                    00006450
C                                                                           00006460
C         SCALING OF  X  AXIS.                                              00006470
C                                                                           00006480
```

```
      WN(NPTS+1) = 4200.0E0                                                    00006490
      WN(NPTS+2) = 200.0E0                                                     00006500
      IF (NORM.EQ.0) GO TO 40                                                  00006510
      CALL AXIS (0.,0.,"NORMALIZED AMPLITUDE",20,10.0,90.,AP(NPTS+1),AP(       00006520
     1NPTS+2))                                                                 00006530
      GO TO 50                                                                 00006540
   40 CALL AXIS (0.,0.,"AMPLITUDE",9,10.0,90.,AP(NPTS+1),AP(NPTS+2))           00006550
   50 CALL AXIS (0.,0.,"WAVE NUMBER",-11,20.0,0.,WN(NPTS+1),WN(NPTS+2))        00006560
      CALL LINE (WN(1),AP(1),NPTS,1,0,2)                                       00006570
      CALL PLOT(23.0,0.0,-3)
      RETURN                                                                   00006590
      END                                                                      00006600
```

```
      SUBROUTINE REGRES                                                 00000060
C                                                                       00000070
C                       MULTIPLE LINEAR REGRESSION                      00000080
C                         BY THE STEPWISE METHOD                        00000090
C              DEVELOPED FROM THIOKOL PROGRAM NUMBER - E023.             00000100
C                                                                       00000110
C***********************************************************************00000120
C                                                                       00000130
C                                                                       00000140
C     N      - TOTAL NUMBER OF VARIABLES ON INPUT (MAX. = 60).          00000150
C     L      - TOTAL NUMBER OF DEPENDENT VARIABLES                      00000160
C     M      - TOTAL NUMBER OF OBSERVATIONS                             00000170
C     F1     - THE F SIGNIFICANCE LEVEL TO ENTER A VARIABLE INTO THE    00000180
C              REGRESSION                                               00000190
C     F2     - THE F LEVEL TO REMOVE A VARIABLE FROM THE REGRESSION     00000200
C     ITR    - NUMBER OF TRANSFORMED VARIABLES                          00000210
C     J      - VARIABLE NUMBER BEING TRANSFORMED                        00000220
C     NTRAN  - TRANSFORMATION TYPE CODE                                 00000230
C              = 1, LOG OF X   -  LOG10(X(I))                           00000240
C              = 2, POWER OF X  -  (X(I)+A)**P                          00000250
C              = 3, SQUARE ROOT OF X  -  SQRT(X(I))                     00000260
C              = 4, NATURAL LOG OF X  -  LOG(X(I))                      00000270
C              = 5, X(I-1) * (X(J)**POWER(I))                           00000280
C     CONS   - TRANSFORMATION CONSTANT IF ANY                           00000290
C     POWER  - POWER TO WHICH TRANSFORMED VARIABLE MAY BE TAKEN,        00000300
C              1.0 WHEN NOT INPUT                                       00000310
C     W      - WEIGHT APPLIED TO THE SPECIFIC OBSERVATION,              00000320
C     X      - DATA FOR VARIABLES 1 UP THRU N.                          00000330
C                                                                       00000340
C        INCORPORATED AT THIOKOL   MAY 26, 1978.                        00000350
C                                                                       00000360
C        SUBROUTINE WRITTEN ON   MAY 22, 1979.                          00000370
C                                                                       00000380
C        BY OWEN C. SMITH.                                              00000390
C                                                                       00000400
C***********************************************************************00000410
      COMMON /CORREL/ PRREF(60),MPFILE(30),                             00000420
     1                NPHYSI(10),NUMDEP,NUMIND,NUMOBS,IREG             00000430
      COMMON /SELCTR/ IFILE(30),NPT29(30)                               00000440
      DIMENSION PHYS(100,10),XHT(30),IVAR(50)                           00000450
      DIMENSION FDIST(30), SUMX(60), SUMXX(60,60), X(60), B(60), SB(60),00000460
     1CONS(60),SD(60),R(60,60),XM(60),POWER(60),B1(60),YY(60),CORRCF(10)00000470
     2,NTRAN(60),IFLAG(60),ISUB(60)                                     00000480
C                                                                       00000490
C.........F - DISTRIBUTION PERCENTAGE POINTS (ALPHA = .10).             00000500
C                                                                       00000510
C.........FROM THE TEXT , PAGE 482.                                    00000520
C                                                                       00000530
      DATA FDIST / 39.86,8.53,5.54,4.54,4.06,3.78,3.59,3.46,3.36,3.28,  00000540
     A             3.23,3.13,3.14,3.10,3.07,3.05,3.03,3.01,2.99,2.97,   00000550
```

```
     B              2.96,2.95,2.94,2.93,2.92,2.91,2.90,2.89,2.89,2.88 / 00000560
C
C*****************************************************************************
C
C     READ MECHANICAL PROPERTIES TAPE ; GENERATED BY E410 PROGRAM.
C
C*****************************************************************************
C
C                                                                       0000057C
      READ(IREG) TITLE
    4 READ (IREG) N1,N2,N3,N4,(PHYS(N1,N5),N5=1,10)
      IF (EOF(IREG)) 5,4
    5 N = NUMIND + NUMDEP                                               0000060C
      NN = N                                                            0000061C
      L = NUMDEP                                                        0000062C
      M = NUMOBS                                                        0000063C
C        ICURVE = LINEAR OR NON-LINEAR REGRESSION MODE                  0000064C
      ICURVE = 0                                                        0000065C
      JCURVE = 0                                                        0000066C
      REWIND IREG                                                       0000067C
   10 ITR = 0                                                           0000068C
      LL = L + 1                                                        0000069C
      IF (LL.GT.29) STOP
      F1 = FDIST(LL)                                                    0000071C
      F2 = FDIST(LL+1)                                                  0000072C
      IF (ICURVE.EQ.0) GO TO 12                                         0000073C
      NV = NUM1 + JCURVE                                                0000074C
      WRITE (6,705) NV                                                  0000075C
      GO TO 11                                                          0000076C
   12 WRITE (6,710)                                                     0000077C
   11 WRITE (6,720) N,L,M,F1,F2                                         0000078C
C                                                                       0000079C
C     INITIALIZE SUMS.                                                  0000080C
C                                                                       0000081C
      N1 = N - L + 1                                                    0000082C
      N2=N                                                              0000083C
      IOBS=0                                                            0000084C
      DO 20 I=1,N                                                       0000085C
      SUMX(I)=0.0                                                       0000086C
      ITRAN(I)=0                                                        0000087C
      IFLAG(I)=0                                                        0000088C
      ISUB(I) =0                                                        0000089C
      DO 20 J=1,N                                                       0000090C
   20 SUMXX(I,J)=0.0                                                    0000091C
C                                                                       0000092C
      OBS=M                                                             0000093C
C   30 IF (ITR) 50,50,40                                                0000094C
C                                                                       0000095C
C     CALCULATE SUMS, SUMS OF SQUARES AND CROSS PRODUCTS.               0000096C
C     READ OBSERVATIONS FOR EACH VARIABLE X(I).                         0000097C
```

```
C                                                                       00000950
      WRITE (6,750)                                                     00000960
C                                                                       00001000
   70 N=N2                                                              00001010
C                                                                       00001020
C.....SETUP INDEPENDENT VARIABLES.                                      00001030
C                                                                       00001040
      IF (ICURVE.EQ.1) GO TO 76                                         00001050
C                                                                       00001060
      DO 3000 MCO = 1,NUMIND                                            00001070
      READ (27) IAX,XHT                                                 00001080
      X(MCO) = XHT(IOBS+1)                                              00001090
      IVAR(MCO) = IAX                                                   00001100
 3000 CONTINUE                                                          00001110
      REWIND 27                                                         00001120
C                                                                       00001130
C     FIND WHICH RECORD IS NEEDED FOR PHYSICAL PROPERTY INPUT.          00001140
C                                                                       00001130
C     FIND WHICH RECORD IS NEEDED FOR PHYSICAL PROPERTY INPUT.          00001140
C                                                                       00001150
      LIB = MPFILE(IOBS+1)                                              00001160
C                                                                       00001170
C.....SETUP DEPENDENT VARIABLES.                                        00001180
C                                                                       00001190
      DO 75 MGM=1,NUMDEP                                                00001200
      KIM = NPHYSI(MGM)                                                 00001210
      X(NUMIND+MGM) = PHYS(LIB,KIM)                                     00001220
   75 CONTINUE                                                          00001230
      GO TO 78                                                          00001240
   76 READ (14) (X(JB),JB=1,N)                                          00001250
      WT = 0.0                                                          00001260
C                                                                       00001270
C.....TRANSFORMATION POSSIBILITIES.                                     00001280
C                                                                       00001290
      DO 177 I=1,N                                                      00001300
      IF (IFLAG(I).NE.0) GO TO 178                                      00001310
      IF (NTRAN(I)) 180,180,120                                         00001320
  120 NNTR=NTRAN(I)                                                     00001330
      GO TO (130,140,150,160,170,175),NNTR                              00001340
      WRITE (6,780)                                                     00001350
      STOP                                                              00001360
C                                                                       00001370
C     LOG OF X                                                          00001380
C                                                                       00001390
  130 X(I)=ALOG10(X(I))                                                 00001400
      GO TO 180                                                         00001410
C                                                                       00001420
C     POWER OF X                                                        00001430
C                                                                       00001440
  140 X(I)=(X(I)+CONS(I))**POWER(I)                                     00001450
```

```
      GO TO 180                                                                 00001460
C                                                                               00001470
C     SQUARE ROOT OF X                                                          00001480
C                                                                               00001490
  150 X(I)=(X(I))**.5                                                           00001500
      GO TO 180                                                                 00001510
C                                                                               00001520
C     NATURAL LOG OF X                                                          00001530
C                                                                               00001540
  160 X(I)=ALOG(X(I))                                                           00001550
      GO TO 180                                                                 00001560
C                                                                               00001570
C     X(I-1) MULTIPLIED BY (X(J)**POWER(I)).  TRANSFORMATION CARD               00001580
C     CONTAINS (A) RESULTANT VARIABLE NUMBER, (B) CODE 5, (C) NUMBER            00001590
C     OF VARIABLE MULTIPLIER (X(J)), AND (D) POWER OF X(J).  (J NOT = I)        00001600
C                                                                               00001610
  170 JJ=CONS(I)                                                                00001620
      X(I)=X(I-1)*(X(JJ)**POWER(I))                                             00001630
      GO TO 180                                                                 00001640
C                                                                               00001650
C     FACTOR TIMES X                                                            00001660
C                                                                               00001670
  175 X(I)=X(I)*CONS(I)                                                         00001680
      GO TO 180                                                                 00001690
C                                                                               00001700
C     VARIABLE NOT CONSIDERED IN THIS PROBLEM.                                  00001710
C                                                                               00001720
  178 X(I)=0.050                                                                00001730
  180 CONTINUE                                                                  00001740
      DO 179 I=1,N                                                              00001750
  179 ISUB(I)=I                                                                 00001760
C                                                                               00001770
C     CHECK TO SEE IF ALL VARIABLES ARE USED IN THIS PROBLEM.  (IFLAG)          00001780
C                                                                               00001790
      ICOUNT=0                                                                  00001800
      DO 181 I=1,N                                                              00001810
      IF (IFLAG(I).EQ.0) GO TO 181                                              00001820
      ICOUNT=ICOUNT+1                                                           00001830
      K3=N-I                                                                    00001840
      DO 183 K2=1,K3                                                            00001850
      K5=I+K2                                                                   00001860
      X(K5-ICOUNT) = X(K5)                                                      00001870
      ISUB(K5-ICOUNT)=K5                                                        00001880
  183 CONTINUE                                                                  00001890
  181 CONTINUE                                                                  00001900
C                                                                               00001910
      N=N-ICOUNT                                                                00001920
C                                                                               00001930
      IF (WT) 200,190,200                                                       00001940
  190 WT=1.0                                                                    00001950
```

```
C                                                                       00001960
C       SUM OF OBSERVATIONS                                             00001970
C                                                                       00001980
  200 DO 210 I=1,N                                                      00001990
      SUMX(I)=SUMX(I)+(WT*X(I))                                         00002000
C                                                                       00002010
C       SUMS OF SQUARES AND CROSS PRODUCTS STORED BY COLUMNS.           00002020
C                                                                       00002030
      DO 210 J=1,N                                                      00002040
  210 SUMXX(I,J)=SUMXX(I,J)+(WT*X(I)*X(J))                              00002050
      IF (WT-1.0) 220,230,220                                           00002060
  220 OBS=OBS+WT-1.0                                                    00002070
  230 IOBS=IOBS+1                                                       00002080
C                                                                       00002090
C       WRITE OBSERVATIONS ON UNIT 11 FOR USE WITH PREDICTIONS.         00002100
C                                                                       00002110
      IF (ICURVE.EQ.1) GO TO 235                                        00002120
      WRITE (11) (X(K),K=1,N)                                           00002130
  235 WRITE (6,790) IOBS,IFILE(IOBS)                                    00002140
      WRITE (6,800) (X(I),ISUB(I),I=1,N)                                00002150
C                                                                       00002160
      IF (M-IOBS) 260,260,70                                            00002170
  260 IF (ICURVE.EQ.1) GO TO 262                                        00002180
      WRITE (6,810)                                                     00002190
      GO TO 261                                                         00002200
  262 WRITE (6,815)                                                     00002210
  261 CONTINUE                                                          00002220
      REWIND 11                                                         00002230
      ICT = 1                                                           00002240
      DO 270 I=1,N                                                      00002250
C                                                                       00002260
C       MEANS.                                                          00002270
C                                                                       00002280
      XM(I)=SUMX(I)/OBS                                                 00002290
C                                                                       00002300
C       STANDARD DEVIATIONS.                                            00002310
C                                                                       00002320
      SD(I)=(SUMXX(I,I)-(OBS*XM(I)*XM(I)))/(OBS-1.0))**0.5              00002330
      IF (ICURVE.EQ.1) GO TO 263                                        00002340
      IF (I.GT.NUMIND) GO TO 265                                        00002350
C                                                                       00002360
      WRITE (6,820) XM(I),SD(I),ISUB(I),IVAR(I)                         00002370
      GO TO 270                                                         00002380
  263 WRITE (6,819) XM(I),SD(I),ISUB(I)                                 00002390
      GO TO 270                                                         00002400
  265 ICTT= ICT + 5                                                     00002410
      WRITE (6,821) XM(I),SD(I),ISUB(I),(PRREF(LA),LA=ICT,ICTT)         00002420
      ICT = ICT + 6                                                     00002430
  270 CONTINUE                                                          00002440
C                                                                       00002450
```

```
      DO 300 I=1,N                                                          00002460
      R(I,I)=1.0                                                            00002470
      K=I+1                                                                 00002480
      IF (N-K) 300,280,280                                                  00002490
  280 DO 290 J=K,N                                                          00002500
      R(I,J)=((SUMXX(I,J)-(OBS*XM(I)*XM(J)))/(OBS-1.0))/(SD(I)*SD(J))       00002510
  290 CONTINUE                                                              00002520
  300 CONTINUE                                                              00002530
      WRITE (6,830)                                                         00002540
      DO 310 I=1,N                                                          00002550
      WRITE (6,840)                                                         00002560
  310 WRITE (6,850) (R(I,J),ISUB(I),ISUB(J),J=I,N)                          00002570
      WRITE (6,860)                                                         00002580
C                                                                           00002590
C     CALCULATE FOR NEW DEPENDENT VARIABLE.                                 00002600
C                                                                           00002610
      NEND=0                                                                00002620
  320 IF (NEND) 330,350,330                                                 00002630
  330 K=N-L+1                                                               00002640
      IF (ICURVE.EQ.1) GO TO 335                                            00002650
      READ (12) ((R(I,J),I=1,N),J=1,N)                                      00002660
      REWIND 12                                                             00002670
      GO TO 337                                                             00002680
  335 READ (15) ((R(I,J),I=1,N),J=1,N)                                      00002690
      REWIND 15                                                             00002700
  337 KNEND=K+NEND                                                          00002710
      DO 340 I=1,N                                                          00002720
      R(K,I)=R(KNEND,I)                                                     00002730
  340 R(I,K)=R(I,KNEND)                                                     00002740
      R(K,K)=1.0                                                            00002750
      SD(K)=SD(KNEND)                                                       00002760
      XM(K)=XM(KNEND)                                                       00002770
      GO TO 370                                                             00002780
C                                                                           00002790
C     WRITE LOWER HALF OF COEFFICIENT MATRIX.                               00002800
C                                                                           00002810
  350 DO 360 I=1,N                                                          00002820
      JI=I+1                                                                00002830
      DO 360 J=JI,N                                                         00002840
      R(J,I)=R(I,J)                                                         00002850
  360 CONTINUE                                                              00002860
C                                                                           00002870
C     WRITE ORIGINAL CORRELATION MATRIX ON UNIT 12 .                        00002880
C     TO BE USED WITH SUCCEEDING DEPENDENT VARIABLES IF ANY.                00002890
C                                                                           00002900
C     TO BE USED WITH SUCCEEDING DEPENDENT VARIABLES IF ANY.                00002890
C                                                                           00002900
C                                                                           00002910
      IF (ICURVE.NE.1) GO TO 364                                            00002920
      WRITE (15) ((R(I,J),I=1,N),J=1,N)                                     00002930
```

```
      REWIND 15                                                          00002940
      GO TO 359                                                          00002950
  364 WRITE (12) ((R(I,J),I=1,N),J=1,N)                                  00002960
      REWIND 12                                                          00002970
C                                                                        00002980
C     REGRESSION ANALYSIS.  CALCULATES BEST REGRESSION EQUATION WITH     00002990
C     STANDARD ERROR OF EACH COEFFICIENT IN THE EQUATION.                00003000
C                                                                        00003010
C     DEGREES OF FREEDOM                                                 00003020
C                                                                        00003030
  369 CONTINUE                                                           00003040
  370 DF=OBS-1.0                                                         00003050
      K=N-L+1                                                            00003060
C                                                                        00003070
C     STANDARD ERROR OF DEP. VAR.                                        00003080
C                                                                        00003090
      NVIN=0                                                             00003100
      NVOUT=0                                                            00003110
      NTRY=0                                                             00003120
  380 SE=SD(K)*((OBS-1.0)*R(K,K)/DF)**.5                                 00003130
      NTRY=NTRY+1                                                        00003140
      K=K-1                                                              00003150
      VMIN=1.0E35                                                        00003160
      VMAX=0.0                                                           00003170
      NMIN=0                                                             00003180
      NMAX=0                                                             00003190
      DO 470 I=1,K                                                       00003200
      IF (R(I,I)) 390,470,390                                            00003210
  390 IF (R(I,I)-0.001) 470,470,400                                      00003220
  400 VRNC=R(I,K+1)*R(K+1,I)/R(I,I)                                      00003230
      IF (VRNC) 440,470,410                                              00003240
  410 IF (VRNC-VMAX) 430,430,420                                         00003250
  420 VMAX=VRNC                                                          00003260
      NMAX=I                                                             00003270
  430 SB(I)=0.0                                                          00003280
      SD(I)=0.0                                                          00003290
      GO TO 470                                                          00003300
C                                                                        00003310
C     CALCULATE REGRESSION COEFFICIENTS AND STANDARD ERRORS.             00003320
C                                                                        00003330
  440 B(I)=R(I,K+1)*(SD(K+1)/SD(I))                                      00003340
      SB(I)=(SE/SD(I))*(R(I,I)/(OBS-1.0))**.5                            00003350
      IF (VMIN) 460,450,450                                              00003360
  450 VMIN=VRNC                                                          00003370
      NMIN=I                                                             00003380
      GO TO 470                                                          00003390
  460 IF (VRNC-VMIN) 470,470,450                                         00003400
  470 CONTINUE                                                           00003410
      SUMBT=0.0                                                          00003420
      DO 480 I=1,K                                                       00003430
```

```
  480 SUMBI=SUMBI+B(I)*XM(I)                                          00003440
C                                                                     00003450
C     REGRESSION (PURE) CONSTANT                                      00003460
C                                                                     00003470
      BO=XM(K+1)-SUMBI                                                00003480
C                                                                     00003490
C     OUTPUT REGRESSION COEFFICIENTS                                  00003500
C     STD. ERROR OF COEFFICIENTS                                      00003510
C     STD. ERROR OF DEPENDENT VAR.                                    00003520
C                                                                     00003530
      IF (NTRY.NE.1) GO TO 481                                        00003540
      WRITE (6,871) NTRY,KSC                                          00003550
      GO TO 482                                                       00003560
  481 WRITE (6,870) NTRY                                              00003570
  482 IF (NVOUT) 490,500,490                                          00003580
  490 WRITE (6,880) ISUB(NVOUT)                                       00003590
      WRITE (6,890) FOUT                                              00003600
      GO TO 520                                                       00003610
  500 IF (NVIN) 510,520,510                                           00003620
  510 WRITE (6,900) ISUB(NVIN)                                        00003630
      WRITE (6,890) FIN                                               00003640
  520 WRITE (6,910) BO                                                00003650
      WRITE (6,920) (B(I),ISUB(I),I=1,K)                              00003660
      WRITE (6,930) (SB(I),I=1,K)                                     00003670
      WRITE (6,940) SE                                                00003680
      IF (VMIN) 530,550,550                                           00003690
  530 IF (VMIN*DF/R(K+1,K+1)+F2) 550,550,540                          00003700
C                                                                     00003710
C     SELECT PIVOT ELEMENT FOR MATRIX INVERSION. (REMOVE VARIABLE)    00003720
C                                                                     00003730
  540 KP=NMIN                                                         00003740
      NVOUT=NMIN                                                      00003750
      NVIN=0                                                          00003760
      FOUT=(VMIN*DF/R(K+1,K+1))*(-1.0)                                00003770
      DF=DF+1.0                                                       00003780
      GO TO 570                                                       00003790
  550 IF (VMAX*DF/(R(K+1,K+1)-VMAX)-F1) 660,660,560                   00003800
C                                                                     00003810
C     (ADD VARIABLE)                                                  00003820
C                                                                     00003830
  560 KP=NMAX                                                         00003840
      NVIN=NMAX                                                       00003850
      NVOUT=0                                                         00003860
      FIN=VMAX*DF/(R(K+1,K+1)-VMAX)                                   00003870
      DF=DF-1.0                                                       00003880
  570 K=K+1                                                           00003890
C                                                                     00003900
C     CALCULATE NEXT MATRIX.  INVERT ONE VECTOR, STORE ON ORIGINAL MAT- 00003910
C     RIX.  MUST READ BACK IN ORIGINAL MATRIX WHEN SOLVING NEW REGRESS- 00003920
C     ION FOR NEW DEPENDENT VARIABLE.                                 00003930
```

```
C                                                                       00003940
      DO 610 I=1,K                                                      00003950
      IF (I-KP) 580,610,580                                             00003960
  580 DO 600 J=1,K                                                      00003970
      IF (J-KP) 590,600,590                                             00003980
C                                                                       00003990
C     I NOT =KP, J NOT =KP                                              00004000
C                                                                       00004010
  590 R(I,J)=(R(KP,KP)*R(I,J)-R(I,KP)*R(KP,J))/R(KP,KP)                 00004020
  600 CONTINUE                                                          00004030
  610 CONTINUE                                                          00004040
      DO 630 I=1,K                                                      00004050
      IF (I-KP) 620,630,620                                             00004060
C                                                                       00004070
C     I NOT =KP, J =KP                                                  00004080
C                                                                       00004090
  620 R(I,KP)=(-R(I,KP))/R(KP,KP)                                       00004100
  630 CONTINUE                                                          00004110
      DO 650 J=1,K                                                      00004120
      IF (J-KP) 640,650,640                                             00004130
C                                                                       00004140
C     I =KP, J NOT =KP                                                  00004150
C                                                                       00004160
  640 R(KP,J)=R(KP,J)/R(KP,KP)                                          00004170
  650 CONTINUE                                                          00004180
C                                                                       00004190
C     I =KP, J =KP                                                      00004200
C                                                                       00004210
      R(KP,KP)=1.0/R(KP,KP)                                             00004220
      GO TO 380                                                         00004230
C                                                                       00004240
C     RESOLVE FOR NEW DEPENDENT VAR.                                    00004250
C                                                                       00004260
  660 NEND=NEND+1                                                       00004270
C                                                                       00004280
C     MULTIPLE CORRELATION COEFFICIENT                                  00004290
C                                                                       00004300
      K=NEND-1                                                          00004310
      RMULT=SQRT(1.0-DF*SF**2)/((OBS-1.0)*SD(K)**2))**.5                00004320
      WRITE (6,950) RMULT                                               00004330
C                                                                       00004340
      IF (ICURVE.EQ.1) GO TO 661                                        00004350
C                                                                       00004360
C        PRINT LAST SET OF COEFFICIENTS FOR THIS RMULT.                 00004370
C                                                                       00004380
      WRITE (13) (B(IAD),IAD=1,NUMIND)                                  00004390
      WRITE(6,920) (B(IAD),ISUB(IAD),IAD=1,NUMIND)                      00004400
      CORRCF(NEND) = RMULT                                              00004410
      GO TO 666                                                         00004420
  661 IF (RMULT.LT.CORRCF(JCURVE)) GO TO 665                            00004430
```

```
      WRITE(6,1000) NV                                                  00004440
      GO TO 666                                                         00004450
  665 WRITE(6,1010)                                                     00004460
C                                                                       00004470
C     PREDICTION OF DEPENDENT VARIABLE.                                 00004480
C                                                                       00004490
  666 WRITE (6,960) KSC                                                 00004500
      YPRED=0.0                                                         00004510
      SUMD = 0.                                                         00004520
      SUMD2 = 0.                                                        00004530
      KPRED=N-L+NEND                                                    00004540
      KYY=N-L                                                           00004550
C                                                                       00004560
      REWIND 14                                                         00004570
      DO 680 I=1,M                                                      00004580
      IF (ICURVE.NE.1) GO TO 685                                        00004590
      READ (14) (X(K),K=1,N)                                            00004600
      GO TO 686                                                         00004610
  685 READ (11) (X(K),K=1,N)                                            00004620
  686 CONTINUE                                                          00004630
      DO 670 J=1,KYY                                                    00004640
      YPRED=YPRED+(B(J)*X(J))                                           00004650
  670 CONTINUE                                                          00004660
      YPRED=YPRED+B0                                                    00004670
      AXX=X(KPRED)                                                      00004680
      DELTA=AXX-YPRED                                                   00004690
      SUMD = SUMD + AXX                                                 00004700
      SUMD2 = SUMD2 +(AXX)**2                                           00004710
      WRITE (6,970) I,X(KPRED),YPRED,DELTA                              00004720
  680 YPRED=0.0                                                         00004730
      REWIND 11                                                         00004740
      REWIND 14                                                         00004750
C                                                                       00004760
C        DEVV = VARIANCE (FROM PAGE 210 IN TEXT).                       00004770
C                                                                       00004780
      SNUMR = SUMD2 - ((SUMD)**2/M)                                     00004790
      DEVV =  SNUMR / (M-1)                                             00004800
C        SIGMA = STANDARD DEVIATION.                                    00004810
      SIGMA= SQRT(DEVV)                                                 00004820
      XBARR = (SUMD/M)                                                  00004830
      CVV = (SIGMA/XBARR)                                               00004840
      WRITE (6,980) XBARR,SIGMA,CVV                                     00004850
      KSC = KSC + 1                                                     00004860
      IF (L-NEND)  1200,1200,1100                                       00004870
 1100 WRITE (6,860)                                                     00004880
      GO TO 320                                                         00004890
C                                                                       00004900
C        START CHECK FOR NON-LINEAR REGRESSION ATTEMPTS.                00004910
C                                                                       00004920
 1200 IF (ICURVE.EQ.1) GO TO 1210                                       00004930
```

```
      REWIND 13                                                          00004940
C        ENTERING NONLINEAR REGRESSION MODE. (ICURVE=1).                 00004950
      ICURVE = 1                                                         00004960
      MIAMI = L                                                          00004970
      NUM1 = NUMIND                                                      00004980
 1210 JCURVE = JCURVE + 1                                                00004990
      IF (JCURVE.GT.MIAMI) GO TO 1500                                    00005000
      IF (CORRCF(JCURVE).LT..750E0) GO TO 1350                           00005010
      READ (13) (B1(J3),J3=1,NUM1)                                       00005020
 1250 READ (11) (YY(II),II=1,NN)
      IF (EOF(11)) 1400,9999
 9999 IA = 1
      DO 1310 J4 = 1, NUM1                                               00005050
      IF (B1(J4).EQ.0.0E0) GO TO 1310                                    00005060
      X(IA) = YY(J4)                                                     00005070
      X(IA+1) = X(IA)**2                                                 00005080
      IA = IA + 2                                                        00005090
 1310 CONTINUE                                                           00005100
      X(IA) = YY(NUM1+JCURVE)                                            00005110
      WRITE (14) (X(KA),KA=1,IA)                                         00005120
      GO TO 1250                                                         00005130
 1350 READ (13)                                                          00005140
      GO TO 1210                                                         00005150
C                                                                        00005160
 1400 CONTINUE                                                           00005170
      REWIND 11                                                          00005180
      REWIND 14                                                          00005190
      N = IA                                                             00005200
      L = 1                                                              00005210
      GO TO 10                                                           00005220
C                                                                        00005230
C        FORMATS.                                                        00005240
C                                                                        00005250
  705 FORMAT (1H1,44X, ***** FTIS - NONLINEAR REGRESSION MODE FOR *****00005260
     1/58X,"DEPENDENT VARIABLE = VAR(",I2,")"//1H )                      00005270
  710 FORMAT (1H1,44X,"E490 - FTIS REGRESSION ANALYSIS"//1H )            00005280
  720 FORMAT (19H NO. OF VARIABLES  ,I3,34H      NO. OF DEPENDENT VARIAB00005290
     1LES  ,I3//22H NO. OF OBSERVATIONS  ,I5//28H F LEVEL TO ENTER VARIA00005300
     2BLE  ,F10.3,34H     F LEVEL TO REMOVE VARIABLE   ,F10.3/1H )       00005310
  730 FORMAT (I2,I2,F10.4,F10.4,5X,I1)                                   00005320
  740 FORMAT (9H VARIABLE,I4,20H  TRANSFORMED.  TYPE,I4/1H )             00005330
  745 FORMAT (9H VARIABLE,I4,20H  TRANSFORMED.  TYPE,I4,3X,"   * IFLAG=100005340
     X; THIS VARIABLE IS NOT CONSIDERED PART OF PROBLEM ",I9/1H )        00005350
  750 FORMAT (1H ,24HTRANSFORMED DATA VALUES.//1X,"OBSERVATION / FTIS FI00005360
     1LE NO."/)                                                          00005370
  780 FORMAT (44HCOMPUTED GO TO INDEX OUTSIDE ALLOWABLE RANGE)           00005380
  790 FORMAT (1H ,I3,"/",I2)                                             00005390
  800 FORMAT (7H       ,F10.5,5H VAR(,I2,3H)  ,1H ,F10.5,5H VAR(,I2,3H) 00005400
     1 ,1H ,F10.5,5H VAR(,I2,3H)  ,1H ,F10.5,5H VAR(,I2,3H)  ,1H ,F10.5,00005410
     25H VAR(,I2,3H)  )                                                  00005420
```

```
  810 FORMAT (1H1/1X,"            MEAN          STD. DEV.        VARIABLE 000054
     1      DATA WORD / PHYS. PROP."/)                                    000054
  815 FORMAT (1H1/1X,"            MEAN          STD. DEV.        VARIABLE 000054
     1"/)                                                                000054
  819 FORMAT(9XF10.4,4XE12.4,7XI6)                                        000054
  820 FORMAT(9XF10.4,4XE12.4,7XI6,16X,I3)                                 000054
  821 FORMAT(9XF10.4,4XE12.4,7XI6,16X,6A4)                                000054
  830 FORMAT (1H /47H SIMPLE CORRELATION COEFFICIENTS. (ROW BY COL.)/1H 000055
     1)                                                                  000055
  840 FORMAT (1H )                                                        000055
  850 FORMAT (1H F7.4,4H  R(,I2,1H,,I2,6H)     ,F7.4,4H  R(,I2,1H,,I2,6H000055
     1)     ,F7.4,4H  R(,I2,1H,,I2,6H)     ,F7.4,4H  R(,I2,1H,,I2,6H)   000055
     2  ,F7.4,4H  R(,I2,1H,,I2,6H)     )                                 000055
  860 FORMAT (1H1)                                                        000055
  870 FORMAT (1H /14H TRIAL NUMBER ,I5/1H )                               000055
  871 FORMAT (1H /14H TRIAL NUMBER ,I5,3X,"FOR VARIABLE (",I2,")"/1H )    000055
  880 FORMAT (23H VARIABLE GOING OUT =  ,I4/1H )                          000055
  890 FORMAT (20H F LEVEL             ,F12.4/1H )                         000056
  900 FORMAT (23H VARIABLE GOING IN  =  ,I4/1H )                          000056
  910 FORMAT (20H PURE CONST. B(0) = ,E12.4/1H )                          000056
  920 FORMAT (1X"COEFFICIENTS"//(1XE12.4," B(",I2,")   ",E12.4," B(",I2,000056
     1")   ",F12.4," B(",I2,")   ",E12.4," B(",I2,")   ",E12.4," B(",I2,000056
     2")"))                                                              000056
  930 FORMAT (1H /31H STANDARD ERROR OF COEFFICIENTS//                    000056
     1(1XE12.4,7XE12.4,7XE12.4,7XE12.4,7XE12.4))                         000056
  940 FORMAT (1H /28H STANDARD ERROR OF ESTIMATE //7H       ,E12.4//1H )000056
  950 FORMAT (1H //33H MULTIPLE CORRELATION COEFFICIENT//7H       ,F10.5000056
     1/)                                                                 000057
  960 FORMAT(1H1,19X,"ACTUAL VS. PREDICTED RESULTS FOR VARIABLE (",I2,")000057
     1"//1X,"OBSERVATION",8X,                                            000057
     2"ACTUAL         PREDICTED        DEVIATION "//)                    000057
  970 FORMAT (I7,F20.4,5F16.4/1H )                                        000057
  980 FORMAT(/1X,"MEAN = ",F12.6,4X,"STD. DEV. = ",F12.6,4X,"COEFFICIENT000057
     1 OF VARIATION = ",F12.6)                                           000057
 1000 FORMAT(1X,"**** CONCLUSION   NON-LINEAR REGRESSION MODEL PROVIDES 000057
     1THE BEST FIT FOR VARIABLE (",I2,") ."/1X,"**************************000057
     2**********************************************************************000057
     3*")                                                                000058
 1010 FORMAT(1X,"**** CONCLUSION   LINEAR REGRESSION MODEL PROVIDES THE 000058
     1T FIT FOR THIS VARIABLE. ****"/1X,"**********************************00005F
     2**************************************************")               00005F
 1500 CONTINUE                                                           00005F
      RETURN                                                             00005F
      END                                                                00005F
```

```
      PROGRAM E410FTIR(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE8,TAPE9)
C***********************************************************************
C
C          E410  /  FOURIER TRANSFORM INFRARED SPECTROSCOPY.
C
C                    PHYSICAL PROPERTIES MASTER TAPE GENERATOR.
C
C***********************************************************************
C
C                    THIOKOL CORPORATION / HUNTSVILLE , ALABAMA 35807
C
C          PRINCIPAL INVESTIGATOR    W. W. SCHWARZ
C                                    TELEPHONE (205) - 882 - 8388
C
C          SCIENTIFIC PROGRAMMER     O. C. SMITH
C                                    TELEPHONE (205) - 882 - 8215
C
C***********************************************************************
C
C          SEPTEMBER , 1979.
C
C          FORTRAN IV - G LEVEL 21 LANGUAGE
C
C          CDC 6600  --  (AFRPL)
C
C          PREPARED IN FULFILLMENT OF CONTRACT F04611 - 78 - C - 0027
C
C***********************************************************************
C
      DIMENSION DHEL(G,10),TITLE(10),IAGEWK(100),ITEMPA(100),ITESTT(100)
      DIMENSION IREC(100)
      COMMON N1,N2
      DATA CREATE/*CREATE  */,UPDATE/*UPDATE  */
C
C
      MASTER = 8
      N1 = 5
      N2 = 6
      NREC = 0
C
      READ (N1,400) RUNTYP
C
      IF (RUNTYP.EQ.UPDATE) GO TO 650
      IF (RUNTYP.NE.CREATE) GO TO 20
      GO TO 30
   20 CONTINUE
      WRITE(N2,470) RUNTYP
      STOP 11
   30 CONTINUE
C
```

```
      READ (N1,499) TITLE
      WRITE (N2,520) TITLE
      WRITE(N2,560)
      WRITE (N2,530)
      WRITE (N2,535)
      WRITE (N2,540)
      WRITE (N2,550)
      WRITE (N2,545)
      WRITE (N2,550)
C
      ICOUNT=11
   10 READ (N1,500) FLAG,K1,K2,K3
      IF (EOF(N1)) 200,999
  999 ICOUNT=ICOUNT+2
      NREC=NREC+1
      IAGEWK(NREC) = K1
      ITEMPA(NREC) = K2
      ITESTT(NREC) = K3
      READ (N1,510) (PH(NREC,M),M=1,10)
      WRITE (N2,600) NREC,IAGEWK(NREC),ITEMPA(NREC),ITESTT(NREC),(PH(NRE
     -C,JJ),JJ=1,10)
      IREC(NREC)=NREC
      IF(ICOUNT.GE.60) GO TO 40
      GO TO 10
   40 CONTINUE
      WRITE(N2,570)
      WRITE(N2,560)
      WRITE (N2,530)
      WRITE (N2,535)
      WRITE (N2,540)
      WRITE (N2,550)
      WRITE (N2,545)
      WRITE (N2,550)
      ICOUNT=7
      GO TO 10
C
  650 CONTINUE
      CALL RENAME
C
      GO TO 250
C
  200 CONTINUE
      WRITE(MASTER) TITLE
      DO 240 N=1,NREC
      WRITE(MASTER) IREC(N),IAGEWK(N),ITEMPA(N),ITESTT(N),(PH(N,JJ),
     1JJ=1,10)
  240 CONTINUE
C
C*****************************************************************
C
```

```
470  FORMAT(1H1,1X,"-(( ",A8," IS AN INVALID MODE. NO CHANGES APPLIED T
    1O DATA-SET. EXECUTION TERMINAT I  N   G  .   .    .",/,1H1)
 480 FORMAT (10A4)
 490 FORMAT (A8)
 500 FORMAT(A8,7X,I5,2I10)
 510 FORMAT (5(F10.2))
 520 FORMAT  (1H1/1X,"FOURIER TRANSFORM INFRARED SPECTROSCOPY - E410 PH
    -YSICAL PROPERTIES MASTER TAPE GENERATOR"
    2/1X,"(AFRPL/PCO - THIOKOL/HUNTSVILLE)"//1X,"PROPERTIES FOR SOLID "
    3ROPELLANT",13X,10A4)
 530 FORMAT (1X,"REF   AGE   AGE   TEST   MODULUS    STRAIN AT   STRAIN AT
    -MAXIMUM      STRAIN      STRAIN")
 535 FORMAT (1X,"NO.          TEMP  TEMP                    BREAK      MAXIMUM
    - STRESS      ENERGY   ENDURANCE")
 540 FORMAT (45X,"STRESS",15X,"DENSITY")
 545 FORMAT (5X,"(WK)  (F)   (F)   (PSI)       (%)         (%)        (PS
    -I)       (PSI)       (%)")
 550 FORMAT (1X,"--------------------------------------------------------
    ----------------------------------------------------------------------
    ----------")
 600 FORMAT(/1X,I3,1X,I4,1X,I4,2X,I3,1X,10(F9.3,2X))
 560  FORMAT(1X,"=========================================================
    1=====================================================================
    2 ---------=")
 570  FORMAT(1H1)
C
C*************************************************************************
C
 250  CONTINUE
      REWIND MASTER
      STOP
      END
```

```
      SUBROUTINE RENAME
C*****************************************************************************
C
C.........SEPTEMBER , 1979.
C
C
C     CHANGES THE DATA SET ESTABLISHED IN F410 MAIN.
C
C
C*****************************************************************************
      COMMON N1,N2
      DIMENSION JAGEWK(100),JTEMPA(100),JTESTT(100),NREC(100),
     1PH1(100,10),SAVDAT(100,10),IAGEWK(100),ITEMPA(100),ITESTT(100)
      DIMENSION KOUNT(30),V(10),TITLE(10)
      DATA ENDLST/'ENDLIST'/,CHANGE/'CHANGE  '/,DELETE/'DELETE  '/,
     1ADD/'ADD     '/,ENDNOL/'ENDNOLST'/
      MASTER=8
C
      WRITE(N2,10)
      LINTOT=0
      I=1
      READ (MASTER) TITLE
   12 READ(MASTER) NREC(I),JAGEWK(I),JTEMPA(I),JTESTT(I),(PH1(I,JJ),JJ=1
     -,10)
      IF (EOF(MASTER)) 14,999
  999 IF(NREC(I).GT.LINTOT) LINTOT=NREC(I)
      I=I+1
      GO TO 12
   14 CONTINUE
      REWIND MASTER
C*****************************************************************************
C
C          CHECK THE INPUT SEQUENCE FOR ALL THE  ACTION  CARDS.
C
C*****************************************************************************
      IFIRST = 0
      ISHIFT = 0
      LAST = 0
      LOOP = 0
      II = 0
      MIDDLE = 0
    5 READ(N1,20)ACTION,NP,K1,K2,K3
      IF (EOF(N1)) 30,777
  777 LOOP = LOOP + 1
      IF (ACTION.NE.CHANGE.AND.LOOP.EQ.1) IFIRST = 1
      IF (ACTION.EQ.CHANGE) GO TO 70
      IF (ACTION.EQ.ADD) GO TO 60
      IF (ACTION.EQ.DELETE) LAST = 1
      GO TO 25
   60 IF(IFIRST.EQ.1.AND.LOOP.GT.1) GO TO 55
```

```
      IF (MIDDLE.NE.1) GO TO 25
      IF (LAST.NE.1) GO TO 25
      WRITE (6,710) LOOP,ACTION
      STOP 60
   55 WRITE (6,710) LOOP,ACTION
      STOP 62
   60 MIDDLE = 1
      L1=L1+1
      KOUNT(L1) = NR
      IF (LAST.EQ.0) GO TO 25
      WRITE (6,710) LOOP,ACTION
      STOP 64
C
C     WRITE TO TEMP. DISK FILE 9.
C
   25 WRITE (9) ACTION,NR,K1,K2,K3
      IF (ACTION.NE.ADD.AND.ACTION.NE.CHANGE) GO TO 5
      READ(N),125) (V(K),K=1,10)
      WRITE (9) (V(K),K=1,10)
      GO TO 5
C
   30 CONTINUE
      REWIND 9
C
   15 READ(9) ACTION,NR,K1,K2,K3
      IF (EOF(9)) 666,666
  666 IF(ACTION.EQ.ENDNOL) GO TO 600
      IF(ACTION.EQ.ENDLST) GO TO 500
      IF(NR.LE.0)          GO TO 450
      IF(NR.GT.100)        GO TO 450
      IF(ACTION.EQ.CHANGE) GO TO 100
      IF(ACTION.EQ.DELETE) GO TO 200
      IF(ACTION.EQ.ADD)    GO TO 300
      GO TO 400
C**********************************************************************
C ACTION = CHANGE ROUTINE
C**********************************************************************
  100 CONTINUE
      JAGEWK(NR)=K1
      JTEMPA(NR)=K2
      JTESTT(NR)=K3
C
      READ(9) (PHI(NR,I),I=1,10)
C
      WRITE(N2,135) NR
      WRITE(N2,170)NR,JAGEWK(NR),JTEMPA(NR),JTESTT(NR),(PHI(NR,JJ)
     -,JJ=1,10)
      IF(NR.GT.LINTOT) LINTOT=NR
      GO TO 15
C**********************************************************************
```

```
C ACTION = DELETE ROUTINE
C*************************************************************************
 200  CONTINUE
      DO 205 LX=1,LI
      IF (NR.GT.KOUNT(LX)) ISHIFT=ISHIFT+1
 205  CONTINUE
      MI = NR+ISHIFT
      DO 230 J=MI,LINTOT
      M=J+1
      IF(M.GE.100) STOP 72
      NREC(J)=NREC(M)
      JAGEWK(J)=JAGEWK(M)
      JTEMPA(J)=JTEMPA(M)
      JTESTT(J)=JTESTT(M)
C
      DO 220 I=1,10
      PHI(J,I)=PHI(M,I)
 220  CONTINUE
 230  CONTINUE
      LINTOT=LINTOT-1
      WRITE(N2,240) NR
      GO TO 15
C*************************************************************************
C ACTION = ADD ROUTINES
C*************************************************************************
 300  CONTINUE
C
      IF(NR.GT.LINTOT) GO TO 340
      DO 330 J=1,LINTOT
      IF(NR.EQ.NREC(J)) GO TO 310
C
      GO TO 330
C
 310  CONTINUE
      L=LINTOT+1
      DO 320 K=J,L
      DO 314 I=1,10
      SAVDAT(K,I)=PHI(K,I)
 314  CONTINUE
      JAGEWK(K)=JAGEWK(K)
      JTEMPA(K)=JTEMPA(K)
      JTESTT(K)=JTESTT(K)
 320  CONTINUE
C
      DO 315 K=J,L
      M=K+1
      DO 317 I=1,10
      PHI(M,I)=SAVDAT(K,I)
 317  CONTINUE
      JAGEWK(M)=JAGEWK(K)
```

```
      ITEMPA(M)=ITEMPA(K)
      JTESTT(M)=ITESTT(K)
  315 CONTINUE
  330 CONTINUE
C
      LINTOT=L
      GO TO 350
C
  340 CONTINUE
C
      LINTOT=LINTOT+1
  350 CONTINUE
C
      JAGEWK(NR)=K1
      JTEMPA(NR)=K2
      JTESTT(NR)=K3
C
      READ(9) (PHI(NR,I),I=1,10)
      IF (NR.GT.LINTOT) GO TO 380
      WRITE(N2,360) NR
      GO TO 15
  380 WRITE(N2,365) NR
      GO TO 15
C
C*****************************************************************
C ERROR MESSAGES FOR INVALID UPDATE ACTION AND BAD LINE NUMBER
C*****************************************************************
  400 CONTINUE
      WRITE(N2,410) ACTION
      WRITE(N2,420)
      GO TO 500
  430 CONTINUE
      WRITE(N2,460) NR
      STOP 70
C**** ACTION=SAVLST (LINES RENUMBERED, DATA STORED AND PRINTED)
C*****************************************************************
  500 WRITE(MASTER) TITLE
C
      WRITE(N2,590) TITLE
      WRITE(N2,570)
      WRITE(N2,530)
      WRITE(N2,540)
      WRITE(N2,550)
      WRITE(N2,560)
      WRITE(N2,565)
      WRITE(N2,560)
C
      ICOUNT=11
      DO 580 J=1,LINTOT
```

```
      ICOUNT=ICOUNT+2
      NREC(J)=J
      WRITE(N2,510) NREC(J),JAGEWK(J),JTEMPA(J),JTESTT(J),(PH1(J,I),I=
     11,10)
      WRITE(MASTER) NREC(J),JAGEWK(J),JTEMPA(J),JTESTT(J),(PH1(J,I),I=
     11,10)
C
      IF(ICOUNT.GE.61) GO TO 575
      GO TO 580
  575 CONTINUE
      WRITE(N2,501)
      WRITE(N2,570)
      WRITE(N2,530)
      WRITE(N2,540)
      WRITE(N2,550)
      WRITE(N2,560)
      WRITE(N2,565)
      WRITE(N2,560)
      ICOUNT=7
  580 CONTINUE
      GO TO 650
C*************************************************************************
C ACTION = ENDNOL (LISTING AND RENUMBERING SUPRESSED)
C*************************************************************************
  600 WRITE(MASTER) TITLE
      DO 640 J=1,LINTOT
      WRITE(MASTER) NREC(J),JAGEWK(J),JTEMPA(J),JTESTT(J),(PH1(J,I),I=
     11,10)
  640 CONTINUE
C
C*****   FORMATS.
C
   10 FORMAT(1H1," **UPDATE MODE ASSUMED.....NEW DATA FOLLOWS**",///)
   20 FORMAT(A8,2X,2I5,2I10)
  125 FORMAT(5E10.3)
  135 FORMAT(///" (( CORRECTED DATA FROM LINE ",I3,"))")
  170 FORMAT(/1X,I3,1X,I4,1X,I4,2X,I4,1X,10(F9.3,2X))
  240 FORMAT(//," -(( LINE ",I3," DELETED FROM DATA SET")
      FORMAT(//," (( A NEW LINE WILL BE ADDED PRECEDING LINE ",I3)
  365 FORMAT(//," (( NEW LINE ",I3," ADDED TO DATA SET ")
      FORMAT(1H1," -(( ",A9,")) IS AN ILLEGAL UPDATE FUNCTION",/,
     1" *-----------------------------------------**)
  420 FORMAT(//" ALL CHANGES PRECEDING ABOVE FUNCTION WERE APPLIED",
     1/,1H1)
  460 FORMAT(1H1," -(( ",I3," )) IS AN INVALID LINE NUMBER.  NO CHANGES
     1APPLIED TO DATA. EXECUTION TERMINAT I  N   S  .  .   . ",/,1H1)
  501 FORMAT(1H1)
  510 FORMAT(/,1X,I3,1X,I4,1X,I4,2X,I4,1X,10(F9.3,2X))
  530 FORMAT(1X,"REC  AGE  AGE   TEST  MODULUS   STRAIN AT  STRAIN AT  M
     1AXIMUM    STRAIN    STRAIN")
```

```
  540  FORMAT(1X,"NO.        TEMP  TEMP                  BREAK      MAXIMUM
     -STRESS    ENERGY   ENDURANCE")
  550  FORMAT(45X,"STRESS",15X,"DENSITY")
  560  FORMAT(1X,"-----------------------------------------------------------
     ------------------------------------------------------------------
     ----------")
  565  FORMAT (5X,"(4K)  (F)   (F)   (PSI)       (()        (()        (PS
     -I)      (TRD)       (()")
  570  FORMAT(" ===========================================================
     1===========================================================
     2========")
  590  FORMAT  (1H1/1X,"FOURIER TRANSFORM INFRARED SPECTROSCOPY - E410 PH
     -YSICAL PROPERTIES MASTER TAPE GENERATOR"
     2/1X,"(AFRPL/PCO - THIOKOL/HUNTSVILLE)"//1X,"PROPERTIES FOR SOLID P
     3ROPELLANT  ",9X,1044)
  710 FORMAT (1H0," (((( ACTION CARD NUMBER -",I3," IS AN OUT OF SEQUENC
     1E  ",A6,"  COMMAND. JOB IS TERMINATED....")
C
  650  CONTINUE
       REWIND MASTER
       REWIND 9
       RETURN
       END
```

APPENDIX B

PROGRAM FLOWCHARTS

CARD ID PAGE/BOX NAME REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)

FORTRAN MODULE E490 - MAIN PROGRAM

CHART TITLE - INTRODUCTORY COMMENTS

CHART TITLE - PROCEDURES

12/11/79 PROCEDURAL STATEMENT LABEL INDEX AUTOFLOW CHART SET - E490 - MAIN PROGRAM PAGE 1

PG.9X	NAME	PG.0X	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME
2.07	3	3.02	28	4.29	69	5.24	445	7.31	551
3.11	5	2.48	29	5.01	69	7.01	450	8.13	600
2.11	8	4.13	40	4.26	70	6.07	460	8.28	625
4.01	9	4.17	50	8.01	300	7.19	470	8.32	630
2.23	20	7.25	52	5.07	400	7.20	475	8.34	650
2.29	22	4.23	55	5.15	420	7.04	480	8.21	700
2.29	25	5.02	60	5.19	430	8.09	500	8.20	710
2.36	26	5.03	65	5.22	440	8.04	510	7.34	800
3.03	27								

CHART TITLE - INTRODUCTORY COMMENTS

```
**********************************************************************
**********************************************************************

        E490 - FOURIER TRANSFORM INFRARED SPECTROSCOPY PROGRAM.

              THIOKOL CORPORATION / HUNTSVILLE , ALABAMA 35807

        PRINCIPAL INVESTIGATOR    W. W. SCHWARZ
                                  TELEPHONE (205) - 882 - 8388

        SCIENTIFIC PROGRAMMER     C. C. SMITH
                                  TELEPHONE (205) - 882 - 8215

**********************************************************************
**********************************************************************

        READS POLYS FTIS DATA TAPES.

        SEPTEMBER , 1979.

        FORTRAN IV -- H EXTENDED LANGUAGE

        CDC 6600  --  (AFRPL)

**********************************************************************
**********************************************************************

$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

        CALL XFILE (PPL PROGRAM).
```

CHART TITLE - PROCEDURES

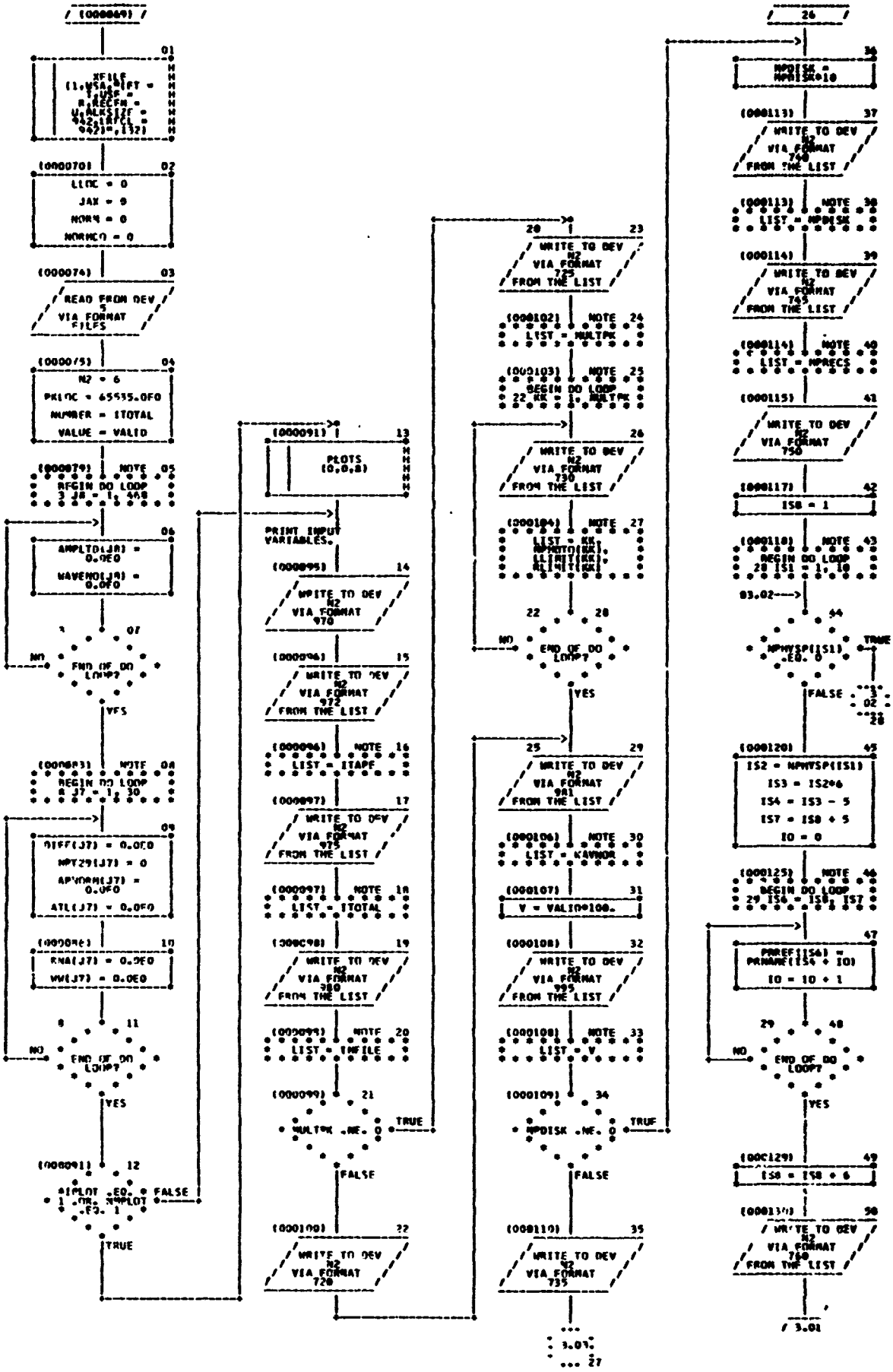


CHART TITLE - PROCEDURES

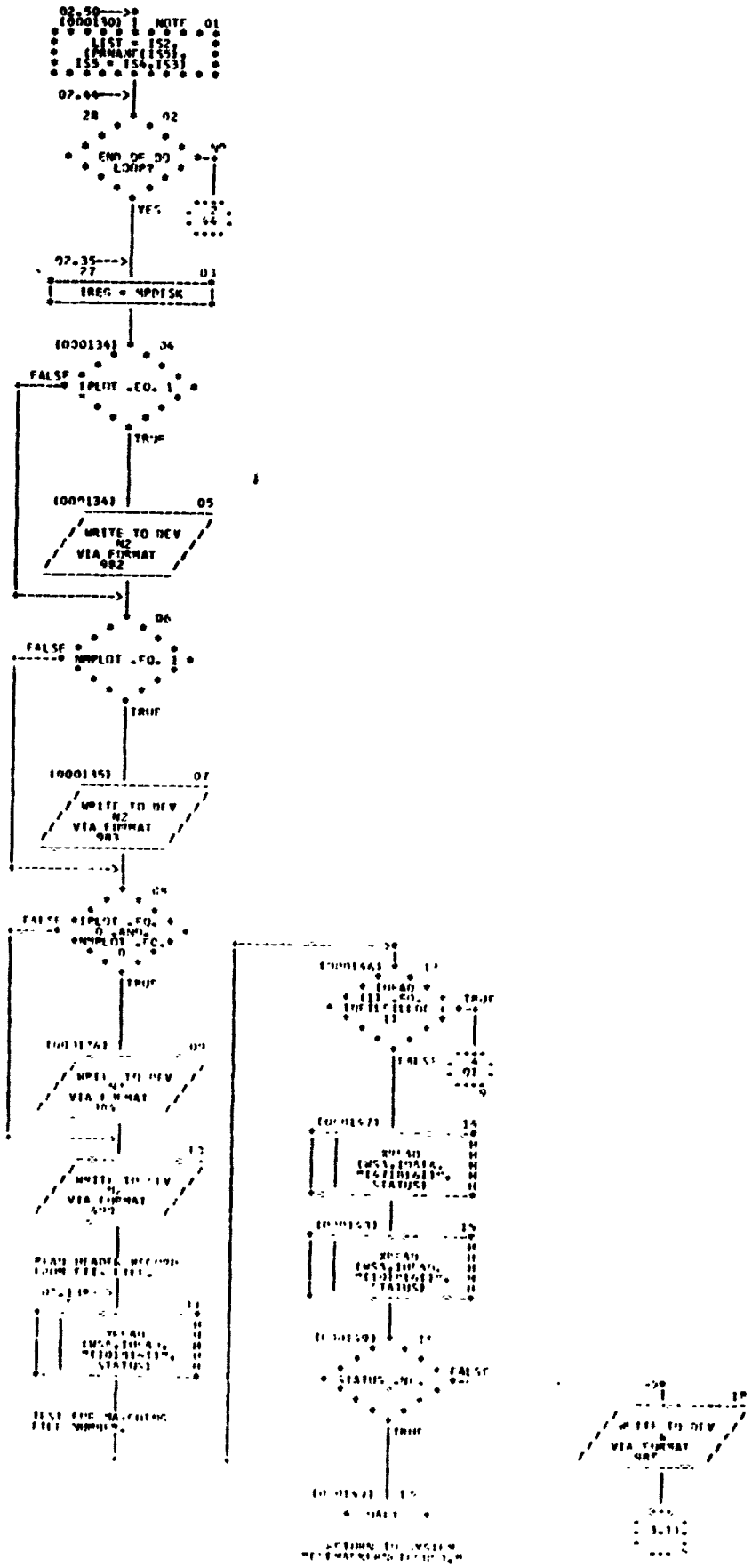


CHART TITLE - PROCEDURES

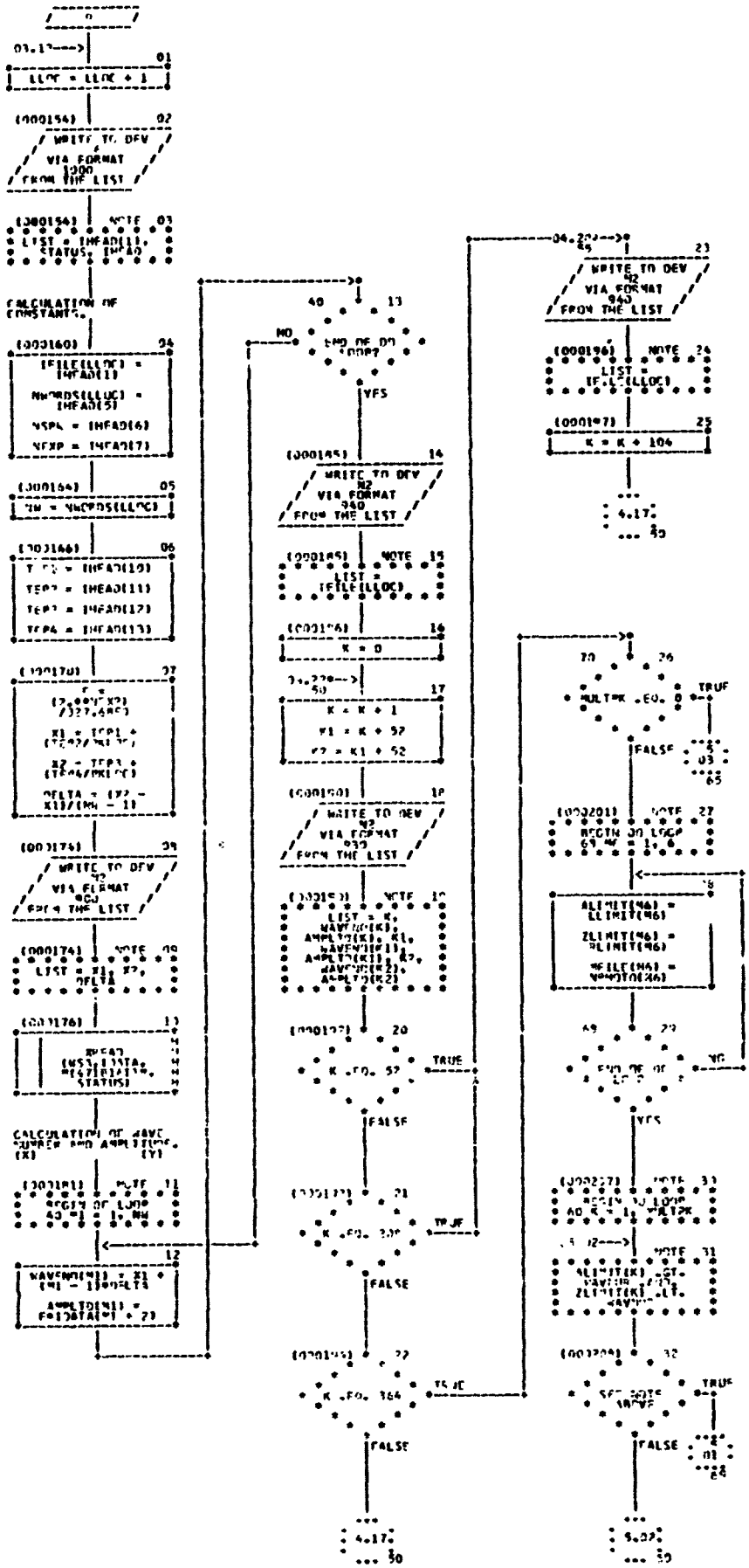


CHART TITLE - PROCEDURES

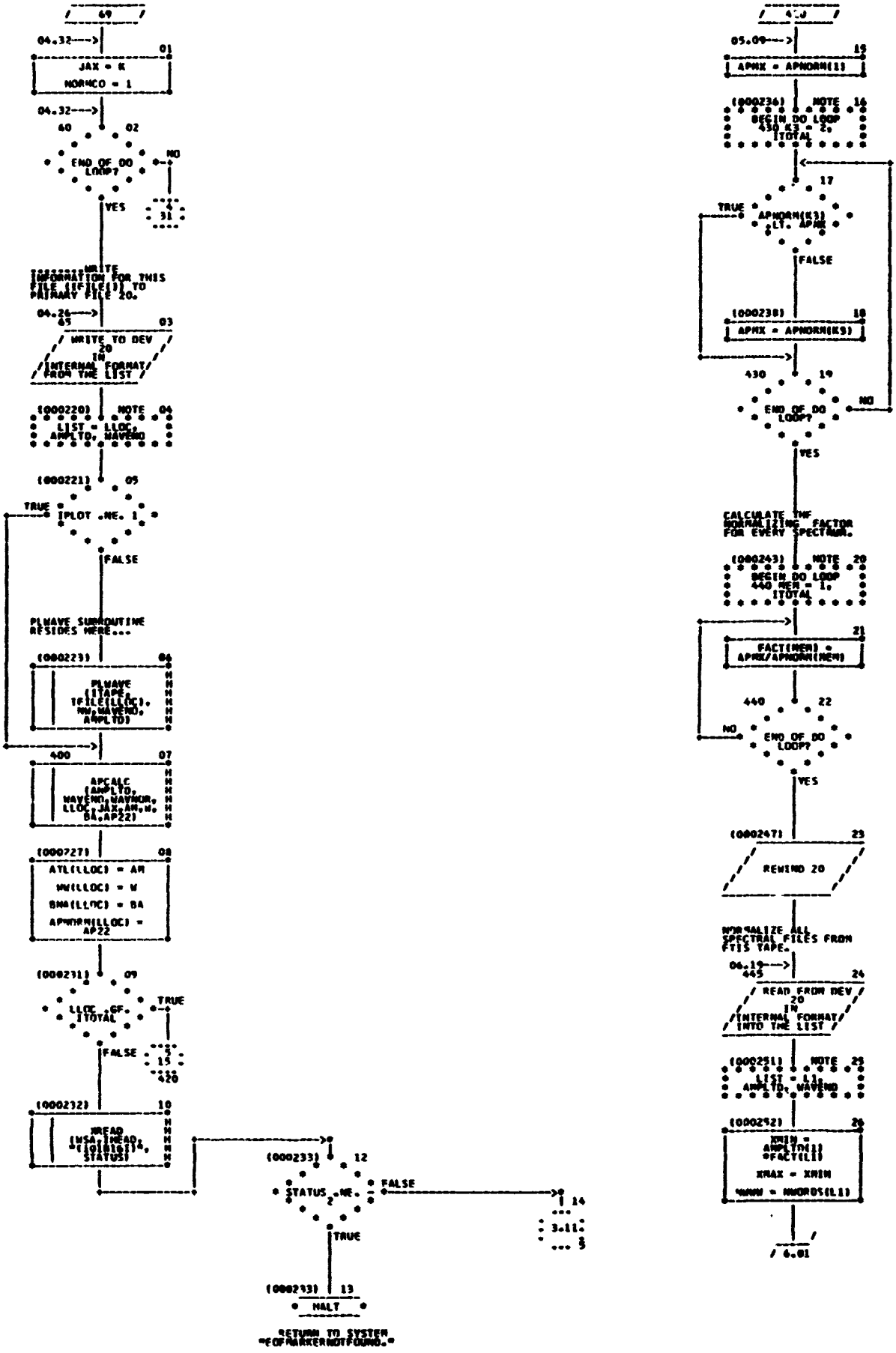


CHART TITLE - PROCEDURES

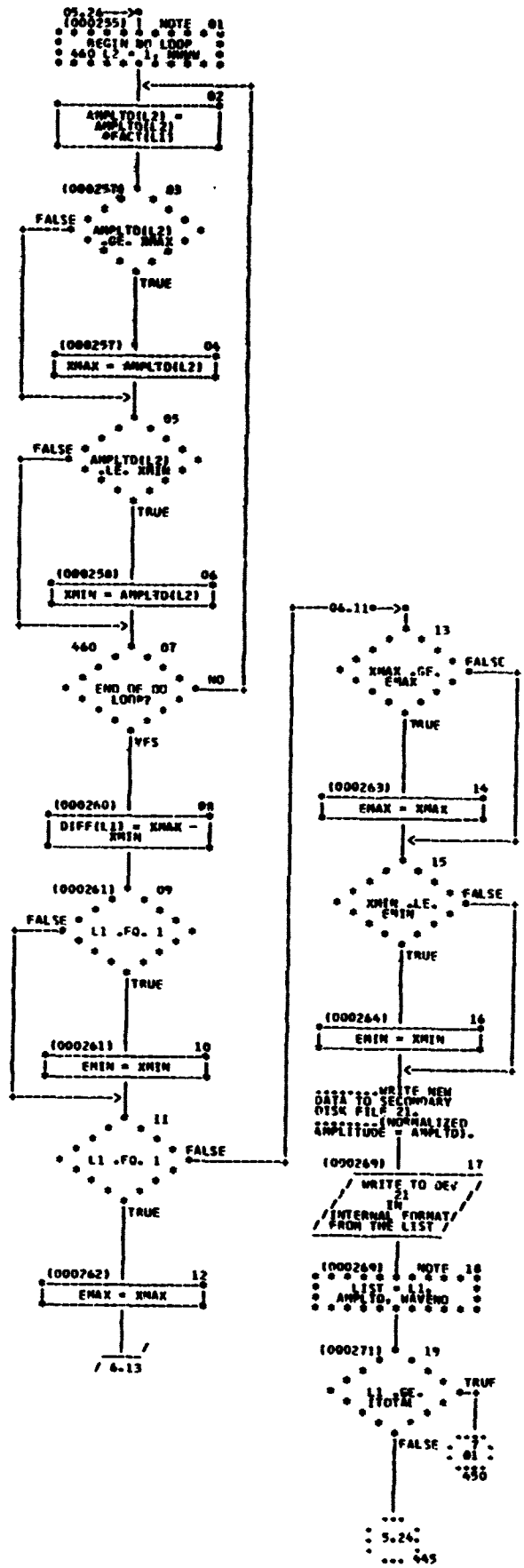


CHART TITLE - PROCEDURES

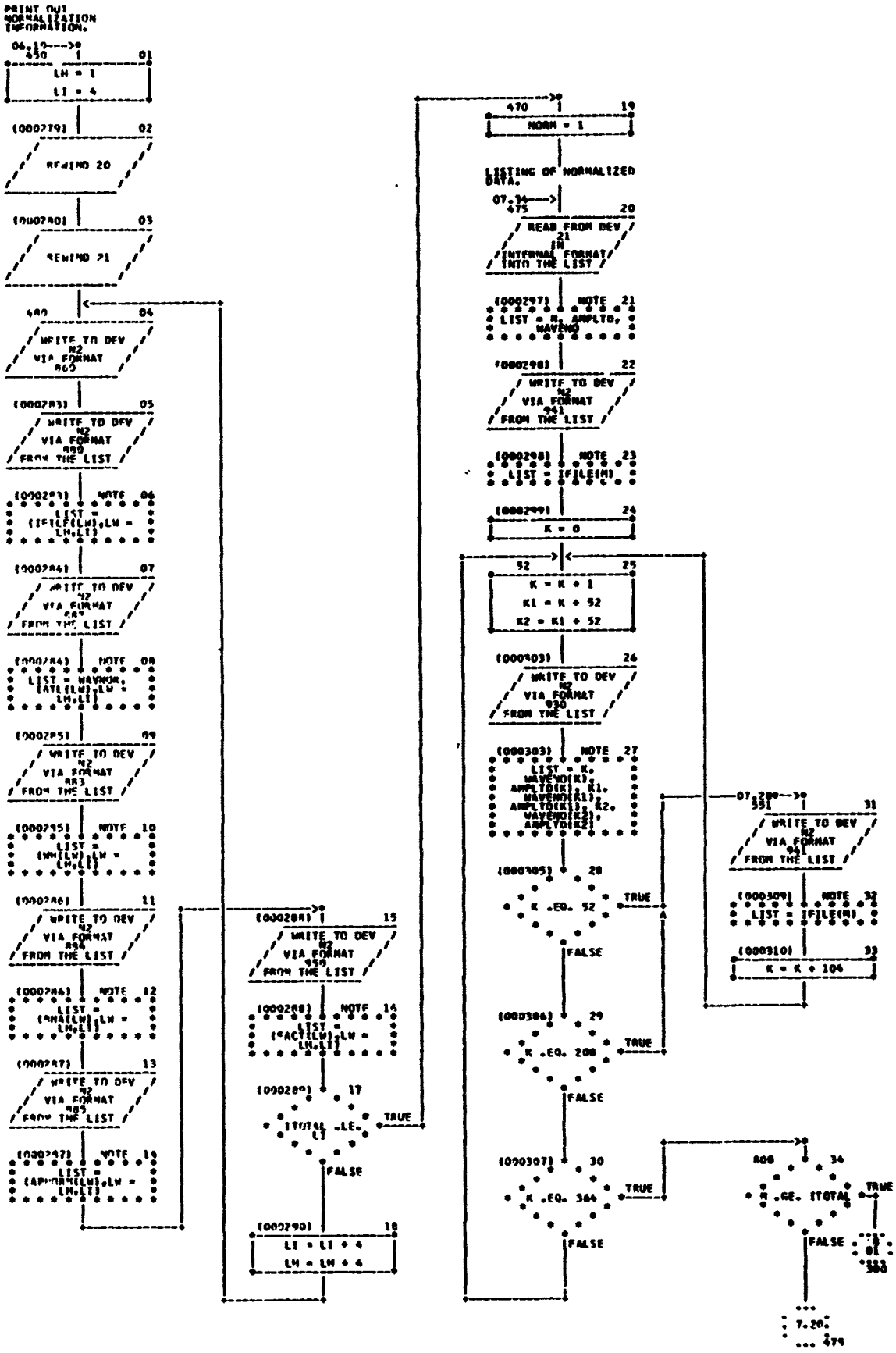


CHART TITLE - PROCEDURES

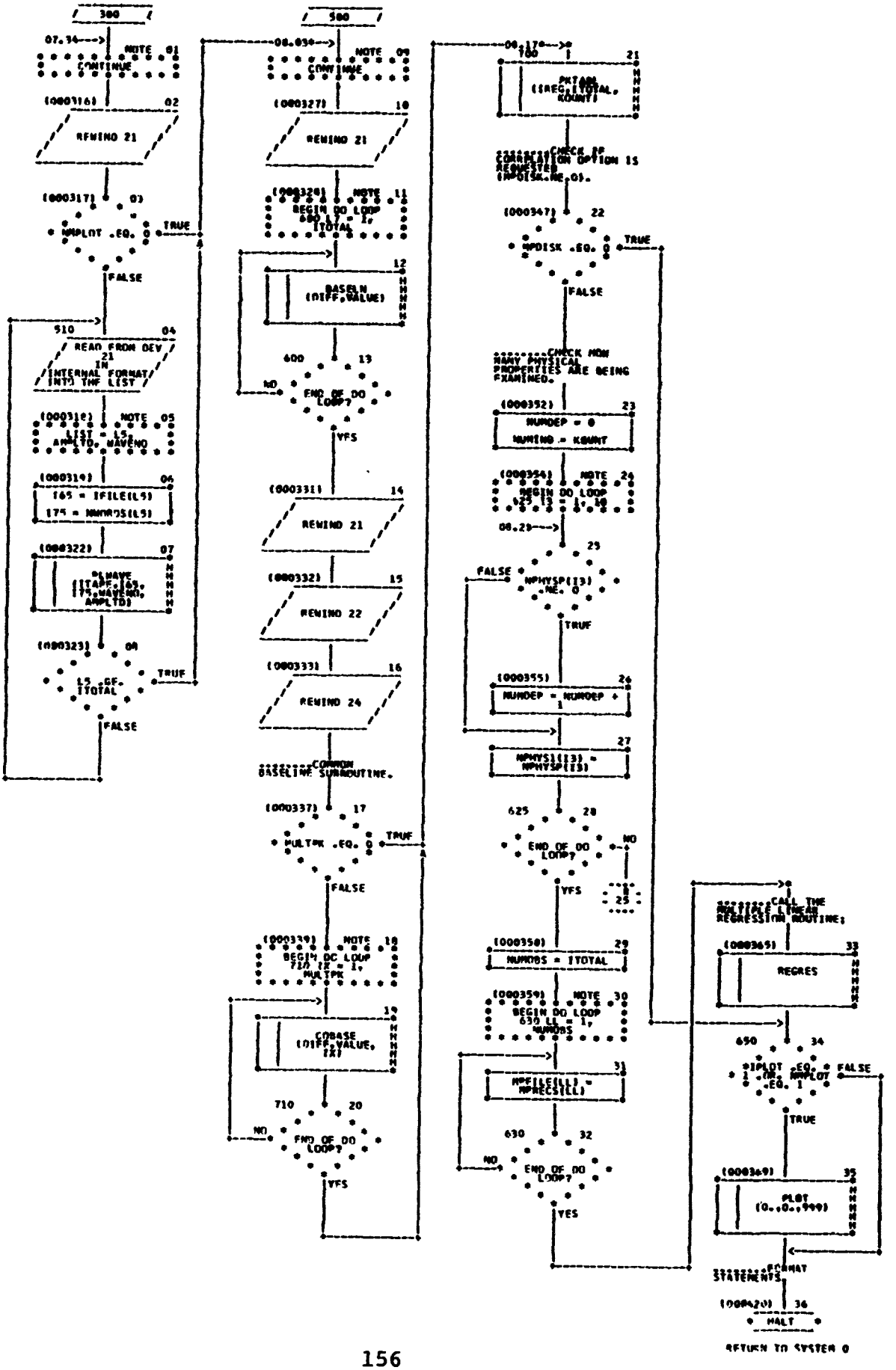


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      PROGRAM F490FTN(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE1,TAPE20
     ,TAPE21,TAPE22,TAPE23,TAPE24,TAPE25,TAPE26,TAPE27,TAPE11,TAPE12,TA
     PE13,TAPE14,TAPE15,TAPE10)
      COMMON /CORREL/ PREF(60),NPFILE(30),
                      NPHYS1(10),NUMDEP,NUMIND,NUMOBS,IPEG
      COMMON /SPECTR/ IFILE(30),NPT29(30)
      COMMON /POINTS/ NWORDS(30)
      COMMON /PTINF/  FMAX,EMIN,NOBN
      COMMON /TWINPK/ ALIMIT(6),ZLIMIT(4),MFILE(6),NOPMCO,NUMBER
      DIMENSION AMPLTD(468),WAVENO(468),PRNAME(60),FACT(30)
      DIMENSION APNORM(30),ATL(30),SNA(30),WB(30),DIFF(30)
      DIMENSION RLIMIT(6),INFILE(30),NPRECS(30),NPHOTO(6),NPHYSP(10)
      DIMENSION NSA(1372),INFAD(101),IDATA(471)
      REAL LLIMIT(6)
      NAMELIST /FILES/ ITAPE,ITOTAL,INFILE,MULTPK,NPHOTO,LLIMIT,RLIMIT,
                       VALID,NAVNOR,NPOISK,NPRECS,NPHYSP,IPLOT,NNPLOT
      DATA INFILE /3000/,
           NPHOTO /600/,
           IPLOT  /0/,
           LLIMIT /600.0/,
           NPOISK /0/,
           NPRECS /3000/,
           MULTPK /0/,
           NNPLOT /0/,
           NPHYSP /1000/,
           RLIMIT /600.0/,
           VALID /.02/
      DATA PRNAME /"MODU","LUS ","    ","    ","    ","    ","    ",
                   "STRA","IN A","T BR","EAK ","    ","    ","    ",
                   "STRA","IN A","T MA","XIMU","M ST","RESS",
                   "MAXI","MUM ","STRE","SS  ","    ","    ","    ",
                   "STRA","IN E","NERG","Y DE","NSIT","Y   ","    ",
                   "STRA","IN E","NOUR","ANCE","    ","    ","    ",
                   "PHYS","ICAL"," PRO","PERT","Y NO","  7 ","    ",
                   "PHYS","ICAL"," PRO","PERT","Y NO","  8 ","    ",
                   "PHYS","ICAL"," PRO","PERT","Y NO","  9 ","    ",
                   "PHYS","ICAL"," PRO","PERT","Y NO"," 10"/
  490 FORMAT(1HL)
  985 FORMAT(/,2X,"EOF ENCOUNTERED",/)
 1000 FORMAT(1H1,2X,"FILE ",I3,2X,"STATUS = ",F6.1,/,26(1X,4(I20,5X),/)
     )
  715 FORMAT(A2,6X,3A2,4X,4A2)
  720 FORMAT(/5X,"NUMBER OF  COMMON BASELINE  AREAS SPECIFIED   0.")
  725 FORMAT(/5X,"NUMBER OF  COMMON BASELINE  AREAS SPECIFIED   ",I1,"."
     )
  730 FORMAT(10X,"AREA ",I1," IS BEST PICTURED IN FILE ",I2," :",/,10X,"
     LEFT LIMIT ESTIMATE = ",F7.2,/,10X,"RIGHT LIMIT ESTIMATE = ",F7.2)
  735 FORMAT(/5X,"NO STATISTICAL CORRELATION WITH PHYSICAL PROPERTIES WI
     LL BE PERFORMED. -- (NPOISK=0)")
  740 FORMAT(/5X,"STATISTICAL CORRELATION WITH PHYSICAL PROPERTIES HAS B
     EEN REQUESTED",//5X,"PHYSICAL PROPERTY INPUT DISK  FT",I2,"F001."
     )
  745 FORMAT(/5X,"PHYSICAL PROP. RECORD NUMBERS  ",10(I3,5X)/36X,10(I3,5
     X)/36X,10(I3,5X))
  750 FORMAT(/5X,"THE FOLLOWING PHYSICAL PROPERTIES WILL BE USED",/5X,"AS
      DEPENDENT VARIABLES  ")
  760 FORMAT(10X,"PROP. NO. ",I1," - ",6A4)
  860 FORMAT(1H1,4X,"SUMMARY OF  AMPLITUDE  NORMALIZATION  "//
     54X,3("FILE",16X),"FILE"/55X,3("NO",18X),"NO")
  880 FORMAT(54X,3(I3.17X),I3/)
  882 FORMAT(//7X,"MAXIMUM AMPLITUDE NEAREST ",F6.1,"  WN. = ",4(E15.7,5
     X)/)
  883 FORMAT(7X,"WAVE NUMBER AT MAX. AMPLITUDE = (WNMAX) =  ",F10.4,3(10
     X,F10.4)/)
  884 FORMAT(7X,"BASELINE AMPLITUDE AT (WNMAX) = ",8X,4(E15.7,5X)/)
  885 FORMAT(7X,"PEAK HEIGHT AT (WNMAX) = ",19X,4(E15.7,5X)/)
  890 FORMAT(1H1,/(1X8(10)))
  900 FORMAT(1X,3(5X,F10.4))
  930 FORMAT(6X,I3,4X,F10.4,2X,E15.7,2(7X,I3,4X,F10.4,2X,E15.7))
  940 FORMAT(1H1,4X,"FTIS FILE NUMBER  ",I3,20X,"NON-NORMALIZED (PURE) S
```

CARD ID PAGE/BOX NAME REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)

FORTRAN MODULE E450 - SUBROUTINE APCALC

CHART TITLE - SUBROUTINE APCALC(AMPLTD,NAVENG,NAVNGR,IFN,JAX,APMAX,NE,D2,AP2)

CHART TITLE - NON-PROCEDURAL STATEMENTS

PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME
1.01	PCALC	1.19	20	1.21	45	2.12	110	1.32	230
1.03	1	1.27	30	2.08	75	1.22	200	2.01	240
1.05	5	1.29	35	2.15	80	1.25	210	2.02	245
1.11	10	1.34	40	2.05	100	1.31	220	2.04	250
1.15	15								

CHART TITLE - SUBROUTINE APCALC(AMPLTD,NAVENO,NAVNOR,IFN,JAX,APMAX,WE,D2,AP2)

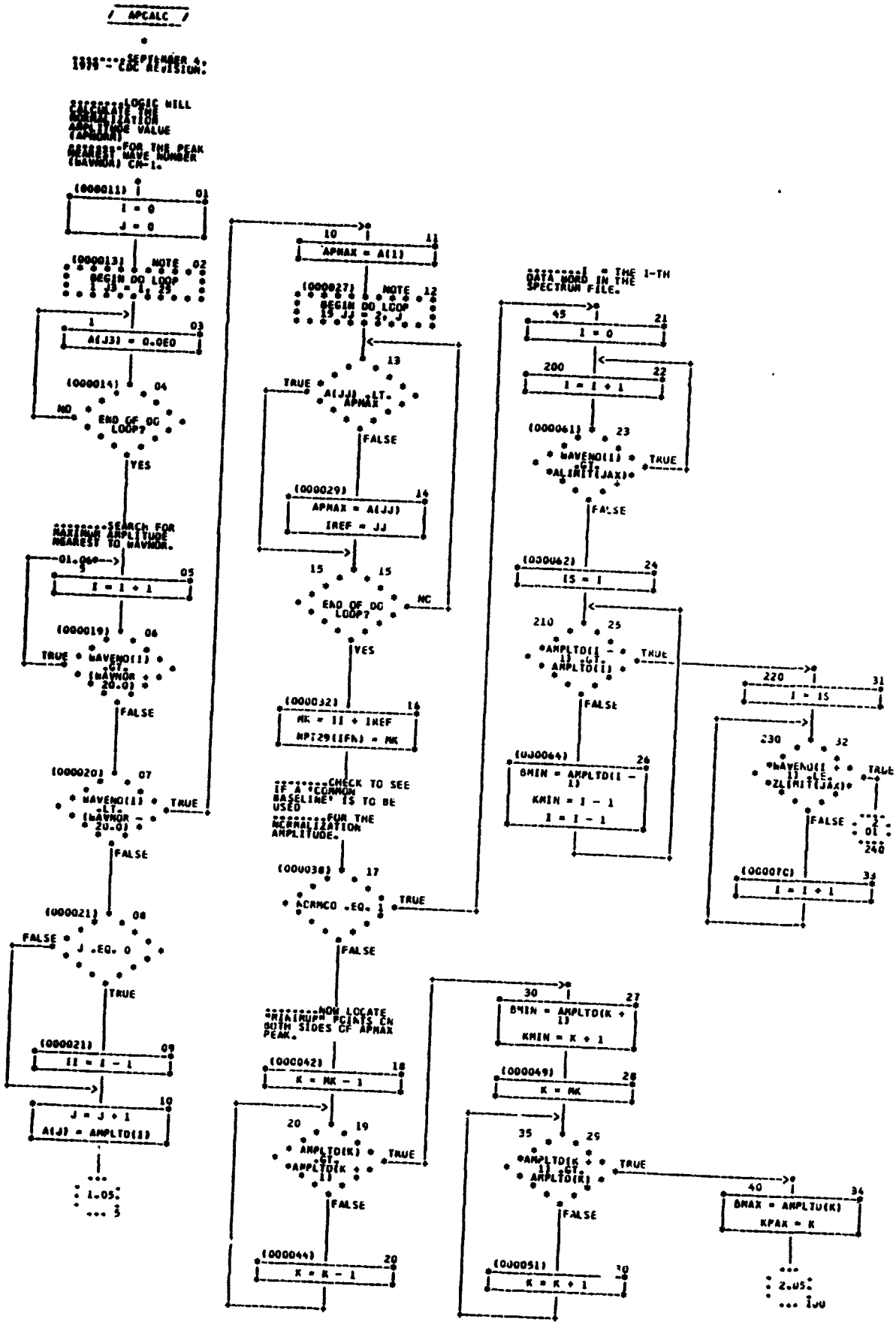


CHART TITLE - SUBROUTINE APCALC(AMPLTD,NAVEND,NAVNOR,IFN,JAX,APMAX,ME,D2,AP2)

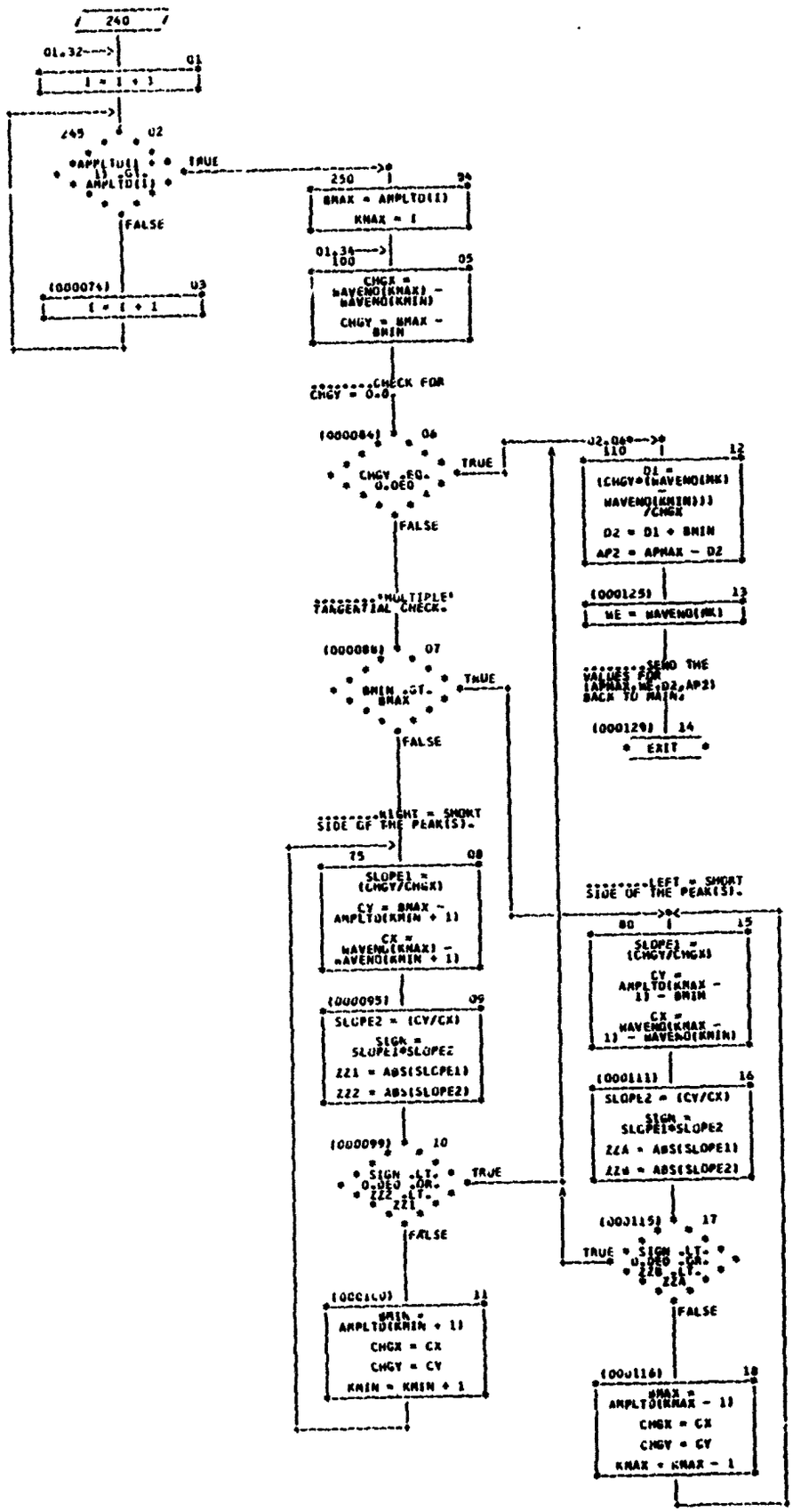


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON /SPECTR/ IFILE(30),NPTS(30)
      COMMON /TWINPK/ ALIMIT(6),ZLIMIT(6),NFILE(6),NORMCO,NUMBER
      DIMENSION AMPLTD(468),WAVEND(468),A(25)
```

CARD ID PAGE/BOX NAME REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)

FORTRAN MODULE E990 - SUBROUTINE BASELN

CHART TITLE - SUBROUTINE BASELN(DIFF,VALUE)

CHART TITLE - NON-PROCEDURAL STATEMENTS

PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME
1.01	BSELN	2.25	30	3.18	75	2.26	100	2.16	130
2.06	10	3.01	40	3.07	80	3.19	110	1.04	1000
2.08	15	3.05	50	2.14	90	3.23	120	1.07	1100
2.11	20	3.11	60						

CHART TITLE - SUBROUTINE BASELN(DIFF,VALUE)

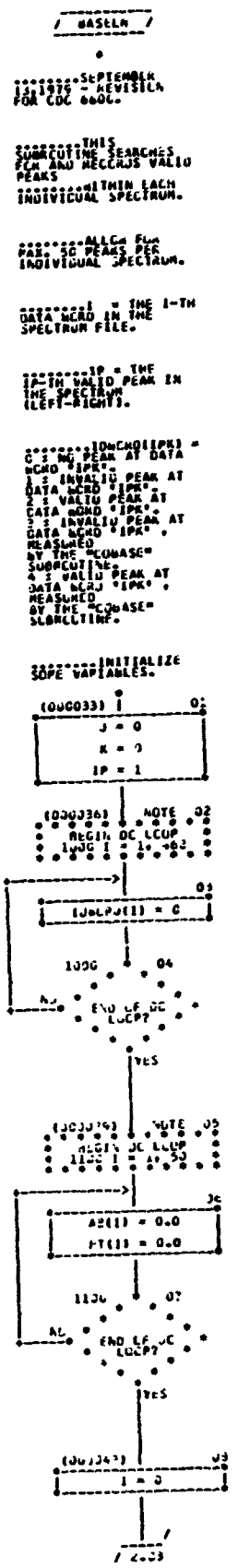


CHART TITLE - SUBROUTINE BASEAR(DIFF,VALUE)

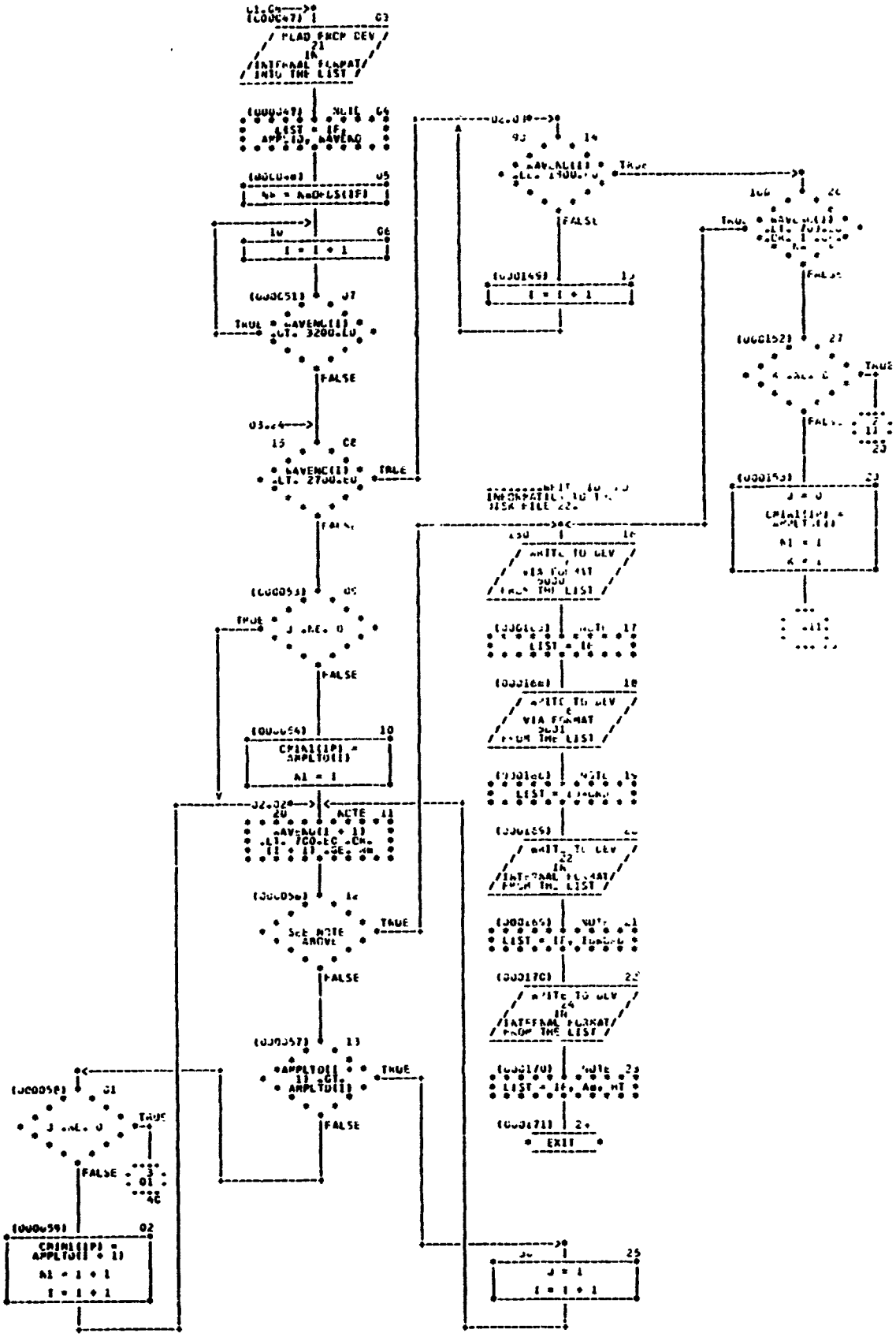


CHART TITLE - SUBROUTINE BASELN(DIFF,VALUE)

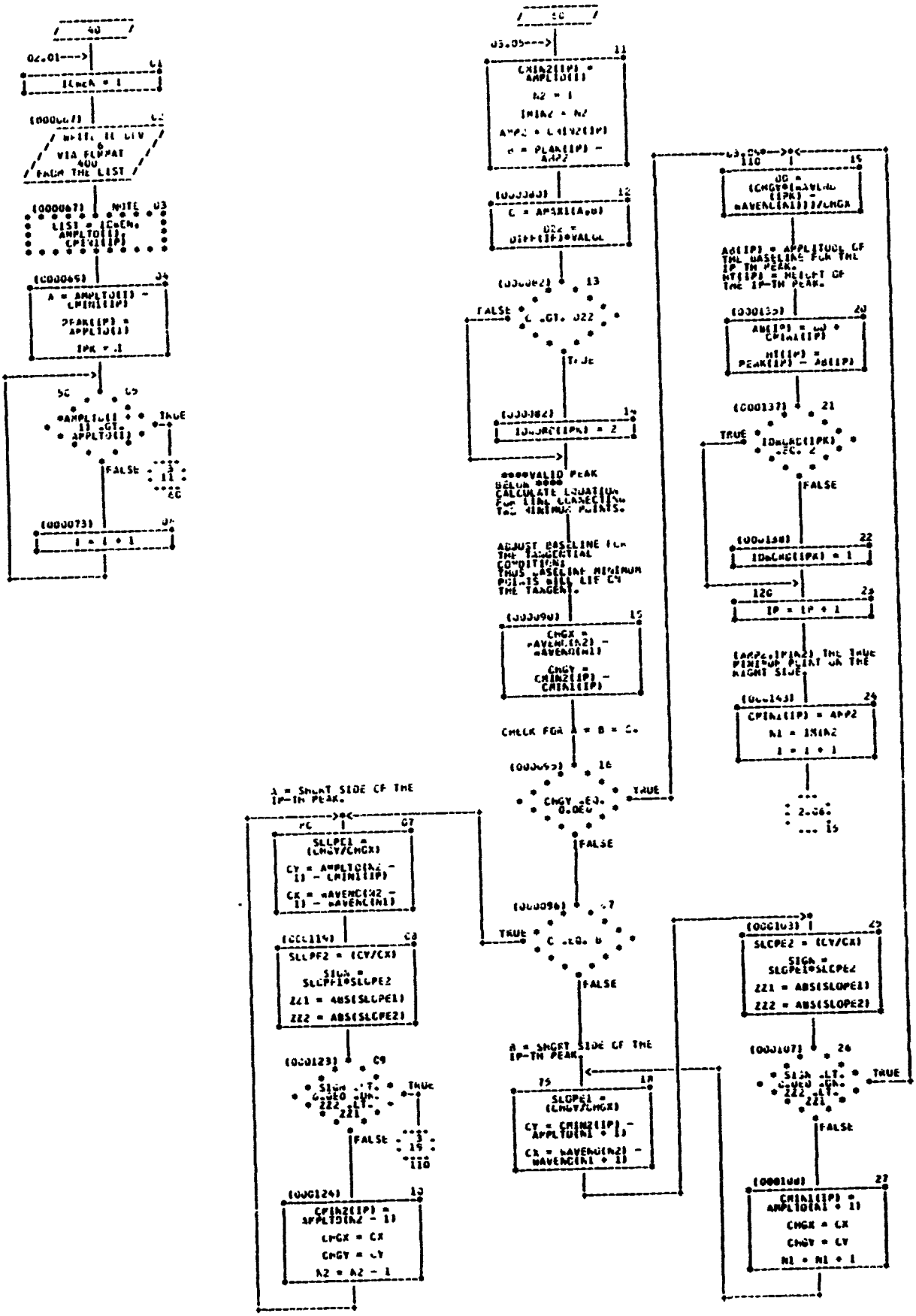


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON /POINTS/ NWCRDS(30)
      DIMENSION AMPLTD(4688),mAVENC(4688),IDwORD(4691)
      DIMENSION CHIN1(50),CHIN2(50),PEAK(50),AB(50),HT(50),DIFF(30)
400   FORMAT(3X,I5,3X,E15.7,3X,E15.7)
5000  FORMAT (5X,I5)
5001  FORMAT (5(/5X,10011))
```

CARD ID PAGE/BOX NAME REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)

FORTRAN MODULE 1490 - SUBROUTINE C'BASE

CHART TITLE - SUBROUTINE CCBASE(DIFF,VALUE,JX)

CARD ID	PAGE/BOX	NAME	REFERENCES					
(0000031)	1.01	CC'ASE						
(0000033)	1.02		(0000034)	1.03				
(0000034)	1.03	2						
(0000041)	1.04		(0000046)	1.04				
(0000045)	1.05	4	(0000041)	1.06				
(0000047)	1.09	5	(0000044)	1.07				
(0000052)	1.11	6	(0000051)	1.21	(00000[illegible])	3.25		
(0000063)	1.22	7	(0000055)	1.17				
(0000067)	1.23	10	(0000067)	1.24				
(0000065)	1.26	20	(0000073)	1.27				
(0000074)	1.28	30	(0000069)	1.20				
(0000075)	1.29	35	(0000077)	1.30				
(0000074)	2.01	40	(0000075)	1.29				
(0000080)	2.02	55	(0000027)	2.03				
(0000087)	2.04	65	(0000083)	2.02				
(0000092)	2.06	[illegible]	(0000105)	2.14				
(0000095)	2.07	65	(0000097)	2.08				
(0000107)	2.09	900	(0000087)	2.04				
(0000098)	2.10	70	(0000095)	2.07				
(0000099)	2.11	71	(0000101)	2.12				
(0000102)	2.13	75	(0000099)	2.11				
(0000115)	3.01	[illegible]	(0000104)	2.14				
(0000116)	3.02	45	(0000111)	2.0[illegible]				
(0000128)	3.05	100	(0000117)	3.03				
(0000141)	3.08	150	(0000153)	3.15				
(0000157)	3.09	170	(0000137)	3.07	(0000169)	4.12		
(0000177)	3.13	110	(0000133)	3.06	(0000164)	3.11	(0000[illegible])	3.14
(0000181)	3.19	111	(0000176)	3.17				
(0000192)	3.20		(0000164)	3.23				
(0000183)	3.22		(0000192)	3.20				
(0000184)	3.23	105						
(0000188)	3.26		(0000139)	4.01				
(0000185)	4.01	116						
(0000192)	4.03	11[illegible]	(00001[illegible])	4.24				
(0000195)	4.05		(0000203)	4.05				
(0000203)	4.04	150						
(0000205)	4.09		(0000207)	4.07				
(0000210)	4.10	200						
(0000219)	4.16		(0000231)	4.23				
(0000224)	4.21		(0000227)	4.19				
(0000227)	4.22	225	(0000222)	4.18				
(0000231)	4.23	220	(0000219)	4.16	(00002[illegible])	4.21		
(0000236)	4.2[illegible]		(0000242)	5.03				
(0000242)	5.03	400						
(0000243)	5.04	2[illegible]3	(0000235)	4.24				
(0000251)	5.11		(0000255)	5.15				
(0000255)	5.19	310						
(0000266)	5.20	400	(0000261)	5.24				

CHART TITLE - NON-PROCEDURAL STATEMENTS

12/05/79 PROCEDURAL STATEMENT LABEL INDEX AUTOFLOW CHART SET - E490 - SUBROUTINE COBASE PAGE 1

PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME
1.01	CBASE	1.28	30	2.11	71	3.19	111	4.23	220
1.03	2	1.29	35	2.13	75	4.03	115	4.22	225
1.08	4	2.01	40	3.01	80	4.01	116	5.04	230
1.09	5	2.02	55	3.02	85	3.09	120	5.03	300
1.11	6	2.04	60	3.05	100	3.08	130	5.19	310
1.22	7	2.06	62	3.23	105	4.09	150	5.26	400
1.23	10	2.07	65	3.16	110	4.10	200	2.09	600
1.26	20	2.10	70						

CHART TITLE - SUBROUTINE CUMASE(DIFF,VALUE,JX)

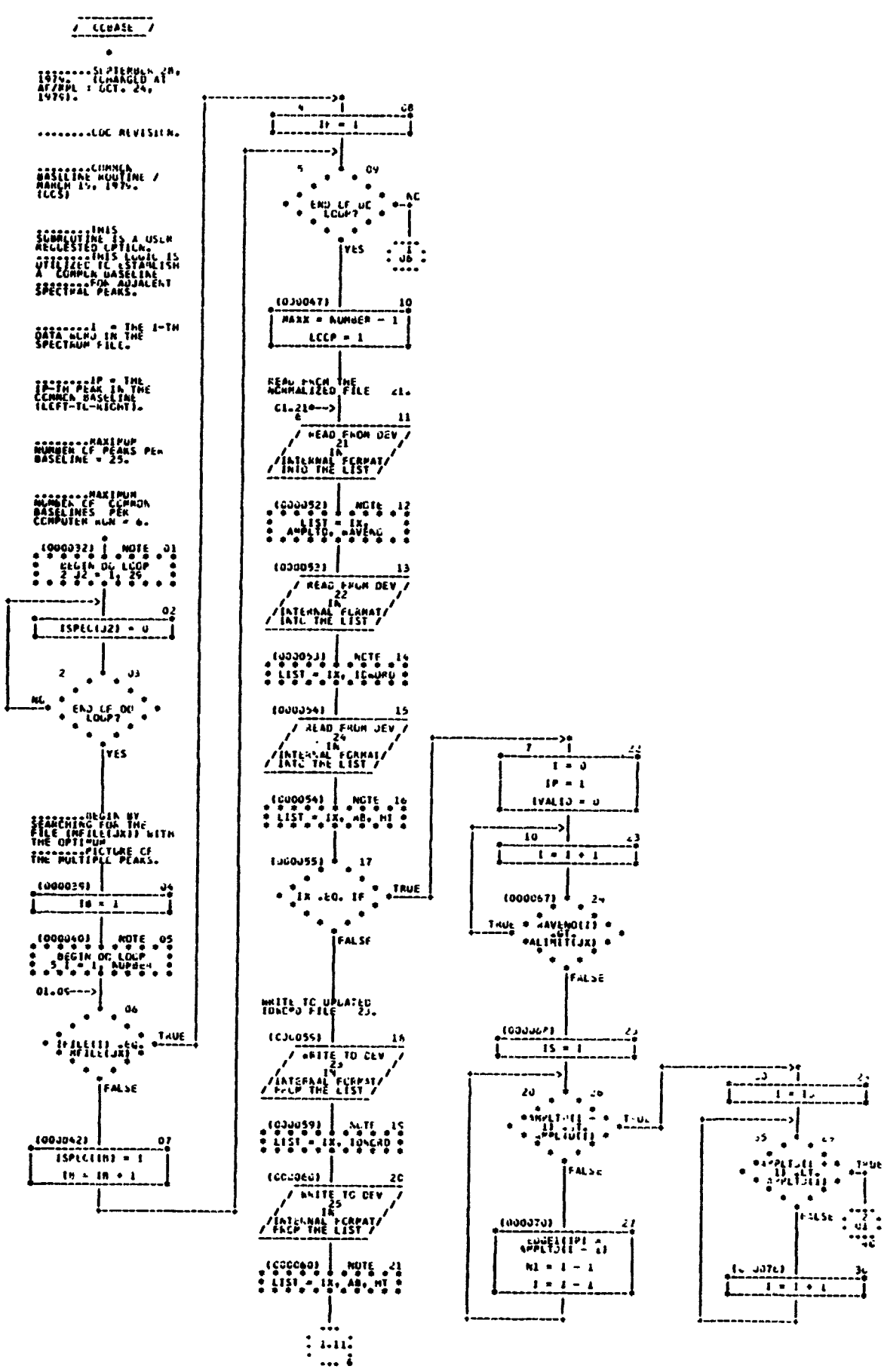


CHART TITLE - SUBROUTINE CODASE(DIFF,VALUE,JX)

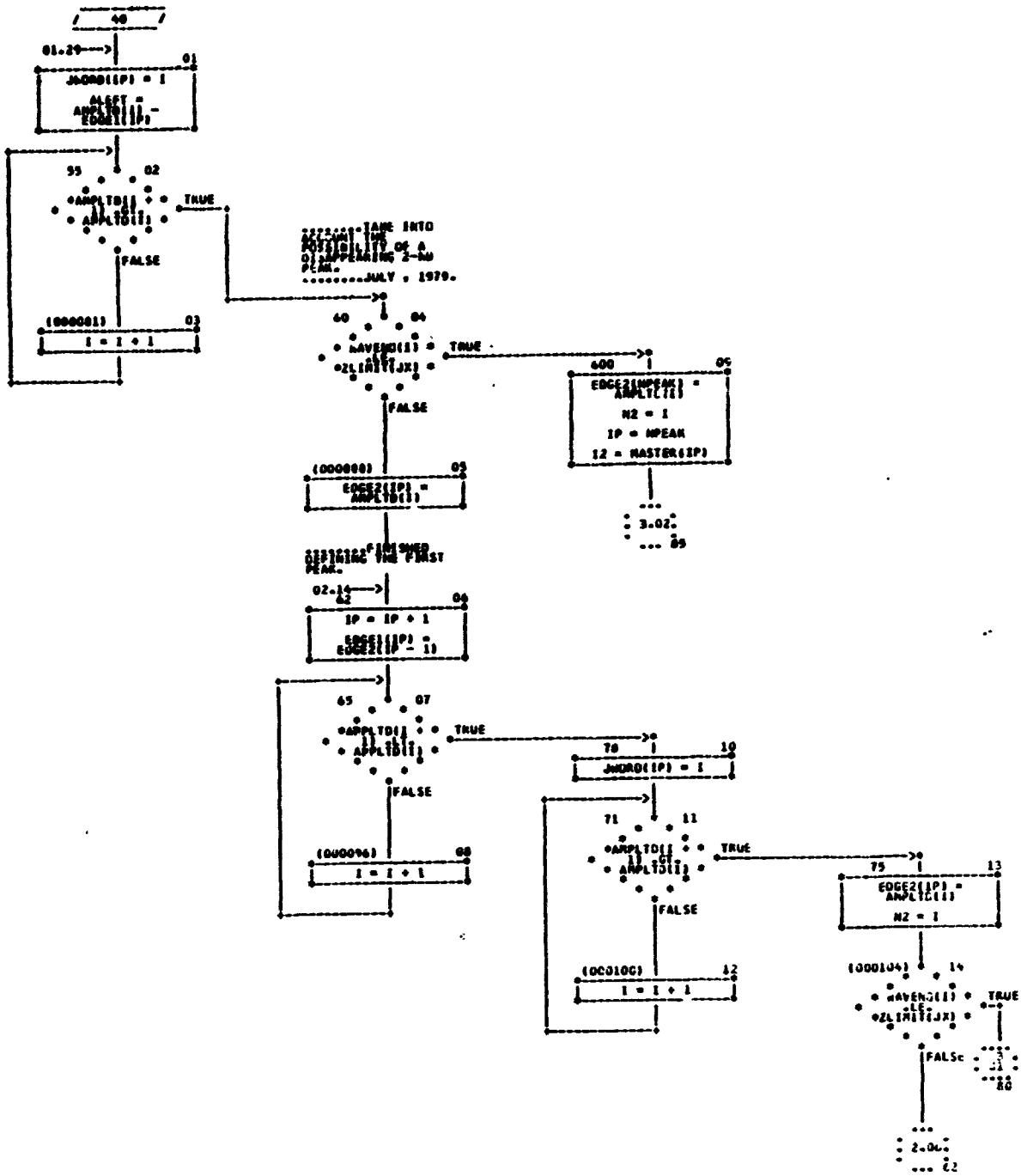


CHART TITLE - SUBROUTINE CGBASE(DIFF,VALUE,JX)

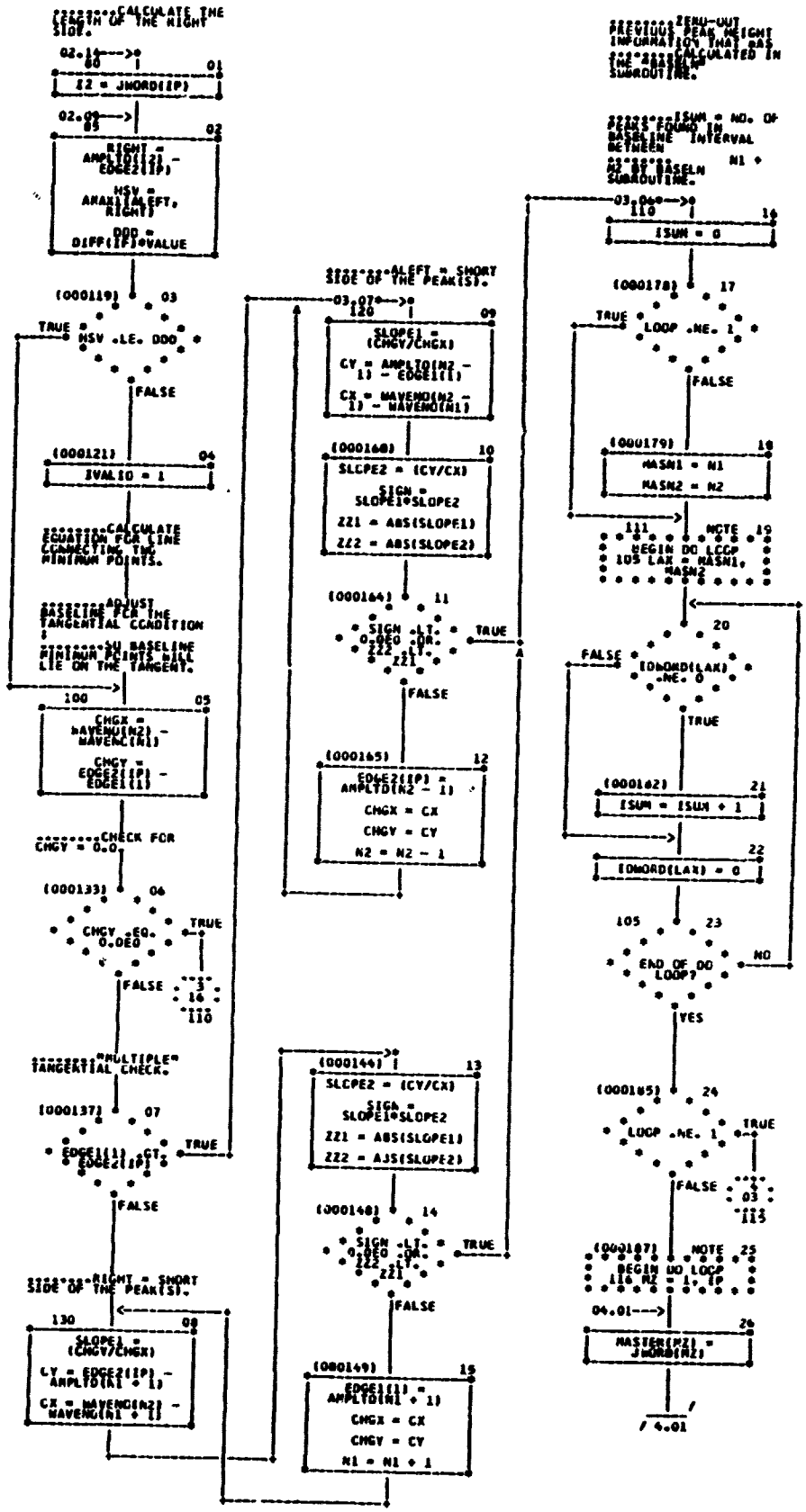


CHART TITLE - SUBROUTINE COBASE(DIFF,VALUE,JX)

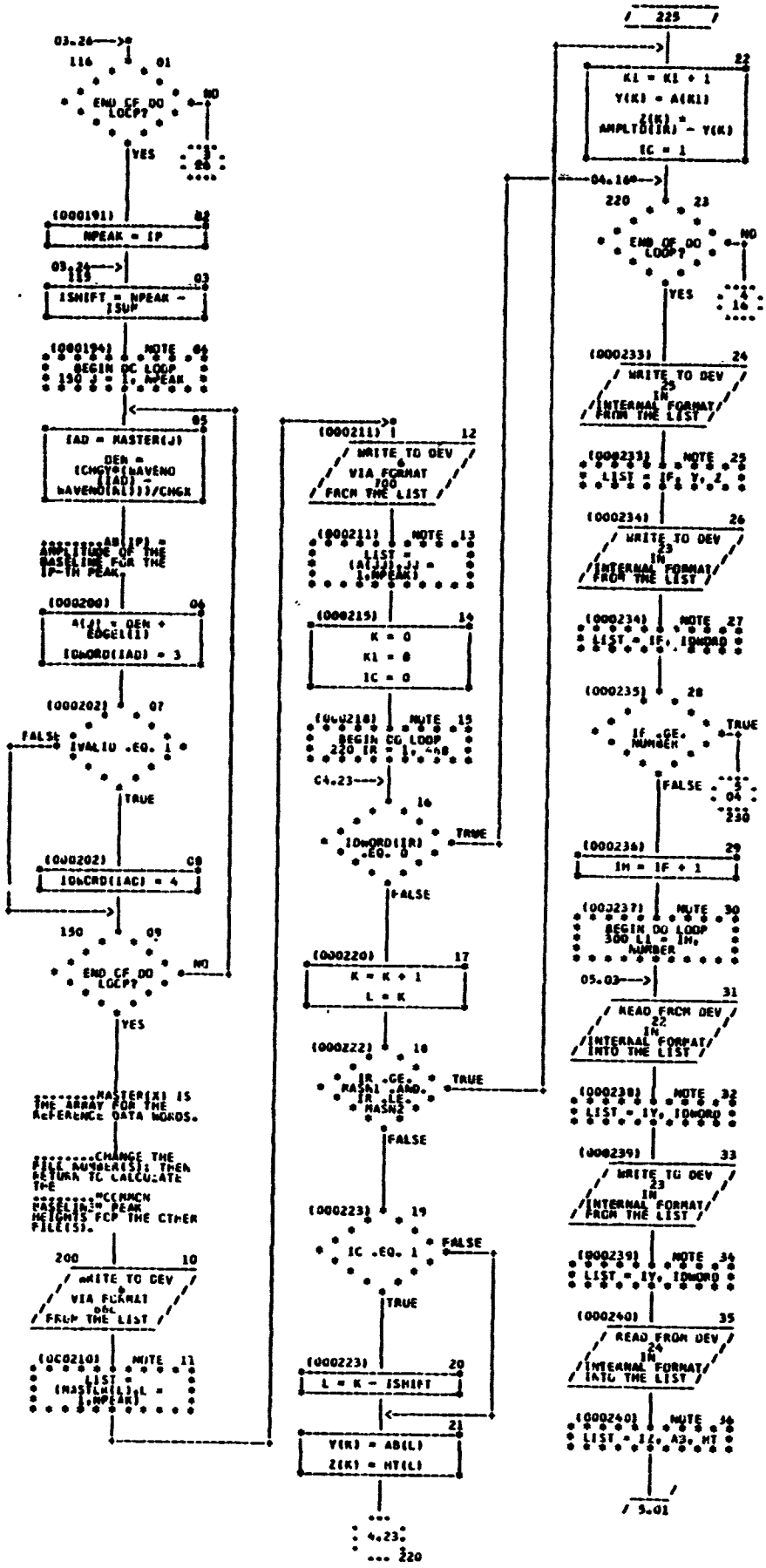


CHART TITLE - SUBROUTINE CCBASE(DIFF,VALUE,JX)

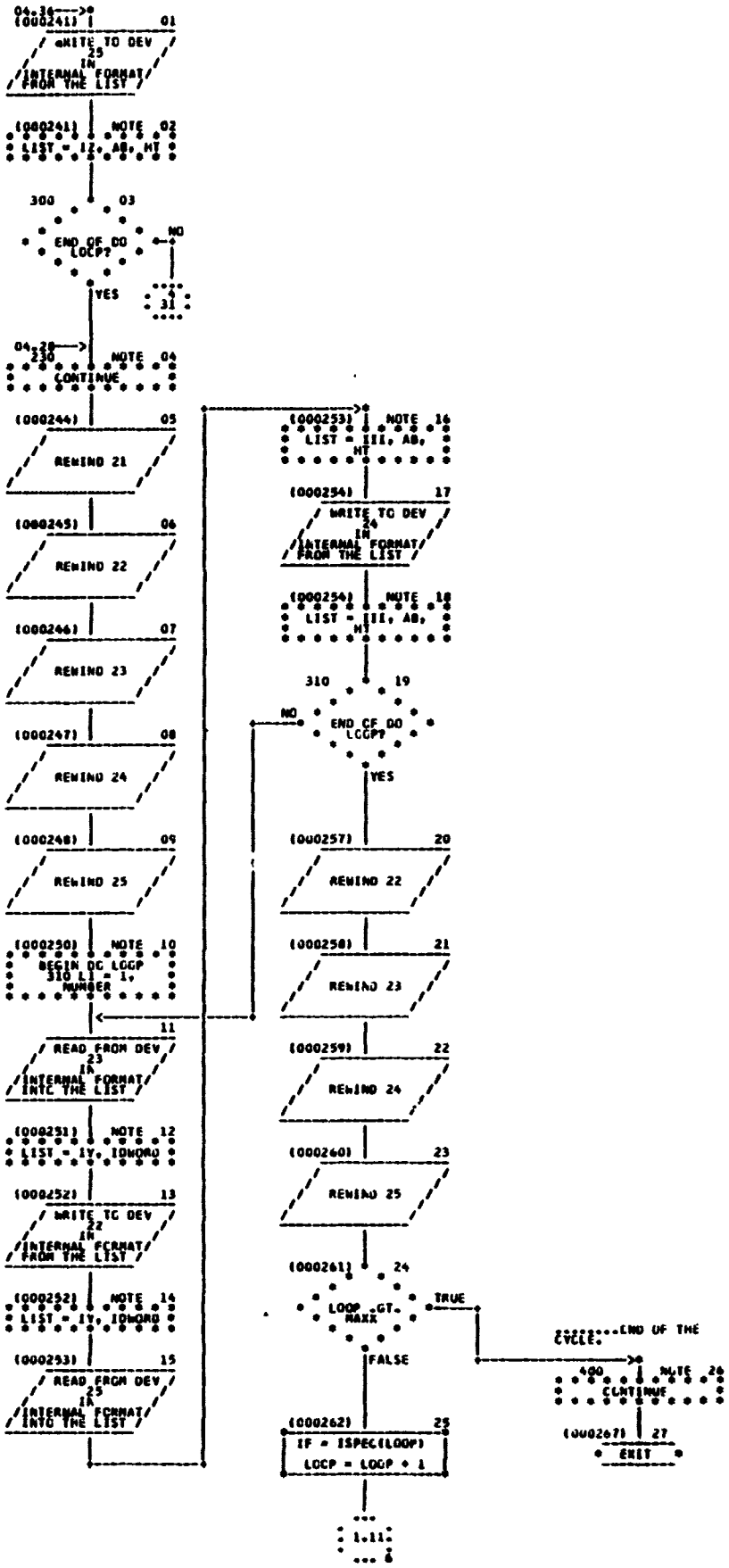


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON /SPECTR/ IFILE(30),NPTS(30)
      COMMON /TWINPK/ ALIMIT(6),ZLIMIT(6),MFILE(6),NORM(6,NUMBER
      DIMENSION AMPLTD(468),WAVENO(468),IDWORD(468),AB(50),HT(50,
      DIMENSION EDGE1(25),EDGE2(25),ISPEC(29),JWORD(25),MASTER(25)
      DIMENSION A(25),Y(50),Z(50),DIFF(30)
700   FORMAT (10(5X,F6.2))
666   FORMAT(1H0,5X,513)
```

CARD ID PAGE/BOX NAME REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)

FORTRAN MODULE E499 - SUBROUTINE PKTABL

CHART TITLE - SUBROUTINE PKTABL(IREG,ITOTAL,IKOUNT)

PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME
1.01	KTABL	2.09	5	2.16	35	3.06	65	2.05	230
1.01	1	3.09	10	2.18	45	3.29	70	3.24	240
1.20	2	1.21	15	2.24	50	1.25	110	3.14	250
2.01	3	3.32	20	2.29	60	3.01	210	2.12	500
1.27	4	1.23	25						

CHART TITLE - SUBROUTINE PKTABL(IREG,ITOTAL,IKOUNT)

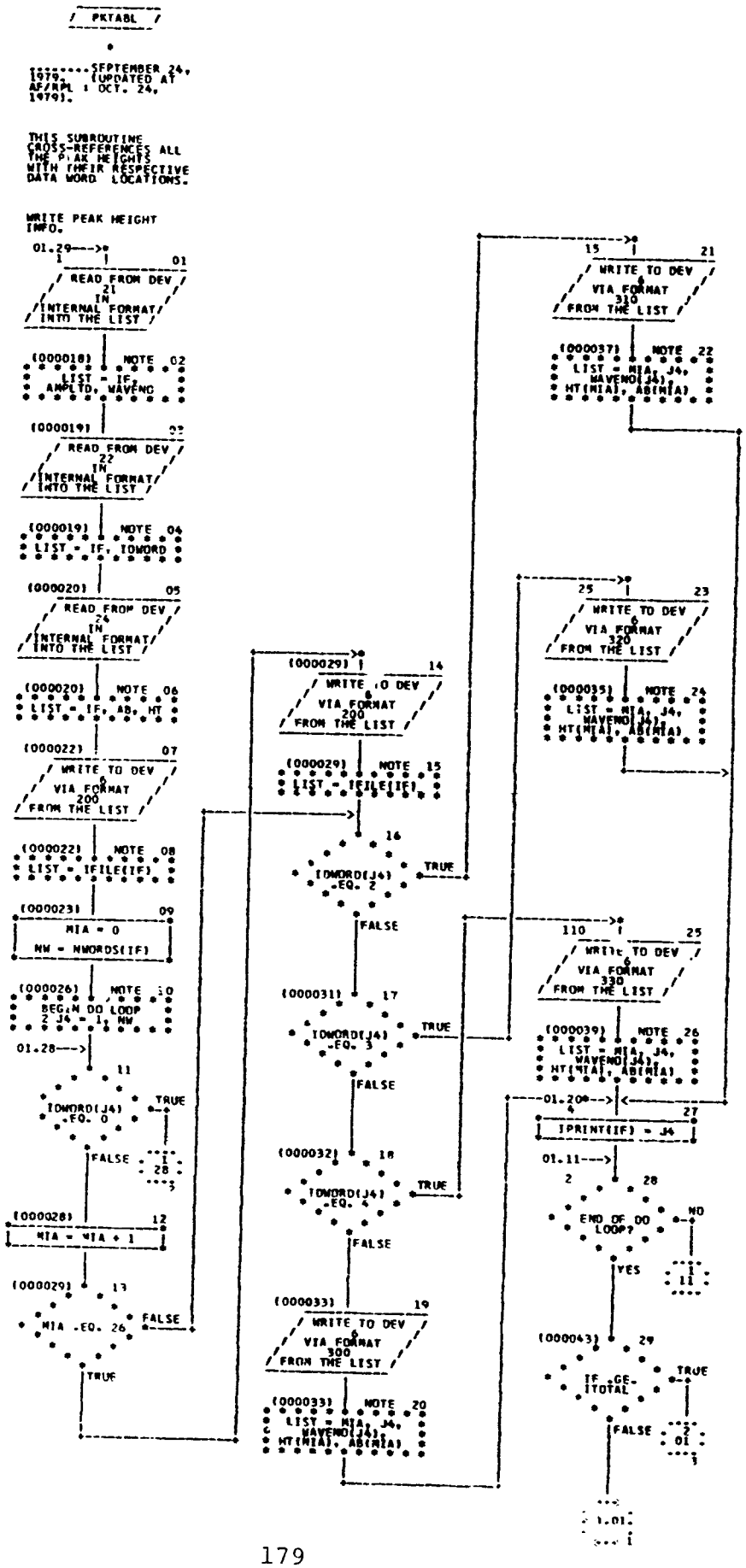


CHART TITLE - SUBROUTINE PKTABL(IREG,ITOTAL,IKOUNT)

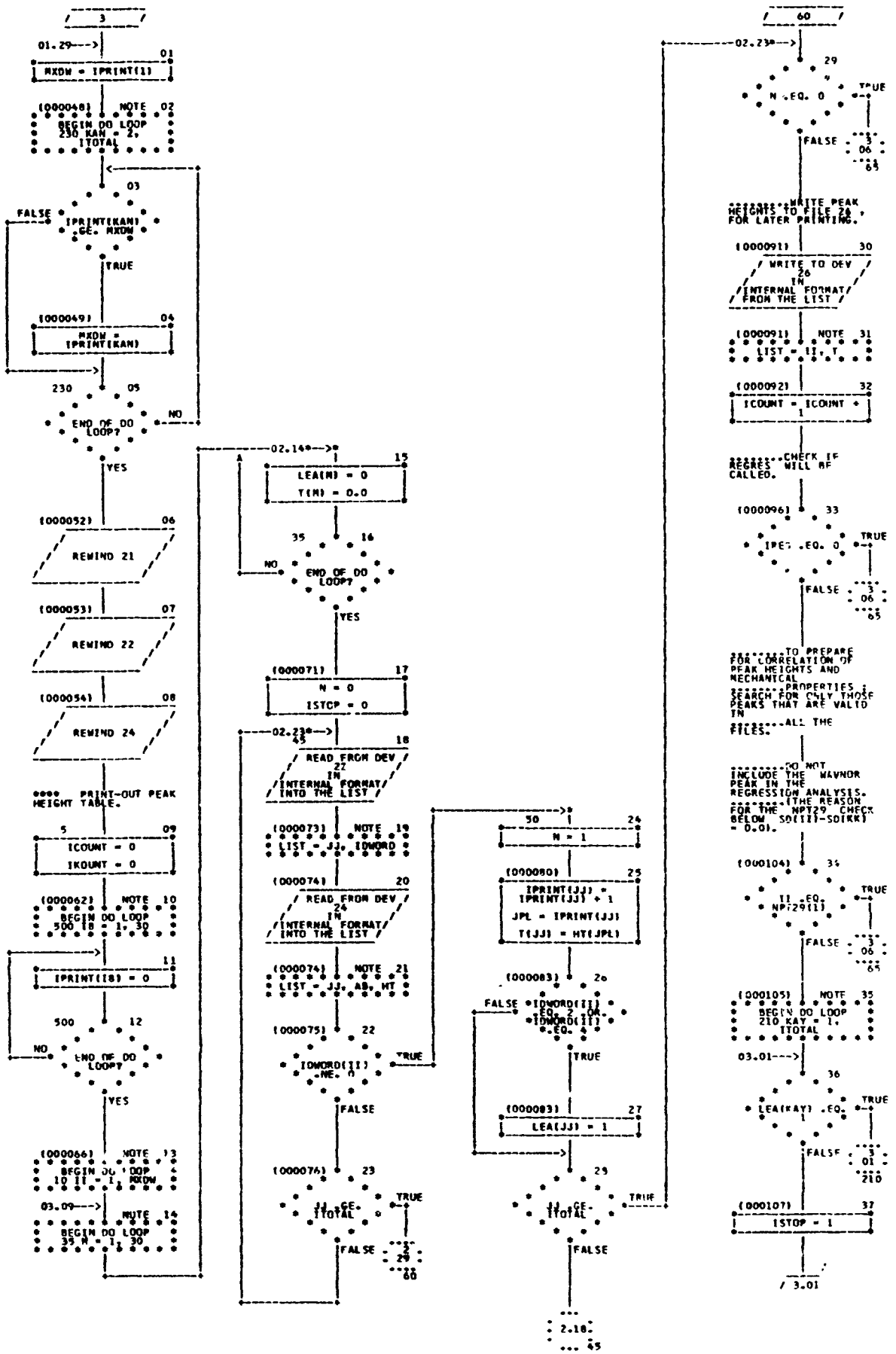


CHART TITLE - SUBROUTINE PKTABL(IREG,ITOTAL,IKOUNT)

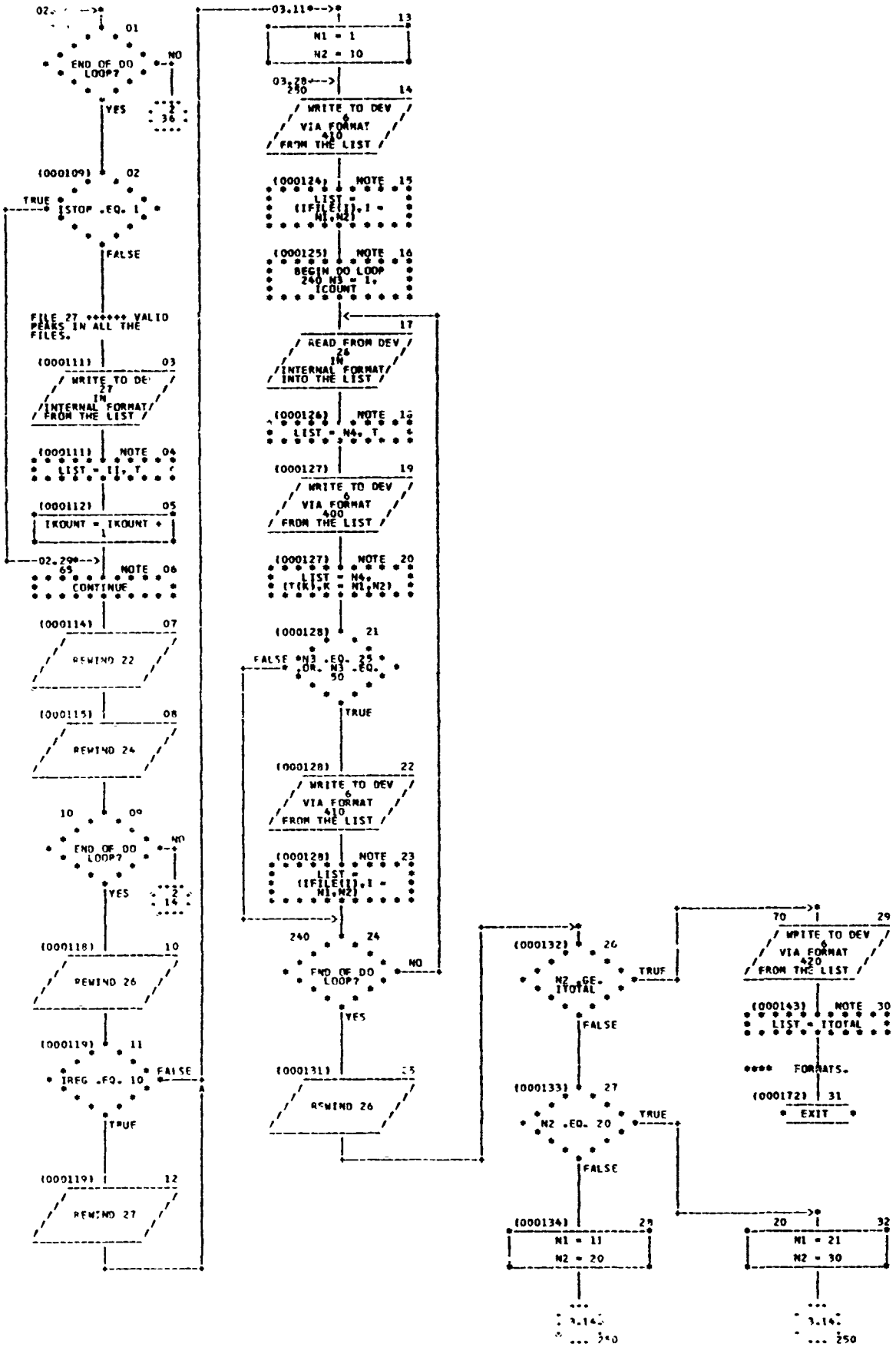


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
        COMMON /SPECTR/ IFILE(30),NPT2?(30)
        COMMON /POINTS/ NWORDS(30)
        DIMENSION AMPLYD(468),WAVENO(468.,IDNGRD(468),AB(50),HT(50)
        DIMENSION T(30),IPRINT(30),LFA(30)
200     FORMAT(1H1,4X,"FOURIER TRANSFORM INFRARED SPECTROSCOPY  --  NORMAL
        IZED PEAK HEIGHT INFORMATION   FILE NUMBER",I3,//5X
        ,"*** - DENOTES A VALID PEAK."/5X,"CB. - DENOTES A PEAK MEASURED F
        ROM A  COMMON BASELINE ."//5X
        ,"PEAK NUMBER     DATA WORD     WAVE NUMBER     PEAK HEIGHT     BA
        SELINE AMPLITUDE"/5X,"---- ------     ---- ----     ---- ------
          ---- ------     -------- ---------")
300     FORMAT(1H0,8X,I2,13X,I3,8X,F10.4,5X,F12.7,5X,F12.7)
310     FORMAT(1H0,4X,"*** ",I2,13X,I3,8X,F10.4,5X,F12.7,5X,F12.7)
320     FORMAT(1H0,8X,I2," CB.",9X,I3,8X,F10.4,5X,F12.7,5X,F12.7)
330     FORMAT(1H0,4X,"*** ",I2," CB.",9X,I3,8X,F10.4,5X,F12.7,5X,F12.7)
400     FORMAT(/8X,I3,7X,10(F7.3,4X))
410     FORMAT(1H1,7X,"FTIS ***************************  PEAK HEIGHT TABUL
        ATION FOR ALL THE FILES  *******************************************"
        //8X,"DATA",8X,
        10("FILE",7X),/8X,"WORD",9X,10(I2,9X)/8X,"----------------------
        ------------------------------------------------------------------
        ---------------- -----------" )
420     FORMAT(1H0,4X,"NORMAL END OF PEAK HEIGHT TABLE  "/5X,"TOTAL NUMBER
         OF FILES LISTED = ",I3,".")
```

CARD ID PAGE/BOX NAME REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)

FORTRAN MODULE E490 - SUBROUTINE PLWAVE

CHART TITLE - SUBROUTINE PLWAVE(ITAPS,IF,NPTS,WN,...)

CHART TITLE - NON-PROCEDURAL STATEMENTS

PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME
1.01	LWAVE	1.17	20	1.24	30	1.29	40	1.30	50
1.23	10								

CHART TITLE - SUBROUTINE PLWAVE(ITAPE,IF,NPTS,MN,AP)

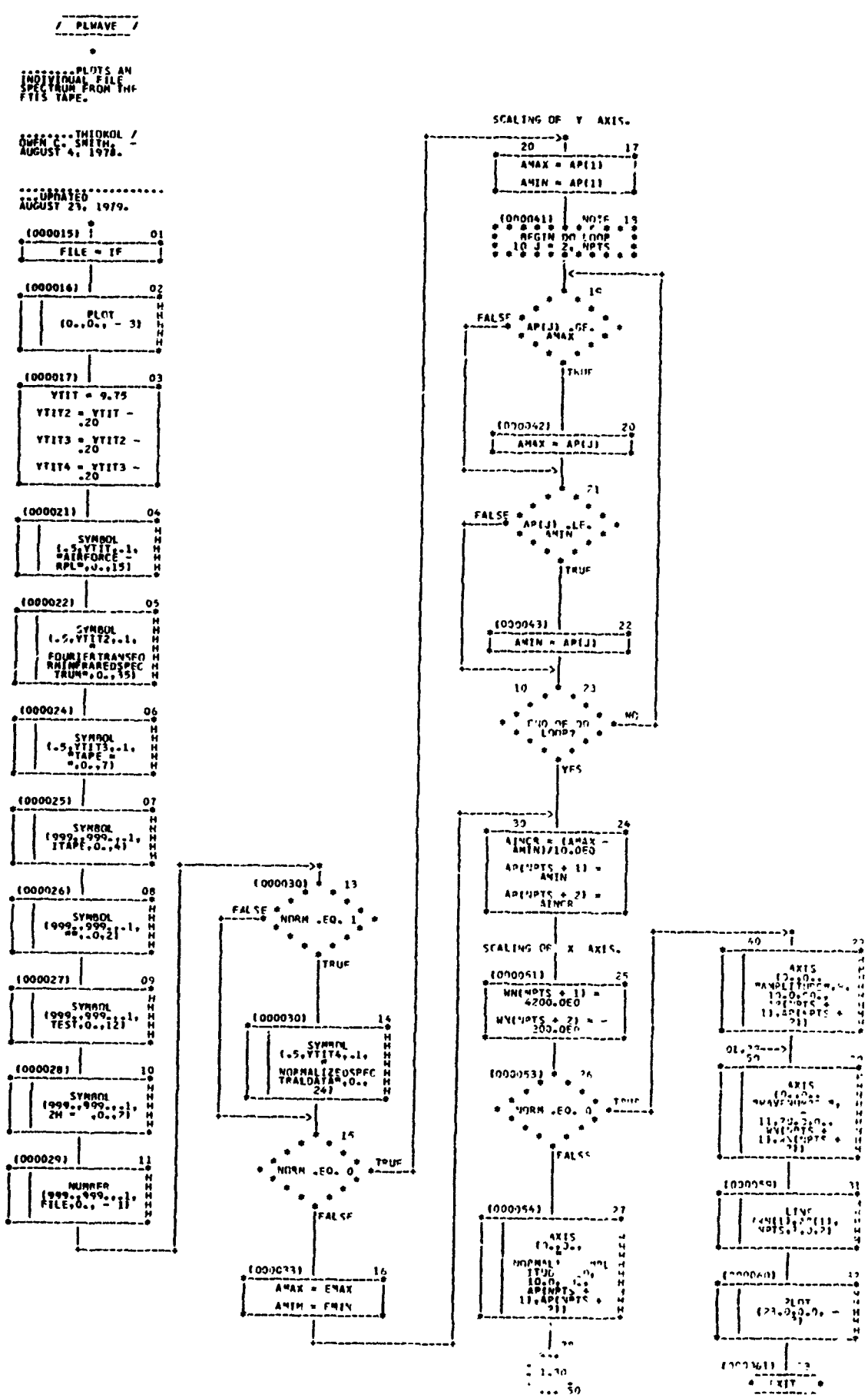


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
COMMON /PTINF / PMAX,PMIN,NOPM
DIMENSION AP(470),WN(470),TEST(_)
DATA TEST/"FILE","  NUM","BER "/
```

FORTRAN MODULE E450 - SUBROUTINE REGRES

CHART TITLE - SUBROUTINE REGRES

CARD ID	PAGE/BOX	NAME	REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)
(0003331)	6.15 420		
(0003341)	6.16 430	(0003321) 6.14	
(0003411)	6.17 440	(0003311) 6.13	
(0003441)	6.19 450	(0003471) 6.20	
(0003471)	6.20 460	(0003431) 6.18	
(0003481)	6.21 470	(0003281) 6.10	(0003291) 6.11 (0003311) 6.13 (0003371) 6.16 (0003461) 6.19
(0003511)	6.24 490		
(0003511)	6.24	(0003511) 6.25	
(0003641)	7.01 491	(0003611) 6.27	
(0003651)	7.03 417	(0003631) 6.29	
(0003661)	7.04 490		
(0003691)	8.01 511	(0003651) 7.03	
(0003701)	8.02 510		
(0003721)	8.06 520	(0003681) 7.07	(0003691) 8.01
(0003871)	9.15 550	(0003761) 8.14	(0003771) 8.16
(0003771)	8.16 530		
(0004341)	9.17 660	(0003871) 8.15	
(0004501)	8.27 661	(0004421) 8.21	
(0003811)	9.01 540	(0003771) 8.16	
(0003911)	9.03 560	(0003971) 8.15	
(0003961)	9.05 570	(0003961) 9.02	
(0004031)	9.07	(0004111) 9.12	
(0004041)	9.08 580		
(0004051)	9.09	(0004101) 9.11	
(0004091)	9.10 590	(0004051) 9.09	
(0004101)	9.11 600	(0004051) 9.09	
(0004111)	9.12 610	(0004031) 9.07	
(0004131)	9.14	(0004181) 9.16	
(0004171)	9.15 620	(0004131) 9.14	
(0004181)	9.16 630	(0004131) 9.14	
(0004201)	9.18	(0004251) 9.20	
(0004241)	9.19 640	(0004201) 9.18	
(0004251)	9.20 650	(0004291) 9.18	
(0004541)	10.01 665	(0004501) 8.27	
(0004571)	10.02 666	(0004491) 8.26	(0004521) 8.29
(0004661)	10.07	(0004691) 10.21	
(0004691)	10.10 645	(0004661) 10.07	
(0004701)	10.12 686	(0004681) 10.09	
(0004721)	10.14	(0004731) 10.15	
(0004731)	10.15 670		
(0004801)	10.20 680		
(0004951)	10.21 1100		
(0005121)	11.01 9999		
(0005141)	11.03	(0005181) 11.05	
(0005181)	11.05 1110	(0005141) 11.03	
(0005191)	11.09 1230	(0004941) 10.30	
(0005061)	11.12 1210	(0005001) 11.09	(0005231) 11.22
(0005101)	11.17 1250	(0005211) 11.08	
(0005921)	11.20 1500	(0005071) 11.13	
(0005221)	11.22 1350	(0005091) 11.14	
(0005251)	11.23 1400	(0005111) 11.19	

CHART TITLE - NON-PROCEDURAL STATEMENTS

PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME
1.01	EGRES	3.03	180	5.22	330	6.24	480	9.20	650
1.03	4	4.01	181	5.37	335	7.01	481	8.17	660
1.06	5	3.13	183	5.40	337	7.03	482	9.27	661
1.09	10	4.04	190	5.43	340	7.04	490	10.01	665
2.02	11	4.05	200	5.27	350	8.01	500	10.03	666
2.01	12	4.08	210	5.31	360	8.02	510	10.15	670
2.09	20	4.12	220	6.01	364	8.06	520	10.20	680
2.1.	70	4.13	230	6.04	369	8.16	530	10.10	685
2.24	75	4.17	235	6.05	370	9.01	540	10.12	686
2.25	76	4.22	260	6.07	38.	8.15	550	10.31	1100
2.27	78	4.25	261	6.11	390	9.03	560	11.09	1200
2.31	120	4.24	262	6.12	400	9.05	570	11.12	1210
2.35	130	4.35	263	6.14	410	9.08	580	11.17	1250
2.36	140	5.01	265	6.15	420	9.10	590	11.05	1310
2.37	150	5.05	270	6.16	430	9.11	600	11.22	1350
2.38	160	5.09	280	6.17	440	9.12	610	11.23	1400
2.39	170	5.11	290	6.19	450	9.15	620	11.20	1500
3.01	175	5.12	300	6.20	460	9.16	630	2.19	3000
3.02	179	5.16	310	6.21	470	9.19	640	11.01	9999
3.05	179	5.21	320						

CHART TITLE - SUBROUTINE REGRES

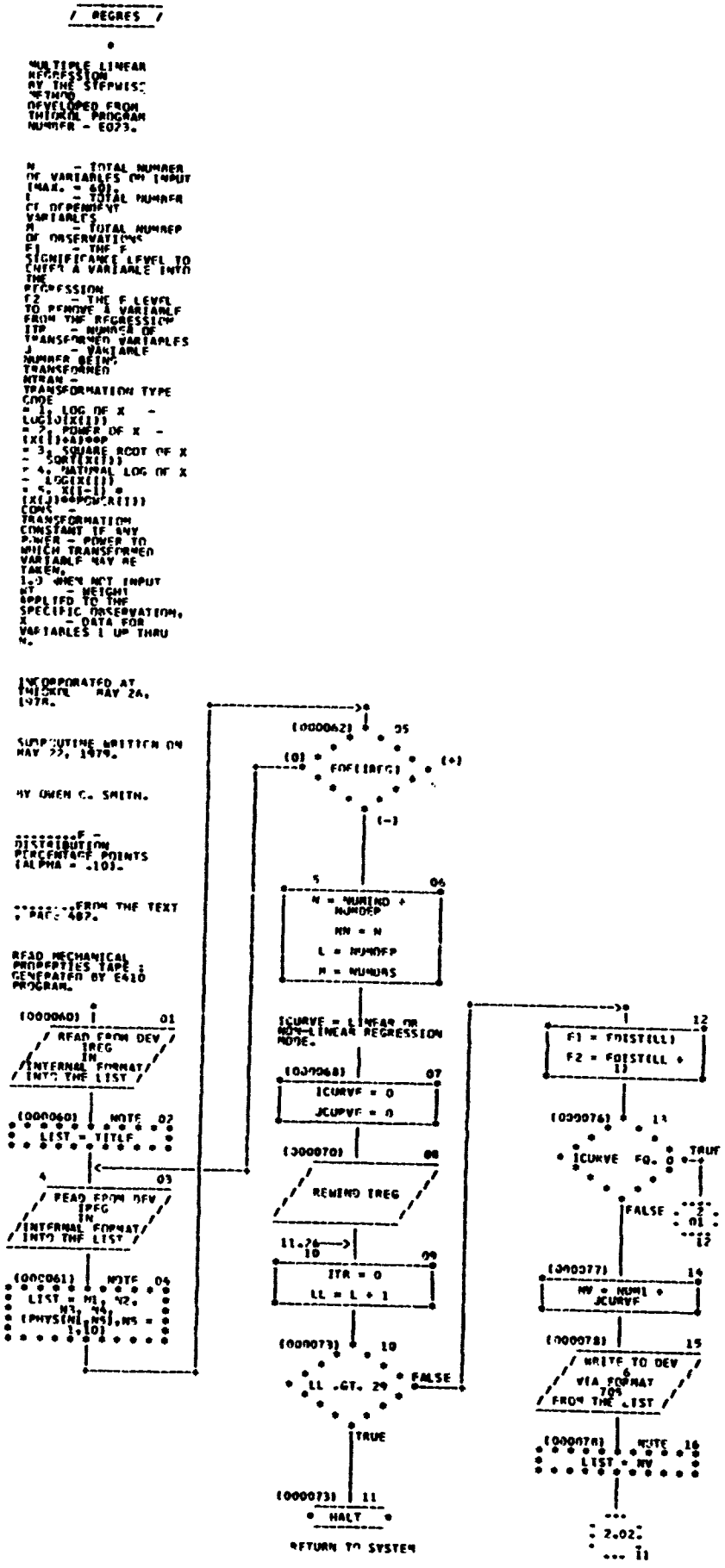


CHART TITLE - SUBROUTINE REGRES

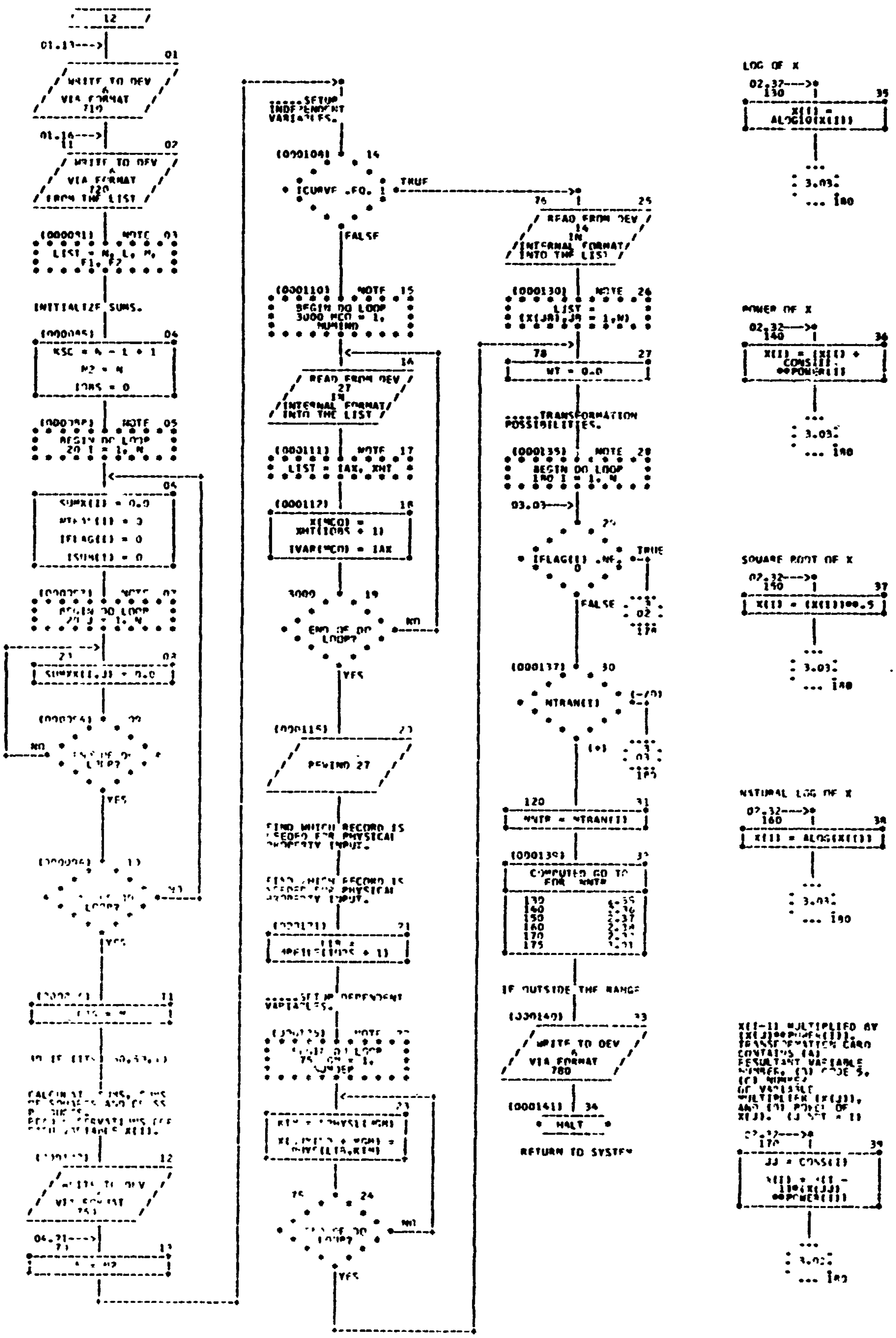


CHART TITLE - SUBROUTINE REGRES

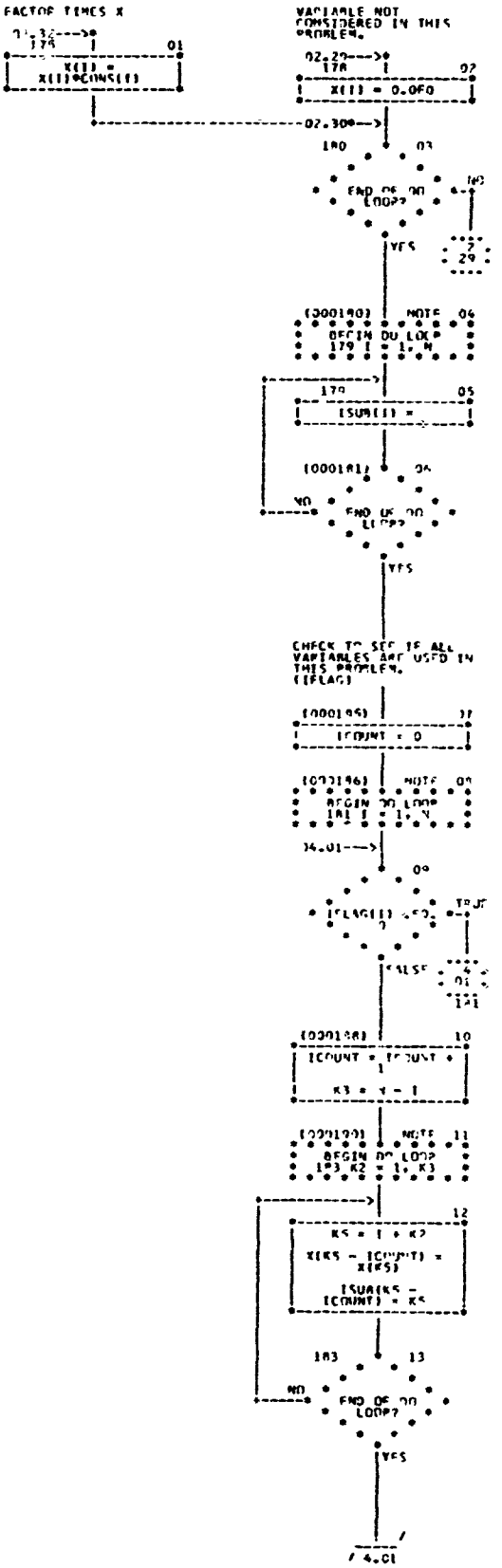


CHART TITLE = SUBROUTINE FORFS

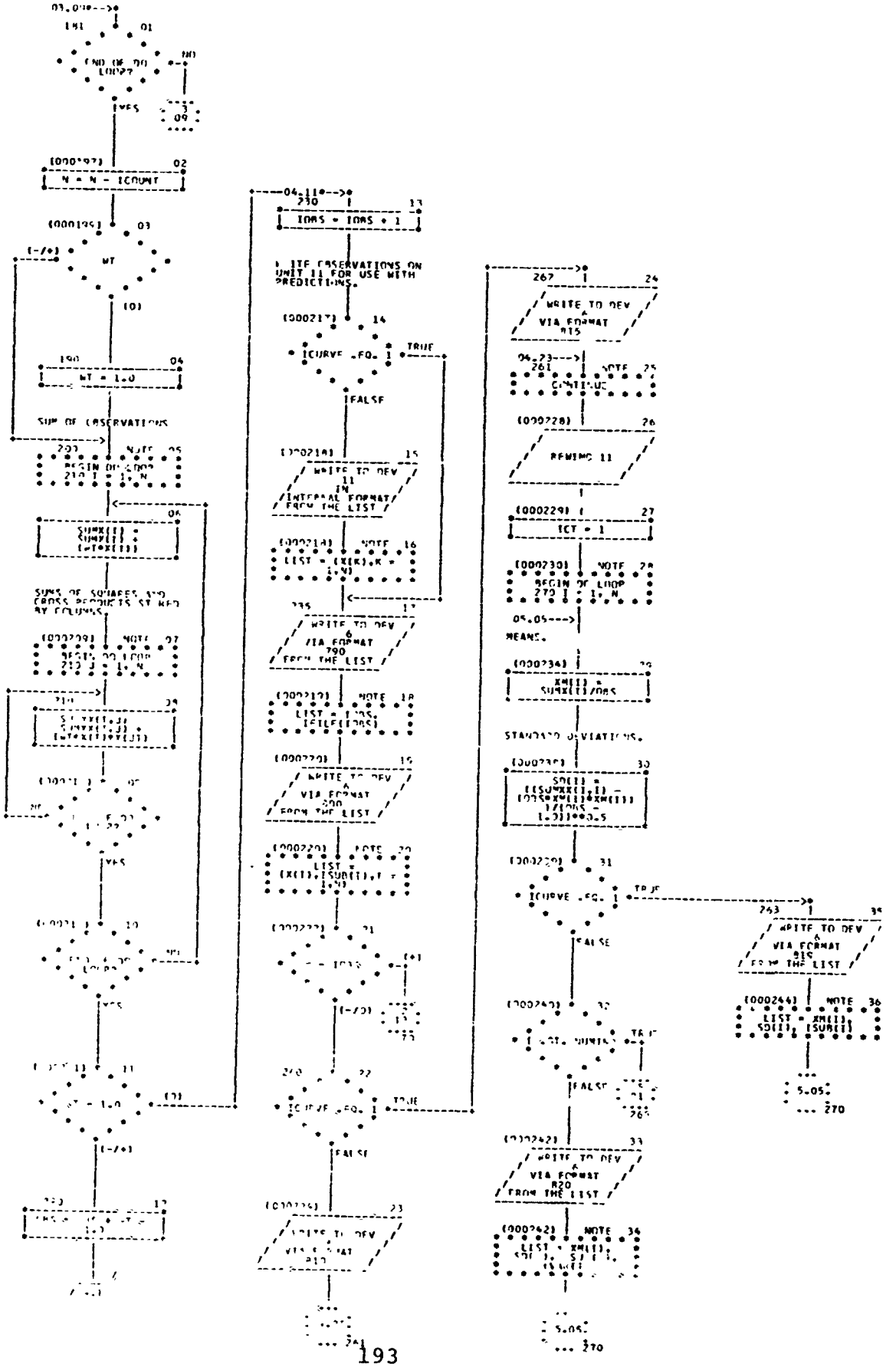
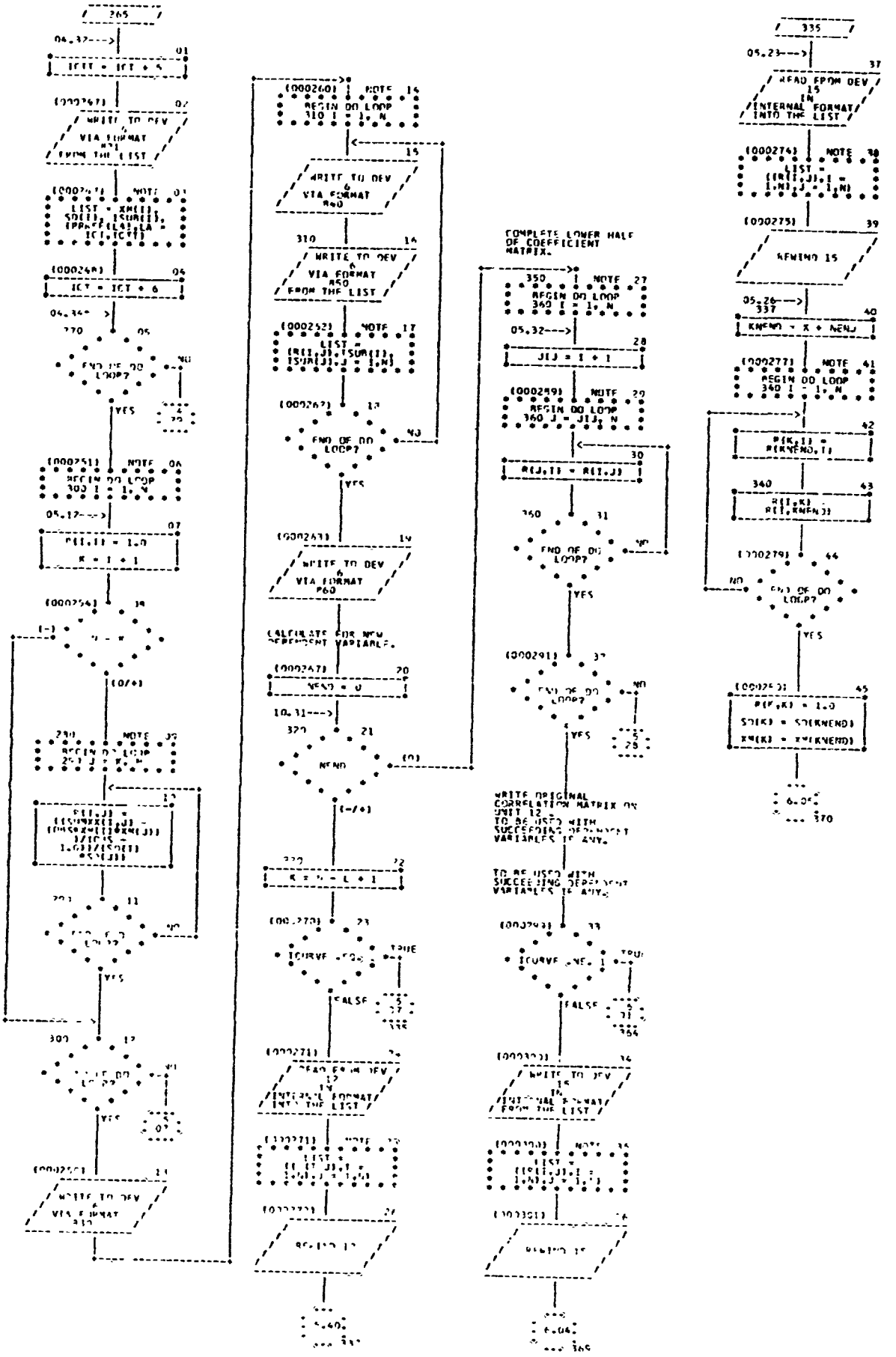


CHART TITLE - SUBROUTINE REGRES



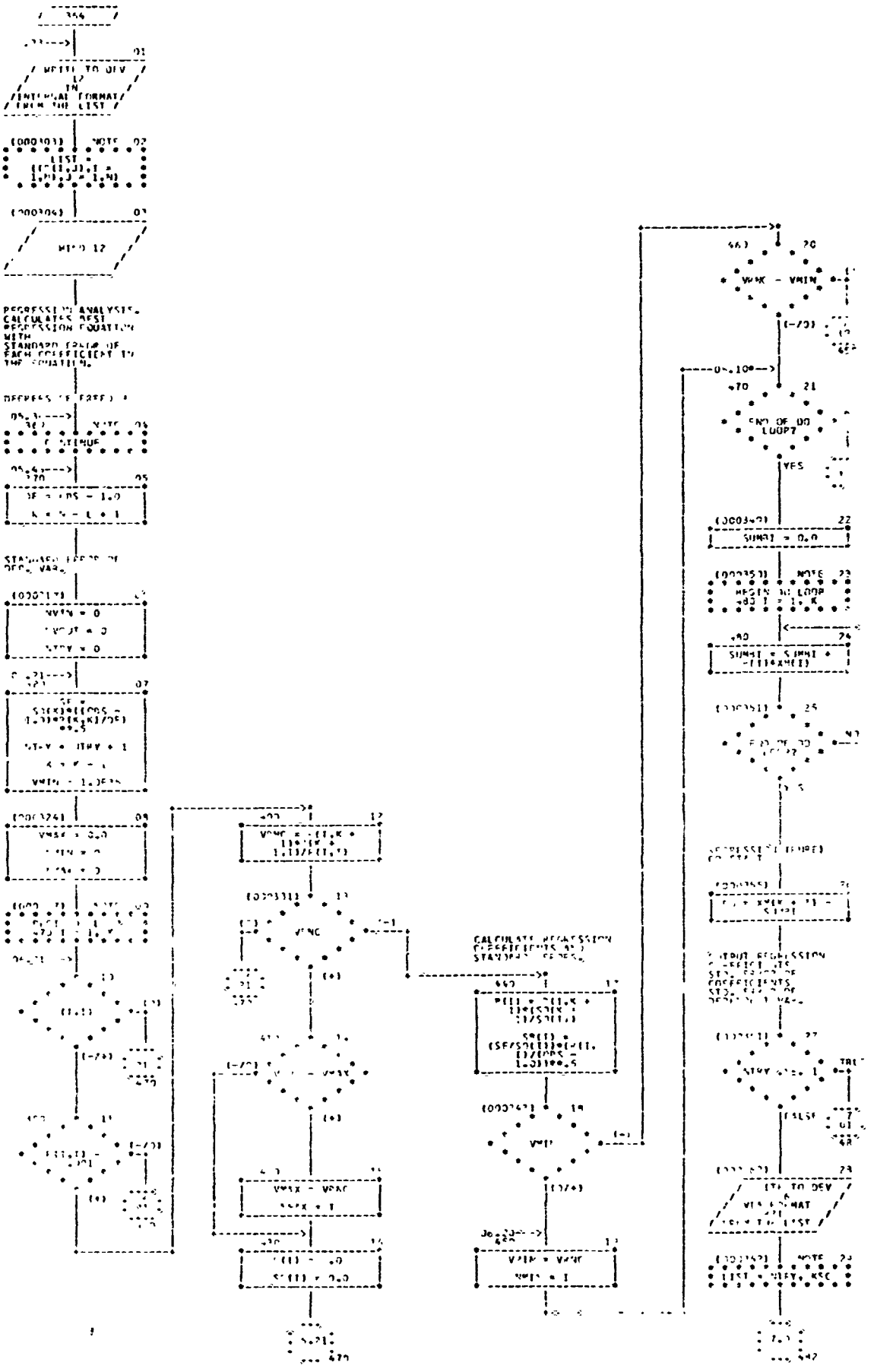
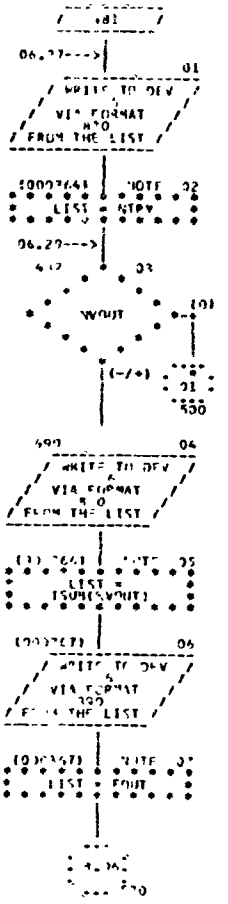


CHART TITLE - SUBROUTINE REGRES



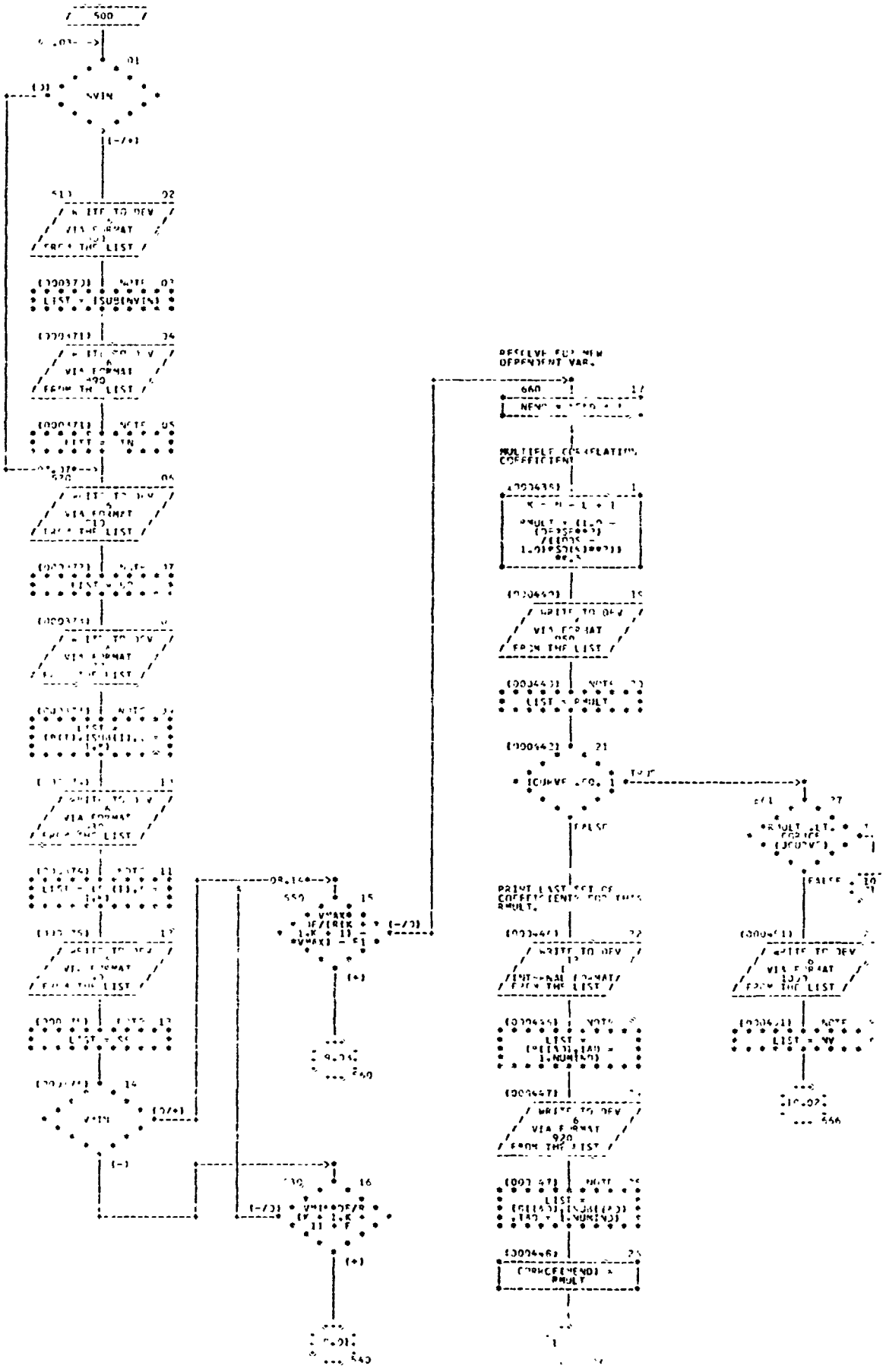


CHART TITLE - SUBROUTINE REGRES

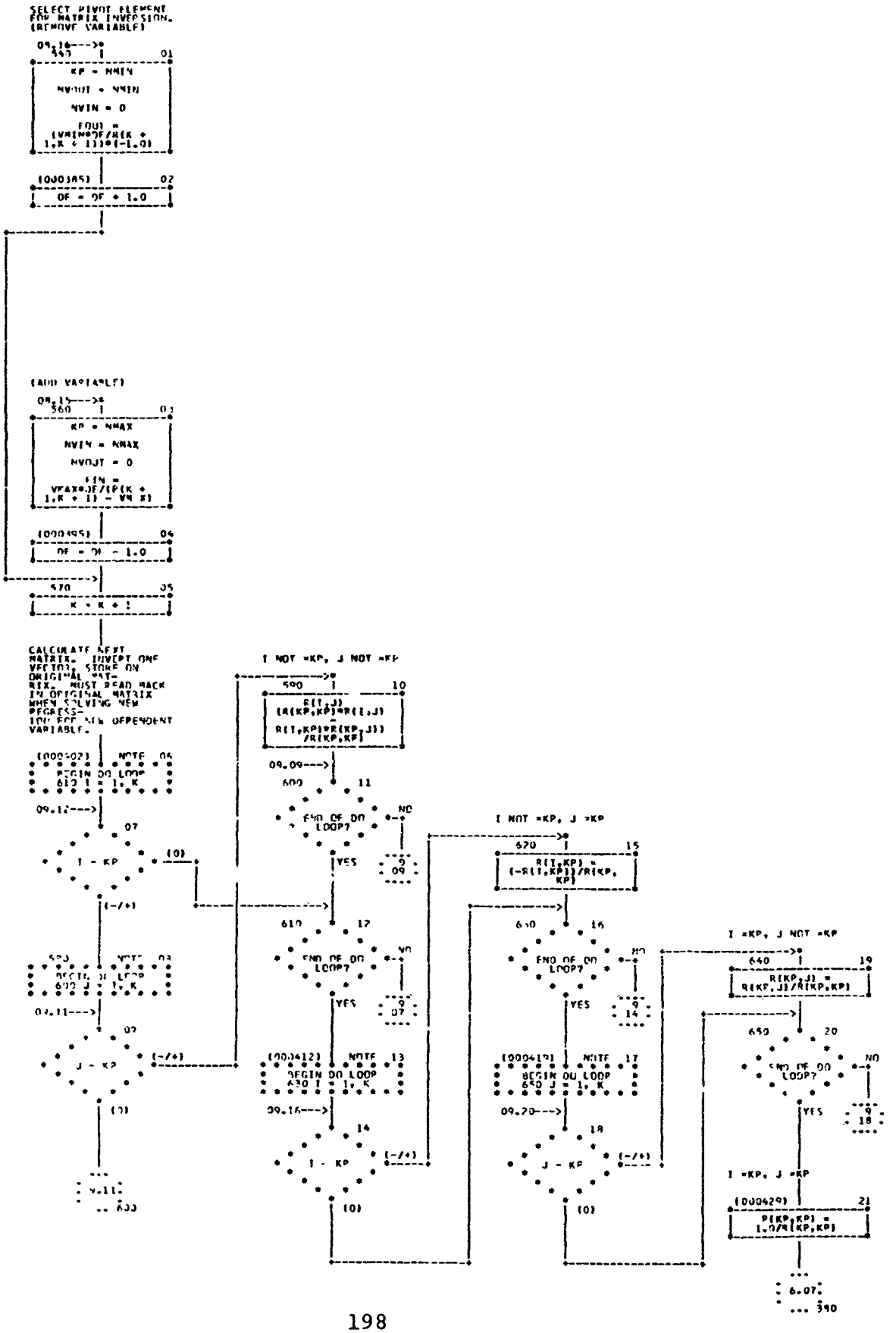


CHART TITLE = SUBROUTINE REGRES

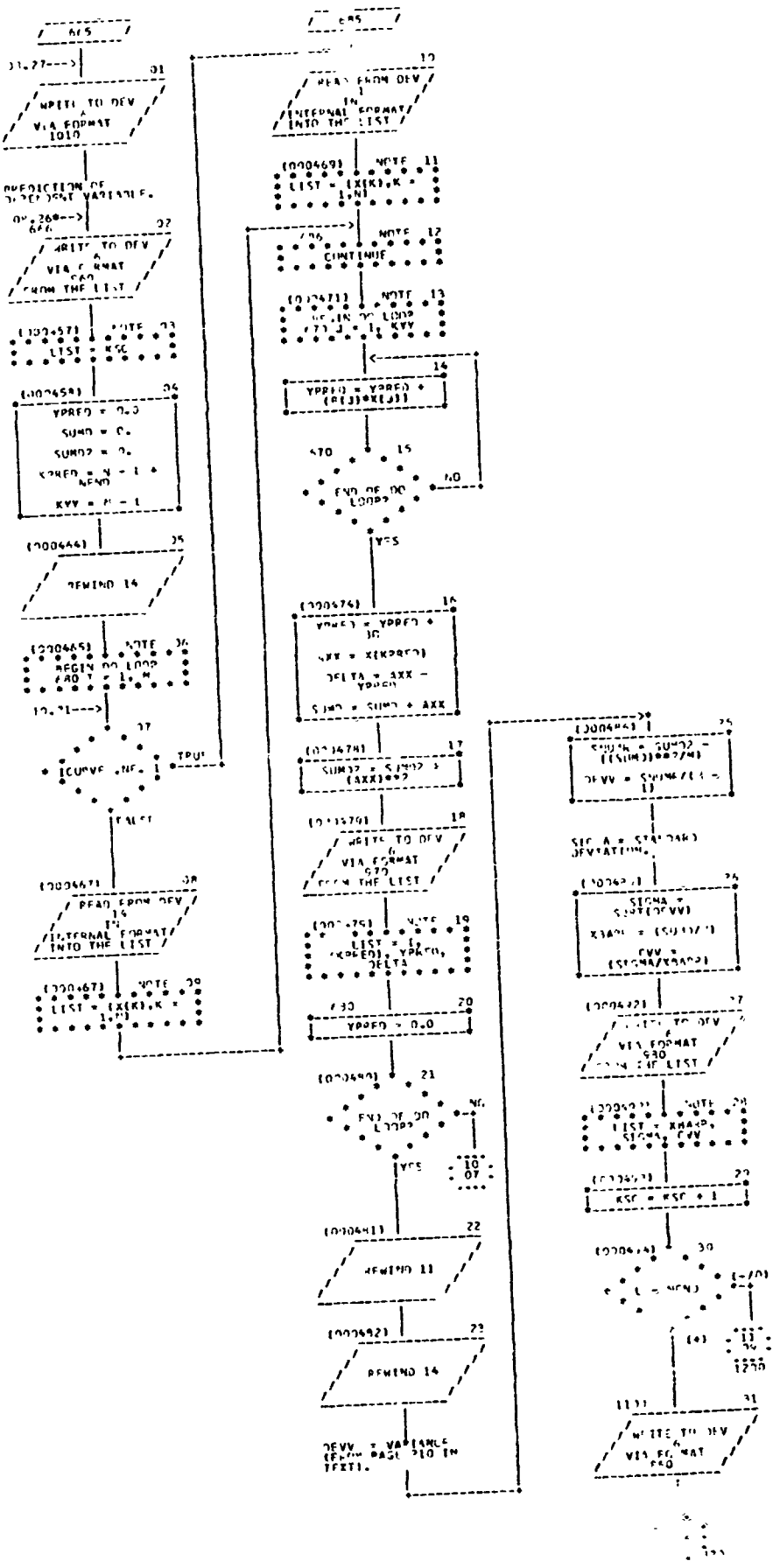
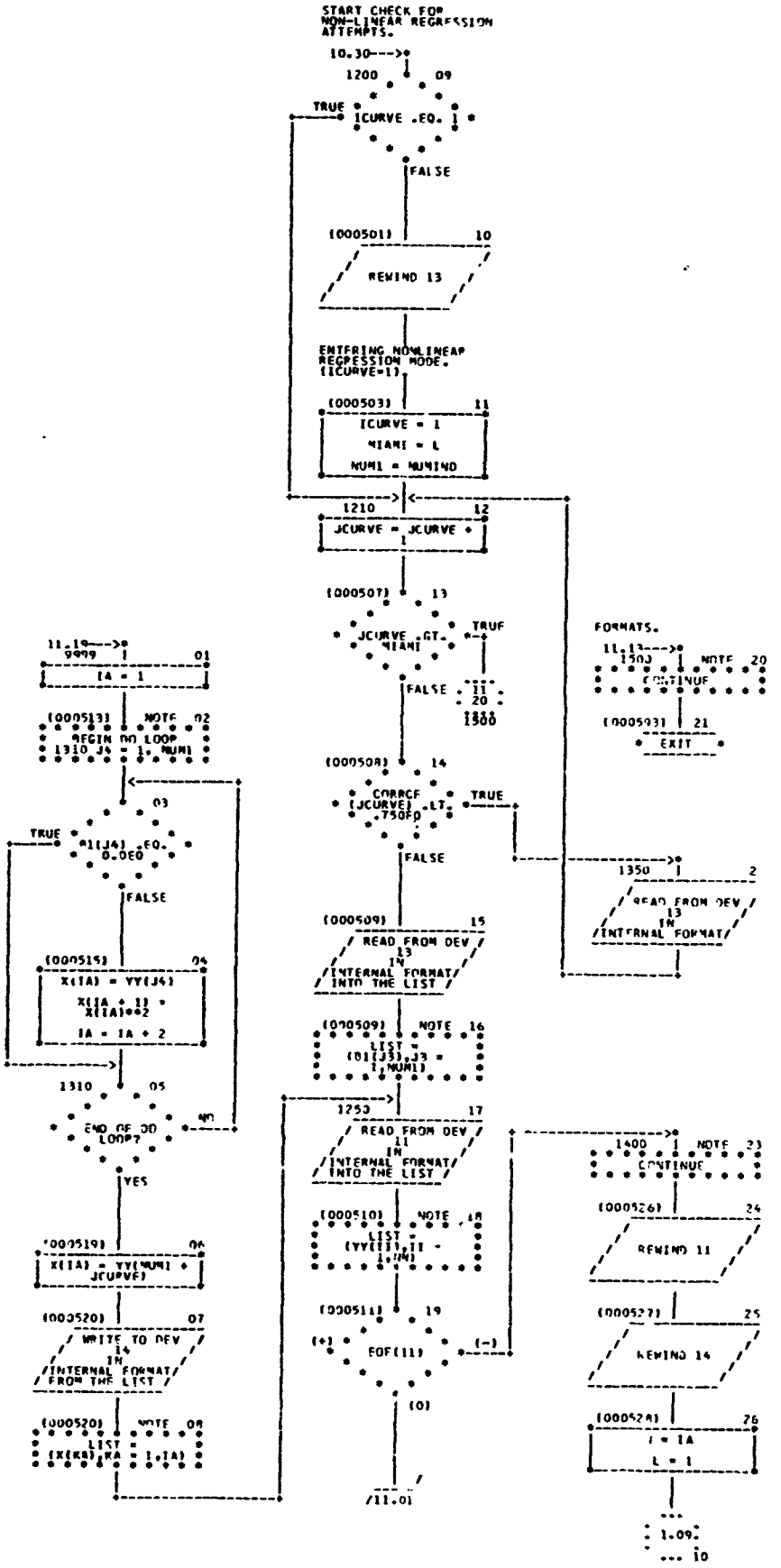


CHART TITLE - SUBROUTINE REGRES



```
      COMMON /CORREL/ PROPE(60), IFILE(30),
                NPHYS1(10),NUMDEP,NUMIND,NUMP  IPPE
      COMMON /SPECTR/ IFILE(30),NPT29(30)
      DIMENSION PHYS(100,10),XOT(30),IVAR(50)
      DIMENSION FDIST(30), SUMX(60), SUMXX(60,60), X(60), A(60), SR(60),
     CONS(60),SD(60),R(60,60),XM(60),POWER(60),RI(60),YY(60),CORRCF(10)
     ,NTRAN(60),IFLAG(60),ISUB(50)
      DATA FDIST / 39.86,8.53,5.54,4.54,4.06,3.78,3.59,3.46,3.36,3.28,
                3.23,3.18,3.14,3.10,3.07,3.05,3.03,3.01,2.99,2.97,
                2.96,2.95,2.94,2.93,2.92,2.91,2.90,2.89,2.89,2.88 /
705   FORMAT (1H1,44X,"****** ETIS - NONLINEAR REGRESSION MODE FOR ******"
     /58X,"DEPENDENT VARIABLE = VAR(",I2,")"//1H )
710   FORMAT (1H1,44X,"E690 - ETIS REGRESSION ANALYSIS"//1H )
720   FORMAT (19H NO. OF VARIABLES  ,I3,34H       NO. OF DEPENDENT VARIAB
     LES  ,I3//22H NO. OF OBSERVATIONS  ,I5//23H F LEVEL TO ENTER VARIA
     BLE  ,F10.3,35H     F LEVEL TO REMOVE VARIABLE   ,F10.3/1H )
730   FORMAT (I2,I2,F10.4,F10.4,5X,I1)
740   FORMAT (9H VARIABLE,I4,20H  TRANSFORMED.  TYPE,I4/1H )
745   FORMAT (9H VARIABLE,I4,20H  TRANSFORMED.  TYPE,I4,3X,"   * IFLAG=1
     ; THIS VARIABLE IS NOT CONSIDERED PART OF PROBLEM ",I9/1H )
750   FORMAT (1H ,24HTRANSFORMED DATA VALUES.//1X,"OBSERVATION / ETIS FI
     LE NO."/)
780   FORMAT (44HCOMPUTED GO TO INDEX OUTSIDE ALLOWABLE RANGE)
790   FORMAT (1H ,I3,"/",I2)
800   FORMAT (7H       ,F10.5,5H VAR(,I2,3H)  ,1H ,F10.5,5H VAR(,I2,3H)
     ,1H ,F10.5,5H VAR(,I2,3H)  ,1H ,F10.5,5H VAR(,I2,3H)  ,1H ,F10.5,
     5H VAR(,I2,3H)  )
810   FORMAT (1H1/1X,"            MEAN          STD. DEV.       VARIABLE
          DATA WORD / PHYS. PROP."/)
815   FORMAT (1H1/1X,"            MEAN          STD. DEV.       VARIABLE
     "/)
819   FORMAT(9XF10.4,4XF12.4,7XI6)
820   FORMAT(9XF10.4,4XF12.4,7XI6,16X,I3)
821   FORMAT(9XF10.4,4XF12.4,7XI6,16X,6A6)
830   FORMAT (1H /38H SIMPLE CORRELATION COEFFICIENTS. (ROW BY COL.)/1H
     )
840   FORMAT (1H )
850   FORMAT (1H F7.4,6H  R(,I2,1H,,I2,6H)     ,F7.4,6H  R(,I2,1H,,I2,6H
     )     ,F7.4,6H  R(,I2,1H,,I2,6H)     ,F7.4,6H  R(,I2,1H,,I2,6H)
       ,F7.4,6H  R(,I2,1H,,I2,6H)     )
860   FORMAT (1H1)
870   FORMAT (1H /14H TRIAL NUMBER ,I5/1H )
871   FORMAT (1H /14H TRIAL NUMBER ,I5,3X,"FOR VARIABLE (",I2,")"/1H )
880   FORMAT (23H VARIABLE GOING OUT =  ,I4/1H )
890   FORMAT (20H F LEVEL            ,F12.4/1H )
900   FORMAT (23H VARIABLE GOING IN  =  ,I4/1H )
910   FORMAT (20H PURE CONST. B(0) = ,F12.4/1H )
920   FORMAT (1X"COEFFICIENTS"//(1XF12.6," B(",I2,")   ",F12.6," B(",I2,
     ")   ",F12.6," B(",I2,")   ",F12.6," B(",I2,")   ",F12.6," B(",I2,
     ")"))
930   FORMAT (1H /31H STANDARD ERROR OF COEFFICIENTS//
     (1XF12.4,7XF12.4,7XF12.4,7XF12.4,7XF12.4))
950   FORMAT (1H /24H STANDARD ERROR OF ESTIMATE //7H       ,F12.4//1H )
951   FORMAT (1H //33H MULTIPLE CORRELATION COEFFICIENT//7H       ,F10.5
     /)
960   FORMAT(1H1,19X,"ACTUAL VS. PREDICTED RESULTS FOR VARIABLE (",I2,")
     "//1X,"OBSERVATION",4X,
     "ACTUAL          PREDICTED          DEVIATION "//)
970   FORMAT (I7,F20.4,5F16.4/1H )
980   FORMAT(/1X,"MEAN = ",F12.6,4X,"STD. DEV. = ",F12.6,4X,"COEFFICIENT
      OF VARIATION = ",F12.6)
1000  FORMAT(1X,"***** CONCLUSION   NON-LINEAR REGRESSION MODEL PROVIDES
     THE BEST FIT FOR VARIABLE (",I2,") ."/1X,"*****************************
     *********************************************************************
     *")
1010  FORMAT(1X,"***** CONCLUSION   LINEAR REGRESSION MODEL PROVIDES THE
     T FIT FOR THIS VARIABLE. *****"/1X,"**********************************
     ****************************************************")
```

CARD ID PAGE/BOX NAME REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)

FORTRAN MODULE E41C - MAIN PROGRAM

CHART TITLE - INITIAL DECLARATIONS

CHART TITLE - PROCEDURES

(0000087)	2.06	650	(0000043)	2.04			
(0000046)	2.09	20	(0000044)	2.05			
(0000049)	3.01	30	(0000045)	2.05			
(0000062)	3.14	10	(0000074)	3.24	(0000085)	3.44	
(0000064)	3.17	999					
(0000092)	3.25	200	(0000063)	3.16			
(0000095)	3.29		(0000097)	3.31			
(0000097)	3.31	240					
(0000129)	3.32	250	(0000090)	3.09			
(0000075)	3.35	40	(0000073)	3.24			

CHART TITLE - NON-PROCEDURAL STATEMENTS

12/13/79 [illegible] FL INDEX : TOFLOW CHART SET - E410 - MAIN PROGRAM PAGE 1

PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME	PG.BX	NAME
3.1[illegible]	10	3.31	30	3.25	200	3.32	250	3.17	999
2.09	20	3.35	40	3.31	240	2.06	650		

CHART TITLE - INTRODUCTORY COMMENTS

```
**************************************************************************

        E410  /  FOURIER TRANSFORM INFRARED SPECTROSCOPY.

                 PHYSICAL PROPERTIES MASTER TAPE GENERATOR.

**************************************************************************
```


THIOKOL CORPORATION / HUNTSVILLE , ALABAMA 35807

PRINCIPAL INVESTIGATOR W. W. SCHWARZ
TELEPHONE (205) - 882 - 8399

SCIENTIFIC PROGRAMMER D. C. SMITH
TELEPHONE (205) - 882 - 8215


```
**************************************************************************

        SEPTEMBER , 1979.

        FORTRAN IV - G LEVEL 21 LANGUAGE

        CDC 6600  --  (AFPPL)

        PREPARED IN FULFILLMENT OF CONTRACT F04611 - 79 - C - 0007

**************************************************************************
```

CHART TITLE - PROCEDURES

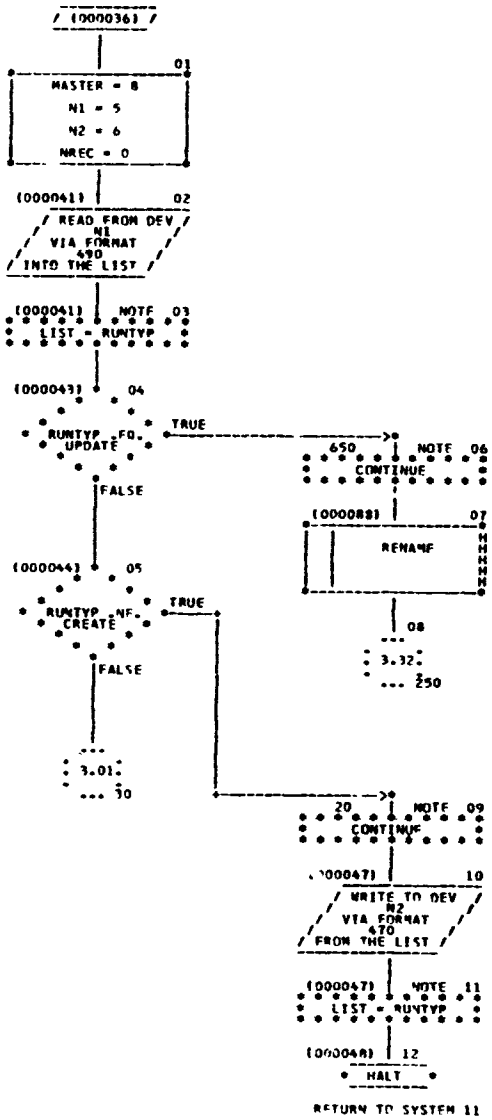
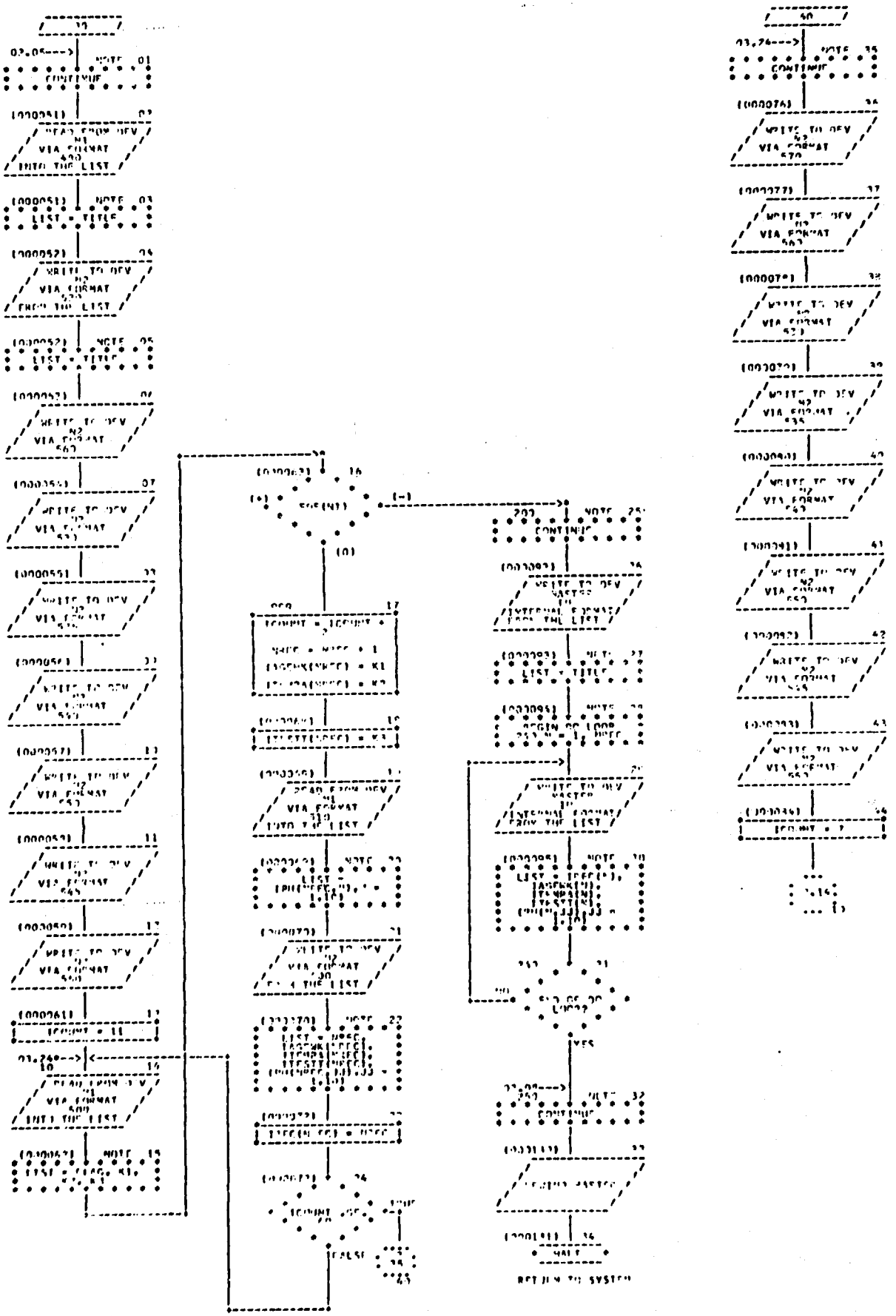


CHART TITLE = PROCEDURES



```
      PROGRAM   (INPUT, ,TAPE  =INPUT,TAPE  =OUTPUT,    ,TAPE  )
      DIMENSION PH(100,10),TITLE(10),    MK(100),ITEMPA(100),ITESTT(100)
      DIMENSION IREC(100)
      COMMON N1,N2
      DATA CREATE/"CREATE  "/,UPDATE/"UPDATE  "/
470   FORMAT(1H1,1X,"-(( ",A8," IS AN INVALID MODE. NO CHANGES APPLIED T
     O DATA-SET. EXECUTION TERMINAT I  N    G  .   .    .",/,1H1)
480   FORMAT (10A4)
490   FORMAT (A8)
500   FORMAT(A8,7X,I5,2I10)
510   FORMAT (5(F10.3))
520   FORMAT  (1H1/1X,"FOURIER TRANSFORM INFRARED SPECTROSCOPY - E410 PH
     YSICAL PROPERTIES MASTER TAPE GENERATOR"
     /1X,"(AFRPL/PCD - THIOKOL/HUNTSVILLE)"//1X,"PROPERTIES FOR SOLID P
     ROPELLANT",13X,10A4)
530   FORMAT (1X,"REC  AGE  AGE  TEST  MODULUS   STRAIN AT  STRAIN AT
     MAXIMUM     STRAIN     STRAIN")
535   FORMAT (1X,"NO.        TEMP  TEMP              BREAK     MAXIMUM
      STRESS     ENERGY   ENDURANCE")
540   FORMAT (45X,"STRESS",15X,"DENSITY")
545   FORMAT (5X,"(WK)  (F)   (F)   (PSI)        ()         ()        (?
     )       (T90)        ()")
550   FORMAT (1X,"------------------------------------------------------
     ------------------------------------------------------------------
     ---------")
600   FORMAT(/1X,I3,1X,I4,1X,I4,2X,I4,1X,10(F9.3,2X))
560   FORMAT(1X,"=======================================================
     ==================================================================
     ==========")
570   FORMAT(1H1)
```

CARD ID PAGE/BOX NAME REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)

FORTRAN MODULE E410 - SUBROUTINE RENAME

CHART TITLE - SUBROUTINE RENAME

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE RENAME

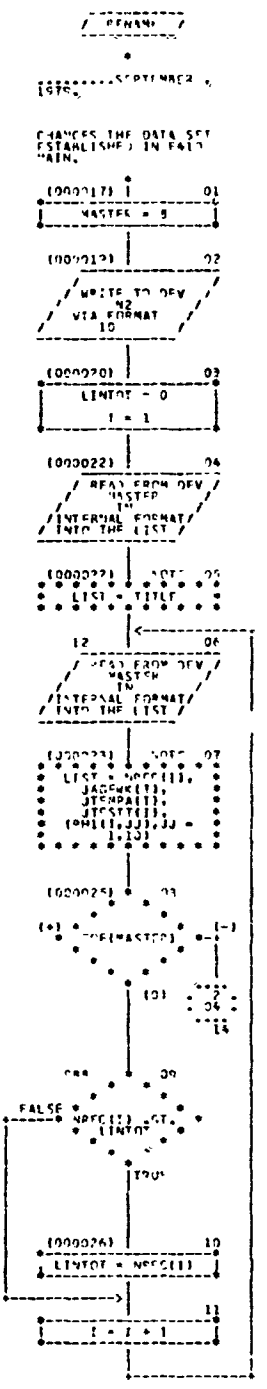
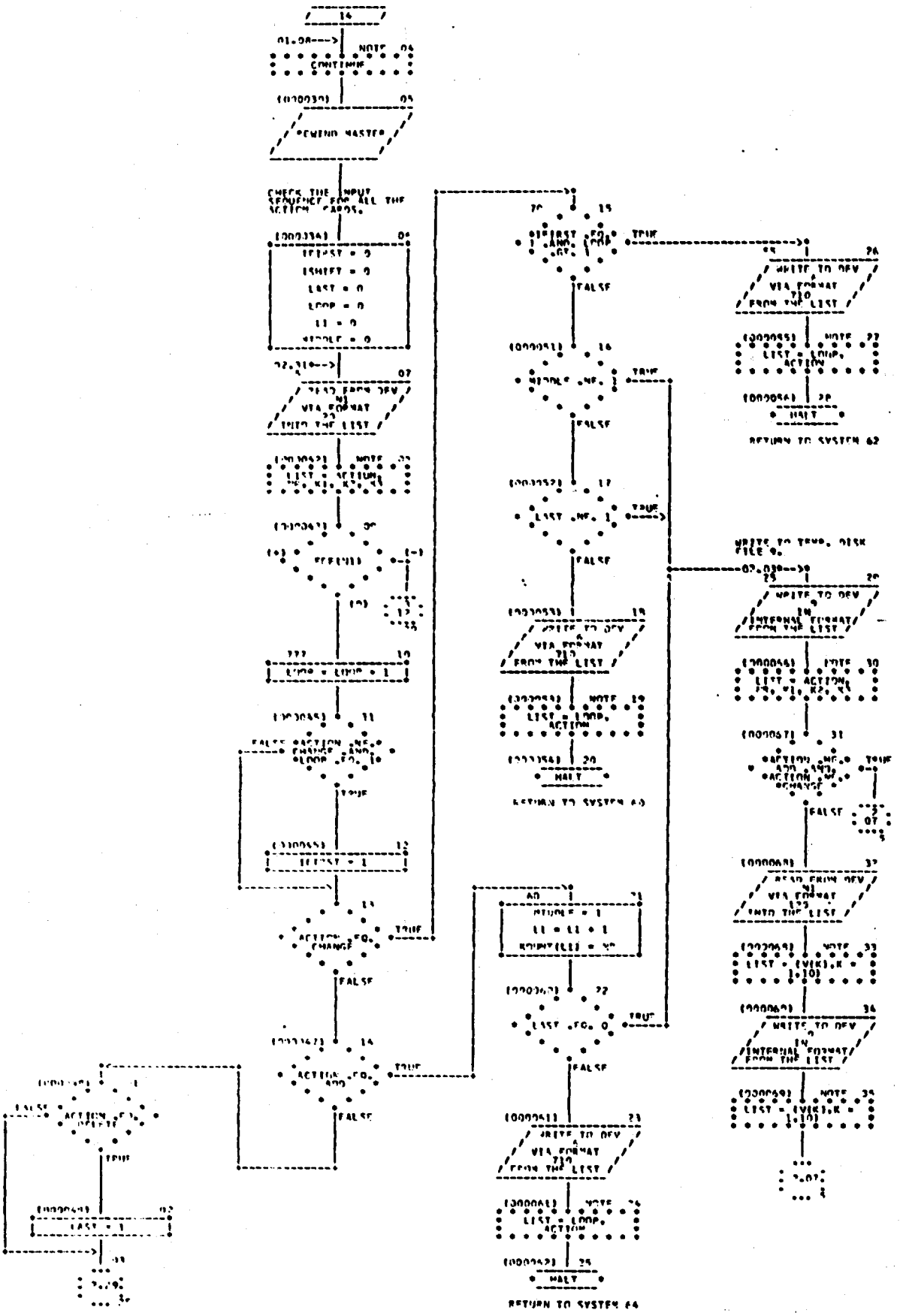
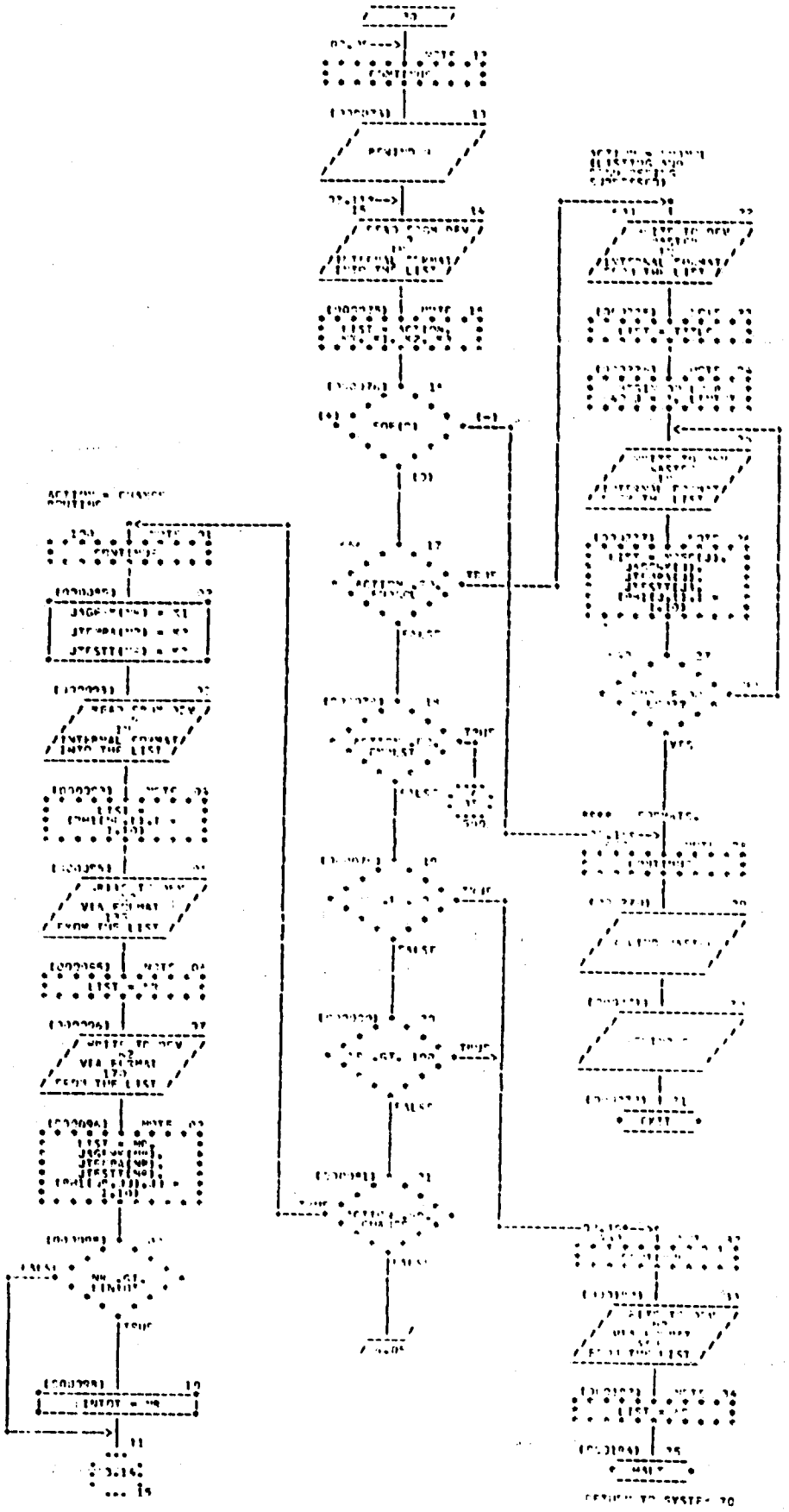


CHART TITLE - SUBROUTINE RENAME





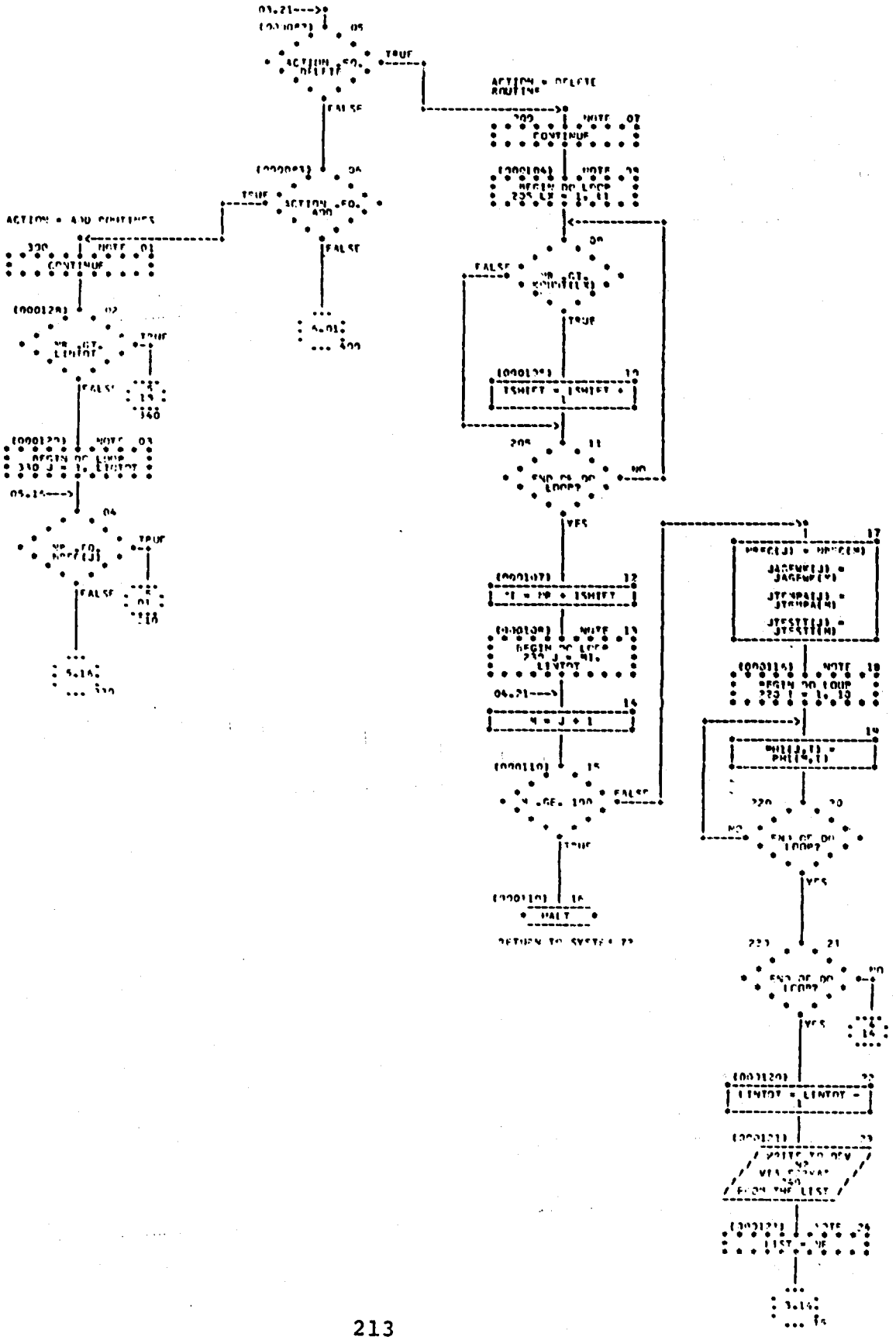


CHART TITLE - SUBROUTINE RENAME

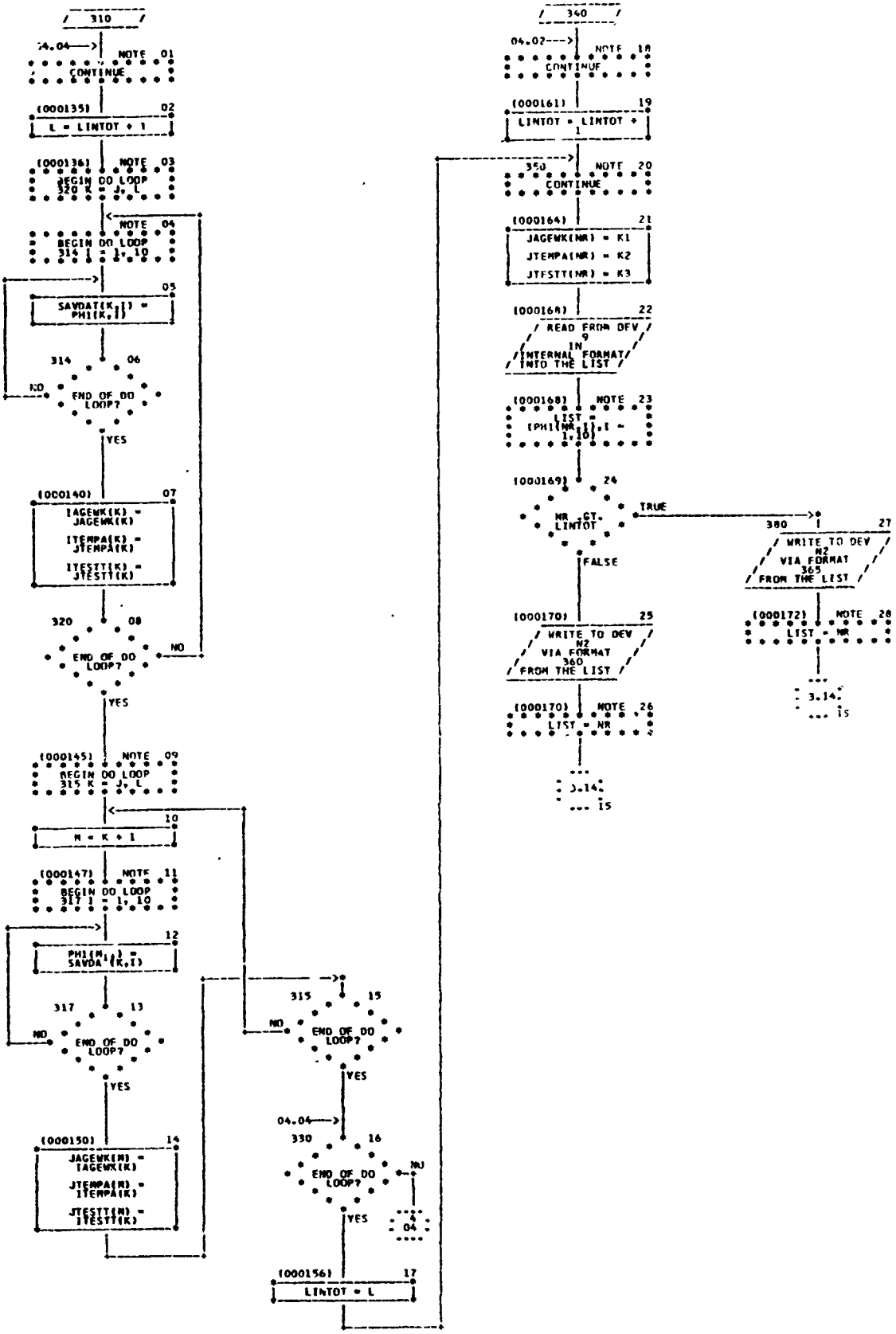


CHART TITLE - SUBROUTINE RENAME

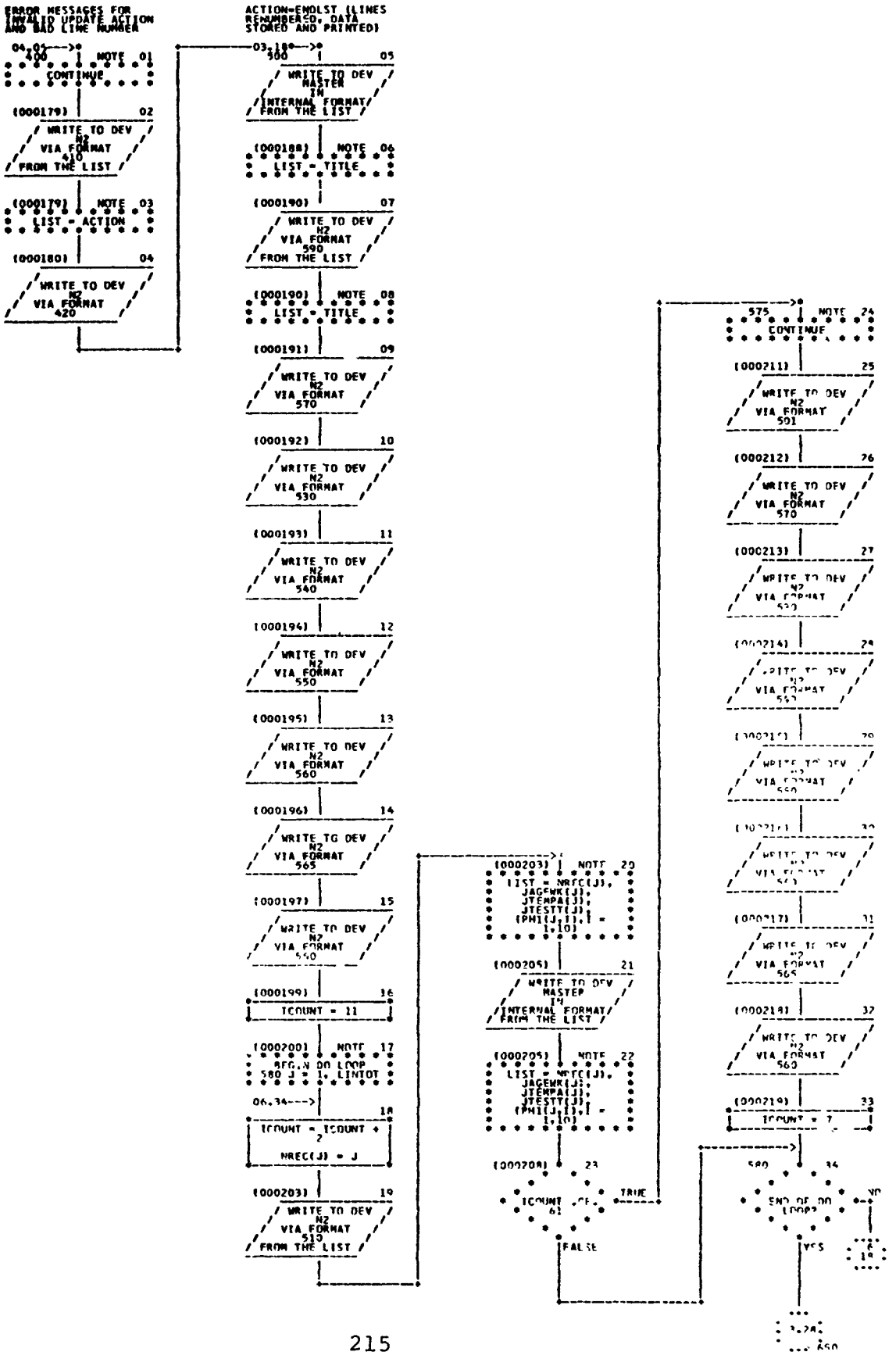


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
          COMMON N1,N2
          DIMENSION JAGEWK(100),ITEMPA(100),JTESTT(100),NAFE(100),
          PHI(100,10),CAMDAT(100,10),IAGEWK(100),ITEMPA(100),ITESTT(100)
          DIMENSION KOUNT(30),V(10),TITLE(10)
          DATA ENDLST/*ENDLIST*/,CHANGE/*CHANGE  */,DELETE/*DELETE  */,
          ADD/*ADD      */,ENDNL/*ENDNLIST*/
 10       FORMAT(1H1,* ***UPDATE MODE ASSUMED.....NEW DATA FOLLOWS***,///)
 20       FORMAT(A8,2X,2I5,2I1)
 125      FORMAT(5F10.3)
 135      FORMAT(//* (( CORRECTED DATA FROM LINE *,I3,*))*)
 170      FORMAT(/1X,I3,1X,I4,1X,I4,2X,I4,1X,10(F8.3,2X))
 240      FORMAT(//,* -(( LINE *,I3,* DELETED FROM DATA SET*)
 360      FORMAT(//,* (( A NEW LINE WILL BE ADDED PRECEDING LINE *,I3)
 365      FORMAT(//,* (( NEW LINE *,I3,* ADDED TO DATA SET *)
 410      FORMAT(1H1,* -(( *,A8,*)) IS AN ILLEGAL UPDATE FUNCTION*,/,
          * ---- ------------------------------------*)
 420      FORMAT(//* ALL CHANGES PRECEDING ABOVE FUNCTION WERE APPLIED*,
          /,1H1)
 460      FORMAT(1H1,* -(( *,I3,* )) IS AN INVALID LINE NUMBER.  NO CHANGES
          APPLIED TO DATA. EXECUTION TERMINAT I  N   G  .   .    . *,/,1H1)
 501      FORMAT(1H1)
 510      FORMAT(/,1X,I3,1X,I4,1X,I4,2X,I5,1X,10(F9.3,2X))
 530      FORMAT(1X,*REC  AGE  AGE   TEST  MODULUS   STRAIN AT  STRAIN AT  M
          AXIMUM    STRAIN    STRAIN*)
 540      FORMAT(1X,*NO.        TEMP  TEMP                BREAK      MAXIMUM
          STRESS    ENERGY   ENDURANCE*)
 550      FORMAT(45X,*STRESS*,15X,*DENSITY*)
 560      FORMAT(1X *-------------------------------------------------------
          ----------------------------------------------------------------
          ----------*)
 565      FORMAT (5X,*(WK)  (F)   (F)   (PSI)       (()         (()       (PS
          I)      (T30)       (()*)
 570      FORMAT(* ********************************************************
          ****************************************************************
          *********)
 580      FORMAT  (1H1/1X,*FOURIER TRANSFORM INFRA RED SPECTROSCOPY - FS10 PH
          YSICAL PROPERTIES MASTER TAPE GENERATOR*
          /1X,*(AFRPL/PCO - THIOKOL/HUNTSVILLE)*//1X,*PROPERTIES FOR SOLID P
          ROPELLANT  *,5X,10A4)
 710      FORMAT (1H1,* (((( ACTION CARD NUMBER -*,I3,* IS AN OUT OF SEQUENC
          E  *,A6,*  COMMAND, JOB IS TERMINATED....*)
```