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SEDIMENT SIZE ANALYSIS SYSTEM USER GUIDE

by

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TABLE OF CONTENTS:

INTRODUCTION:

Sediment size data is obtained from samples submitted to the Atlantic Geoscience Centre (A.G.C.) sediment laboratories, which perform a variety of experiments on the samples and records the results.[1] The results must be put through a series of operations to produce meaningful statistical reports. The means for automating the production of these reports is the Sediment Analysis System.

The system will produce up to three output reports containing the results of statistical operations selected by the user: a complete data listing report, a neatly formatted summary report, and computer drawn graphs.

The system is made up of one main procedure, popularly known as "READY". The procedure resides in the A.G.C. software library and is publicly accessible. To use the system, the user should have a basic understanding of the B.I.O. Cyber mainframe computer. For any assistance, contact A.G.C.'s Data Section, located on the fifth floor Murray building.

[1]Experimental techniques include Settling towers, Sedigraph^{R}, Coulter^{R} counters, pipette, sieve and centrifugation. The enclosed analysis is, however, independent of the technique and is responsive only to the correct format of the sediment size data. Data generated from the sediment laboratories is normally from automated computerized systems. Lab officers occasionally enter header information and some size data through communicating micro-computers. The data is then verified within the laboratories and transferred to the B.I.O. Cyber mainframe computer.

2. PRODUCTS:

Three statistical operations can be performed on the input size data. The first is the calculation of statistical parameters using the method of moments: mean, standard deviation, skewness and kurtosis. The second is the frequency of occurrence (by weight) of grains in specified grain size intervals. The third is the calculation of the percentage of clay, silt, sand, and gravel within each sample. The results from one or all of these statistical operations can be recorded and subsequently displayed in one or all of the three output reports.

The first report type is the comprehensive Data Report. The user's original data, most intermediate calculations and all statistical results are included in this report. If the user requests graphs to be plotted, then the directions to the plotter are also included. A log of the computer session which executes the procedure is appended to the end of the report in case of unforseen errors. If the user does not request the Data Report only the terminal session computer log will be produced. If requested, this report can be used to verify the data supplied by the A.G.C. sediment laboratories

The second report type is the Summary Report. The report summarizes and prints the results of the statistical operations in a higher quality format. The log of the terminal session will not be included. This report can be used as a final copy for reference or publishing purposes.

The third report includes graphic representation of the frequency and percentage results. Four separate frequency graphs are available for each sample: Linear vs Logarithmic, Logarithmic vs Logarithmic, Cumulative Frequency, or Probability Frequency. Each sample can have all four graphs plotted separately, or have any combination of the graphs overlaying each other. Each

sample plot is accompanied by a pie diagram which displays the composition percentages of clay, silt, sand and gravel.

The user will be requested to supply a file name as a prefix for the files used to store the reports. The prefix can be 1 to 5 characters long and must begin with a letter. To distinguish between the reports, each has a distinct suffix appended to the prefix file name. The suffixes used to identify the three different reports are:

"DA" - for the data report.
"GL" - for the summary report.
"PL" - for the graphic report.

In the past, most users have used the same file name as the submitted sediment size data file. This makes it easy to identify the report files, and keeps all the files together on the accounts catalog listing.

Three other optional files with distinct suffixes ("ST", "MD", "CL") may be produced. These files are in machine code and therefore unreadable. They are used as input to other programs. For details and formats on these optional files, refer to the SEDIMENT ANALYSIS SYSTEM MANUAL kept on file with Program Support Subdivision/Data Section, Systems Development.

All the reports produced are saved on the user's account. They may be sent to a printer or to a plotter at the user's discretion. A copy of the terminal session log, along with the plotter directions (if any), are automatically sent to computer services central printer and should be retrieved from the user's output bin.

3. SEDIMENT SIZE DATA FILES:

The results of the sediment size analyses from the A.G.C. sediment laboratories are recorded on computer files. The results are in the form of weight percentages, calculated for specified grain size intervals within the sample. The sediment lab will provide the user with the name of the sediment data file and the account number which the file is kept on (presently IAP6000), on a form which also records the users original requests.

The sediment size data file should be processed on the Sediment Analysis System account IAP6000 (password available from PSS, Data Section), or the user may transfer it to their own account.

To transfer a file to your account, log in and type:

```
GET,filename/UN=IAP6000  (cr)        *NOTE - (cr) means carriage return
SAVE,filename  (cr)
```

Unfortunately the analysis system can not accept a sediment size data file name longer then five characters. If the name assigned to the file by the sediment laboratories is greater then five characters, it will be necessary to change the name.

To rename a file, type in:

```
GET,filename  (cr)
RENAME,filename=newfilename  (cr)
SAVE,newfilename  (cr)
```

If the data is not in a computer file, the user can enter it directly through a terminal into the Sediment Analysis System. The user will be prompted for the data and given an opportunity to correct any mistakes before processing is attempted. The data will be saved on the account for future use. Refer to Appendix B for a step by step explaination.

The Sediment Analysis System will slightly modify the original data file by adding a few lines to the beginning. The user will be prompted to provide a new file name for this new data file. In the past, most users have found it convenient to use the same name as the original file. The new file will be written over the old file and can be used for future resubmission through the analysis system.

After the user is finished with the data file, it should be placed in the account's archive for preservation. Any file left inactive for 30 days within an account is automatically purged from the computer.

To save a file on the archive, type in:

```
GET,filename (cr)
ARCPUT,filename.comments (cr)
```

The comments are optional, but are useful for identifying the file's contents and the owner. The data files can be retrieved at any time in the future, usually within a few hours. A manual on the use of the Leicester Archiving Package (LAP) is available from the Bedford Institute of Oceanography Computing Services, reference Bicomp Note #7.

4. SEDIMENT ANALYSIS:

To use the Sediment Analysis System, the user must log on to the B.I.O. Cyber mainframe computer. The system programs are kept on the A.G.C library account under the file name "SEDSIZE". The Sediment Analysis System account IAP6000 always has the most up to date copy of the programs but if the user would like a copy of the procedure on their account, or does not have the most up to date copy, it can be retrieved and saved by typing:

```
GET,PROCFIL=SEDSIZE/UN=IAGCLIB (cr)
SAVE,PROCFIL (cr)
```

*WARNING: If the file "PROCFIL" already exists on the account, it will have to be purged before the new one can be saved. Check that no important Procfil procedures are lost by doing so.

This will retrieve the file "SEDSIZE" from the A.G.C. library and save it in the file "PROCFIL" on the users account (the file name "PROCFIL" is used to make the initiation commands of the system shorter).

To initiate the Sediment Analysis System, type:

```
-READY (cr)
```

The user is welcomed to the system and the interrogation begins. The questions in the query are self explanatory, but for a guideline, read through the step by step explanation attached (Appendix A). Do not worry about answering any of the questions incorrectly. If the answer does not make any sense to the computer, the warning bell sounds and the question is repeated. If at any time the user would like to quit, the procedure can be terminated by typing a "CTRL T (cr)"; hold down the control key and type a "T" and a carriage return.

5. GETTING RESULTS ON PAPER:

The results are stored in computer files within the user's account. It is up to the user to decide whether a hard copy of the results should be made. This allows the user to select which printer or plotter to employ and also to produce copies at their leisure.

Within the file "PROCFIL" are two procedures for producing hard copies of the results.

To send the data report and/or the summary report to the central line printer located in Computing Services, type:

-PRINT,,filename (cr)

If you do not include the file name, you will be prompted for it. It will take at least 30 minutes before the printouts will appear in the user's output bin.

The graphic report can be sent to either the Xynetics (flat bed plotter), or the Zeta plotter (drum plotter). The Zeta plotter has a much faster turn around time where as the Xyenetics has the capability of using wet ink for publishing quality plots.

To send the graphic report file to the plotter, type:

-HCOPY (cr)

The user will be prompted for a name and telephone extension for identification, along with the file name which contains the graphs. The user will also be asked whether to use wet ink or ball point (wet ink is not available for the Zeta plotter) and how many graphs there are in the file. Remember, if you requested four graph drawings for each sample, you will have to enter four times the number of samples.

Depending on the number of graphs being plotted and how busy the Xynetics plotter is, the user should be able to retrieve the graphs from the plot bin the following day.

The printout and plot bins are located in the remote printer room located on the third floor Holland building. Computing services can be consulted to gain entrance through the coded door lock.

APPENDIX A

STEP BY STEP EXPLANATION:

WELCOME TO THE SEDIMENT ANALYSIS SYSTEM

1. ENTER AN ESTIMATED RUN TIME (IN SECONDS). "?" FOR HELP.
   (ANS) (a number less then 9999)
   (ANS) ? (an explanation and a guideline appears)

2. ENTER A PREFIX FILE NAME (MAX = 5 LETTERS). "?" FOR HELP.
   (ANS) (a file name starting with a letter and less then or equal to 5 letters)
   (ANS) ? (an explanation of the file name appears)

```
*****************************
*  BEGIN SEDIMENT ANALYSIS  *
*****************************
```

Answer all the questions requiring a "YES" or "NO" answer with a "Y" for "YES", and a "N" for "NO".

3. WOULD YOU LIKE AN EXPLANATION OF THIS PROCEDURE? (Y/N)

   (ANS) Y (an explanation of the analysis procedure and possible products appears)

   (ANS) N

4. THE SEDIMENT ANALYSIS QUESTIONS ALREADY HAVE DEFAULT ANSWERS.
   WOULD YOU LIKE TO KNOW WHAT THEY ARE? (Y/N)

   (ANS) Y (a list of the questions with the default answers appears)

   (ANS) N

5. WOULD YOU LIKE THE DATA REPORT GENERATED? (Y/N)
   ("?" FOR HELP).

   (ANS) Y (the original data, intermediate calculations and results are saved)
   (the terminal session log is appended in case of errors)
   (if graphs are requested, plotter instructions are included)

   (ANS) N (only the terminal session log is saved in the data report)

   (ANS) ? (an explanation of the data report appears)

QUESTIONS ABOUT YOUR SEDIMENT SIZE DATA

6. HOW MANY SAMPLES ARE IN YOUR DATA FILE?
IF YOU ARE NOT SURE, TYPE 1

(ANS) (any number less then 300 is allowed)
(the number of samples you supply will be counted. You will be asked if you would like to change the number processed to equal the number supplied later in the questioning)

7. WOULD YOU LIKE TO USE THE DEFAULT ANSWERS FOR THESE SAMPLES? (Y/N)

(ANS) Y (the questions receive the default answers)
(go to question 9)

(ANS) N (you will be required to answer all the questions)

8. IS YOUR SEDIMENT SIZE DATA ALREADY IN A FILE ON THIS ACCOUNT? (Y/N)

(ANS) Y (it is assumed that the data is already in a file)

(ANS) N (it is assumed that you will enter the data after the questions)

9. WHAT IS THE NAME OF YOUR DATA FILE?
(MAX = 5 LETTERS)

(ANS) (enter the file name of your sediment size data)
(a search for the file is made on the account. If not found, the question is repeated)
(if using default answers, go to question 27)
(if phi range exceeds default phi range, go to question 21)

*NOTE: Questions 10 and 11 are not asked if the data file has already gone through the analysis system.

10. IS THIS COULTER COUNTER DATA? (Y/N)

(ANS) Y (the system expects coulter counter data)

(ANS) N (the system expects regular weight frequency data)

11. YOUR DATA FILE HAS BEEN SLIGHTLY MODIFIED
ENTER A FILE NAME FOR YOUR NEW SEDIMENT SIZE DATA FILE.

(ANS) (any file name starting with a letter and less then or equal to 5 letters)
(in the past most users have used the same file name as the original sediment size data file. The new file is written over the old file)

12. IS THE GRAIN SIZE DATA IN PHI UNITS? (Y/N)
(NO ASSUMES MM UNITS)

(ANS) Y (grain sizes are calculated using phi units)

(ANS) N (grain sizes are calculated using mm units)

SELECTION OF STATISTICAL ANALYSES

13. WOULD YOU LIKE THE STATISTICAL PARAMETERS CALCULATED? (Y/N)
(MEAN, STANDARD DEVIATION, SKEWNESS AND KURTOSIS)

(ANS) Y (the parameters are calculated)

(ANS) N (the parameters are not calculated)

14. WOULD YOU LIKE FREQUENCY TABLES CALCULATED? (Y/N)

(ANS) Y (grain size frequencies are calculated and tables produced)

(ANS) N (no tables are produced)

15. WOULD YOU LIKE % MUD, SAND, GRAVEL, AND CLAY CALCULATED? (Y/N)

(ANS) Y (composition percentages are calculated)

(ANS) N (composition percentages are not calculated)

QUESTIONS ABOUT THE SUMMARY REPORT

16. WOULD YOU LIKE THE SUMMARY REPORT GENERATED? (Y/N)

(ANS) Y (the neatly formatted summary report is generated)

(ANS) N (go to question 20)

*NOTE: Questions 17, 18, and 19 are asked only if they were requested to be calculated.

17. ARE THE FREQUENCY TABLE CALCULATIONS TO BE INCLUDED? (Y/N)

(ANS) Y (the tables are put into the summary report)

(ANS) N

18. ARE THE % MUD, SAND, GRAVEL, AND CLAY TO BE INCLUDED? (Y/N)

(ANS) Y (the composition percentages are put in the summary report)

(ANS) N

19. ARE THE STATISTICAL PARAMETERS TO BE INCLUDED? (Y/N)

(ANS) Y (the parameters are put into the summary report)

(ANS) N

PLOTTING QUESTIONS

20. WOULD YOU LIKE GRAPH PLOTS TO BE GENERATED? (Y/N)

(ANS) Y (graphs for the samples will be produced)

(ANS) N (go to question 21, 22, and then 27)

21. THE PHI RANGE OF THE SAMPLES ON FILE filename IS x.x TO x.x
ENTER THE PHI RANGE YOU WOULD LIKE THE GRAPHS PLOTTED AT.
(EG. 3.0,8.0 WILL PRODUCE GRAPHS WITH A 3.0 TO 8.0 PHI AXIS BASE)
(RANGE IS -10.0 TO +18.0 PHI)

(ANS) (any two numbers between -10.0 and 18.0, separated by a comma)
(it is a good idea to make the range a little larger then the actual phi range, especially if using mid-point intervals)

22. ENTER THE LENGTH OF THE PHI AXIS TO USE FOR EACH GRAPH (IN INCHES).
(RANGE IS 1.0 TO 11.0 INCHES)

(ANS) (any number between 1.0 and 11.0 inches)
(the larger the graph, the easier it is to read. It can be scaled down by the plotter when actually drawn)

23. EACH SAMPLE CAN HAVE DIFFERENT GRAPH TYPES SPECIFIED OR ALL SAMPLES CAN BE PLOTTED USING THE SAME GRAPH TYPE.
DO YOU WANT TO SPECIFY DIFFERENT GRAPHIC OPTIONS FOR EACH INDIVIDUAL SAMPLE? (Y/N)

(ANS) Y (the plotting questions will be repeated for each sample)

(ANS) N (all samples will be plotted the same way)

24. UP TO FOUR GRAPH DRAWINGS CAN BE PRODUCED FOR EACH SAMPLE. EACH GRAPH CAN BE PLOTTED SEPARATELY OR OVERLAYING EACH OTHER. IF YOU SELECT ONE GRAPH DRAWING AND IN THE NEXT QUESTION SELECT THE PRODUCTION OF MORE THEN ONE GRAPH, THEY WILL ALL BE DRAWN AS ONE.
HOW MANY GRAPH DRAWINGS FOR EACH SAMPLE ARE TO BE GENERATED?

(ANS) (any number less then or equal to 4)
(if you select one drawing and in the next question ask for two graphs to be produced, they will be plotted over top of each other)

25. WHICH GRAPHS WOULD YOU LIKE PRODUCED?

1. LINEAR VS LOGARITHMIC
2. LOGARITHMIC VS LOGARITHMIC
3. CUMULATIVE FREQUENCY
4. PROBABILITY FREQUENCY

ANSWER WITH THE CORRESPONDING NUMBERS.
TYPE THE NUMBERS TOGETHER, NO SPACES, IN THE ORDER TO BE DRAWN

(ANS) (any combination of the 4 numbers. Eg. "24", "4213", etc)

26. ENTER B FOR BAR, S FOR SPIKE, OR L FOR LINE TO REPRESENT THE GRAPH STYLE TO USE FOR EACH GRAPH.
ENTER YOUR CHOICE IN THE SAME SEQUENCE AS YOU DID FOR THE LAST QUESTION.

(ANS) (any combination of the three letters)
(eg. if the graphs selected were "24" and you wanted the log log graph plotted using the spike style and the probability frequency plotted using the bar style, you would enter "SB")

27. IS THERE ANOTHER FILE OF SAMPLES TO BE PROCESSED? (Y/N)

(ANS) Y (go to question 6)

(ANS) N (interrogation ends, data submitted for processing)

***** END SEDIMENT ANALYSIS SYSTEM *****

APPENDIX B

STEP BY STEP EXPLANATION OF MANUAL DATA INPUT:

*** RAW DATA ENTRY ***

1. ARE THE DATA POINTS BASED ON THE LOW
   END POINTS OF EACH FREQUENCY INTERVAL?
   (A NO ANSWER IMPLIES THEY ARE MIDPOINT)

   (ANS) Y (intervals are calculated using end points)

   (ANS) N (intervals are calculated using mid points)

2. ENTER DATA AS
   POINT, FREQUENCY
   (EG. 3.75, 25.46)
   YOU MUST ENTER X SETS OF DATA
   (DON'T WORRY ABOUT MISTAKES,
   YOU'LL BE ABLE TO CORRECT THEM
   AFTER EACH SET IS ENTERED)

   HOW MANY POINT PAIRS ARE IN
   THIS SAMPLE?

   (ANS) (number of grain size intervals for this sample)

3. POINT, FREQUENCY...

   (ANS) (enter each of the size intervals and weight percentages)

4. IS THE DATA CORRECT?

   (ANS) Y (goto question 7)

   (ANS) N (goto question 5)

5. PRESS RETURN WHEN DONE CORRECTIONS
   ENTER THE ROW, COLUMN, CORRECTED VALUE IN THIS ORDER.

   (ANS) (enter the corrections. Repeats until empty carriage return)

*NOTE: QUESTION 6 IS ONLY ASKED IF "Y" WAS THE ANSWER FOR QUESTION 1.

6. ENTER THE END POINT OF THE LAST INTERVAL?

   (ANS) (the last endpoint interval of the sample)

7. ENTER THE IDENTIFIER FOR THIS SAMPLE
(TWO (2) LINES, MAXIMUM 60 CHARACTERS EACH)
TERMINATE THE LINE WITH A $ SIGN
(NEEDED TO CENTER THE TITLE)
FOR LINE X:

(ANS) (a title to used as a header for the reports. Repeats twice)

8. YOUR SEDIMENT SIZE DATA HAS BEEN SLIGHTLY MODIFIED.
ENTER IN A NEW FILE NAME IN WHICH TO SAVE THE DATA?

(ANS) (a file name of 5 or less characters)

*** SAVING RAW DATA FILE ***

APPENDIX C:

Answers to defaulted questions:

1.	Is the data file already on the account?	YES
2.	Is the data in phi units?	YES
3.	Are the statistic parameters to be calculated?	YES
4.	Are frequency tables to be produced?	YES
5.	Are the composition percentages calculated?	YES
6.	Is the summary report generated?	YES
7.	Are the frequency tables to be included?	YES
8.	Are the composition percentages to be included?	YES
9.	Are the statistic parameters to be included?	YES
10.	Are graphs to be produced?	YES
11.	Specify different graphic options for each sample?	NO
12.	Number of graph drawings for each sample?	1
13.	Phi range of phi axis?	-5.0 to 18.0

*NOTE. If the user's phi range exceeds this range, even though the default answers are being used, they will have the opportunity to change the phi range.

14.	Length of phi axis (in inches)?	11
15.	Types of graphs to produce?	2 & 4
16.	Symbols to use for graphs?	B & L

Appendix D1

Data Report Listing

DATA RANGE: 28

PHI UNITS

ORIGINAL DATA, POINTS:

-3.000	-.900	-.700	-.500	-.300
-.100	.100	.300	.500	.700
.900	1.100	1.300	1.500	1.700
1.900	2.100	2.300	2.500	2.700
2.900	3.100	3.300	3.500	3.700
3.900	4.100	8.000		

AND FREQUENCIES:

.040	.541	.000	.107	.344
.738	.918	.836	3.097	5.448
9.666	11.525	18.559	20.532	11.400
5.732	2.768	1.507	1.938	1.722
1.292	.431	.431	.215	.000
.215	.000	.000		

ORDERED RELATIVE FREQUENCY:

.0004000	.0054099	.0000000	.0010700	.0034399
.0073799	.0091798	.0083598	.0309694	.0544789
.0966581	.1152477	.1855863	.2053159	.1139977
.0573189	.0276794	.0150697	.0193796	.0172197
.0129197	.0043099	.0043099	.0021500	.0000000
.0021500	.0000000	.0000000		

ORDERED CUMULATIVE FREQUENCY:

.0004000	.0058099	.0058099	.0068799	.0103198
.0176996	.0268795	.0352393	.0662087	.1206876
.2173457	.3325933	.5181796	.7234955	.8374933
.8948121	.9224916	.9375612	.9569409	.9741605
.9870803	.9913902	.9957001	.9978500	.9978500
1.0000000	1.0000000	1.0000000		

ORDERED MID POINT VALUES:

-3.000	-.900	-.700	-.500	-.300
-.100	.100	.300	.500	.700
.900	1.100	1.300	1.500	1.700
1.900	2.100	2.300	2.500	2.700
2.900	3.100	3.300	3.500	3.700
3.900	4.100	8.000		

ORDERED INTERVAL POINT VALUES (PHI UNITS):

-4.050	-1.950	-.800	-.600	-.400
-.200	.000	.200	.400	.600
.800	1.000	1.200	1.400	1.600
1.800	2.000	2.200	2.400	2.600
2.800	3.000	3.200	3.400	3.600
3.800	4.000	6.050	9.950	

MEAN, STD DEV, KURTOSIS, SKEWNESS - PHI :

1.38306	.60436	6.32025	.10864

Appendix D1 (cont)

Computer Log Listing

```
15.08.05.SED,CM150000,T100.
15.08.05.$USER,IAP3801,.
15.08.05.ABSC,  B.
15.08.05.CHARGE,AGC1,BANKRUPT.
15.08.05. CUMULATIVE SRU LIMIT EXCEEDED.
15.08.05.ACSC,  P,      ,       2.009UNTS.
18.24.34.$PROLOG,PROC1,,.
18.24.35.$SETFS,PROC1/FS=AD.
18.24.35.PROC1.
18.24.35.$IFE,$$,NE.$$,END.
18.24.35.$ENDIF,END.
18.24.35.$REVERT.
18.24.36.ATTACH,DISSPLA/UN=LIBRARY.
18.24.36.COPY,INPUT,HANDLE.
18.24.37. EOI ENCOUNTERED.
18.24.37.REWIND,HANDLE.
18.24.37.GET,SEDCALC/UN=IAGCLIB.
18.24.37.LIBRARY,DISSPLA.
18.24.50.SEDCALC,HANDLE,DAVEDA,,DAVEGL,*PL=1000000.
18.26.45.  CM LWA+1 =116553B, LOADER USED 142600B
18.28.43.    STOP
18.28.43.    145600 MAXIMUM EXECUTION FL.
18.28.43.    43.356 CP SECONDS EXECUTION TIME.
18.28.43.SKIP,OVER.
18.28.43.ENDIF,OVER.
18.28.43.GET,AUTOSAV/UN=LIBRARY.
18.28.43.IFE,FILE(PLFILE,LO),JUMP1.
18.28.43.  STATUS,F.
18.28.43. ENQUIRY COMPLETE.
18.28.44.  AUTOSAV,PLFILE,DAVEPL.
18.28.45.$IFE,FILE(PLFILE,MS),LOST.
18.28.45.$SKIP,LOCAL.
18.28.45.$ENDIF,LOCAL.
18.28.45.$SET(R1=R1G)
18.28.45.$RETURN,QQQQQTT.
18.28.45.$ENQUIRE(FN=PLFILE,O=QQQQQTT)
18.28.45. ENQUIRY COMPLETE.
18.28.45.$XEDIT(QQQQQTT,L=0,I=QQQQQIN)
18.28.46.- XEDIT      00.00.01.     0.061      0.049
18.28.46.QQQQQTT.
18.28.46.$SET(R1G= 298)
18.28.46.$REVERT.CCL
18.28.46.$RETURN,QQQQQTT,QQQQQIN.
18.28.46.$IFE,R1G.EQ.0,ERRORS.
18.28.46.$ENDIF,ERRORS.
18.28.47.  $IFE,R1G.LE.448,DIRECT.
18.28.47.    $IFE,$DAVEPL$.EQ.$$,PNAMEI.
18.28.47.    $ELSE,PNAMEI.
18.28.47.      $PURGE(DAVEPL/NA)
18.28.47. DAVEPL NOT FOUND.
18.28.47.      $REPLACE(PLFILE=DAVEPL)
18.28.48.    $ENDIF,PNAMEI.
18.28.48.$ELSE,DIRECT.
18.28.48.$ENDIF,DIRECT.
18.28.48.$SET(R1G=R1)
18.28.48.$REVERT.    FILE PERMANENT
```

Summary Report Listing

CALCULATION RESULTS FOR
THE SAMPLE WITH THE IDENTIFIER:

CRUISE M. V. ARCTIC PROWLER FEB 17-22/85 OLYM 404 - 8000
SAMPLE NUMBER= 3213

RESULTS

MIDPOINTS MM	MIDPOINTS PHI	RELATIVE FREQUENCY PERCENTAGES	CUMULATIVE FREQUENCY PERCENTAGES
8.0	-3.00	.04	.04
1.9	-.90	.54	.58
1.6	-.70	.00	.58
1.4	-.50	.11	.69
1.2	-.30	.34	1.03
1.1	-.10	.74	1.77
.93	.10	.92	2.69
.81	.30	.84	3.52
.71	.50	3.10	6.62
.62	.70	5.45	12.07
.54	.90	9.67	21.73
.47	1.10	11.52	33.26
.41	1.30	18.56	51.82
.35	1.50	20.53	72.35
.31	1.70	11.40	83.75
.27	1.90	5.73	89.48
.23	2.10	2.77	92.25
.20	2.30	1.51	93.76
.18	2.50	1.94	95.69
.15	2.70	1.72	97.42
.13	2.90	1.29	98.71
.12	3.10	.43	99.14
.10	3.30	.43	99.57
.88E-01	3.50	.21	99.79
.77E-01	3.70	.00	99.79
.67E-01	3.90	.21	100.00
.58E-01	4.10	.00	100.00
.39E-02	8.00	.00	100.00

GRAIN SIZE BREAKDOWN

% GRAVEL	% SAND	% SILT	% CLAY	% MUD
.49	99.51	.00	.00	.00

STATISTICAL MEASURES

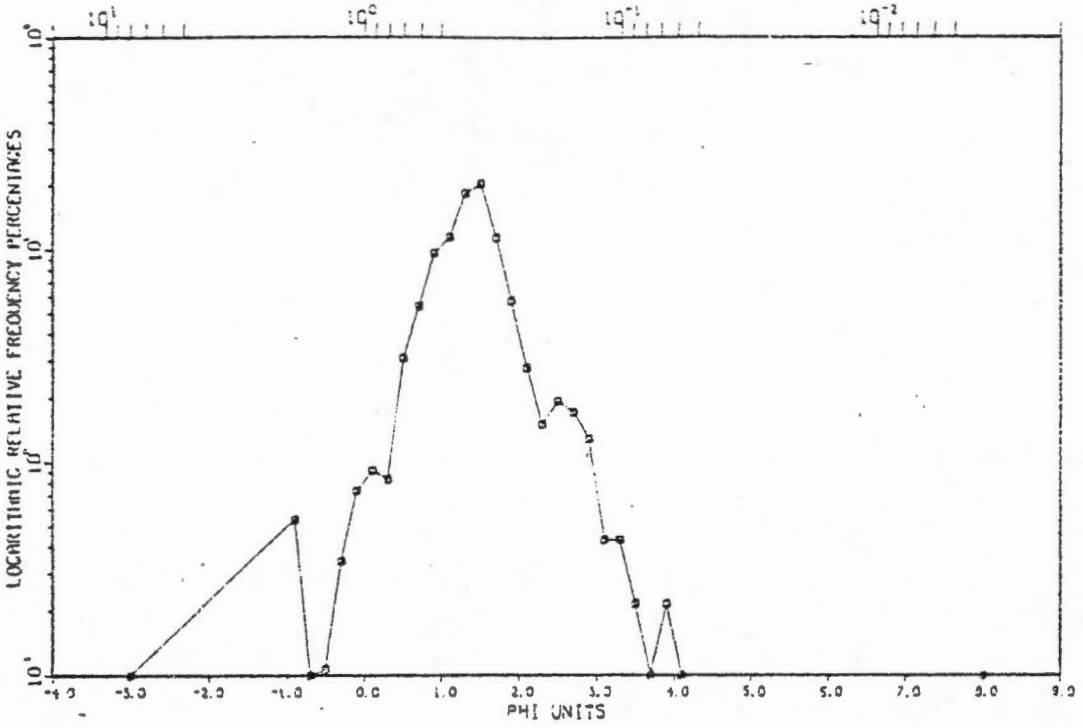
MEAN (PHI)	STANDARD DEVIATION (PHI)	KURTOSIS (NO DIM.)	SKEWNESS (NO DIM.)
1.38	.60	6.32	.11

Appendix D3

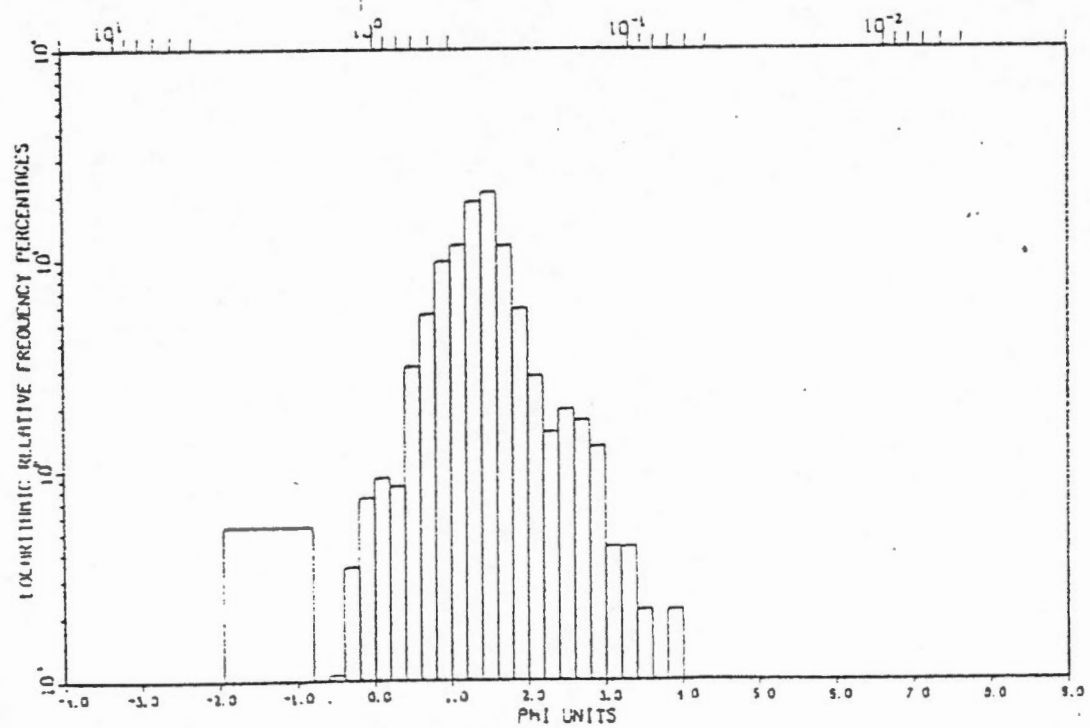
Graph Plot Illustrations

GRAPH STYLES:

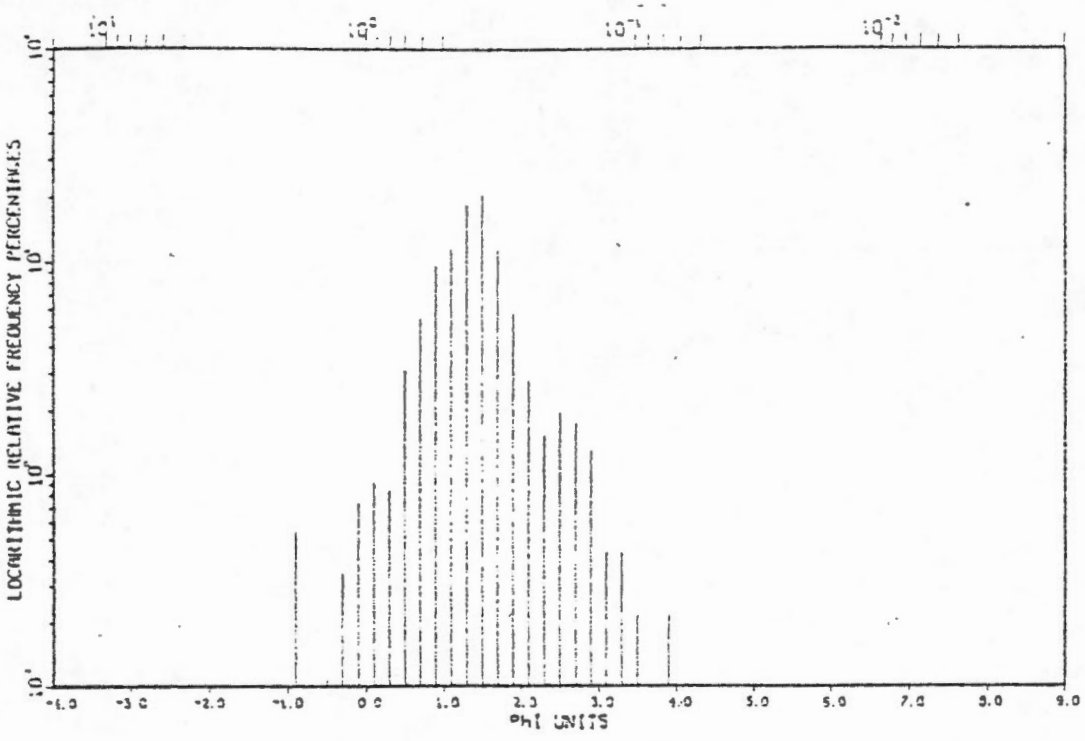
Line



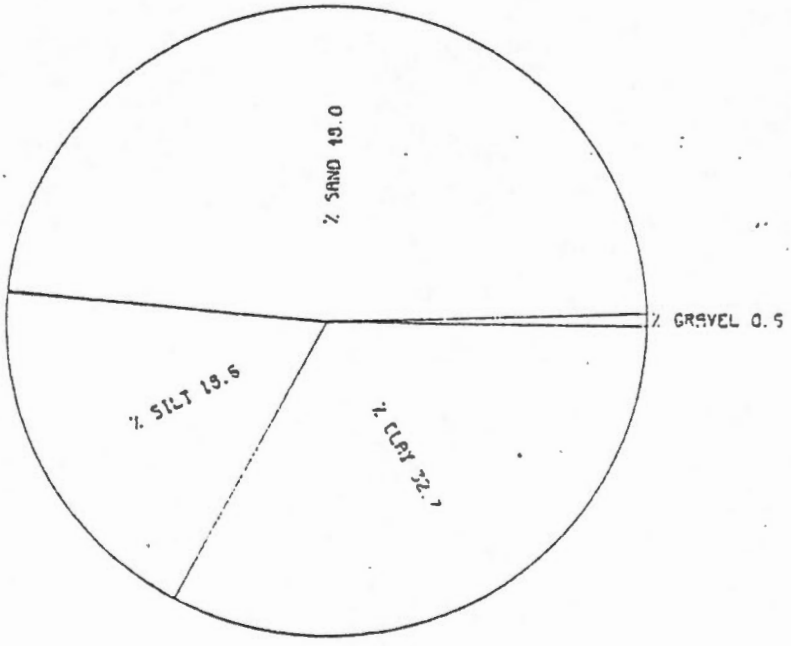
Bar



Spike

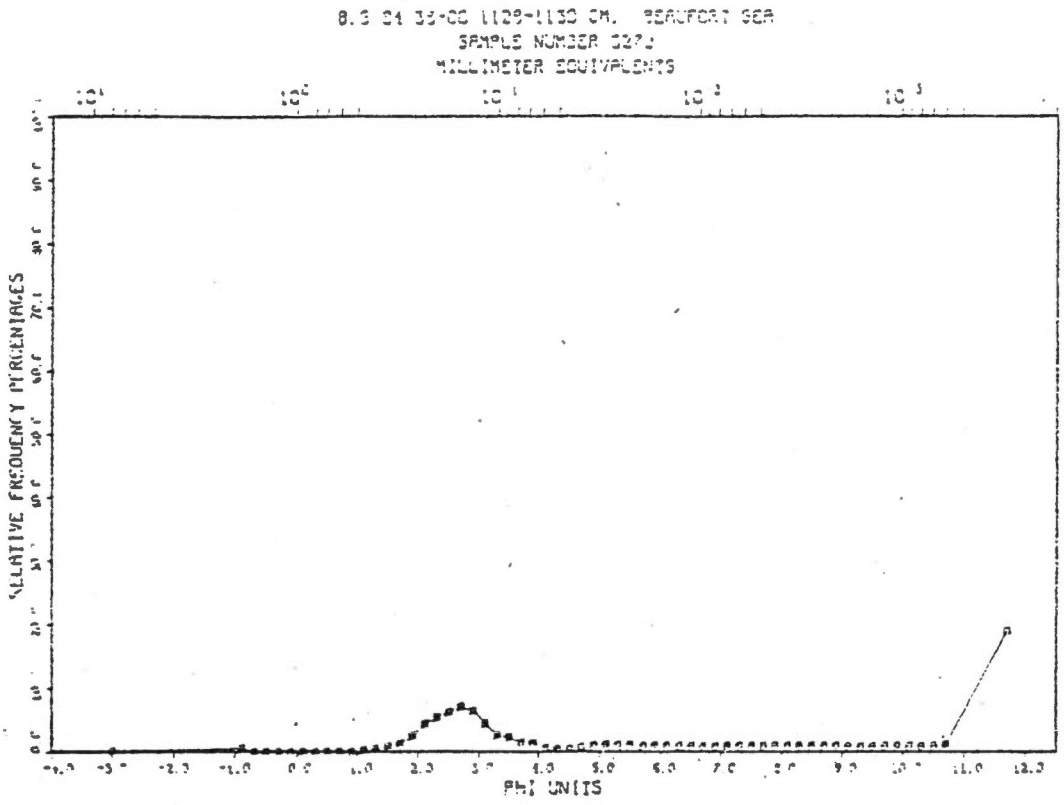


Pie Diagram

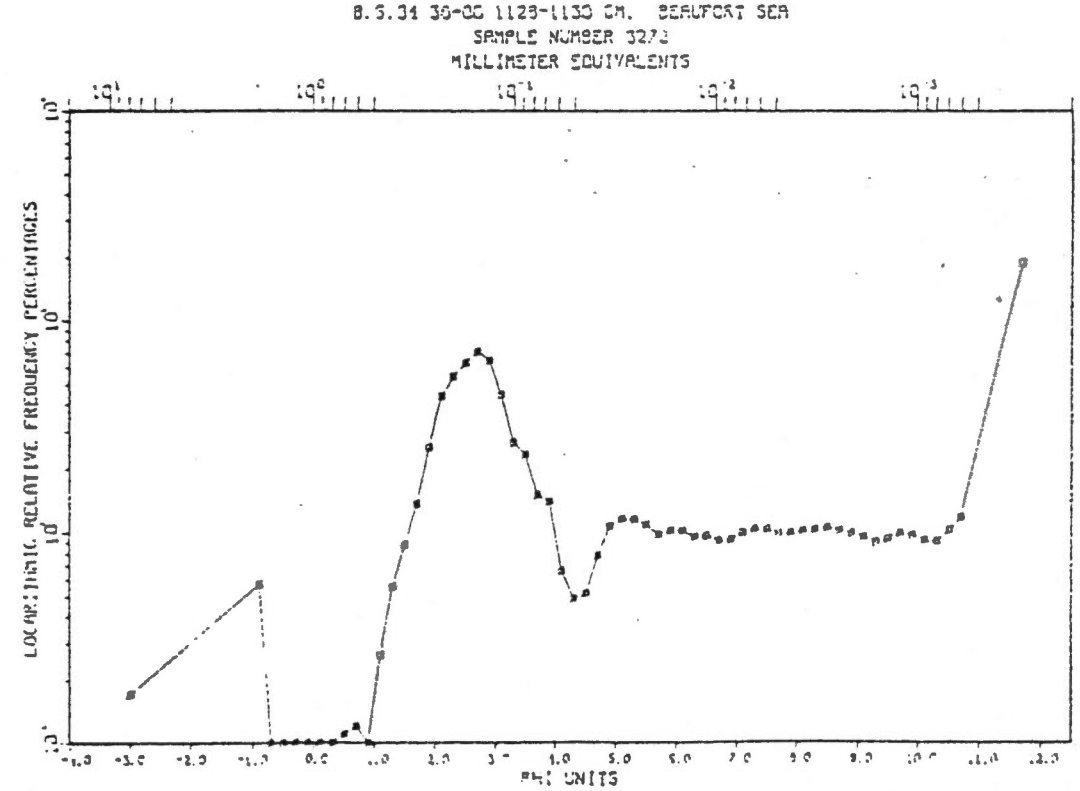


GRAPH TYPES:

Linear VS Logarithmic

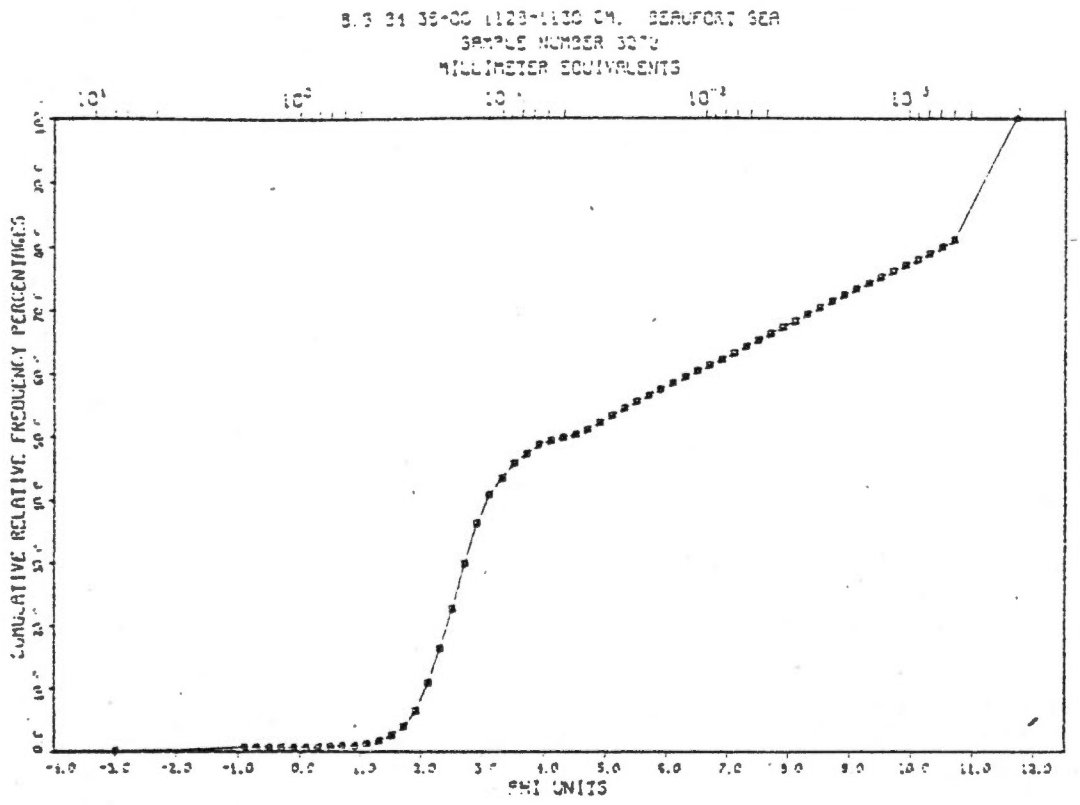


Logarithmic VS Logarithmic

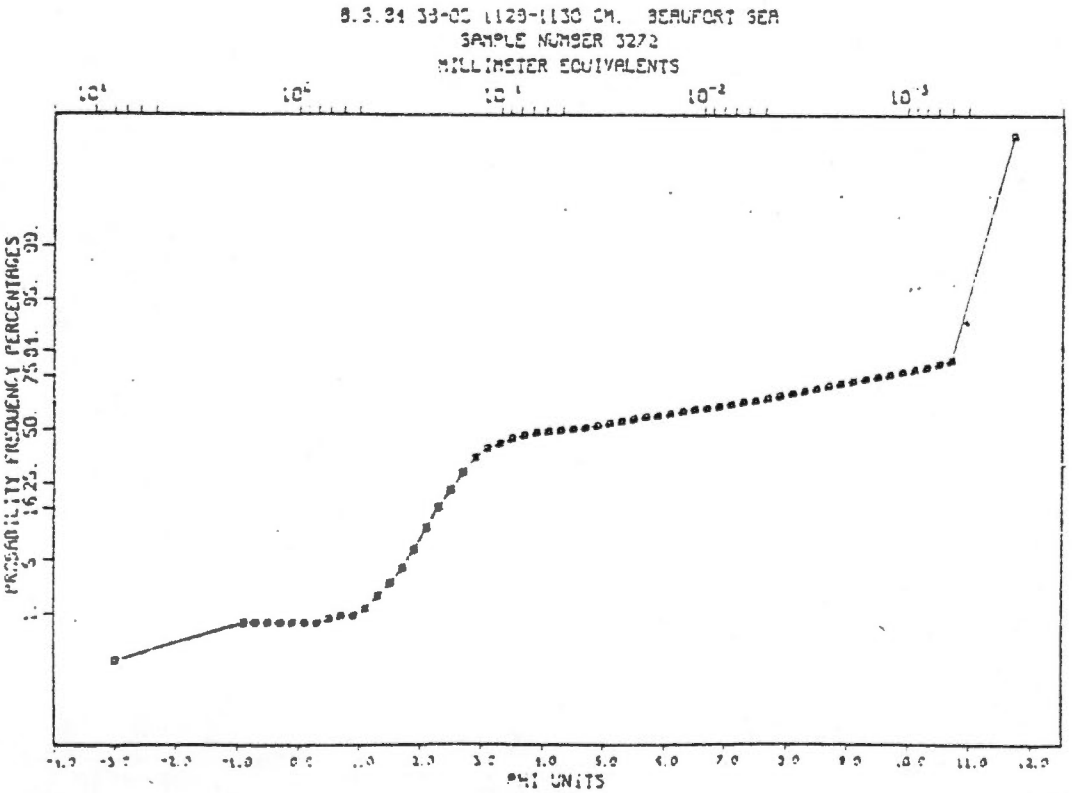


GRAPH TYPES (cont):

Cumulative Frequency

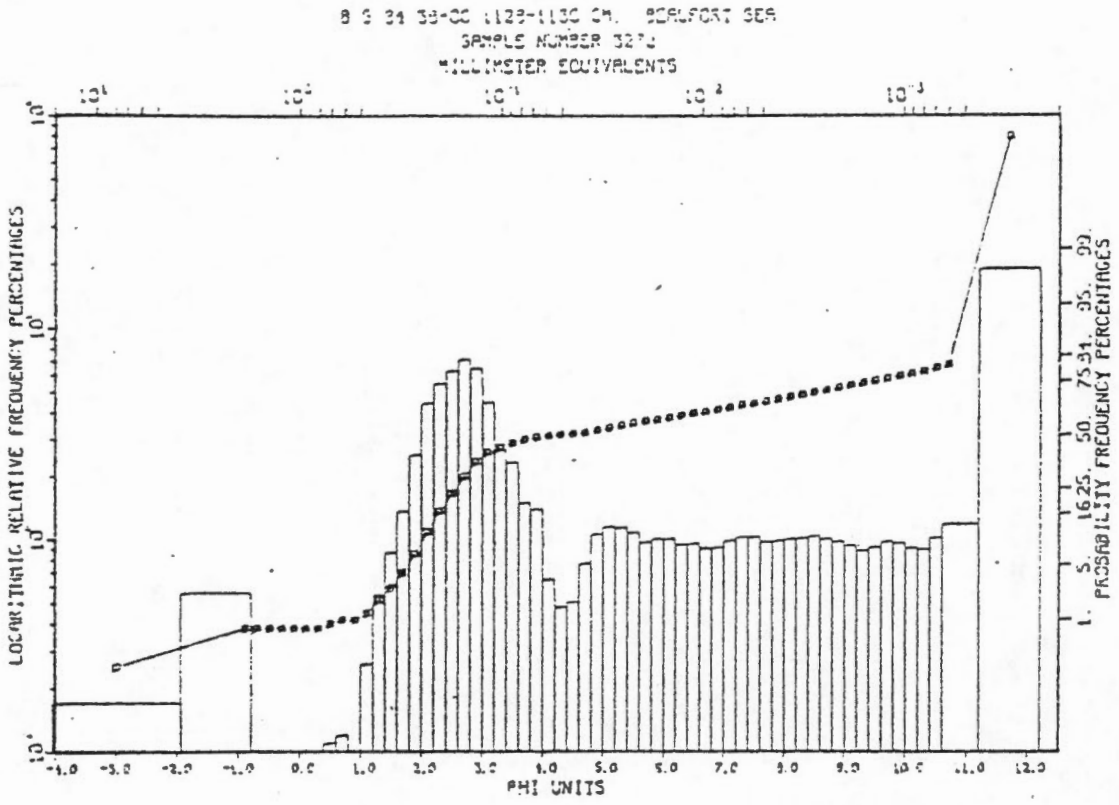


Probability Frequency

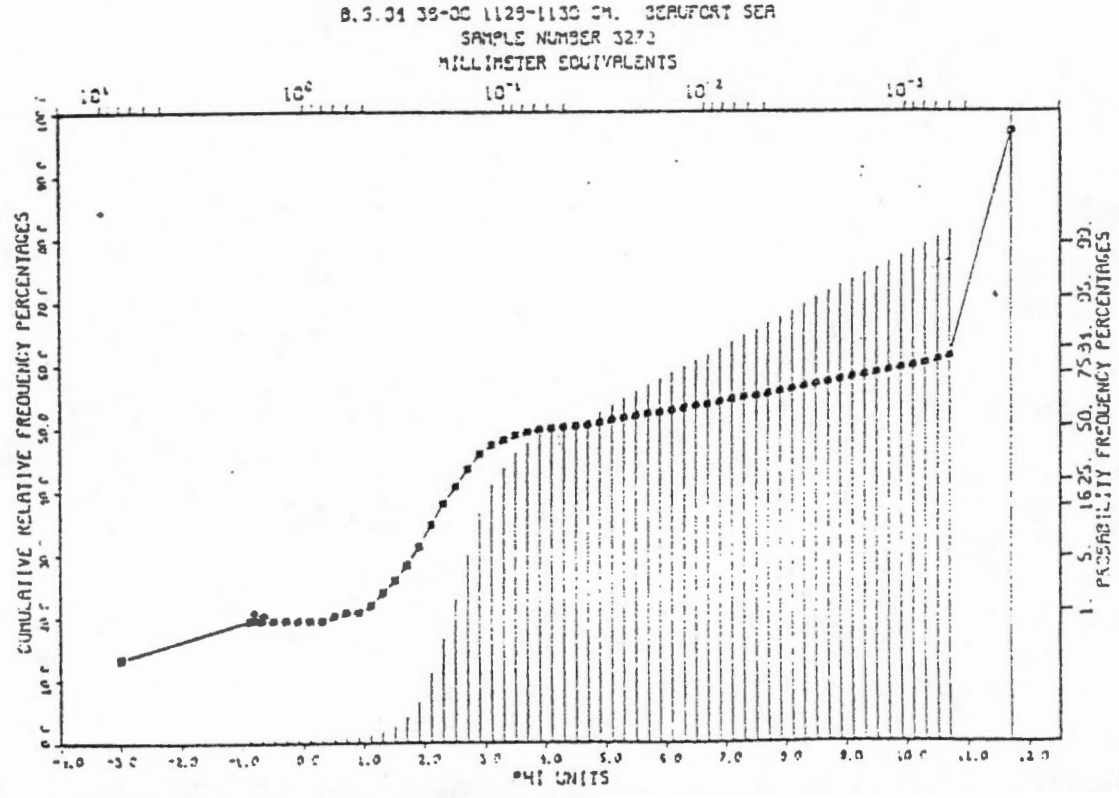


COMBINATION OF GRAPH TYPES AND STYLES:

Logarithmic and Probability

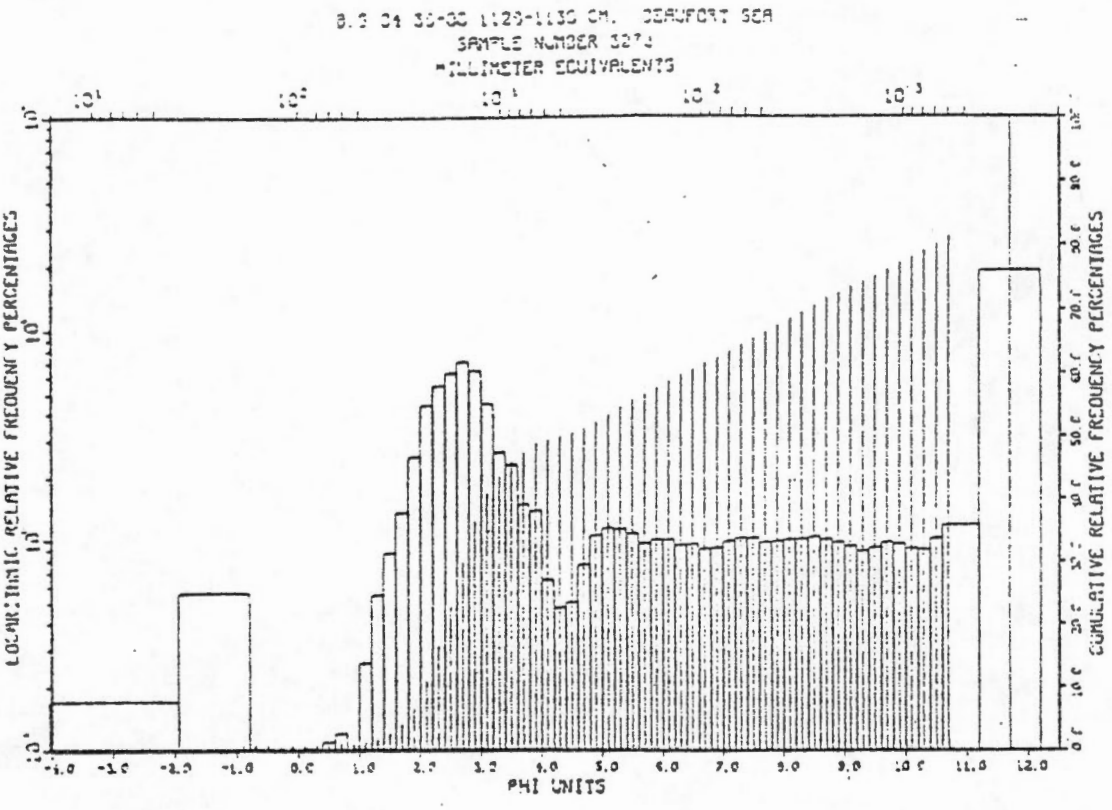


Cumulative and Probability



COMBINATION OF GRAPH TYPES AND STYLES (cont):

Logarithmic and Cumulative



Linear, Logarithmic, Cumulative, and Probability