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CHART

**A Computer Plotting Package for the Display of
Position-Dependent Marine Data**

by

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Technical Report

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Acknowledgments

This version of CHART owes much to those who laid the groundwork with their versions of the program in past years: Carl O. Bowin, Stephen R. Gegg, Leon A. Gove, Robert C. Groman, Hartley Hoskins, Maxine M. Jones, Christine M. Wooding -- and to all those who used the old CHART at sea and suggested improvements when they got home.

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ABSTRACT

Computer program CHART produces plots of navigation tracks and data points in a choice of 14 projections where navigation coordinates are defined. It was written specifically for the plotting and annotation of geological and geophysical data; however, any data which includes geographical coordinates can be plotted.

The package was designed for broad flexibility of applications and for ease of use. Parameters are entered interactively; the user responds to online prompts worded in plain English. Several levels of default choices are incorporated; a user who takes all defaults can produce a plot by entering only the data source and format, and plot bounds.

CHART can be used on any Digital Equipment Corporation VAX machine running VMS. It uses plotting subroutines (MAPPACK) maintained by the WHOI Information Processing & Communications Laboratory (IPCL) to draw projection grids and coastlines, and to locate the position for each data point. The program creates a file of Calcomp plotting instructions for subsequent plotting.

Some additional features of CHART: coastlines, multiple data sets on one grid; empty grid without data points; corner registration marks; calculation of plot size; user-defined input format; online entry of data points where large time gaps occur; online documentation.

INTRODUCTION

Computer program CHART provides a facility for the plotting of data points and navigation tracks on a choice of projections. Navigation lines may be drawn with or without annotated data values at points where geographical coordinates are provided; data points may be posted with both symbols and annotations at any defined positions. It is suited especially to the plotting of geological and geophysical data; however, any data which includes geographical coordinates can be plotted. To use CHART, type

```
$ RUN BLUE::SEA1:[GNG.CHART]CHART
```

CHART can be used without reading this report. The online documentation is sufficient for any user to produce a plot without reference to written documentation. The purpose here is to introduce the utility to those in search of a suitable plotting package, and to notify old friends that the new CHART is online and available.

Some of the features of CHART include:

- 14 map projections
- coastlines
- make an empty grid without data points
- grid with minutes or decimal degrees; gridlines and/or tickmarks

- corner registration marks
- automatic calculation of size of plot
- plot multiple sets of data on one grid
- user-defined input format
- online entry of data points where large time gaps occur
- choice of symbols for data points
- choice of annotation of actual time or interpolated whole hours
- choice of orientation of data values plotted
- online documentation

The program was designed to meet the needs of the Department of Geology & Geophysics, and is maintained by the department's Digital Data Library (DDL). It has been used for the plotting of navigation, with annotations of bathymetry, geomagnetics and gravity values at the navigation coordinates. In addition to the production of final plots, the DDL uses CHART as an error-checking facility to preview raw data for correction. The sole data requirement is that each data point must be tied to a navigational position.

This package is appropriate for any application that requires the display of position and/or annotation of values at predetermined navigation points. CHART can be used on any Digital Equipment Corporation VAX machine running VMS, including the MicroVAX, which is especially suitable for work at sea. A scientist in the process of collecting data at sea can display the ship's track in order to review

the navigation; he can examine data while the ship is under way to evaluate the cruise data collection procedure and to adapt an ongoing experiment to observed conditions. On shore he can plot existing data, using any VMS machine, for analysis and for the preparation of final reports.

At WHOI all files pertaining to CHART are in

BLUE::SEA1:[GNG.CHART]

Documentation files are:

- CHART.DOC - brief description of the package
- CHTPARM.DOC - list of current default values
- DATAVALS.DOC - description of data value codes
- FORMATS.DOC - list of input data formats
- GETX.DOC - template for subroutine to read user format
- NXKEY.DOC - key for converting old to new data value codes

The CHART package, including documentation and source code, is available on floppy disks and on 9-track magnetic tape for off-site use. CHART is written in FORTRAN77 and has VMS operating system calls. It can be used without change with these site limitations:

VAX VMS operating system

FORTRAN77 compiler

Calcomp plotter and software

WHOI Coastlines Package

WHOILIB subroutine library (MAPPACK, TPLOT, CPLOT)

HISTORY

A plotting package to display ship tracks and data, also named CHART, has been used for twenty years by G&G personnel. Successive members of the Digital Data Library staff added and adapted features as they were requested. The original CHART was written in FORTRAN66 for the Sigma computer used at WHOI until 1981, with a seagoing version in HP-FORTRAN for the Hewlett Packard system used at sea. The shore version was adapted in 1979 for use on the present VAX 11/780 system. As CHART grew, it became increasingly difficult to troubleshoot and patch.

By 1984 there existed the two related CHARTs, with the attendant need to make any change twice, once for the shore VAX system and again for the sea HP system. With the phasing out of the HP systems, it made sense to have available a single CHART for use on shore (VAX 11/780) and at sea (MicroVAX).

Formerly those who wished to have a CHART plot made a request to the staff of the DDL. Now that DDL is staffed by one person, most users must make their own plots. Each user has had to learn the intricacies of the old CHART, an investment of time that was expensive and discouraged potential users. Providing a revised CHART appeared to be an economical move, and one that would provide easy access for those wanting plots.

The interactive nature of the new CHART and the online documentation will make the new CHART more widely available to users, even to those who have seldom used a computer.

At the same time, the revision of the program provided an opportunity to incorporate new features in the program. Computers have changed radically in the past ten years, both in access methods and in available software. The CHART package in use in 1984 reflected the computer characteristics and some of the limitations of the 1960's. Input was by card image entry, and users were required to set "sense switches" to indicate options. The program is now used interactively, with the user responding to online prompts. Each response further defines and restricts the user's options, so that only those options available to the defined procedure are offered. Defaults are available so that a plot may be produced when the user enters only the data source, format and plot bounds.

The new CHART is enhanced by software provided by WHOI's Information Processing & Communications Laboratory (IPCL). Formerly the Mercator grid was the only choice for all plot tracks. Now plots can be made on a choice of 14 projections, and coastlines may be drawn. A simple plot still can be made on a Mercator projection with no coastlines. A subset of CHART sufficient for use at sea on geophysical cruises makes plots on Mercator projection and accepts input only from those formats habitually used in the collection of raw data.

USING CHART

Defaults

CHART has three levels of default choices.

- 1) Accept all the defaults that are provided. You then respond to a minimum of questions, and make a Mercator plot at a scale of 1"/degree of longitude.
- 2) Select specific default values in each line prompt, indicated by angle brackets, by typing carriage return. Prompts flagged with an asterisk must be answered.
- 3) Construct a file of default values that replaces those provided by CHART. In this mode you will then accept all defaults and respond to a minimum of online prompts. This method is useful when CHART must be run repeatedly with a fixed set of unique default values.

At the start of the CHART run, you may choose to have a list of all the default values displayed on the terminal. To see these values before running CHART, type the file CHTPARM.DOC.

Tailoring default values

The parameter file containing the defaults, fully annotated, is:

```
SEA1:[GNG.CHART]DEFAULTS.DAT
```

To set up a unique set of default values, copy this file into your directory, and edit it to suit your application. Then run CHART with the command

```
$ RUN SEA1:[GNG.CHART]CHART
```

Grid requirements

The map bounds and the dimensions of the plotting device to be used must be entered. (This applies only to a hard copy device; screen display on a graphics terminal is automatically scaled.) If the plot does not fit, you will be required to change either the scale or the bounds.

There are two "hooks" for formats defined by the user. For repeated runs and for economy of operation, you may access your data via a format that has been known traditionally as "GETX". Alternatively, you may define your format at run time by responding to a series of prompts from CHART.

Input requirements

You must enter the input data filename, and indicate the type of data (navigation, bathymetry, magnetics, etc.) and the format. If you choose to use all defaults, in most cases you will have no choice about how the data are displayed.

Formats

A standard suite of formats and list of data values evolved over the years for geophysical applications at WHOI. In addition, merged formats were introduced recently to facilitate data exchange between scientific institutions. At your request, CHART will display a list of the format names available. To see this list before running CHART, type the file FORMATS.DOC. You may instead elect to use some format of your own which differs from the standard formats recognized by CHART.

When GETX is used, a tailored version of CHART is created in your own directory. An example of a GETX read subroutine is available in SEA1:[GNG.CHART]GETX.DOC. You must write a GETX.FOR subroutine, compile it, and then execute the following link command:

```
$ @SEA1:[GNG.CHART]GETX.LNK
```

Your directory now will contain an executable CHART that is ready to run.

Entering format specifications in the online mode while CHART is running is useful when you have only one plot to make from nonstandard input format, thus saving the time that would have been required to write a GETX. In addition, there are cases for which the online mode is the only choice. GETX does not have provision for a cruise identifier, and does require time-date values; in the online mode you may annotate the cruise identifier, and you may plot a navigation line and data annotations without providing time values. There are some constraints. At the minimum, you must enter the format to read geographical positions. The data may also include time, day, month, year, cruise identifier, and one other data type. The data may be either unblocked or blocked. However, two options available to all other input formats -- using only part of an input data file, and the facility to create data records interactively to fill time gaps -- are not available when online format entry is chosen.

Data Values

The annotation of data values as they occur along a navigation line or at specified sites in the ocean is usually the reason for making a CHART plot. The program displays a menu of data values appropriate to the format that has been chosen, and you are expected to enter the code number related to that value in the menu display. Code numbers not relevant to your choice of data type will not be displayed. When CHART

is run online, you do not need to know the code number which retrieves your data type -- it is displayed in the menu. However, a batch file created to run CHART must include the appropriate code.

Each data type has a specific code number which remains the same for all input formats. For example, "ship's heading" is always code number 10, whether it appears in SEAG format, in MBATR, in CALCM, or in NGSDC. The only exception to this procedure is the availability of an extra data type, 8 - generic user data, which is available to those who define their own input formats, either GETX or online.

In former CHART versions the code for a specific data value varied from one format to the next. Veteran users who want to update their batch routines with the new code numbers (formerly called NX numbers) should see NXKEY.DOC. A list of all data types available, grouped by discipline, is in DATAVALS.DOC.

The time span between any two data points clearly affects the accuracy of the plotted navigation line. Those who suspect their data files contain unacceptable time gaps may choose either to omit drawing a connecting line between those plotted points, or to key in time and position values to fill a time gap while CHART is running. The time gap to be tested is entered online.

CONCLUSION

The aim of rewriting CHART has been to ease the pedestrian chore of plot production. To this end, several documentation files, those with the extent .DOC, are available in BLUE::SEA1:[GNG.CHART]. Users who are content with the defaults provided will not need to read these .DOC files. Every effort has been made to provide screen prompts that are understandable to the novice. But doubtless some obscurities have slipped into the package. And perhaps a "bug" remains, despite countless tests. And so we make these recommendations to those in trouble:

**Look through the documentation files that follow.

**Scan the examples of CHART runs.

**Call Ann Martin, Clark 114, 548-1400 Ext. 2581.

DOCUMENTATION FILES

(BLUE::SEA1:[GNG.CHART]*.DOC)

CHART.DOC

gives an abbreviated online introduction to the uses of CHART.

Program CHART Documentation
April 1985

Program CHART produces plots of navigation tracks or data points in a choice of 14 projections, with time or data annotations made at given locations. The program is maintained by the Digital Data Library, G & G, and is available for general use. Please call Ann Martin, at Extension 2581, if you have comments about the program or require more information. To use CHART, type

\$ RUN SEA1:[GNG.CHART]CHART

Earlier CHART programs have been used by the DDL for many years. This version retains most of the historical CHART features, as provided by Lee Gove, Chris Wooding, Bob Groman et al.

CHART now has been completely revised to:

- 1) Be self-documenting, so that the general user can take advantage of CHART options without repeated reference to documentation,
- 2) Use WHOI-IPCL plotting subroutines (MAPPACK) to plot coastlines, and to plot any one of 14 projections,
- 3) Accept a format for input data that is defined by the user at runtime.

CHART creates two output files in the user's account: a file named ECHO.DAT; and a Plotdfer file FOR095.DAT which will be used to make the plot. The ECHO file is displayed at the user's terminal during the CHART run to list the options that have been chosen and the data file used. The Plotdfer file may be plotted on the Calcomp with the command \$CPLOT, at a VT-100 graphics terminal or a Tektronix with the command \$TPLOT, or on any plotting device supported by IPCL's Plotdfer scheme.

DOCUMENTATION:

CHART.DOC	-- this file
CHTPARM.DOC	-- shows the defaults in effect
DATAVALS.DOC	-- description of data value codes
FORMATS.DOC	-- list of input data formats
GETX.DOC	-- instructions for building GETX
NXKEY.DOC	-- key for converting old to new data value codes

USE:

Menus with user prompts appear in the sequence:

- Grid Set-up
- Input Format and Data Description
- Plotting of Data Points
- Annotation of Data Points

The user is offered a choice of 21 data input formats. However, any format containing coordinates may be used; the format also may be defined by the user at run time. As an alternative, for repeated uses and for economy of operation, you may access your data via a user routine known traditionally as GETX. Instructions for building a GETX routine and for creating a unique CHART that incorporates this GETX are in GETX.DOC.

A plot can be produced by accepting all or some of the defaults available. Prompts flagged with an asterisk (*) must be answered. To other questions you may type <CR> to get the default value.

If CHART is to be run repeatedly with a fixed set of parameters that differs from the standard default, the user may construct a temporary parameter file dedicated to that use in order to avoid answering the unstarred prompts. To use this option, copy SEA1:[GNG.CHART]DEFAULTS.DAT to the directory where you are working. Change the default values to suit your application, and then run CHART with

```
$ RUN SEA1:[GNG.CHART]CHART
```

CHTPARM.DOC

shows some of the defaults available in the CHART package.
 However, if the user tailors the defaults by making a unique
 DEFAULTS.DAT, this CHTPARM list will no longer be applicable.

 GRID DEFAULTS

>PROJECTION	-	Mercator
>COASTLINES	-	none
>CORNERS	-	no registration marks
>BORDER	-	no data offset
>GRIDLINES	-	each 1 degree
>MINUTE TICS	-	none
>SCALE	-	1 inch/degree of longitude
>DEGREE LABELS	-	0.105 inches high
>PLOT DATA	-	yes

 DATA INPUT DEFAULTS

>USE ENTIRE DATA INPUT FILE

 DATA PLOTTING DEFAULTS

>NO SYMBOL AT DATA POINT
 >CONNECT ALL DATA POINTS WITH A STRAIGHT LINE
 >ANNOTATE EVERY DATA POINT THAT WILL FIT WITHOUT OVERWRITING
 >ANNOTATE ON RIGHT SIDE OF TRACK, AT RIGHT ANGLES
 >ANNOTATE THE CRUISE NAME EACH TIME IT CHANGES
 >SIZE OF ANNOTATION - 0.07 INCHES HIGH
 >ANNOTATE DATA VALUES AS INTEGERS

DATAVALS.DOC

gives a full list of the data values (and their code numbers) available for annotation. During a CHART run, the menu of optional data values that is displayed includes only those values relevant to the format that has been chosen.

TIME

- 1 - time
- 2 - day
- 3 - month
- 4 - year
- 5 - time zone
- 8 - user data (generic)

NAVIGATION

- 10 - ship's heading, degrees
- 11 - negative ship's heading, degrees
- 12 - ship speed, knots
- 13 - ship speed north-south, knots
- 14 - ship speed east-west, knots
- 15 - negative speed, knots
- 16 - current heading, degrees
- 17 - current speed, knots
- 18 - current speed north-south, knots
- 19 - current speed east-west, knots
- 20 - azimuth of current, degrees
- 21 - cumulative distance, nautical miles
- 22 - cumulative distance, kilometers

BATHYMETRY

- 30 - corrected depth, fathoms
- 31 - corrected depth, meters
- 32 - uncorrected depth, fathoms
- 33 - uncorrected depth, meters
- 34 - negative corrected depth, fathoms
- 35 - negative corrected depth, meters
- 36 - negative uncorrected depth, fathoms
- 37 - negative uncorrected depth, meters
- 38 - depth correction, fathoms
- 39 - depth correction, meters
- 40 - Matthews' table number
- 41 - two-way uncorrected water depth travel time, seconds

MAGNETICS

- 50 - observed total magnetic field, gammas
- 51 - theoretical regional field, gammas
- 52 - xxxx of total magnetic field, gammas
- 53 - xxx of total magnetic field, gammas
- 54 - xx of total magnetic field, gammas
- 55 - xxx.x of total magnetic field, gammas
- 56 - xx.x of total magnetic field, gammas
- 57 - geomagnetic anomaly, gammas
- 58 - depth or altitude of geomagnetic sensor, meters

GRAVITY

- 70 - observed total gravity, milligals
- 71 - total gravity minus 970 000 milligals
- 72 - free air anomaly, milligals
- 73 - negative free air anomaly, milligals
- 74 - Bouguer anomaly, milligals
- 75 - Eotvos correction, milligals
- 76 - negative Eotvos correction, milligals
- 77 - xxx of total gravity, milligals
- 78 - xx of total gravity, milligals
- 79 - xxx.x of total gravity, milligals
- 80 - height

SPECIAL FORMATS

- 100- NGSDC navigation point identification, alpha
- 101- NGSDC fix description, alpha
- 110- MGD77 bathymetry correction code
- 111- MGD77 bathymetry type code
- 112- MGD77 total geomagnetic field for sensor 1, gammas
- 113- MGD77 total geomagnetic field for sensor 2, gammas
- 114- MGD77 geomagnetic field sensor number
- 115- MGD77 geomagnetic field diurnal correction, gammas
- 116- MGD77 quality code for gravity
- 117- MGD77 quality code for geomagnetics
- 118- MGD77 quality code for bathymetry
- 119- MGD77 quality code for navigation
- 120- MGD77 position type code')
- 130- 10 degree latitude key - GWS, GDW, EDF
- 131- 1 degree latitude key - GWS, GDW, EDF
- 132- decimal part of latitude - GWS, GDW, EDF
- 133- 10 degree longitude key - GWS, GDW, EDF
- 134- 1 degree longitude key - GWS, GDW, EDF
- 135- decimal part of longitude - GWS, GDW, EDF
- 136- logical unit number containing the data - GWS, GDW, EDF
- 137- record number for the data point - GWS, GDW, EDF
- 140- GSUM source code
- 141- GSUM elevation
- 142- GSUM depth
- 143- GSUM terrain correction
- 144- GSUM complete Bouguer anomaly
- 145- GSUM regional free anomaly

150- GWS "JSORC" key
160- GDW geoid height
161- GDW geoid uncertainty
162- GDW geoid bias
163- GDW deflection from vertical
164- GDW "JDAY"
165- GDW "JSEC"
166- GDW "JDECSEC"
167- GDW "JCODE"
168- GDW "JPASS"
169- GDW "JTRAK"
170- COSA data value
171- COSA record number
180- EDF focal depth, kilometers
181- EDF depth control(A,D,G,N,or S in A1 format)
182- EDF average body wave magnitude, MB
183- EDF average surface wave magnitude, MS
184- EDF component Z or H (A1 format)
185- EDF data source (A3 format)

FORMATS.DOC

shows data types and their associated format names that are recognized by CHART. This list may be displayed during a CHART run.

****GEOLOGY & GEOPHYSICS FORMATS****

Final Merged Formats, Single Data types:

Navigation	--	FIXSE, DDLS (blocked FIXSE)
Bathymetry	--	MBATR, DDLS (blocked MBATR)
Gravity	--	SEAG1, SEAG2, DDLS (blocked SEAG), GSUM
Magnetics	--	CALCM, DDLS (blocked CALCM)

Acquisition Formats:

Bathymetry	--	EASYD, SEDEP
Gravity	--	AQUI
Magnetics	---	AQUI, EASYM

Merged Formats, All Data types: NGSDC, MGD77, MGDWHOI

Bowin Gravity Lab: GWS, GDW, COSA, EDF

User-specified Formats: On-line input, GETX

GETX.DOC

is a template for the writing of the subroutine GETX to access data that is in some format not recognized by CHART.

```

C Subroutine GETX is a routine written by the user to access
C variable data input by CHART. The user makes a unique version
C of CHART in his own directory. An example follows after the
C double row of asterisks.
C
C**Notes on GETX:
C
C     Arguments KTAPE,NX,NY,NZ,NW are defined by the calling
C routine. They must be included, as shown below.
C     DATAX is defined in this routine, and returns the data
C value to be plotted.
C     DATAY,DATAZ,DATAX are arguments needed by calling programs
C other than CHART. They are not defined here. Include them in
C the argument list.
C     RLAT and RLON are real variables defined as the latitude
C and longitude values, in radians.
C     KDA,KMO,KYR,KHM are integer variables defined in this
C routine as the day, month, year and time of the data value (NX)
C being returned. They take the values:
C         1 <= KDA <= 31
C         1 <= KMO <= 12
C         KYR - last 2 digits, as 86 for 1986
C         0 <= KHM <= 2359
C     IEOD is an integer variable returned by this routine to
C indicate the end-of-file. Set IEOD to 1 at end-of-data. Otherwise
C set IEOD to 0 (zero).
C
C**Making your own CHART:
C
C     Compile GETX, link it using SEA1:[GNG.CHART]GETX.LNK, and
C run the CHART that now will exist in your own directory.
C
C*****

```

```

C*****
C      SUBROUTINE GETX(KTAPE,NX,NY,NZ,NW,DATAX,DATAY,DATAZ,
C      $          DATAW,RLAT,RLON,KDA,KMO,KYR,KHM,IEDD)
C
C      This version of GETX user format
C      includes values for (uncorrected) depths and station numbers.
C
C      October 1985
C      Ann Martin
C
C      Application:  Yellow Sea data
C
C      Plot Values:
C          NX = 1  time
C          NX = 8  station numbers (generic)
C          NX = 33 bathymetry
C
C*****
C
C      DIMENSION PLT(50)
C      DATA DEGRAD/1.745329E-2/
C
C      IEDD = 0
C      KHM = 0
C
C      READ(KTAPE,15,ERR=90,END=99)KDA,KMO,KYR,KHM,DLAT,DLATMIN,
C      $          DLON,DLONMIN,DPTH,ISTA
15      FORMAT(3I2,I4,5X,F3.0,1X,F7.3,F4.0,1X,F6.2,T41,F5.1,T49,I2)
C
C      KYROUT = KYR
C      KMOOUT = KMO
C      KDAOUT = KDA
C
C      RLAT = (DLAT + (DLATMIN/60.)) * DEGRAD
C      RLON = (DLON + (DLONMIN/60.)) * DEGRAD
C
C
C      IF( NX .LT. 0 .OR. NX .GT. 33) THEN
20          WRITE(6,20)
          FORMAT(/5X,'NX value not valid')
          STOP
      ELSEIF (NX .EQ. 0) THEN
          DATAX = 0.0
          RETURN
      ELSE
          PLT(1) = FLOAT(KHM)
          PLT(8) = ISTA
          PLT(33) = DPTH
C
          DATAX = PLT(NX)
      ENDIF

```

```
C          RETURN
C
C  errors
90          CONTINUE
           WRITE(6,901) IOSTAT
901         FORMAT(/5X,'Error reading input. Err code= ',I3)
           STOP
C
C  End of file
99          CONTINUE
           WRITE(6,991) KDAOUT, KMOOUT, KYROUT
991         FORMAT(/5X,'EOF after date: ',3I2)
           IEOD=1
           RETURN
           END
```

SAMPLE CHART RUNS

ALL default values are accepted in this example. Note that prompts preceded by an asterisk (*) are answered.

\$ RUN SEA1:[GNG.CHART]CHART

PROGRAM CHART -- VAX VERSION 1.01

Digital Data Library, G&G Department
Date of Run: 1-DEC-86 09:35

This program makes a deferred plot file (FOR095.DAT) which may be displayed later. A plot can be produced by accepting all or some of the defaults available. Screen prompts will allow you to enter your plotting requests.

Prompts flagged with an asterisk(*) must be answered.

Default Options:

All defaults - Minimum prompts are displayed.
Line defaults - All prompts are displayed. Defaults are enclosed in angle brackets < >.
Type <CR> to get the default value.

>>Do you want to see the list of default values? (Y/<N>):

>>Do you want to use ALL the default values? (<Y>/N):

Enter map bounds(degrees) for N,S,W,E.

South of Equator and West of Greenwich are "-".

Enter either whole or decimal degrees

(eg, 33,30.21,-67.4,-65).

*>> 42,38,-69,-62.5

>>Enter width(inches) of your plotter (eg,8.5):

>>Enter length of paper (99 for drum plotters):

YOUR GRID PLOT REQUESTS INCLUDE:

PROJECTION: Mercator

DEGREE SPACING: 1.0 degree

SCALE: 1.000 inch(es)

BOUNDS: 42.00

-69.00 -62.50

38.00

If these are correct, enter <CR> to continue.
 Otherwise enter anything else to try again.
 >>

*****DATA INPUT*****

Enter label for left margin of plot
 >>TEST USING ALL DEFAULTS

*>>Enter input data filename (eg, A2093.DAT): KNORR83.FIX

>>Do you want to see a list of the format names used
 to read data for CHART? (Y/<N>):

DATA DESCRIPTION

- 1 - Navigation
- 2 - Bathymetry
- 3 - Gravity
- 4 - Magnetism
- 5 - Earthquake data
- 6 - Merged (NGSDC or MGD77)
- 7 - User-supplied

*>>Enter the code number which describes your data: 1

Navigation Values

- 1 - time
- 2 - day
- 3 - month
- 4 - year
- 5 - time zone

*>>Navigation value: 4

>>Are you using a file in DDLS format? (Y/<N>):

>>Your input data must be in FIXSE format.
 Is this correct? (<Y>/N):

YOUR DATA PLOTTING REQUESTS INCLUDE:

PLOT LABEL: TEST USING ALL DEFAULTS

INPUT DATA FILENAME: KNORR83.FIX

THE ENTIRE FILE IS TO BE PLOTTED

CLASS OF DATA: NAVIGATION

FORMAT NAME: FIXSE

VALUE ANNOTATED: 4

TRACK POINTS CONNECTED (YES/NO): YES

ANNOTATE EVERY 1 PLOTTED POINT

If these are correct, enter <CR> to continue
the CHART plotting operation; otherwise enter
anything else.

>>

Please wait. Data file KNORR83.FIX is being read.

NUMBER OF POINTS READ =	266
NUMBER OF POINTS PLOTTED =	136
NUMBER OF POINTS ANNOTATED =	56

>>Do you want to make another plot on the same grid? (Y/<N>):

END OF CURRENT PLOT

FORTRAN STOP

LINE DEFAULT VALUES are accepted in this example. At the prompt for accepting all defaults, the user has typed "N".

```
$ RUN SEA1:[GNG.CHART]CHART
```

```
PROGRAM CHART -- VAX VERSION 1.01
```

```
Digital Data Library, G&G Department  
Date of Run: 1-DEC-86 10:07
```

This program makes a deferred plot file (FOR095.DAT) which may be displayed later. A plot can be produced by accepting all or some of the defaults available. Screen prompts will allow you to enter your plotting requests.

Prompts flagged with an asterisk(*) must be answered.

Default Options:

All defaults - Minimum prompts are displayed.
Line defaults - All prompts are displayed. Defaults are enclosed in angle brackets < >.
Type <CR> to get the default value.

>>Do you want to see the list of default values? (Y/<N>):

>>Do you want to use ALL the default values? (<Y>/N): N

*****GRID DESCRIPTION*****

>>Enter code for projection type, or -1 to see the available options (<1>): -1

PROJECTION CODES

- 1 - Mercator <default>
- 2 - Miller
- 3 - Square
- 4 - Cylindrical Stereographic
- 5 - Lambert Cylindrical
- 6 - Flat Polar
- 7 - Sinusoidal
- 8 - Mollweide
- 9 - Lambert Conic Conformal
- 10 - Universal Transverse Mercator

--Azimuthal--

- 13 - Equal Area
- 14 - Equidistant
- 15 - Orthographic
- 16 - Stereographic

>>Enter code for projection type, or -1 to see the available options (<1>):

The grid choices for your projection are:

- 0 - Draw borders only (no grid)
- 1 - Draw border and grid lines <default>
- 2 - Draw two reference lines only
- 3 - Circle border for polar azimuthal displays

>>Enter code choice for the grid:

Gridline spacing may be every Nth degree or minute.

>>Enter a value for N <1.0>:

>>Do you want corner registration marks one degree outside the bounds? (Y/<N>):

>>Do you wish to offset the edge of your data N.N degrees inside each border? (Y/<N>):

>>Do you wish to have tic marks? (Y/<N>):

You have 3 choices for the labelling of degrees:

- 1 - no labelling
- 2 - labelling, height 0.105" <default>
- 3 - labelling; your choice of height

>>Please enter one of the labelling codes:

SCALING CODES

- 3 - Map distance(inches) per degree of longitude
- 4 - Scale ratio(earth to map) at base parallel

*>>Enter code for scaling choice: 3

>>Enter map distance(inches) per longitude degree: .5

The degrees on your grid may be:

- 1 - decimal degrees <default>
- 2 - degrees and minutes

>>Please enter your code choice:

Enter map bounds(degrees) for N,S,W,E.

South of Equator and West of Greenwich are "-".

Enter either whole or decimal degrees

(eg, 33,30.21,-67.4,-65).

*>> 42,38,-69,-60

>>Enter width(inches) of your plotter (eg,8.5):
 >>Enter length of paper (99 for drum plotters):
 >>Do you wish to draw coastlines? (Y/<N>):
 >>Do you want to plot data on this grid? (<Y>/N):

YOUR GRID PLOT REQUESTS INCLUDE:

PROJECTION: Mercator
 DEGREE SPACING: 1.0 degree
 SCALE: 0.500 inch(es)
 BOUNDS: 42.00
 -69.00 -60.00
 38.00

If these are correct, enter <CR> to continue.
 Otherwise enter anything else to try again.
 >>

*****DATA INPUT*****

Enter label for left margin of plot
 >>TEST USING LINE DEFAULTS

*>>Enter input data filename (eg, A2093.DAT): KNORR83.FIX
 >>Do you want to see a list of the format names used
 to read data for CHART? (Y/<N>):

DATA DESCRIPTION

- 1 - Navigation
- 2 - Bathymetry
- 3 - Gravity
- 4 - Magnetism
- 5 - Earthquake data
- 6 - Merged (NGSDC or MGD77)
- 7 - User-supplied

*>>Enter the code number which describes your data: 1

Navigation Values

- 1 - time
- 2 - day
- 3 - month
- 4 - year
- 5 - time zone

*>>Navigation value: 2

You may use the entire file, or a subset defined by start and end dates.

>>Use the entire file?(<Y>/N):

>>Are you using a file in DDLS format? (Y/<N>):

>>Your input data must be in FIXSE format.
Is this correct? (<Y>/N):

*****DATA LABELS & SYMBOLS*****

The symbol plotted at the data point may be:

- 0 - none <default>
- 1 - circle
- 2 - dot
- 3 - "+"
- 4 - "X"
- 5 - tick

>>Enter code number for data point symbol: 4

>>Do you want to connect each plotted point with a straight line? (<Y>/N):

Data Gaps - If your data contains long time gaps between points, you have three options:

- 1 - ignore time gaps, connect points <default>
- 2 - do not connect those points, or
- 3 - key in time and position values to fill the gap and connect the old and new points

>>Enter code for your data choice:

>>Annotate data values? (<Y>/N):

>>To annotate every Nth point, enter a value for N (<1>):

>>To annotate N digits after a decimal point, enter value for N. For integer, enter -1 (<-1>):

>>To enlarge character height, enter a factor which will be multiplied by 0.07 inches (<1>):

Annotations are prevented from overplotting the previous 7 annotations. However, you may choose to prevent all instances of overplotting by using INCOREMAP. Warning - this takes time and space.
 >>Do you wish to use INCOREMAP? (Y/<N>):

TRACK ANNOTATION PLACEMENT

1 - on right side of track <default>
 2 - on left side of track
 3 - alternately on left and right sides of track
 >>Enter code for annotation placement:

ANGLE OF ANNOTATIONS

1 - at right angles to incremental track <default>
 2 - horizontal
 3 - vertical
 4 - horizontal or vertical, depending on direction
 5 - invert annotation on track heading 091 to 269
 >>Enter code for annotation angle:

YOUR DATA PLOTTING REQUESTS INCLUDE:

PLOT LABEL: TEST USING LINE DEFAULTS

INPUT DATA FILENAME: KNORR83.FIX

THE ENTIRE FILE IS TO BE PLOTTED

CLASS OF DATA: NAVIGATION

FORMAT NAME: FIXSE

VALUE ANNOTATED: 2

TRACK POINTS CONNECTED (YES/NO): YES

ANNOTATE EVERY 1 PLOTTED POINT

If these are correct, enter <CR> to continue the CHART plotting operation; otherwise enter anything else.
 >>

Please wait. Data file KNORR83.FIX is being read.

NUMBER OF POINTS READ =	266
NUMBER OF POINTS PLOTTED =	261
NUMBER OF POINTS ANNOTATED =	71

>>Do you want to make another plot on the same grid? (Y/<N>):

END OF CURRENT PLOT

INPUT ERRORS are introduced deliberately in this run to show how
CHART responds.

\$ RUN SEA1:[GNG.CHART]CHART

PROGRAM CHART -- VAX VERSION 1.01

Digital Data Library, G&G Department
Date of Run: 1-DEC-86 10:14

This program makes a deferred plot file (FOR095.DAT)
which may be displayed later. A plot can be produced
by accepting all or some of the defaults available.
Screen prompts will allow you to enter your plotting
requests.

Prompts flagged with an asterisk(*) must be answered.

Default Options:

All defaults - Minimum prompts are displayed.
Line defaults - All prompts are displayed. Defaults
are enclosed in angle brackets < >.
Type <CR> to get the default value.

>>Do you want to see the list of default values? (Y/<N>):

>>Do you want to use ALL the default values? (<Y>/N):

Enter map bounds(degrees) for N,S,W,E.

South of Equator and West of Greenwich are "-".

Enter either whole or decimal degrees

(eg, 33,30.21,-67.4,-65).

*>> 33

##You have not entered the required parameter(s).
Try again.

Enter map bounds(degrees) for N,S,W,E.

South of Equator and West of Greenwich are "-".

Enter either whole or decimal degrees

(eg, 33,30.21,-67.4,-65).

*>> 41,38,-66,-62

>>Enter width(inches) of your plotter (eg,8.5):

>>Enter length of paper (99 for drum plotters):

YOUR GRID PLOT REQUESTS INCLUDE:

PROJECTION: Mercator

DEGREE SPACING: 1.0 degree

SCALE: 1.000 inch(es)

BOUNDS: 41.00

-66.00 -62.00

38.00

If these are correct, enter <CR> to continue.

Otherwise enter anything else to try again.

>> NO

PROGRAM CHART -- VAX VERSION 1.01

Digital Data Library, G&G Department

Date of Run: 1-DEC-86 10:15

This program makes a deferred plot file (FOR095.DAT) which may be displayed later. A plot can be produced by accepting all or some of the defaults available. Screen prompts will allow you to enter your plotting requests.

Prompts flagged with an asterisk(*) must be answered.

Default Options:

All defaults - Minimum prompts are displayed.

Line defaults - All prompts are displayed. Defaults are enclosed in angle brackets < >. Type <CR> to get the default value.

>>Do you want to see the list of default values? (Y/<N>):

>>Do you want to use ALL the default values? (<Y>/N):

Enter map bounds(degrees) for N,S,W,E.

South of Equator and West of Greenwich are "-".

Enter either whole or decimal degrees

(eg, 33,30.21,-67.4,-65).

*>> 42,39,-66,-61

YOUR GRID PLOT REQUESTS INCLUDE:

PROJECTION: Mercator

DEGREE SPACING: 1.0 degree

SCALE: 1.000 inch(es)

BOUNDS: 42.00

-66.00 -61.00

39.00

If these are correct, enter <CR> to continue.
 Otherwise enter anything else to try again.
 >>

*****DATA INPUT*****

Enter label for left margin of plot
 >>TEST SHOWING CHART RESPONSE TO ERRORS

*>>Enter input data filename (eg, A2093.DAT):

##You have not entered the required parameter(s).
 Try again.

*>>Enter input data filename (eg, A2093.DAT): KNORR83.FIX

>>Do you want to see a list of the format names used
 to read data for CHART? (Y/<N>):

DATA DESCRIPTION

- 1 - Navigation
- 2 - Bathymetry
- 3 - Gravity
- 4 - Magnetics
- 5 - Earthquake data
- 6 - Merged (NGSDC or MGD77)
- 7 - User-supplied

*>>Enter the code number which describes your data:

##Your code number is illegal. Please try again.

DATA DESCRIPTION

- 1 - Navigation
- 2 - Bathymetry
- 3 - Gravity
- 4 - Magnetics
- 5 - Earthquake data
- 6 - Merged (NGSDC or MGD77)
- 7 - User-supplied

*>>Enter the code number which describes your data: 1

Navigation Values

- 1 - time
- 2 - day
- 3 - month
- 4 - year
- 5 - time zone

*>>Navigation value:

>>Are you using a file in DDLS format? (Y/<N>):

>>Your input data must be in FIXSE format.
Is this correct? (<Y>/N):

YOUR DATA PLOTTING REQUESTS INCLUDE:

PLOT LABEL: TEST SHOWING CHART RESPONSE TO ERRORS

INPUT DATA FILENAME: KNORR83.FIX

THE ENTIRE FILE IS TO BE PLOTTED

CLASS OF DATA: NAVIGATION

FORMAT NAME: FIXSE

VALUE ANNOTATED: 0

TRACK POINTS CONNECTED (YES/NO): YES

ANNOTATE EVERY 1 PLOTTED POINT

If these are correct, enter <CR> to continue
the CHART plotting operation; otherwise enter
anything else.

>> MMM

MESSAGE - MESSAGE - MESSAGE

You have cancelled your CHART request.

At the prompt enter STOP to quit, or MORE to try again.

*>> STOP

NUMBER OF POINTS READ =	0
NUMBER OF POINTS PLOTTED =	0
NUMBER OF POINTS ANNOTATED =	0

>>Do you want to make another plot on the same grid? (Y/<N>):

END OF CURRENT PLOT

ONLINE FORMAT is used to enable CHART to access data that is not in standard format.

\$ RUN SEA1:[GNG.CHART]CHART

PROGRAM CHART -- VAX VERSION 1.01

Digital Data Library, G&G Department
Date of Run: 1-DEC-86 10:21

This program makes a deferred plot file (FOR095.DAT) which may be displayed later. A plot can be produced by accepting all or some of the defaults available. Screen prompts will allow you to enter your plotting requests.

Prompts flagged with an asterisk(*) must be answered.

Default Options:

All defaults - Minimum prompts are displayed.
Line defaults - All prompts are displayed. Defaults are enclosed in angle brackets < >.
Type <CR> to get the default value.

>>Do you want to see the list of default values? (Y/<N>):

>>Do you want to use ALL the default values? (<Y>/N):

Enter map bounds(degrees) for N,S,W,E.

South of Equator and West of Greenwich are "-".

Enter either whole or decimal degrees

(eg, 33,30.21,-67.4,-65).

*>> 42,39,-69,-62

>>Enter width(inches) of your plotter (eg,8.5):

>>Enter length of paper (99 for drum plotters):

##Your plot is too wide for your plotter.

You must change either the scale or the bounds.

*>>Change scale? (Y/N): Y

SCALING CODES

- 3 - Map distance(inches) per degree of longitude
- 4 - Scale ratio(earth to map) at base parallel

*>>Enter code for scaling choice: 3

>>Enter map distance(inches) per longitude degree: .5

YOUR GRID PLOT REQUESTS INCLUDE:

PROJECTION: Mercator

DEGREE SPACING: 1.0 degree

SCALE: 0.500 inch(es)

BOUNDS: 42.00

-69.00 -62.00

39.00

If these are correct, enter <CR> to continue.

Otherwise enter anything else to try again.

>>

*****DATA INPUT*****

Enter label for left margin of plot

>>TEST USING ONLINE FORMAT ENTRY

*>>Enter input data filename (eg, A2093.DAT): KNORR83.FIX

>>Do you want to see a list of the format names used
to read data for CHART? (Y/<N>): Y

GEOLOGY & GEOPHYSICS FORMATS

Final Merged Formats, Single Data types:

Navigation	--	FIXSE, DDLS (blocked FIXSE)
Bathymetry	--	MBATR, DDLS (blocked MBATR)
Gravity	--	SEAG1, SEAG2, DDLS (blocked SEAG), GS
Magnetics	--	CALCM, DDLS (blocked CALCM)

Acquisition Formats:

Bathymetry	--	EASYD, SEDEP
Gravity	--	AQUI
Magnetics	---	AQUI, EASYM

Merged Formats, All Data types: NGSDC, MGD77, MGDWHOI

Bowin Gravity Lab: GWS, GDW, COSA, EDF

User-specified Formats: On-line input, GETX

To continue type <CR>:

DATA DESCRIPTION

- 1 - Navigation
- 2 - Bathymetry
- 3 - Gravity
- 4 - Magnetics
- 5 - Earthquake data
- 6 - Merged (NGSDC or MGD77)
- 7 - User-supplied

*>>Enter the code number which describes your data: 7

Please choose one of the code numbers below:

- 1 - GETX
- 2 - online input

*>>User code: 2

User-Format Values

- 1 - time
- 2 - day
- 3 - month
- 4 - year
- 8 - user data (generic)

*>>User value: 4

>>Is this input file blocked? (Y/<N>):

*>>Enter your logical record length: 44

>>Your input data must be in ONLINE format.
Is this correct? (<Y>/N):

FORMAT ENTRY ROUTINE
January 1985 version

CHART requires each fix field to contain a
plus(+) or minus(-) in the first position.
>>Do your positions have signs?(Y/N): Y

You may enter specifications for any of the following format descriptors. Be sure to enter a fix. Type the key numbers that you need, one at a time, to be prompted for your entry. End with "99".

USER DATA FORMAT MENU

- 1 - Latitude, decimal degrees
- 2 - Longitude, decimal degrees
- 3 - Latitude, degrees and decimal minutes
- 4 - Longitude, degrees and decimal minutes
- 5 - Time: year
- 6 - Time: month
- 7 - Time: day
- 8 - Time: hour-minute
- 9 - Cruise identifier (eg, A2093L02)
- 10 - Another data value (eg, for Shot Instant)
- 99 - End of format description

>>Menu number: 3

>>Enter start column for latitude: 16

>>Enter format for whole degree(eg,I3): I3

>>Enter start column for minutes: 20

>>Enter format for minutes (eg,F5.2): F7.3

USER DATA FORMAT MENU

- 1 - Latitude, decimal degrees
- 2 - Longitude, decimal degrees
- 3 - Latitude, degrees and decimal minutes
- 4 - Longitude, degrees and decimal minutes
- 5 - Time: year
- 6 - Time: month
- 7 - Time: day
- 8 - Time: hour-minute
- 9 - Cruise identifier (eg, A2093L02)
- 10 - Another data value (eg, for Shot Instant)
- 99 - End of format description

>>Menu number: 4

>>Enter start column for longitude: 27

>>Enter format for whole degree(eg,I3): I4

>>Enter start column for minutes: 32

>>Enter format for minutes (eg,F5.2): F7.3

USER DATA FORMAT MENU

- 1 - Latitude, decimal degrees
- 2 - Longitude, decimal degrees
- 3 - Latitude, degrees and decimal minutes
- 4 - Longitude, degrees and decimal minutes
- 5 - Time: year
- 6 - Time: month
- 7 - Time: day
- 8 - Time: hour-minute
- 9 - Cruise identifier (eg, A2093L02)
- 10 - Another data value (eg, for Shot Instant)
- 99 - End of format description

>>Menu number: 5

>>Enter start column for year: 7

>>Enter format for year (eg, I2): I2

USER DATA FORMAT MENU

- 1 - Latitude, decimal degrees
- 2 - Longitude, decimal degrees
- 3 - Latitude, degrees and decimal minutes
- 4 - Longitude, degrees and decimal minutes
- 5 - Time: year
- 6 - Time: month
- 7 - Time: day
- 8 - Time: hour-minute
- 9 - Cruise identifier (eg, A2093L02)
- 10 - Another data value (eg, for Shot Instant)
- 99 - End of format description

>>Menu number: 99

YOUR DATA PLOTTING REQUESTS INCLUDE:

PLOT LABEL: TEST USING ONLINE FORMAT ENTRY

INPUT DATA FILENAME: KNORR83.FIX

THE ENTIRE FILE IS TO BE PLOTTED

CLASS OF DATA: USER-SUPPLIED

FORMAT NAME: ONLINE

VALUE ANNOTATED: 4

TRACK POINTS CONNECTED (YES/NO): YES

ANNOTATE EVERY 1 PLOTTED POINT

If these are correct, enter <CR> to continue
the CHART plotting operation; otherwise enter
anything else.
>>

Please wait. Data file KNORR83.FIX is being read.

NUMBER OF POINTS READ =	266
NUMBER OF POINTS PLOTTED =	215
NUMBER OF POINTS ANNOTATED =	56

>>Do you want to make another plot on the same grid? (Y/<N>):

END OF CURRENT PLOT

FORTRAN STOP

TIME GAPS BETWEEN DATA POINTS more than N hours apart -- set here to 2 -- are found, and the user is prompted to key in values to fill each gap. Note that the standard default package cannot be accepted in the second prompt, and that the Data Gap prompt is answered with "3".

\$ RUN SEA1:[GNG.CHART]CHART

PROGRAM CHART -- VAX VERSION 1.01

Digital Data Library, G&G Department
Date of Run: 1-DEC-86 10:27

This program makes a deferred plot file (FOR095.DAT) which may be displayed later. A plot can be produced by accepting all or some of the defaults available. Screen prompts will allow you to enter your plotting requests.

Prompts flagged with an asterisk(*) must be answered.

Default Options:

All defaults - Minimum prompts are displayed.
Line defaults - All prompts are displayed. Defaults are enclosed in angle brackets < >.
Type <CR> to get the default value.

>>Do you want to see the list of default values? (Y/<N>):

>>Do you want to use ALL the default values? (<Y>/N): N

*****GRID DESCRIPTION*****

>>Enter code for projection type, or -1 to see the available options (<1>):

The grid choices for your projection are:

- 0 - Draw borders only (no grid)
- 1 - Draw border and grid lines <default>
- 2 - Draw two reference lines only
- 3 - Circle border for polar azimuthal displays

>>Enter code choice for the grid:

Gridline spacing may be every Nth degree or minute.

>>Enter a value for N <1.0>:

>>Do you want corner registration marks one degree outside the bounds? (Y/<N>):

>>Do you wish to offset the edge of your data N.N degrees inside each border? (Y/<N>):

>>Do you wish to have tic marks? (Y/<N>):

You have 3 choices for the labelling of degrees:

- 1 - no labelling
- 2 - labelling, height 0.105" <default>
- 3 - labelling; your choice of height

>>Please enter one of the labelling codes:

SCALING CODES

- 3 - Map distance(inches) per degree of longitude
- 4 - Scale ratio(earth to map) at base parallel

*>>Enter code for scaling choice: 3

>>Enter map distance(inches) per longitude degree: 2

The degrees on your grid may be:

- 1 - decimal degrees <default>
- 2 - degrees and minutes

>>Please enter your code choice:

Enter map bounds(degrees) for N,S,W,E.

South of Equator and West of Greenwich are "-".

Enter either whole or decimal degrees

(eg, 33,30.21,-67.4,-65).

*>> 42,40,-71,-68

>>Enter width(inches) of your plotter (eg,8.5): 30

>>Enter length of paper (99 for drum plotters): 99

>>Do you wish to draw coastlines? (Y/<N>):

>>Do you want to plot data on this grid? (<Y>/N):

YOUR GRID PLOT REQUESTS INCLUDE:

PROJECTION: Mercator

DEGREE SPACING: 1.0 degree

SCALE: 2.000 inch(es)

BOUNDS: 42.00

-71.00 -68.00

40.00

If these are correct, enter <CR> to continue.

Otherwise enter anything else to try again.

>>

*****DATA INPUT*****

Enter label for left margin of plot

>>TEST USING ONLINE DATA INPUT

*>>Enter input data filename (eg, A2093.DAT): KNORR83.FIX

>>Do you want to see a list of the format names used
to read data for CHART? (Y/<N>):

DATA DESCRIPTION

- 1 - Navigation
- 2 - Bathymetry
- 3 - Gravity
- 4 - Magnetism
- 5 - Earthquake data
- 6 - Merged (NGSDC or MGD77)
- 7 - User-supplied

*>>Enter the code number which describes your data: 1

Navigation Values

- 1 - time
- 2 - day
- 3 - month
- 4 - year
- 5 - time zone

*>>Navigation value: 1

You may use the entire file, or a subset defined by start and end dates.

>>Use the entire file?(<Y>/N):

>>Are you using a file in DDLS format? (Y/<N>):

>>Your input data must be in FIXSE format.
Is this correct? (<Y>/N):

*****DATA LABELS & SYMBOLS*****

TIME DATA

- 1 - Real times, from data file <default>
- 2 - Interpolated whole hours

>>Enter code for time choice:

The symbol plotted at the data point may be:

- 0 - none <default>
- 1 - circle
- 2 - dot
- 3 - "+"
- 4 - "X"
- 5 - tick

>>Enter code number for data point symbol: 4

>>Do you want to connect each plotted point with a straight line? (<Y>/N):

Data Gaps - If your data contains long time gaps between points, you have three options:

- 1 - ignore time gaps, connect points <default>
- 2 - do not connect those points, or
- 3 - key in time and position values to fill the gap and connect the old and new points

>>Enter code for your data choice: 3

*>>Enter minimum gap as decimal hours (eg,2.1): 2.0

>>Annotate data values? (<Y>/N):

>>To annotate every Nth point, enter a value for N (<1>):

>>To annotate N digits after a decimal point, enter value for N. For integer, enter -1 (<-1>):

>>To enlarge character height, enter a factor which will be multiplied by 0.07 inches (<1>):

Annotations are prevented from overplotting the previous 7 annotations. However, you may choose to prevent all instances of overplotting by using INCOREMAP. Warning - this takes time and space.

>>Do you wish to use INCOREMAP? (Y/<N>):

TRACK ANNOTATION PLACEMENT

- 1 - on right side of track <default>
- 2 - on left side of track
- 3 - alternately on left and right sides of track

>>Enter code for annotation placement:

ANGLE OF ANNOTATIONS

- 1 - at right angles to incremental track <default>
- 2 - horizontal
- 3 - vertical
- 4 - horizontal or vertical, depending on direction
- 5 - invert annotation on track heading 091 to 269

>>Enter code for annotation angle:

YOUR DATA PLOTTING REQUESTS INCLUDE:

PLOT LABEL: TEST USING ONLINE DATA INPUT

INPUT DATA FILENAME: KNORR83.FIX

THE ENTIRE FILE IS TO BE PLOTTED

CLASS OF DATA: NAVIGATION

FORMAT NAME: FIXSE

VALUE ANNOTATED: 1

TRACK POINTS CONNECTED (YES/NO): YES

TIME GAPS:

THE PROGRAM WILL TEST FOR 2.0 HOURS.

YOU WILL ENTER ONLINE DATA POINTS.

ANNOTATE EVERY 1 PLOTTED POINT

PLOT REAL TIMES READ FROM DATA FILE

If these are correct, enter <CR> to continue the CHART plotting operation; otherwise enter anything else.

>>

Please wait. Data file KNORR83.FIX is being read.

*A data gap has been found.

The new position is more than 2.0 hours from the previous position.
The old position and time were:

TIME: 20- 9-80 1640
LATITUDE: 41 27.85
LONGITUDE: -70 -26.60

The new position and time are:

TIME: 20- 9-80 2000
LATITUDE: 41 25.62
LONGITUDE: -69 -41.10

At the prompts, enter a midway time and position:

>>TIME (DD,MM,YY,HHMM): 20,09,80,1800
>>LATITUDE (eg,-30 57.35) :41 26.13
>>LONGITUDE(eg,-105 53.72): -70 -10.0

*A data gap has been found.

The new position is more than 2.0 hours from the previous position.
The old position and time were:

TIME: 20- 9-80 2106
LATITUDE: 41 24.73
LONGITUDE: -69 -21.45

The new position and time are:

TIME: 21- 9-80 0
LATITUDE: 41 18.13
LONGITUDE: -68 -46.70

At the prompts, enter a midway time and position:

>>TIME (DD,MM,YY,HHMM): 20,09,80,2300
>>LATITUDE (eg,-30 57.35) :41 19.00
>>LONGITUDE(eg,-105 53.72): -68 -59.0

*A data gap has been found.

The new position is more than 2.0 hours from the previous position.
The old position and time were:

TIME: 9-10-80 530
LATITUDE: 41 17.18
LONGITUDE: -69 -20.75

The new position and time are:

TIME: 9-10-80 737
LATITUDE: 41 25.95
LONGITUDE: -69 -43.31

At the prompts, enter a midway time and position:

>>TIME (DD,MM,YY,HHMM): 9,10,80,0700
>>LATITUDE (eg,-30 57.35) :41 42.44
>>LONGITUDE(eg,-105 53.72): -69 -41.31

NUMBER OF POINTS READ = 266
NUMBER OF POINTS PLOTTED = 13
NUMBER OF POINTS ANNOTATED = 7

>>Do you want to make another plot on the same grid? (Y/<N>):

END OF CURRENT PLOT

FORTTRAN STOP

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November 21, 1986

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16. Abstract (Limit: 200 words) Computer program CHART produces plots of navigation tracks and data points in a choice of 14 projections where navigation coordinates are defined. It was written specifically for the plotting and annotation of geological and geophysical data; however, any data which includes geographical coordinates can be plotted. The package was designed for broad flexibility of applications and for ease of use. Parameters are entered interactively; the user responds to online prompts worded in plain English. Several levels of default choices are incorporated; a user who takes all defaults can produce a plot by entering only the data source and format, and plot bounds. CHART can be used on any Digital Equipment Corporation VAX machine running VMS. It uses plotting subroutines (MAPPACK) maintained by the WHOI Information Processing & Communications Laboratory (IPCL) to draw projection grids and coastlines, and to locate the position for each data point. The program creates a file of Calcomp plotting instructions for subsequent plotting. Some additional features of CHART: coastlines, multiple data sets on one grid; empty grid without data points; corner registration marks; calculation of plot size; user-defined input format; online entry of data points where large time gaps occur; online documentation.			
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