UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

COMPUTER PROGRAM DESIGNED TO DRAW BAR GRAPHS FROM OIL SHALE FISCHER ASSAY OR SALINE MINERAL DATA

By

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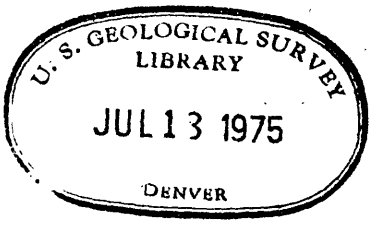

This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards

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C     * * * * * * * * SHALE/SALINE BAR GRAPHS - USGS * * * * * * * * *
C                          PROGRAM NUMBER  B625
C                        U S GEOLOGICAL SURVEY
C                  GEOLOGIC DIVISION, DENVER, COLORADO
C                     WRITTEN BY GEORGE VAN TRUMP, JR.
C                              ON MAY  1, 1975
C     ------------------------------------------------------------
C        THIS PROGRAM IS USED TO PREPARE A GERBER 622 PLOT TAPE OF BAR
C     GRAPHS USING ANY SELECTED COLUMN VERSUS DEPTH FROM A SHALE/SALINE
C     MATRIX.  THE PROGRAM REQUIRES THAT THE DATA HAVE BEEN STORED ON
C     MAGNETIC DEVICE BY PROGRAM D0102(SHALE/SALINE DATA ANALYSIS) IN
C     THE SHALE/SALINE DATA BASE.
C        SUBROUTINES PLTSET, SCALE, NEATLN, LINE, CHAR, XAXIS, YAXIS , &
C     ENDPLT ARE ROUTINES FOR THE USGS GERBER 622 PLOTTER.  THESE ROUT-
C     INES WERE WRITTEN BY GERALD I. EVENDEN, GEOLOGIC DIVISION, DENVER,
C     COLORADO.
C     ------------------------------------------------------------
C
C     DECK SETUP FOR THIS PROGRAM:
C     1. HEADER CARD
C                    COL  1     PUT AN ASTERISK(*) IN THIS COLUMN.
C        CORE NM  - COL  2-6   THE FILE NAME OF THE CORE.
C                    COL  7     (NOT USED)
C              IU - COL  8     = 0 DISK T018: WILL BE USED FOR INPUT.
C                              = 1 DISK DSKB: WILL BE USED FOR INPUT.
C                    COL  9     (NOT USED)
C              IY - COL 10-11  THE COLUMN OF SHALE/SALINE MATRIX TO BE
C                              PLOTTED ALONG Y-AXIS.  IF BLANK OR ZERO,
C                              THEN COL. 7 IS USED.
C                    COL 12-16  (NOT USED)
C             XIN - COL 17-21  SCALE ALONG THE X-AXIS(DEPTH AXIS) IN
C                              UNITS PER INCH OF PLOT.  IF BLANK OR
C                              ZERO, THEN A VALUE OF 20.0 IS USED.
C             YIN - COL 22-26  SCALE ALONG THE Y-AXIS IN UNITS PER INCH
C                              OF PLOT.  IF BLANK OR ZERO, THEN A
C                              VALUE OF 40.0 IS USED.
C                    COL 27-80  (NOT USED)
C     2. STEP 1 MAYBE REPEATED AS MANY TIMES AS NECESSARY.
C     ------------------------------------------------------------
1          REAL*8 DATE
2          LOGICAL CONT
3          DIMENSION X(10),XV(2),YV(2),XP(4),YP(4),ID(2),RID(2),
3         1 A(2),B(2),AA(2),BB(2),XVT(2),YVT(2),XPT(4),YPT(4)
4          COMMON /BLTLNE/ NOLINE,XXXX(5000),YYYY(5000)
5          DATA LIST,ITAPE/3,10/,IBLANK/' '/,DATE/'(07/01/75)'/
6          DATA XV,YV,XP,YP/3.0,43.0,0.0,80.0,40.0,1.0,3.0,44.0,2.25,1.0,1.0,
6         1 4.0/
7          DATA XVT,YVT,XPT,YPT/0.0,1.7,0.0,3.0,1.7,1.0,0.4,0.0,
7         1 2.85,1.0,0.4,0.0/
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8           CALL PLTSET (0,XPD,YPD,1)
      C     ------------------------------------------------------------
      C ... READ NEW DATA FOR PROCESSING A CORE.
      C     ------------------------------------------------------------
9       100 READ (1,270,END=260) NAME,IU,IY,XIN,YIN
10          IF(NAME.EQ.IBLANK) GO TO 260
11          CALL OPEN (ITAPE,NAME,IU)
12          NOLINE=0
13          READ(ITAPE) ID,NN,MM
14          WRITE (LIST,280) DATE,ID,NN,MM
15          IF (IY.EQ.0) IY=7
16          IF (XIN.EQ.0.0) XIN=20.0
17          IF (YIN.EQ.0.0) YIN=40.0
18          WRITE (LIST,290) IY
19          WRITE (LIST,310) XIN
20          WRITE (LIST,320) YIN
      C     ------------------------------------------------------------
      C ... BEGIN PROCESSING CORE.
      C     ------------------------------------------------------------
      C
      C ... DETERMINE THE MINIMUM AND MAXIMUM DEPTHS AND MAXIMUM YIELD.
      C
21          YMAX=-100.0
22          DO 110 I=1,NN
23          READ(ITAPE) RID,X
24          IF(X(IY).GT.YMAX) YMAX=X(IY)
25          IF(I.EQ.1) DPSTR=X(1)
26          IF(I.EQ.NN) DPEND=X(2)
27      110 CONTINUE
      C
      C ... COMPUTE PARAMETERS AND INITIALIZE PLOTTER FOR ALL STRIPS.
      C
28          REWIND ITAPE
29          READ(ITAPE)
30          XV(1)=3.0
31          XV(2)=43.0
32          YV(2)=80.0
33          XP(1)=40.0
34          XP(4)=XP(1)+XP(3)+1.0
35          YP(1)=2.25
36          YP(3)=1.0
37          YP(4)=YP(1)+YP(3)+1.0
38          XA=IFIX(DPSTR+0.5)
39          XMIN=XA-AMOD(XA,XIN)
40          XA=IFIX(DPEND+0.5)
41          XMAX=XA-AMOD(XA,XIN)+XIN
42          NOSTR=(XMAX-XMIN)/(XIN*XP(1))+0.999999
43          WRITE(LIST,330) NOSTR
44          WRITE(LIST,340)
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      X1=XMIN
      DO 120 I=1,NOSTR
      X2=AMIN1(X1+40.0*XIN,XMAX)
      ALG=(X2-X1)/XIN
      WRITE(LIST,350) I,X1,X2,ALG
  120 X1=X2
      XV(1)=XMIN
      XV(2)=AMIN1(XV(1)+40.0*XIN,XMAX)
      YV(2)=2.25*YIN
      XP(1)=(XV(2)-XV(1))/XIN
      XP(4)=XP(1)+XP(3)+1.0
      YP(4)=NOSTR*4.0
      CALL SCALE(XV,YV,XP,YP,4,ICODE)
      IF(ICODE.LT.0) GO TO 250
      NS=0
C     ------------------------------------------------------------
C ... START PLOTTING EACH STRIP.
C     ------------------------------------------------------------
      DO 230 I=1,NN
      READ(ITAPE,END=220) RID,X
      IF(X(IY).EQ.0.0) X(IY)=-1.0
      B(1)=X(IY)
      B(2)=X(IY)
      A(2)=X(2)
      IF(I.EQ.1) GO TO 130
      IF(A(2).GT.XV(2)) CONT=.TRUE.
      GO TO 210
C
C ... INITIALIZE PLOT FOR EACH NEW STRIP OF CORE.
C
  130 CONT=.FALSE.
      NS=NS+1
      YP(3)=4.0*(NS-1)+1.0
      XV(2)=AMIN1(XV(1)+40.0*XIN,XMAX)
      XP(1)=(XV(2)-XV(1))/XIN
      YP(1)=0.4375
      YP(3)=YP(3)-0.6
      CALL SCALE(XV,YV,XP,YP,3,ICODE)
      IF(ICODE.LT.0) GO TO 250
C
C ... DRAW DEPTH ANNOTATION ACROSS BOTTOM EDGE OF EACH STRIP.
C
      CALL NEATLN
      NO=(XV(2)-XV(1))/XIN*10.0-0.95
      DO 160 J=1,NO
      IF(MOD(J,2).EQ.0) GO TO 140
      BB(1)=YV(1)
      BB(2)=YV(2)
      GO TO 150
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85      140 BB(1)=YV(2)
86          BB(2)=YV(1)
87      150 XX=XV(1)+J*XIN/10.0
88          AA(1)=XX
89          AA(2)=XX
90      160 CALL LINE(AA,BB,2,0,0)
      C
      C ... DRAW ANNOTATION TO THE LEFT OF 1ST STRIP.
      C
91          IF (NS.NE.1) GO TO 170
92          CALL SCALE(XVT,YVT,XPT,YPT,3,ICODE)
93          IF (ICODE.LT.0) GO TO 250
94          CALL NEATLN
95          AA(1)=0.5
96          AA(2)=AA(1)
97          BB(1)=YVT(1)
98          BB(2)=YVT(2)
99          CALL LINE (AA,BB,2,0,0)
100         AA(1)=0.9
101         AA(2)=AA(1)
102         CALL LINE (AA,BB,2,0,0)
103         AA(1)=1.3
104         AA(2)=AA(1)
105         CALL LINE (AA,BB,2,0,0)
106         AA(1)=0.9
107         AA(2)=1.3
108         BB(1)=YVT(2)/2.0
109         BB(2)=BB(1)
110         CALL LINE (AA,BB,2,0,0)
111         AA(1)=1.3
112         AA(2)=XVT(2)
113         BB(1)=YVT(2)/3.0
114         BB(2)=BB(1)
115         CALL LINE (AA,BB,2,0,0)
116         BB(1)=2.0*BB(1)
117         BB(2)=BB(1)
118         CALL LINE (AA,BB,2,0,0)
119         CALL CHAR (0.44,0.10,'COMPANY',7,2.0.06,1.5708,0.0,0.0)
120         CALL CHAR (0.84,0.10,'WELL NO.',8,2,0.06,1.5708,0.0,0.0)
121         CALL CHAR (1.24,0.1,'STATE',5,2,0.06,1.5708,0.0,0.0)
122         CALL CHAR (1.24,1.6,'COUNTY',6,2.0.06,1.5708,0.0,0.0)
123         CALL CHAR (1.64,0.1,'T.',2,2,0.06,1.5708,0.0,0.0)
124         CALL CHAR (1.64,1.1,'R.',2,2,0.06,1.5708,0.0,0.0)
125         CALL CHAR (1.64,2.1,'S.',2,2,0.06,1.5708,0.0,0.0)
      C
      C ... INITALIZE DATA AREA FOR EACH STRIP PLOT.
      C
126     170 YP(1)=2.25
127         YP(3)=YP(3)+0.6
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      CALL SCALE(XV,YV,XP,YP,3,ICODE)
      IF(ICODE.LT.0) GO TO 250
      CALL XAXIS(XV,XV,XP,XIN/10.0,10,0.06,'(F5.0,10X)',14)
      CALL YAXIS(YV,YV,YP,YIN/ 4.0, 1,0.06,'(F5.1)',6)
      ENCODE (8,370,RID) ID
      DECODE (8,380,RID) ID
      CALL CHAR(XV(1),0.5*(YV(1)+YV(2)),ID,8,2,0.10,1.5708,-0.1*R/2,2.8)
C
C ... DRAW YIELD ANNOTATION IN DATA AREA.
C
      DO 200 J=1,8
      YY=J*YIN/4.0
      IF(MOD(J,2).EQ.0) GO TO 180
      AA(1)=XV(1)
      AA(2)=XV(2)
      GO TO 190
  180 AA(1)=XV(2)
      AA(2)=XV(1)
  190 BB(1)=YY
      BB(2)=YY
  200 CALL LINE(AA,BB,2,0,0)
      YV(1)=XV(2)
      IF(I.NE.1) GO TO 210
      A(1)=X(1)
      CALL STOLNE(A,YV(1),1,0,0)
  210 CALL STOLNE(A,B,2,1,0)
      IF(CONT) CALL FINLIN
      IF(CONT) GO TO 130
      A(1)=A(2)
      IF(I.NE.NN) GO TO 230
  220 CALL STOLNE(A,YV(1),1,1,0)
      CALL FINLIN
      GO TO 240
  230 CONTINUE
C
C ... TERMINATE PLOT AND RECYCLE FOR NEW CORE.
C
  240 CALL ENDPLT(0)
      CALL SHUT
      GO TO 100
C     ------------------------------------------------------------
C ... ERROR IN SCALING DATA FOR PLOTTER.
C     ------------------------------------------------------------
  250 WRITE(LIST,360)
      CALL ENDPLT(0)
      STOP 'ABNORMAL TERMINATION'
  260 STOP 'NORMAL TERMINATION'
C
C
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166    270 FORMAT(A5,1X,I1,1X,I2,5X,2F5.0)
167    280 FORMAT('1SHALE/SALINE BAR GRAPHS - USGS',A10,///10X,'CORE ID  ='
167       12A4,//,10X,'NO INTERV=',I8,//,10X,'NO VARS  =',I8,/)
168    290 FORMAT(10X,'Y-VAR COL=',I8/)
169    310 FORMAT(/10X,'X-SCALE FACTOR = ',F7.2,' UNITS/IN')
170    320 FORMAT(/10X,'Y-SCALE FACTOR = ',F7.2,' UNITS/IN')
171    330 FORMAT(//5X,'THE NO OF STRIPS IN THIS CORE =',I3)
172    340 FORMAT(/9X,'NO   STP DP   END DP       LG')
173    350 FORMAT(9X,I2,3F9.1)
174    360 FORMAT (//'0ERROR...CANNOT SCALE PLOTTER WITH THE GIVEN PARMS.')
175    370 FORMAT (2A4)
176    380 FORMAT (A5,A3)
177        END
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1           SUBROUTINE STOLNE(A,B,N,N1,N2)
      C
      C     THIS SUBROUTINE STORES YIELD DATA FOR SUBSEQUENT PLOTTING AND THEN
      C     PLOTS IT.
      C
2           COMMON /BLTLNE/ NOLINE,X(5000),Y(5000)
3           DIMENSION A(1),B(1)
4           DO 100 I=1,N
5           NOLINE=NOLINE+1
6           X(NOLINE)=A(I)
7       100 Y(NOLINE)=B(I)
8           RETURN
9           ENTRY FINLIN
10          CALL LINE (X,Y,NOLINE,0,0)
11          NOLINE=0
12          RETURN
13          END
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```
1           SUBROUTINE FILES
      C
      C     THIS SUBROUTINE IS USED TO OPEN AND CLOSE INPUT FILES.  IT IS
      C     MACHINE DEPENDENT AND WOULD REQUIRE MODIFICATION IF THIS PROGRAM
      C     WERE EXECUTED ON A NON "DEC" MACHINE.
      C
2           DIMENSION NAMDSK(0/1)
3           ENTRY OPEN(IN,NAME,IOPT)
4           OPEN (UNIT=IN,DEVICE=NAMDSK(IOPT),ACCESS='SEQIN',FILE=NAME)
5           RETURN
6           ENTRY SHUT
7           CLOSE (UNIT=IN,DEVICE=NAMDSK(IOPT),ACCESS='SEQIN',FILE=NAME)
8           RETURN
9           END
```