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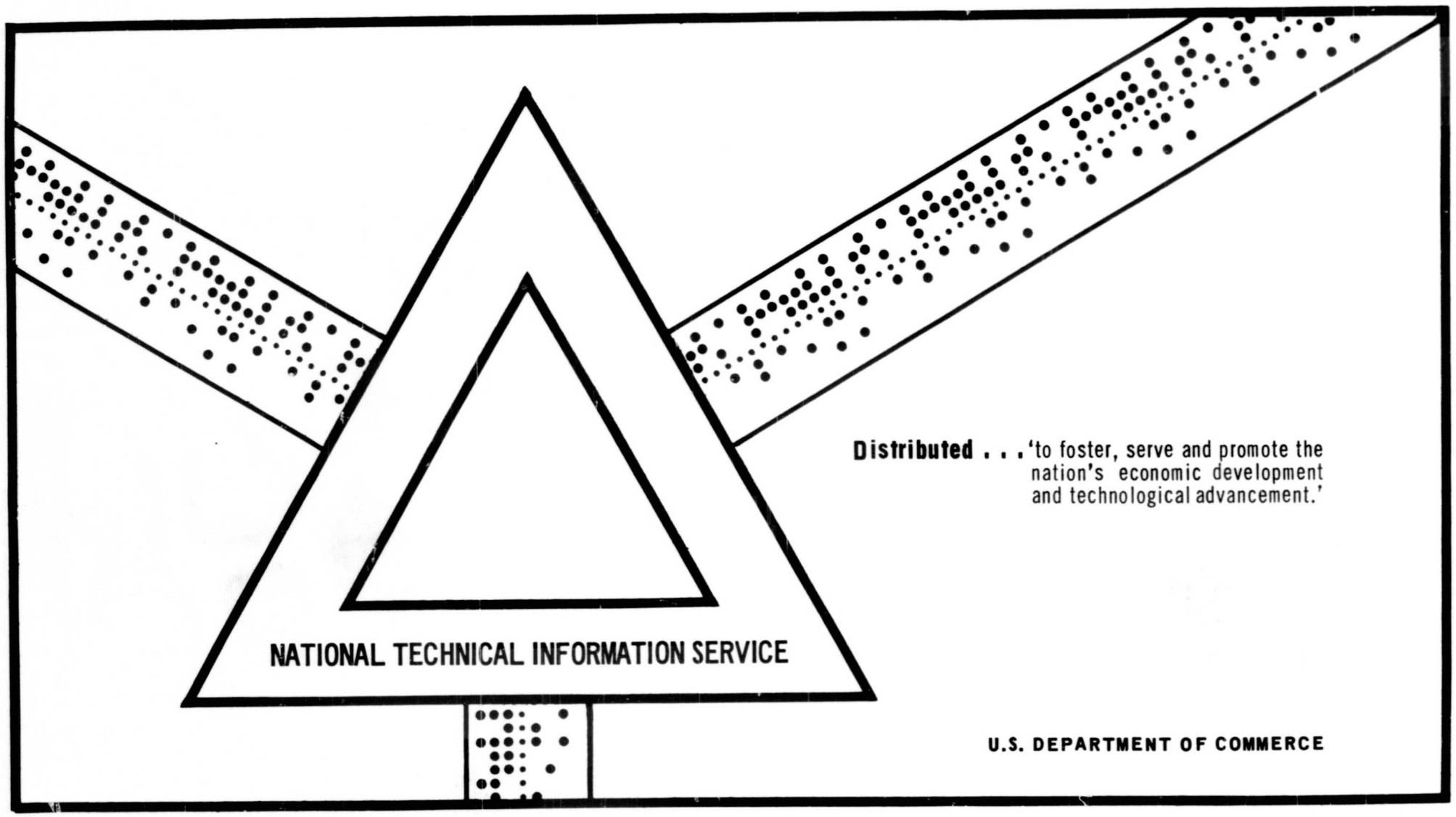

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METALS AND CERAMICS DIVISION

PROGRAM FOR COMPUTING PARTIAL PRESSURES FROM RESIDUAL GAS ANALYZER DATA

D. S. Easton, Carla A. Giles,
Sandra H. Merriman, and R. E. Clausing

Work sponsored by NASA-SNSO-C, J. J. Lombardo, Chief,
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CONTENTS

PROGRAM FOR COMPUTING PARTIAL PRESSURES FROM RESIDUAL GAS ANALYZER DATA

D. S. Easton, Carla A. Giles,[1]
Sandra H. Merriman,[1] and R. E. Clausing

ABSTRACT

A computer program for determining the partial pressures of various gases from residual gas analyzer data is given. The analysis of the ion currents of 18 m/e spectrometer peaks allows the determination of 12 gases simultaneously. Comparison is made to ion gage readings along with certain other control information. The output data are presented in both tabular and graphical form.

INTRODUCTION

The qualitative interpretation of residual gas analyzer (RGA) spectra is sometimes possible by simple pattern recognition, however, the quantitative interpretation is usually difficult. Each gas present in the analyzer will produce a characteristic ion spectra and the analyzer will have a particular sensitivity for each gas. Both the sensitivity and characteristic spectra (cracking pattern) can be determined by calibration of the analyzer with known pressures of known gas compositions. (For less critical work these data may be obtained from the literature for similar instruments.) Once the sensitivity and cracking patterns are available for each gas, complex spectra produced by the presence of several gases may be analyzed by solving a set of simultaneous equations involving all of the gases and their contributions to the peaks observed in the total RGA ion spectra. If the sensitivities, the cracking patterns, and the RGA data are all accurate, an exact solution will be obtained. In most cases, however, an optimization procedure must be used to obtain the most satisfactory fit to the data. This

[1]Numerical Analysis Program, Mathematics Division.

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report describes a computer program for processing sensitivity and cracking pattern data for 12 gases along with RGA data for 18 m/e (mass-to-charge ratio) peaks to obtain quantitative partial pressure data.

The calculation is part of an outgassing-rate program developed to calculate the outgassing rates of gases desorbed from NERVA fuel elements.[2] The program is given along with a sample calculation which produces both tabular and graphical output.

Experimental Technique

In our work the RGA was a Varian quadrupole with an electron multiplier; however, the program can be used with any of the many types of RGA's available.

A nude Bayard-Alpert type ion gage is used to monitor total pressure and to determine the sensitivity of the RGA. The emission current of the ion gage was adjusted to provide readings normalized to equivalent nitrogen pressure.

The gas analyzer was calibrated for 12 high-purity grade gases (H_2, He, CH_4, H_2O, C_2H_4, N_2, CO, O_2, A_2, CO_2, C_2H_6, and C_3H_8) obtained from the Matheson Company. The cracking pattern (characteristic ion spectra) and sensitivity (amps per torr) were established for each gas and are shown in the sample calculation in the Appendix. Also given are selected ionization constants[3–6] normalized to nitrogen equivalents and used to convert the ion current of the mass spectrometer and ion gage to partial pressures in torr.

---

[2]D. S. Easton and R. E. Clausing, "Outgassing of Nuclear Rocket Fuel Elements," J. Vac. Sci. Technol. 7(6), S116–S123 (1970).

[3]R. W. Kiser, Introduction to Mass Spectrometry and Its Application, p. 300, Prentice-Hall, Englewood Cliffs, New Jersey, 1965.

[4]Saul Dushman, Scientific Foundation of Vacuum Technique, 2nd ed., p. 324, Wiley, New York, 1965.

[5]Varian Reprint on Vacuum Technology, No. 2, Varian Associates, Palo Alto, California, March 1965.

[6]P. A. Redhead, J. P. Hobson, and E. V. Kornelsen, The Physical Basis of Ultra High Vacuum, p. 264, Chapman & Hall, Ltd., London, 1968.

Calculation Procedure

Input data for the calculation consists of the following:

1. identification of run,
2. date (day and month),
3. accumulated time (in hours),
4. ion gage pressure (torr),
5. temperature of the apparatus,
6. temperature of the sample,
7. the cracking pattern of 12 gases (the parent peak is set to 1 and all other peaks a fractional part),
8. the sensitivity (amps per torr) for each gas,
9. the ionization constant (normalized to nitrogen) for each gas, and
10. the amplitudes of 18 selected peaks (ion current in amps) from the RGA spectra.

The spectra from the RGA is recorded as a function of time and/or temperature along with other data desired. The intensities of the spectrometer peaks at 18 separate values of m/e (mass-to-charge ratios of 2, 4, 12, 13, 14, 15, 16, 17, 18, 22, 26, 27, 28, 29, 30, 32, 40, and 44) are recorded for each run. The program generates a least-squares fit for a set of 18 simultaneous equations (18 values of m/e) with 12 unknowns (gases):

$$B_i = \sum_{J=1}^{12} A_{ij} X_j \,, \qquad (1)$$

where

B_i = intensity of the i^{th} peak (ion current),

A_{ij} = fractional contribution to the i^{th} peak from the j^{th} gas as determined by experimental cracking pattern, and

X_j = ion current from the parent peak of the j^{th} gas.

The coefficients A_{ij} of the equation are obtained from the cracking pattern. All pressures are corrected[7] for temperatures other than 300°K by

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[7]P. A. Redhead, J. P. Hobson, and E. V. Kornelsen, The Physical Basis of Ultra High Vacuum, pp. 281–287, Chapman & Hall, Ltd., London, 1968.

$$P_{corr} = P_i(T_i\,°K/300°K)^{1/2} , \qquad (2)$$

where

P_{corr} = corrected pressure (in torr),
P_i = measured pressure (in torr), and
T_i = measured temperature (°K).

The tabular output contains a print-out of the input data for the cracking pattern, the ionization constants, and the RGA sensitivity, along with the following results for each data scan.

1. The pressures are corrected for thermal effects.
2. For each peak, the measured ion current is compared with a calculated value based on the least-squares fit.
3. Ion currents are converted to corrected partial pressures, and printed along with the summed total.
4. The partial pressures of the hydrocarbons are summed and printed separately.
5. The percentage composition is calculated and printed.
6. The ion currents of the RGA are summed and divided by the ion gage pressure to give a check on the total sensitivity of the RGA.
7. The readings from the RGA and the ion gage are compared by summing the partial pressures and comparing the total pressure to the reading from the ion gage after it has been corrected for composition.

The computer next sorts the data and prints the time versus partial pressure for each gas. If desired there is an option which fits these values to a power equation:

$$P = A(t/t_o)^B , \qquad (3)$$

where

P = partial pressure (in torr),
A = intercept at time t_o (in torr),
t = time (in hours),
t_o = 1 hr, and
B = slope of the curve of the log of the partial pressure versus the log of time.

The values of A and B are tabulated for each gas. Equation (3) describes some cases of simple outgassing and will not hold for pressure changes with temperature or more complex changes of pressure with time. A qualitative assessment of the fit of the RGA results to the specified function can be obtained from the correlation coefficient and correlations of determination. These are convenient and useful for testing the fit and comparing the scatter in data for different gases or from different runs. The tabular output includes 95% confidence limits for B and for the log of the partial pressures (designated as log y in the computer print-out).

The program provides for a graphical output of the log of the partial pressure versus time or temperature on either a linear or logarithmic scale. Such graphs may be produced for the ion gage pressure, for the partial pressure of each gas, or that of the summed hydrocarbons. The data may also be plotted in a composite graph which shows the pressure relationships for any or all gases. The following options are available: (1) use the fitted values from Eq. (3) to draw a line through the data, (2) plot points only, and (3) connect points by a line.

The program for the determination of partial pressures, together with an example of an experiment where data were taken for a period of 350 hr at a constant temperature, is included in this report in the Appendix.

Another report[8] has been written to describe a program to compute the composition, quantity, and outgassing rates (in torr liters per second) of various gases in a vacuum system. In this case a more sophisticated vacuum system is necessary in which additional ion gages and calibrated conductances are included.

---

[8]D. S. Easton, Sandra H. Merriman, Carla L. Armstrong, and R. E. Clausing, A Computer Program for Calculating, Tabulating, and Plotting Outgassing Rates of Selected Gases, ORNL-TM-3220 (February 1971).

PRECEDING PAGES [redacted] NOT FILMED
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APPENDIX


```
**FTN,L,E,G.
C      PROGRAM PARTIAL PRESSURE                                          10
C                                                                        20
C                                                                        30
C THIS PROGRAM IS A METHOD OF DETERMINING THE PARTIAL PRESSURES OF 12     40
C GASES FROM RESIDUAL GAS ANALYZER DATA.                                 50
C THE PROGRAM USES DATA TAKEN AT INTERVALS OF TIME AND/OR TEMPERATURE    60
C FROM A RESIDUAL GAS ANALYZER AND ION GAGES TO CALCULATE THE FOLLOWING  70
C VALUES OF VARIOUS GASES  (1) PARTIAL PRESSURE,                         80
C (2) FIT OF THE PARTIAL PRESSURE VS. TIME TO AN ANALYTICAL EXPRESSION.  90
C (3) PROVIDES FOR GRAPHICAL PLOTTING, (4) PRINTS OUT CERTAIN CONTROL   100
C DATA FOR INFORMATION AND IDENTIFICATION.                              110
C THE PROGRAM INCLUDES THESE 4 SUBROUTINES (1)PRINT,  (2)LSFIT,         120
C (3) HPMINV, (4) GRAPHS.                                               130
C THE FOLLOWING DATA ARE NECESSARY FOR THE PROGRAM                      140
C    1. DATE                                                            150
C    2. ACCUMULATED TIME                                                160
C    3. TEMPERATURE OF THE SAMPLE                                       170
C    4. ION GAGE PRESSURE (TORR)                                        180
C    5. CERTAIN SELECTED PEAKS (ION CURRENT IN AMPS) FROM A RESIDUAL    190
C       GAS ANALYZER.                                                   200
C    6. TEMPERATURE OF THE APPARATUS.                                   210
C    IN ADDITION THE CRACKING PATTERN, SENSITIVITY (AMPS/TORR), AND THE 220
C    IONIZATION CONSTANTS (NORMALIZED TO NITROGEN) FOR EACH GAS MUST BE 230
C    KNOWN. HOWEVER,THESE VALUES NEED NOT BE GENERATED FOR EVERY RUN    240
C    AS DO THE VALUES LISTED ABOVE.                                     250
C FOR EACH SET OF DATA(ONE ELAPSED TIME OR TEMPERATURE), OUTPUT CONSISTS 260
C    OF MEASURED PEAK HEIGHT, THE CALCULATED PEAK, DIFFERENCE BETWEEN   270
C    THE MEASURED AND CALCULATED PEAK, THE PERCENT DIFFERENCE. THE      280
C    PARTIAL PRESSURE OF EACH GAS, PERCENT OF TOTAL PRESSURE FOR EACH   290
C    GAS, THE SUM OF THE CURRENTS, TOTAL CURRENT(ION GAGE PRESSURE, THE 300
C    SUM OF PARTIAL PRESSURES, THE ION GAGE ADJUSTED PRESSURE, AND THE  310
C    DIFFERENCE IN THE ION GAGE PRESSURE AND SUM.                       320
C AN ADDITIONAL PRINT OUT SHOWS EACH GAS AND ALL THE ACCUMULATED         330
C    PARTIAL PRESSURES AS A FUNCTION OF TIME AND TEMPERATURE.           340
C THE USER MAY SPECIFY 2 OTHER OPTIONS                                   350
C    1.BY SETTING LSOPT=1, PROGRAM WILL PRINT A TABULATED LEAST SQUARE   360
C         FIT OF PARTIAL PRESSURE  .VS. TIME. A CURVE OF THE FORM        370
C         Y=A*X**B WILL BE FITTED TO THE DATA. IN THIS EQUATION,         380
C         Y=PARTIAL PRESSURE,A=INTERCEPT AT TIME 1, X=TIME IN HOURS,     390
C         AND B=SLOPE OF CURVE ON LOG-LOG PLOT.                          400
C    2.A SECOND OPTION ALLOWS THE USER TO OBTAIN LOG-LOG OR LOG-LINEAR   410
C         PLOTS OF PARTIAL PRESSURE .VS. TIME OR TEMPERATURE FOR EACH    420
C         GAS PLUS A COMPOSITE PLOT OF A SELECTION OF GASES.             430
C                                                                        440
C  *** PREPARING INPUT ***                                               450
C                                                                        460
C                                                                        470
C ALL DATA CARDS FOLLOW THIS CONTROL CARD                                480
C   //GO.FT50F001 DD *                                                   490
C                                                                        500
C THE  FOLLOWING DATA ARE ENTERED  IN COLUMNS THAT ARE RIGHT ADJUSTED.   510
C THE DATA CARDS OR SETS OF CARDS ARE ASSEMBLED AS FOLLOWS               520
C    1. CONTAINS THE VALUE OF LSOPT IN COLUMN 5. IF THIS OPTION IS NOT   530
C       DESIRED, INCLUDE A BLANK CARD.                                   540
C    2. A SET OF CARDS(NUMBER OF PEAKS + 2) CONTAINING VALUES OF THE     550
C       CRACKING PATTERN OF THE GASES, IN FIELDS OF 8 COLUMNS EACH.      560
C                                                                        570
C       FOR EACH M/E VALUE, THERE MUST BE 2 CARDS, THE FIRST CONTAINING  580
C       THE CRACKING PATTERN OF H, HE, CH4, H2O, N2, CO, O2, AR, CO2,    590
C       C2H6, THE SECOND CONTAINING C2H4, C3H8.                          600
C    3. VALUES OF THE FGA SENSITIVITY (IN AMPS/TORR) OF THE ABOVE GASES  610
C       IN THE SAME ORDER, 8 COLUMNS, 10 PER CARD.                       620
C    4. CARDS CONTAINING THE IONIZATION  CONSTANTS OF THE GASES. 8       630
C       COLUMNS, 10 PER CARD.                                            640
C    5. TEMPERATURE OF THE APPARATUS IN DEGREES C, (C), COLUMN 1-8.      650
C    6. 2 CARDS FOR IDENTIFICATION OF RUN, COLUMNS 1-80.                 660
C    7. A SET OF CARDS FOR EACH TIME/TEMP. RUN CONTAINING                670
C         A. 1 CARD WITH THE FOLLOWING 4 VALUES IN FIELDS OF 8 COLUMNS   680
C            EACH.  DATE(DAY AND MONTH), TIME(HOURS), TEMPERATURE        690
C            (IN DEGREES C), AND ION GAGE PRESSURE.                      700
C         B. VALUES OF ION CURRENTS OF 18 PEAKS AT M/E VALUES OF         710
C            2,4,12,13,14,15,16,17,18,22,26,27,28,29,30,32,40,AND 44.    720
C            8 COLUMNS,  8 PER CARD.                                     730
C      8. 1 BLANK CARD.                                                  740
C IF PLOTS ARE DESIRED, SEE SUBROUTINE GRAPHS FOR DATA CARD DESCRIPTION  750
C   AND INCLUDE THESE DATA CARDS HERE. IF NO PLOTS ARE DESIRED, THIS     760
C   CONCLUDES DATA. THE LAST 2 CARDS IN THE DECK ARE THE FOLLOWING       770
C   CONTROL CARDS.                                                       780
C  /*                                                                    790
C  //                                                                    800
C                                                                        
```

```
C                                                                       810
      REAL*8 TITLE,GASLEG,GASES,HEADING,XTIT                            820
      COMMON/BLK1/TEMP,LSOFIT                                           830
      COMMON /EATOGR/ LINE                                              840
      COMMON /PILOT/ XAL,YL,TETLE,GASLEG                                850
      DIMENSION          M(15),CON(15),CONI(15),       DT(15),          860
     1    A(15,25),B(15,15),D(15,25),V(25),S(15),C(25),T(15,15),        870
     2    TITLE(50),AS(20),RS(20),XTIT(4),TETLE(40),DATE(2),XAL(2),     880
     3    YL(2),ME(25),CONION(15),RGA(15),GASES(50),HEADING(14),        890
     4          HOURS(  50),TEMP(  50),PRESS(  50,20),GASLEG(50)        900
      DATA (XTIT=8HTIME (HO,8HURS)$    ,8HTEMPERAT,8HURE (C)$)          910
      DATA  (ME=2.4,12.17.14.15,16.17,18.22,26.27,28.29,30.32,40.44)    920
      DATA (TITLE=8H ION GAG,8HE        ,8H TOTAL P,8HPRESSURES,        930
     1            8H H      ,8H         ,8H HELIUM ,8H         ,        940
     2            8H METHANE,8H         ,                             950
     3            8H WATER V,8HAPOR     ,8H NITROGE,8HN        ,        960
     4            8H CO     ,8H         ,8H OXYGEN ,8H         ,        970
     5            8H ARGON  ,8H         ,8H CO2    ,8H         ,        980
     6            8H C2H4   ,8H         ,8H C2H6   ,8H         ,        990
     7            8H C3H8   ,8H         ,8H HYDROCA,8HRBONS    )       1000
      DATA (GASLEG=8H GAGE    ,8H TOTA   ,8H H      ,8H HELI   ,        1010
     1  8H METH   ,8H WATR   ,8H NITR   ,8H CO     ,8H OXYG   ,        1020
     2  8H ARGO   ,8H CO2    ,8H C2H4   ,8H C2H6   ,8H C3H8   ,        1030
     3  8H HYDR   )                                                    1040
      DATA(GASES=8HH          ,8HHELIUM  ,8HMETHANE ,8HWATER    ,      1050
     3           8HNITROGEN,                                          1060
     1           8HCO       ,8HOXYGEN  ,8HARGON   ,8HCO2      ,      1070
     4           8HC2H4     ,                                         1080
     2           8HC2H6     ,8HC3H8    ,8HVAPOR   )                   1090
      DATA(HEADING=8HGAS      ,8H        ,8H  HOURS ,8H      TE,      1100
     1            8HMP    OUT,8HGASSING ,8HPATE    ,8HGAS    ,       1110
     2   *        8H      ,8H  HOURS ,8H      TE,8HPP   PAP,           1120
     3            8HTIAL PRE,8HSSURE   )                              1130

      DATA (CON(I)=2.,4.,16.,18.,28.,28.,32.,40.,44.,28., 30.,44.)      1140
      DATA  (M=12),(N=18)                                               1150
      READ 130,LSOFIT                                                   1160
  130 FORMAT(I5)                                                        1170
      DO 111 J=1,N                                                      1180
      READ 110,(A(I,J),I=1,M)                                           1190
  111 CONTINUE                                                          1200
      READ 110,  (RGA(I),I=1,M )                                        1210
      READ 110,(CONION(I),I=1,M)                                        1220
  110 FORMAT(10F8.0)                                                    1230
      NC=0                                                              1240
C                                                                       1250
C  SET UP CONSTANTS FOR SOLVING SYSTEM OF EQUATIONS.                    1260
C                                                                       1270
      DO 1 J=1,15                                                       1280
      DO 1 I=1,15                                                       1290
    1 B(I,J)=T(I,J)=0.0                                                 1300
      DO 3 I=1,M                                                        1310
      DO 3 J=1,M                                                        1320
      X=0.                                                              1330
      DO 2 K=1,M                                                        1340
    2 X=X+A(I,K)*A(J,K)                                                 1350
    3 T(I,J)=X                                                          1360
C                                                                       1370
C SUBROUTINE MPMINV PERFORMS A MATRIX INVERSION ON T AND RETURNS        1380
C     VALUES IN B.                                                      1390
C                                                                       1400
      CALL MPMINV(T,M,B,2000,1.0E-6,IER,EMAX)                           1410
      DO 5 I=1,N                                                        1420
      DO 5 J=1,M                                                        1430
      X=0                                                               1440
      DO 4 K=1,M                                                        1450
    4 X=X+B(K,I)*B(K,J)                                                 1460
    5 Q(J,I)=X                                                          1470
C                                                                       1480
C READ TEMPERATURE CORRECTION FACTOR                                    1490
C  AND RUN TITLE                                                        1500
C                                                                       1510
      READ 1007,C                                                       1520
      READ 1001,(TETLE(IJ),IJ=1,40)                                     1530
 1001 FORMAT (20A4)                                                     1540
      CALL IDAY(DATE)                                                   1550
      PRINT 1002,DATE                                                   1560
 1002 FORMAT (   *0* ,*1X, *000 CURRENT DATE IS *,2A4,* 000*//66X,*MFRVA 1570
     * RE-TI FUEL ELEMENT PARTIAL PRESSURE PROGRAM*//60X,*DEWEY EASTON*  1580
     2 //)                                                              1590
      PRINT 1003,(TETLE(IJ),IJ=1,40)                                    1600
 1003 FORMAT (25X,20A4)                                                 1610
      PRINT 1004,C                                                      1620
 1004 FORMAT (1H0,*3X,*APPARATUS TEMPERATURE (C) = *,F4.0)              1630
      PRINT 1005,(GASES(I),I=1,13),((MF(J),(A(I,J),I=1,M)),J=1,N)       1640
 1005 FORMAT (1H1,55X,*000 CRACKING PATTERN 000*//2X,**/E*,7X,12(A8,2X)/ 1650
     1   42X,A8/(3X,12,3X,12F10.4))                                     1660
      DO 120 I=1,M                                                      1670
  120 CON(I)=CON(I)*RGA(I)                                              1680
      PRINT 1006,(TITLE(2*I+9),TITLE(2*I+4),CONION(I),RGA(I),CON(I),    1690
     1    I=1,M)                                                        1700
```



```
 1006 FORMAT(1H0,53X,*000 CORRECTION CONSTANTS 000*//58X,*IONIZATION*,   1710
     1* 0 RGA SENSITIVITY = *ASTER*/59X,*CONSTANT*,7X,*AMPS/TORR*//     1720
     2   (38X,2A8,F12.4,2X,F12.4,4X,F12.4))                             1730
      PRINT 1210,DATE,(TETLE(IJ),IJ=1,40)                               1740
 1210 FORMAT(//// *1X,*000 CURRENT DATE IS *,2A4,* 000*//(46X,20A4))    1750
      D=D+273.                                                          1760
      G=SCRT(D/300.)                                                    1770
    6 NC=NC+1                                                           1780
C                                                                       1790
C  READ DATE, TIME, TEMPERATURE OF RUN, ION GAGE                        1800
C                                                                       1810
      READ 1007,DAY,HOURS(NC),TEMP(NC),Z                                1820
 1007 FORMAT (4F8.1)                                                    1830
      IF (DAY.EQ.0.0.AND.HOURS(NC).EQ.0.) GO TO 16                      1840
      PRESS(NC,1)=Z*G                                                   1850
      PRINT 1200,(TETLE(IJ),IJ=1,20)                                    1860
 1200 FORMAT(1H1///1X,20A4)                                             1870
      PRINT 1009,DAY,HOURS(NC),TEMP(NC),Z,PRESS(NC,1)                   1880
 1009 FORMAT (1H , *DATE =*,F15.2/* HOURS =*,F14.2/* TEMPERATURE (DEGREE 1890
     1 C.) =*,F8.2/* ION GAGE(TORR) =*,1PE19.5,1CX,*THERMAL CORRECTION = 1900
     2*,1PF15.5//    )                                                 1910
C                                                                       1920
C  READ ION CURRENT FOR N PEAKS.                                        1930
C                                                                       1940
      READ 1008,(V(I),I=1,N)                                            1950
 1008 FORMAT (8F8.1)                                                    1960
C                                                                       1970
C  SOLVE SYSTEM OF EQUATIONS.  FIND COMPUTED M/E VALUES.                1980
C                                                                       1990
      DO 8 I=1,M                                                        2000
      X=0                                                               2010
      DO 8 J=1,N                                                        2020
    8 X=X+Q(I,J)*V(J)                                                   2030
    9 S(I)=X                                                            2040
      DO 11 I=1,N                                                       2050
      X=0                                                               2060
      DO 10 J=1,M                                                       2070
   10 X=X+S(J)*A(J,I)                                                   2080
   11 C(I)=X                                                            2090
      PRINT 1010                                                        2100
 1010 FORMAT (*     M/E*,3X,*MEASURED PEAK*,6X,*CALCULATED M/E*,7X,*DIFFE 2110
     1RENCE*,9X,*PERCENT DIFF*/10X,*HEIGHT (AMPS)*)                     2120
C                                                                       2130
C  SUM ION CURRENTS                                                     2140
C                                                                       2150
      U=0.                                                              2160
      DO 13 I=1,N                                                       2170
      PCNT=(C(I)-V(I))/V(I)*100.                                        2180
      U=U+V(I)                                                          2190
      DIFFER=C(I)-V(I)                                                  2200
   13 PRINT 1011,ME(I),V(I),C(I),DIFFER,PCNT                            2210
 1011 FORMAT (17,1PE15.5,2E20.5,2PF20.5)                                2220
C                                                                       2230
C COMPUTE PARTIAL PRESSURES FOR M GASES                                 2240
C                                                                       2250
      W=0.                                                              2260
      DO 12 I=1,M                                                       2270

      D1(I)=S(I)/CON(I)*G                                               2280
   12 W=W+D1(I)                                                         2290
      PRESS(NC,2)=W                                                     2300
      J=3                                                               2310
      DO 15 I=1,M                                                       2320
      PRESS(NC,J)=C1(I)                                                 2330
   15 J=J+1                                                             2340
      PRESS(NC,15)=D1(3)+D1(10)+D1(11)+D1(12)                           2350
C                                                                       2360
C  FIND PERCENT OF TOTAL PRESSURE                                       2370
C                                                                       2380
      T2=Z/W                                                            2390
      T3=100./W                                                         2400
      WT=W*T2                                                           2410
      HGT=PRESS(NC,15)*T3                                               2420
      PS=0.0                                                            2430
      DO 130 I=1,M                                                      2440
      DT(I)=D1(I)*T3                                                    2450
  130 PS=C1(I)*T2/CONION(I)+PS                                          2460
      PG=PS*G                                                           2470
      PRINT 1013                                                        2480
 1013 FORMAT(/// * GAS*,2X,*PRESSURE*,7X,*PERCENT*/33X,*TOR*,          2490
     1      9X,*OF TOTAL PRESSURE*//)                                   2500
      PRINT 1014,PRESS(NC,1),W,WT,(TITLE(2*I+9),TITLE(2*I+4),C1(I),     2510
     1     DT(I),I=1,M),TITLE(26),TITLE(30),PRESS(NC,15),HGT          2520
 1014 FORMAT (* ION GAGE*,20X,1PE13.5//* SUM OF PARTIAL PRESSURES*,4X,  2530
     1     1PE13.5,2PE16.5/(2A8,1PX,1PE13.5,2PF16.5))                  2540
      TC=U/7                                                            2550
      DIFF=(PG-W)/W*100.                                                2560
      DIFFER=PG-W                                                       2570
      PRINT 101*,U,TC,W,PG,DIFFER,DIFF                                  2580
```

```
1018 FORMAT ('0SUM OF CURRENTS = ',1PE12.5,' AMPS'/' SENSITIVITY (TOTAL
     1 CURRENT/ION GAGE PRESSURE)= ',E12.5,' AMPS/TORR'/' SUMMATION PART
     2IAL PRESSURE = ',E12.5,' TORR'/
     3                    ' ION GAGE ADJUSTED PRESSURE = ',E12.5,
     4 ' TORR'/' DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PAR
     5TIAL PRESSURES) = ',E12.5,' TORR'/' PERCENT DIFFERENCE = ',0PF9.3)
      GO TO 6
   16 IF (NC.EQ.2) GO TO 24
      NC=NC-1
      ML=M+3
C
C SUBROUTINE PRINT PRINTS EACH GAS AND THE PARTIAL PRESSURES (FUNCTION
C    OF TIME AND TEMPERATURE), ACCUMULATED FROM ALL THE CASES.
C
      CALL PRINT(PRESS,HOURS,TEMP,ML,TITLE,NC,HEADING,8)
      DO 22 I=1,ML
      IF(LSCFIT.EQ.0) GO TO 22
      IS=2*I-1
      PRINT 1021,TITLE(IS),TITLE(IS+1)
 1021 FORMAT(1H1///  ' GAS IS ',2A8//)
C
C  SUBROUTINE LSFIT FINDS A AND B (IN EQUATION Y=A*X**B) BY METHOD OF
C  LEAST SQUARES. (X=TIME, Y=PARTIAL PRESSURE)
C
   22 CALL LSFIT(NC,HOURS,PRESS(1,I),AS(I),BS(I))
C
C TEST TO SEE IF PLOTS ARE DESIRED . IF SO, SET UP LIMITS FOR PLOTTING
C
  23 READ (50,1025,END=24) LINE
 1025 FORMAT (1A)
      XAL(1)=1000.
      XAL(2)=0.
      YL(1)=.1
      YL(2)=0.
      DO 21 J=1,NC
      IF (HOURS(J).LT.XAL(1)) XAL(1)=HOURS(J)
      IF (HOURS(J).GT.XAL(2)) XAL(2)=HOURS(J)
      DO 21 I=1,ML
      IF(PRESS(J,I).LT.YL(1)) YL(1)=PRESS(J,I)
   21 IF(PRESS(J,I).GT.YL(2)) YL(2)=PRESS(J,I)
      CALL GRAPHS(PRESS,HOURS,XTIT(1),ML,TITLE,NC,8S)
      CALL GRAPHS(PRESS,TEMP,XTIT(3),ML,TITLE,NC,8S)
      CALL ADVANS
   24 END
```



```
      SUBROUTINE PRINT(X,HOURS,TEMP,ML,TITLE,NC,HEADING,N)
C
C
      REAL*8 TITLE( 50),HEADING(14)
      DIMENSION X(  50,20),HOURS(  50),TEMP(  50)
      NPAGES=NC/55
      IREM=NC-NPAGES*55
      DO 20 I=1,ML,2
      I1=2*I-1
      IK=I5+9
      IF(NPAGES.GE.1) GO TO 140
      IF(I.GT.1) GO TO 150
      IREM=0
      LINES=NC
      JJJ=0
      GO TO 150
  140 L=0
      LINES=55
  165 JJJ=55*L
  150 DO 19 J=1,LINES
      JJ=JJJ+J
      IF(I.EQ.ML.AND.J.EQ.1) 17,18
   17 PRINT 1017,(HEADING(II),II=N,N+6),TITLE(IS),TITLE(IS+1),HOURS(JJ),
     1    TEMP(JJ),X(JJ,I)
 1017 FORMAT(1H1///  1X,7A8//2A8,F7.2,3X,F9.2,5X,1PE13.5)
      GO TO 19
   18 IF(I.NE.ML) GO TO 120
      PRINT 1018,HOURS(JJ),TEMP(JJ),X(JJ,I)
 1018 FORMAT(16X,F7.2,3X,F9.2,5X,1PE13.5)
      GO TO 19
  120 IF(J.EQ.1) 117,118
  117 PRINT 2017,(HEADING(II),II=N,N+6),(HEADING(II),II=N,N+6),TITLE
     1   (IS),TITLE(IS+1),HOURS(JJ),TEMP(JJ),X(JJ,I),TITLE(IK),TITLE
     2   (IK+1),HOURS(JJ),TEMP(JJ),X(JJ,I+1)
2017 FORMAT(1H1///  1X,7A8,7X,7A8//2(2A8,0PF7.2,3X,F9.2,5X,1PE13.5,
     1   10X))
      GO TO 19
  118 PRINT 2018,HOURS(JJ),TEMP(JJ),X(JJ,I),HOURS(JJ),TEMP(JJ),X(JJ,I+1)
2018 FORMAT(16X,  0PF7.2,3X,F9.2,5X,1PE13.5,26X,0PF7.2,3X,F9.2,5X,
     1      1PE13.5)
   19 CONTINUE
      IF(NPAGES.EQ.0) GO TO 20
      L=L+1
      IF(L-NPAGES) 165,130,20
  130 IF(IREM.EQ.0) GO TO 20
      LINES=IREM
      GO TO 150
   20 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE LSFIT(NC,X,Y,AS,BS)                                    3530
C                                                                       3540
C                                                                       3550
C **** IT IS IMPORTANT TO NOTE HERE THAT ALTHOUGH THE USE OF THE CORRE-  3560
C        LATION COEFFICIENT IS NOT LEGITIMATE IN A STATISTICAL SENSE     3570
C        BECAUSE THE X VALUES IN THIS PROGRAM ARE NOT RANDOM, IT DOES    3580
C        GIVE SOME INDICATION OF THE GOODNESS OF THE LEAST SQUARES FIT.  3590
C                                                                       3600
C                                                                       3610
      DIMENSION X(  50),Y(  50),D1(  50),D2(  50),TEMP(  50),          3620
     1   YLOG(50),Y2(50),XXMEAN(50)                                     3630
      COMMON/BLK1/TEMP,LSOFIT                                           3640
      COMMON /FITTOGR/ PRESSP(  50,20),NS(  50),HOURP(  50,20),CALOG    3650
     1    (  50,20),I1,TEMPP(  50,20)                                   3660
      DATA  (I1=0)                                                      3670
      I1=I1+1                                                           3680
      N = 0                                                             3690
      DO 1 I=1,NC                                                       3700
      IF (Y(I).LE.0.0.OR.X(I).LE.1.0E-20) GO TO 1                       3710
      N=N+1                                                             3720
      D1(N)=ALOGF(X(I))                                                 3730
      D2(N)=ALOGF(Y(I))                                                 3740
      TEMPP(N,I1)=TEMP(I)                                               3750
1     CONTINUE                                                          3760
      NS(I1)=N                                                          3770
      IF (N.LT.2) GO TO 6                                               3780
      Q3=Q4=Q5=Q6=Q7=0.0                                                3790
      DO 2 J=1,N                                                        3800
      Q3=Q3+D1(J)                                                       3810
      Q4=Q4+D2(J)                                                       3820
      Q5=Q5+D1(J)*D2(J)                                                 3830
      Q6=Q6+D1(J)*D1(J)                                                 3840
2     Q7=Q7+D2(J)*D2(J)                                                 3850
      Q9=(FLOAT(N)*Q5-Q3*Q4)/(FLOAT(N)*Q6-Q3*Q3)                        3860
      Q8=(Q4-Q3*Q9)/FLOAT(N)                                            3870
      T=2.306                                                           3880
      DO 20 J=1,N                                                       3890
      YLOG(J)=Q8+Q9*D1(J)                                               3900
      YTYC=D2(J)-YLOG(J)                                                3910
20    Y2(J)=YTYC*YTYC                                                   3920
      SUMYYC=Y2(1)                                                      3930
      DO 30 J=2,N                                                       3940
30    SUMYYC=SUMYYC+Y2(J)                                               3950
      XBAR=Q3/N                                                         3960
      DO 40 J=1,N                                                       3970
40    XXMEAN(J)=(D1(J)-XBAR)*(D1(J)-XBAR)                               3980
      SUMXXB=XXMEAN(1)                                                  3990
      DO 50 J=2,N                                                       4000
50    SUMXXB=SUMXXB+XXMEAN(J)                                           4010
      S2=SUMYYC/(N-2)                                                   4020
      ALPHA=Q8+Q9*XBAR                                                  4030
      CONFB=T*SQRT(S2/SUMXXB)                                           4040
      CONFA=    (T*SQRT(S2/N))                                          4050
      XXX=(FLOAT(N)*Q6-Q3*Q3)*(FLOAT(N)*Q7-Q4*Q4)                       4060
      IF (XXX.GT.0.0) GO TO 7                                           4070
      QQ=0.0                                                            4080
      GO TO 8                                                           4090
7     QQ=(FLOAT(N)*Q5-Q3*Q4)/SQRT(XXX)                                  4100
8     IF(QQ.GT.174.) GO TO 6                                            4110
      AS=EXP(Q8)                                                        4120
      BS=Q9                                                             4130
      IF(LSOFIT.EQ.0) GO TO 10                                          4140
      IF(XXX.GT.0.0) GO TO 9                                            4150
      PRINT 1003,AS,BS,ALPHA,CONFA,CONFB                                4160
1003  FORMAT (' POWER  Y=A0X**B WITH A = 'E13.5,' AND B = ',F13.5,//    4170
     15X,'USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN',4180
     2     ' VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.'/         4190
     3 5X,'ALPHA = ',F13.5,5X,'CONFIDENCE LIMIT ON ALPHA = ',F13.5,5X,  4200
     4   'CONFIDENCE LIMIT ON B = ',E13.5                               4210
     5//' INDEXES    CORRELATION COEFFICIENT DOES NOT EXIST. ALL DEPENDE4220
     6NT VALUES ARE THE SAME, BAD FIT.'  //3X,                          4230
     7'X',10X,'Y',12X,'Y CALC.'10X,'DIFFER.',8X,'PCT DIFF.',4X,'LOG OF  4240
     8Y',7X,'CONFIDENCE LIMIT ON LOG Y'/)                               4250
      GO TO 10                                                          4260
9     PRINT 1001,AS,BS,ALPHA,CONFA,CONFB,QQ,QC2                         4270
```



```
1001  FORMAT (' POWER  Y=A0X**B WITH A = 'E13.5,' AND B = ',F13.5,//    4290
     15X,'USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN',4300
     2     ' VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.'/         4310
     3 5X,'ALPHA = ',F13.5,5X,'CONFIDENCE LIMIT ON ALPHA = ',E13.5,5X,  4320
     4   'CONFIDENCE LIMIT ON B = ',E13.5                               4330
     5//' INDEXES    CORRELATION COEFFICIENT = ',E13.5,10X,'CORRELATION 4340
     6 OF DETERMINATION = ',E13.5//3X,                                  4350
     7'X',10X,'Y',12X,'Y CALC.'10X,'DIFFER.',8X,'PCT DIFF.',4X,'LOG OF  4360
     8Y',7X,'CONFIDENCE LIMIT ON LOG Y'/)                               4370
10    DO 8 J=1,N                                                        4380
      W7=EXP(C1(J))                                                     4390
      W8=EXP(D2(J))                                                     4400
      W9=AS*W7**BS                                                      4410
      Q4=W9/W8-1.                                                       4420
      Z7=W8-W9                                                          4430
      CONF=    T*SQRT(S2*(1/N+XXMEAN(J)/SUMXXB+1.0))                    4440
      IF (Q4.LT.0.) GO TO 3                                             4450
      Q4=IFIX(1000.*Q4+.5)/10.                                          4460
      GO TO 4                                                           4470
3     Q4=IFIX(1000.*Q4-.5)/10.                                          4480
4     IF(LSOFIT.EQ.0) GO TO 11                                          4490
      PRINT 1002,W7,W8,W9,Z7,Q4,YLOG(J),CONF                            4500
11    PRESSP(J,I1)=W8                                                   4510
      HOURP(J,I1)=W7                                                    4520
      CALOG(J,I1)=W9                                                    4530
8     CONTINUE                                                          4540
1002  FORMAT (F7.2,1P6E13.4)                                            4550
      RETURN                                                            4560
6     PRINT 1004,N                                                      4570
1004  FORMAT(1H0,'THE SUBROUTINE LSFIT WHICH PERFORMS A LEAST SQUARES FI4580
     1T WAS CALLED, BUT IT IS IMPOSSIBLE TO PERFORM SUCH A FIT BECAUSE'/4590
     2' THERE ARE EITHER TOO FEW DATA POINTS (N=0 OR 1) OR THE PRESSURES4600
     3       ARE SO SMALL THEY ARE'/' MEANINGLESS (N.GT.1). IN THIS PAR4610
     4TICULAR CASE N= ',I3)                                             4620
      NS(I1)=0                                                          4630
      AS=BS=0.0                                                         4640
      RETURN                                                            4650
      END                                                               4660
```

```
      SUBROUTINE HPRINV(A,N,B,M,ELEAST,ITER,PMAX)                       4670
C                                                                       4680
C                                                                       4690
C     THIS IS ORNL F04022 OF 2-68                                   M   4700
C     F1 UCSD HPRINV                                                    4710
C     HIGH PRECISION MATRIX INVERSION                                   4720
C                                                                       4730
      DIMENSION A(15,15),B(15,15),E(15,15),IPIVCT(15),JPIVCT(15),PROW(15
     1),C(15)                                                           4740
      EQUIVALENCE (C,PROW)                                              4750
C                                                                       4760
C     INITIALIZATION                                                    4770
C                                                                       4780
    1 L=N-1                                                             4790
    2 DO 4 J=0,L                                                        4800
    3 I=15*J                                                            4810
    4 DO 4 K=1,N                                                        4820
    5 I=I+1                                                             4830
    6 E(I)=A(I)                                                         4840
    7 DO 9 J=1,N                                                        4850
    8 IPIVCT(J)=0                                                       4860
    9 JPIVCT(J)=0                                                       4870
   10 DO 48 II=1,N                                                      4880
C                                                                       4890
C     SEARCH FOR PIVOT ELEMENT                                          4900
C                                                                       4910
   11 BMAX=0.0                                                          4920
   12 L=N-1                                                             4930
   13 DO 25 J=0,L                                                       4940
   14 IF(JPIVCT(J+1)-1)15,25,25                                         4950
   15 I=15*J                                                            4960
   16 DO 24 K=1,N                                                       4970
   17 I=I+1                                                             4980
   18 IF(IPIVCT(K)-1)19,24,24                                           4990
   19 X=ABSF(E(I))                                                      5000
   20 IF (BMAX-X)21,24,24                                               5010
   21 BMAX=X                                                            5020
   22 IROW=I-J*15                                                       5030
   23 JCOL=J+1                                                          5040
   24 CONTINUE                                                          5050
   25 CONTINUE                                                          5060
   26 IPIVCT(IROW)=JCOL                                                 5070
   27 JPIVCT(JCOL)=IROW                                                 5080
   28 PIVOT=B(IROW,JCOL)                                                5090
C                                                                       5100
C     REPLACE PIVOT COLUMN WITH ROW MULTIPLIERS                         5110
C                                                                       5120
   29 DO 34 K=1,N                                                       5130
   30 IF(IROW-K)31,33,31                                                5140
   31 B(K,JCOL)=-B(K,JCOL)/PIVOT                                        5150
   32 GO TO 34                                                          5160
   33 B(K,JCOL)=1.0/PIVOT                                               5170
   34 CONTINUE                                                          5180
C                                                                       5190
C     REDUCE NON PIVOT COLUMNS                                          5200
C                                                                       5210
   35 DO 36 I=1,N                                                       5220
   36 PROW(I)=B(IROW,I)                                                 5230
   37 DO 45 J=1,N                                                       5240
   38 IF(JCOL-J)39,45,39                                                5250
   39 DO 44 K=1,N                                                       5260
   40 IF(IROW-K)41,43,41                                                5270
   41 B(K,J)=B(K,J)-B(K,JCOL)*PROW(J)                                   5280
   42 GO TO 44                                                          5290
   43 B(K,J)=B(K,J)/PIVOT                                               5300
   44 CONTINUE                                                          5310
   45 CONTINUE                                                          5320
C                                                                       5330
C     INTERCHANGE ROWS AND COLUMNS                                      5340
C                                                                       5350
   46 DO 49 I=1,N                                                       5360
   47 J=JPIVCT(I)                                                       5370
   48 DO 48 K=1,N                                                       5380
   49 E(I,K)=B(J,K)                                                     5390
   50 LL=N-1                                                            5400
   51 DO 99 J=0,LL                                                      5410
   52 I=15*J                                                            5420
   53 K=IPIVCT(J+1)                                                     5430
   54 L=15*(K-1)                                                        5440
   55 DO 99 JJ=1,N                                                      5450
   56 I=I+1                                                             5460
   57 L=L+1                                                             5470
   58 B(I)=E(L)                                                         5480
   59 CONTINUE                                                          5490
   60 IF(I-225)55,55,61                                                 5500
C                                                                       5510
C     COMPUTE F=I-(BA) AND FIND LARGEST ABSOLUTE VALUE                  5520
C                                                                       5530
```



```
   61 ITER=0                                                            5550
   62 KK=0                                                              5560
   63 PMAX=0.0                                                          5570
   64 DO 76 J=1,N                                                       5580
   65 DO 76 I=1,N                                                       5590
   66 F(I,J)=0.0                                                        5600
   67 DO 68 K=1,N                                                       5610
   68 F(I,J)=F(I,J)+A(I,K)*B(K,J)                                       5620
   69 IF(I-J)72,70,72                                                   5630
   70 F(I,J)=1.0-E(I,J)                                                 5640
   71 GO TO 73                                                          5650
   72 F(I,J)=-E(I,J)                                                    5660
   73 Y=ABSF(F(I,J))                                                    5670
   74 IF(PMAX-Y)75,76,76                                                5680
   75 PMAX=Y                                                            5690
   76 CONTINUE                                                          5700
   77 IF(KK-1)78,95,95                                                  5710
   78 IF(PMAX-ELEAST)95,95,79                                           5720
   79 ITER=ITER+1                                                       5730
C                                                                       5740
C     COMPUTE I+F                                                       5750
C                                                                       5760
   80 DO 82 I=1,N                                                       5770
   81 J=I                                                               5780
   82 F(I,J)=F(I,J)+1.0                                                 5790
C                                                                       5800
C     COMPUTE ENRICHED INVERSE,B=B(I+F)                                 5810
C                                                                       5820
   83 DO 91 I=1,N                                                       5830
   84 DO 88 J=1,N                                                       5840
   85 C(J)=0.0                                                          5850
   86 DO 87 K=1,N                                                       5860
   87 C(J)=C(J)+B(I,K)*F(K,J)                                           5870
   88 CONTINUE                                                          5880
   89 DO 90 L=1,N                                                       5890
   90 B(I,L)=C(L)                                                       5900
   91 CONTINUE                                                          5910
   92 IF(ITER-M)63,93,93                                                5920
   93 KK=KK+1                                                           5930
   94 GO TO 63                                                          5940
   95 RETURN                                                            5950
      END                                                               5960
```

```
      SUBROUTINE GRAPHS(PRESS ,HOURS,XTIT,ML,TITLL,NC,BS)                  5970
C                                                                          5980
C                                                                          5990
C *** PLOTTING OPTIONS ***                                                 6000
C IF PLOTS ARE DESIRED, THEY ARE REQUESTED BY THE FOLLOWING DATA CARDS     6010
C (PLACE AFTER  THE BLANK CARD IN THE MAIN PROGRAM). COLUMNS 1-5,          6020
C RIGHT ADJUSTED.                                                          6030
C     1. 1 CARD, FOR POINTS ONLY SET=-1                                    6040
C        FOR POINTS CONNECTED BY A LINE, SET=1                             6050
C THE NEXT 6 CARDS REPRESENT 6 PLOTTING OPTIONS OF PARTIAL PRESSURE .VS.   6060
C TIME AND ARE REPRESENTED BY THE  INTEGERS P(1)-P(6) WHICH ARE            6070
C DESCRIBED BELOW.  IF ANY OPTION IS OMITTED, PLACE A C IN COLUMN  5  OR   6080
C INCLUDE A BLANK CARD. IF THE SIGN OF P(1)-P(6) IS NEGATIVE, A FITTED     6090
C LINE TO THE EXPRESSION Y=A*X**B  WILL BE DRAWN.                          6100
C     CARD 1. P(1), LOG PARTIAL PRESSURE .VS. LOG TIME                     6110
C             FOR PLOTS, SET=1  OR  -1 (FITTED)                            6120
C             FOR NC PLOTS, SET=0                                          6130
C     CARD 2. P(2), LOG PARTIAL PRESSURE .VS. LINEAR TIME                  6140
C             FOR PLOTS, SET=1 OR -1                                       6150
C             FOR NC PLOTS, SET=0                                          6160
C     CARD 3. P(3), LOG PARTIAL PRESSURE .VS. LOG TIME OF SELECTED GASES.  6170
C             SET VALUE EQUAL TO THE NUMBER OF GASES TO BE PLOTTED.        6180
C             FOLLOW THIS NUMBER BY THE FIRST 4 LETTERS OF EACH GAS AND    6190
C             PRECEDE EACH BY A SPACE. EXAMPLE    3 C3H8 HYDR TOTA         6200
C             ***EXCEPTION*** USE WATR TO REPRESENT WATER VAPOR.           6210
C     CARD 4. P(4), SAME AS P(3) EXCEPT LOG-LINEAR.                        6220
C     CARD 5. P(5), LOG PARTIAL PRESSURE .VS. LOG TIME. COMPOSITE GRAPH    6230
C             WHICH INCLUDES ALL GASES.                                    6240
C             FOR PLOT, SET=15 OR -15                                      6250
C             FOR NC PLOT, SET=0                                           6260
C     CARD 6. P(6), SAME AS P(5) EXCEPT LOG-LINEAR.                        6270
C THE NEXT 6 CARDS REPRESENT 6 PLOTTING OPTIONS OF PARTIAL PRESSURE .VS.   6280
C TEMPERATURE AND VALUES ARE SET THE SAME AS P(1)-P(6). THERE IS NO        6290
C OPTION FOR ADDING FITTED LINES, THEREFORE ALL VALUES ARE POSITIVE.       6300
C                                                                          6310
C ****NOTE****THERE MUST BE 12 DATA CARDS IN ALL FOR PLOTTING.             6320
C                                                                          6330
C THE LAST 2 CARDS IN THE DECK ARE THE FOLLOWING CONTROL CARDS             6340
C   /*                                                                     6350
C   //                                                                     6360
C                                                                          6370
C                                                                          6380
      REAL*8 TTL,TITLL,XTIT,TTT,GASLEG                                     6390
      INTEGER P(6)                                                         6400
      COMMON /FITTOGP/ PRESSP(  50,2C),NS(  50),HOURP(  50,20),CALOG       6410
     1    (  50,20),TL,TEMPP(  50,2C)                                      6420
      COMMON /PLOT/ XAL,YL,TETLE,GASLEG                                    6430
      COMMON /PATCOM/ LINE                                                 6440
      DIMENSION XA(2),YA(2),XAL(2),TTL(6,20),ICPA(25),BUF(3000),YL(2),     6450
     1HOURS(  50),PRESS (  50,2C),TITLL( 50),XTIT(4),TTT(20),TETLE(40),    6460
     2   GASLEG(50),PS(2C)                                                 6470
      DATA (ITIME=1)                                                       6480
      DATA  (TTL=20(8H          ))                                         6490
      DATA  (XA=1.0E-02,1.0E+03),(YA=1.0E-1C,1.0E-01)                      6500
C                                                                          6510
C     XA=LOG SCALE X, YA=LOG SCALE Y                                       6520
C                                                                          6530
C     XAL=LINEAR SCALE X, YL=LINEAR SCALE Y                                6540
C IF PLOTTING PRESSURE  VS. TEMPERATURE, CHANGE LIMITS ON X AXIS TO        6550
C       CORRESPOND TO TEMPERATURE, INSTEAD OF TIME.                        6560
C                                                                          6570
      IF (ITIME.EQ.1) GO TO 3                                              6580
      XAL(1)=1000.                                                         6590
      XAL(2)=0.                                                            6600
      DO 1 J=1,NC                                                          6610
      IF (HOURS(J).LT.XAL(1)) XAL(1)=HOURS(J)                              6620
    1 IF (HOURS(J).GT.XAL(2)) XAL(2)=HOURS(J)                              6630
    3 CONTINUE                                                             6640
      NBOTH=0                                                              6650
      CALL GRDCPA(9,0R)                                                    6660
      CALL CDDCPA(10,LINE)                                                 6670
C                                                                          6680
C READ PLOTTING OPTIONS                                                    6690
C                                                                          6700
      DO 200 I=1,6                                                         6710
      READ 1001,P(I),(TTL(I,J),J=1,19)                                     6720
 1001 FORMAT(I5,19A8)                                                      6730
  200 CONTINUE                                                             6740
      DO 900 I=1,6                                                         6750
      IF(P(I).EQ.0) GO TO 900                                              6760
      NP=IABS(P(I))                                                        6770
      GO TO (400,400,100,102,101,101) I                                    6780
C
```



```
C THIS SECTION PLOTS OPTIONS 3,4,5,6. EACH OF THESE OPTIONS PRODUCES       6790
C       ONLY 1 GRAPH.                                                      6800
C SET UP LEGEND FOR PLOTTING ALL GASES ON 1 PLOT.                          6810
C                                                                          6820
  101 DO 7 J=1,ML                                                          6830
      DECODE(5,1003,GASLEG(J))    TTL(I,J)                                 6840
 1003 FORMAT(A5)                                                           6850
    7 CONTINUE                                                             6860
      IF(I.EQ.5) GO TO 100                                                 6870
  102 CALL GRDCPA(5,9.)                                                    6880
      CALL SETPLT(XAL,YA,2,'YLOG','MECH',0.,0.,BUF,3000)                   6890
      GO TO 130                                                            6900
  100 CALL GRDCPA(5,6.2F)                                                  6910
      CALL SETPLT(XA,YA,2,'LOG','MECH',C.,0.,BUF,3000)                     6920
  130 NSYM=0                                                               6930
      CALL TITLE(.2,'SELECTED GASES',XTIT,'PRESSURE (TORR)')               6940
      CALL SYMBOL(.1,10.03,.1 ,TETLE(1),0.,80)                             6950
C                                                                          6960
C TEST TO SEE IF NAMES OF GASES ON DATA CARDS ARE CORRECT. IF NOT, THAT    6970
C       GAS IS NOT PLOTTED.                                                6980
C                                                                          6990
      DO 12 K=1,NP                                                         7000
      DO  9 J=1,ML                                                         7010
      IF(ICOMPARE(TTL(I,K),GASLEG(J),5    1,EQ.C) 10,9                     7020
    9 CONTINUE                                                             7030
      PRINT 1002,I                                                         7040
 1002 FORMAT('1 THE INPUT CARD WITH P',I1,' ETC. IS WRONG. CHECK THE NAM   7050
     1ES. LINES WITH UNRECOGNIZED NAMES WILL BE OMITTED FROM THE PLOT.')   7060
      GO TO 12                                                             7070
   10 IF (NS(J).LT.2) GO TO 12                                             7080
      CALL PAYPLT(HOURP(1,J),PRESSP(1,J),NS(J))                            7090
C                                                                          7100
C TEST TO SEE IF A FITTED LINE IS DESIRED.                                 7110
C                                                                          7120
      IF(P(I).GT.0) GO TO 11                                               7130
      CALL GRDCPA(10,0)                                                    7140
      CALL LINPLT(HOURP(1,J),CALOG(1,J),NS(J),0,0)                         7150
      CALL GRDCPA(10,LINE)                                                 7160
   11 NSYM=NSYM+1                                                          7170
      TTT(NSYM)=TTL(I,K)                                                   7180
   12 CONTINUE                                                             7190
      YBOX=.2+.2*NSYM                                                      7200
      CALL LEGEND('LEGENDS',0 ,-NSYM,TTT(1),-8.1,.YBOX    ,6.TH,10.)      7210
      GO TO 300                                                            7220
C                                                                          7230
C THIS SECTION PLOTS OPTIONS 1 AND 2, 1 PLOT PER GAS.                      7240
C                                                                          7250
  400 IF(NBOTH.EQ.1) GO TO 300                                             7260
      DO 9 J=1,ML                                                          7270
      IF(P(I).EQ.0) GO TO 4                                                7280
      IF(NS(J).LT.2) GO TO 4                                               7290
      CALL GRDCPA(6,6.2F)                                                  7300
      CALL SETPLT(XA,YA,2,'LOG','MECH',C.,0.,BUF,3000)                     7310
      CALL TITLE(.2,'S', XTIT,'PRESSURE (TORR)S')                          7320
      CALL SYMBOL(.5,10.2F,.21,TITLL(2*J-1),C.,16)                         7330
      CALL SYMBOL(.1,10.03,.1 ,TETLE(1),0.,80)                             7340
      CALL PAYPLT(HOURP(1,J),PRESSP(1,J),NS(J))                            7350
      IF(P(I).GT.0) GO TO 4                                                7360
      CALL SYMBOL(4.,10.25,.14,'SLOPE = ',0.,8)                            7370
      CALL NUMBER(5.,10.25,.14,BS(J),0.,THIELC.3)                          7380
      CALL GRDCPA(10,0)                                                    7390
      CALL LINPLT(HOURP(1,J),CALOG(1,J),NS(J),0,0)                         7400
      CALL GRDCPA(10,LINE)                                                 7410
    4 IF(P(2).EQ.0) GO TO 5                                                7420
      IF(NS(J).LT.2) GO TO 5                                               7430
      CALL GRDCPA(5,.)                                                     7440
      CALL SETPLT(XAL,YA,2,'YLOG','MECH',0.,0.,BUF,3000)                   7450
      CALL TITLE(.2,'S', XTIT,'PRESSURE (TORR)S')                          7460
      CALL SYMBOL(.5,10.25,.21,TITLL(2*J-1),0.,16)                         7470
      CALL SYMBOL(.1,10.03,.1 ,TETLE(1),0.,80)                             7480
      CALL PAYPLT(HOURP(1,J),PRESSP(1,J),NS(J))                            7490
      NBOTH=1                                                              7500
      IF(P(2).GT.0) GO TO 5                                                7510
      CALL GRDCPA(10,0)                                                    7520
      CALL LINPLT(HOURP(1,J),CALOG(1,J),NS(J),0,0)                         7530
      CALL GRDCPA(10,LINE)                                                 7540
    5 CONTINUE                                                             7550
  900 CONTINUE                                                             7560
   32 ITIME=2                                                              7570
      RETURN                                                               7580
      END                                                                  7590
```

```
IEF285I   SYS70269.T094821.SV000.CLAP.P0000047          SYSOUT
IEF285I   VOL SER NOS= XXXXXX.
IEF285I   SYS70269.T094821.SV000.CLAP.P0000048          DELETED
IEF285I   VOL SER NOS= PROBAP.
IEF285I   SYS70269.T094821.PV000.CLAP.UT20              PASSED
IEF285I   VOL SER NOS= 222222.
IEF285I   SYS70269.T094821.PV000.CLAP.UT30              PASSED
IEF285I   VOL SER NOS= 333333.
IEF285I   SYS70269.T094821.PV000.CLAP.S0000049          SYSIN
IEF285I   VOL SER NOS= CDDDDC.
IEF285I   SYS70269.T094821.PV000.CLAP.SC000049          DELETED
IEF285I   VOL SER NOS= CDDDDC.


CLAP     FT63                    18.52.C7 10-22-70
      CPU SEC.=   66.38//     I/O REQUESTS=   565//     REGION ALLOC.= 470K//     MACH. USE SEC.=   73.30//     REGION USED= 420K


XXLINK EXEC PGM=IEWL,PARM='LIST,MAP',COND=(C,LT,FT63),REGION=256K          00000130
//LINK.SYSLIB DD DSNAME=LABLTP,DISP=SHR
X/SYSLIB DD DSN=SYS1.WBGTEST,UNIT=2314,VOL=SER=MVT17P,DISP=SHR             00000140
// DD DSNAME=AB.G1.P31396.C10207.CHANDLER.GRAPHICS,
// VOLUME=REF=222222,DISP=SHR
X/  DD DSN=SYS1.LM901,UNIT=2314,VOL=SER=MVT17P,DISP=SHR                    00000150
X   DD DSN=LABLIB,DISP=SHR                                                 00000160
XXSYSPRINT DD SYSOUT=*,SPACE=(2420,(100,20),RLSE),                        *00000170
XX DCB=(RECFM=FBM,LRECL=121,BLKSIZE=2420)                                  00000180
XXSYSUT1 DD DSNAME=&UTA1,SPACE=(CYL,(P,1)),UNIT=2314                       00000190
XXSYSLMOD DD DSNAME=&&JOBLIB(NAME2X),DISP=(,PASS),                        X00000200
XX SPACE=(CYL,(&SYS1,&SYS2,1),RLSE),UNIT=(2314,,SEP=SYSUT1)                00000210
XXSYSLIN DD DSNAME=&UT30,DISP=(OLD,DELETE)                                 00000220
XX   DD DDNAME=SYSIN                                                       00000230
//LINK.SYSIN DD *
IEF236I ALLOC. FOR CLAP     LINK
IEF237I SYSLIB   ON 237
IEF237I          ON 234
IEF237I          ON 237
IEF237I SYSPRINT ON 232
IEF237I SYSUT1   ON 230
IEF237I SYSLMOD  ON 235
IEF237I SYSLIN   ON 199
IEF237I          ON 239
```


F129-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED LIST,MAP
VARIABLE OPTIONS USED - SIZE=(291904,102400) DEFAULT OPTION(S) USED

MODULE MAP

CONTROL SECTION

NAME	ORIGIN	LENGTH
$9999999	00	4648
HILC$$$$	4648	240
PRINT	4888	818
LSFIT	50A0	1464
FITTOGR$	5608	3F4C
HPMINV	8458	1010
GRAPHS	8468	4164
$CVRT23 *	F5D0	20
SPOWER3D*	F5F0	5C
ABSF *	F650	C
ADVANS *	F660	184
IHCFXP *	F7E0	14C
IHCFLOAT*	F938	50
IHCFCOMH*	F988	F3C
IDAY *	10BC8	108
IHCFIFIX*	10CD0	70
IHCSQRT *	10A40	F0
ABS *	10R20	C
IHCFRXPR*	10B30	D4
ICOMPARE*	10C08	AC
LEGEND *	10C78	E0C
LINPLT *	11988	1E40
LOGF *	13FC8	C
NUMBER *	13FD8	228
SETPLT *	13A00	E2P
SYMBOL *	14828	BCF
IHCFCVTH*	150F8	107C
IHCFAINT*	16178	44
APITH= *	161C0	478
CPT *	16638	B00

ENTRY

NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
$CVRT24	F5D0						
EXP	F7BC						
FLOAT	F93E	DFLOAT	F93F				
IBCOM	F98P	IBCOM=	F988	FDIVCS=	F9AC	INTSW	10A0C
DUMPFLAG	10610						
IFIX	109D4	INT	109D4	IDINT	109EC		
SQRT	10A46						
FRXPR=	10B30						
ICOMPA	10CC8						
PNTPLT	13F8A	RAYPLT	14226	TITLE	14206		
ADCON=	150F8	FCV20	15244	FCV40	152EA	FCVLO	1537A
FCV10	15680	FCVF0	15842	FCVC0	15DA4	INT65W	1615C
ATNT	1617E						
SSSTIMES	162D6	CPALIGTH	16424				

NAME	ORIGIN	LENGTH
IHCFIOSH*	17208	E8A
IABS *	1F0C0	C
LIBMERR *	1F0D0	96C
PLOTS *	18440	CA0
@@@CPA *	19DF0	4DC
@@@CPA$$$*	19ED0	B4
@CVPT32 *	19678	48
IHCSLOG *	19EC0	194
AXIS *	19018	266C
@PPC@ *	1F8B8	D8
ISIGN *	1FFA0	24
INTL *	1FFB8	F5C
SETDUMP *	1C7B8	66F
XLIMIT *	1CE90	94
IHCFMAXR*	1CEF8	C@
BOX *	1CF88	508
GRID *	1D4C0	1444
LABEL *	1E908	14C7
LINFUP *	1FD10	440
RANGE *	20190	274
SCALE *	20EC8	8F0
SIGN *	20FB8	2F
IHCSSCN *	20FE0	218
BCDTCINT*	211F8	70
CRTNUM *	21268	22E
CRTSYM *	21490	8C5
IHCLLOG *	21D58	1A0
CURPDUMP*	21F08	6A5
DUMCUR *	22580	146F
GDUMP *	23C1F	45C
PUTOUTC *	24084	7A0
@FLCAC@ *	24814	4@5
IHCUATBL*	25108	3@F
@@NPWR *	2@B7@	9F@
@@@FPT *	2@F60	5AA
RCUNDF *	26510	248
STEPF *	26758	27A
@CVPT63 *	26990	20
@POWER31*	26AB0	7C
DBLE *	26A3C	1F
IHCFEXI?*	26A58	1C

NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
FIOCS*	1720F	SETFIO	18048	SETSYSCU	18058		
FACTOR	1847A	WHERE	18480	OFFSET	18402	PLOT	184F4
ALOG10	196C8	ALOG	196DE				
@@PORC	1C112	@@@SYM	1C206	@@@NUM	1C33F	@@@FF	1C432
SETFAU	1CF7A	SETFAULT	1C886				
YLIMIT	1CE8E						
MAX1	1CEEF	MIN1	1CEFE	AMAX1	1CF14	AMIN1	1CF2A
COS	20FE4	SIN	20FFE				
BCDTOI	211F8	BCDTINT	211F8	BCDTIN	211F8		
ALOG10	21D5E	DLOG	21D74				
$POWER32	269C0						

NAME	ORIGIN	LENGTH
INTOBCD *	26A58	10F
IWAGZZZ?*	26B68	B@
LOC *	26BE8	A
IHCFMAXI*	26BF8	C9
REPLACE *	26CC8	50
IHCFRXPI*	26D18	94
BLK1$$$$	26DB0	CC
EATOGR$$	2?EB0	A
DUMPCODS	26F88	30
CSECTS$$	?AEB8	12C4

NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
EXIT	26A38						
INTOBC	26A58	INTBCDL	26A6C	INTBCD	26A6C		
MAXO	26BF8	MIAO	26C0E	AMAXO	26C24	AMINO	26C3A
REPLAC	26CC8						
@PXPI*	26D18						

ENTRY ADDRESS 00
TOTAL LENGTH 28180

@@@@NAME* CODE NOT EXIST BUT HAS BEEN ADDED TO DATA SET

```
IEF285I   LABLIB                                          KEPT
IEF285I   VOL SER NOS= PVT17P.
IEF285I   A0.G1.P31394.C1020C7.CHANDLER.GRAPHICS          KEPT
IEF285I   VOL SER NOS= ZZZZZZ.
IEF285I   LAPLIB                                          KEPT
IEF285I   VOL SER ACS= PVT17P.
IEF285I   SYS70265.T094821.SV000.CLAP.R0000050            SYSOUT
IEF285I   VOL SER NCS= RRRRRR.
IEF285I   SYS70265.T094821.RV000.CLAP.UT#1                DELETED
IEF285I   VOL SER NOS= EFEEEE.
IEF285I   SYS70265.T094821.RV000.CLAP.FJOBLIB             PASSED
IEF285I   VOL SER NCS= CLIB01.
IEF285I   SYS70265.TC94821.RV000.CLAP.UT3C                DELETED
IEF285I   VOL SER NCS= 333333.
IEF285I   SYS70265.T094871.RV000.CLAP.SC000051            SYSIN
IEF285I   VOL SER NOS= YYYYYY.
IEF285I   SYS70265.T094821.RV000.CLAP.S0000051            DELETED
IEF285I   VOL SER NOS= YYYYYY.
```

```
CLAP     LINK                  18.52.40 10-22-7C
      CPU SEC.=   3.21//     I/O REQUESTS=   670//     REGION ALLOC.= 256K//     MACH. USE SEC.=    7.68//     REGION USED= 250K
```

```
XXGO EXEC PGM=*.LINK,SYSLMOD,COND=((0,LT,FT63),(5,LT,LINK)),          *00000240
XX REGION=256K                                                         00000250
XXFT51F001 DD SYSOUT=A,SPACE=(3458,(DPRIM,ESEC),RLSE),                X00000260
XX             DCB=(RECFM=FBA,LRECL=133,BLKSIZE=3458)                  00000270
XXFT52F001 DD DSNAME=&FJOBLIB(NAMEEX),DISP=(OLD,DELETE),              X00000280
XX DCB=(RECFM=U,BLKSIZE=256),LABEL=(,,,IN)                             00000290
XXFT55F001 DD DSNAME=&UT2D,DISP=(OLD,DELETE),                         *00000300
XX DCB=(RECFM=FB,LRECL=20,BLKSIZE=320)                                 00000310
//GO.FT52F001 DD SYSOUT=P,DCB=(RECFM=FB,LRECL=8C,BLKSIZE=3520),
// SPACE=(3520,(1),RLSE)
//GO.FT50F001 DD *
//
IEF236I ALLOC. FOR CLAP     GO
IEF237I PGM=*.DD ON 233
IEF237I FT51F001 ON 232
IEF237I FT53F001 ON 233
IEF237I FT55F001 ON 191
IEF237I FT52F001 ON 231
IEF237I FT50F001 ON 236
```


*** CURRENT DATE IS 10-22-70 ***

NERVA XE-II FUEL ELEMENT PARTIAL PRESSURE PROGRAM

DEWEY EASTON

RUN NO. 1C1, 6CC-C, 350 MP AT 90 DEG

APPARATUS TEMPERATURE (DI = 60.

*** CRACKING PATTERN ***

M/E	H	HELIUM	METHANE	WATER VAPOR	NITROGEN	CC	OXYGEN	ARGON	CO2	C2H4	C2H6	C3H8
2	1.0000	0.0	0.0070	0.0	0.0	0.C	0.0	0.0	0.0	0.0290	0.0040	0.0040
4	0.0	1.0000	0.0	0.0	0.0	0.C	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0210	0.C	0.0	0.0200	0.0	0.0	0.0250	0.0120	0.0030	0.0050
13	0.0	0.0	0.0990	0.0	0.0	0.0	0.0	0.0	0.0	0.0160	0.0060	0.0040
14	0.0	0.0	0.1450	0.0	0.0900	0.C060	0.0	0.0	0.0	0.0400	0.0200	0.0250
15	0.0	0.0	0.8000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0270	0.2500
16	0.0	0.0	1.0000	0.0380	0.C	0.0080	0.0790	0.C	0.0546	0.0	0.0020	0.0130
17	0.0	0.C	0.0120	0.2660	0.0	0.C	0.0	0.0	0.0	0.0	0.0	0.C
18	0.0	0.0	0.C	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.C
22	0.0	0.0	0.0	0.0	0.0	0.C	0.0	0.0	0.0100	0.0	0.0	0.0
26	0.0	0.0	0.0	0.C	0.0	0.0	0.0	0.0	0.0	0.5060	0.1920	0.0250
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5440	0.2840	0.3900
28	0.0	0.0	0.0	0.0	1.0000	1.0000	0.0	0.0	0.1640	1.0000	1.0000	0.7180
29	0.0	0.0	0.0	0.0	0.0100	0.0100	0.0	0.0	0.0	0.0280	0.2000	1.0000
30	0.0	0.0	0.C	0.0	0.0	0.0020	0.0	0.0	0.0	0.0	0.2440	0.0220
32	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0	0.0	0.0
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	0.0	0.0	0.4400

*** CORRECTION CONSTANTS ***

	IONIZATION CONSTANT	PGA SENSITIVITY = MASTER AMPS/TORR	
H	0.44CC	0.4848	0.2239
HELIUM	0.163C	0.2577	0.0420
METHANE	1.4C00	0.4400	0.6160
WATER VAPOR	1.CCC0	0.7000	0.7000
NITROGEN	1.0CCC	1.1000	1.1000
CO	1.C100	1.1900	1.2100
OXYGEN	1.07CC	0.8252	0.8830
ARGON	1.1400	0.8333	0.9500
CO2	1.4C00	1.0000	1.4000
C2H4	1.9C00	0.4900	0.8920
C2H6	2.6500	0.5613	1.5099
C3H8	3.58C0	0.3352	1.2000

*** CURRENT DATE IS 10-22-70 ***

RUN NO. 1C1, 6CC-C, 350 MP AT 90 DEG

RUN NO. 101, 600-C, 350 HP AT 50 DEG
DATE = 2.13
HOURS = 2.00
TEMPERATURE (DEGREE C.) = 49.2°
ION GAGE(TORR) = 3.350C0E-06 THERMAL CORRECTION = 3.52944E-06

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	5.90000E-08	5.89598E-08	-2.34479E-13	-39.74221E-05
4	1.00000E-12	1.00000E-12	0.0	0.0
12	1.25C00E-08	6.10752E-09	-6.39648E-09	-51.17183E 00
13	8.00000E-10	-7.88606E-10	-1.58861E-09	-19.85771E 01
14	4.70000E-09	2.56036E-09	-2.13963E-09	-45.52414E 00
15	7.00000E-09	1.58629E-09	8.36251E-09	11.15094E 01
16	6.99000E-08	6.34319E-08	-6.26807E-09	-89.67196E-01
17	4.95000E-07	5.04640E-07	9.64647E-09	19.47870E-01
18	1.90000E-06	1.89767E-06	-2.32331E-09	-12.25424E-02
22	3.40000E-09	-3.91450E-10	-3.89145E-09	-11.11841E 01
26	3.60000E-09	-1.05028E-08	-1.41027E-08	-39.17429E 01
27	5.60000E-09	1.89157E-08	1.33157E-08	23.77801E 01
28	4.05000E-07	4.05252E-07	2.52985E-10	62.31721E-03
29	1.10000E-07	1.03702E-07	-6.2978E-09	-57.25166E-01
30	4.30000E-09	3.51387E-09	-7.86125E-10	-18.28207E 00
32	1.35000E-08	1.39951E-08	4.95145E-10	36.67743E-01
40	2.00000E-09	2.00000E-09	0.0	0.0
44	4.60000E-09	5.09909E-09	4.99094E-10	10.84992E 00

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	3.52944E-06	
SUM OF PARTIAL PRESSURES	3.48012E-06	99.99999E 00
H	2.82457E-07	81.16300E-01
HELIUM	2.70818E-12	72.C7168E-06
METHANE	-1.99665E-08	-57.37308E-02
WATER VAPOR	2.85617E-06	82.07058E 00
NITROGEN	1.11742E-08	32.10958E-02
CO	3.14647E-07	91.07334E-01
OXYGEN	1.64992E-C8	47.98453E-02
ARGON	2.21812E-09	63.73686E-03
CO2	-2.94584E-08	-84.64765E-02
C2H6	-4.60425E-08	-13.23C12E-C1
C2H6	1.64C52E-C9	47.12997E-02
C3H8	8.92829E-08	25.36776E-01
HYDROCARBONS	2.35145E-08	68.71736E-02

SUM OF CURRENTS = 3.10150E-06 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 8.2582CE-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 3.48012E-06 TORR
ION GAGE ADJUSTED PRESSURE = 3.P3C67E-06 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 3.50952E-07 TORR
PERCENT DIFFERENCE = 10.07

RUN NO. 101, 600-C, 350 HP AT 50 DEG
DATE = 2.14
HOURS = 20.50
TEMPERATURE (DEGREE C.) = 49.25
ION GAGE(TORR) = 1.80000E-07 THERMAL CORRECTION = 1.89642E-07

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	8.80000E-09	8.79995E-09	-4.26226E-14	-49.44610E-05
4	1.00000E-13	1.00000E-13	0.0	0.0
12	1.10000E-09	1.71800E-09	6.17995E-10	96.18138E 00
13	5.00000E-11	-2.14347E-11	-7.14347E-11	-14.28693E 01
14	3.20000E-10	5.21387E-10	2.01387E-10	62.93359E 00
15	4.60000E-10	-3.27C74E-10	-7.87074E-10	-17.11030E 01
16	3.50000E-09	4.07878E-09	5.78782E-10	16.53662E 00
17	1.40000E-08	1.50736E-08	1.07364E-09	76.68889E-01
18	5.70000E-08	5.66925E-08	-3.C7541E-10	-53.95449E-02
22	3.00000E-10	3.57940E-10	5.79405E-11	19.31352E 00
26	2.50000E-10	3.15233E-10	6.52327E-11	26.09309E 00
27	5.60000E-10	4.98209E-10	-6.17908E-11	-11.03514E 00
28	5.20000E-08	5.15785E-08	-2.15C1CE-11	-41.34811E-03
29	7.20000E-10	9.54614E-10	2.34614E-10	32.58525E 00
30	2.80000E-10	2.49019E-10	-3.C9812E-11	-11.06473E 00
32	2.90000E-09	2.25427E-09	-4.57259E-11	-19.88080E-01
40	8.90000E-11	8.90000E-11	0.0	0.0
44	3.60000E-08	3.59557E-08	-4.43308E-11	-12.31409E-02

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	1.89642E-07	
SUM OF PARTIAL PRESSURES	1.96185E-07	99.99999E 00
H	4.15298E-08	21.16872E 00
HELIUM	2.9C818E-12	12.78479E-04
METHANE	-9.32007E-10	-47.55756E-02
WATER VAPOR	8.53276E-08	43.49339E 00
NITROGEN	3.38C58E-09	17.23161E-01
CO	3.6C066E-08	18.34355E CC
OXYGEN	2.68983E-09	13.7107CE-01
ARGON	9.42701E-11	48.C517CE-03
CO2	2.69367E-08	13.73026E CC
C2H6	3.79004E-10	19.31492E-02
C2H6	4.52902E-10	23.08511E-02
C3H8	3.22478E-10	16.43745E-02
HYDROCARBONS	2.16477E-10	11.C5981E-02

SUM OF CURRENTS = 1.77725E-07 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 9.8736CE-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 1.96185E-07 TORR
ION GAGE ADJUSTED PRESSURE = 2.28412E-07 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 3.22279E-08 TORR
PERCENT DIFFERENCE = 16.427

RUN NO. 101, 600-C, 350 HR AT 50 DEG
DATE = 2.15
HOURS = 71.00
TEMPERATURE (DEGREE C.) = 49.25
ION GAGE(TORR) = 1.200000E-07 THERMAL CORRECTION = 1.264209E-07

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	9.900000E-09	4.999968E-09	-3.952718E-14	-71.056308E-05
4	1.000000E-13	1.000000E-13	0.0	0.0
12	1.100000E-09	1.11 .78E-09	9.677928E-11	91.617568E-01
13	9.900000E-11	1.019928E-13	-1.[illegible]E-11	-48.119889E 00
14	2.700000E-10	2.000000E-10	1.[illegible]E-11	17.031138E-01
15	2.900000E-10	2.247148E-10	-6.[illegible]E-11	-20.511638E 00
16	2.800000E-09	2.849938E-09	4.992988E-11	17.85[illegible]E-01
17	6.700000E-09	6.69[illegible]E-09	-4.[illegible]E-11	-66.[illegible]E-02
18	2.900000E-08	2.901008E-08	1.008098E-11	40.[illegible]E-03
22	2.700000E-10	2.444068E-10	-2.[illegible]E-11	-76.272368E-01
26	1.690000E-10	1.[illegible]E-10	-6.[illegible]E-12	-43.470618E-01
27	2.600000E-10	2.466398E-10	6.[illegible]E-12	27.644628E-01
28	3.200000E-09	3.196758E-08	-2.[illegible]E-12	-76.[illegible]E-04
29	5.000000E-10	5.118008E-10	1.[illegible]E-11	31.616948E-01
30	2.000000E-10	1.968568E-10	-3.[illegible]E-12	-14.731568E-01
40	3.500001E-11	3.500008E-11	0.0	-50.350008E-02
44	2.[illegible]E-08	2.499638E-08	-3.687728E-12	-14.[illegible]E-03

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	1.264209E-07	
SUM OF PARTIAL PRESSURES	1.063008E-07	99.999908 CC
H	2.359268E-08	22.194268E 00
HELIUM	2.708188E-12	23.995298E-04
METHANE	3.799778E-10	35.688768E-[illegible]
WATER VAPOR	3.764268E-08	35.481938E 00
NITROGEN	8.[illegible]E-10	81.219368E-02
CO	2.287008E-08	21.522938E 00
OXYGEN	1.546678E-09	14.548128E-01
ARGON	3.991778E-11	36.[illegible]E-03
CO2	1.670908E-09	17.686678E 00
C2H6	7.209978E-11	67.[illegible]E-01
C2H8	4.041768E-10	38.[illegible]E-02
C3H8	1.110798E-10	10.[illegible]E-02
HYDROCARBONS	9.[illegible]E-10	86.[illegible]E-02

SUM OF CURRENTS = 1.009008E-07 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 8.[illegible]E-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 1.063008E-07 TORR
ION GAGE ADJUSTED PRESSURE = 1.[illegible]E-07 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 4.[illegible]E-09 TORR
PERCENT DIFFERENCE = 43.0%

RUN NO. 101, 600-C, 350 HR AT 50 DEG
DATE = 2.15
HOURS = 46.00
TEMPERATURE (DEGREE C.) = 49.25
ION GAGE(TORR) = 6.500008E-08 THERMAL CORRECTION = 6.848178-08

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	4.250008-09	4.249978E-09	-3.197448E-14	-75.233968E-05
4	1.000008-13	1.000008-13	0.0	0.0
12	6.700008-10	7.591138E-10	8.911278E-11	13.300418E 00
13	2.400008-11	1.747698E-11	-7.523078E-12	-30.092278 00
14	1.590008-10	1.769538E-10	2.195308E-11	13.905188 00
15	2.250008-10	2.167178E-10	-8.282788E-12	-36.812538-01
16	1.800008-09	1.803248E-09	3.241198E-12	18.006588-02
17	3.900008-09	3.201798E-09	-9.821438-11	-29.761928-01
18	1.200008-08	1.202608-08	2.[illegible]E-11	21.665638-02
22	1.400008-10	1.697098-10	-1.029128-11	-97.173328-01
26	1.000008-10	1.029798-10	2.979048E-12	29.790618-01
27	1.600008-10	1.571988-10	-2.802448-12	-17.515748-01
28	2.000008-08	1.956768-08	-2.433618-12	-12.168048-03
29	3.000008-10	3.041978-10	4.[illegible]E-12	13.398178-01
30	1.200008-10	1.237158-10	3.715298-12	30.960768-01
32	6.000008-10	5.997428-10	-2.[illegible]E-13	-42.928618-03
40	1.800008-11	1.800008-11	0.0	0.0
44	1.[illegible]E-08	1.699808-08	-2.01[illegible]E-12	-11.828448-03

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	6.848178-08	
SUM OF PARTIAL PRESSURES	6.706368-08	99.[illegible]E CC
H	2.009908-08	29.904468 CC
HELIUM	2.508188-12	37.400078-04
METHANE	4.092048-10	61.017288-02
WATER VAPOR	1.810028-08	26.[illegible]E CC
NITROGEN	9.461048-10	91.608318-02
CO	1.429998-08	21.278218 CC
OXYGEN	7.158218-10	10.[illegible]E-01
ARGON	1.996318-11	29.[illegible]E-03
CO2	1.277148-08	19.[illegible]E CC
C2H6	6.346[illegible]E-11	94.[illegible]E-03
C2H8	2.961838-10	38.[illegible]E-02
C3H8	9.408658-11	80.[illegible]E-03
HYDROCARBONS	7.829308-10	11.[illegible]E-01

SUM OF CURRENTS = 6.090308-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 9.[illegible]E-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 6.706368-08 TORR
ION GAGE ADJUSTED PRESSURE = 8.[illegible]E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 2.119878-08 TORR
PERCENT DIFFERENCE = 31.610

RUN NO. 101, 600-C, 350 HR AT 90 DEG
DATE = 2.1?
HOURS = 46.7?
TEMPERATURE (DEGREE C.) = 49.2?
ION GAGE (TORR) = 6.50000E-08 THERMAL CORRECTION = 6.84817E-08

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	4.40000E-09	4.39996E-09	-3.90795E-14	-88.81791E-05
4	1.00000E-13	1.00000E-13	0.0	0.0
12	7.00000E-09	1.19072E-09	-5.80927E-09	-82.98966E 00
13	2.80000E-11	1.67586E-11	-1.12414E-11	-40.14784E 00
14	1.60000E-10	-1.15721E-09	-1.35721E-09	-84.82566E 01
15	2.30000E-10	1.99708E-10	-3.4292CE-11	-14.90955E 00
16	1.70000E-09	2.04147E-09	3.41568E-10	20.09225E 00
17	2.80000E-09	3.24269E-09	4.42693E-10	15.81307E 00
18	1.25000E-08	1.23693E-08	-1.30743E-10	-10.45947E-01
22	1.80000E-10	1.90075E-10	1.00745E-11	55.97189E-01
26	9.00000E-11	1.26364OE-10	3.63403E-11	40.37810E 00
27	1.60000E-10	1.31580E-10	-2.84197E-11	-17.76231E 00
28	2.20000E-08	2.21274E-08	1.22412E-10	55.64194E-02
29	3.00000E-10	2.46142E-10	-5.38576E-11	-17.95253E 00
30	1.20000E-10	-1.51914E-10	-2.71914E-10	-22.65950E 01
32	6.00000E-10	5.73014E-10	-2.69857E-11	-44.97625E-01
40	2.00000E-11	2.00000E-11	0.0	0.0
44	1.90000E-08	1.91063E-08	1.06326E-10	55.96082E-02

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	6.84817E-08	
SUM OF PARTIAL PRESSURES	7.02461E-08	99.99998E 00
H	2.07157E-09	29.4902CE 00
HELIUM	7.50818E-12	35.70963E-04
METHANE	3.52169E-10	50.1336CE-02
WATER VAPOR	1.86169E-08	26.50239E 00
NITROGEN	-1.54157E-08	-21.94522E 00
CO	3.07400E-09	43.76041E 00
OXYGEN	6.83728E-10	97.33323E-02
ARGON	2.21212E-11	31.57638E-03
CO2	1.43040E-08	20.36272E 00
C2H6	6.77920E-10	96.50626E-02
C2H6	-6.50482E-10	-92.60035E-02
C3H8	1.97199E-10	28.07258E-02
HYDROCARBONS	9.76806E-10	82.11219E-02

SUM OF CURRENTS = 7.12380E-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 1.05751E 00 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 7.02461E-08 TORR
ION GAGE ADJUSTED PRESSURE = 8.77425E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 1.74964E-08 TORR
PERCENT DIFFERENCE = 24.90?

RUN NO. 101, 600-C, 350 HR AT 90 DEG
DATE = 2.1?
HOURS = 63.2?
TEMPERATURE (DEGREE C.) = 49.2?
ION GAGE (TORR) = 9.00000E-08 THERMAL CORRECTION = 9.26782E-08

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	9.85000E-09	9.84996E-09	-4.20326E-14	-11.07340E-04
4	1.00000E-13	1.00000E-13	0.C	0.0
12	6.00000E-10	6.43294E-10	4.3034CE-11	71.72334E-01
13	2.00000E-11	8.70071E-12	-1.12993E-11	-56.46648E 00
14	1.30000E-10	1.44305E-10	1.43054E-11	12.54221E 00
15	1.95000E-10	1.09484E-10	-8.5315?E-11	-43.75174E 00
16	1.70000E-09	1.91931E-09	6.?3142E-11	92.27134E-01
17	1.90000E-09	1.92724E-09	2.72319E-11	14.33644E-01
18	7.25000E-09	7.24C20E-09	-9.73044E-12	-13.42600E-02
22	1.45000E-10	1.44695E-10	-3.04?4?E-13	-21.01764E-02
26	6.00000E-11	6.5C976E-11	9.C7362E-12	83.9409?E-01
27	1.10000E-10	1.09527E-10	-4.72845E-12	-42.98819E-01
28	1.70000E-09	1.69758E-09	-2.4961CE-12	-12.33000E-03
29	2.25000E-10	2.49404E-10	2.44042E-11	10.90187? 00
30	9.70000E-11	9.33?49E-11	-4.64049E-12	-?1.78327E-01
32	3.45000E-10	3.29819E-10	-9.14?26E-12	-14.96001E-01
40	1.10000E-11	1.10000E-11	C.C	0.0
44	1.45000E-08	1.44956E-08	-4.39405E-12	-30.29480E-03

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	9.26782E-08	
SUM OF PARTIAL PRESSURES	9.33289E-08	99.99998E 00
H	1.01732E-08	34.08136E 00
HELIUM	2.58018E-12	47.C3229E-04
METHANE	1.09493E-10	3?.?3?1?E-02
WATER VAPOR	1.08473E-08	36.43411E 00
NITROGEN	6.21017E-10	?1.09?28E-02
OXYGEN	1.2C803E-08	22.6837?E 00
ARGON	4.07900E-10	7?.C3769E-02
CO2	1.22997E-11	22.87033E-03
C2H6	1.08690E-08	3?.41846E 00
C2H6	3.6?980E-11	68.??3?5E-03
C3H8	1.?C928E-10	?0.17665E-02
C3H8	9.2C949E-11	?7.61C61E-03
HYDROCARBONS	4.39034E-10	82.32976E-03

SUM OF CURRENTS = 8.76011E-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 9.93623E-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 9.33289E-08 TORR
ION GAGE ADJUSTED PRESSURE = 9.07411E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 1.?8229E-08 TORR
PERCENT DIFFERENCE = ??.?0?

RUN NO. 101, 600-C, 350 HP AT 50 DEG
DATE = 2.16
HOURS = 72.00
TEMPERATURE (DEGREE C.) = 40.25
ION GAGE(TORR) = 4.00000E-08 THERMAL CORRECTION = 4.21426E-08

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	3.050000E-09	3.050000E-09	-4.440892E-15	-14.56030E-05
4	1.000000E-13	1.000000E-13	0.0	0.0
12	5.000000E-10	4.217546E-10	-7.824411E-11	-15.64882E 00
13	1.500000E-11	7.700995E-12	-7.299004E-12	-48.66029E 00
14	1.100000E-10	9.720606E-11	-1.279394E-11	-11.58125E 00
15	1.600000E-10	8.482678E-11	-7.517321E-11	-46.95755E 00
16	9.900000E-10	1.019908E-09	8.990CCE-11	89.36836E-01
17	1.100000E-09	9.451478E-10	-1.548522E-10	-14.29936E 00
18	3.500000E-09	3.522227E-09	3.222135E-11	11.20607E-01
22	1.200000E-10	1.219319E-10	-2.068095E-12	-24.55269E-01
26	5.500000E-11	1.915790E-11	-3.584210E-11	-65.16747E 00
27	8.900000E-11	1.197619E-10	3.976410E-11	39.69530E 00
28	1.000000E-08	1.000070E-08	6.680905E-13	66.08047E-04
29	1.050000E-10	1.038118E-10	9.81C76E-12	47.62571E-01
30	7.500000E-10	7.370922E-10	-1.290778E-11	-17.21023E-01
32	2.800000E-10	2.747972E-10	-5.2C717E-12	-19.59704E-01
40	1.300000E-11	1.300000E-11	0.0	0.0
44	1.200000E-08	1.199827E-08	-1.731FFE-12	-15.09903E-03

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	4.214260E-08	
SUM OF PARTIAL PRESSURES	3.561990E-08	99.999995 OC
H	1.449790E-08	40.701782 OC
HELIUM	2.708188E-12	7C.415146E-04
METHANE	2.443946E-10	68.59786E-02
WATER VAPOR	9.328090E-09	34.99547CE OC
NITROGEN	3.509728E-10	98.53248E-02
CC	9.204618E-09	34.611918 OC
OXYGEN	3.278060E-10	92.C9140E-02
ARGON	1.441788E-11	4C.4767FE-03
CO2	9.179878E-09	25.76049E OC
C2H4	-1.238128E-09	-34.7F924E-01
C2H6	2.181568E-09	58.99869E-01
C3H8	-3.889888E-10	-10.91825E-01
HYDROCARBONS	7.197F9E-10	2C.181C4E-01

SUM OF CURRENTS = 3.287819E-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 8.219528-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 3.561990E-08 TORR
ION GAGE ADJUSTED PRESSURE = 3.994139E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 2.22215E-08 TORR
PERCENT DIFFERENCE = 64.07C

RUN NO. 101, 600-C, 350 HP AT 50 DEG
DATE = 2.19
HOURS = 137.00
TEMPERATURE (DEGREE C.) = 49.25
ION GAGE(TORR) = 2.100005-08 THERMAL CORRECTION = 2.21249E-08

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	2.500008-09	2.500008-09	-3.77476E-15	-1*.09903E-05
4	1.000008-13	1.000008-13	0.0	0.0
12	3.200008-10	3.408648-10	2.086448-11	65.20209F-01
13	1.100008-11	2.992518-11	1.892518-11	17.20467F 01
14	6.200008-11	1.020588-10	4.005778-11	64.60F16F 00
15	9.200008-10	4.373128-10	-4.826878-10	-*2.46603E 00
16	6.800008-10	1.058838-09	3.788278-10	55.70985E 00
17	4.050008-10	4.038388-10	-3.616448-12	-89.29483E-02
18	1.500008-09	1.498578-09	-1.348768-11	-89.55057E-02
22	*.000008-11	8.203278-11	3.203278-11	64.06551E 00
26	2.900008-11	7.180348-12	-2.181948-11	-75.24014E 00
27	3.200008-11	5.085508-11	1.885508-11	58.92200E 00
28	7.500008-08	7.454978-08	-5.027098-12	-67.0278*E-03
29	9.000008-11	2.124888-10	1.224888-10	13.609808 01
30	3.000008-11	-1.062428-11	-4.062428-11	-13.54140E 01
32	1.100008-10	8.007228-11	-2.992788-11	-27.20708F 00
40	*.000008-12	*.000008-12	C.C	0.0
44	8.200008-09	8.279258-09	-2.075148-11	-25.00148E-02

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	2.212498-08	
SUM OF PARTIAL PRESSURES	2.656898-08	99.99998F 0*
H	1.179058-08	44.37329E OC
HELIUM	2.568188-12	94.40252E-04
METHANE	8.490088-10	31.95464F-01
WATER VAPOR	2.237428-09	84.21204F-01
NITROGEN	-1.113408-10	-41.9437CF-02
CO	5.420268-09	20.40078F OC
OXYGEN	9.*543?8-11	35.9605BF-02
ARGON	5.545308-12	2C.8714CF-03
CO2	6.177348-09	23.23521F OC
C2H4	3.248238-11	12.22568E-02
C2H6	-7.688898-11	-28.9243BF-02
C3H8	1.518958-10	57.15739F-02
HYDROCARBONS	9.562368-10	35.990PCF-01

SUM OF CURRENTS = 2.2F441E-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 1.07352F 0C AMPS/TORR
SUMMATION PARTIAL PRESSURE = 2.65689F-08 TORR
ION GAGE ADJUSTED PRESSURE = 3.1P765E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = *.30756E-09 TORR
PERCENT DIFFERENCE = 10.07?

RUN NO. 101, 600-C, 350 HR AT 50 DEG
DATE = 2.19
HOURS = 141.25
TEMPERATURE (DEGREE C.) = 49.25
ION GAGE(TORR) = 2.10000E-08 THERMAL CORRECTION = 2.21249E-08

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	2.55000E-09	2.55000E-09	-3.77476E-15	-14.80297E-05
4	1.00000E-13	1.00000E-13	0.0	0.0
12	2.70000E-10	2.69794E-10	1.97342E-13	73.08971E-01
13	1.30000E-11	6.97619E-12	-3.02391E-12	-30.23811E 00
14	5.80000E-11	6.04301E-11	4.43014E-12	79.10954E-01
15	8.15000E-11	8.41684E-11	2.68842E-12	32.76136E-01
16	5.90000E-10	5.87659E-10	-2.99121E-12	-49.68159E-02
17	3.15000E-10	3.07678E-10	-7.32179E-12	-23.26349E-01
18	1.15000E-09	1.15206E-09	2.05924E-12	17.90645E-02
22	4.80000E-11	7.14878E-11	2.14878E-11	42.97580E 00
26	2.60000E-11	2.93436E-11	3.34356E-12	12.85985E 00
27	4.00000E-11	3.48848E-11	-5.11523E-12	-77.88074E-01
28	6.80000E-09	6.79541E-09	-5.89726E-13	-86.72804E-04
29	7.00000E-11	7.05401E-11	5.40131E-13	77.16447E-02
30	2.50000E-11	2.63282E-11	1.32819E-12	53.12753E-01
32	8.70000E-11	8.72310E-11	2.31037E-13	26.55602E-02
40	6.50000E-12	6.50000E-12	0.0	0.0
44	7.15000E-09	7.14950E-09	-4.97326E-13	-69.56361E-04

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	2.21249E-08	
SUM OF PARTIAL PRESSURES	2.47900E-08	99.99998E 00
H	1.20370E-08	48.43507E 00
HELIUM	2.50810E-12	10.30022E-03
METHANE	1.79412E-10	72.03966E-02
WATER VAPOR	1.77396E-08	71.20774E-01
NITROGEN	1.11004E-10	45.58332E-02
CO	4.71928E-09	19.35576E 00
OXYGEN	1.04085E-10	42.76414E-02
ARGON	7.20000E-12	29.60436E-03
CO2	5.39790E-09	22.02828E 00
C2H4	4.00690E-11	16.47280E-02
C2H6	4.42291E-11	18.16331E-02
C3H8	1.43510E-12	58.97982E-04
HYDROCARBONS	2.61140E-10	10.72411E-01

SUM OF CURRENTS = 1.92771E-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 9.17956E-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 2.47900E-08 TORR
ION GAGE ADJUSTED PRESSURE = 2.34423E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = -9.09152E-09 TORR
PERCENT DIFFERENCE = -37.33%

RUN NO. 101, 600-C, 350 HR AT 50 DEG
DATE = 2.22
HOURS = 210.50
TEMPERATURE (DEGREE C.) = 46.25
ION GAGE(TORR) = 2.10000E-08 THERMAL CORRECTION = 2.21249E-08

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	2.55000E-09	2.55000E-09	-3.96820E-15	-15.67373E-05
4	1.00000E-13	1.00000E-13	0.0	0.0
12	3.20000E-10	3.29760E-10	9.76064E-12	30.50200E-01
13	9.50000E-12	6.48698E-12	-3.01302E-12	-31.71602E 00
14	7.80000E-11	7.95403E-11	1.54032E-12	26.55729E-01
15	6.90000E-11	7.91456E-11	1.01456E-11	14.70378E 00
16	5.20000E-10	5.71701E-10	-8.29914E-12	-14.30885E-01
17	1.70000E-10	1.69328E-10	-6.72006E-12	-35.71767E-01
18	6.10000E-10	6.11930E-10	1.93023E-12	31.64318E-02
22	2.00000E-11	7.10104E-11	5.10104E-11	25.50522E 01
26	2.25000E-11	2.61963E-11	3.69627E-12	16.42784E 00
27	3.90000E-11	3.55633E-11	-3.43667E-12	-88.12034E-01
28	8.75000E-09	8.74967E-09	-3.26855E-13	-37.35424E-04
29	9.50000E-11	9.36596E-11	-1.34035E-12	-14.10933E-01
30	4.00000E-11	4.14069E-11	1.40687E-12	35.17187E-01
32	5.40000E-11	5.46551E-11	6.55101E-13	12.13149E-01
40	5.00000E-12	5.00000E-12	0.0	0.0
44	7.10000E-09	7.09970E-09	-2.94875E-13	-41.53170E-04

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	2.21249E-08	
SUM OF PARTIAL PRESSURES	2.21298E-08	99.99998E 00
H	1.20404E-08	47.41272E 00
HELIUM	2.50818E-12	99.80904E-04
METHANE	1.64564E-10	65.48556E-02
WATER VAPOR	9.21011E-10	36.65017E-01
NITROGEN	-1.99371E-11	-79.33635E-03
CO	6.52060E-09	25.94764E 00
OXYGEN	6.52152E-11	25.95135E-02
ARGON	5.54770E-12	22.06663E-03
CO2	5.34786E-09	21.26502E 00
C2H4	1.29756E-11	51.63446E-03
C2H6	7.57727E-11	30.15251E-02
C3H8	-2.67019E-12	-10.62559E-03
HYDROCARBONS	2.50642E-10	99.73891E-02

SUM OF CURRENTS = 2.04921E-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 9.75813E-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 2.21298E-08 TORR
ION GAGE ADJUSTED PRESSURE = 2.70883E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 7.95847E-09 TORR
PERCENT DIFFERENCE = 31.66%

RUN NO. 101, 600-C, 350 MA AT 90 DEG
DATE = 2.29
HOURS = 287.25
TEMPERATURE (DEGREE C.) = 40.25
ION GAGE(TORR) = 1.050000E-08 THERMAL CONDUCTION = 1.106249E-08

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	2.109900E-09	2.110000E-09	-2.886580E-15	-13.765618E-05
4	1.000000E-13	1.000000E-13	0.0	0.0
12	1.200000E-10	1.191151E-10	1.913514E-11	15.959400 00
13	7.900000E-12	4.611365E-12	-2.896359E-12	-38.484600 00
14	3.990000E-11	4.010395E-11	4.603718E-12	12.867640 00
15	9.800000E-11	9.641100E-11	-1.589002E-12	-27.996400E-01
16	2.950000E-10	2.953899E-10	7.892644E-13	16.563990E-02
17	6.100000E-11	5.941866E-11	-1.581340E-12	-25.923930E-01
18	2.200000E-10	2.204606E-10	4.059959E-13	18.454700E-02
22	2.350000E-11	2.345933E-11	-4.066771E-14	-19.056100E-02
26	2.200000E-11	2.241835E-11	4.183204E-13	19.013620E-01
27	3.100000E-11	3.064639E-11	-3.536446E-13	-11.472640E-01
28	4.450000E-09	4.444949E-09	-5.115915E-13	-11.496420E-03
29	9.400000E-11	9.475136E-11	7.513504E-13	12.736300E-01
30	1.900000E-11	1.478390E-11	7.835219E-13	41.259790E-01
32	1.700000E-11	1.696900E-11	-3.097528E-14	-18.220720E-02
40	1.150000E-11	1.150000E-11	0.0	0.0
44	2.350000E-09	2.344557E-09	-4.342199E-13	-18.481678E-03

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	1.106249E-08	
SUM OF PARTIAL PRESSURES	1.570946E-08	99.999978 00
H	9.914440E-09	63.127768 00
HELIUM	2.900180E-12	18.470179E-01
METHANE	1.120693E-10	71.353639E-02
WATER VAPOR	3.317316E-10	21.122000E-01
NITROGEN	5.009995E-11	32.389767E-02
CO	3.424139E-09	21.802229E 00
OXYGEN	2.024779E-11	12.892164E-02
ARGON	1.279429E-11	81.298838E-02
CL2	1.764979E-09	11.237799E 00
C2H6	2.012266E-11	10.564269E-02
C2H4	3.140000E-11	21.317469E-02
C3H8	8.442091E-12	53.757269E-02
HYDROCARBONS	1.027400E-10	11.499644E-01

SUM OF CURRENTS = 9.820000E-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 8.882647E-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 1.570946E-08 TORR
ION GAGE ADJUSTED PRESSURE = 1.089790E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 3.132046E-09 TORR
PERCENT DIFFERENCE = 14.662

RUN NO. 101, 600-C, 350 MA AT 90 DEG
DATE = 2.29
HOURS = 159.25
TEMPERATURE (DEGREE C.) = 40.25
ION GAGE(TORR) = 7.490000E-09 THERMAL CONDUCTION = 7.798389E-09

M/E	MEASURED PEAK HEIGHT (AMPS)	CALCULATED M/E	DIFFERENCE	PERCENT DIFF
2	1.660000E-09	1.660000E-09	-2.986580E-15	-17.999836-05
4	1.000000E-13	1.000000E-13	0.0	0.0
12	9.900000E-11	9.981178E-11	9.913678E-12	64.279819E-01
13	6.600000E-12	7.796832E-12	-1.867867E-12	-36.667364E 00
14	2.900000E-11	2.698168E-11	1.991868E-12	59.679828E-01
15	3.900000E-11	3.907868E-11	7.682764E-14	21.998788E-02
16	1.490000E-10	1.477938E-10	-2.866000E-13	-15.869618E-02
17	4.150000E-11	3.922006E-11	-2.279198E-12	-54.737988E-01
18	1.670000E-10	1.676868E-10	6.144839E-13	42.376898E-02
22	1.700000E-11	1.819988E-11	-1.918168E-14	-99.299868E 00
26	1.590000E-11	1.175849E-11	-4.615998E-13	-94.448798E-01
27	1.600000E-11	1.646898E-11	6.525868E-13	43.449888E-01
28	2.990000E-09	2.969818E-09	-1.798168E-13	-97.886869E-04
29	5.990000E-11	5.963288E-11	-9.375298E-13	-22.838698E-01
30	1.190000E-11	1.177818E-11	7.361628E-13	66.798838E-01
32	1.200000E-11	1.202898E-11	2.689198E-14	19.499268E-02
40	6.900000E-12	6.900000E-12	0.0	0.0
44	1.490000E-09	1.481868E-09	1.948188E-12	76.982578E-03

GAS	PRESSURE TORR	PERCENT OF TOTAL PRESSURE
ION GAGE	7.798389E-09	
SUM OF PARTIAL PRESSURES	1.107228E-08	99.999978 00
H	7.038918E-09	64.259868 00
HELIUM	2.900198E-12	21.197968E-02
METHANE	7.091868E-11	99.688289E-02
WATER VAPOR	2.198389E-10	19.928839E-01
NITROGEN	4.179868E-11	79.387268E-02
CO	2.200000E-09	19.868288 00
OXYGEN	1.598898E-11	12.128868E-02
ARGON	4.998778E-12	62.179988E-02
CO2	2.398888E-09	21.668978 00
C2H6	1.398688E-11	11.178988E-02
C2H4	2.087838E-11	19.668138E-02
C3H8	6.778988E-12	68.388268E-02
HYDROCARBONS	1.078888E-10	98.629978E-02

SUM OF CURRENTS = 7.350298E-08 AMPS
SENSITIVITY (TOTAL CURRENT/ION GAGE PRESSURE)= 9.426188E-01 AMPS/TORR
SUMMATION PARTIAL PRESSURE = 1.107228E-08 TORR
ION GAGE ADJUSTED PRESSURE = 1.398298E-08 TORR
DIFFERENCE (ION GAGE ADJUSTED PRESSURE - SUMMATION PARTIAL PRESSURES) = 1.919918E-09 TORR
PERCENT DIFFERENCE = 14.664

GAS	HOURS	TEMP	PARTIAL PRESSURE
ION GAGE	2.00	49.25	3.529648-06
	20.50	49.25	1.996625-07
	31.00	49.25	1.264208-07
	46.00	49.25	6.848178-08
	46.75	49.25	6.848178-08
	63.25	49.25	5.267022-08
	75.00	49.25	4.214268-08
	137.00	49.25	2.712498-08
	141.25	49.25	2.212498-08
	210.50	49.25	7.212498-08
	283.25	49.25	1.106248-08
	990.25	49.25	7.796508-09

GAS	HOURS	TEMP	PARTIAL PRESSURE
TOTAL PRESSURE	2.00	49.25	3.480128-06
	20.50	49.25	1.961858-07
	31.00	49.25	1.06300F-07
	46.00	49.25	6.70838E-08
	46.75	49.25	7.02461E-08
	63.25	49.25	5.39288F-08
	75.00	49.25	3.86299E-08
	137.00	49.25	2.65689E-08
	141.25	49.25	2.43508F-08
	210.50	49.25	2.91298E-08
	283.25	49.25	1.57054E-08
	990.25	49.25	1.18322E-08

GAS	HOURS	TEMP	PARTIAL PRESSURE
H	2.00	49.25	2.824978-07
	20.50	49.25	4.15298E-08
	31.00	49.25	2.355268-08
	46.00	49.25	2.CC9508-08
	46.75	49.25	2.C7157E-08
	63.25	49.25	1.81752E-08
	75.00	49.25	1.446749-08
	137.00	49.25	1.178958-08
	141.25	49.25	1.203708-08
	210.50	49.25	1.20404E-08
	283.25	49.25	9.414488-09
	990.25	49.25	7.838918-09

GAS	HOURS	TEMP	PARTIAL PRESSURE
HELIUM	2.00	49.25	2.980198-12
	20.50	49.25	2.980198-12
	31.00	49.25	2.980198-12
	46.00	49.25	2.980198-12
	46.75	49.25	2.980198-12
	63.25	49.25	2.980198-12
	75.00	49.25	2.980198-12
	137.00	49.25	2.980198-12
	141.25	49.25	2.980198-12
	210.50	49.25	2.980198-12
	283.25	49.25	2.980198-12
	990.25	49.25	2.980198-12

GAS	HOURS	TEMP	PARTIAL PRESSURE
METHANE	2.00	49.25	-1.996699E-06
	20.50	49.25	-9.330979E-10
	31.00	49.25	3.749772E-10
	44.00	49.25	4.090864E-10
	48.75	49.25	8.521490E-10
	63.25	49.25	1.996438E-10
	75.00	49.25	2.6[illegible]E-10
	137.00	49.25	8.498068E-10
	141.25	49.25	1.794128E-10
	210.50	49.25	1.669864E-10
	283.25	49.25	1.126679E-10
	298.25	49.25	7.654946E-11

GAS	HOURS	TEMP	PARTIAL PRESSURE
METHYLCYCLOPENTANE	2.00	49.25	2.[illegible]E-06
	20.50	49.25	6.922756E-08
	31.00	49.25	3.784280E-08
	44.00	49.25	1.810682E-08
	48.75	49.25	1.361648E-08
	63.25	49.25	1.009778E-08
	75.00	49.25	9.326805E-09
	137.00	49.25	2.737482E-09
	141.25	49.25	2.737948E-09
	210.50	49.25	4.210811E-10
	283.25	49.25	3.317310E-10
	298.25	49.25	2.191689E-10

GAS	HOURS	TEMP	PARTIAL PRESSURE
NITROGEN	2.00	49.25	1.113628E-08
	20.50	49.25	3.980588E-09
	31.00	49.25	8.433264E-10
	44.00	49.25	3.461CAE-10
	48.75	49.25	-1.941978E-08
	63.25	49.25	4.218178E-10
	75.00	49.25	3.9C9729E-10
	137.00	49.25	-1.114ACE-10
	141.25	49.25	1.110064E-10
	210.50	49.25	-1.993718E-11
	283.25	49.25	5.C8[illegible]E-11
	298.25	49.25	4.192968E-11

GAS	HOURS	TEMP	PARTIAL PRESSURE
CO	2.00	49.25	3.166478E-07
	20.50	49.25	7.600696E-08
	31.00	49.25	2.297899E-08
	44.00	49.25	1.[illegible]E-08
	48.75	49.25	1.[illegible]E-08
	63.25	49.25	1.259638E-08
	75.00	49.25	5.204618E-09
	137.00	49.25	5.420268E-09
	141.25	49.25	4.713288E-09
	210.50	49.25	6.920608E-09
	283.25	49.25	3.424138E-09
	298.25	49.25	2.234888E-09

GAS	HOURS	TEMP	PARTIAL PRESSURE	GAS	HOURS	TEMP	PARTIAL PRESSURE
OXYGEN	2.00	49.25	1.669929E-08	ARGON	2.00	49.25	2.210129E-09
	20.50	49.25	2.489835E-09		20.50	49.25	9.427018E-11
	31.00	49.25	1.544475E-09		31.00	49.25	7.681719E-11
	44.00	49.25	7.136231E-10		44.00	49.25	1.994331E-11
	66.75	49.25	6.837208E-10		66.75	49.25	2.210129E-11
	67.25	49.25	4.095008E-10		67.25	49.25	1.219978E-11
	79.00	49.25	3.278968E-10		79.00	49.25	1.648178E-11
	137.00	49.25	9.594330E-11		137.00	49.25	9.365368E-12
	141.25	49.25	1.040990E-10		141.25	49.25	7.208098E-12
	210.50	49.25	6.521928E-11		210.50	49.25	5.949369E-12
	283.25	49.25	2.024779E-11		283.25	49.25	1.275428E-11
	290.25	49.25	1.434349E-11		290.25	49.25	4.990779E-12

GAS	HOURS	TEMP	PARTIAL PRESSURE	GAS	HOURS	TEMP	PARTIAL PRESSURE
CO2	2.00	49.25	-2.965868E-09	CO2	2.00	49.25	-4.684299E-09
	20.50	49.25	2.479378E-09		20.50	49.25	3.780946E-10
	31.00	49.25	1.878487E-09		31.00	49.25	7.280978E-11
	44.00	49.25	1.277714E-09		44.00	49.25	6.344828E-11
	66.75	49.25	1.076468E-09		66.75	49.25	6.779468E-10
	67.25	49.25	1.068088E-09		67.25	49.25	3.885282E-11
	79.00	49.25	9.179878E-09		79.00	49.25	-1.838138E-09
	137.00	49.25	6.177268E-09		137.00	49.25	9.364828E-11
	141.25	49.25	5.779798E-09		141.25	49.25	6.994368E-11
	210.50	49.25	5.363868E-09		210.50	49.25	1.297748E-11
	283.25	49.25	1.788878E-09		283.25	49.25	2.953288E-11
	290.25	49.25	1.368818E-09		290.25	49.25	1.384438E-11

GAS	HOURS	TEMP	PARTIAL PRESSURE
C2H6	2.00	49.25	1.646729-09
	26.50	49.25	4.529029-10
	31.00	49.25	4.661340-10
	46.00	49.25	2.981939-10
	46.75	49.25	-6.904939-10
	63.25	49.25	1.469289-10
	75.00	49.25	2.102569-09
	137.00	49.25	-7.484999-11
	141.25	49.25	4.429919-11
	210.50	49.25	7.977279-11
	287.25	49.25	5.740069-11
	350.25	49.25	1.999419-11

GAS	HOURS	TEMP	PARTIAL PRESSURE
C3H8	2.00	49.25	8.828299-08
	26.50	49.25	9.224789-10
	31.00	49.25	1.110759-10
	46.00	49.25	9.408659-11
	46.75	49.25	1.971999-10
	63.25	49.25	5.205459-11
	75.00	49.25	-3.889089-10
	137.00	49.25	1.519999-10
	141.25	49.25	1.455199-12
	210.50	49.25	-2.670199-12
	287.25	49.25	9.442819-12
	350.25	49.25	4.777999-12

GAS	HOURS	TEMP	PARTIAL PRESSURE
HYDROCARBONS	2.00	49.25	2.351459-08
	26.50	49.25	2.169779-10
	31.00	49.25	9.666219-10
	46.00	49.25	7.825389-10
	46.75	49.25	5.768069-10
	63.25	49.25	4.390349-10
	75.00	49.25	7.189799-10
	137.00	49.25	9.562349-10
	141.25	49.25	2.611499-10
	210.50	49.25	2.306429-10
	287.25	49.25	1.227489-10
	350.25	49.25	1.070069-10

GAS IS ION GAGE

POWER Y=A*X**B WITH A = 0.629018-09 AND B = -0.113928 01

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR,
ALPHA = -0.167108F 02 CONFIDENCE LIMIT ON ALPHA = 0.117139F 00 CONFIDENCE LIMIT ON B = 0.869208-01

THERMES CORRELATION COEFFICIENT = -0.994558 CO CORRELATION OF DETERMINATION = 0.989228 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	3.939408-06	3.956408-06	-6.328CE-07	-1.79CCE 01	-1.2792E 01	5.05798E-01
20.50	1.096668-07	1.044PE-07	1.475PE-08	7.8000E CO	-1.9603E 01	4.1781F-01
31.00	1.28618-07	1.2741F-07	1.1740E-09	1.CCCCE-01	-1.9874E 01	4.1072E-01
46.00	6.848018-08	6.13966-08	1.8900F 01	-1.6324E 01	4.0681E-01	
46.75	6.848018-08	7.991748-08	1.1431F-08	1.67CCE 01	-1.6434E 01	4.0671F-01
63.25	9.267118-08	9.667PF-08	1.9543F-09	2.1000F 00	-1.6687E 01	4.0577F-01
79.00	4.2161F-08	4.6661F-08	4.467PE-09	1.0700E 01	-1.6881E 01	4.0549E-01
174.00	2.2121F-08	2.3479E-08	1.3542E-09	6.1000F 00	-1.7567E 01	4.1098F-01
141.25	2.2121E-08	2.2676F-08	5.4111F-10	2.5C00E CO	-1.7602E 01	4.1141E-01
210.50	2.2121E-08	1.63966-08	-7.7C9E-09	-3.4900F 01	-1.8056E 01	4.1855F-01
203.25	1.1061F-08	1.0266F-08	-7.6033E-10	-7.2000F 00	-1.8795E 01	4.2562E-01
350.25	7.9964F-09	8.0490E-09	2.626CF-10	3.4000E CO	-1.9636E 01	4.3155E-01

GAS IS TOTAL PRESSURE

POWER Y=A*X**B WITH A = 0.495739F-09 AND B = -0.106139F 01

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR,
ALPHA = -0.166988E 02 CONFIDENCE LIMIT ON ALPHA = 0.171446F 00 CONFIDENCE LIMIT ON B = 0.127298 00

THERMES CORRELATION COEFFICIENT = -0.988778 CO CORRELATION OF DETERMINATION = 0.975718 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	3.48018-06	3.5756E-06	-1.1C45F-06	-3.17CCE C1	-1.2950E 01	7.4034E-01
20.50	1.9618F-07	7.0096F-07	4.7762F-09	2.4000F 00	-1.5620F 01	6.1196F-01
31.00	1.0650F-07	1.2957F-07	2.3267F-08	2.1900E 01	-1.5F79E 01	6.0110F-01
46.00	6.7064F-08	8.5231F-08	1.8168F-08	2.71C0F 01	-1.6278E 01	5.9545E-01
46.75	7.0267F-08	8.3781F-08	1.9734E-08	1.9300F 01	-1.6209E 01	5.9531F-01
63.25	9.3329E-08	6.0789F-08	7.4552F-09	1.40C0F 01	-1.6616F 01	5.9390F-01
79.00	5.5620E-08	5.0733F-08	1.5113E-08	4.24C0E 01	-1.6797E 01	5.9422E-01
174.00	2.6569F-08	2.4767F-08	1.9739E-1C	7.C000E-01	-1.7436E 01	6.0196E-01
197.00	2.4351F-08	2.9613E-08	1.5619E-08	F.400CE 00	-1.7469E 01	6.0719F-01
141.25	2.4351F-08	1.6968F-08	-8.181CE-09	-3.256CE C1	-1.7842F 01	4.1263E-01
210.50	2.4133E-08	1.5706E-08	1.2387E-08	-3.722CF-09	-2.12CCE C1	-1.8207F 01	6.2298E-01
203.25	1.5706E-08	1.1832E-08	5.8865F-C9	-1.9477E-09	-1.65CUE C1	-1.8432F 01	6.3166E-01
350.25	1.1832E-08					

GAS IS H

POWER Y=A*X**B WITH A = 0.707008-06 AND B = -0.693329 00

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.177290 02 CONFIDENCE LIMIT ON ALPHA = 0.190417 00 CONFIDENCE LIMIT ON B = 0.110079 00

INDEXES CORRELATION COEFFICIENT = -0.971678 00 CORRELATION OF DETERMINATION = 0.944082 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	2.9306E-07	1.9123E-07	-8.9230E-08	-3.1400E 01	-7.0405E 01	8.7941E-01
20.90	4.1730E-08	4.2260E-08	7.1070E-10	1.7000E 00	-7.6000E 01	5.9773E-01
31.00	2.3997E-08	3.2267E-08	8.6744E-09	2.6700E 01	-1.7210E 01	5.4046E-01
44.00	2.0079E-08	2.4019E-08	4.0030E-09	2.4700E 01	-1.7300E 01	5.4327E-01
46.75	2.9710E-08	2.4697E-08	3.9417E-09	1.9600E 01	-1.7910E 01	5.4750E-01
63.25	1.9174E-08	2.0730E-08	2.0439E-09	1.1400E 01	-1.7716E 01	9.4101E-01
75.00	1.4400E-08	1.8107E-08	3.4091E-09	7.4000E 01	-1.7827E 01	3.4200E-01
177.00	1.1700E-08	1.7716E-08	4.2630E-10	7.6600E 00	-1.9221E 01	7.4000E-01
161.25	1.2030E-08	1.1974E-08	-6.7905E-11	-5.0000E-01	-1.8200E 01	5.6030E-01
210.95	1.2060E-08	9.2277E-09	-2.8130E-09	-2.3060E 01	-7.9901E 01	5.7001E-01
283.25	9.9160E-09	3.6000E-09	-2.3137E-09	-2.3300E 01	-1.8005E 01	5.6034E-01
390.25	7.0900E-09	6.6769E-09	-1.2225E-09	-1.5600E 01	-1.8014E 01	5.7627E-01

GAS IS HELIUM

POWER Y=A*X**B WITH A = 0.290000-11 AND B = -0.507940-06

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.267118 02 CONFIDENCE LIMIT ON ALPHA = 0.049951-06 CONFIDENCE LIMIT ON B = 0.477938-06

INDEXES CORRELATION COEFFICIENT DOES NOT EXIST. ALL DEPENDENT VALUES ARE THE SAME. BAD FIT.

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	2.9000E-12	2.9000E-12	5.0000E-16	0.0	-2.6711E 01	2.7770E-06
20.90	2.9000E-12	2.9000E-12	2.7360E-16	0.0	-2.6711E 01	2.2000E-06
31.00	2.9000E-12	2.9000E-12	1.7307E-16	0.0	-2.6711E 01	2.2000E-06
44.00	2.9000E-12	2.9000E-12	1.1400E-16	0.0	-2.6711E 01	2.2300E-06
46.75	2.9000E-12	2.9000E-12	1.1100E-16	0.0	-2.6711E 01	2.2300E-06
63.25	2.9000E-12	2.9000E-12	6.0790E-17	0.0	[illegible]	2.3000E-06
75.00	2.9000E-12	2.9000E-12	4.0700E-17	0.0	[illegible]	2.2200E-06
177.00	2.9000E-12	2.9000E-12	-4.9000E-17	0.0	[illegible]	2.2500E-06
161.25	2.9000E-12	2.9000E-12	-3.7770E-17	0.0	[illegible]	2.2900E-06
210.95	2.9000E-12	2.9000E-12	-1.1300E-16	0.0	-2.6711E 01	2.2000E-06
283.25	2.9000E-12	2.9000E-12	-1.9700E-16	0.0	-2.6711E 01	2.3370E-06
380.25	2.9000E-12	2.9000E-12	-1.0090E-16	0.0	-2.6711E 01	2.3000E-06

GAS IS METHANE

POWER Y=A*X**B WITH A = 0.29844E-08 AND B = -0.8499E 00

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR,
ALPHA = -0.22179E 02 CONFIDENCE LIMIT ON ALPHA = 0.42909E 00 CONFIDENCE LIMIT ON B = 0.73991E 00

INDEXES CORRELATION COEFFICIENT = -0.64227E 00 CORRELATION OF DETERMINATION = 0.41251E 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
31.00	3.7097E-10	4.9160E-10	7.7320E-11	1.91CCE 01	-2.1510E 01	1.4057E 00
46.00	4.0980E-10	3.6390E-10	-4.5629E-11	-1.1100E 01	-2.1739E 01	1.4079E 00
46.75	3.5817E-10	3.6036E-10	2.1900E-12	2.3000E 00	-2.1744E 01	1.4049E 00
63.25	1.9980E-10	3.0910E-10	1.1960E-10	6.1000E 01	-2.1910E 01	1.3657E 00
75.00	2.4439E-10	2.7709E-10	3.3730E-11	1.37C0E 01	-2.2904E 01	1.3510E 00
137.00	8.4001E-10	1.9952E-10	-6.4049E-10	-7.6900E 01	-2.2339E 01	1.3496E 00
161.25	1.7861E-10	1.9620E-10	2.0787E-11	1.1900E 01	-2.2952E 01	1.3516E 00
210.50	1.6407E-10	1.5795E-10	-7.0122E-12	-4.30CCE 00	-2.2571E 01	1.3944E 00
283.25	1.1260E-10	1.3303E-10	2.1134E-11	1.8800E 01	-2.2734E 01	1.4469E 00
350.25	7.9760E-11	1.1908E-10	4.9372E-11	6.0000E 01	-2.2891E 01	1.4934E 00

GAS IS WATER VAPOR

POWER Y=A*X**B WITH A = 0.17538E-04 AND B = -0.18590E 01

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR,
ALPHA = -0.19676E 02 CONFIDENCE LIMIT ON ALPHA = 0.21202E 00 CONFIDENCE LIMIT ON B = 0.15734E 00

INDEXES CORRELATION COEFFICIENT = -C.99331E 00 CORRELATION OF DETERMINATION = C.98667E 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	2.8962E-06	4.8527E-06	1.9566E-06	6.99CCE 01	-1.2236E 01	9.1599E-01
20.50	8.5320E-08	6.4937E-08	-2.0391E-08	-2.39CCE 01	-1.6590E 01	7.9630E-01
31.00	3.7643E-08	3.0170E-08	-7.4732E-09	-1.9900E 01	-1.7316E 01	7.4346E-01
46.00	1.8100E-08	1.4517E-08	-3.5837E-09	-1.98C0E 01	-1.8064E 01	7.3630E-01
46.75	1.8817E-08	1.4088E-08	-4.7290E-09	-2.4300E 01	-1.8079E 01	7.3620E-01
63.25	1.0897E-08	8.0447E-09	-2.8527E-09	-2.62C0E 01	-1.8430E 01	7.3445E-01
75.00	5.3269E-09	5.8660E-09	5.3911E-10	1.0100E 01	-1.8954E 01	7.3683E-01
137.00	2.2374E-09	1.9201E-09	-3.1734E-10	-1.42C0E 01	-2.0071E 01	7.4399E-01
161.25	1.7360E-09	1.8144E-09	8.0417E-11	4.60CCE 00	-2.0120E 01	7.4671E-01
210.50	9.2102E-10	8.6609E-10	-5.4523E-11	-6.C000E 00	-2.0867E 01	7.5762E-01
283.25	3.3173E-10	4.9958E-10	1.6784E-10	[illegible].0600E 01	-2.1417E 01	7.7042E-01
350.25	2.1917E-10	3.3704E-10	1.1788E-10	5.38C0E 01	-2.1811E 01	7.8114E-01

GAS IS NITROGEN

POWER V=A*X**B WITH A = 0.481090-07 AND B = -0.119090 01

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.219950 02 CONFIDENCE LIMIT ON ALPHA = 0.301250 00 CONFIDENCE LIMIT ON B = 0.749040 00

INDEXES CORRELATION COEFFICIENT = -0.971300 00 CORRELATION OF DETERMINATION = 0.943620 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	1.11740-00	1.09930-00	7.77900-02	6.60000 01	-1.70030 01	1.30310 00
20.90	7.98060-09	1.27490-09	-2.10620-09	-6.23000 01	-2.09010 01	1.10060 00
71.00	8.63330-10	7.91700-10	-7.15640-11	-8.30000 00	-2.09970 01	1.09230 00
44.00	3.44130-10	5.02790-10	1.36640-10	4.93000 01	-2.14110 01	1.08480 00
63.25	4.21820-10	3.48640-10	-7.73200-11	-1.74000 01	-2.17770 01	1.08480 00
77.00	3.40970-10	2.96440-10	-6.[illegible]340-11	-1.84000 01	-2.19730 01	1.08480 00
141.25	1.11000-10	1.30260-10	2.72600-11	2.45000 01	-2.27020 01	1.10930 00
203.25	9.08600-11	6.20730-11	1.12120-11	2.20000 01	-2.39030 01	1.15790 00
79C.25	4.19400-11	4.06170-11	7.57720-12	1.70000 01	-2.57670 01	1.17120 00

GAS IS CO

POWER V=A*X**B WITH A = 0.780900-08 AND B = -0.933610 00

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.102360 02 CONFIDENCE LIMIT ON ALPHA = 0.294000 00 CONFIDENCE LIMIT ON B = 0.173600 00

INDEXES CORRELATION COEFFICIENT = -0.969010 00 CORRELATION OF DETERMINATION = 0.938000 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	3.18090-07	3.00310-07	-8.63170-09	-2.70000 00	-1.49520 01	1.01060 00
20.90	3.68070-08	3.91000-08	-9.02310-10	-2.50000 00	-1.71690 01	0.34040-01
71.00	2.26700-08	2.30010-08	9.01900-10	4.10000 00	-1.73910 01	0.20670-01
46.00	1.62700-08	1.69070-08	2.23710-09	1.57000 01	-1.79140 01	0.12090-01
66.75	1.31600-08	1.62600-08	-1.44000-09	-4.71000 01	-1.79990 01	0.12690-01
63.25	1.20060-08	1.22670-08	1.79210-10	1.40000 00	-1.82170 01	0.10730-01
79.00	9.70660-09	1.04000-08	9.25700-09	1.00000 02	-1.83760 01	0.11140-01
137.00	9.42030-09	9.99000-09	9.78040-10	9.90000 00	-1.89380 01	0.21100-01
161.25	6.71190-09	9.79140-09	1.07010-09	2.20000 01	-1.89670 01	0.22040-01
210.50	6.92060-09	9.99090-09	-2.93020-09	-3.00000 01	-1.93390 01	0.36300-01
203.25	7.42010-09	2.02040-09	-3.99070-10	-1.17000 01	-1.96160 01	0.50430-01
79C.25	2.23490-09	2.48070-09	2.49010-10	1.10000 01	-1.98190 01	0.62200-01

GAS IS OXYGEN

POWER Y=AX**B WITH A = 0.124139E-06 AND B = -0.141629E 01

USING THE MODEL LOG(Y)=ALPHA+B*LOG(T1-YBAR) WHERE YBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * YBAR.
ALPHA = -0.219868E 01 CONFIDENCE LIMIT ON ALPHA = 0.348968E 00 CONFIDENCE LIMIT ON B = 0.298529E 00

INCHES	CORRELATION COEFFICIENT = -0.979119 CO		CORRELATION OF DETERMINATION = 0.941129 CC				
X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y	
2.00	1.66***-08	4.2763E-08	2.6064E-08	1.561CE C2	-1.69868 01	..30639 00	
20.50	2.*****-09	1.*938E-09	-1.1C61E-09	-4.11CBE 01	-2.02639 01	1.24277 00	
33.00	1.46***-09	8.81798-10	-6.44768-10	-4.300CE 01	-2.0064* 01	1.22154 00	
46.00	7.196**-10	5.0421E-10	-2.1542E-10	-7.45BCE C1	-2.1462E 01	1.20997 00	
46.75	6.97798-10	4.*2798-10	-1.*C94E-10	-2.79CBE C1	-2.14318 01	1.20968 00	
63.25	4.05*8E-*9	3.2113E-10	-8.A3229-11	-2.08BCE C1	-2.1899E 01	1.20688 CC	
79.00	3.27***-10	2.523*E-10	-7.55731E-11	-2.30CCE C1	-2.2210E 01	1.20797 00	
137.00	9.5*63E-11	1.07*0E-10	1.*592E-11	1.89CCE C1	-2.2*9*E 01	1.22229 00	
141.29	1.*4**E-10	1.0261E-10	-1.1417E-12	-1.10CBE C0	-2.2997E 01	1.22369 00	
210.**	6.*216E-11	9.850*E-11	-6.*C41E-12	-1.C5BCE C1	-2.3563E 01	1.24488 CC	
283.25	2.03***-11	3.*429E-11	1.*1816-11	5.98CCE 01	-2.1492E 01	1.36*** 00	
350.75	1.4*4**-11	2.044*E-11	1.4106E-11	6.85CCE 01	-2.4283E 01	1.28*** 00	

GAS IS ARGON

POWER Y=AX**B WITH A = 0.250168-08 AND B = -0.1346** 01

USING THE MODEL LOG(Y)=ALPHA+B*LOG(T1-YBAR) WHERE YBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * YBAR.
ALPHA = -0.349**E 01 CONFIDENCE LIMIT ON ALPHA = 0.3738*E 00 CONFIDENCE LIMIT ON B = 0.2*6*2* 00

INCHES	CORRELATION COEFFICIENT = -0.9*****E 01		CORRELATION OF DETERMINATION = 0.9*1*2* 00				
X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y	
2.00	2.2181E-09	1.2*778-09	-1.032E8-09	-4.*1*8E 01	-8.65*6E 01	1.*6*2E 00	
16.50	9.427*E-11	7.*9*2E-11	-1.*32*E-11	-1.3*CBE 01	-8.3E*9E 01	1.3*6*E 00	
31.00	3.8**7E-11	4.*4**E-11	1.*6*2E-11	3.77CBE 01	-8.*7*9E 01	1.3*6*E 00	
46.00	1.***3E-11	2.3479E-11	1.1816E-11	5.77CCE 01	-8.61B2E 01	1.3*79E 00	
46.75	2.2181E-11	2.*9*8E-11	9.7195E-12	3.97CBE 01	-8.62*6E 01	1.3*3BE 00	
63.25	1.2*8*E-11	2.1867E-11	9.6*77E-12	7.*1CBE 01	-8.6*67E 01	1.3*67E 00	
79.00	1.6*12E-11	1.*9*9E-11	3.2713E-12	2.6*8BE 01	-8.67B2E 01	1.3*67E 00	
137.00	9.5*8*E-12	9.*7*8E-12	7.*8*4E-12	6.3*8CE 01	-8.3*73E 01	1.3*67E 00	
141.29	7.2**9E-12	8.*977-12	1.*8*8E-12	2.C*CBE 01	-8.3*6*E 01	1.3*81E 00	
210.50	9.5*8*E-12	8.7*16E-12	-4.377*E-14	-4.C*BBE-C1	-8.3*8BE 01	1.3*8*E 00	
283.25	1.2754E-11	3.*3*2E-12	-5.*4C1E-12	-4.*7CBE 01	-8.42*6E 01	1.3*3BE 00	
3*6.25	4.*9*9E-12	7.*4*1E-12	-1.*27*E-12	-7.*9*9E 01	-8.6*1BE 01	1.3*25E 00	

GAS IS CO2

POWER Y=AX**B WITH A = 0.*60979-00 AND B = -0.963719 00

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.197160 00 CONFIDENCE LIMIT ON ALPHA = 0.179360 00 CONFIDENCE LIMIT ON A = 0.202599 00

INDEPENDENT CORRELATION COEFFICIENT = -0.984680 00 CORRELATION OF DETERMINATION = 0.970618 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
20.50	2.69778-00	3.07298-09	2.96798-09	1.36CCE 01	-1.77046 01	6.6661F-01
31.00	1.07602-00	2.06829-09	1.72826-09	1.20000 00	-1.77018 01	6.31529-01
44.00	1.17710-00	1.40130-09	1.24130-09	9.70CCE 00	-1.00033 01	6.0F299-01
66.75	1.43048-00	1.37096-09	-5.90C29-10	-3.6000F 00	-1.00998 01	6.06799-01
83.25	1.08000-00	1.02106-09	-5.79389-10	-5.3600E 00	-1.03908 01	9.98579-01
95.00	9.17000-01	8.76060-10	-4.23939-10	-4.7000E 00	-1.05540 01	7.05679-01
137.00	8.17369-00	4.09537-10	-1.27820-09	-3.0700F 01	-1.08398 01	6.01228-01
161.25	9.17907-00	4.79310-10	-8.26778-10	-1.1400F 01	-1.01648 01	6.02169-01
210.00	9.34700-01	7.23609-10	-2.10798-09	-3.7400E 01	-1.09498 01	6.2002F-01
283.25	1.76500-00	3.67096-10	0.69908-10	3.77C0F 02	-1.98398 01	6.39639-01
396.25	1.36898-00	1.99138-09	6.12198-10	6.47C0E 01	-2.08408 01	6.9668F-01

GAS IS C2H6

POWER Y=AX**B WITH A = C.619C78-09 AND B = -0.104648 01

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.238168 02 CONFIDENCE LIMIT ON ALPHA = 0.618098 00 CONFIDENCE LIMIT ON A = 0.697748 00

INDEPENDENT CORRELATION COEFFICIENT = -0.787748 CC CORRELATION OF DETERMINATION = 0.627868 CC

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
20.50	3.7500F-10	2.6079E-10	-1.1421E-10	-3.0F00E 01	-2.2067E 01	2.1926F 00
31.00	7.2061E-11	1.6918F-10	9.7139E-11	1.3400F 02	-2.29000 01	2.0628F 00
44.00	6.7465E-11	1.1194F-10	4.4678E-11	7.6400E 01	-2.2913F 01	2.0879E 00
66.75	6.7791E-10	1.1006E-10	-5.6786E-10	-8.3800E 00	-2.2971E 01	2.0099E 00
83.25	7.4859E-11	8.0279E-11	4.2680E-11	1.1940F 02	-2.3246F 01	1.9713E 00
137.00	3.7487E-11	3.5779E-11	3.2477E-12	1.0CCCE 01	-2.4499E 01	1.9773E 00
161.25	4.0064F-11	3.4600E-11	-5.4581E-12	-1.3600E 01	-2.4807E 01	1.9902E 00
210.00	1.2474E-11	2.2799E-11	9.8197E-12	7.5700E 01	-2.4956F 01	2.0377E 00
283.25	2.9152E-11	1.6709E-11	-1.2424E-11	-4.2600E 01	-2.4817E 01	2.1937E 00
396.25	1.7164E-11	1.1580E-11	2.3586E-11	1.0000E 20	-2.9037E 01	2.5772E 00

GAS 11 C2H6

POWER Y=AX**B WITH A = 0.779398E-08 AND B = -0.829478 00

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.223979 02 CONFIDENCE LIMIT ON ALPHA = 0.791659E 00 CONFIDENCE LIMIT ON B = 0.924339E 00

INDEXES CORRELATION COEFFICIENT = -0.790469E 00 CORRELATION OF DETERMINATION = 0.624988E 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	1.1405E-09	3.2368E-09	1.9963E-09	9.732CE 01	-1.9564E 01	3.0044E 00
26.50	4.4291E-10	4.6710E-10	1.6594E-11	3.7CCCE 00	-2.1480E 01	2.4772E 00
31.00	4.9413E-10	3.5781E-10	-7.1321E-11	-1.760CE 01	-2.1873E 01	2.4356E 00
46.00	2.7410E-10	2.9486E-10	-1.6725E-11	-6.4CCCE 00	-2.2151E 01	2.4134E 00
67.25	1.4093E-10	1.8419E-10	2.7272E-11	1.440CE 01	-2.2415E 01	2.4085E 00
75.00	2.1014E-09	1.9987E-10	-1.9417E-09	-9.24CCE 01	-2.2557E 01	2.4107E 00
141.25	6.4230E-11	9.4534E-11	3.0304E-11	1.177CE 02	-2.3092E 01	2.4472E 00
210.99	7.7771E-11	6.7847E-11	-7.8852E-12	-1.04CCE 01	-2.3413E 01	2.4427E 00
283.25	5.1407E-11	5.3064E-11	1.6586E-11	3.05CCE 01	-2.3660E 01	2.5277E 00
350.25	1.0734E-11	4.4491E-11	2.9557E-11	1.40CCE 02	-2.3574E 01	2.5745E 00

GAS 11 C3H8

POWER Y=AX**B WITH A = 0.139779E-06 AND B = -0.193437 01

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.252139 02 CONFIDENCE LIMIT ON ALPHA = 0.961208 00 CONFIDENCE LIMIT ON B = 0.478459E 00

INDEXES CORRELATION COEFFICIENT = -0.911137E 00 CORRELATION OF DETERMINATION = 0.830322E 00

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	8.9284E-09	3.8067E-08	-5.0218E-08	-5.69CCE 01	-1.7084E 01	3.7879E 00
20.50	7.7240E-10	9.3775E-10	2.1627E-10	6.52CCE 01	-2.1393E 01	3.1102E 00
71.00	1.1109E-10	2.4964E-10	1.3854E-10	1.246CE 02	-2.2312E 01	3.0668E 00
46.00	9.4087E-11	1.2097E-10	6.6879E-11	1.236CE 02	-2.2436E 01	3.0439E 00
46.75	1.4720E-10	1.1744E-10	-7.9771E-11	-4.050CE 01	-2.2365E 01	3.0429E 00
63.25	5.2078E-11	6.7448E-11	1.7393E-11	3.46CCE 01	-2.2320E 01	3.0407E 00
137.00	1.5160E-10	1.6364E-11	-1.9936E-10	-8.92CCE 01	-2.2337E 01	3.0987E 00
141.25	1.4329E-12	1.5449E-11	1.4016E-11	9.78CCE 02	-2.2393E 01	3.1037E 00
283.25	8.4439E-12	4.3113E-12	-4.1314E-12	-4.89CCE 01	-2.2417CE 01	3.2294E 00
350.25	4.7780E-12	2.9205E-12	-1.8575E-12	-3.89CCE 01	-2.2559E 01	3.2807E 00

GAS 15 HYDROCARBONS

POWER Y=ABXBAR WITH B = 0.174995E-07 AND B = -0.827415E 00

USING THE MODEL LOG(Y)=ALPHA+B*(LOG(X)-XBAR) WHERE XBAR=MEAN VALUE OF LOG(X(I)) AND ALPHA = LOG A + B * XBAR.
ALPHA = -0.213108F 02 CONFIDENCE LIMIT ON ALPHA = 0.52011F 00 CONFIDENCE LIMIT ON B = 0.385975E 00

INCHES CORRELATION COEFFICIENT = -0.842688E CC CORRELATION OF DETERMINATION = 0.71011E CC

X	Y	Y CALC.	DIFFER.	PCT DIFF.	LOG OF Y	CONFIDENCE LIMIT ON LOG Y
2.00	2.3914F-08	9.9596E-C9	-1.4C55F-08	-5.8800F 01	-1.8435F 01	2.2460F 00
20.50	2.1458E-10	1.4774F-C9	1.2204E-09	5.6250F C2	-2.0360E 01	1.8553E 00
31.00	9.6663F-10	1.0709E-09	9.4220F-11	9.6CCCE 00	-2.0703E 01	1.8238E CC
46.00	7.82**E-10	7.3646E-10	-4.6450E-11	-*.9CCCE 00	-2.1029E 01	1.8044F 00
66.75	5.7481E-10	7.2667E-10	1.4596E-10	2.6CCOF C1	-2.1043E 01	1.9060E 00
93.25	4.3004F-10	5.6507E-10	1.2603F-10	2.89CCF C1	-2.1297E 01	1.8017F 00
75.00	7.1088F-10	4.914AF-10	-7.2742E-10	-3.16C0E 01	-2.1434E 01	1.8026F 00
137.00	9.5625F-10	2.6953E-1C	-6.8772E-10	-6.8800F C1	-2.1942E 01	1.8250E 00
161.25	2.5114E-10	2.9109F-10	2.9935E-11	1.1500E 01	-2.1977E 01	1.8249E 00
210.50	2.5064F-10	2.0924F-10	-4.1402F-11	-1.6500E 01	-2.2278F 01	1.8586F 00
293.25	1.9779F-10	1.6767F-1C	-2.0C76E-11	-1.0900F 01	-2.2533E 01	1.8899E 00
350.25	1.0701F-10	1.9730F-10	9.0297F-11	2.82CCE 01	-2.2709E 01	1.9163F 00


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IEF285I   VOL SER NOS= CL1R01.
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IEF285I   VOL SER NOS= 272227.
IEF285I   SYS70265.T094821.SV000.CLAP.P0000C53         DELETED
IEF285I   VOL SER NOS= XXXXXX.
IEF285I   SYS70265.T094821.RV000.CLAP.S0000C54         SYSIN
IEF285I   VOL SER NOS= CDDDDC.
IEF2d5I   SYS7C26*.T094821.RVC00.CLAP.SC00C05A         DELETED
IEF285I   VOL SER NOS= CDDDDD.


CLAP     GO                    10.57.23 10-22-7C
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CLAP     MODEL=75 12333        10.57.23 10-22-7C
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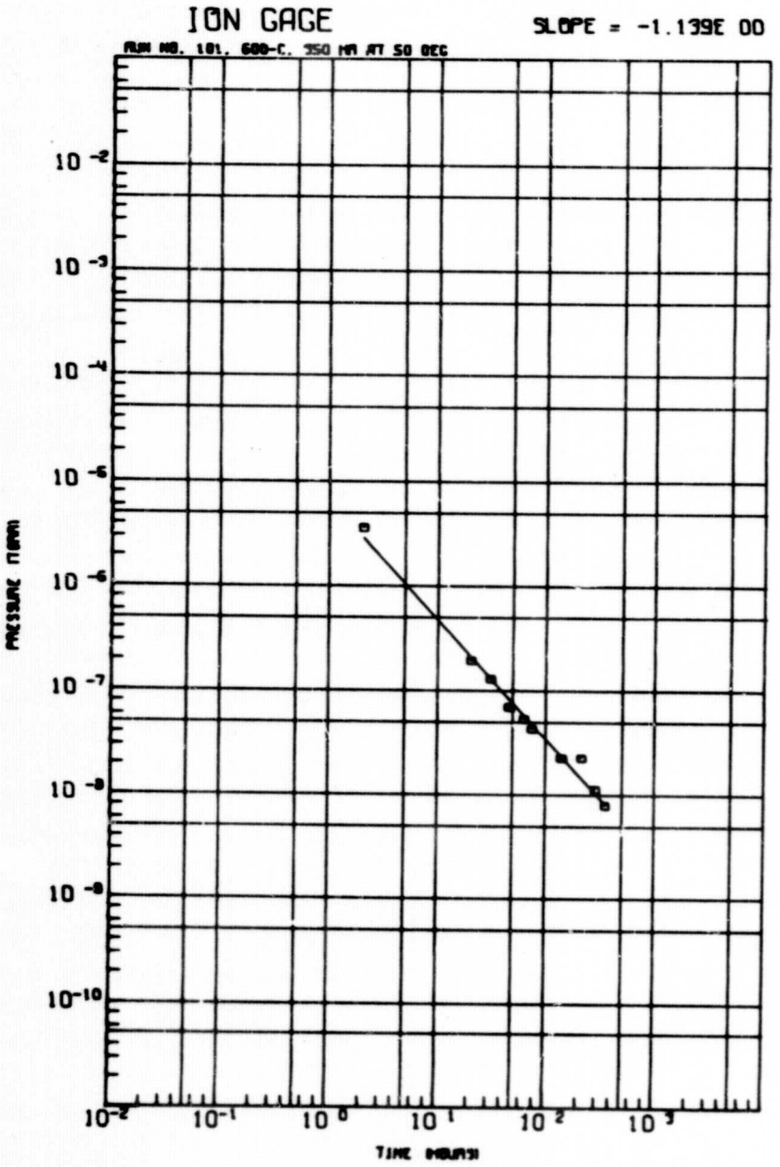
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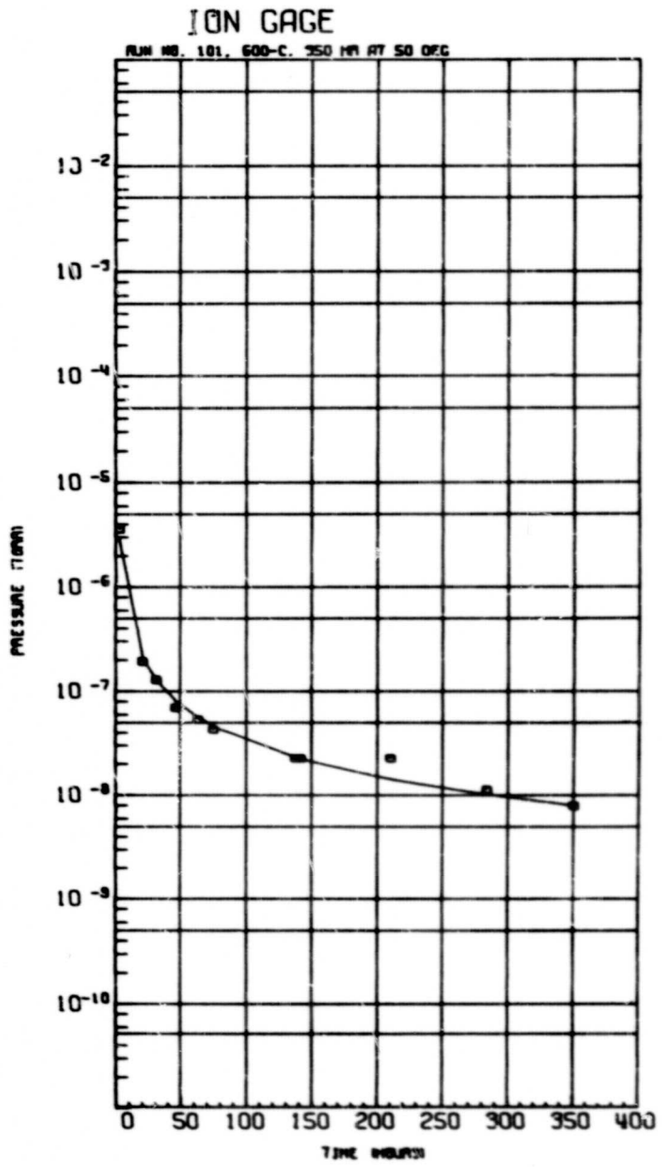
TIME (HOURS)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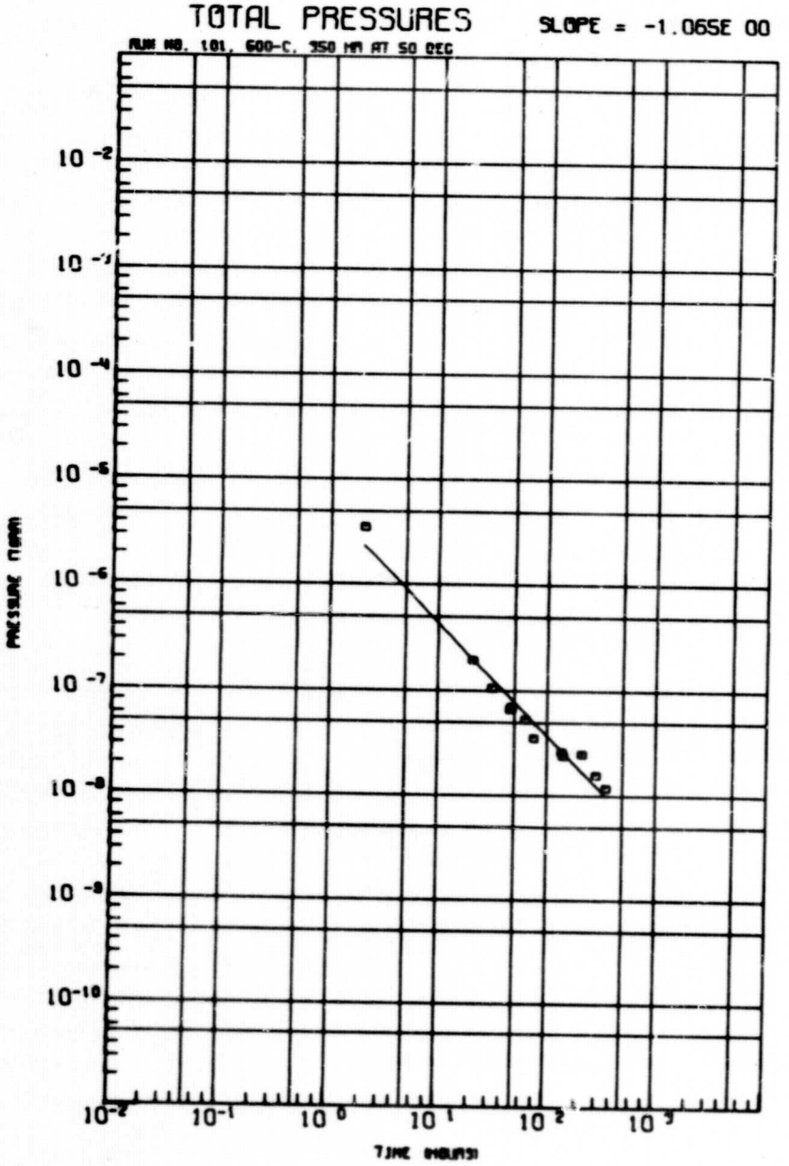
PRESSURE (TORR)
TIME (HOURS)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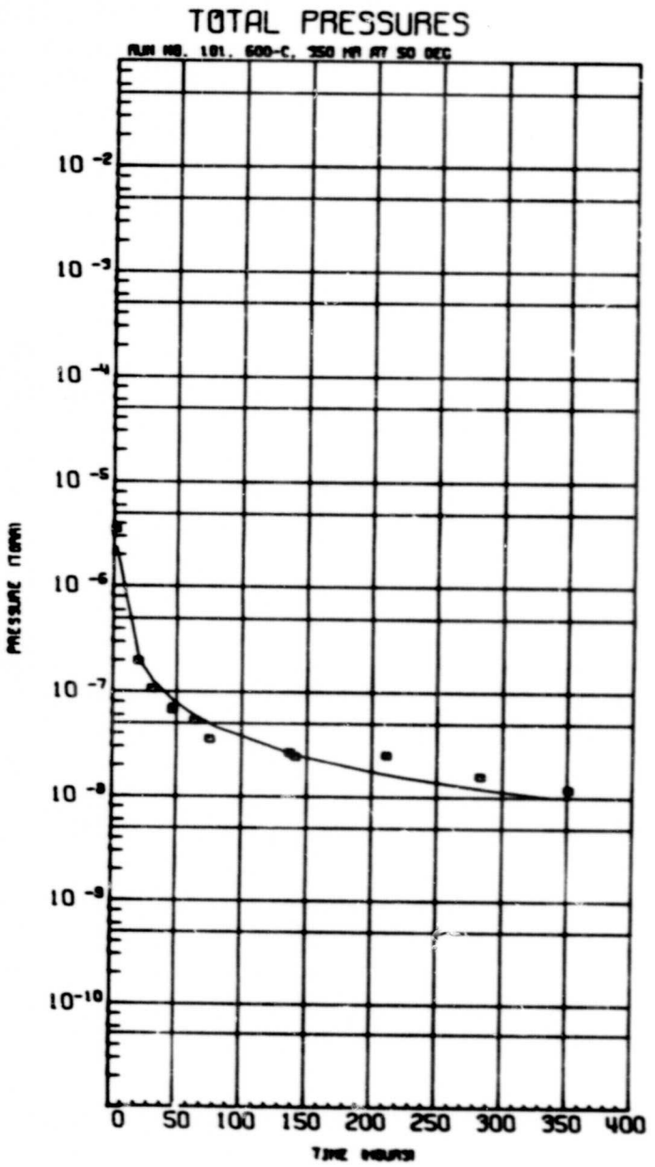
PRESSURE (TORR)
TIME (HOURS)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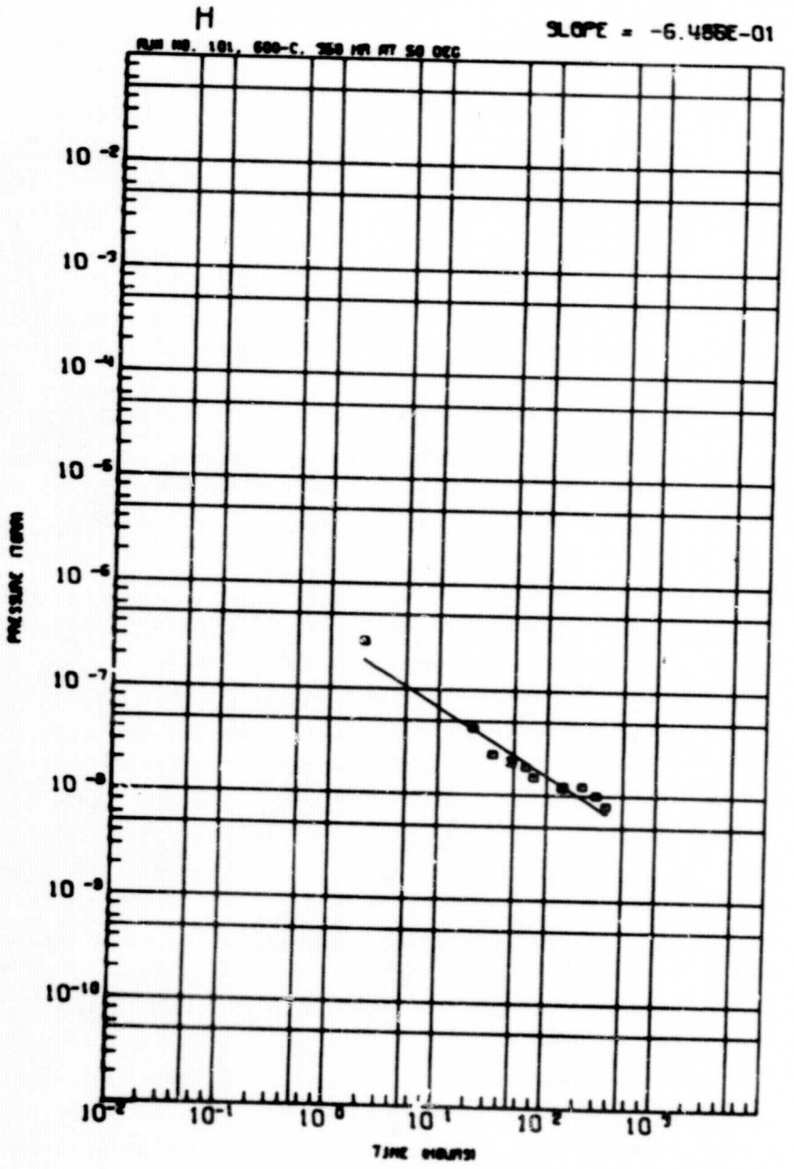
PRESSURE (TORR)
TIME (HOURS)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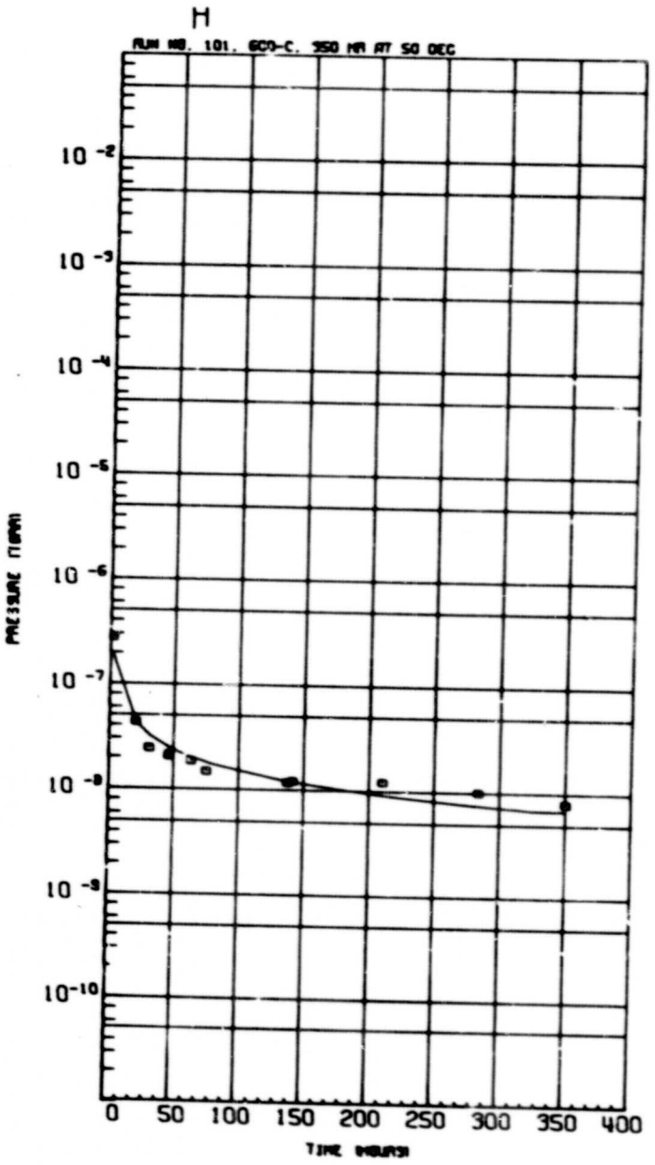
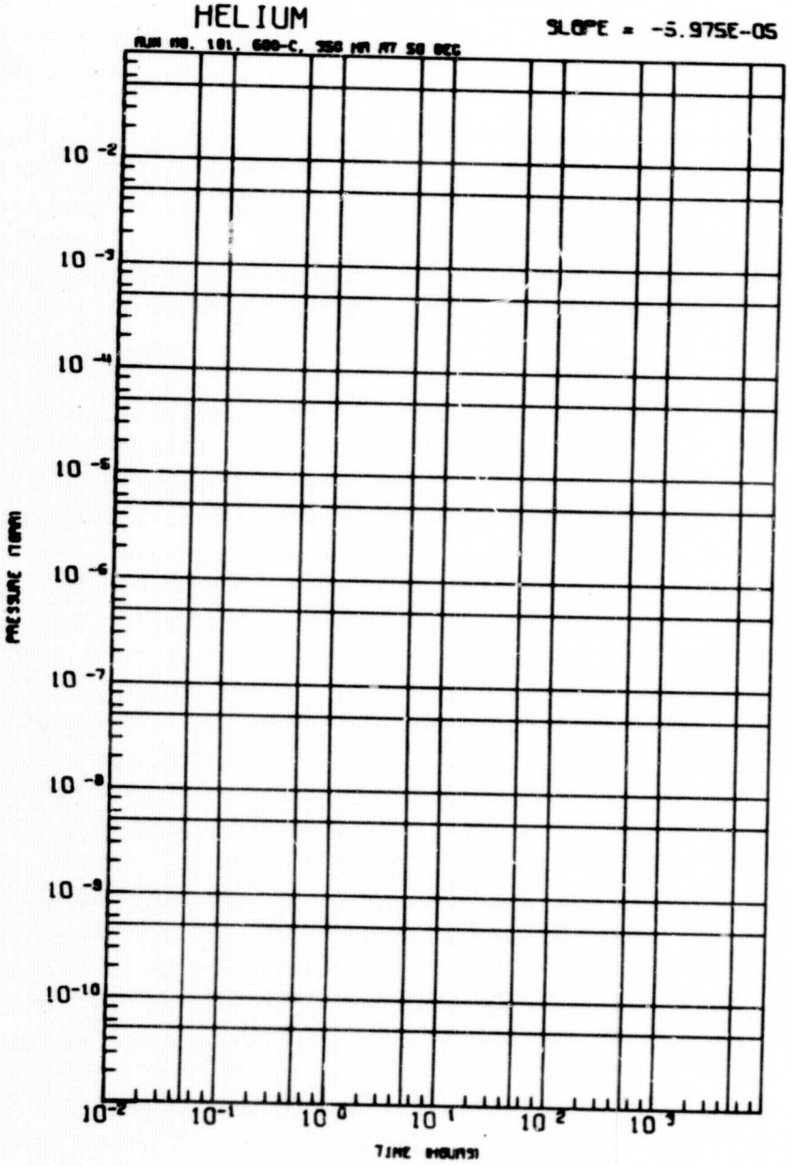
RUN NO. 101, 600-C, 350 MM AT 50 DEG
PRESSURE mmHg
TIME HOURS


H
RUN NO. 101, 600-C, 350 MM AT 50 DEG
PRESSURE mmHg
TIME HOURS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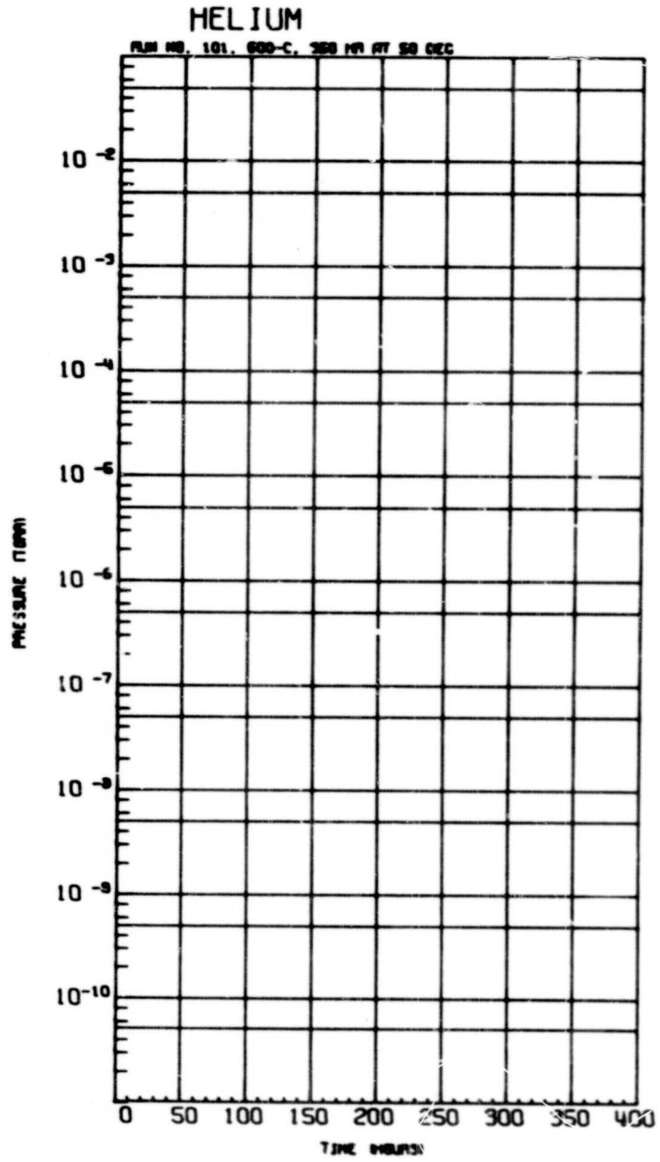
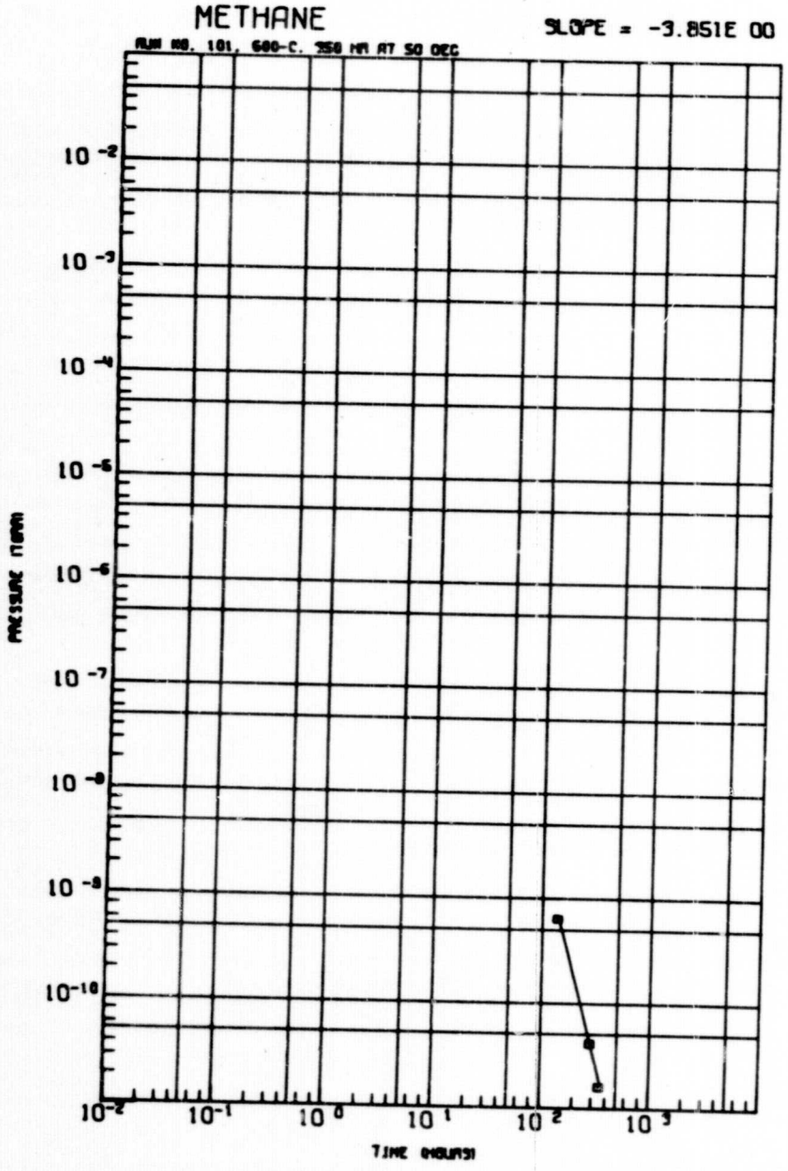
PRESSURE (TORR)
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3}
TIME (HOURS)


HELIUM
RUN NO. 101, 600-C, 250 MM AT 50 DEC
PRESSURE (TORR)
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
0 50 100 150 200 250 300 350 400
TIME (HOURS)


METHANE
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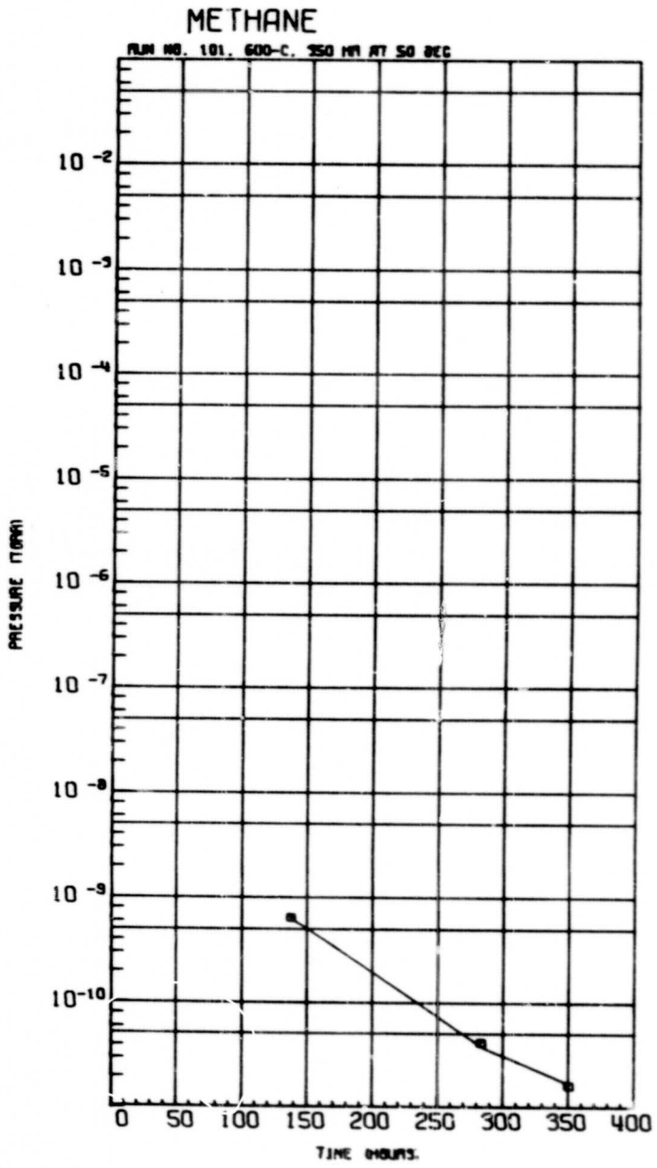
PRESSURE (TORR)
TIME (HOURS)


METHANE
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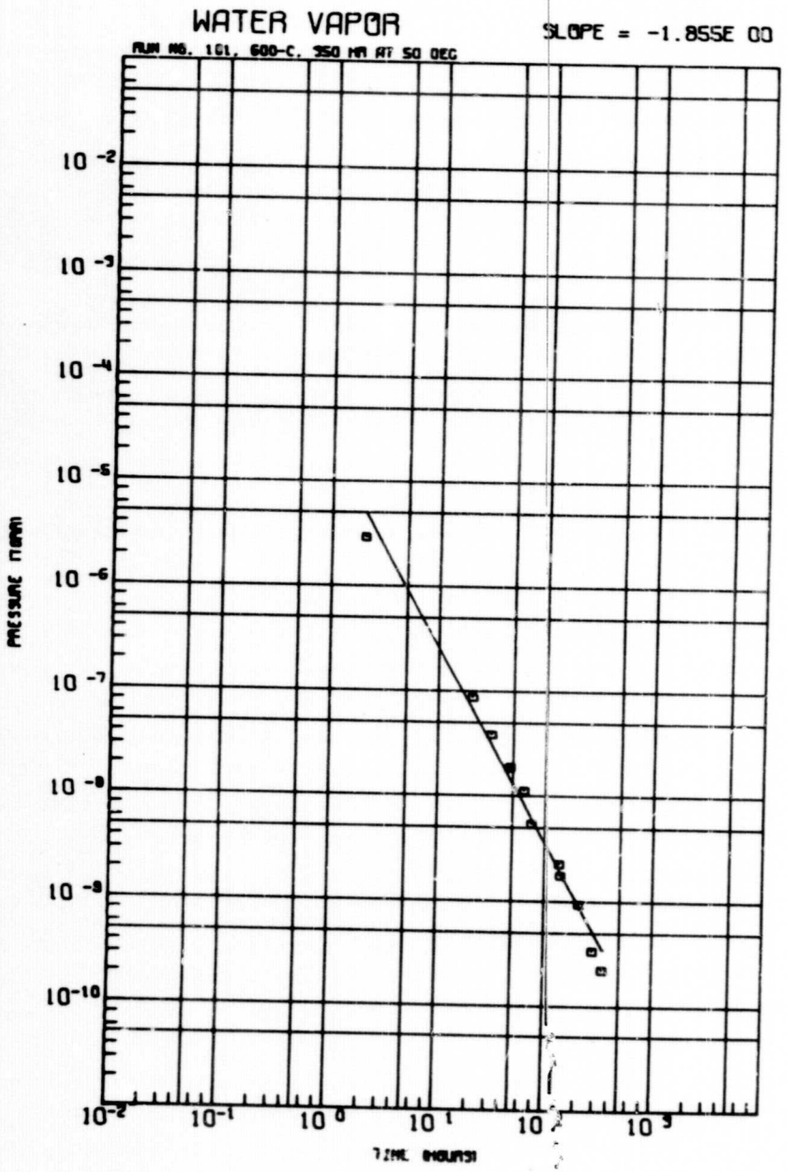
PRESSURE (TORR)
TIME (HOURS)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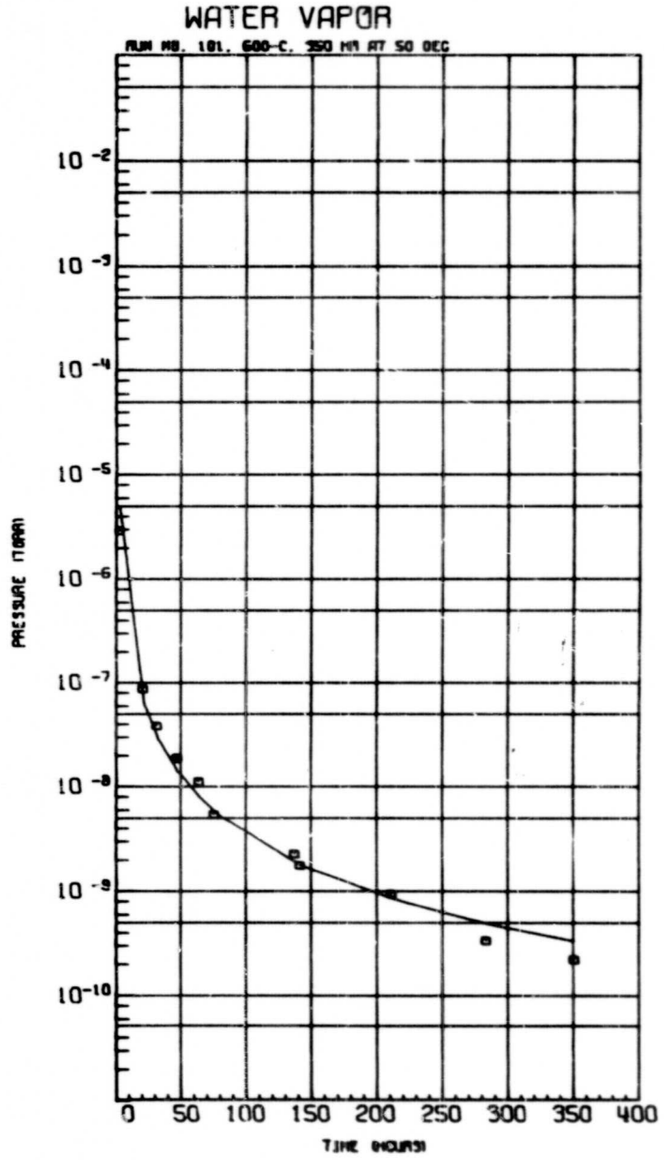
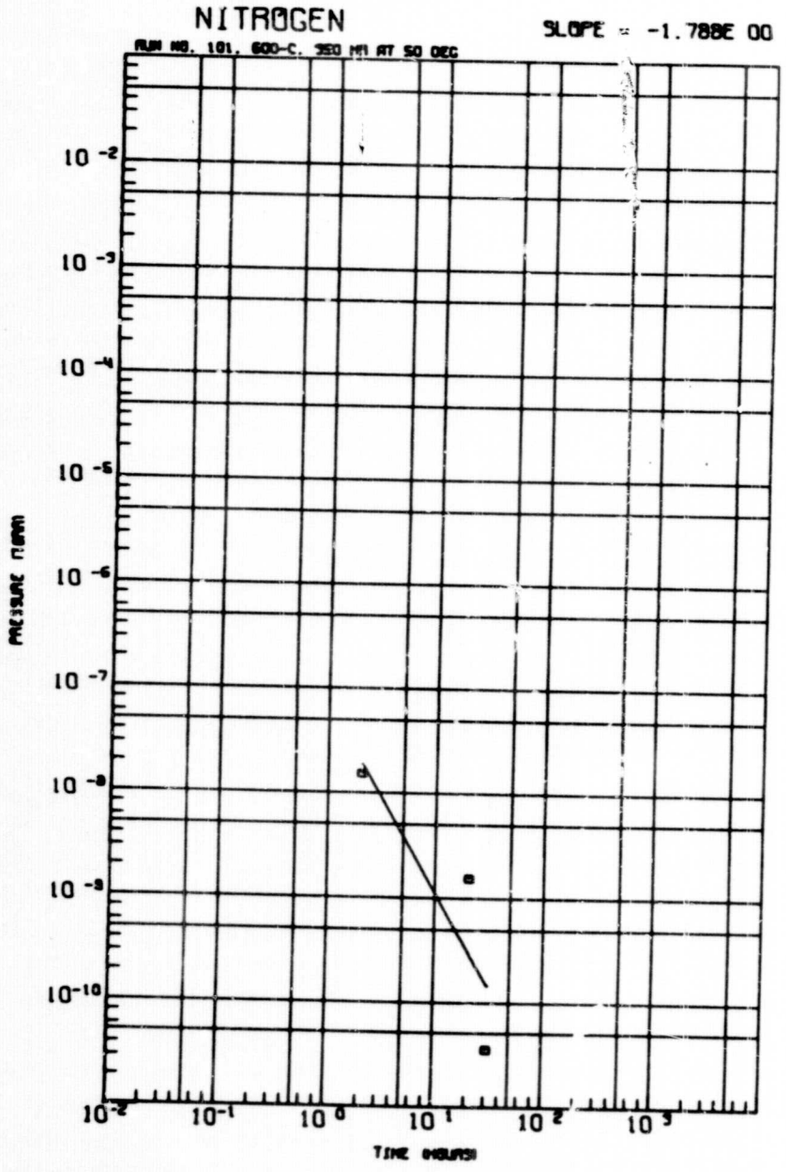
SLOPE = -1.855E 00
RUN NO. 101, 600-C, 350 MM AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)


WATER VAPOR
RUN NO. 101, 600-C, 350 MM AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)


NITROGEN
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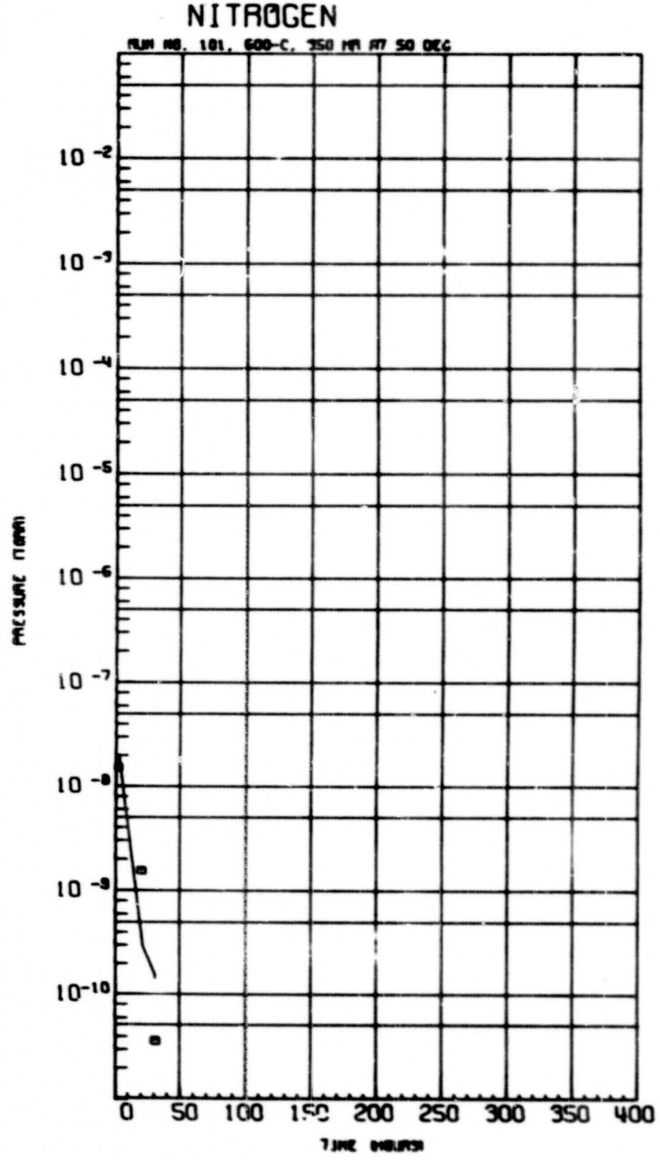
RUN NO. 101, 600-C, 350 MM AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)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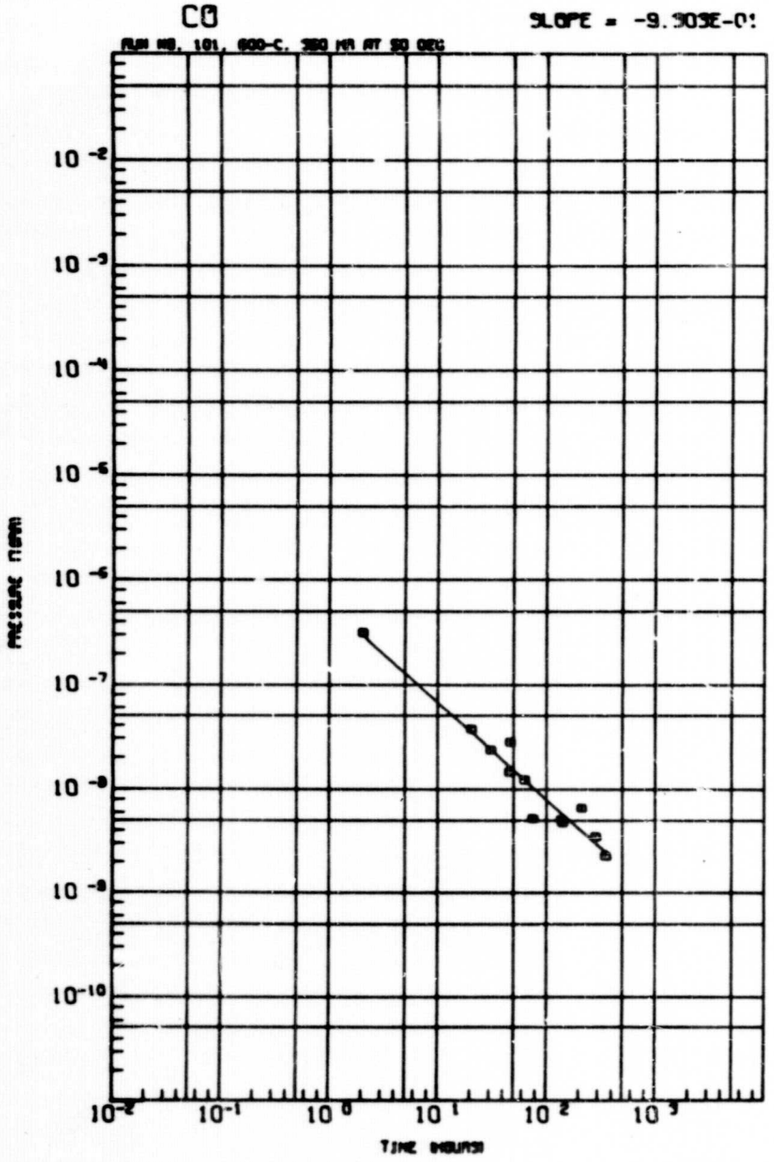
PRESSURE (TORR)
TIME (HOURS)


C0
SLOPE = -9.3035E-0
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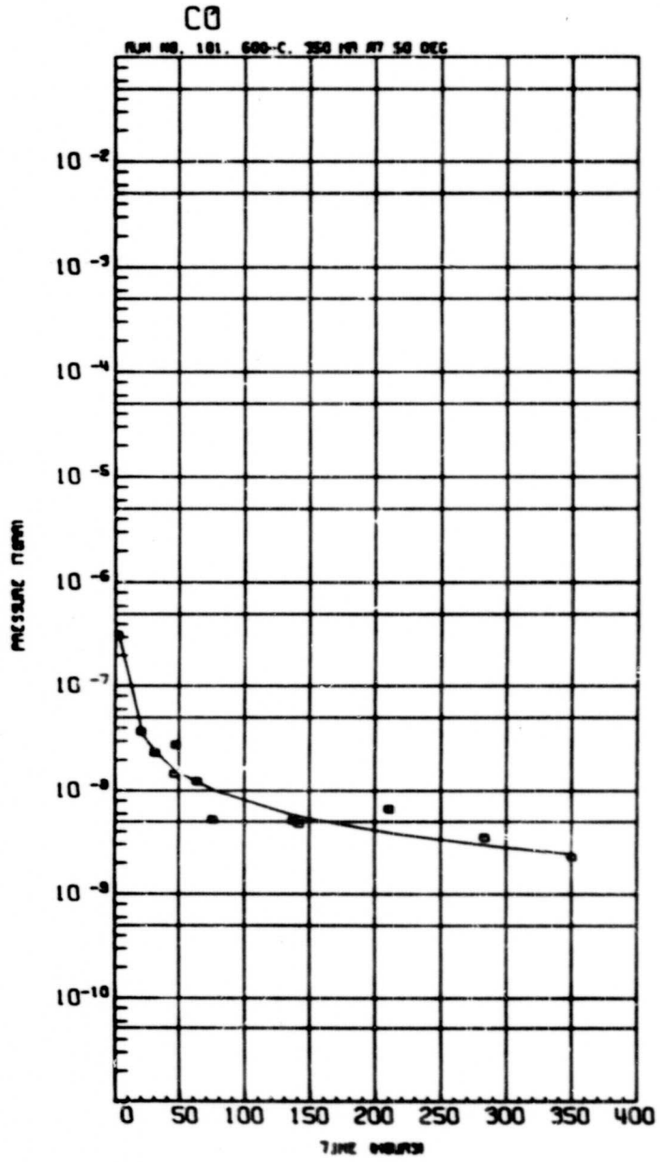
PRESSURE TORR
TIME HOURS


C0
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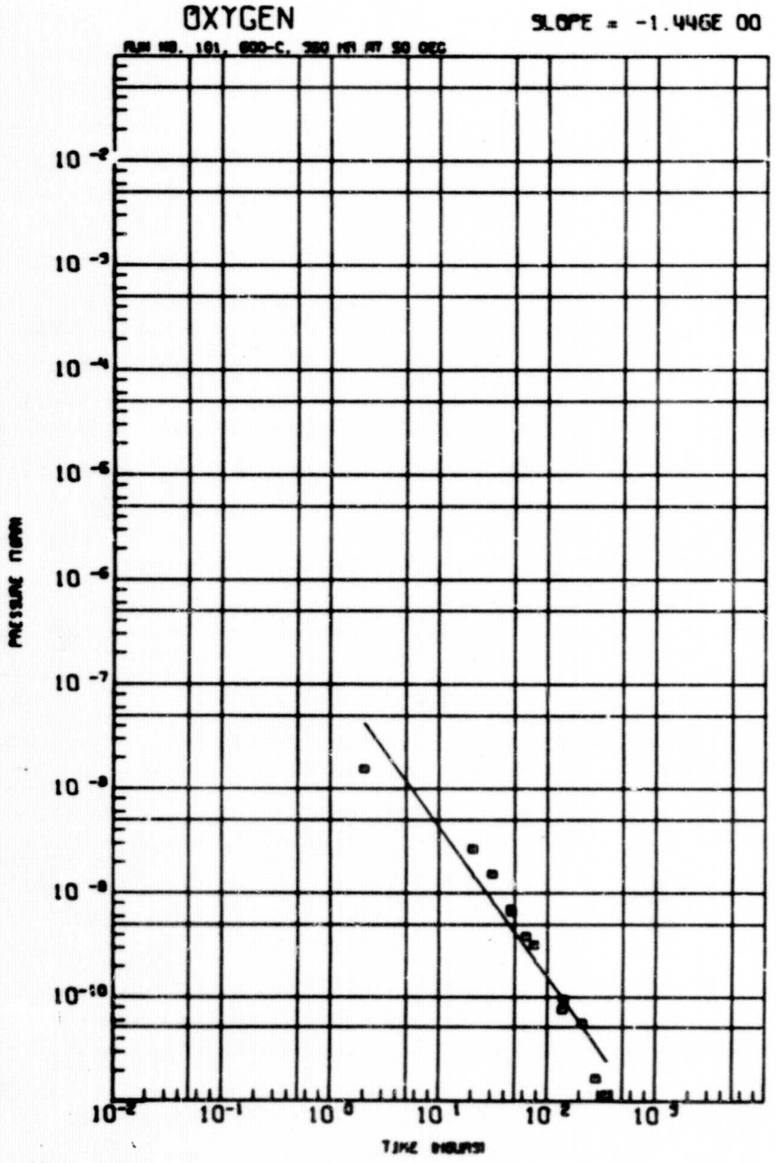
PRESSURE TORR
0 50 100 150 200 250 300 350 400
TIME HOURS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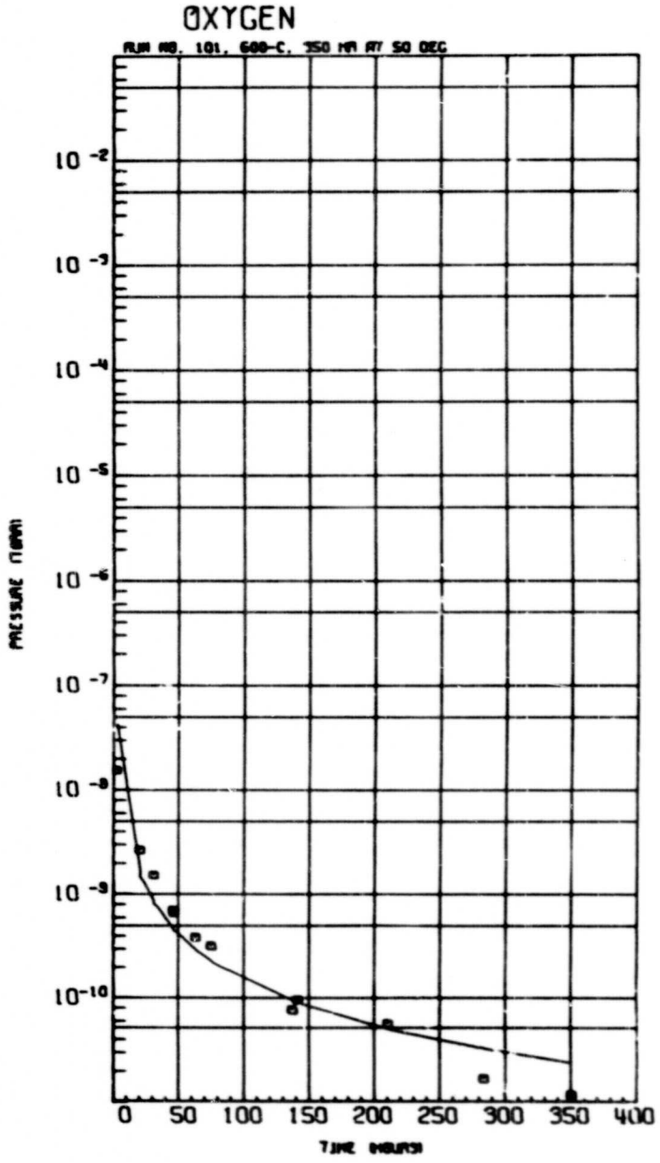
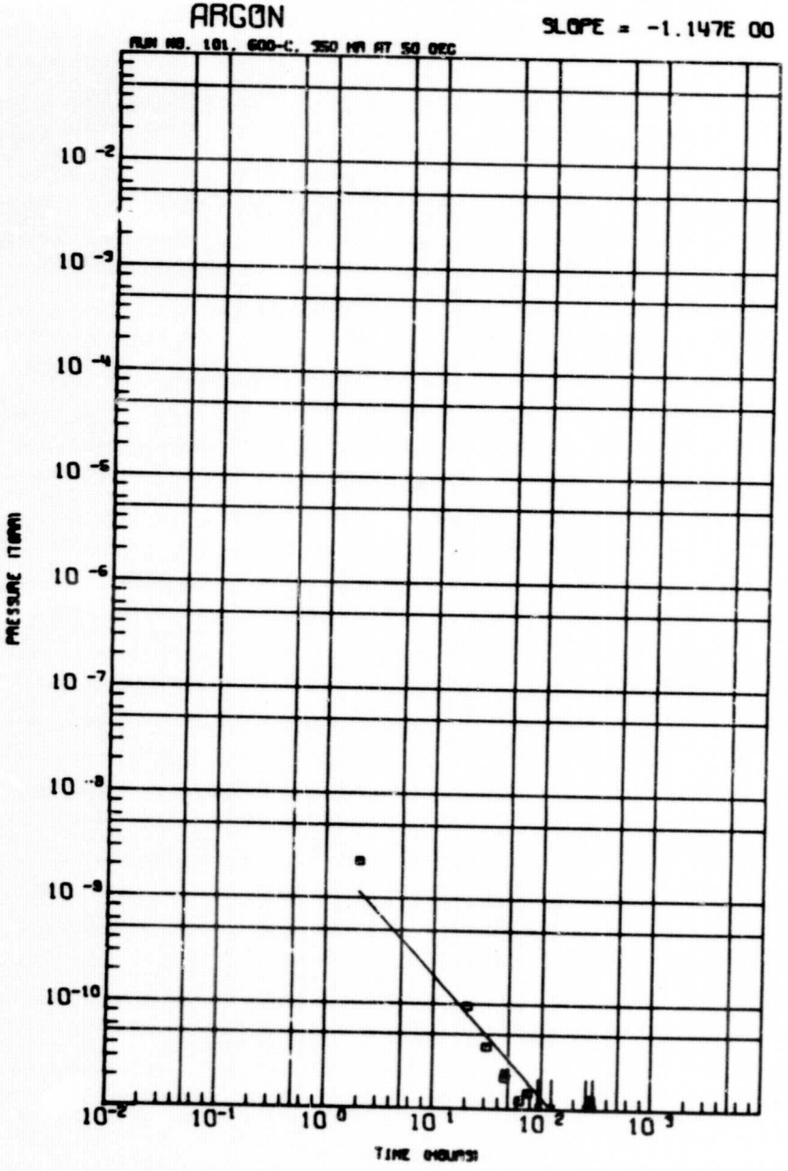
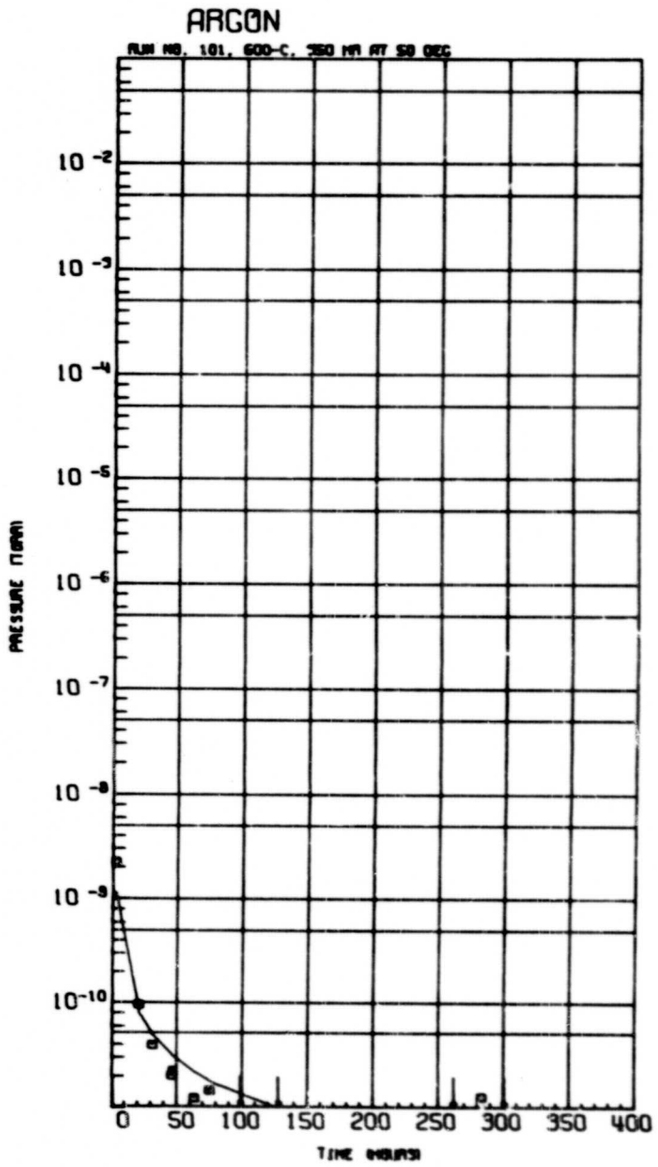
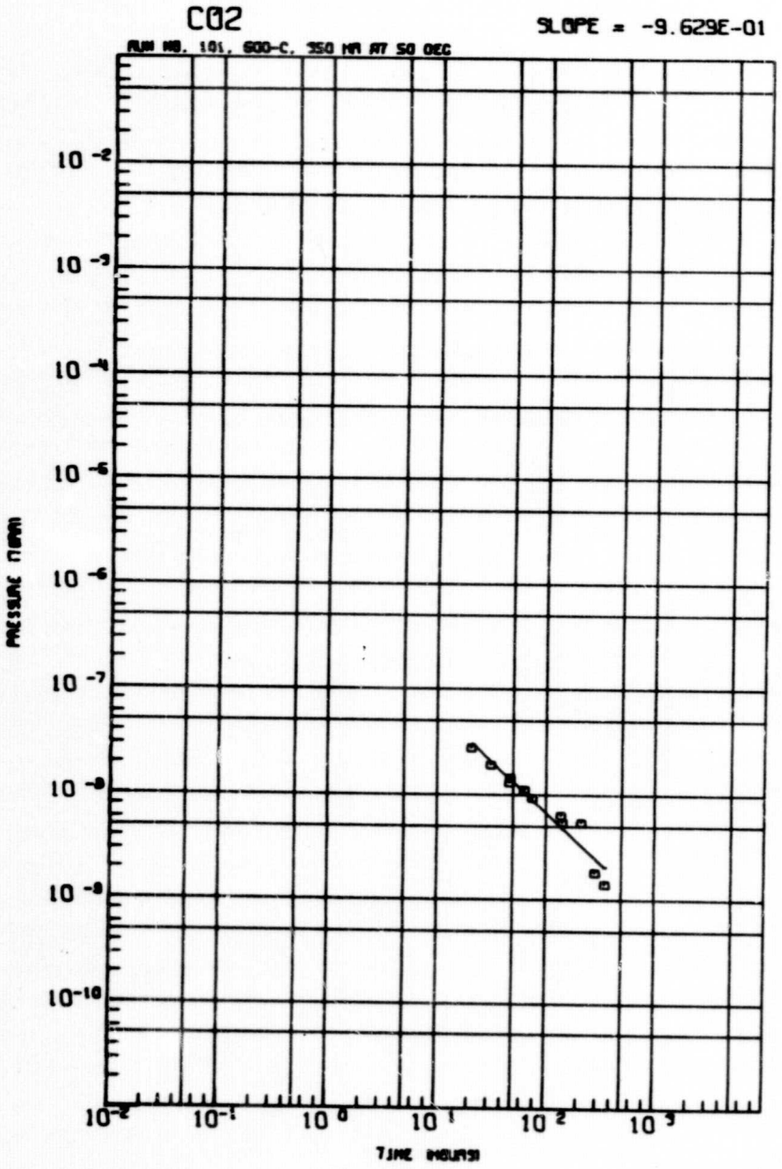
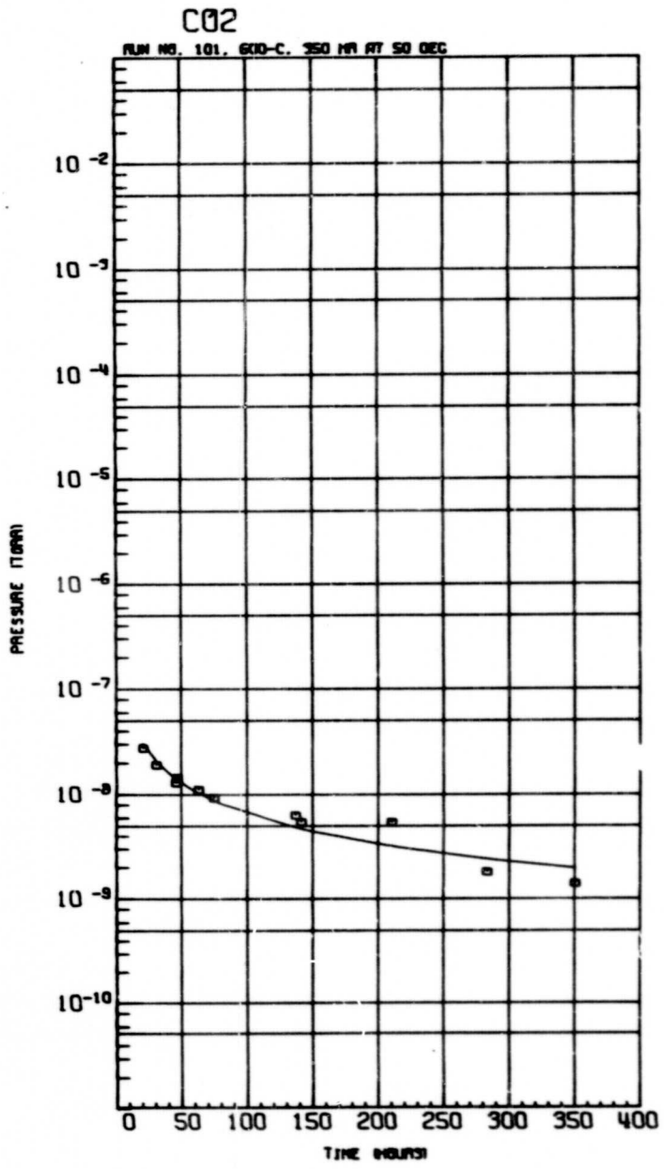
PRESSURE (TORR)
TIME (HOURS)

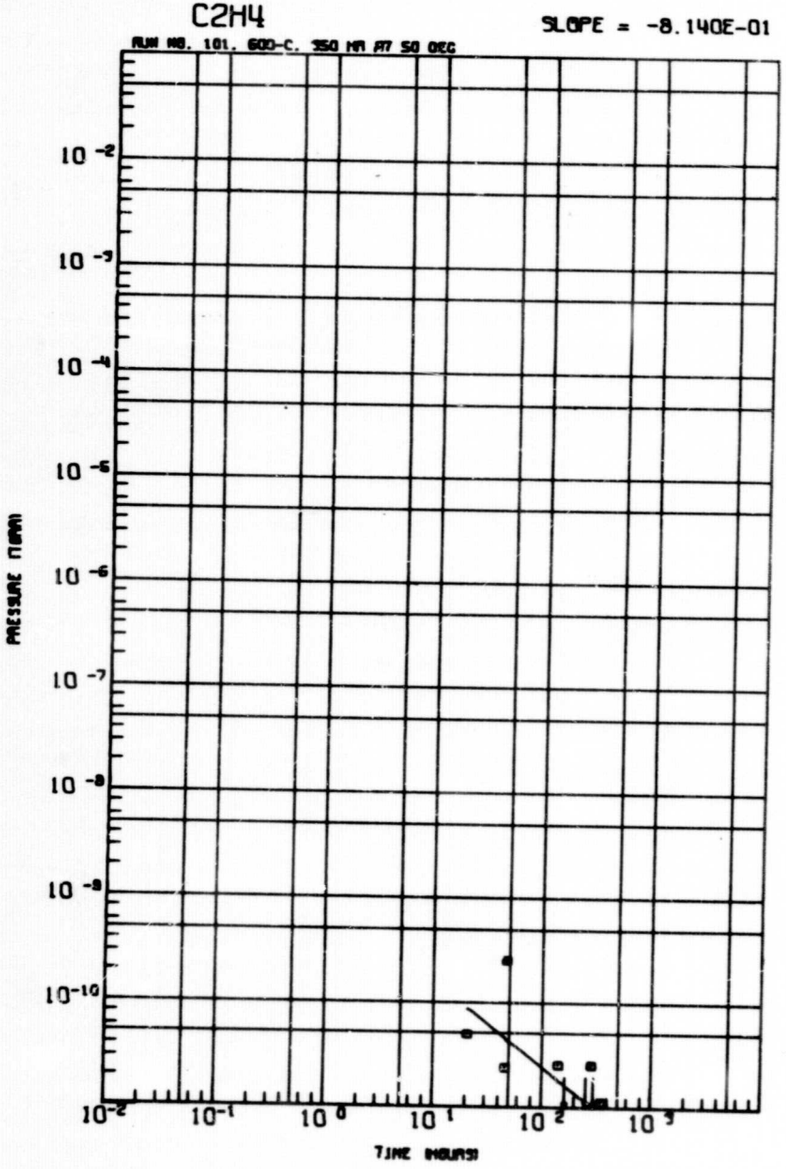

OXYGEN
RUN NO. 101, 600-C, 350 MM AT 90 DEG
PRESSURE (TORR)
TIME (HOURS)

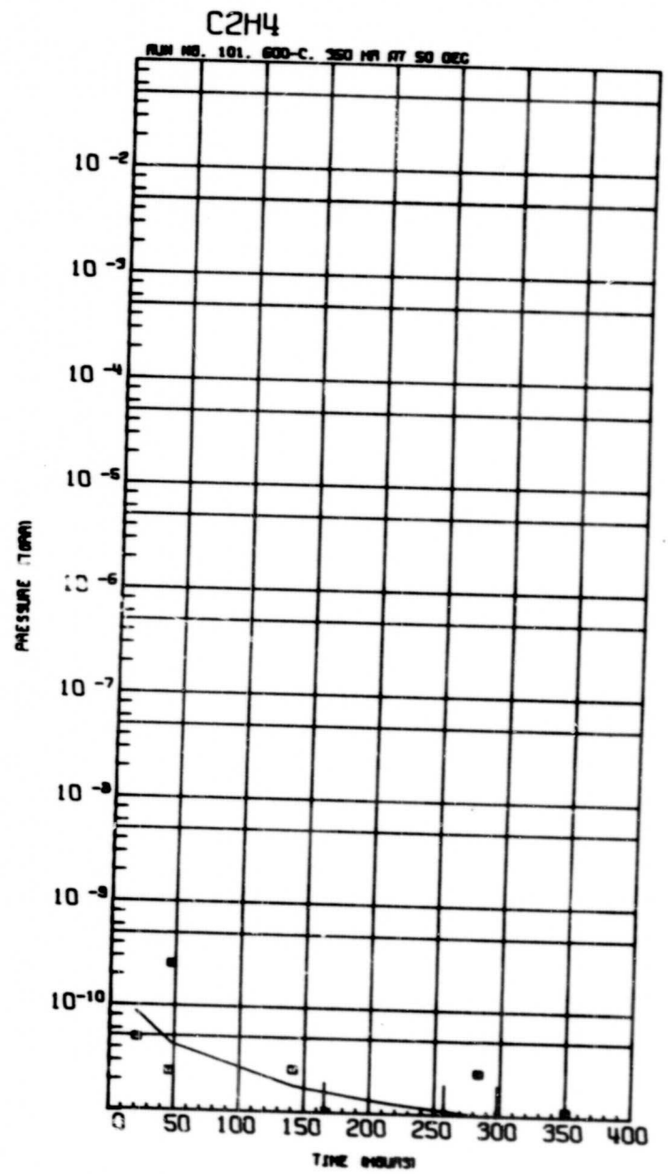

ARGON
SLOPE = -1.147E 00
RUN NO. 101, 600-C, 350 MM AT 50 DEC
PRESSURE (TORR)
TIME (HOURS)

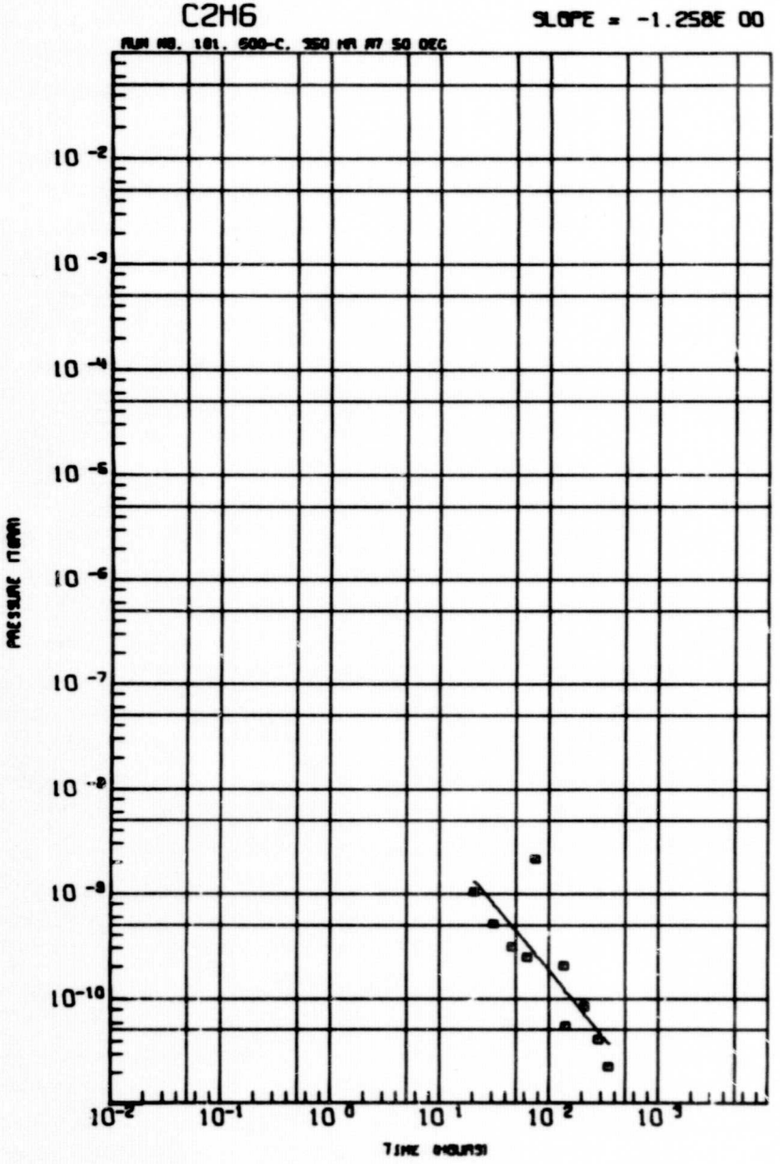

ARGON
RUN NO. 101, 600-C, 350 MM AT 50 DEC
PRESSURE (TORR)
TIME (HOURS)

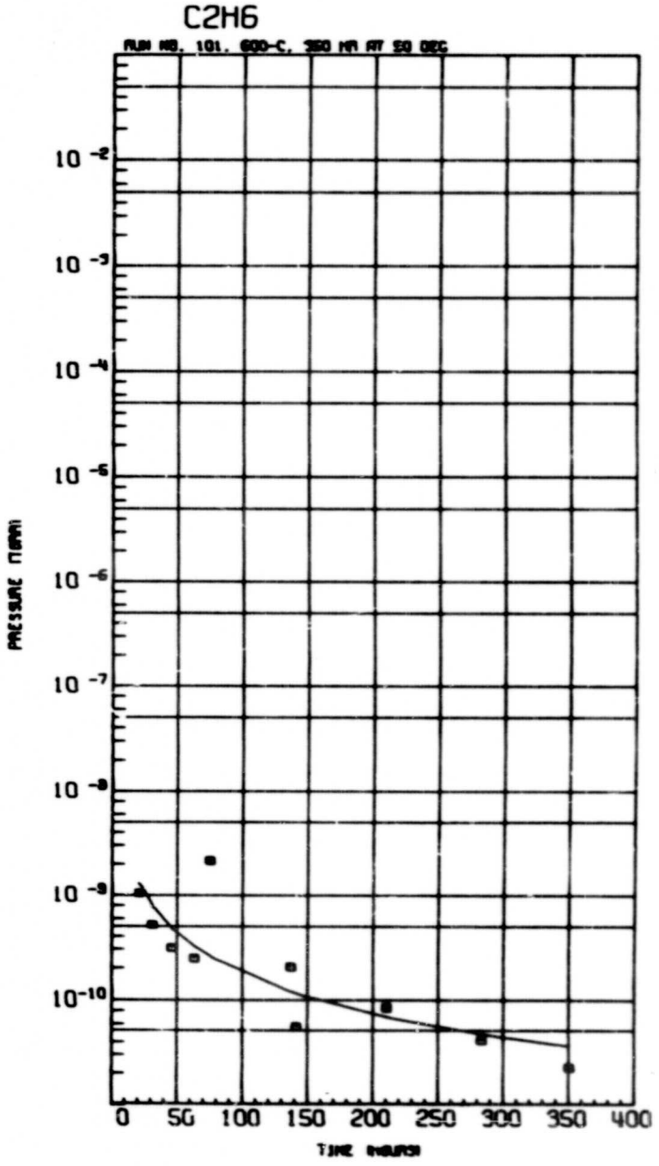

C02
SLOPE = -9.629E-01
RUN NO. 101, GOD-C, 350 MA AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)

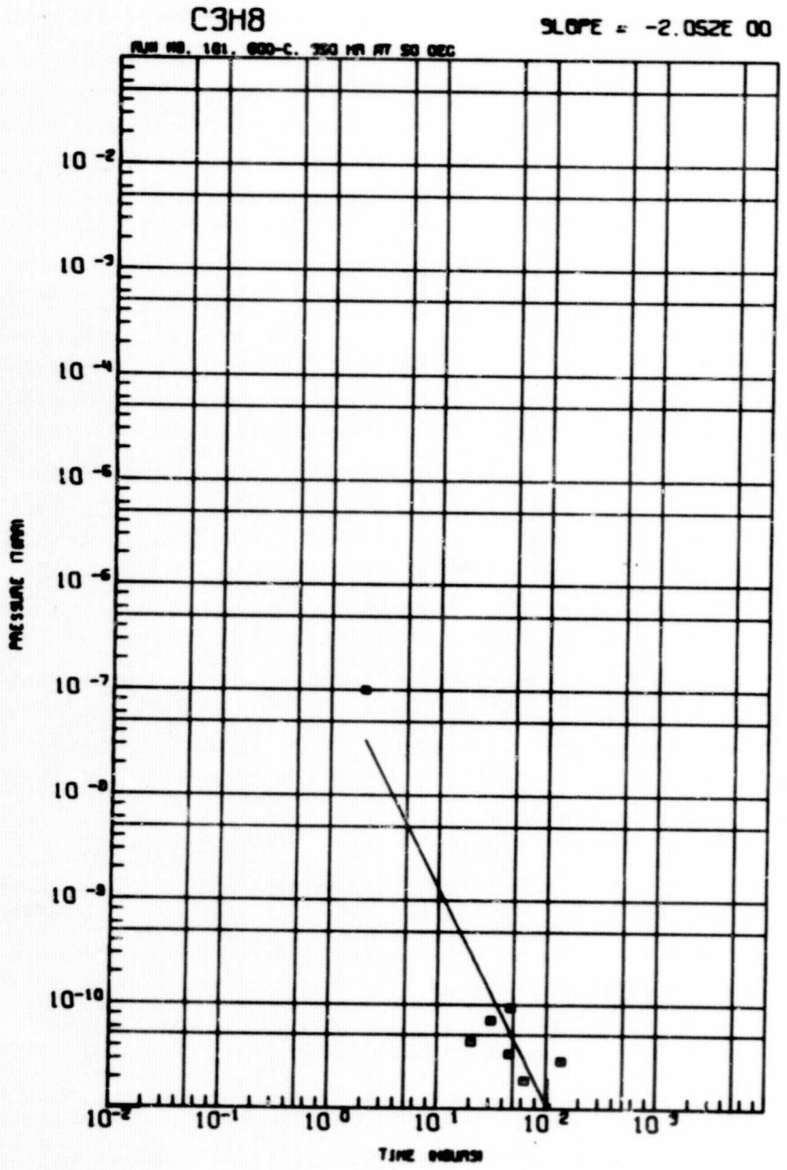

C02
RUN NO. 101, GOD-C, 350 MA AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)

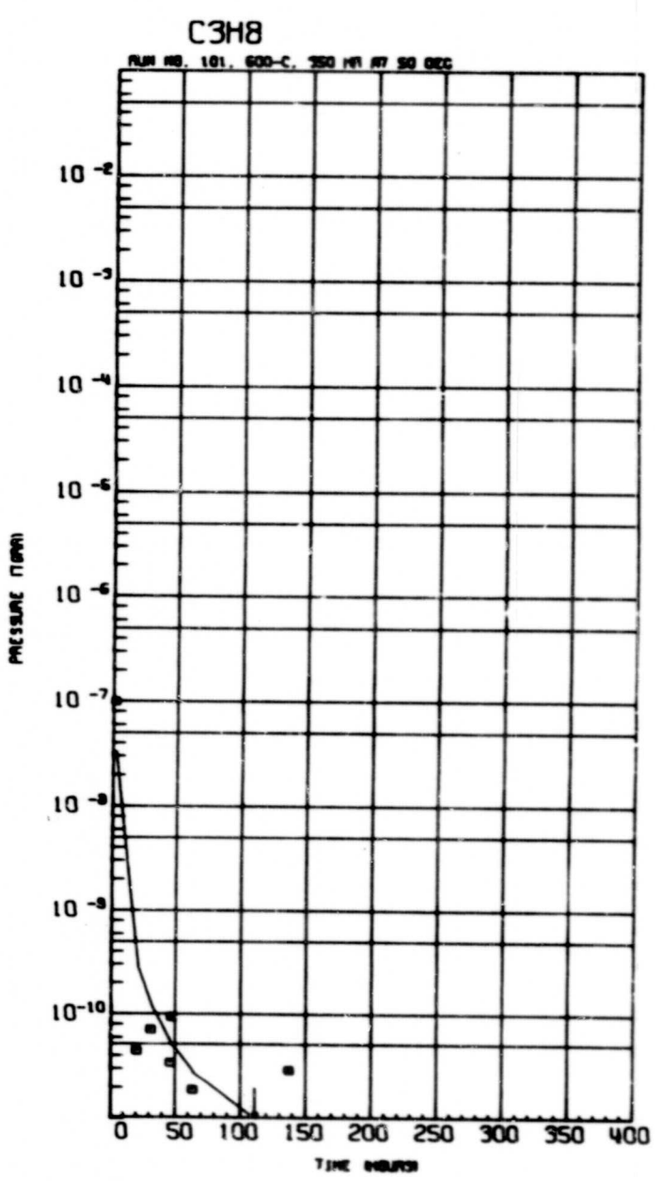

C2H4
SLOPE = -8.140E-01
RUN NO. 101. 600-C. 350 MM AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)

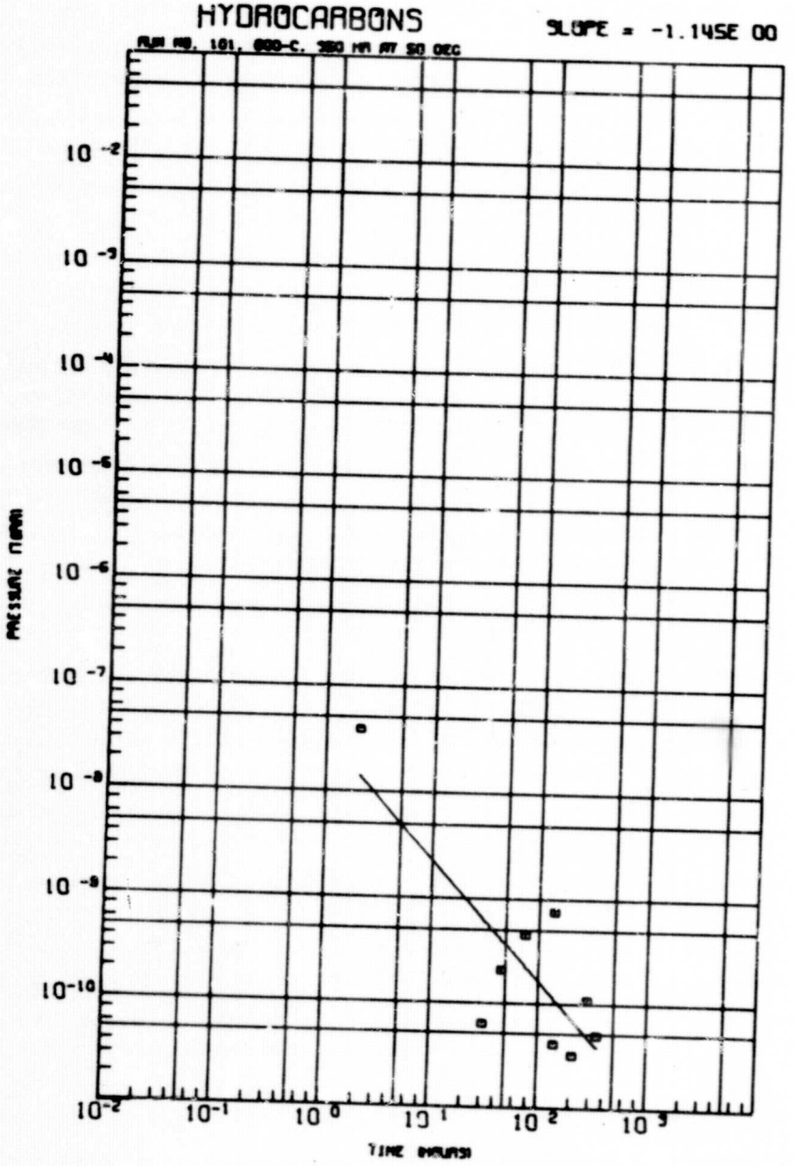

C2H4
RUN NO. 101. 600-C. 350 MM AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)

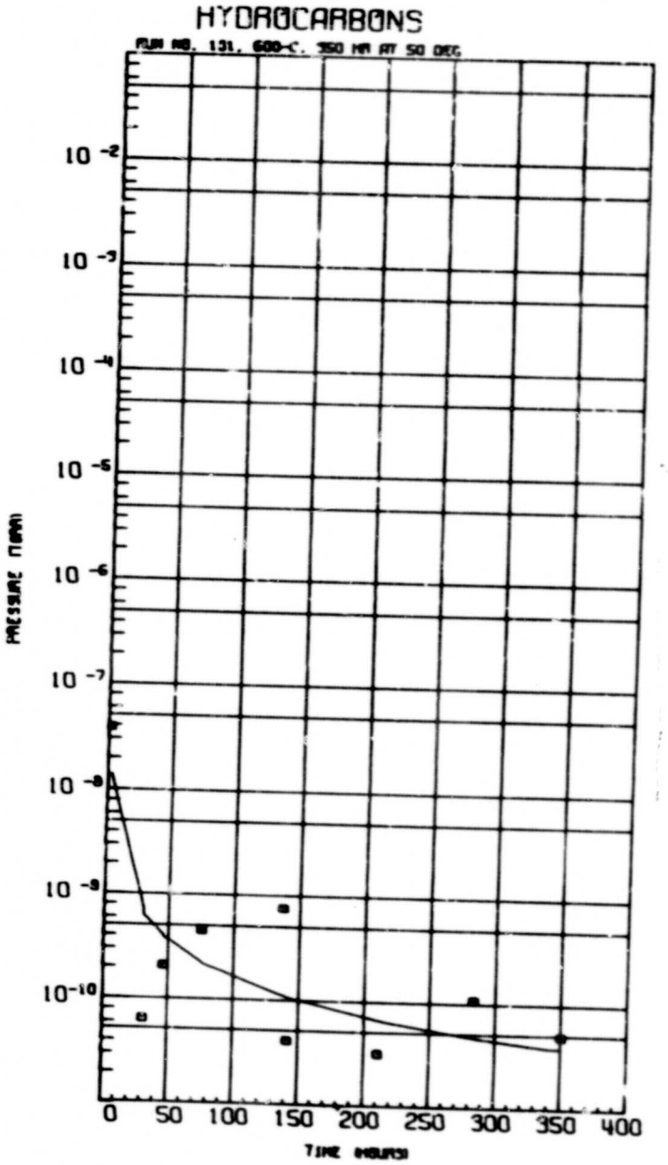

C2H6
SLOPE = -1.258E 00
RUN NO. 101, 600-C, 350 MM AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)

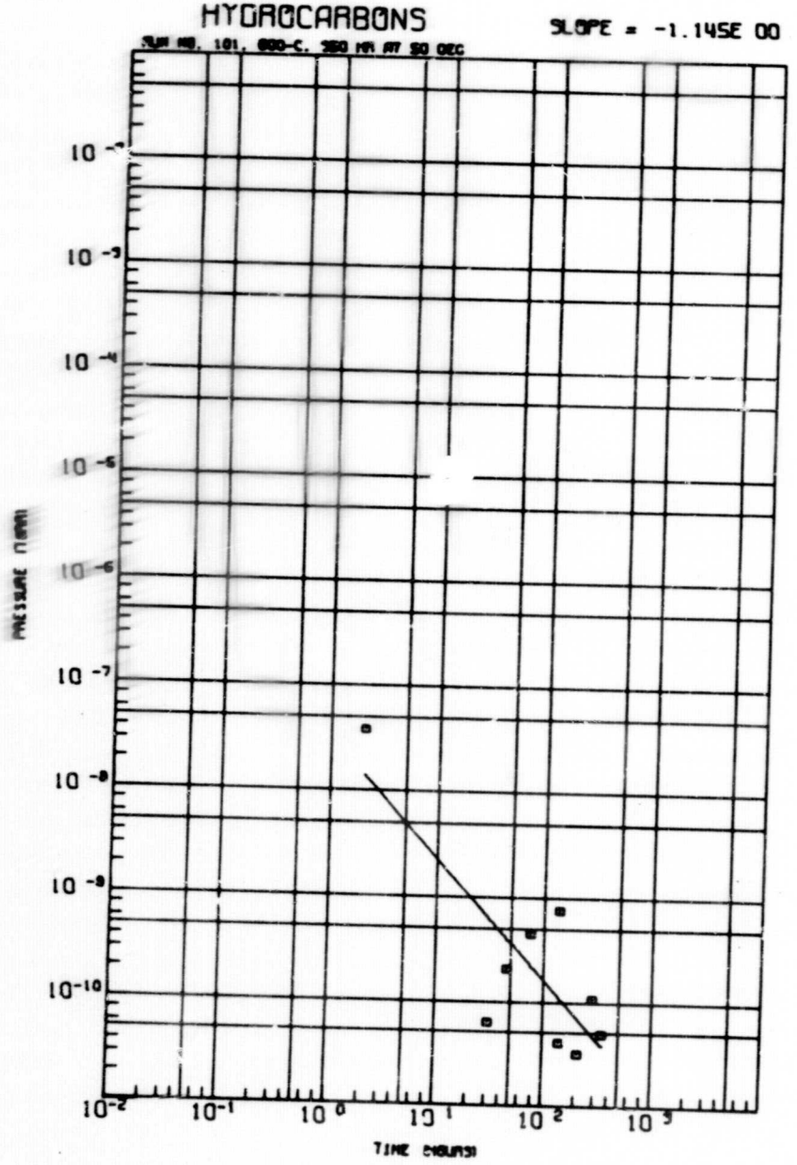

C2H6
RUN NO. 101, 600-C, 350 MM AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)

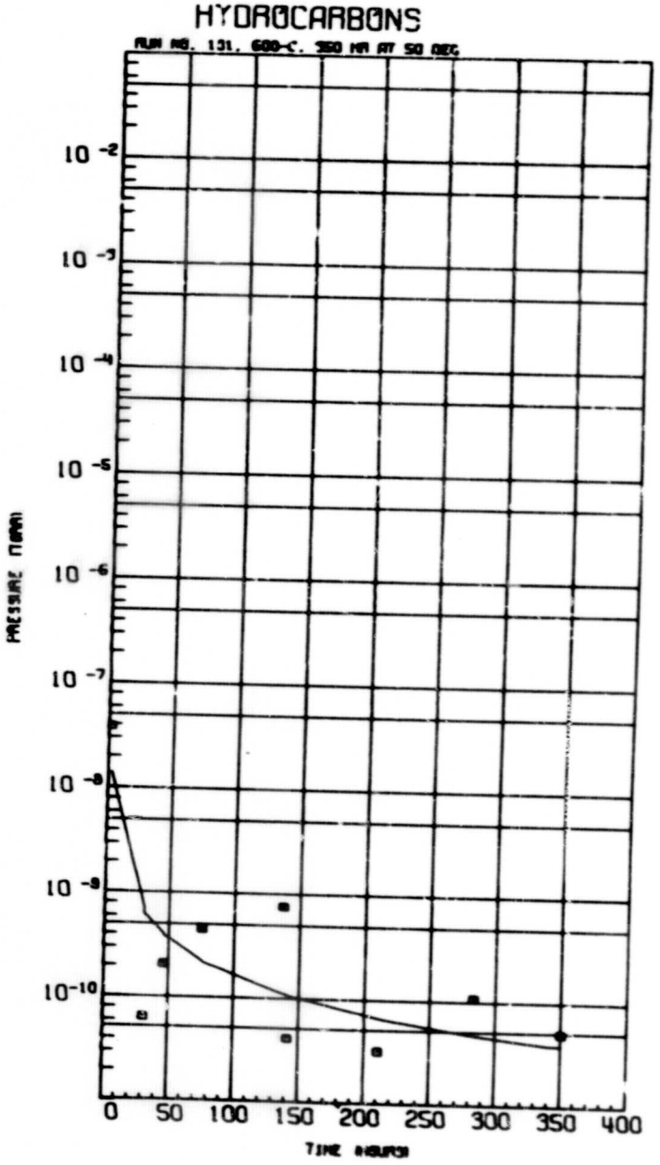

C3H8
SLOPE = -2.052E 00
RUN NO. 101, 600-C, 350 MM AT 90 DEC
PRESSURE (TORR)
TIME (HOURS)


C3H8
RUN NO. 101, 600-C, 350 MM AT 90 DEC
PRESSURE (TORR)
TIME (HOURS)

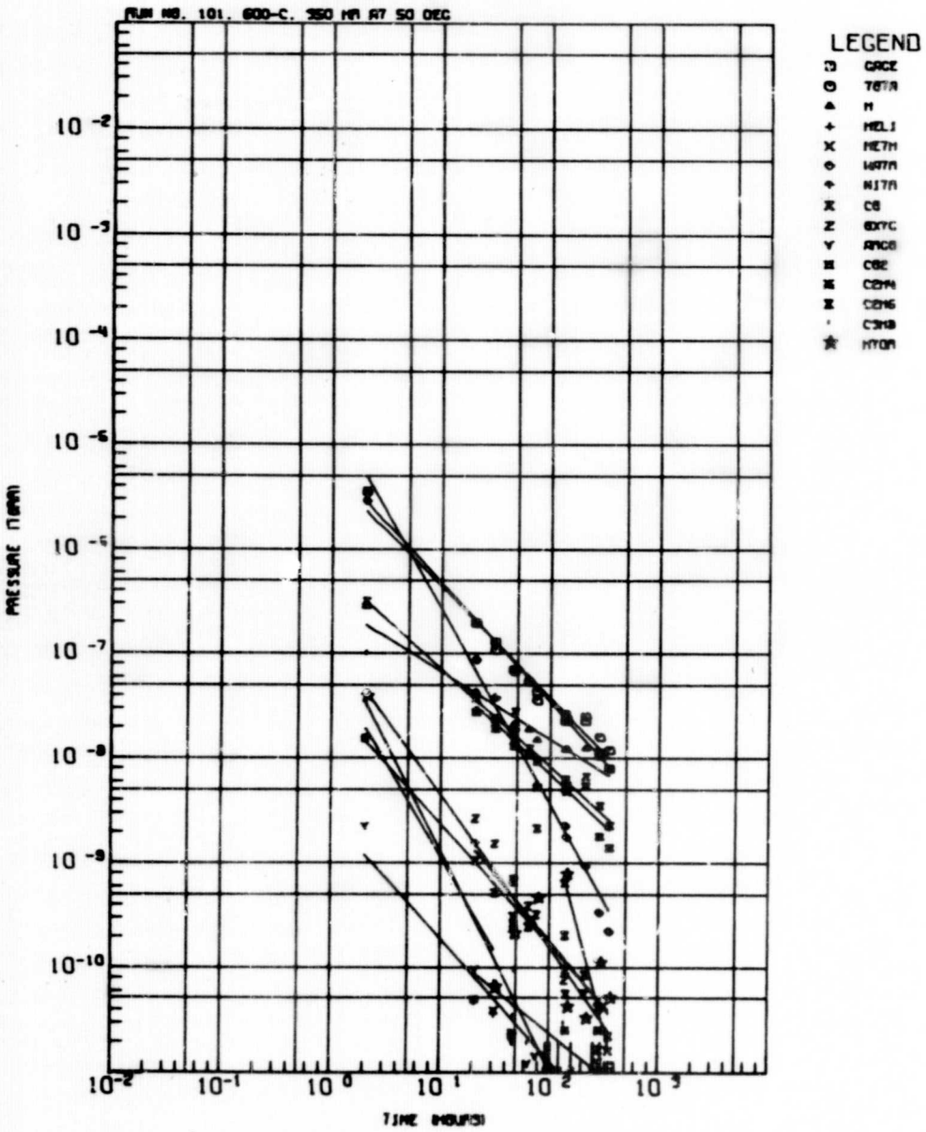

HYDROCARBONS
SLOPE = -1.145E 00
RUN NO. 131, 600-C, 350 MM AT 50 DEG
PRESSURE (MMH)
TIME (HOURS)


HYDROCARBONS
RUN NO. 131, 600-C, 350 MM AT 50 DEG
PRESSURE (MMH)
TIME (HOURS)


HYDROCARBONS
SLOPE = -1.145E 00
RUN NO. 101, 600-C, 350 MA AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)


HYDROCARBONS
RUN NO. 131, 600-C, 350 MA AT 50 DEG
PRESSURE (TORR)
TIME (HOURS)

SELECTED GASES



SELECTED GASES