

AD-A241 212

INSTRUCTION REPORT GL-91-2

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US Army Corps  
of Engineers

# MICROCOMPUTER GEOTECHNICAL QUALITY ASSURANCE OF COMPACTED EARTH FILL DATA PACKAGE: USER'S GUIDE

by

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August 1991

Final Report

Approved For Public Release; Distribution Is Unlimited

91-12319



Prepared for DEPARTMENT OF THE ARMY  
US Army Corps of Engineers  
Washington, DC 20314-1000

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# REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

<b>1. AGENCY USE ONLY (Leave blank)</b>		<b>2. REPORT DATE</b> August 1991	<b>3. REPORT TYPE AND DATES COVERED</b> Final report	
<b>4. TITLE AND SUBTITLE</b> Microcomputer Geotechnical Quality Assurance of Compacted Earth Fill Data Package: User's Guide			<b>5. FUNDING NUMBERS</b>	
<b>6. AUTHOR(S)</b> Earl V. Edris, Jr., William E. Strohm, Jr., Kay G. Woo				
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> USAE Waterways Experiment Station, Geotechnical Laboratory 3909 Hall's Ferry Road, Vicksburg, MS 39180-6199			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> Instruction Report GL-91-2	
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> US Army Corps of Engineers Washington, DC 20314-1000			<b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>	
<b>11. SUPPLEMENTARY NOTES</b> Available from National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.				
<b>12a. DISTRIBUTION/AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited			<b>12b. DISTRIBUTION CODE</b>	
<b>13. ABSTRACT (Maximum 200 words)</b>  A microcomputer base system for storage, retrieval, and display of geotechnical construction control earthwork data for earth and rock-fill dams is described and detailed instructions for using the system are given with examples from actual projects. The data system is designed for field project quality control and quality assurance monitoring and rapid display of a variety of construction control data and preparation of reports required by Corps of Engineers (CE) guidance (EM 1110-2-1911, "Construction Control for Earth and Rock-Fill Dams"). Additional output including a statistical analysis package provide the user with complete reporting and evaluation capability. The package provides for easy, interactive data entry and editing designed for minimum training.				
<b>14. SUBJECT TERMS</b> Construction management      Geotechnical engineering Data processing                      Rockfill dams Earth dams			<b>15. NUMBER OF PAGES</b> 172	
			<b>16. PRICE CODE</b>	
<b>17. SECURITY CLASSIFICATION OF REPORT</b> UNCLASSIFIED	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> UNCLASSIFIED	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b>	<b>20. LIMITATION OF ABSTRACT</b>	

PREFACE

This user's guide describes the use of a microcomputer database package for geotechnical construction control of earth and rock-fill dam embankments. This package evolved from the database package used on the Corps-wide time-sharing system and described in Instruction Report GL-83-1. This package is a product of the Computer Applications in Geotechnical Engineering (CAGE) project sponsored by the Headquarters, US Army Corps of Engineers (USACE). The USACE Technical Monitor is Mr. Art Walz.

This database package was developed by Mr. Earl V. Edris, Jr. and William E. Strohm, Jr., Soil and Rock Mechanics Division (SRMD), Geotechnical Laboratory (GL), US Army Engineer Waterways Experiment Station (WES). Software was developed by Ms. Kay G. Woo, SMRD, GL, WES. Modifications of this package resulted from the applications of earlier versions prepared for the Jacksonville District (Cerrillos Dam) and the Fort Worth District (Ray Roberts and Cooper Lake Dams). The initial application of the package described in this report was for the Huntington District (Yatesville Dam). Both Mr. Pat Oshel in the Huntington District and Mr. Dan Boster at the Yatesville project office provided valuable comments and suggestions during the software development. This report was prepared by Mr. Edris.

The CAGE project's Principal Investigator was Mr. Strohm until December 1988, when Mr. Edris became the project's Principal Investigator. The development of this CAGE package was accomplished under the supervision of Dr. Don C. Banks, Chief, SRMD, GL, and under the general supervision of Dr. William F. Marcuson III, Chief, GL.

COL Larry B. Fulton, EN, is the Commander and Director of WES. Dr. Robert W. Whalin is the Technical Director.



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MICROCOMPUTER GEOTECHNICAL QUALITY ASSURANCE  
OF COMPACTED EARTH FILL DATA PACKAGE:  
USER'S GUIDE

PART I: INTRODUCTION

Purpose

1. The purpose of this guide is to provide a description and instructions for the use of the microcomputer version of the CAGE package for quality assurance (QA) of compacted earth fill. The package was developed for Corps-wide use under the Computer Applications in Geotechnical Engineering (CAGE) project sponsored by the Headquarters, US Army Corps of Engineers. The guide must be used in conjunction with other applicable instructions regarding the microcomputer operating system and instructions for manipulating a database using the software package dBASE III Plus (Trademark of Ashton-Tate).

Basic Definitions

2. A database can be defined as items of information and groups of data values stored together in an orderly form such that all or any part of the information or data can be readily accessed. Compaction test results and field density test data stored in a filing cabinet could be classified as a simple form of a database. A computerized database package includes, in addition to the database itself, all peripheral software that enables the data to be quickly stored, accessed, manipulated (or analyzed) by the most useful means, and displayed in the most useful manner for the user. A database package can therefore be categorized as an engineering tool. It can, if properly used, be a powerful tool that greatly enhances the usefulness and value of geotechnical information and data.

3. More specifically, a computerized earthwork construction control database package can provide more effective control with quicker response. The orderly storage, rapid retrieval, display, and analysis of data from tests performed during construction of an earth and/or rockfill embankment can greatly benefit quality assurance monitoring and provide more complete

as-built documentation.

### Background

4. The basis and need for earthwork quality assurance testing is described in EM 1110-2-1911 (Headquarters, Department of the Army 1977). This manual documents the need for quality assurance data and describes the procedures for obtaining and reporting this quality assurance information. Field density determinations consisting of volume and weight measurements decide the wet density of in-place fill. This data with the water content measurements are used to determine the fill water contents and dry densities. These field results are then related to laboratory generated values to determine the fill percent compaction and variations of water content from optimum. The percent compaction and variation from optimum water content are used to ensure that the embankment is built as designed. Thus, records of the compaction control tests are used to document the construction procedures and the adequacy of the in-place materials.

5. The initial quality assurance package was developed in 1979 and 1980 for use at Warm Springs Dam (Edris, Hammer, and Vanadit-Ellis 1983). That version, developed on a mainframe computer system, was designed for use with either the standard one point or the two point compaction method of control (Headquarters, Department of the Army 1977). Several variations of the initial package have been used on several different earth dams.

6. The initial microcomputer package was developed in 1984 for use in the Jacksonville District on Cerrillos Dam, Puerto Rico (Edris, Strohm, and Mann 1984). This package consisted of a microcomputer data entry module from which the data were transferred to the main frame database. Since then, the package has been totally converted to a microcomputer based package.

7. The package described in this user's guide is designed for the standard one point method of control (Headquarters, Department of the Army 1977). A variation of this package was developed for the Fort Worth District for use on Ray Roberts and Cooper Lake Dams. That variation used the correlations of liquid limit with optimum water content and maximum dry density as the method of compaction control. An instruction report (Edris, Strohm, and Woo (in preparation)) will describe the details of that package variation.

### Application

8. The package can be useful during construction in the following ways:
- a. Providing a means for more effective daily control of desired percent compaction and specified requirements such as placement water content and material suitability.
  - b. Expedient monitoring of the construction control system including cross checking of indirect or expedient method results against accepted standard method results. For example, results of rapid water content determination can be compared with corresponding results by oven drying.
  - c. Convenient updating of compaction control information such as frequency of testing statistics, and updating of test location summaries. In addition, the package allows addition of new five-point compaction curves representing different materials.
  - d. Generating ENG FORM 4080, "Summary of Field Compaction Control Data," and associated forms.
  - e. Generating a special form known as the shotgun plot, showing results of tests for percent compaction and deviation from optimum water content.
  - f. Providing assistance in the solution of problems that develop during construction relating to compactive effort, density, water content, and material type, source, and quantity.
  - g. Providing the field office and designer with rapid access to the latest data when needed.
  - h. Computer stored data can save considerable labor and time during preparation of the Criteria and Performance Report (Headquarters, Department of the Army, 1977) and in defending contractor claims during and after project construction.

### Computer Requirements

9. The QA program package requires an IBM compatible microcomputer with the MS-DOS (Trademark MicroSoft Corp.) 3.0 or better operating system and a 20 megabyte (Mb) fixed disk to provide sufficient storage. A copy of dBASE III Plus is also required to run the package until a compiled version of the QA program is developed. A printer is needed to generate the tables and printer plots. A dot matrix printer that supports or emulates an Epson (trademark

Epson America, Inc.) FX-80, FX-85, FX-100, FX-185, MX-80, MX-100, RX-80, or LQ1500 printer can be used as well as the Hewlett Packard Laser Jet or Thinkjet printers. Plotters that support Hewlett Packard GL plot command language can be used for graphic output. An enhanced graphics adapter (EGA) card and EGA monitor are required to use the statistical package.

10. The empty database files and the associated programs that make up the quality assurance part of the package fill four double density disks. The statistics package consists of nine disks. Approximately 1.5 megabytes of hard disk space is needed to load the quality assurance portion of the package. An additional 3.5 megabytes is needed for the statistical package. The average project should be able to store about 400 field tests on one-third megabyte of hard disk space.

#### Report Organization

11. The remainder of this report is broken into two parts. Part II describes the database structure and data entry procedures. Part III describes the methods to retrieve data from the package. Detailed examples illustrating the procedures are described in the text and included in Appendixes A, B, C, D, and E.

## PART II: DATA ENTRY AND STORAGE

### Database Structure

12. The proprietary software (dBASE III Plus) used to develop the microcomputer version of the QA package is a relational type of database system. It uses a file structure that can be visualized as a table with columns for variables (called fields) and rows (records) for values of the variables. The structure of each database file is created by naming the fields, defining their type (character or numeric) and their size (number of characters or digits and decimal places). Data in one file are related to data in other files by one or more key variable names such as zone, report number, and test number. The architecture of the package files was based on the data needed for the ENG FORM 4080 report, as outlined in Edris, Hammer, and Vanadit-Ellis (1983).

13. A diagram of the files for the standard one-point quality assurance (QA) version is shown in Figure 1. The type of data stored in each file is shown in Table 1. Data about a project are stored in the PROJ.DBF file. Information that is specific for each embankment zone is contained in the ZONE.DBF file. Examples of this type of data which are constant for a particular embankment zone (such as drain material, random rock, etc.) can include compaction equipment, compaction effort, and specifications for percent compaction, water content, and maximum particle size. Items that are specific to a particular report period such as the beginning and ending dates for the report, material source, and comments about the report are stored in the REPORT.DBF file. Specific test results are stored in the TEST1.DBF, TEST2.DBF, and TEST3.DBF files. The other files shown in Table 1 are automatically filled by the package when needed for reports or plots.

14. Only one project can be entered for each installation of the package. The initial database applications were developed for large projects on a District-wide scale. When the microcomputer versions were developed, this single-project application was continued. For a series of small projects where the compaction control is maintained in a central location, this package could be used. In this case, project identification would be the District name or overall project identification and zone information would then be used to identify the smaller projects.

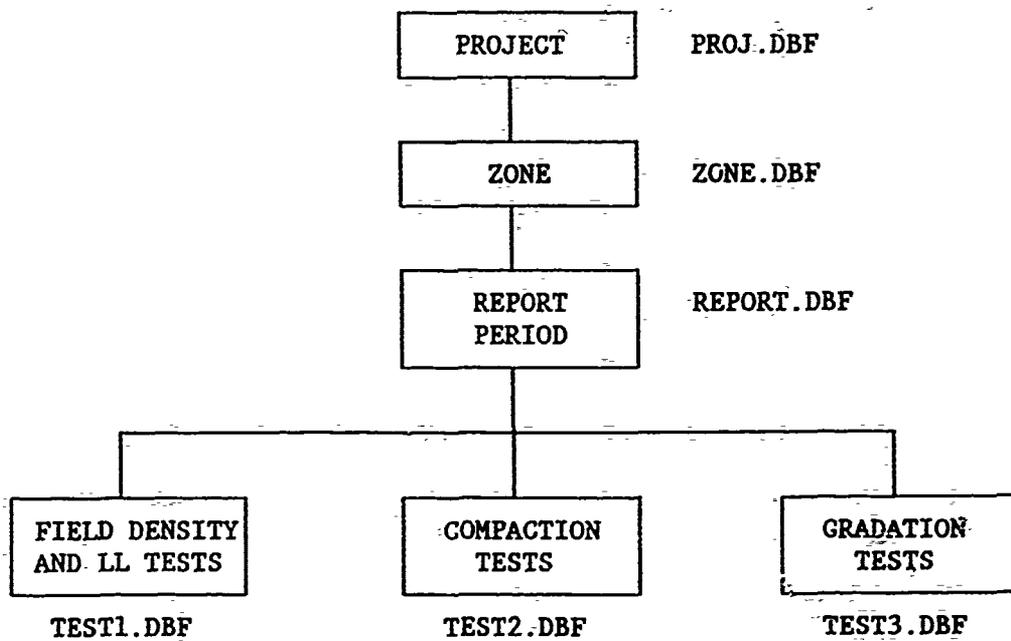


Figure 1. Diagram of database files for the quality assurance package

Table 1

Structure of Data Files and Explanation of Fields

Structure for database: D:PROJ.dbf					Project Data File
Number of data records: 1					
Date of last update : 04/07/89					
Field	Field Name	Type	Width	Dec	
1	PROJ_NAME	Character	40		Project Name
2	PROJ_RIVER	Character	40		Project River
3	PROJ_CNTY	Character	20		Project County
4	PROJ_STATE	Character	2		Project State
5	PROJ_TOWN	Character	20		Project Town
6	CNTRCT_NO	Character	16		Contract Number
7	CONTRACTOR	Character	40		Contractor Name
** Total **			179		
Structure for database: D:ZONE.dbf					Embankment Zone File
Number of data records: 9					
Date of last update : 04/07/89					
Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	EMB_ZONE	Character	20		Embankment Zone Name
3	EQUIP	Character	15		Compaction Equipment
4	COMP_PERC	Numeric	7	2	Specified Percent Compaction
5	WL_LIMIT	Numeric	4	1	Minimum Deviation from Optimum Water Content
6	WR_LIMIT	Numeric	3	1	Maximum Deviation from Optimum Water Content
7	FMS	Numeric	2		Field Mold Size
8	LMS	Numeric	2		Laboratory Mold Size
9	MUW	Numeric	6	2	Moist Unit Weight
10	MPS	Numeric	6	3	Maximum Particle Size
11	C Effort	Character	3		Compaction Effort (Std, Mod)
12	L_FLAG	Numeric	1		Flag For Uploading Data
** Total **			73		
Structure for database: D:REPORT.dbf					Report Period File
Number of data records: 7					
Date of last update : 04/07/89					
Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Numeric	3		Report Number
3	BEGIN_DATE	Date	8		Beginning Date of Report
4	END_DATE	Date	8		Ending Date of Report
5	MS	Character	10		Material Source (Borrow Area)
6	LLT	Numeric	2		Loose Lift Thickness
7	PASSES	Numeric	2		No. Passes of Equipment
8	NOTE	Character	90		Note for this Zone and Report
9	L_FLAG	Numeric	1		Flag For Uploading Data
** Total **			128		

(Continued)

(Sheet 1 of 9)

Table 1 (Continued)

Structure for database: D:TEST1.dbf

Number of data records: 322

Date of last update : 04/07/89

Field	Field Name	Type	Width	Dec	Field Density
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Numeric	3		Report Number of that Zone
3	NO	Character	8		Test Number
4	RTN	Character	8		Retest Category
5	USE	Character	4		Passed or Failed Category
6	DATE_MADE	Date	8		Date of Field Test
7	LAB	Character	1		Lab Performing Test (QA/QC)
8	TEST_TYPE	Character	3		Type of Field Density Test
9	STA	Character	6		Station of Test Location
10	OFT	Character	5		Offset of Test Location
11	ELE	Numeric	6	1	Elevation of Test Location
12	DEP	Numeric	2		Depth of Test Hole
13	FDD	Numeric	5	1	Field Dry Density
14	FWC	Numeric	4	1	Field Water Content
15	WCDD	Character	1		Rapid Water Content Detection Device
16	LL	Numeric	3		Liquid Limit
17	PI	Numeric	2		Plastic Index
18	DD1	Numeric	5	1	One Point Maximum Dry Density
19	WC1	Numeric	4	1	One Point Optimum Water Content
20	QFDD	Numeric	5	1	Quick Field Dry Density
21	QFWC	Numeric	4	1	Quick Field Water Content
22	QLDD	Numeric	5	1	Quick One Point Maximum Dry Density
23	Q1WC	Numeric	4	1	Quick One Point Optimum Water Content
24	FMDD	Numeric	5	1	Field Maximum Dry Density
25	FOWC	Numeric	4	1	Field Optimum Water Content
26	DOWC	Numeric	5	1	Field Deviation from Optimum Water Content
27	PC	Numeric	5	1	Field Percent Compaction
28	USCG	Character	7		Classification
29	RST	Character	1		Record Sample Taken
30	COMMENTS	Character	120		Comments About Test
31	QMDD	Numeric	5	1	Quick Maximum Dry Density
32	QOWC	Numeric	4	1	Quick Optimum Water Content
33	QPC	Numeric	5	1	Quick Percent Compaction
34	QDOWC	Numeric	4	1	Quick Deviation from Optimum Water Content
35	L_FLAG	Numeric	1		Flag For Uploading Data
**	Total	**	266		

(Continued)

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Table 1 (Continued)

Structure for database: D:TEST2.dbf

Number of data records: 6

Date of last update : 04/07/89

Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Numeric	3		Report No. for the Zone
3	NO	Character	8		Test Number
4	GS	Numeric	4	2	Specific Gravity
5	CNO	Character	8		Compaction Test No.
6	MDD5	Numeric	5	1	Maximum Dry Density
7	OWC5	Numeric	4	1	Optimum Water Content
8	DOWC5	Numeric	4	1	Deviation from Optimum Water Content
9	PC5	Numeric	5	1	Percent Compaction
10	GT75I	Numeric	3		Percent Minus 3/4-in Sieve
11	LL	Numeric	3		Liquid Limit
12	PL	Numeric	2		Plastic Limit
13	L_FLAG	Numeric	1		Flag For Uploading Data
**	Total	**	54		

Five Point Compaction Test Results

Structure for database: D:TEST3.dbf

Number of data records: 230

Date of last update : 04/07/89

Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Numeric	3		Report Number
3	NO	Character	8		Test Number
4	GR24IN	Numeric	3		Percent Minus 24-in. Sieve
5	GR22IN	Numeric	3		Percent Minus 22-in. Sieve
6	GR19IN	Numeric	3		Percent Minus 19-in. Sieve
7	GR15IN	Numeric	3		Percent Minus 15-in. Sieve
8	GR11IN	Numeric	3		Percent Minus 11-in. Sieve
9	GR9IN	Numeric	3		Percent Minus 9-in. Sieve
10	GR7IN	Numeric	3		Percent Minus 7-in. Sieve
11	GR4IN	Numeric	3		Percent Minus 4-in. Sieve
12	GR35I	Numeric	3		Percent Minus 3.5-in. Sieve
13	GR3I	Numeric	3		Percent Minus 3-in. Sieve
14	GR2I	Numeric	3		Percent Minus 2-in. Sieve
15	GR15I	Numeric	3		Percent Minus 1.5-in. Sieve
16	GR1I	Numeric	3		Percent Minus 1-in. Sieve
17	GR75I	Numeric	3		Percent Minus 3/4-in. Sieve
18	GR375I	Numeric	3		Percent Minus 3/8-in. Sieve
19	GR4	Numeric	3		Percent Minus No. 4 Sieve
20	GR8	Numeric	3		Percent Minus No. 8 Sieve
21	GR10	Numeric	3		Percent Minus No. 10 Sieve
22	GR16	Numeric	3		Percent Minus No. 16 Sieve
23	GR20	Numeric	3		Percent Minus No. 20 Sieve
24	GR30	Numeric	3		Percent Minus No. 30 Sieve

Gradation Test Results

(Continued)

(Sheet 3 of 9)

Table 1 (Continued)

Structure for database: D:TEST3.dbf

Field	Field Name	Type	Width	Dec	
25	GR40	Numeric	3		Percent Minus No. 40 Sieve
26	GR50	Numeric	3		Percent Minus No. 50 Sieve
27	GR60	Numeric	3		Percent Minus No. 60 Sieve
28	GR80	Numeric	3		Percent Minus No. 80 Sieve
29	GR100	Numeric	3		Percent Minus No. 100 Sieve
30	GR200	Numeric	3		Percent Minus No. 200 Sieve
31	PERMEABLE	Numeric	8	2	Permeability
32	PIT_WT	Numeric	7	1	Test Pit Material Weight
33	PIT_VOL	Numeric	6	1	Test Pit Volume
34	FUW	Numeric	7	3	Field Unit Weight
35	L_FLAG	Numeric	1		Flag For Uploading Data
** Total **			125		

Structure for database: D:REPPRT.dbf

Data File for 4080 Report

Number of data records: 0

Date of last update : 04/07/89

Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Character	3		Report Number
3	NO	Character	8		Test Number
4	DATE_MADE	Character	5		Date Test Made
5	TEST_TYPE	Character	3		Type of Field Test
6	STA	Character	6		Station of Test Location
7	OFT	Character	5		Offset of Test Location
8	ELE	Character	6		Elevation of Test Location
9	DEP	Character	2		Depth of Test
10	MS	Character	7		Material Source
11	USCG	Character	7		Classification
12	MPS	Character	4		Maximum Particle Size
13	GR75I	Character	3		Percent Minus 3/4 in Sieve
14	GR4	Character	3		Percent Minus No. 4 Sieve
15	GR200	Character	3		Percent Minus No. 200 Sieve
16	LL	Character	3		Liquid Limit
17	PI	Character	2		Plastic Limit
18	FDD	Character	5		Field Dry Density
19	FWC	Character	4		Field Water Content
20	FMS	Character	2		Field Mold Size
21	QFDD	Character	5		Quick Field Dry Density
22	QFWC	Character	4		Quick Field Water Content
23	FIVE_PT	Character	1		Five Point Test Indicator
24	MDD	Character	5		Maximum Dry Density
25	OWC	Character	4		Optimum Water Content
26	DOWC	Character	5		Field Deviation from Optimum Water Content
27	PC	Character	5		Field Percent Compaction

(Continued)

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Table 1 (Continued)

Structure for database: D:REPPRT.dbf

Field	Field Name	Type	Width	Dec	
28	USE	Character	4		Acceptance Category
29	COMMENTS	Character	120		Field Test Comments
** Total **			238		

Structure for database: D:SN4080.dbf

Field	Field Name	Type	Width	Dec	
					Special Notes Added to 4080 Report
Number of data records:				1	
Date of last update				: 04/07/89	
1	NOTATION	Character	4		Note Number (A, B, C, etc)
2	REFERENCE	Character	15		Title of Note
3	NOTE1	Character	80		First Line of Text
4	NOTE2	Character	80		Second Line of Text
5	NOTE3	Character	80		Third Line of Text
** Total **			260		

Structure for database: D:REPPRT2.dbf

Field	Field Name	Type	Width	Dec	
					Data File for 4081 Report
Number of data records:				0	
Date of last update				: 04/07/89	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Character	3		Report Number
3	NO	Character	8		Test Number
4	DATE_MADE	Character	8		Date Test Made
5	TEST_TYPE	Character	3		Type of Field Test
6	STA	Character	6		Station of Test Location
7	OFT	Character	5		Offset of Test Location
8	ELE	Character	6		Elevation of Test Location
9	DEP	Character	2		Depth of Test
10	MS	Character	10		Material Source
11	USCG	Character	7		Classification
12	MPS	Character	6		Maximum Particle Size
13	GR4	Character	3		Percent Minus No. 4 Sieve
14	GR10	Character	3		Percent Minus No. 10 Sieve
15	GR20	Character	3		Percent Minus No. 20 Sieve
16	GR40	Character	3		Percent Minus No. 40 Sieve
17	GR80	Character	3		Percent Minus No. 80 Sieve
18	GR100	Character	3		Percent Minus No. 100 Sieve
19	GR200	Character	3		Percent Minus No. 200 Sieve
20	FDD	Character	5		Field Dry Density
21	C_EFFORT	Character	3		Compactive Effort (Std, Mod)
22	FIVE_PT	Character	1		Five Point Test Indicator
23	MDD	Character	5		Maximum Dry Density
24	PC	Character	5		Percent Compaction
25	COMMENTS	Character	120		Field Test Comments
** Total **			228		

(Continued)

(Sheet 5 of 9)

Table 1 (Continued)

Structure for database: D:SN4081.dbf  
 Number of data records: 1  
 Date of last update : 04/07/89

Special Notes Added to  
 4081 Report

Field	Field Name	Type	Width	Dec	
1	NOTATION	Character	4		Note Number (A, B, C, etc)
2	REFERENCE	Character	15		Title of Note
3	NOTE1	Character	80		First Line of Text
4	NOTE2	Character	80		Second Line of Text
5	NOTE3	Character	80		Third Line of Text
** Total **			260		

Structure for database: D:GRSUMMRY.dbf  
 Number of data records: 0  
 Date of last update : 04/07/89

Data File for Gradation  
 Summary Report

Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Character	3		Report Number
3	NO	Character	8		Test Number
4	GR24IN	Character	3		Percent Minus 24-in. Sieve
5	GR22IN	Character	3		Percent Minus 22-in. Sieve
6	GR19IN	Character	3		Percent Minus 19-in. Sieve
7	GR15IN	Character	3		Percent Minus 15-in. Sieve
8	GR11IN	Character	3		Percent Minus 11-in. Sieve
9	GR9IN	Character	3		Percent Minus 9-in. Sieve
10	GR7IN	Character	3		Percent Minus 7-in. Sieve
11	GR4IN	Character	3		Percent Minus 4-in. Sieve
12	GR3I	Character	3		Percent Minus 3-in. Sieve
13	GR2I	Character	3		Percent Minus 2-in. Sieve
14	GR15I	Character	3		Percent Minus 1.5-in. Sieve
15	GR1I	Character	3		Percent Minus 1-in. Sieve
16	GR75I	Character	3		Percent Minus 3/4-in. Sieve
17	GR375I	Character	3		Percent Minus 3/8-in. Sieve
18	GR4	Character	3		Percent Minus No. 4 Sieve
19	GR8	Character	3		Percent Minus No. 8 Sieve
20	GR10	Character	3		Percent Minus No. 10 Sieve
21	GR16	Character	3		Percent Minus No. 16 Sieve
22	GR20	Character	3		Percent Minus No. 20 Sieve
23	GR30	Character	3		Percent Minus No. 30 Sieve
24	GR40	Character	3		Percent Minus No. 40 Sieve
25	GR50	Character	3		Percent Minus No. 50 Sieve
26	GR80	Character	3		Percent Minus No. 80 Sieve
27	GR100	Character	3		Percent Minus No. 100 Sieve
28	GR200	Character	3		Percent Minus No. 200 Sieve
** Total **			90		

(Continued)

(Sheet 6 of 9)

Table 1 (Continued)

Structure for database: D:REPCUMUL.dbf

Cumulative Test File for

Number of data records: 6  
 Date of last update : 12/13/88

Shotgun Plot

Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Numeric	3		Report Number
3	TESTS	Numeric	10		Total No. of Tests
4	TESTS_OL	Numeric	5		Total No. Outside Limits
5	TESTU1	Numeric	5		No. Outside on Moisture
6	TESTU2	Numeric	5		No. Outside on Density
7	TESTU3	Numeric	5		No. Outside on Moist. & Den.
8	TESTN	Numeric	5		No. Not Retested or Reworked
9	TESTR1	Numeric	5		No. Retested after Reworked
10	TESTR2	Numeric	5		No. Reworked
11	TESTR3	Numeric	5		No. Retested
** Total **			57		

Structure for database: D:GEN\_DATA.dbf

Tabular Data For Shotgun Report

Number of data records: 0  
 Date of last update : 04/07/89

Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	TESTS	Numeric	5		Total No. of Tests
3	TESTS_OL	Numeric	5		Total No. Outside Limits
4	TESTU1	Numeric	5		No. Outside on Moisture
5	TESTU2	Numeric	5		No. Outside on Density
6	TESTU3	Numeric	5		No. Outside on Moist & Den.
7	TESTR1	Numeric	5		No. Retested after Reworked
8	TESTR2	Numeric	5		No. Reworked
9	TESTR3	Numeric	5		No. Retested
10	TESTN	Numeric	5		No. Not Retested or Reworked
11	PROJ_NAME	Character	40		Project Name
12	DISTRICT	Character	20		District Name
13	EMB_ZONE	Character	20		Embankment Zone
14	COMP_PERC	Numeric	7	2	Specification Percent Compaction
15	WL_LIMIT	Numeric	4	1	Minimum Deviation from Optimum Water Content
16	WR_LIMIT	Numeric	3	1	Maximum Deviation from Optimum Water Content
17	REPORT_NO	Numeric	3		Report Number
18	BEGIN_DATE	Character	8		Beginning Date
19	END_DATE	Character	8		Ending Date
20	RECCNT	Numeric	5		Record Count
** Total **			167		

(Continued)

(Sheet 7 of 9)

Table 1 (Continued)

Structure for database: D:PLT_DATA.dbf				Plot File for Shotgun Report	
Number of data records: 0					
Date of last update : 04/07/89					
Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Numeric	3		Report Number
3	NO	Character	8		Test Number
4	USE	Character	4		Acceptance Category
5	DATE_MADE	Character	8		Date Made
6	PC	Numeric	5	1	Percent Compaction
7	DOWC	Numeric	4	1	Deviation from Optimum Water Content
8	RTN	Character	8		Latest Retest Number
9	COMMENTS	Character	30		Plot File Comments
** Total **			74		

Structure for database: D:XYGEN.dbf					
Number of data records: 0					
Date of last update : 01/05/89					
Field	Field Name	Type	Width	Dec	
1	TITLE	Character	18		Title of Plot
2	X_LABEL	Character	18		X Axis Label
3	Y_LABEL	Character	18		Y Axis Label
4	GRAPH_CNT	Numeric	3		Graph Counter
5	LINE_CNT	Numeric	3		No. of Lines
6	DATA_LABEL	Character	10		Data Point Label
7	XY_CNT	Numeric	4		Count of Data Points
** Total **			75		

Structure for database: D:XYDATA.dbf					
Number of data records: 0					
Date of last update : 01/05/89					
Field	Field Name	Type	Width	Dec	
1	ZONECODE	Character	3		Zone Code Letters
2	REPORT_NO	Numeric	3		Report Number
3	NO	Character	8		Test Number
4	DATE_MADE	Date	8		Date Test Value
5	X1	Numeric	6	1	X1 Value
6	Y1	Numeric	6	1	Y1 Value
** Total **			35		

(Continued)

(Sheet 8 of 9)

Table 1 (Concluded)

Structure for database: D:TIMEDATA.dbf

Number of data records: 0

Date of last update : 10/17/88

Field	Field Name	Type	Width	Dec	
1	TEXT_LINE	Character	20		Plot Title
2	REPORT_NO	Character	3		Report Number
3	NO	Character	8		Test Number
4	DATE_MADE	Character	8		Date Test Made
5	VALUE	Numeric	10	4	Plotted Value
** Total **			50		

Structure for database: D:BACK\_TRK.dbf

Number of data records: 6

Date of last update : 04/07/89

Field	Field Name	Type	Width	Dec	
1	DATAFILE	Character	12		
2	INIT_DSK	Numeric	2		
3	DSKCOUNT	Numeric	2		
** Total **			17		

Structure for database: D:DISKID.dbf

Number of data records: 0

Date of last update : 06/29/88

Field	Field Name	Type	Width	Dec	
1	DISK_NO	Numeric	3		Disk Number
2	DISK_LABEL	Character	25		Disk Label
** Total **			29		

15. The embankment zones are identified by both a unique full name and a two- or three-letter abbreviation. The short abbreviation enhances the user friendliness by requiring less input. Examples of the zone names and short identifiers used for examples and in the appendixes are listed below.

DRN	DRAIN MATERIAL	PSS	PROCESSED SANDSTONE 12 IN MAXIMUM
EMB	EMBANKMENT	RAN	RANDOM ROCK
GF1	GRADED FILTER TYPE 1	SC	SEMI-COMPACTED
GF2	GRADED FILTER TYPE 2	SS8	SANDSTONE ROCKFILL 8 IN MAXIMUM
IMP	IMPERVIOUS CORE	SSR	SANDSTONE ROCKFILL 24 IN MAXIMUM

16. Report numbers can be sequential or defined for specific dates and must be unique for each zone. Thus, there can be a report "one" for each zone.

17. Test numbers must be unique for each project. The first two or three letters of the test number designates the zone of the test. Test numbers are stored with interior zeros added automatically to maintain proper order (e.g. RD1 is entered as RD1 and is stored as RD00001); the zeros are also printed out in listings and the 4080 report to help find specific test numbers. When a retest is made, an "A" is added for the first retest, a "B" for the second and so on (e.g. RD0012AA, RD00123B, etc.). The maximum number of tests is 99999 for the two-letter ones and 9999 for the three-letter zones. In this version of the package, the test number field size has been increased to 8 characters.

18. Test data are contained in three data files (TEST1.DBF, TEST2.DBF, and TEST3.DBF). The first data file contains the information associated with a standard one point field test. This includes location information, field dry density and water content results, the associated maximum dry density and optimum water content values determined by the one point method, and the resulting percent compaction and deviation from optimum water content. The package can handle both rapid or quick and final or standard oven-dried field test information. The data for this file should be available within a day of the actual field test. The second data file contains all the data associated with five-point compaction curves with a particular report period. The third data file contains gradation test results.

19. In addition to the data files, a number of index files are created to speed up the operation of the quality assurance data package. All indexes

use either the individual or combinations of the embankment zone, report number, and test number to order the various data files. An auxiliary program named QAINDEX.PRG is included with the database package. This program will generate the required index files. The user should not need to execute this program; however, if the index files should become corrupted, this program can be used to recreate the indexes.

### Data Entry

20. Data are entered with one of the first five options shown on the main menu in the upper half of Figure 2. Project, zone, and report number data must be entered before any associated test data are entered. This order is necessary because the zone and report number are required before access can be obtained to the test files. When a new zone, report number, or test number is entered, the user is asked if it is correct and can reenter if desired. This check is the only place that the user is allowed to correct an error in the entered zone name, report number, or test number. When queried for the zone, a list of existing zone names with zone codes is shown for easy selection by code. In the edit (or change mode), if a wrong report number or test number is entered, a list of stored numbers is shown upon request. Examples of the first five options of the main menu and the screens for the different data entry segments are shown in Appendix A. Options 7 and 8, which deal with report number correction and backing up or restoring data files, are also illustrated in Appendix A.

21. The report end date is separated from the other report data so that this item can be used as a flag to indicate when test data have been completed and checked. The end date is printed on all the tabular reports. Thus, if the end date is not printed, the user knows that either some values are yet to be entered or the data have not been checked.

22. The test data can be entered for any of the three data files (TEST1.DBF, TEST2.DBF, and TEST3.DBF) as the information becomes available. The user does not have to wait for the data contained in the last two data files to be completed before the field test results can be entered. When field test results are entered, calculations for percent compaction and deviation from optimum water content are made by the program and displayed for the user.

23. The user is required to enter the acceptance category which is stored in the USE field contained in TEST1.DBF. A list of the abbreviations and meanings is shown to help the user select the appropriate entry. An accepted test is noted with the letters AC. A failed or unacceptable test is noted for the type of failure using the symbols U1, U2, or U3. In the same manner, a retest field is used to store the type of retest using the symbols R1, R2, or R3. The meaning of the symbols is listed below.

AC	Acceptable test
U1	Unacceptably large deviation of water content from optimum
U2	Unacceptably low percent compaction
U3	Unacceptable deviation from optimum water content and low percent compaction
R1	Reworked and retested
R2	Reworked but not retested
R3	Retested but not reworked

24. Retest numbers must have the same number as the original test number with an A, B, C, etc. added. Retests can be noted as acceptable (AC) or unacceptable (U1, U2, or U3) along with the retest category. The retest category and type can be changed and the retest type will also be changed on the original test. The type of retest shown with the original test is for the latest retest where more than one retest is made.

<u>M A I N M E N U</u>	<u>S E L E C T I O N</u>
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 6

R E P O R T S A N D P L O T S

<u>M E N U</u>	<u>S E L E C T I O N</u>
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION: 4

Figure 2. Menu options for data entry and for summary reports and plots

### PART III: DATA RETRIEVAL AND DISPLAY

25. The main benefit of any database package is the ability to perform analyses by generating reports and plots. This package contains a number of preprogrammed reports and plots that address the majority of the reporting and output needs. All reports and plots are accessed from option 6 in the main menu. The report's and plot's submenu is shown in the bottom half of Figure 2. The first two reports (options 1 and 2) provide quick tables of the zone specifications and report information for the various zones. Both of these options generate tabular reports for all embankment zones. The only additional user input after the option selection is limited to the need for a printed copy or just a listing to the screen. The capabilities and features of the other reports and plots are described below. Examples of output generation for all output options except the statistical plots (option 10) are shown in Appendix B. Examples illustrating the statistical plot generation are shown in Appendix C.

#### Engineering Forms

26. There are three types of standard forms available for the project to report field compaction control results to the District. Two of the three forms are Engineer Forms (Engineer Forms 4080 and 4081), whereas the other is a summary of gradation results. The Engineer Form 4080 is used with cohesive material where the percent compaction and deviation from optimum water content is reported. The Engineer Form 4081 is used with cohesionless material where only the relative density is reported. While both of these forms contain some gradation results for key sieves, the complete gradation results can be presented on the summary gradation report. An example page of an Engineer Form 4080 is shown in Figure 3.

27. Generation of all these reports is initiated by using option 6 in the main menu to obtain the reports and plots submenu. The Engineer Form 4080 is generated from option 4 of this submenu while option 5 generates the Engineer Form 4081 and option 6 generates the summary gradation report. Once any of these three options is chosen, the user selects the zone and report number for which the report will be generated. Single or multiple reports for one zone can be generated at one time. After some questions concerning the

MONTHLY SUMMARY OF COMPACTION CONTROL TESTS																												
PROJECT: YATESVILLE LAKE DAM										CONTRACT NO. DACW69-86-C-0039						DATE OF REPORT: 03/29/89 THRU 04/16/89				REPORT NO. 1 OF 4								
RIVER: BLAINE CREEK, KY										CONTRACTOR: LANE CONSTRUCTION CORP.																		
STATE: KY																												
TOWN: LOUISA																												
EMBANKMENT ZONE		MINIMUM SPECIFIED % COMP				SPECIFIED % LIMITS				COMPACTION EQUIPMENT/PRESSURE				LOOSE LIFT THICKNESS (IN)				NUMBER OF PASSES										
IMPERVIOUS CORE		95.00				-1.0 TO 2.0				SHPSFT SEE NOTE				8				6										
TEST IDENTIFICATION										CLASSIFICATION DATA						IN-PLACE DATA		LAB TEST DATA				FLD & LAB COMPARISON						
TEST NO	DATE MADE	TST TYP	STA	SET (FT)	ELEV (FT)	DEP (IN)	EORR SRCE	CLASS	(IN)	3/4	#4	#200	ILL	PI	(PCF)	(Z)	T	(PCF)	(Z)	1-PT	1-PT	MAX	OPT	M	Z	COR	COMP	
																												GRABATION
COL 1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26				
IMP0001	03/29	SV	5+85.5	1.5US	523.3	7	AREA 1	ICL	4.00	100	98	67	29	10	113.7	16.2	6	112.6	13.8	113.8	15.4	0.8	99.9					
AC	TEST ELEVATION IS 2 FT ABOVE ROCK																											
IMP0002	04/05	SV	5+80	17US	526.0	6	AREA 1	ICL	4.00	100	98	84	29	9	113.2	17.1	6	109.9	15.0	111.2	16.5	0.6	101.8					
AC	NG																											
IMP0003	04/05	SV	5+44	15OS	526.3	6	AREA 1	ICL	4.00	100	98	72	29	9	110.4	17.7	6	112.6	13.7	113.9	15.2	2.5	96.9					
UI	.5% TOO MUCH MOISTURE																											
IMP0004	05/06	SV	6+24	4US	530.0	6	AREA 1	ICL	4.00	100	98	74	29	9	114.2	17.3	6	112.5	13.8	113.7	15.3	2.0	100.4					
AC	THIS TEST ELEVATION IS 1.5 FT ABOVE THE ROCK																											
IMP0005	04/11	SV	5+60	6 OS	529.5	6	AREA 1	ICL	4.00	100	100	77	29	10	113.4	16.7	6	110.4	14.0	112.5	15.8	0.9	100.8					
AC	NG																											
IMP0006	04/11	SV	6+30	20 US	530.0	6	AREA 1	ICL	4.00	100	99	81	30	9	111.0	18.1	6	107.3	15.3	109.1	17.7	0.4	101.7					
AC	NG																											
IMP0007	04/12	SV	5+09	10 US	528.0	6	AREA 1	ICL	4.00	100	98	86	36	14	111.2	18.7	6	106.0	14.8	109.0	18.2	0.5	103.0					
AC	NG																											
IMP0008	04/12	SV	5+20	6 US	530.0	6	AREA 1	ICL	4.00	100	98	86	36	14	109.8	19.5	6	109.3	16.2	109.2	17.6	1.9	100.5					
AC	NG																											
IMP0009	04/13	SV	4+70	10 OS	531.5	6	AREA 1	ICL	4.00	100	99	87	32	11	109.3	19.6	6	108.6	15.9	109.9	17.2	2.4	99.5					
UI	NG																											
IMP0010	04/13	SV	6+55	15 OS	533.0	6	AREA 1	ICL	4.00	100	99	83	32	11	109.5	19.4	6	110.5	14.8	111.6	16.3	3.1	99.1					
UI	TEST ELEVATION 2 FT ABOVE ROCK																											
IMP0011	04/14	SV	4+32	9 OS	533.0	6	AREA 1	ICL	4.00	100	100	87	35	13	104.1	19.2	6	107.0	15.9	100.1	17.9	1.3	96.3					
AC	NG																											
IMP0012	04/14	SV	5+34.6	6.8US	533.0	8	AREA 1	ICL	4.00	100	100	87	33	12	104.1	18.9	6	106.9	16.4	106.0	18.3	0.6	96.4					
AC	THIS TEST IS 6 FT UPSTREAM OF UNDISTURBED BLOCK SAMPLE NO. 1																											
111 REPORT NOTE: THIS REPORT PREVIOUSLY SUBMITTED ON "NON-COMPUTER" 4000. SHEEPSOFT PRESSURE 1200 PSI.																												
ENS FORM 4080 (COMPUTER GENERATED) PROGRAM 041080										LAB CHIEF: _____						SUBMITTED BY: _____ PROJECT ENGINEER												

Figure 3. Example page of Engineer Form 4080

inclusion of explanation columns, paper size, and type of printer, the reports are generated. A special table is printed after the Engineer Form 4080 in which unacceptable tests that have not been retested are identified in either a group of rejected tests that are not reworked or retested or a group of accepted tests that are outside the specification limits. All the steps involved in the generation of these forms are shown on pages B7 through B22.

28. For both the Engineer Form 4080 and 4081, comments concerning a specific report can be included with the forms. Option 3 of the report's and plot's submenu is used to enter the comments. The user must select the appropriate form for the comments (i.e. 4080 or 4081). A menu screen requesting notation, reference, and comment appears. The user can enter a symbol or notation and reference that identifies the comment to some tests. A number of comments can be contained in the database. Each time a particular Engineer Form is generated, all comments are printed under the "special notes" heading in the explanation table for that form.

#### Shotgun Plots.

29. A plot of percent compaction versus deviation from optimum water content is called a shotgun plot because the test locations should be randomly scattered (i.e. like a shotgun pattern) within the zone's specified boundaries. There are two steps required to generate this plot. The first step involves generation of a plot data file which is then used in the second step where the plot is actually generated. This two-step process was required because of the 640K RAM memory imposed by DOS. To generate the shotgun plot, option 7 is selected from the report's and plot's submenu. The program will perform a disk-check to determine the amount of free memory available. If less than 125K is available, generation of the plot data file is not possible. The user has the option to continue the plot generation or abort and return to the submenu once the amount of free memory has been determined.

30. The plot data file generation is similar to the generation of the forms in that the user can select either one or several reports for a particular zone. Once the report numbers are selected, the user supplies the District name and can select to either plot the entire report data or a particular subset of the specified report data. At this point the plot data file is created using a user-specified file name. When the file creation is

complete, the user is instructed to execute the plot generation program once the database program is terminated. The user is returned to the report's and plot's submenu to either create the plot data files or exit the database program and enter the plot generation program to plot the data file just created.

31. The plot-generation program requires several pieces of information before a plot can be generated. The first item is the name of the data file that the database program generated. The name of the output file that this program generates is the next item in the prompt sequence. The other information concerns selection of plotting devices and selecting the range of the percent compaction and deviation from optimum water content to plot. Available output devices include the ability to preview the plot on the screen, plot on a small Hewlett Packard pen plotter attached through communication port 1 to the computer, or plot to a printer. For a printer, the plot is designed to be used on a 132 character per line printer using 10 characters per inch. If an 80-character printer is used, the compressed mode of 17.2 characters per inch must be used. The user is presented with the data range of the percent compaction and has the option to change the range value. The scales for the deviation from optimum water content and percent compaction can be changed. The percent compaction scale range can be either 10 or 20 percentage points (e.g. 90 to 100 or 90 to 110). The plot shows the data point location and the specification limits. If multiple points occur, the number of data points at that location is listed instead of the symbol. For those tests that are outside the specifications, a letter is used to locate both the initial point on the plot and any retest points. A table summarizing the number of acceptable and unacceptable cumulative and plotted tests is included with the plot. An example of the shotgun plot is shown in Figure 4 while pages B23 through B28 illustrate all the steps involved in generation of this plot.

#### CURVEFIT Plots

32. The CURVEFIT option allows the user to generate an x-y plot using the CURVEFIT program (M0001)\*. This program has a number of statistical and

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\* This program is available as part of the CORPS library system. The documentation and the program are available from the Engineering Computer Program Library and can be obtained by contacting US Army Engineer Waterways Experiment Station, ATTN: CEWES-IM-DS, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, phone 601-634-2481.

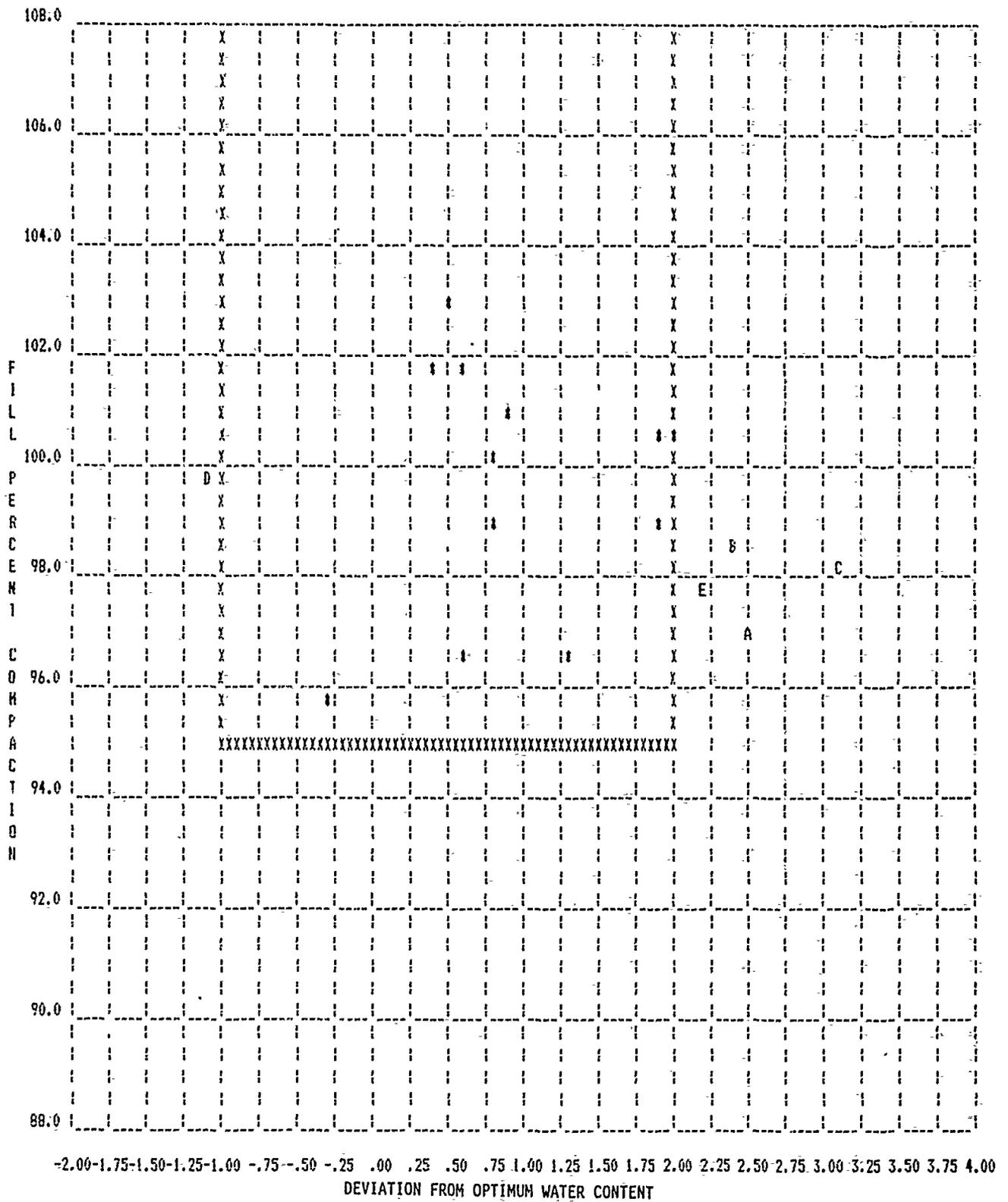


Figure 4. Example of shotgun plot

plotting capabilities that are not used in the example. The user is referred to the CURVEFIT user's guide (Renner 1979). To generate this plot using data stored in the database, two steps are required. The first step involves generation of a plot data file which is used in the second step when the plot is generated. This two-step process was required because of the 640K RAM memory imposed by DOS. Option 9 is selected from the report's and plot's submenu. The program will perform a disk-check to determine the amount of free memory available. If fewer than 125K are available, generation of the plot data file is not possible. The user has the option to continue the plot generation or abort and return to the submenu once the amount of free memory has been determined.

33. Data can be selected for a particular zone by either a date range or a report number. For either data selection method, lists of available dates or report numbers are provided to ease selection of values. Once the scope of the zone data has been selected, the user must select the particular data items to be plotted. A menu of the available data items is presented to the user from which selections for x and y axes are made. At this point, the plot data file is created using a user-specified file name. When the file creation is complete, the user is instructed to execute the plot generation program once the database program is terminated. The user is returned to the report's and plot's submenu to either create more plot data files or exit the database program and enter the plot-generation program to plot the data file just created.

34. The CURVEFIT program only plots on EGA type screens with a screen dump to the printer (if the word GRAPHICS is entered before the program is called). A printer plot is generated by plotting the created output file (OUT.EPS) using the program EPRINT.EXE. To create the screen plot and the output plot file, several pieces of information are required. The first item which must be entered by the user is the type of printer that will be used for the plot. Most Epson printers and the Hewlett Packard Thinkjet and Laser Jet printers are supported by this program. After the printer selection, the user must enter the input file name. The program then needs to know how to read the input data file. The files created by the database program do not have line numbers and are paired data values. Next, the user is presented with the curvefit data handling menu from which option 5 is selected. The user is referred to the CURVEFIT user's manual (Renner 1979) for details of the other

options available from this menu. Seven plot parameters are specified by the user or default settings can be used. These parameters include type of axes, labels, titles, and scales. An example of the curvefit plot is shown in Figure 5, whereas pages B36 through B43 illustrate all the steps involved in generation of this plot.

### General X-Y Plots

35. The general X-Y plot allows the user to generate an X-Y data plot for user-selected data items. This plot does not have all the capabilities of the CURVEFIT program but is included because this program plots on CGA-type screens and can output the plots to Hewlett Packard-type plotters in addition to most Epson printers and the Hewlett Packard Thinkjet and Laser Jet printers. There are two steps required to generate general X-Y plots. The first step involves the generation of a plot data file which is used in the second step where the plot is generated. This two-step process was required because of the 640K RAM memory imposed by DOS. To generate the shotgun plot, option 7 is selected from the reports and plots submenu. The program will perform a disk-check to determine the amount of free memory available. If fewer than 125K are available, the generation of the plot data file is not possible. The user has the option to continue the plot generation or abort and return to the submenu once the amount of free memory has been determined.

36. Data can be selected for a particular zone by either a date range or a report number. For either data selection method, lists of available dates or report numbers are provided to ease selection of values. Once the scope of the zone data has been selected, the user must select the particular data items to be plotted. A menu of the available data items is presented to the user from which selections for x and y axes are made. Before the plot file is created with a user-specified file name, the user enters the plot title and the X and Y axes labels. When the file creation is complete, the user is instructed to execute the plot generation program once the database program is terminated. The user is returned to the reports and plots submenu to either create more plot data files or exit the database program and enter the plot generation program to plot the data file just created.

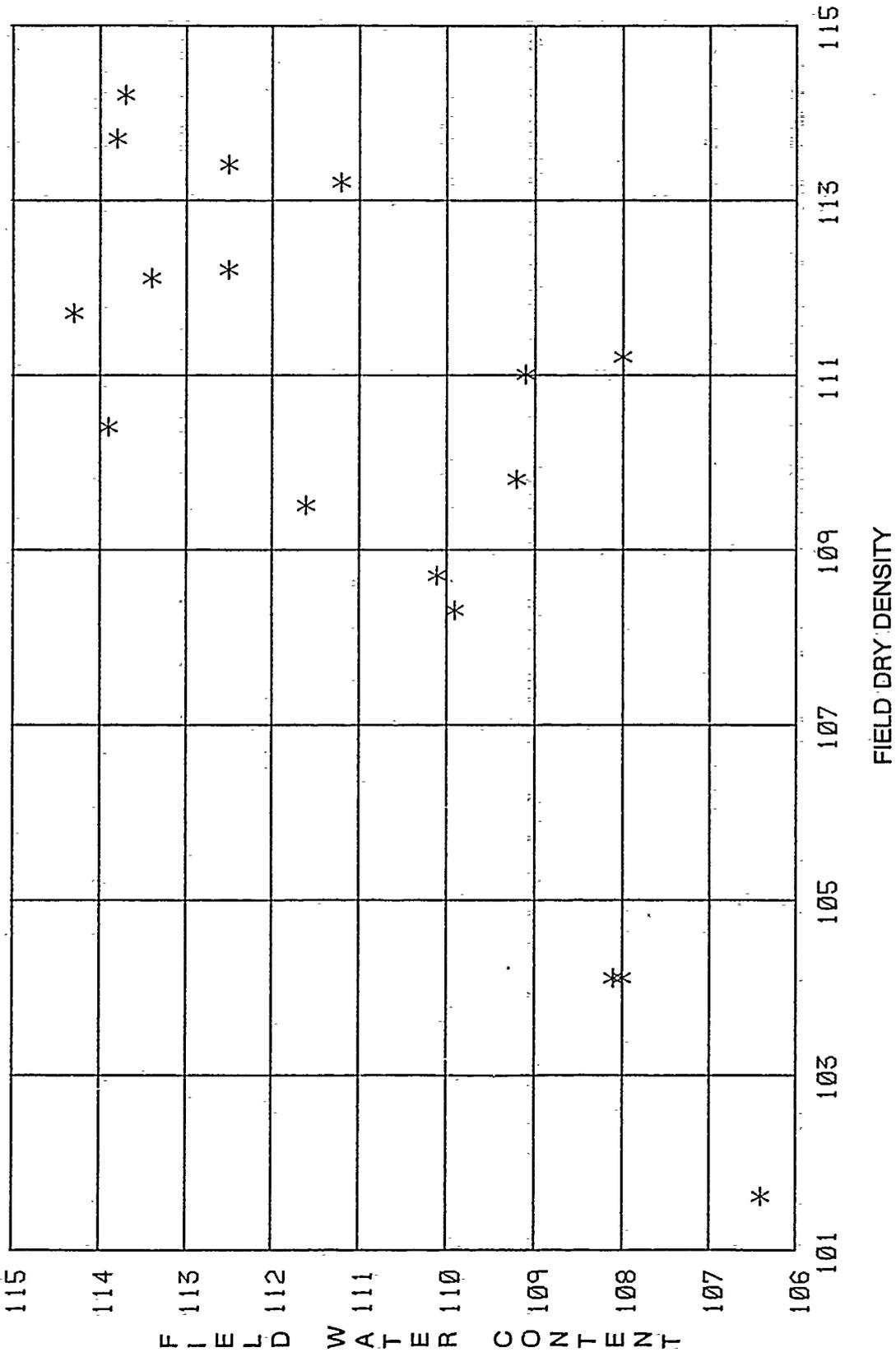


Figure 5. Example of CURVEFIT plot

37. The generation of the X-Y plot requires that several pieces of information be provided by the user. The first is the file name of the data file created by the database program. The user can then select different or the same symbol and line types for the information to be plotted. The symbol and line types are determined by the order the data are stored in the data file. The only other information that is needed is the type of output device. If a printer device is chosen, the plot program generates an output file (OUT.EPS) which requires the program EPRINT.EXE. An example of the X-Y plot is shown in Figure 6 while pages B29 through B35 illustrate all the steps involved in generation of this plot.

#### Time-History Plots

38. The time history plot allows the user to evaluate data items over a period of time. The process involved to generate this program is the same as the general X-Y plot program. The user is referred to the above section or Appendix B for details of this process. One additional feature that is applicable to this plot is the capability to organize to plot the average test value for each report number. An example of the time history plot is shown in Figure 7 while pages B44 through B51 illustrate all the steps involved in generation of this plot.

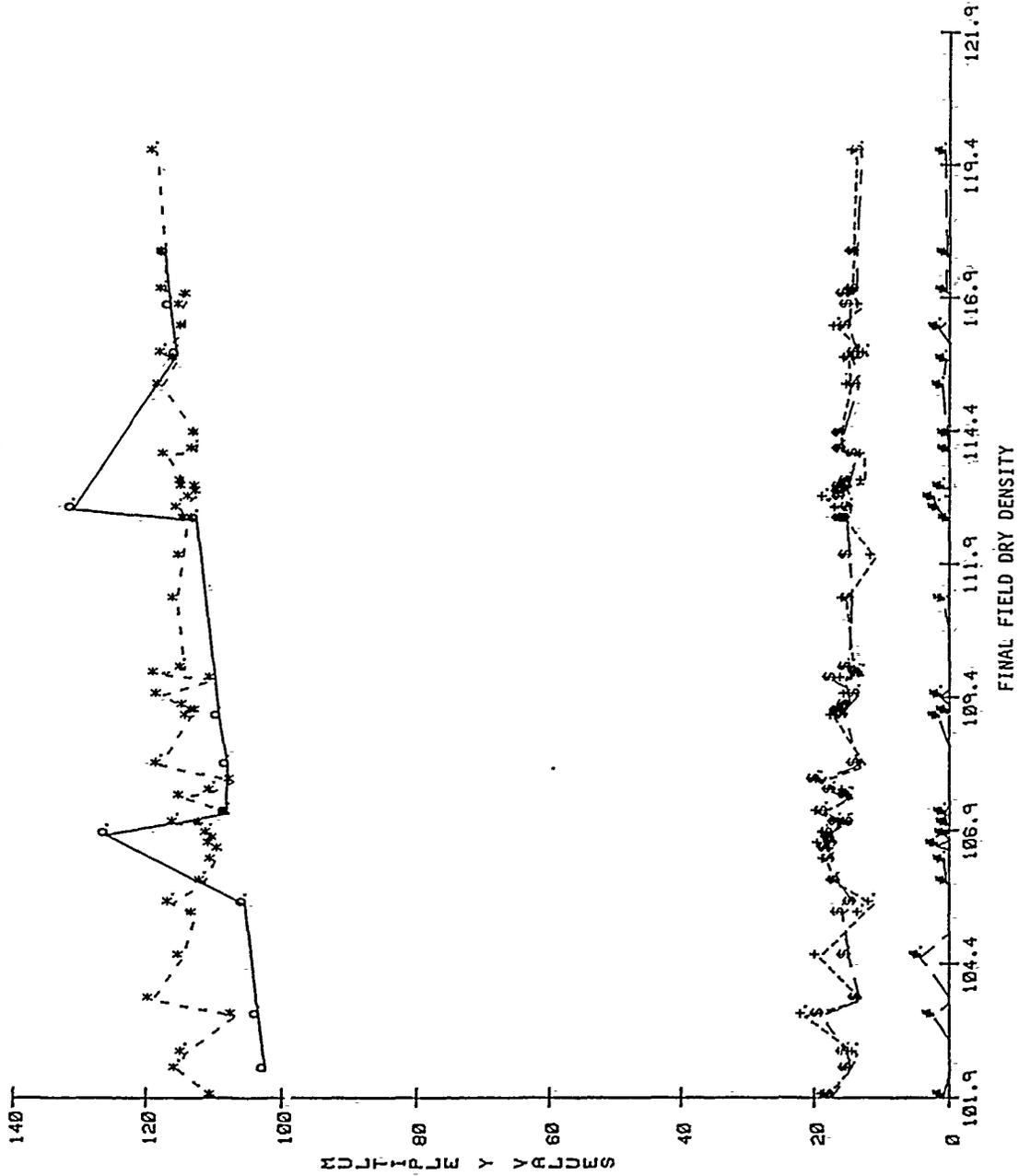
#### Statistical Plots

39. The statistical package included with the quality control database package provides capabilities in three main statistical areas:

- a. Statistical analysis of univariate and bivariate data.
- b. Quality control charts.
- c. Design of inspection sampling plans.

The "Statistical Analysis" part allows the user to look at histograms and cumulative distributions of the single and bivariate data, study the linear regression of one data field against another, and compare the probabilistic distributions of the data with some commonly used analytical probability distribution. The "Quality Control Charts" part allows the user to develop cumulative reject charts, cumulative sum charts, control charts, and moving average charts. An acceptance sampling or "Inspection Sampling" plan can assist the user in making decisions about the control quality of the

# X-Y PLOT



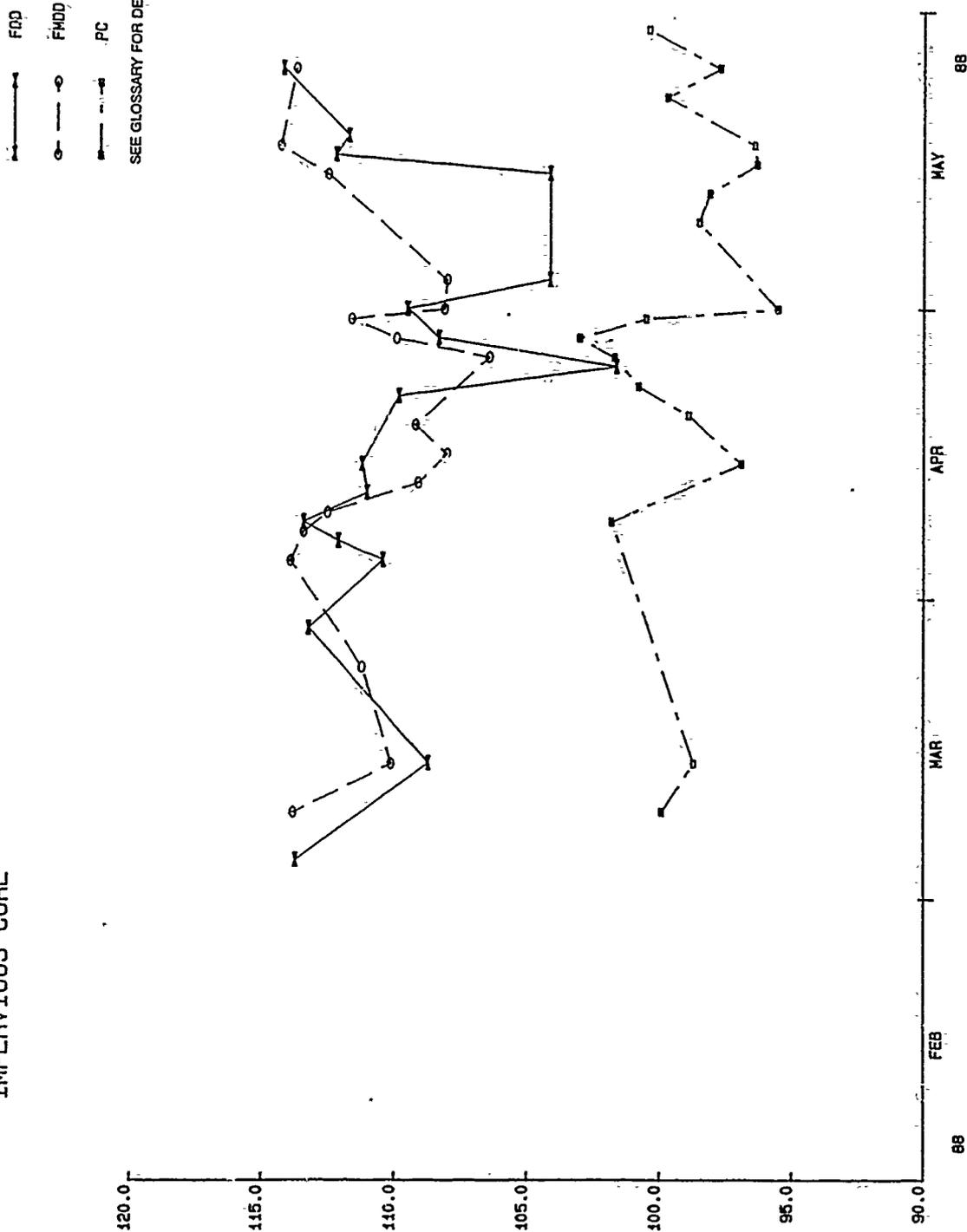
- — OFD
- \* — FMD
- + — FWC
- — FOW
- × — DOW

SEE GLOSSARY FOR DEFINITIONS

Figure 6. Example of general X-Y plot

IMPERVIOUS CORE

M U L T I P L E Y V A L U E S



TIME SERIES PLOT

Figure 7. Example of time history plot

embankment fill. Operating characteristic charts can be plotted to visualize the efficiency of the sampling plan. This manual describes how to access and use the statistical package and does not address the technical aspects of the statistical analyses which are covered in Baecher (1987). Appendix C contains examples of the plots and illustrates the steps involved in creating the various plots.

40. To use the statistical package, the user must translate the data from the database to a format for the statistical program. The user begins the translation by using option 10 from the report's and plot's submenu. Test data are selected for a zone and then organized by all tests for a zone, date range, or report number. The translated data are saved in user-named files and in files with the name TEST1.TXT, TEST2.TXT, and TEST#.TXT. When the file creation is complete, the user is instructed to execute the statistical program once the database program is terminated. The user is returned to the report's and plot's submenu either to create other plot data files or to exit the database program and execute the statistical program with the latest translated data set.

## REFERENCES

- Baecher, Gregory. 1987 (Sep). "Statistical Quality Control of Engineering Embankments," Contract Report GL-87-2, US Army Engineer Waterways Experiment Station, Vicksburg, MS.
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- Edris, Earl V., Jr., Strohm, William E., Jr., and Mann, Lawrence A. 1984 (Oct). "Use of Microcomputers for the Collection of Geotechnical Construction Control Data Associated with Embankment Dams," Proceedings, Second National Conference on Microcomputers in Civil Engineering, Orlando, FL.
- Edris, Earl V., Jr., Strohm, William E., Jr., and Woo, Kay G. "Quality Assurance of Compacted Earth Fill Using Liquid Limit Correlation: Microcomputer Database Package User's Guide," (in preparation), US Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Headquarters, Department of the Army. 1977. "Construction Control for Earth and Rock-fill Dams," Engineering Manual 1110-2-1911, Washington, DC.
- Renner, Robert L. 1979 (Nov). "User's Guide for the Interactive Computer Program 'CURVEFIT'," Instruction Report O-79-3, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

APPENDIX A: DATA ENTRY FOR QUALITY ASSURANCE PACKAGE  
YATESVILLE LAKE DAM VERSION

1. This appendix presents examples of the data entry procedures using the Yatesville Lake Dam version of the quality assurance package. Options 1, 2, 3, 4, 5, 7, and 8 are illustrated in this appendix. The following notes clarify the material in this appendix and describes the user input required to generate the examples:

a. All user responses are indicated with underlined bold print.

b. The "-----" indicated the top of the screen. All the extra spaces on the screens are not shown in the examples. Thus, some screens will appear to contain more lines than others. The word "Caps" indicate that the CAPS LOCK is on.

c. The user is asked at a number of location to add or edit data. The examples in this appendix will use both of these options. The only difference between the add and edit is that the screen is initially blank in the add mode instead of displaying the selected data set in the edit mode. For those cases illustrating the initial entry of data, the input values will be highlighted as user responses.

d. NOTES ABOUT THE EXAMPLES ARE IN A SMALLER PRINT FONT.

2. Upon beginning the program by entering either "DO MAIN" from within dBASE III or entering "DBASE MAIN" for the system prompt, the main menu appears.

```
-----
                                     Caps
      M A I N   M E N U                SELECTION
      =====
PROJECT DATA                        1
EMBANKMENT ZONE DATA                2
REPORT PERIOD DATA                  3
REPORT END DATE                      4
TEST DATA ENTRY & EDIT              5
REPORTS AND PLOTS                    6
REPORT NUMBER CORRECTION              7
BACKUP / RESTORE *.DBF FILES         8
QUIT TO SYSTEM                       Q
ENTER SELECTION: 1
```

Option 1 PROJECT DATA

-----

Caps

DO YOU WISH TO ADD OR CHANGE PROJECT DATA, OR TO EXIT  
TO THE MAIN MENU?(ENTER A,C, OR X RESPECTIVELY): C

PROJECT NAME: YATESVILLE LAKE DAM  
PROJECT RIVER: BLAINE CREEK, KY  
PROJECT COUNTY: LARWENCE  
PROJECT STATE: KY  
PROJECT TOWN: LOUISA  
CONTRACT NO.: DACW69-86-C-0039  
CONTRACTOR: LANE CONSTRUCTION CORP.

DO YOU WANT TO INPUT ZONE DATA NOW? (ENTER Y OR N): N

-----

Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM

DO YOU WISH TO ADD OR CHANGE ZONE DATA, OR TO EXIT  
TO THE MAIN MENU?(ENTER A,C, OR X RESPECTIVELY): A

NAME OF ZONE?: EMBANKMENT  
CODE OF ZONE?: EMB

IS THIS CORRECT? (N/Y) Y

-----

PROJECT: YATESVILLE LAKE DAM

Caps

Embankment Zone Code: EMB  
Embankment Zone: EMBANKMENT

EQUIPMENT: Sheepfoot Roller  
COMPACTION PERCENT: 98.0  
W.C. % LOWER LIMIT: -1.0  
W.C. % UPPER LIMIT: 2.0  
FIELD MOLD SIZE: 6  
LAB. MOLD SIZE: 6  
MOIST UNIT WEIGHT: \_\_\_\_\_  
MAXIMUM PARTICLE SIZE: 0.25  
COMPACTION EFFORT: STD

DO YOU WISH TO CHANGE YOUR INPUT FOR THIS ZONE?

ENTER Y OR N: N

DO YOU WISH TO INPUT MORE ZONE DATA? (ENTER Y OR N): N

DO YOU WISH TO INPUT REPORT DATA FOR THIS ZONE? (Y/N): N

-----

Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM

DO YOU WISH TO ADD OR CHANGE ZONE DATA, OR TO EXIT TO THE MAIN MENU?(ENTER A,G, OR X RESPECTIVELY): A

NAME OF ZONE?: EMBANKMENT  
CODE OF ZONE?: EMB

THIS ZONE AND/OR ZONECODE ALREADY EXISTS; PLEASE TRY AGAIN

- DRN DRAIN MATERIAL
- EMB EMBANKMENT
- GF1 GRADED FILER TYPE 1
- GF2 GRADED FILTER TYPE 2
- IMP IMPERVIOUS CORE
- PSS PROS SANDSTONE 12IN
- RAN RANDOM ROCK
- SS8 SS ROCKFILL 8IN
- SSR SS ROCKFILL 24IN

Press any key to continue...

-----  
RETURN TO THE MAIN MENU BY RESPONDING TO THE PROMPT WITH AN X  
-----

M A I N M E N U	Caps SELECTION
-----	-----
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 2

Option 2 EMBANKMENT ZONE DATA

-----  
DATA FOR PROJECT: YATESVILLE LAKE DAM

DO YOU WISH TO ADD OR CHANGE ZONE DATA, OR TO EXIT  
TO THE MAIN MENU?(ENTER A,C, OR X RESPECTIVELY): C

-----  
Caps

SELECT THE ZONE YOU WISH TO CHANGE:

DRN DRAIN MATERIAL  
EMB EMBANKMENT  
GF1 GRADED FILTER TYPE 1  
GF2 GRADED FILTER TYPE 2  
IMP IMPERVIOUS CORE  
PSS PROS SANDSTONE 12IN  
RAN RANDOM ROCK  
SS8 SS ROCKFILL 8IN  
SSR SS ROCKFILL 24IN

ENTER ZONE CODE, <RETURN> TO VIEW LIST, OR <0> TO QUIT: EMB

-----  
PROJECT: YATESVILLE LAKE DAM

Caps

Embankment Zone Code: EMB  
Embankment Zone: EMBANKMENT

EQUIPMENT: Sheepfoot Roller  
COMPACTION PERCENT: 98.0  
W.C. % LOWER LIMIT: -1.0  
W.C. % UPPER LIMIT: 2.0  
FIELD MOLD SIZE: 6  
LAB. MOLD SIZE: 6  
MOIST UNIT WEIGHT:  
MAXIMUM PARTICLE SIZE: 0.25  
COMPACTION EFFORT: STD

USE ARROW KEYS TO MOVE CURSOR TO ITEM THAT WILL BE CHANGED. ENTER NEW VALUE BY TYPING OVER OLD VALUE.  
FOLLOW ON SCREEN INSTRUCTIONS TO EXIT EDIT MODE.

-----  
RETURN TO THE MAIN MENU BY RESPONDING TO THE PROMPT WITH AN X

M A I N M E N U	Caps SELECTION
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 3

Option 3 REPORT PERIOD DATA

SELECT ZONE:

DRN DRAIN MATERIAL  
 EMB EMBANKMENT  
 GF1 GRADED FILER TYPE 1  
 GF2 GRADED FILTER TYPE 2  
 IMP IMPERVIOUS CORE  
 PSS PROS SANDSTONE 12IN  
 RAN RANDOM ROCK  
 SS8 SS ROCKFILL 8IN  
 SSR SS ROCKFILL 24IN

ENTER ZONE CODE CONTAINING THE REPORT, <RETURN> TO  
 VIEW LIST, OR <0> TO ABORT THIS OPERATION: IMP

-----

Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE

DO YOU WISH TO ADD OR CHANGE REPORT DATA, OR TO EXIT  
TO THE MAIN MENU?(ENTER A,C, OR X RESPECTIVELY): A

LAST REPORT NUMBER = 6  
ENTER REPORT NUMBER: 7

IS THIS CORRECT? (N/Y) Y

-----

PROJECT: YATESVILLE LAKE DAM

Caps

EMBANKMENT ZONE CODE: IMP  
EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NO.: 7

BEGINNING DATE (MM/DD/YY): 07/10/88  
MATERIAL SOURCE: Borrow A  
LOOSE LIFT THICKNESS: 8  
NUMBER OF PASSES: 8

DO YOU WISH TO CHANGE YOUR INPUT?  
ENTER Y OR N: N  
DO YOU WISH TO INPUT MORE REPORT DATA? (ENTER Y OR N): N  
DO YOU WISH TO INPUT TEST DATA FOR THIS REPORT? (ENTER Y OR N): N

-----

Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE

DO YOU WISH TO ADD OR CHANGE REPORT DATA, OR TO EXIT  
TO THE MAIN MENU?(ENTER A,C, OR X RESPECTIVELY): C

SELECT REPORT NO. FOR THIS ZONE:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

ENTER REPORT NUMBER OR <0> TO VIEW LIST OR EXIT: 7

-----

PROJECT: YATESVILLE LAKE DAM

Caps

EMBANKMENT ZONE CODE: IMP  
EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NO.: 7

BEGINNING DATE (MM/DD/YY): 07/10/88  
MATERIAL SOURCE: Borrow A  
LOOSE LIFT THICKNESS: 8  
NUMBER OF PASSES: 8

DO YOU WISH TO CHANGE YOUR INPUT?  
ENTER Y OR N: N

-----

RETURN TO THE MAIN MENU BY RESPONDING TO THE PROMPT WITH AN X

-----

<u>M A I N M E N U</u>	Caps SELECTION
-----	
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 4

Option 4 REPORT END DATE

-----

SELECT ZONE:

DRN	DRAIN MATERIAL
EMB	EMBANKMENT
GF1	GRADED FILTER TYPE 1
GF2	GRADED FILTER TYPE 2
IMP	IMPERVIOUS CORE
PSS	PROS SANDSTONE 12IN
RAN	RANDOM ROCK
SS8	SS ROCKFILL 8IN
SSR	SS ROCKFILL 24IN

ENTER ZONE CODE CONTAINING THE REPORT, <RETURN> TO  
VIEW LIST, OR <0> TO ABORT THIS OPERATION: IMP

-----

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE

Caps

SELECT REPORT NO. FOR THIS ZONE:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

ENTER REPORT NUMBER OR <0> TO VIEW LIST OR EXIT: 7

-----

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NO.: 7

Caps

REPORT END DATE (MM/DD/YY/): 07/23/88

REPORT NOTE: NO DATA ADDED FOR THIS REPORT.

DO YOU WISH TO ENTER MORE REPORT END DATES?(ENTER Y OR N): N

-----

RETURN TO THE MAIN MENU BY RESPONDING TO THE PROMPT WITH AN X

-----

<u>M A I N M E N U</u>	Caps SELECTION -----
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 5

Option 5: TEST DATA ENTRY & EDIT

-----

SELECT ZONE:

DRN	DRAIN MATERIAL
EMB	EMBANKMENT
GF1	GRADED FILTER TYPE 1
GF2	GRADED FILTER TYPE 2
IMP	IMPERVIOUS CORE
PSS	PROS SANDSTONE 12IN
RAN	RANDOM ROCK
SS8	SS ROCKFILL 8IN
SSR	SS ROCKFILL 24IN

ENTER ZONE CODE CONTAINING THIS REPORT, <RETURN> TO  
VIEW LIST, OR <0> TO ABORT THIS OPERATION: IMP

-----

Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE

SELECT REPORT NO. FOR THIS ZONE:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

ENTER REPORT NUMBER OR <0> TO VIEW LIST OR EXIT: 7

-----

Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE  
AND REPORT NUMBER: 7

DO YOU WISH TO ADD OR CHANGE TEST DATA, OR TO EXIT  
TO THE MAIN MENU?(ENTER A,C OR X RESPECTIVELY): A

ENTER TEST NUMBER: IMPO001  
INPUT THE TEST GROUP(1,2 OR 3)  
INPUT A ZERO TO QUIT: 1

-----

Caps

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMPO001

TYPE OF COMPACTION TEST: SV  
TEST DATE (MM/DD/YY): 03/29/88  
SOURCE OF DATA (A=QA, C=QC): A

STATION: 5+85.5  
OFFSET: 1.5US  
ELEVATION: 523.3  
DEPTH IN INCHES: 7

-----  
Caps

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMPO001

SOIL CLASSIFICATION: CL  
LIQUID LIMIT: 29  
PLASTICITY INDEX: 10  
RAPID MOISTURE DETECTION DEVICE (M/S/O): 0 \*  
QUICK FIELD WATER CONTENT:       
QUICK FIELD DRY DENSITY:       
QUICK ONE-POINT WATER CONTENT:       
QUICK ONE-POINT DRY DENSITY:       
QUICK OPTIMUM WATER CONTENT:       
QUICK MAXIMUM DRY DENSITY:       
OVEN FIELD WATER CONTENT: 17.5  
OVEN FIELD DRY DENSITY: 110.2  
ONE-POINT WATER CONTENT: 14.8  
ONE-POINT DRY DENSITY: 109.6  
FOC OPTIMUM WATER CONTENT: 15.4  
FOC MAXIMIM DRY DENSITY: 113.8

\* (M/S/O) IDENTIFIES THE RAPID MOISTURE DETECTION DEVICE

-----  
Caps

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMPO001

WAS A RECORD SAMPLE TAKEN? (Y/N): N

COMMENTS: FICTITIOUS DATA

DO YOU WISH TO CHANGE YOUR INPUT?  
ENTER Y OR N: N

ONE OR BOTH PERCENT COMPACTION VALUES CANNOT BE CALCULATED.  
DO YOU WANT TO EDIT YOUR INPUT? (Y/N) N

Caps

-----  
EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMPO001

CALCULATED VALUES ARE:

FIELD DEVIATION FROM OPTIMUM WATER CONTENT = 2.1  
FIELD PERCENT COMPACTION = 96.8  
QUICK DEVIATION FROM OPTIMUM WATER CONTENT = 0.0  
QUICK PERCENT COMPACTION = 0.0

ENTER STATUS OF TEST: U3 USER SELECTS STATUS OF THE TEST FROM LIST OF VALID CODES, BASED ON THE CALCULATED VALUES, THE ZONE SPECIFICATIONS, AND THE USER'S EXPERIENCE.

STATUS OF TEST	
<AC>	= ACCEPTABLE
<U1>	= OUTSIDE ON MOISTURE
<U2>	= OUTSIDE ON DENSITY
<U3>	= OUTSIDE ON BOTH

FOR UNACCEPTABLE TESTS, THE USER IS ASKED THE FOLLOWING:

WILL THE TEST BE REWORKED AND/OR RETESTED? (W/T/B/X) B  
W = REWORKED ONLY (U\*R2) THE VALUES IN PARENTHESES ARE  
T = RETESTED ONLY (U\*N) ENTERED INTO THE DATABASE  
B = BOTH REWORKED AND RETESTED (U\*N) WHERE THE \* REPRESENTS 1, 2,  
X = NONE OF THE ABOVE (U\* ) OR 3.

Caps

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMPO001

CALCULATED VALUES ARE:

FIELD DEVIATION FROM OPTIMUM WATER CONTENT = 2.1  
FIELD PERCENT COMPACTION = 96.8  
QUICK DEVIATION FROM OPTIMUM WATER CONTENT = 0.0  
QUICK PERCENT COMPACTION = 0.0

TEST STATUS/TYPE OF RETEST = U3N THE TEST STATUS HAS BEEN MODIFIED TO INDICATE THAT THIS MATERIAL WILL BE RETESTED AND MAYBE REWORKED.

INPUT THE TEST GROUP(1,2 OR 3)  
INPUT A ZERO TO QUIT: 2

-----

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMP0001

Caps

5-POINT CURVE NUMBER: 14  
5-POINT MAXIMUM DRY DENSITY: 113.4  
5-POINT OPTIMUM WATER CONTENT: 15.8  
5-POINT PERCENT COMPACTION: 97.2  
5-POINT DEVIATION FROM OPTIMUM W. C.: 1.7  
PERCENT GREATER THAN 3/4 INCH SIEVE: \_\_\_\_\_  
LIQUID LIMIT: 30  
PLASTIC LIMIT: 20  
SPECIFIC GRAVITY OF SOLIDS: \_\_\_\_\_

DO YOU WISH TO CHANGE YOUR INPUT?  
ENTER Y OR N: N

INPUT THE TEST GROUP(1,2 OR 3)  
INPUT A ZERO TO QUIT: 3

-----

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMP0001

Caps

% PASSING 4" SIEVE: \_\_\_\_\_  
% PASSING 3" SIEVE: \_\_\_\_\_  
% PASSING 2" SIEVE: \_\_\_\_\_  
% PASSING 1 1/2" SIEVE: \_\_\_\_\_  
% PASSING 1" SIEVE: \_\_\_\_\_  
% PASSING 3/4" SIEVE: 100  
% PASSING 3/8" SIEVE: 99  
% PASSING #4 SIEVE: 98  
% PASSING #8 SIEVE: \_\_\_\_\_  
% PASSING #10 SIEVE: 95  
% PASSING #16 SIEVE: \_\_\_\_\_  
% PASSING #20 SIEVE: \_\_\_\_\_  
% PASSING #30 SIEVE: \_\_\_\_\_  
% PASSING #40 SIEVE: 84  
% PASSING #50 SIEVE: \_\_\_\_\_  
% PASSING #80 SIEVE: 72  
% PASSING #100 SIEVE: 70  
% PASSING #200 SIEVE: 67

DO YOU WISH TO CHANGE YOUR INPUT?  
ENTER Y OR N: N

-----

Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE  
AND REPORT NUMBER: 7

DO YOU WISH TO ADD OR CHANGE TEST DATA, OR TO EXIT  
TO THE MAIN MENU?(ENTER A,C OR X RESPECTIVELY): A

ENTER TEST NUMBER: IMPO002

IS THIS CORRECT? (Y/N) Y

INPUT THE TEST GROUP(1,2 OR 3)  
INPUT A ZERO TO QUIT: 1

-----

Caps

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMPO002

TYPE OF COMPACTION TEST: PIT  
TEST DATE (MM/DD/YY): 04/07/89  
SOURCE OF DATA (A=QA, C=QC): A

STATION: 5+50  
OFFSET: 5.0DS  
ELEVATION: 535.0  
DEPTH IN INCHES: 18

COMMENTS: FICTITIOUS DATA

DO YOU WISH TO CHANGE YOUR INPUT?  
ENTER Y OR N: N

Caps

-----  
EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMPO002

% PASSING 24" SIEVE: \_\_\_  
% PASSING 22" SIEVE: \_\_\_  
% PASSING 19" SIEVE: \_\_\_  
% PASSING 15" SIEVE: \_\_\_  
% PASSING 11" SIEVE: \_\_\_  
% PASSING 9" SIEVE: \_\_\_  
% PASSING 7" SIEVE: \_\_\_

PERMEABILITY OF PIT MATERIAL: \_\_\_\_\_  
WEIGHT OF MATERIAL FROM TEST PIT: 113.5  
VOLUME OF TEST PIT: 1.0  
FIELD UNIT WEIGHT: 113.5

Press any key to continue...

Caps

-----  
EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMPO002

% PASSING 4" SIEVE: \_\_\_  
% PASSING 3" SIEVE: \_\_\_  
% PASSING 2" SIEVE: \_\_\_  
% PASSING 1 1/2" SIEVE: \_\_\_  
% PASSING 1" SIEVE: \_\_\_  
% PASSING 3/4" SIEVE: 100  
% PASSING 3/8" SIEVE: 99  
% PASSING #4 SIEVE: 98  
% PASSING #8 SIEVE: \_\_\_  
% PASSING #10 SIEVE: 94  
% PASSING #16 SIEVE: \_\_\_  
% PASSING #20 SIEVE: \_\_\_  
% PASSING #30 SIEVE: \_\_\_  
% PASSING #40 SIEVE: 80  
% PASSING #50 SIEVE: \_\_\_  
% PASSING #80 SIEVE: 71  
% PASSING #100 SIEVE: 67  
% PASSING #200 SIEVE: 64

DO YOU WISH TO CHANGE YOUR INPUT?  
ENTER Y OR N: N

-----  
Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE  
AND REPORT NUMBER: 7

DO YOU WISH TO ADD OR CHANGE TEST DATA, OR TO EXIT  
TO THE MAIN MENU?(ENTER A,C OR X RESPECTIVELY): C

ENTER TEST NUMBER: IMP0003

INPUT THE TEST GROUP(1,2 OR 3)  
INPUT A ZERO TO QUIT: 1

THIS TEST NUMBER HAS NOT BEEN ENTERED FOR THIS TEST GROUP -- PLEASE TRY AGAIN.  
DO YOU WANT TO REVIEW THE LIST OF AVAILABLE TESTS? (Y/N) Y

-----  
Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE  
AND REPORT NUMBER: 7

TEST DATA IN GROUP # 1

IMP0001  
IMP0002

Press any key to continue...

-----  
RETURN TO THE MAIN MENU BY RESPONDING TO THE PROMPT WITH AN X

<u>M A I N M E N U</u>	<u>SELECTION</u>
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 7

Option 7 REPORT NUMBER CORRECTION

Caps

REPORT NUMBER CORRECTION

ZONE(S) CONTAINING REPORTS:

IMP IMPERVIOUS CORE

ENTER ZONE CODE CONTAINING THIS REPORT, <RETURN> TO  
VIEW LIST, OR <0> TO ABORT THIS OPERATION: IMP

Caps

REPORT NUMBER CORRECTION

EMBANKMENT ZONE: IMPERVIOUS CORE

SELECT REPORT NO. FOR THIS ZONE:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

ENTER REPORT NO. TO BE CORRECTED, OR <0> TO VIEW LIST: 7

-----  
Caps

REPORT NUMBER CORRECTION

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NO. TO BE CORRECTED: 7

SELECT REPORT NO. FOR THIS ZONE:

- 1
- 2
- 3
- 4
- 5
- 6
- 7

ENTER CORRECT REPORT NO., OR <0> TO VIEW LIST: 1

-----  
Caps

DATA FOR PROJECT: YATESVILLE LAKE DAM  
AND EMBANKMENT ZONE: IMPERVIOUS CORE

CHANGE REPORT NUMBER 7 TO REPORT NUMBER 1

0 = EXIT 1 = SELECT TESTS INDIVIDUALLY 2 = SELECT RANGE OF TESTS  
ENTER SELECTION NUMBER: 1

ENTER TEST NUMBER: IMP0001

INPUT THE TEST GROUP(1,2 OR 3)  
INPUT A ZERO TO QUIT: 3

Caps

-----  
EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NUMBER: 7  
TEST NUMBER: IMP0001

- % PASSING 4" SIEVE:
- % PASSING 3" SIEVE:
- % PASSING 2" SIEVE:
- % PASSING 1 1/2" SIEVE:
- % PASSING 1" SIEVE:
- % PASSING 3/4" SIEVE:
- % PASSING 3/8" SIEVE:
- % PASSING #4 SIEVE:
- % PASSING #8 SIEVE:
- % PASSING #10 SIEVE:
- % PASSING #16 SIEVE:
- % PASSING #20 SIEVE:
- % PASSING #30 SIEVE:
- % PASSING #40 SIEVE:
- % PASSING #50 SIEVE:
- % PASSING #80 SIEVE:
- % PASSING #100 SIEVE:
- % PASSING #200 SIEVE:

CHANGE THE REPORT NO.? (Y/N) N

-----  
CONTINUE FOR ALL TESTS IN THE REPORT NUMBER THAT IS BEING CHANGED. WHEN FINISHED, RETURN TO THE MAIN MENU BY RESPONDING TO THE PROMPT WITH AN X

<u>M A I N M E N U</u>	<u>SELECTION</u>
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 8

Option 8 BACKUP DATABASE FILES

0 = RETURN TO MAIN MENU    1 = BACKUP \*.DBF FILES    2 = RESTORE \*.DBF FILES  
 SELECT OPTION: 1

Caps

QA FILE BACKUP PROGRAM

THIS PROGRAM COPIES THE DATA FILES TO BACKUP  
 DISKETTE(S). DISKETTE(S) MUST BE FORMATTED AND  
 EMPTY OF ANY FILES.

DO YOU WANT TO CONTINUE? (Y/N) Y

IS THIS CORRECT?  
CURRENT DATE: 04/07/89  
CURRENT TIME: 18:25:51

ARE YOU SURE? Y

ENTER DATA AS (DRIVE #:\XXXXXXXX\XXXXXXXX\):  
WHERE IS THE SOURCE DRIVE\DIRECTORY?:  
C:\QA\

WHERE IS THE BACKUP DRIVE\DIRECTORY?:  
A:

ARE YOU SURE? Y

-----  
Caps

QA FILE BACKUP PROGRAM

SOURCE: C:\QA\  
BACKUP: A:\

INSERT DISK # 1 IN DRIVE A:\  
TO CONTINUE.

HIT ANY KEY

-----  
Caps

QA FILE BACKUP PROGRAM

SOURCE: C:\QA\  
BACKUP: A:\

BACKUP TEST1.DBF TO TEST1BU.DBF

TOTAL NUMBER OF RECORDS IN SOURCE FILE:	322
NUMBER OF RECORDS TO BE COPIED TO DISK:	322
NUMBER OF RECORDS REMAINING IN SOURCE:	0

CONTINUE FOR ALL DATA BASE FILES

<u>M A I N M E N U</u>	<u>SELECTION</u>
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 8

Option 8 RESTORE DATABASE FILES

0 = RETURN TO MAIN MENU    1 = BACKUP \*.DBF FILES    2 = RESTORE  
\*.DBF FILES

SELECT OPTION: 2

Caps

QA BACKUP FILE RESTORE PROGRAM

THIS PROGRAM RESTORES THE FILES THAT HAVE BEEN  
COPIED TO YOUR BACKUP DISKETTE(S).

DO YOU WANT TO CONTINUE? (Y/N) Y

ENTER DATA AS (DRIVE #:\XXXXXXXX\XXXXXXXX\):  
WHERE IS THE BACKUP DRIVE\DIRECTORY?:

A:

WHERE IS THE TARGET DRIVE\DIRECTORY?:

C:\QA\

ARE YOU SURE? Y

INSERT THE LAST DISKETTE IN DRIVE. PRESS ANY KEY TO  
CONTINUE.

-----  
Caps

QA BACKUP FILE RESTORE PROGRAM

BACKUP: A:\  
TARGET: C:\QA\

RESTORE PROJBU.DBF TO PROJ.DBF  
RESTORE? (Y/N) Y

INSERT DISK # 1 IN DRIVE A:\  
TO CONTINUE.

HIT ANY KEY

CONTINUE FOR ALL DATA BASE FILES

-----

<u>      M A I N M E N U      </u>	<u>SELECTION</u>
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: Q

-----

THE USER IS RETURNED TO THE DOS SYSTEM PROMPT.

## APPENDIX B: REPORTS AND PLOTS

1. This appendix presents examples of the reports and plotting capability of the Quality Assurance Package. The statistical plots are described in Appendix C. Option 6 of the main menu is used for all the examples in this appendix. This appendix describes how to generate and shows examples of the various forms of output. The following notes clarify the material in this appendix and describes the user input required to generate the examples:

a. All user responses are indicated with underlined bold print.

b. The "-----" indicated the top of the screen. All the extra spaces on the screens are not shown in the examples. Thus, some screens will appear to contain more lines than others. The word "Caps" indicates that the CAPS LOCK is on.

c. The user is asked at a number of location to add or edit data. The examples in this appendix will use both of these options. The only difference between the add and edit is that the screen is initially blank in the add mode instead of displaying the selected data set in the edit mode. For those cases illustrating the initial entry of data, the input values will be highlighted as user responses.

d. NOTES ABOUT THE EXAMPLES ARE IN A SMALLER PRINT FONT.

2. Upon beginning the program by entering either 'DO MAIN' from within dBASE III or entering 'DBASE MAIN' for the system prompt, the main menu appears.

<u>M A I N M E N U</u>	<u>SELECTION</u>
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 6

-----  
 R E P O R T S   A N D   P L O T S

Caps

M E N U	SELECTION
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION:    1

DO YOU WANT A PRINTED COPY? : N

-----  
 EMBANKMENT ZONE SPECIFICATIONS                      DATE: 04/07/89                      PAGE    1

CODE	EQUIPMENT	PERCENT COMPACT.	-W.C. LIMIT	FIELD M.S. (IN)	MOIST UNIT WT.	MAX. PART. SIZE
	EMBANKMENT ZONE NAME	COMPACT. EFFORT	+W.C. LIMIT	LAB M.S. (IN)		
DRN	VIBRATORY 4PASS	0.00	0.0	0	110.00	
	DRAIN MATERIAL			0.0	0	0.375
EMB	SHEEPFOOT ROLLER	98.00	-1.0	6	0.00	
	EMBANKMENT	STD		2.0	6	0.250
GF1	VIBRATORY 4PASS	0.00	0.0	0	110.00	
	GRADED FILER TYPE 1			0.0	0	1.000
GF2	VIBRATORY 4PASS	0.00	0.0	0	110.00	
	GRADED FILTER TYPE 2			0.0	0	4.000

Press any key to continue...

-----

R E P O R T S   A N D   P L O T S

Caps

M E N U	S E L E C T I O N
=====	
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION:    2

DO YOU WANT A PRINTED COPY? : N

-----

PROJECT: YATESVILLE LAKE DAM

L I S T   O F   Z O N E S   &   R E P O R T S

DATE: 04/07/89

PAGE    1

EMBANKMENT ZONE CODE & NAME:    IMP - IMPERVIOUS CORE

=====

REPT. NO.	BEGIN DATE	END DATE	MATERIAL SOURCE	LOOSE LIFT THICK (IN.)	NO. PASSES
-----					
1	03/29/88	04/16/88	AREA 1	8	6
2	04/17/88	05/03/88	AREA 1	8	6
3	05/04/88	05/31/88	AREA 1	8	6
4	06/01/88	07/01/88	AREA 1	8	6
5	07/02/88	07/31/88	AREA 1	8	6
6	08/01/88	09/09/88	AREA 1	8	6
7	09/10/88	04/07/89	AREA 1	8	6

Press any key to continue...

-----  
\* \* \* N O T E S \* \* \*

EMBANKMENT ZONE CODE: IMP REPORT NO.: 1  
THIS REPORT PREVIOUSLY SUBMITTED ON "NON-COMPUTER" 4080. SHEEPSFOOT PRESSURE  
1290 PSI.

EMBANKMENT ZONE CODE: IMP REPORT NO.: 2  
QC RETEST 6-FT UPSTREAM OF QA-TEST 20A, NOT SUBMITTED BY CONTRACTOR. SHPSFT  
PRESS 1290 PSI

EMBANKMENT ZONE CODE: IMP REPORT NO.: 3  
COMPACT EFFORT CHANGED. 1290 PSI UNTIL 5/13/88--800 PSI ON 5/13--966 PSI  
5/14 AND LATER.

EMBANKMENT ZONE CODE: IMP REPORT NO.: 4  
1050 PSI

EMBANKMENT ZONE CODE: IMP REPORT NO.: 5  
1050 PSI

EMBANKMENT ZONE CODE: IMP REPORT NO.: 6  
END OF REPORT NO. 6                      END OF EMBANKMENT REPORT

Press any key to continue...  
-----

R E P O R T S    A N D    P L O T S	Caps
M E N U	SELECTION
=====	-----
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION:  3

-----  
YATESVILLE LAKE DAM

Caps

ADD COMMENTS TO ENG FORMS 4080 AND 4081

- 0 EXIT TO PREVIOUS MENU
- 1 ADD COMMENTS TO ENG FORM 4080
- 2 ADD COMMENTS TO ENG FORM 4081

SELECT OPTION: 1

-----  
YATESVILLE LAKE DAM

Caps

ADD COMMENTS TO ENG FORM 4080

RECORD NO.: 1

NOTATION: 1

REFERENCE: IMP

COMMENT:

REPORTS WITHOUT GRADATION DATA HAVE ESTIMATED MATERIAL CLASSIFICATIONS.

0 = EXIT TO PREVIOUS MENU    3 = SKIP AHEAD ONE    6 = LIST COMMENTS  
1 = ENTER NEW RECORD        4 = SKIP BACK ONE  
2 = EDIT RECORD              5 = DELETE RECORD

ENTER OPTION NO.: USER ENTERS APPROPRIATE OPTION NUMBER

-----  
YATESVILLE LAKE DAM

Caps

ADD COMMENTS TO ENG FORMS 4080 AND 4081

0 EXIT TO PREVIOUS MENU  
1 ADD COMMENTS TO ENG FORM 4080  
2 ADD COMMENTS TO ENG FORM 4081

SELECT OPTION: 2

-----  
YATESVILLE LAKE DAM

Caps

ADD COMMENTS TO ENG FORM 4081

RECORD NO.: 1

NOTATION: \*\*\*\*

REFERENCE:

COMMENT:

THIS IS A NOTE.

0 = EXIT TO PREVIOUS MENU    3 = SKIP AHEAD ONE    6 = LIST COMMENTS  
1 = ENTER NEW RECORD        4 = SKIP BACK ONE  
2 = EDIT RECORD              5 = DELETE RECORD

ENTER OPTION NO.:    USE < ENTER > APPROPRIATE OPTION NUMBER

-----

R E P O R T S   A N D   P L O T S

Caps

M E N U	S E L E C T I O N
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION:    4

-----

YATESVILLE LAKE DAM

Caps

COMPUTER GENERATED ENG FORM 4080

ZONE REPORTS AVAILABLE AT PRESENT:

0 SELECTION(S)

=====

IMPERVIOUS CORE	IMP	1
IMPERVIOUS CORE	IMP	2
IMPERVIOUS CORE	IMP	3
IMPERVIOUS CORE	IMP	4
IMPERVIOUS CORE	IMP	5
IMPERVIOUS CORE	IMP	6
IMPERVIOUS CORE	IMP	7

---

ENTER ZONE CODE AND REPORT NO. ,            IMP 1  
OR <RETURN><RETURN> TO CONTINUE LIST,  
OR <9><RETURN><RETURN> STOP SELECTION,  
OR <0><RETURN><RETURN> TO EXIT

---

---

REPORT # 1 FOR ZONE IMPERVIOUS CORE  
INCLUDES TESTS FROM 03/29/88 TO 04/16/88  
DO YOU WANT TO CHANGE THE REPORT NO.? (Y/N) N

---

---

REPORT # 1 FOR ZONE IMPERVIOUS CORE

THIS SELECTION WILL BE DELETED FROM THE ABOVE LIST -- HIT ANY KEY TO CON'T.

SELECT ALL REPORTS FOR PRINTING. WHEN PROMPTED FOR ZONE AND REPORT NUMBER ENTER <9><RETURN><RETURN> TO STOP SELECTION AND CONTINUE.

---

---

DO YOU WANT THE COLUMN EXPLANATION TABLE INCLUDED? (Y/N) Y

---

---

SIZE OF PAPER: 1) 8 1/2 x 11 2) 14 7/8 x 11 1

---

---

IS THIS A LASERJET PRINTER? (Y/N) N

PREPARE THE PRINTER FOR FORM TEST . . . . .

---

---

LEFT MARGIN IS SET AT 0  
IS THIS ACCEPTABLE? (Y/N) Y

MONTHLY SUMMARY OF COMPACTION CONTROL TESTS

PROJECT: VATESVILLE LAKE DAM ; CONTRACT NO. DACM69-86-C-0039 ; DATE OF REPORT: 03/29/88 THRU 04/16/88 ; REPORT NO. 1  
 RIVER: BLAINE CREEK, KY ; CONTRACTOR: LANE CONSTRUCTION CORP. ; SHEET 1 OF 4  
 STATE: KY ;  
 TOWN: LOUISA ;

EMBANKMENT ZONE	MINIMUM SPECIFIED % COMP	SPECIFIED W % LIMITS	COMPACTION EQUIPMENT/PRESSURE	LOOSE LIFT THICKNESS (IN)	NUMBER OF PASSES
IMPERVIOUS CORE	95.00	-1.0 TO 2.0	SHPSFT-SEE NOTE	8	6

TEST IDENTIFICATION									CLASSIFICATION DATA				IN-PLACE DATA		LAB TEST DATA				FLD & LAB COMPARISON																	
TEST NO	DATE MADE	TST TYP	STA	OFF SET (FT)	ELEV (FT)	DEP (IN)	BORR SRCE	CLASS	GRADATION	PART	SIEVE	SIZE (IN)	3/4	#4	#200	LL	PI	(PCF)	(%)	T	(PCF)	(%)	1-PT	1-PT	MAX	OPT	W	(%)	+OR-	COMP						
COL 1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	20	21	22	23	24	25	26														
IMP0001	03/29	SV	5+85.5	1.5US	523.3	7	AREA 1	1	CL	4.00	100	98	67	29	10	113.7	16.2	6	112.6	13.8	113.8	15.4	0.8	99.9												
	AC																																			
IMP0002	04/05	SV	5+80	17US	526.0	6	AREA 1	1	CL	4.00	100	98	84	29	9	113.2	17.1	6	109.9	15.0	111.2	16.5	0.6	101.8												
	AC																																			
IMP0003	04/05	SV	5+44	15DS	526.3	6	AREA 1	1	CL	4.00	100	98	72	29	9	110.4	17.7	6	112.6	13.7	113.9	15.2	2.5	96.9												
	UI																																			
IMP0004	05/06	SV	6+24	4US	530.0	6	AREA 1	1	CL	4.00	100	98	74	28	9	114.2	17.3	6	112.5	13.8	113.7	15.3	2.0	100.4												
	AC																																			
IMP0005	04/11	SV	5+60	6 DS	529.5	6	AREA 1	1	CL	4.00	100	100	77	29	10	113.4	16.7	6	110.4	14.0	112.5	15.8	0.9	100.8												
	AC																																			
IMP0006	04/11	SV	6+30	20 US	530.0	6	AREA 1	1	CL	4.00	100	99	81	30	9	111.0	18.1	6	107.3	15.3	109.1	17.7	0.4	101.7												
	AC																																			
IMP0007	04/12	SV	5+00	10 US	528.0	6	AREA 1	1	CL	4.00	100	98	86	36	14	111.2	18.7	6	106.0	14.8	108.0	18.2	0.5	103.0												
	AC																																			
IMP0008	04/12	SV	5+20	6 US	530.0	6	AREA 1	1	CL	4.00	100	98	86	36	14	109.8	19.5	6	108.3	16.2	109.2	17.6	1.9	100.5												
	AC																																			
IMP0009	04/13	SV	4+70	10 DS	531.5	6	AREA 1	1	CL	4.00	100	99	87	32	11	108.3	19.6	6	108.6	15.9	109.9	17.2	2.4	98.5												
	UI																																			
IMP0010	04/13	SV	6+55	15 DS	533.0	6	AREA 1	1	CL	4.00	100	99	83	32	11	109.5	19.4	6	110.5	14.8	111.6	16.3	3.1	98.1												
	UI																																			
IMP0011	04/14	SV	4+32	9 DS	533.0	6	AREA 1	1	CL	4.00	100	100	87	35	13	104.1	19.2	6	107.0	15.9	108.1	17.9	1.3	96.3												
	AC																																			
IMP0012	04/14	SV	5+34.6	6.8US	533.0	8	AREA 1	1	CL	4.00	100	100	87	33	12	104.1	18.9	6	106.9	16.4	108.0	18.3	0.6	96.4												
	AC																																			

\*\*\* REPORT NOTE: THIS REPORT PREVIOUSLY SUBMITTED ON "NON-COMPUTER" 4080. SHEEPSFOOT PRESSURE 1290 PSI.

ENG FORM 4080 (COMPUTER GENERATED) PROGRAM QA4080

LAB CHIEF: \_\_\_\_\_

SUBMITTED BY: \_\_\_\_\_ PROJECT ENGINEER

TEST IDENTIFICATION									CLASSIFICATION DATA					IN-PLACE DATA				LAB TEST DATA				FLD & LAB COMPARISON																														
TEST NO	DATE MADE	TST TYP	STA	SET (FT)	ELEV (FT)	DEP (IN)	BORR SRCE	CLASS	SIZE (IN)	MAX % PASS	SIEVE #	BERG %	LIMITS	DRY DEN (PCF)	MATR (X)	E DRY T (PCF)	MATR (X)	S DRY DEN (PCF)	CONT (X)	1-PT EST	STD METHOD	10R 5 PT (X)	MAX DRY DEN (PCF)	OPT MATR (X)	M. (%)	Z																										
																											10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26									
IMP0013	04/15	SV	6+11	22	US	537.3	6 AREA 1	ICL	4.00	100	99	78	28	91	112.2	14.7	6	109.2	13.3	112.5	15.8	-1.1	99.7																													
U1	TEST IS 0.1% DRY OF SPECIFICATIONS.																																																			
IMP0014	04/16	SV	4+65	12	US	528.5	6 AREA 1	ICL	4.00	100	98	72	334	131	111.7	17.2	6	113.3	13.8	114.3	15.0	2.2	97.7																													
U1R2	0.2% WET OF LIMITS BUT BECAUSE OF PUMPING MATL WAS REMOVED AND REPLACED. LAST QA TEST REPORT #1.																																																			
IMP0099	/	--- AREA 1																								4.00																										
--	NG																																																			
IMP00C1	03/29	SV	5+41	3	DS	522.6	6 AREA 1	ICL	4.00	---	---	---	32	161	108.7	17.9	6	110.0	17.0	110.1	17.1	0.8	98.7																													
AC	1-POINT NOT SUFFICIENTLY ON DRY SIDE TO BE APPROPRIATE FOR SELECTING CORRECT CURVE FROM FOC.																																																			
IMP00C2	04/05	SV	5+73	19	DS	527.5	6 AREA 1	ICL	4.00	---	---	---	30	111	112.1	17.3	6	111.7	13.3	113.4	15.4	1.9	98.9																													
AC	NG																																																			
IMP00C3	04/12	SV	5+40	24	US	529.9	6 AREA 1	ICL	4.00	---	---	---	36	141	101.6	18.9	6	104.6	16.2	106.4	19.2	-0.3	95.5																													
AC	NG																																																			

## EXPLANATION TABLE

SHEET 3 OF 4

## FOR COMPUTER GENERATED 4080 FORM

COL. NO.	TITLE	EXPLANATION
1	TEST NO.	TEST NUMBER.
2	DATE MADE	DATE TEST MADE.
3	TST TYP	TEST TYPE: CYLINDER(CYL), CHUNK(CK), SAND VOLUME(SV), WATER VOLUME(WV), NUCLEAR METHOD(NM), OTHER _____. TEST TYPE CONSTANT FOR A GIVEN ZONE
4	STA	TEST STATION.
5	OFFSET (FT)	RECORD OFFSET BY DISTANCE UP/DOWNSTREAM OF CENTERLINE OF DAM OR LEFT/RIGHT OF AXIS.
6	ELEV (FT)	TEST ELEVATION.
7	DEP (IN)	DEPTH FROM FILL SURFACE TO TOP OF DENSITY TEST.
8	.....	COLUMN 8 DELETED. INFORMATION ORIGINALLY CONTAINED IN COLUMN 8 NOW CONTAINED IN 'COMMENTS' FIELD ON SECOND LINE OF TEST DATA INFORMATION.
9	BDRR SRCE	E.G., BORII (BORROW AREA II).
10	CLASS	SOIL CLASS. WHEN CLASS ESTIMATED, NOTE BY LETTER (E).
11	MAX PART SIZE (IN)	MAXIMUM PARTICLE SIZE.
....	(PC PASSING)3/4 IN	THIS COLUMN DOES NOT EXIST ON THE ORIGINAL 4080, BUT HAS BEEN ADDED FOR THIS REPORT. PERCENTAGE OF TEST MATERIAL PASSING THE 3/4 INCH SIEVE.
12	(PC PASSING) #4 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #4 SIEVE.
13	(PC PASSING) #200 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #200 SIEVE.
14	LL	LIQUID LIMIT.
15	PI	PLASTICITY INDEX.
16	DRY DEN (PCF)	FIELD DRY DENSITY.
17	WATR CONT (Z)	FIELD WATER CONTENT.
18	.....	COLUMN 18 DELETED.
19	.....	COLUMN 19 DELETED.

## EXPLANATION TABLE

SHEET 4 OF 4

20	TEST	TEST TYPE W.R.T. MOLD SIZE, STANDARD METHOD: (A)4-IN. DIA. MOLD OUTLINED IN MANUAL 1110-2-1906. IF MATERIAL WITH MAX. PART. SIZE GREATER THAN 3/4 IN. OR OTHER EFFORT USED IN LAB COMPACTION TEST, NOTE AS 'NS' IN COL. 20 AND REPORT DETAILS OF PROCEDURE.
21	1-PT DRY DEN (PCF)	ONE POINT DRY DENSITY.
22	1-PT WATR CONT (%)	ONE POINT WATER CONTENT.
23	MAX DRY DEN (PCF)	MAXIMUM DRY DENSITY OBTAINED FROM CURVE GENERATED BY ONE POINT OR FIVE POINTS. IF CURVE GENERATED BY FIVE POINTS, VALUE PRECEDED BY A '#'. .
24	OPT WATR CONT (%)	OPTIMUM WATER CONTENT DETERMINED BY ONE POINT OR FIVE POINTS CURVE.
25	W (%) + OR -	COLUMN 17 MINUS COLUMN 24.
26	% COMP	COLUMN 16 DIVIDED BY COLUMN 23.

SYMBOL	REFERENCE	EXPLANATION
NG	COMMENT FIELD	INDICATES 'NONE GIVEN'.
AC	STATUS OF TEST	ACCEPTABLE TEST
U1		UNACCEPTABLE TEST MOISTURE OUT OF RANGE
U2		UNACCEPTABLE TEST DENSITY OUT OF RANGE
U3		UNACCEPTABLE TEST BOTH MOISTURE AND DENSITY ARE OUT OF RANGE
R1	TYPE OF RETEST	MATERIAL REWORKED AND RETESTED
R2		MATERIAL REWORKED ONLY
R3		MATERIAL RETESTED ONLY
N	NOT RETESTED	

SYMBOL	REFERENCE	#### SPECIAL NOTES ####
--------	-----------	-------------------------

1	IMP	REPORTS WITHOUT GRADATION DATA HAVE ESTIMATED MATERIAL CLASSIFICATIONS.
---	-----	---

SUMMARY OF UNACCEPTABLE TESTS

EMB. ZONE IMPERVIOUS CORE      REPORT NO.    1    DATE 05/11/90  
NUMBER OF ACCEPTED TESTS OUTSIDE LIMITS:

IMP0003    OUTSIDE ON MOISTURE  
IMP0009    OUTSIDE ON MOISTURE  
IMP0010    OUTSIDE ON MOISTURE  
IMP0013    OUTSIDE ON MOISTURE

TOTAL NO. OF TESTS ACCEPTED FOR THIS ZONE/REPORT NO.:      4

EMB. ZONE IMPERVIOUS CORE      REPORT NO.    1    DATE 05/11/90  
NUMBER OF REJECTED TESTS NOT REMORKED OR RETESTED:

NONE FOUND

-----  
R E P O R T S   A N D   P L O T S

Caps

<u>M E N U</u>	<u>S E L E C T I O N</u>
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION: 5

-----  
YATESVILLE LAKE DAM

Caps

COMPUTER GENERATED ENG FORM 4081

ZONE REPORTS AVAILABLE AT PRESENT:

0 SELECTION(S)

=====

IMPERVIOUS CORE	IMP	1
IMPERVIOUS CORE	IMP	2
IMPERVIOUS CORE	IMP	3
IMPERVIOUS CORE	IMP	4
IMPERVIOUS CORE	IMP	5
IMPERVIOUS CORE	IMP	6
IMPERVIOUS CORE	IMP	7

=====

ENTER ZONE CODE AND REPORT NO.,            IMP 1  
OR <RETURN><RETURN> TO CONTINUE LIST,  
OR <9><RETURN><RETURN> STOP SELECTION,  
OR <0><RETURN><RETURN> TO EXIT

=====

REPORT # 1 FOR ZONE IMPERVIOUS CORE  
INCLUDES TESTS FROM 03/29/88 TO 04/16/88  
DO YOU WANT TO CHANGE THE REPORT NO.? (Y/N) N

---

REPORT # 1 FOR ZONE IMPERVIOUS CORE

THIS SELECTION WILL BE DELETED FROM THE ABOVE LIST -- HIT ANY KEY TO CON'T.

SELECT ALL REPORTS FOR PRINTING. WHEN PROMPTED FOR ZONE AND REPORT NUMBER ENTER ~~<9><RETURN><RETURN>~~ TO STOP SELECTION AND CONTINUE.

---

DO YOU WANT THE COLUMN EXPLANATION TABLE INCLUDED? (Y/N) Y

---

SIZE OF PAPER: 1) 8 1/2 x 11 2) 14 7/8 x 11 1

---

IS THIS A LASERJET PRINTER? (Y/N) N

PREPARE THE PRINTER FOR FORM TEST . . . . .

---

LEFT MARGIN IS SET AT 0  
IS THIS ACCEPTABLE? (Y/N) Y

SUMMARY OF FIELD COMPACTION CONTROL TESTS

PROJECT: YATESVILLE LAKE DAM	CONTRACT NO. DACW69-86-C-0039	DATE OF REPORT: 03/29/88 THRU 04/16/88	REPORT NO. 1
RIVER: BLAINE CREEK, KY			
STATE: KY	CONTRACTOR: LANE CONSTRUCTION CORP.		SHEET 1 OF 4
TOWN: LOUISA			

EMBANKMENT ZONE	MINIMUM SPECIFIED % COMP	COMPACTION EQUIPMENT/PRESSURE	LOOSE LIFT THICKNESS (IN)	NUMBER OF PASSES
IMPERVIOUS CORE	95.00	SHPSFT SEE NOTE	8	6

TEST IDENTIFICATION									GRADATION									DRY DENSITY			
TEST NO	DATE MADE	TST TYP	STA	OFF SET (FT)	ELEV (FT)	DEP (IN)	BORR SRCE	CLASS	MAX PART SIZE (IN)	PERCENT PASSING TOTAL SAMPLE									FIELD LABORATORY		
										#4	#10	#20	#40	#80	100	200	(PCF) MED	MAX (PCF)	% COMP		
COL 1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	27	28	29	31	
IMP0001	03/29/88 SV	5+85.5	1.5US	523.3	7	AREA 1	CL	4.000	98	95	92	84	72	70	67	113.7	STD	113.8	99.9		
TEST ELEVATION IS 2 FT ABOVE ROCK																					
IMP0002	04/05/88 SV	5+80	17US	526.0	6	AREA 1	CL	4.000	98	94	92	90	87	86	84	113.2	STD	111.2	101.8		
NG																					
IMP0003	04/05/88 SV	5+44	15DS	526.3	6	AREA 1	CL	4.000	98	96	95	88	77	76	72	110.4	STD	113.9	96.9		
.5% TOO MUCH MOISTURE																					
IMP0004	05/06/88 SV	6+24	4US	530.0	6	AREA 1	CL	4.000	98	97	96	90	79	78	74	114.2	STD	113.7	100.4		
THIS TEST ELEVATION IS 1.5 FT ABOVE THE ROCK																					
IMP0005	04/11/88 SV	5+60	6 DS	529.5	6	AREA 1	CL	4.000	100	99	98	---	81	80	77	113.4	STD	112.5	100.8		
NG																					
IMP0006	04/11/88 SV	6+30	20 US	530.0	6	AREA 1	CL	4.000	99	97	96	92	86	85	81	111.0	STD	109.1	101.7		
NG																					
IMP0007	04/12/88 SV	5+00	10 US	528.0	6	AREA 1	CL	4.000	98	98	96	94	90	90	86	111.2	STD	108.0	103.0		
NG																					
IMP0008	04/12/88 SV	5+20	6 US	530.0	6	AREA 1	CL	4.000	98	97	95	93	90	89	86	109.8	STD	109.2	100.5		
NG																					
IMP0009	04/13/88 SV	4+70	10 DS	531.5	6	AREA 1	CL	4.000	99	98	96	95	91	91	87	108.3	STD	109.9	98.5		
NG																					
IMP0010	04/13/88 SV	6+55	15 DS	533.0	6	AREA 1	CL	4.000	99	98	97	94	---	87	83	109.5	STD	111.6	98.1		
TEST ELEVATION 2 FT ABOVE ROCK																					
IMP0011	04/14/88 SV	4+32	9 DS	533.0	6	AREA 1	CL	4.000	100	99	98	96	92	91	87	104.1	STD	100.1	96.3		
NG																					
IMP0012	04/14/88 SV	5+34.6	6.8US	533.0	8	AREA 1	CL	4.000	100	99	98	96	92	91	87	104.1	STD	108.0	96.4		
THIS TEST IS 6 FT UPSTREAM OF UNDISTURBED BLOCK SAMPLE NO. 1																					
IMP0013	04/15/88 SV	6+11	22 US	537.3	6	AREA 1	CL	4.000	99	97	95	91	84	82	78	112.2	STD	112.5	99.7		
TEST IS 0.1% DRY OF SPECIFICATIONS.																					

\*\*\* REPORT NOTE: THIS REPORT PREVIOUSLY SUBMITTED ON "NON-COMPUTER" 4080. SHEEPSFOOT PRESSURE 1290 PSI.

ENG FORM 4081 (COMPUTER GENERATED) LAB CHIEF: \_\_\_\_\_ SUBMITTED BY: \_\_\_\_\_ PROJECT ENGINEERS

TEST IDENTIFICATION									GRADATION									DRY DENSITY		
TEST NO	DATE MADE	TST TYP	STA	OFF SET (FT)	ELEV (FT)	DEP (IN)	BORR SRCE	CLASS	MAX PART SIZE (IN)	PERCENT PASSING TOTAL SAMPLE								FIELD LABORATORY		
										#4	#10	#20	#40	#80	100	200	TST (PCF)	MAX (PCF)	Z COMP	
COL 1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	27	28	29	31
IMP0014	04/16/88	SV	4+65	12 US	528.5	6	AREA 1	CL	4.000	98	96	95	90	79	77	72	111.7	STD	114.3	97.7
0.2% MET OF LIMITS BUT BECAUSE OF PUMPING MATL WAS REMOVED AND REPLACED. LAST QA TEST REPORT #1.																				
IMP0021							AREA 1		4.000	100						72	67	STD		
IMP0023							AREA 1		4.000									STD		
IMP0024							AREA 1		4.000	96					74	70		STD		
IMP0025							AREA 1		4.000	96					82	79		STD		
IMP0026							AREA 1		4.000	91					70	66		STD		
IMP0027							AREA 1		4.000	92			75		65	60		STD		
IMP00C4							AREA 1		4.000									STD		

## EXPLANATION TABLE

SHEET 3 OF 4

FOR COMPUTER GENERATED 4081 FORM

COL. NO.	TITLE	EXPLANATION
1	TEST NO.	TEST NUMBER.
2	DATE MADE	DATE TEST MADE.
3	TST TYP	TEST TYPE: FOR GRAVEL OR SAND FILL: WATER VOLUME(WV), SAND VOLUME(SV), NUCLEAR METHOD(NM), GRADATION SAMPLE (GS), OTHER _____. FOR ROCKFILL: GRADATION SAMPLE(GS), DENSITY TEST(DT) _____. TEST TYPE CONSTANT FOR A GIVEN ZONE.
4	STA	TEST STATION.
5	OFFSET (FT)	RECORD OFFSET BY DISTANCE UP/DOWNSTREAM OF CENTERLINE OF DAM OR LEFT/RIGHT OF AXIS.
6	ELEV (FT)	TEST ELEVATION.
7	DEP (IN)	DEPTH FROM FILL SURFACE TO TOP OF DENSITY TEST.
8	.....	COLUMN 8 DELETED. INFORMATION ORIGINALLY CONTAINED IN COLUMN 8 NOW CONTAINED IN 'COMMENTS' FIELD ON SECOND LINE OF TEST DATA INFORMATION.
9	BORR SRCE	E.G., AREA C, SPILLWAY EXCAVATION, ETC....
10	CLASS	SOIL CLASS. WHEN CLASS ESTIMATED, NOTE BY LETTER (E).
11	MAX PART SIZE (IN)	MAXIMUM PARTICLE SIZE.
12	(PC PASSING) #4 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #4 SIEVE.
13	(PC PASSING) #10 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #10 SIEVE.
14	(PC PASSING) #20 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #20 SIEVE.
15	(PC PASSING) #40 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #40 SIEVE.
16	(PC PASSING) #80 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #80 SIEVE.
17	(PC PASSING) #100 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #100 SIEVE.
18	(PC PASSING) #200 SIV	PERCENTAGE OF TEST MATERIAL PASSING THE #200 SIEVE.
19-26	.....	COLUMNS 19-26 DELETED.
27	(PCF)	IF ESTIMATED, SO NOTE AS 110-E AND STATE HOW ESTIMATED IN FOOTNOTE.

EXPLANATION TABLE

SHEET 4 OF 4

28	TST MED	VIBRATORY TABLE(VT), PROVIDENCE VIBRATED DENSITY(PVD), OTHER ( ). REPORT SEPARATELY DETAILS OF SPECIAL LABORATORY PROCEDURES USED.
29	MAX (PCF)	MAXIMUM DRY DENSITY OBTAINED FROM CURVE GENERATED BY ONE POINT OR FIVE POINTS. IF CURVE GENERATED BY FIVE POINTS, VALUE PRECEDED BY A '5'.
30	.....	COLUMN 30 DELETED.
31	% COMP	PERCENT COMPACTION.

SYMBOL	REFERENCE	EXPLANATION
--------	-----------	-------------

NG	COMMENT FIELD	INDICATES 'NONE GIVEN'.
----	---------------	-------------------------

SYMBOL	REFERENCE	##### SPECIAL NOTES #####
--------	-----------	---------------------------

####		THIS IS A NOTE.
------	--	-----------------

-----

REPORTS AND PLOTS

Caps

M E N U	SELECTION
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION: 6

-----

Caps

SUMMARY OF GRADATION RESULTS

ZONE REPORTS AVAILABLE AT PRESENT: 0 SELECTION(S)

-----

IMPERVIOUS CORE	IMP	1
IMPERVIOUS CORE	IMP	2
IMPERVIOUS CORE	IMP	3
IMPERVIOUS CORE	IMP	4
IMPERVIOUS CORE	IMP	5
IMPERVIOUS CORE	IMP	6
IMPERVIOUS CORE	IMP	7

---

ENTER ZONE CODE AND REPORT NO., IMP 1  
OR <RETURN><RETURN> TO CONTINUE LIST,  
OR <9><RETURN><RETURN> STOP SELECTION,  
OR <0><RETURN><RETURN> TO EXIT

---

REPORT # 1 FOR ZONE IMPERVIOUS CORE  
INCLUDES TESTS FROM 03/29/88 TO 04/16/88  
DO YOU WANT TO CHANGE THE REPORT NO.? (Y/N) N

---

REPORT # 1 FOR ZONE IMPERVIOUS CORE

THIS SELECTION WILL BE DELETED FROM THE ABOVE LIST -- HIT ANY KEY TO CON'T.

SELECT ALL REPORTS FOR PRINTING. WHEN PROMPTED FOR ZONE AND REPORT NUMBER ENTER ~~<9><RETURN><RETURN>~~ TO STOP SELECTION AND CONTINUE.

---

SIZE OF PAPER: 1) 8 1/2 x 11 2) 14 7/8 x 11 1

---

IS THIS A LASERJET PRINTER? (Y/N) N

PREPARE THE PRINTER FOR FORM TEST . . . .

---

LEFT MARGIN IS SET AT 0  
IS THIS ACCEPTABLE? (Y/N) Y

SUMMARY OF GRADATION RESULTS

PROJECT: YATESVILLE LAKE DAM      CONTRACT NO. DACW69-86-C-0039      DATE OF REPORT: 03/29/88 THRU 04/16/88      REPORT NO. 1  
RIVER: BLAINE CREEK, KY  
STATE: KY      CONTRACTOR: LANE CONSTRUCTION CORP.  
TOWN: LOUISA      SHEET 1 OF 1

EMBANKMENT ZONE: IMPERVIOUS CORE

GRADATION

PERCENT PASSING -- TOTAL SAMPLE

TEST NO.	(IN):	24	22	19	15	11	9	7	4	3	2	1.5	1	3/4	3/8	(#):	4	8	10	16	20	30	40	50	80	100	200
IMP0001													100	99			98	95	92	84	72	70	67				
IMP0002													100	100			98	94	92	90	87	86	84				
IMP0003													100	99			98	96	95	88	77	76	72				
IMP0004													100	98			98	97	96	90	79	78	74				
IMP0005													100				100	99	98		92	81	80	77			
IMP0006													100	99			99	97	96	92	86	85	81				
IMP0007													100	99			98	98	96	94	90	90	86				
IMP0008													100	99			98	97	95	93	90	89	86				
IMP0009													100	100			99	98	96	95	91	91	87				
IMP0010													100	100			99	98	97	94			87	83			
IMP0011													100	100			100	99	98	96	92	91	87				
IMP0012													100	100			100	99	98	96	92	91	87				
IMP0013													100	100			99	97	95	91	84	82	78				
IMP0014													100	99			98	96	95	90	79	77	72				
IMP0021													100				100	99	99	97	83	72	67				
IMP0023																											
IMP0024													100				96	93	91	89	81	74	70				
IMP0025													100				96	93	91	88	85	82	79				
IMP0026													100				91	89	87	85	78	70	66				
IMP0027													100				92	89	87	85	75		65	60			
IMP00C4																											

\*\*\* REPORT NOTE: THIS REPLY PREVIOUSLY SUBMITTED ON "NON-COMPUTER" 4080. SHEEPSFOOT PRESSURE 1290 PSI.

PROGRAM GRADSUMH      LAB-CHIEF: \_\_\_\_\_      SUBMITTED BY: \_\_\_\_\_      PROJECT ENGINEER

-----  
R E P O R T S   A N D   P L O T S

Caps

M E N U	SELECTION
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION:    7

-----  
THE COMPUTER AUTOMATICALLY PERFORMES A DISK-CHECK TO DETERMINE IF ENOUGH MEMORY IS AVAILABLE FOR THIS OPTION

Caps

42684416 bytes total disk space  
  90112 bytes in 19 directories  
41881600 bytes in 1192 user files  
  98304 bytes in bad sectors  
  614400 bytes available on disk

655360 bytes total memory  
172608 bytes free

IF THE NUMBER OF BYTES FREE IS LESS THAN 125 K, IT IS VERY  
POSSIBLE THAT THIS PROGRAM WILL TERMINATE BEFORE COMPLETION.  
DO YOU WANT TO CONTINUE THIS PROGRAM? (Y/N)    Y

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR SHOTGUN PLOT

HAVE ANY OF THE TEST DATA FILES BEEN EDITED SINCE  
THE LAST TIME THIS PROGRAM WAS USED? (Y/N)    N

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR SHOTGUN PLOT

ZONE REPORTS AVAILABLE AT PRESENT:

0 SELECTION(S)

=====

IMPERVIOUS CORE	IMP	1
IMPERVIOUS CORE	IMP	2
IMPERVIOUS CORE	IMP	3
IMPERVIOUS CORE	IMP	4
IMPERVIOUS CORE	IMP	5
IMPERVIOUS CORE	IMP	6
IMPERVIOUS CORE	IMP	7

---

ENTER ZONE CODE AND REPORT NO. ,            IMP 1  
OR <RETURN><RETURN> TO CONTINUE LIST,  
OR <9><RETURN><RETURN> STOP SELECTION,  
OR <0><RETURN><RETURN> TO EXIT

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR SHOTGUN PLOT

EMBANKMENT ZONE: IMPERVIOUS CORE  
REPORT NO.: 1

ENTER DISTRICT NAME: HUNTINGTON

DO YOU WANT ALL <A> THE DATA, OR FOR A SPECIFIC PERIOD <P>? (A/P) A

-----  
Caps

ENTER NAME OF FILE TO BE CREATED <XXXXXXXX.XXX>: KSGUNZ.PLT

IS THIS CORRECT? (Y/N): Y

TO RUN THE SHOTGUN PLOT: 1. RETURN TO THE DOS SYSTEM  
2. AT PROMPT, TYPE "SHOTGUN"

Press any key to continue...

USER IS RETURNED TO REPORTS AND PLOTS MENU

USER CAN CONTINUE CREATING PLOT FILES AND REPORTS OR EXIT TO DOS AND GENERATE THE PLOT FILES.

From the DOS prompt enter SHOTGUN

The following question-answer sequence obtains the data needed to generate the plot.

ENTER NAME OF DATA FILE : KSGUNZ.PLT

Provide a name for the output file : KSGUNZ.OUT *This is an ASCII text file that may be used to reference the data shown in the plot.*

ENTER THE TYPE OF DEVICE YOU WISH TO PLOT ON

- 1 - PREVIEW OF PLOT ON SCREEN - NO TEXT
- 2 - HP 7475A PLOTTER
- 3 - PRINTER - 8.0 ON X AXIS - WITH LEGEND
- 4 - PRINTER- 12.0 ON X AXIS - LEGEND ON NEXT PAGE

ENTER 1, 2, 3, OR 4 : 4

This routine is designed to be used on a 132 characters per line printer set at 10 characters per inch across. If your printer is an 80 char printer please set it at the compressed mode of 17.2 char per inch before continuing.

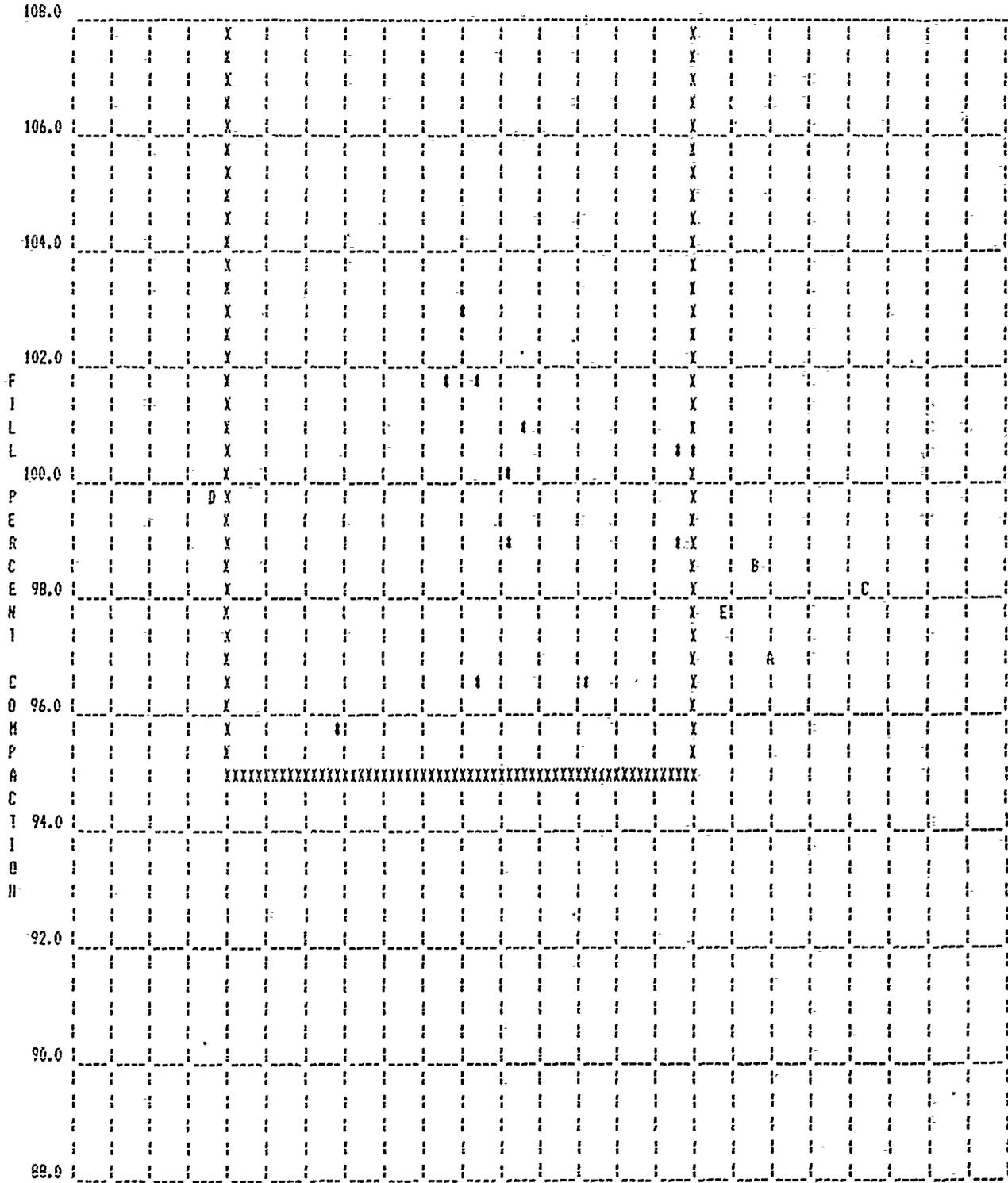
Press "Ctrl Break" to abort program

Press "RETURN" to continue . . .

Percent compaction is plotted between 88% and 108%  
Would you like to change the range (Y/N): N

Variation of Fill will be plotted between -2.0 and 3.0  
Would you like to change the range (Y/N): N

For the PRINTER the RANGES have been adjusted : -2.0 to 4.0 : 88% to 108%  
Press "RETURN" to continue . . .



-2.00 -1.75 -1.50 -1.25 -1.00 -.75 -.50 -.25 .00 .25 .50 .75 1.00 1.25 1.50 1.75 2.00 2.25 2.50 2.75 3.00 3.25 3.50 3.75 4.00  
 DEVIATION FROM OPTIMUM WATER CONTENT

PROJECT : YATESVILLE LAKE DAM  
DISTRICT : HUNTINGTON

EMBANKMENT ZONE : IMPERVIOUS CORE  
REPORT PERIOD : 03/29/88 TO 04/15/88  
REPORT NUMBER : 1

	CUMULATIVE		
	TO THIS	THIS	TOTAL
	REPORT	REPORT	
TOTAL NUM OF TESTS	0	17	17
NUM OUTSIDE LIMITS:			
TOTAL	0	5	5
U1 - U	0	5	5
U2 - DENSITY	0	0	0
U3 - W & DENSITY	0	0	0
R1 - NUM RETESTED			
AFTER REMOKED	0	0	0
R2 - NUM REMOKED	0	1	1
R3 - NUM RETESTED	0	0	0
N - NOT RETESTED			
OR REMOKED	0	4	4

LEGEND:

1 WITHIN ACCEPTABLE LIMITS  
A,B,... OUTSIDE ACCEPTABLE LIMITS  
2,3,... MULTIPLE TEST PLOT POINT

The output file KSGUNZ.OUT contains the following:

TEST NO	USE	PLOT CHAR	PC	DOWC	RETEST	REMARKS
IMP0001	AC	*	99.9	.8		TEST ELEVATION IS 2 FT ABOVE R
IMP0002	AC	*	101.8	.6		
IMP0003	U1	A	96.9	2.5		.5% TOO MUCH MOISTURE
IMP0004	AC	*	100.4	2.0		THIS TEST ELEVATION IS 1.5 FT
IMP0005	AC	*	100.8	.9		
IMP0006	AC	*	101.7	.4		
IMP0007	AC	*	103.0	.5		
IMP0008	AC	*	100.5	1.9		
IMP0009	U1	B	98.5	2.4		
IMP0010	U1	C	98.1	3.1		TEST ELEVATION 2 FT ABOVE ROCK
IMP0011	AC	*	96.3	1.3		
IMP0012	AC	*	96.4	.6		THIS TEST IS 6 FT UPSTREAM OF
IMP0013	U1	D	99.7	-1.1		TEST IS 0.1% DRY OF SPECIFICAT
IMP0014	U1R2	E	97.7	2.2		0.2% WET OF LIMITS BUT BECAUSE
IMP00C1	AC	*	98.7	.8		1-POINT NOT SUFFICIENTLY ON DR
IMP00C2	AC	*	98.9	1.9		
IMP00C3	AC	*	95.5	-.3		

-----

R E P O R T S   A N D   P L O T S	Caps
M E N U	S E L E C T I O N
=====	-----
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION:    8

-----

THE COMPUTER AUTOMATICALLY PERFORMES A DISK-CHECK TO DETERMINE IF ENOUGH MEMORY IS AVAILABLE FOR THIS OPTION

Caps

42684416 bytes total disk space  
 94208 bytes in 19 directories  
 41836544 bytes in 1154 user files  
 98304 bytes in bad sectors  
 655360 bytes available on disk

655360 bytes total memory  
 174992 bytes free

IF THE NUMBER OF BYTES FREE IS LESS THAN 125 K, IT IS VERY POSSIBLE THAT THIS PROGRAM WILL TERMINATE BEFORE COMPLETION.  
 DO YOU WANT TO CONTINUE THIS PROGRAM? (Y/N)    Y



YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR X-Y PLOT

FOR ZONE: IMPERVIOUS CORE

CREATE DATE RANGE FROM AVAILABLE DATES:

03/29/88	04/16/88	04/30/88	05/17/88	05/26/88
04/05/88	04/20/88	05/02/88	05/18/88	05/27/88
04/11/88	04/21/88	05/03/88	05/19/88	05/31/88
04/12/88	04/25/88	05/06/88	05/20/88	06/01/88
04/13/88	04/26/88	05/11/88	05/21/88	06/02/88
04/14/88	04/28/88	05/12/88	05/23/88	06/03/88
04/15/88	04/29/88	05/13/88	05/25/88	06/04/88

(PRESS <RETURN><RETURN> TO VIEW LIST OR EXIT TO ABOVE MENU.)  
PLOT USING RECORDS FOR 04/01/88 TO 04/30/88.

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR X-Y PLOT

YOU MAY SELECT A MAXIMUM OF 5 X-Y PAIRS:

0 PAIR(S) SELECTED

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 1) FINAL FIELD DRY DENSITY (OVEN) | 9) FINAL FIELD WATER CONTENT (OVEN) |
| 2) QUICK FIELD DRY DENSITY        | 10) QUICK FIELD WATER CONTENT       |
| 3) FINAL MAXIMUM DRY DENSITY      | 11) FINAL OPTIMUM WATER CONTENT     |
| 4) QUICK MAXIMUM DRY DENSITY      | 12) QUICK OPTIMUM WATER CONTENT     |
| 5) PERCENT COMPACTION             | 13) DEVIATION FROM OPT. W.C.        |
| 6) QUICK PERCENT COMPACTION       | 14) QUICK DEVIATION FROM OPT. W.C.  |
| 7) ONE-POINT DRY DENSITY          | 15) ONE-POINT WATER CONTENT         |
| 8) QUICK ONE-POINT DRY DENSITY    | 16) QUICK ONE-POINT WATER CONTENT   |

ENTER X-VALUE SELECTION NUMBER OR <RETURN> TO EXIT: 1  
ENTER Y-VALUE SELECTION NUMBER: 9

LOADING FINAL MAXIMUM DRY DENSITY vs FINAL FIELD WATER CONTENT (OVEN) DATA

CONTINUE SELECTING DATA FIELDS TO PLOT

ENTER X-VALUE SELECTION NUMBER OR <RETURN> TO EXIT: 0

A = SELECT DATA FIELD    S = PROCESS SELECTION(S)    X = TERMINATE PROGRAM    S

ORGANIZE DATA FOR X-Y PLOT

ENTER TITLE FOR PLOT: X-Y PLOT

ENTER LABEL FOR X-AXIS: FIN. FLD. DRY DENS

ENTER LABEL FOR Y-AXIS: MULTIPLE Y VALUES

ENTER NAME OF FILE TO BE CREATED <XXXXXXXX.XXX>: KXY.PLT

IS THIS CORRECT? (Y/N): Y

- TO RUN THE XYPLOT PROGRAM:
1. RETURN TO THE DOS SYSTEM
  2. AT PROMPT, TYPE "XYPLOT"

Press any key to continue...

USER IS RETURNED TO REPORTS AND PLOTS MENU

USER CAN CONTINUE CREATING PLOT FILES AND REPORTS OR EXIT TO DOS AND GENERATE THE PLOT FILES.

From the DOS prompt enter XYPLOT

The following question-answer sequence obtains the data needed to generate the plot.

WOULD YOU LIKE A DEMONSTRATION (Y/N) ? : N

USE AN EXISTING DATA FILE (Y/N) ? : Y

ENTER DATA FILENAME : KXY.PLT

The X min and max are :           101.9000000           119.6000000

The Y min and max are :           .0000000           131.3000000

Do you wish to change them (Y/N) ? N

CHOOSE TYPE OF LINE IN PLOT

1 : DIFF SYMBOL & SAME LINE TYPE

2 : DIFF SYMBOL & DIFF LINE TYPE

3 : SAME SYMBOL & DIFF LINE TYPE

ENTER 1 OR 2 OR 3 : 2

CHOOSE TYPE OF OUTPUT DEVICE :

- 1 : SCREEN - IBM COLOR GRAPHICS BOARD
- 2 : HP COMPATABLE PLOTTER
- 3 : EPSON & HP PRINT

ENTER 1, 2 OR 3 : 3

Choose A Printer for the Plot :

- 0 : EPSON FX-185
- 1 : EPSON FX-100
- 2 : EPSON MX-100
- 3 : LQ1500
- 4 : HEWLETT-PACKARD THINKJET
- 5 : EPSON FX-80
- 6 : EPSON MX-80
- 7 : EPSON RX-80
- 8 : EPSON FX-85
- 9 : HP LASER JET PRINTER

ENTER 0,1, 2, 3 , 4, 5, 6, 7, 8 or 9 : 9

Printer output file complete, please press RETURN

Output is written to OUT.EPS each time

AFTER TERMINATION OF THIS PROGRAM

PLEASE type EPRINT

Do you wish to redraw THIS plot (Y/N) ? : N

Stop - Program terminated.

```
*****
* NOTE: The output file, OUT.EPS, generated by this program is *
* in a binary format, and is only for the use of the *
* EPRINT.EXE program. It is overwritten each time a new *
* OUT.EPS file is created. *
*****
```

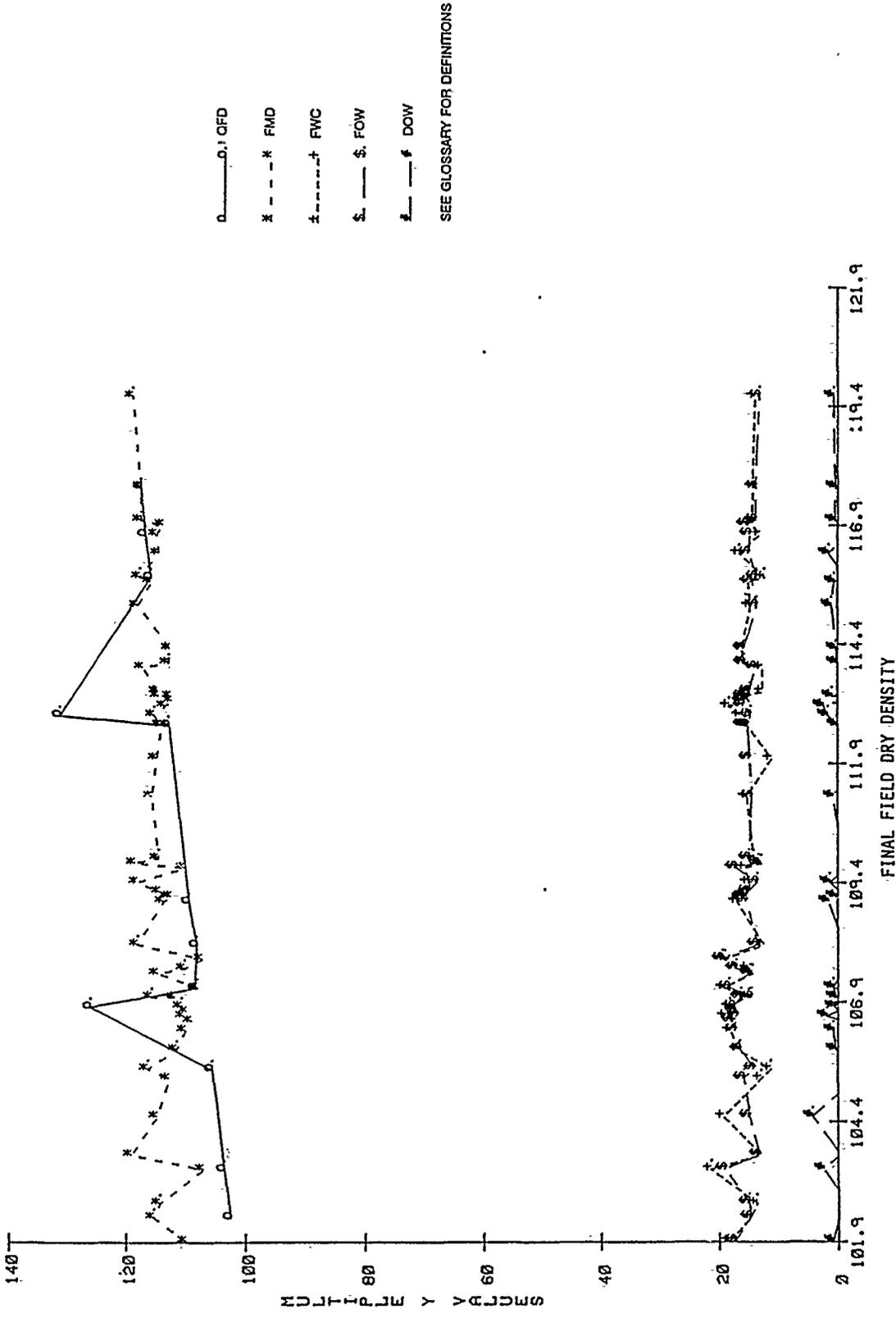
From the DOS prompt enter EPRINT

PROGRAM EPRINT

GCS EPSON AND HP LASER PRINTING ROUTINE

READY HP LASER PRINTER, PRESS <CR> TO CONTINUE

X-Y PLOT



-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR X-Y PLOT

METHODS OF ORGANIZING DATA:

0. EXIT TO PREVIOUS MENU.
1. DATA FOR A PARTICULAR ZONE BY A DATE RANGE.
2. DATA FOR A PARTICULAR ZONE AND REPORT NUMBER.

SELECT METHOD NUMBER: 2

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR X-Y PLOT

ORGANIZE DATA BY ZONE AND REPORT NO.

ZONE REPORTS AVAILABLE AT PRESENT:

IMPERVIOUS CORE	IMP	1
IMPERVIOUS CORE	IMP	2
IMPERVIOUS CORE	IMP	3
IMPERVIOUS CORE	IMP	4
IMPERVIOUS CORE	IMP	5
IMPERVIOUS CORE	IMP	6
IMPERVIOUS CORE	IMP	7

---

ENTER ZONE CODE AND REPORT NO.,            IMP 1  
OR <RETURN><RETURN> TO CONTINUE LIST,  
OR <0><RETURN><RETURN> TO EXIT

-----  
ALL OTHER SCREENS AND PROMPTS FROM THIS POINT ON ARE THE SAME AS SHOWN BEFORE.

-----  
R E P O R T S   A N D   P L O T S

Caps

M E N U	SELECTION:
-----	-----
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION:    9

-----  
THE COMPUTER AUTOMATICALLY PERFORMES A DISK-CHECK TO DETERMINE IF ENOUGH MEMORY IS AVAILABLE FOR THIS OPTION

Caps

42684416 bytes total disk space  
  94208 bytes in 19 directories  
41889792 bytes in 1157 user files  
  98304 bytes in bad sectors  
 602112 bytes available on disk  
  
655360 bytes total memory  
173152 bytes free

IF THE NUMBER OF BYTES FREE IS LESS THAN 125 K, IT IS VERY  
POSSIBLE THAT THIS PROGRAM WILL TERMINATE BEFORE COMPLETION.  
DO YOU WANT TO CONTINUE THIS PROGRAM? (Y/N) Y

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR CURVE-FIT PLOT

METHODS OF ORGANIZING DATA:

0. EXIT TO PREVIOUS MENU.
1. DATA FOR A PARTICULAR ZONE BY A DATE RANGE.
2. DATA FOR A PARTICULAR ZONE AND REPORT NUMBER.

SELECT METHOD NUMBER: 1

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR CURVE-FIT PLOT

ORGANIZE DATA BY DATE RANGE FOR PARTICULAR ZONE

SELECT ZONE:

=====

DRAIN MATERIAL	DRN
EMBANKMENT	EMB
GRADED FILTER TYPE 1	GF1
GRADED FILTER TYPE 2	GF2
IMPERVIOUS CORE	IMP
PROS SANDSTONE 12IN	PSS
RANDOM ROCK	RAN
SS ROCKFILL 8IN	SS8
SS ROCKFILL 24IN	SSR

---

ENTER ZONE CODE, IMP  
OR <RETURN> TO CONTINUE LIST,  
OR <0><RETURN> TO EXIT

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR CURVE-FIT PLOT

FOR ZONE: IMPERVIOUS CORE

CREATE DATE RANGE FROM AVAILABLE DATES:

03/29/88	04/16/88	04/30/88	05/17/88	05/26/88
04/05/88	04/20/88	05/02/88	05/18/88	05/27/88
04/11/88	04/21/88	05/03/88	05/19/88	05/31/88
04/12/88	04/25/88	05/06/88	05/20/88	06/01/88
04/13/88	04/26/88	05/11/88	05/21/88	06/02/88
04/14/88	04/28/88	05/12/88	05/23/88	06/03/88
04/15/88	04/29/88	05/13/88	05/25/88	06/04/88

(PRESS <RETURN><RETURN> TO VIEW LIST OR EXIT TO ABOVE MENU.)  
PLOT USING RECORDS FOR 04/01/88 TO 04/30/88

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR CURVE-FIT PLOT

FOR ZONE: IMPERVIOUS CORE

SELECT X AND Y VALUES:

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 1) FINAL FIELD DRY DENSITY (OVEN) | 9) FINAL FIELD WATER CONTENT (OVEN) |
| 2) QUICK FIELD DRY DENSITY        | 10) QUICK FIELD WATER CONTENT       |
| 3) FINAL MAXIMUM DRY DENSITY      | 11) FINAL OPTIMUM WATER CONTENT     |
| 4) QUICK MAXIMUM DRY DENSITY      | 12) QUICK OPTIMUM WATER CONTENT     |
| 5) PERCENT COMPACTION             | 13) DEVIATION FROM OPT. W.C.        |
| 6) QUICK PERCENT COMPACTION       | 14) QUICK DEVIATION FROM OPT. W.C.  |
| 7) ONE-POINT DRY DENSITY          | 15) ONE-POINT WATER CONTENT         |
| 8) QUICK ONE-POINT DRY DENSITY    | 16) QUICK ONE-POINT WATER CONTENT   |

ENTER X-VALUE SELECTION NUMBER: 3

ENTER Y-VALUE SELECTION NUMBER: 9

LOADING FINAL MAXIMUM DRY DENSITY vs FINAL FIELD WATER CONTENT (OVEN) DATA ....

Caps

-----  
CREATING DATA FILE . . . .

ENTER NAME OF FILE TO BE CREATED <XXXXXXXX.XXX>: CFIT.PLT

IS THIS CORRECT? (Y/N): Y

TO RUN THE CURVE-FIT PLOT: 1. RETURN TO THE DOS SYSTEM  
2. AT PROMPT, TYPE "CURVEFIT"

\*\* NOTE: DEFINE FILE STRUCTURE AS PAIRS

Press any key to continue...

USER IS RETURNED TO REPORTS AND PLOTS MENU

USER CAN CONTINUE CREATING PLOT FILES AND REPORTS OR EXIT TO DOS AND GENERATE THE PLOT FILES.

From the DOS prompt enter CURVEFIT

The following question-answer sequence obtains the data needed to generate the plot.

\*\*\* PROGRAM M0001 - Curvefit (EGA-Version) \*\*\*

Do you want to use a printer (YES or NO) -> Y

ENTER PRINTER TYPE

FX18 - EPSON FX-185  
FX10 - EPSON FX-100  
MX10 - EPSON MX-100  
LQ15 - EPSON LQ-1500  
HPTJ - HEWLETT PACKARD THINKJET  
FX80 - EPSON FX-80  
MX80 - EPSON MX-80  
RX80 - EPSON RX-80  
FX85 - EPSON FX-85  
HPLA - HP LASER JET PRINTER

-> HPLA

Do you want to use an HP plotter (YES or NO) -> Y

ENTER COMMUNICATION PORT (1 or 2)

-> 1

\*\*\* PROGRAM M0001 - Curvefit (EGA Version) \*\*\*

INPUT FROM KEYBOARD (YES OR NO) -> N

INPUT DATA FILE NAME (12 CHAR MAX.) -> CFIT.PLT

Does Input File Have Line Numbers (YES OR NO) -> N

FILE STRUCTURE (SI-Single,PA-Pairs,MU-Multiples) -> PA

\*\*\* PROGRAM M0001 - Curvefit (EGA Version) \*\*\*

# DATA HANDLING MENU

1. SAVE DATA (Permanent File)
2. PRINT DATA (Points Numbered)
3. READ NEW DATA (File or Keyboard)
4. ALTER DATA
5. PLOT DATA (Points/Spline Fit)
6. STATISTICAL ANALYSIS OF DATA
7. LIST DATA (Ascending order of X)
8. FIT DATA
9. DATA EDITING MENU +
10. EXIT PROGRAM

Select Option -> 5

\*\*\* PROGRAM M0001 - Curvefit (EGA Version) \*\*\*

1. Enter Your Own Scales (YES or NO) -> N  
XMIN= 101.600 XMAX= 114.200  
YMIN= 106.400 YMAX= 114.300
2. Enter Axis Type (LI-LINEAR,SL-SEMILOG,LL-LOGLOG) -> LI
3. Enter Point Symbol -> \*
4. Want Grid Axes (YES or NO) -> Y
5. Want Axes Labels (YES or NO) -> Y  
X Axis Label -> FDD  
Y Axis Label -> FWC
6. Device (1-Screen,2-Printer,3-Plotter) -> 2  
Want Plot 1/2 Size (Y or N) --> N
7. Want Spline Fit (YES or NO) -> N

```
*****
*   NOTE:  When the printer has been selected as the output device   *
*           of choice, a binary format file named OUT.EPS is created  *
*           by the program.  No printing occurs.  To obtain a print- *
*           out of the plot, the user must first terminate this      *
*           program and, at the DOS prompt type EPRINT.EXE.          *
*****
```

From the DOS prompt enter EPRINT

PROGRAM EPRINT  
GCS EPSON AND HP LASER PRINTING ROUTINE

READY HP LASER PRINTER, PRESS <CR> TO CONTINUE



-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR CURVE-FIT PLOT

METHODS OF ORGANIZING DATA:

0. EXIT TO PREVIOUS MENU.
1. DATA FOR A PARTICULAR ZONE BY A DATE RANGE.
2. DATA FOR A PARTICULAR ZONE AND REPORT NUMBER.

SELECT METHOD NUMBER: 2

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR CURVE-FIT PLOT

ORGANIZE DATA BY ZONE AND REPORT NO.

ZONE REPORTS AVAILABLE AT PRESENT:

---

IMPERVIOUS CORE	IMP	1
IMPERVIOUS CORE	IMP	2
IMPERVIOUS CGRE	IMP	3
IMPERVIOUS CORE	IMP	4
IMPERVIOUS CORE	IMP	5
IMPERVIOUS CORE	IMP	6
IMPERVIOUS CORE	IMP	7

---

ENTER ZONE CODE AND REPORT NO.,            IMP 1  
OR <RETURN><RETURN> TO CONTINUE LIST,  
OR <0><RETURN><RETURN> TO EXIT

-----  
ALL OTHER SCREENS AND PROMPTS FROM THIS POINT ON ARE THE SAME AS SHOWN BEFORE.

-----  
R E P O R T S   A N D   P L O T S

Caps

M E N U	SELECTION
RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORT	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION: 11

-----  
THE COMPUTER AUTOMATICALLY PERFORMES A DISK-CHECK TO DETERMINE IF ENOUGH MEMORY IS AVAILABLE FOR THIS OPTION  
Caps

42684416 bytes total disk space  
  94208 bytes in 19 directories  
41889792 bytes in 1164 user files  
  98304 bytes in bad sectors  
602112 bytes available on disk

655360 bytes total memory  
174992 bytes free

IF THE NUMBER OF BYTES FREE IS LESS THAN 125 K, IT IS VERY  
POSSIBLE THAT THIS PROGRAM WILL TERMINATE BEFORE COMPLETION.  
DO YOU WANT TO CONTINUE THIS PROGRAM? (Y/N) Y

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR TIME SERIES PLOT

SELECT ZONE:

DRAIN MATERIAL	DRN
EMBANKMENT	EMB
GRADED FILTER TYPE 1	GF1
GRADED FILTER TYPE 2	GF2
IMPERVIOUS CORE	IMP
PROS SANDSTONE 12IN	PSS
RANDOM ROCK	RAN
SS ROCKFILL 8IN	SS8
SS ROCKFILL 24IN	SSR

---

ENTER ZONE CODE, <RETURN> TO CONTINUE IMP  
LIST, OR <0><RETURN> TO EXIT

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR TIME SERIES PLOT

PLOT DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

METHODS OF ORGANIZING PLOT DATA:

0. EXIT OR SELECT ANOTHER ZONE.
1. PLOT INDIVIDUAL TESTS BY DATE RANGE.
2. PLOT INDIVIDUAL TESTS FOR PARTICULAR REPORT NUMBER.
3. PLOT THE TEST AVEPAGE OF EACH REPORT NUMBER.

SELECT METHOD NUMBER: 1

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR TIME SERIES PLOT

PLOT DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

CREATE DATE RANGE FROM AVAILABLE DATES:

03/29/88	04/16/88	04/30/88	05/17/88	05/26/88
04/05/88	04/20/88	05/02/88	05/18/88	05/27/88
04/11/88	04/21/88	05/03/88	05/19/88	05/31/88
04/12/88	04/25/88	05/06/88	05/20/88	06/01/88
04/13/88	04/26/88	05/11/88	05/21/88	06/02/88
04/14/88	04/28/88	05/12/88	05/23/88	06/03/88
04/15/88	04/29/88	05/13/88	05/25/88	06/04/88

(PRESS <RETURN><RETURN> TO VIEW LIST OR EXIT TO ABOVE MENU.)  
PLOT USING RECORDS FOR 04/01/88 TO 04/30/88

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR TIME SERIES PLOT

PLOT DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

YOU MAY SELECT A MAXIMUM OF 6 SETS:

0 SET(S) SELECTED

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 1) FINAL FIELD DRY DENSITY (OVEN) | 9) FINAL FIELD WATER CONTENT (OVEN) |
| 2) QUICK FIELD DRY DENSITY        | 10) QUICK FIELD WATER CONTENT       |
| 3) FINAL MAXIMUM DRY DENSITY      | 11) FINAL OPTIMUM WATER CONTENT     |
| 4) QUICK MAXIMUM DRY DENSITY      | 12) QUICK OPTIMUM WATER CONTENT     |
| 5) PERCENT COMPACTION             | 13) DEVIATION FROM OPT. W.C.        |
| 6) QUICK PERCENT COMPACTION       | 14) QUICK DEVIATION FROM OPT. W.C.  |
| 7) ONE-POINT DRY DENSITY          | 15) ONE-POINT WATER CONTENT         |
| 8) QUICK ONE-POINT DRY DENSITY    | 16) QUICK ONE-POINT WATER CONTENT   |

SELECT DATA FIELD TO PLOT OR <RETURN> TO EXIT: 3

LOADING FINAL MAXIMUM DRY DENSITY DATA . . . . .

CONTINUE SELECTING DATA FIELDS TO PLOT

SELECT DATA FIELD TO PLOT OR <RETURN> TO EXIT: 0

A = SELECT DATA FIELD    S = PROCESS SELECTION(S)    X = TERMINATE PROGRAM    S

-----  
Caps

ENTER NAME OF FILE TO BE CREATED <XXXXXXXXX.XXX>: TIMEP.PLT

IS THIS CORRECT? (Y/N): Y

TO RUN THE TIME SERIES PLOT PROGRAM:

1. RETURN TO THE DOS SYSTEM
2. AT PROMPT, TYPE "TIMEPLT"

Press any key to continue...

USER IS RETURNED TO REPORTS AND PLOTS MENU

USER CAN CONTINUE CREATING PLOT FILES AND REPORTS OR EXIT TO DOS AND GENERATE THE PLOT FILES.

From the DOS prompt enter TIMEPLT

The following question-answer sequence obtains the data needed to generate the plot.

HOW MANY CURVES ON THE PLOT (MAX. IS 6): 5

NAME OF DATA FILE: TIMEP.PLT

TITLE OF PLOT (25 CHAR. MAX): TIME SERIES PLOT

Y-AXIS LABEL : MULTIPLE Y VALUES

ENTER ONE LINE OF NOTES, DO \*NOT TYPE PAST THE STAR.

ENTER THE TYPE OF DEVICE YOU WISH TO PLOT ON

- 1 - TO SCREEN - IBM COLOR GRAPHICS BOARD
- 2 - HP 7475A PLOTTER
- 3 - EPSON & HP PRINTER

ENTER 1, 2, OR 3 : 3

Choose A Printer for the Plot :

- 0 : EPSON FX-185
- 1 : EPSON FX-100
- 2 : EPSON MX-100
- 3 : LQ1500
- 4 : HEWLETT-PACKARD THINKJET
- 5 : EPSON FX-80
- 6 : EPSON MX-80
- 7 : EPSON RX-80
- 8 : EPSON FX-85
- 9 : HP LASER JET PRINTER

ENTER 0,1, 2, 3 , 4, 5, 6, 7, 8 or 9 : 9

Printer output file complete, please press RETURN.  
Output is written to OUT.EPS each time  
AFTER TERMINATION OF THIS PROGRAM  
PLEASE type EPRINT

Do you wish to redraw THIS plot (Y/N) ? : N  
DO YOU WANT A REPLOT AT DIFF SCALE (Y/N): N  
DO YOU WISH TO PLOT OTHER DATA (Y/N): N  
Stop - Program terminated.

```
*****  
* NOTE: The output file, OUT.EPS, generated by this program is *  
* in a binary format, and is only for the use of the *  
* EPRINT.EXE program. It is overwritten each time a new *  
* OUT.EPS file is created. *  
*****
```

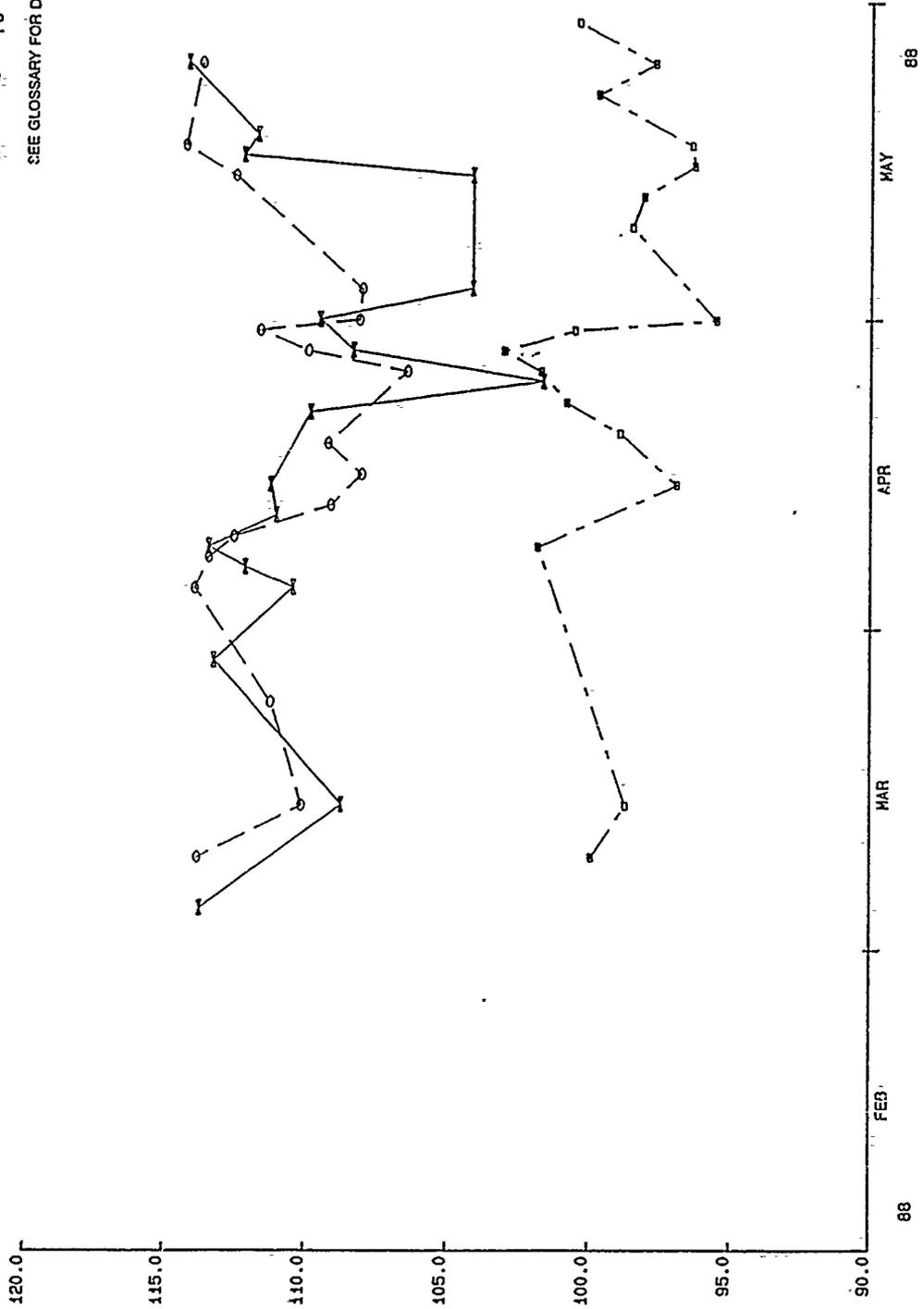
From the DOS prompt enter EPRINT

```
PROGRAM EPRINT  
GCS EPSON AND HP LASER PRINTING ROUTINE  
  
READY HP LASER PRINTER, PRESS <CR> TO CONTINUE
```

IMPERVIOUS CORE

H U L T I P L E Y V A L U E S

FDD  
 FMD  
 PC  
 SEE GLOSSARY FOR DEFINITIONS



TIME SERIES PLOT

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR TIME SERIES PLOT

PLOT DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

METHODS OF ORGANIZING PLOT DATA:

0. EXIT OR SELECT ANOTHER ZONE.
1. PLOT INDIVIDUAL TESTS BY DATE RANGE.
2. PLOT INDIVIDUAL TESTS FOR PARTICULAR REPORT NUMBER.
3. PLOT THE TEST AVERAGE OF EACH REPORT NUMBER.

SELECT METHOD NUMBER: 2

-----  
YATESVILLE LAKE DAM

Caps

ORGANIZE DATA FOR TIME SERIES PLOT

PLOT DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

ORGANIZE DATA BY PARTICULAR REPORT NO.

REPORTS AVAILABLE AT PRESENT FOR ZONE:

- =====
- 1
  - 2
  - 3
  - 4
  - 5
  - 6
  - 7

---

ENTER REPORT NO., OR <RETURN> TO CONTINUE LIST OR TO EXIT 1

-----  
ALL OTHER SCREENS AND PROMPTS FROM THIS POINT ON ARE THE SAME AS SHOWN BEFORE.

ORGANIZE DATA FOR TIME SERIES PLOT

PLOT DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

METHODS OF ORGANIZING PLOT DATA:

- 0. EXIT OR SELECT ANOTHER ZONE.
- 1. PLOT INDIVIDUAL TESTS BY DATE RANGE.
- 2. PLOT INDIVIDUAL TESTS FOR PARTICULAR REPORT NUMBER.
- 3. PLOT THE TEST AVERAGE OF EACH REPORT NUMBER.

SELECT METHOD NUMBER: 3

ALL OTHER SCREENS AND PROMPTS FROM THIS POINT ON ARE THE SAME AS SHOWN BEFORE.

M A I N M E N U	S E L E C T I O N
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: Q

## APPENDIX C: STATISTICAL PACKAGE OUTPUT

1. This appendix presents examples of the statistical capability of the Quality Assurance Package. Option 6 of the main menu is used for all the examples in this appendix. This appendix describes how to generate and shows examples of the various forms of output. The following notes clarify the material in this appendix and describes the user input required to generate the examples:

a. All user responses are indicated with underlined bold print.

b. The "-----" indicated the top of the screen. All the extra spaces on the screens are not shown in the examples. Thus, some screens will appear to contain more lines than others. The word "Caps" indicates that the CAPS LOCK is on.

c. The user is asked at a number of location to add or edit data. The examples in this appendix will use both of these options. The only difference between the add and edit is that the screen is initially blank in the add mode instead of displaying the selected data set in the edit mode. For those cases illustrating the initial entry of data, the input values will be highlighted as user responses.

d. NOTES ABOUT THE EXAMPLES ARE IN A SMALLER PRINT FONT.

2. Upon beginning the program by entering either "DO MAIN" from within dBASE III or entering "DBASE MAIN" for the system prompt, the main menu appears.

M A I N M E N U	SELECTION
=====	-----
PROJECT DATA	1
EMBANKMENT ZONE DATA	2
REPORT PERIOD DATA	3
REPORT END DATE	4
TEST DATA ENTRY & EDIT	5
REPORTS AND PLOTS	6
REPORT NUMBER CORRECTION	7
BACKUP / RESTORE *.DBF FILES	8
QUIT TO SYSTEM	Q

ENTER SELECTION: 6

REPORTS AND PLOTS

Caps

M E N U

SELECTION

---

---

RETURN TO MAIN MENU	0
SUMMARY OF ZONE SPECS.	1
LIST OF ZONES & REPORTS	2
ADD COMMENTS TO 4080/4081 REPORTS	3
PRINT THE 4080 REPORT	4
PRINT THE 4081 REPORT	5
SUMMARY OF GRADATION RESULTS	6
SHOTGUN PLOT (PRINTER)	7
GENERAL X-Y PLOT (PLOTTER)	8
CURVE-FIT PLOT (PRINTER)	9
STATISTICAL REPORTS (PRINTER)	10
TIME SERIES PLOT (PLOTTER)	11

ENTER SELECTION: 10

Caps

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

THE PURPOSE OF THIS PROGRAM IS TO TRANSLATE THE TEST RESULTS FOR GROUPS #1, #2, AND #3 INTO THE FORMAT USED BY THE STATISTICAL REPORTS PACKAGE.

DO YOU WANT TO CONTINUE? (Y/N) Y

-----  
Caps

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

WHICH DIRECTORY CONTAINS THE STATISTICAL REPORTS PACKAGE?  
(X:\XXXXXXXX\XX\XXXXXX\)      C:\STAT\

-----  
YATESVILLE LAKE DAM

Caps

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

SELECT ZONE:  
=====

DRAIN MATERIAL	DRN
EMBANKMENT	EMB
GRADED FILTER TYPE 1	GF1
GRADED FILTER TYPE 2	GF2
IMPERVIOUS CORE	IMP
PROS SANDSTONE 12IN	PSS
RANDOM ROCK	RAN
SS ROCKFILL 8IN	SS8
SS ROCKFILL 24IN	SSR

ENTER ZONE CODE, <RETURN> TO CONTINUE LIST: IMP

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

METHODS OF ORGANIZING PLOT DATA:

1. PLOT ALL TESTS FOR ZONE.
2. PLOT INDIVIDUAL TESTS BY DATE RANGE.
3. PLOT INDIVIDUAL TESTS FOR PARTICULAR REPORT NUMBER.

SELECT METHOD NUMBER: 1

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

ENTER REFERENCE NAME FOR FILES <XXXXXXX>: KT4A

ARE YOU SURE? (Y/N): Y

COPY TO FILE C:\STAT\KT4A1.SAV . . . .  
COPY TO FILE C:\STAT\TEST1.TXT . . . .

COPY TO FILE C:\STAT\KT4A2.SAV . . . .  
COPY TO FILE C:\STAT\TEST2.TXT . . . .

COPY TO FILE C:\STAT\KT4A3.SAV . . . .  
COPY TO FILE C:\STAT\TEST3.TXT . . . .

-----  
Caps

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

TO RUN THE STATISTICAL REPORTS PROGRAM:

1. RETURN TO THE DOS SYSTEM
2. AT PROMPT, TYPE "EASY"
3. SELECT OPTION "4. Tests Identification Menu"
4. SELECT OPTION "1. Choose Tests To Be Used"

PLEASE NOTE THAT THE STATISTICAL PACAKAGE WILL AUTOMATICALLY USE THE MOST RECENTLY TRANSLATED COPIES OF TEST1.TXT, TEST2.TXT, AND TEST3.TXT. TO ACCESS A PREVIOUSLY TRANSLATED DATA SET, PRIOR TO STEP 3 SELECT AND USE THE OPTION "3. Choose Previously Saved Files".

Press any key to continue...

-----  
YATESVILLE LAKE DAM

Caps

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

METHODS OF ORGANIZING PLOT DATA:

1. PLOT ALL TESTS FOR ZONE.
2. PLOT INDIVIDUAL TESTS BY DATE RANGE.
3. PLOT INDIVIDUAL TESTS FOR PARTICULAR REPORT NUMBER.

SELECT METHOD NUMBER: 2

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

CREATE DATE RANGE FROM AVAILABLE DATES:

03/29/88	04/25/88	05/13/88	05/31/88
04/05/88	04/26/88	05/17/88	06/01/88
04/11/88	04/28/88	05/18/88	06/02/88
04/12/88	04/29/88	05/19/88	06/03/88
04/13/88	04/30/88	05/20/88	06/04/88
04/14/88	05/02/88	05/21/88	06/06/88
04/15/88	05/03/88	05/23/88	06/07/88
04/16/88	05/06/88	05/25/88	06/08/88
04/20/88	05/11/88	05/26/88	06/10/88
04/21/88	05/12/88	05/27/88	06/11/88

(PRESS <RETURN><RETURN> TO VIEW LIST.)

PLOT USING RECORDS FOR 04/01/88 TO 04/30/88

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

ENTER REFERENCE NAME FOR FILES <XXXXXXX>: KT4B

ARE YOU SURE? (Y/N): Y

COPY TO FILE C:\STAT\KT4B1.SAV . . . .

COPY TO FILE C:\STAT\TEST1.TXT . . . .

COPY TO FILE C:\STAT\KT4B2.SAV . . . .

COPY TO FILE C:\STAT\TEST2.TXT . . . .

COPY TO FILE C:\STAT\KT4B3.SAV . . . .

COPY TO FILE C:\STAT\TEST3.TXT . . . .

-----  
Caps

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

TO RUN THE STATISTICAL REPORTS PROGRAM:

1. RETURN TO THE DOS SYSTEM
2. AT PROMPT, TYPE "EASY"
3. SELECT OPTION "4. Tests Identification Menu"
4. SELECT OPTION "1. Choose Tests To Be Used"

PLEASE NOTE THAT THE STATISTICAL PACAKAGE WILL AUTOMATICALLY USE THE MOST RECENTLY TRANSLATED COPIES OF TEST1.TXT, TEST2.TXT, AND TEST3.TXT. TO ACCESS A PREVIOUSLY TRANSLATED DATA SET, PRIOR TO STEP 3 SELECT AND USE THE OPTION "3. Choose Previously Saved Files".

Press any key to continue...

-----  
YATESVILLE LAKE DAM

Caps

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

METHODS OF ORGANIZING PLOT DATA:

1. PLOT ALL TESTS FOR ZONE.
2. PLOT INDIVIDUAL TESTS BY DATE RANGE.
3. PLOT INDIVIDUAL TESTS FOR PARTICULAR REPORT NUMBER.

SELECT METHOD NUMBER: 3

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

DATA FOR EMBANKMENT ZONE: IMPERVIOUS CORE

REPORTS AVAILABLE AT PRESENT FOR ZONE:  
=====

- 1
- 2
- 3
- 4
- 5
- 6
- 7

ENTER REPORT NO., OR <RETURN> TO CONTINUE. 1

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

ENTER REFERENCE NAME FOR FILES <XXXXXXX>: KT4C

ARE YOU SURE? (Y/N): Y

COPY TO FILE C:\STAT\KT4C1.SAV . . . .

COPY TO FILE C:\STAT\TEST1.TXT . . . .

COPY TO FILE C:\STAT\KT4C2.SAV . . . .

COPY TO FILE C:\STAT\TEST2.TXT . . . .

COPY TO FILE C:\STAT\KT4C3.SAV . . . .

COPY TO FILE C:\STAT\TEST3.TXT . . . .

-----  
Caps

TRANSLATE TESTS DATA FOR STATISTICAL PACKAGE

TO RUN THE STATISTICAL REPORTS PROGRAM:

1. RETURN TO THE DOS SYSTEM
2. AT PROMPT, TYPE "EASY"
3. SELECT OPTION "4. Tests Identification Menu"
4. SELECT OPTION "1. Choose Tests To Be Used"

PLEASE NOTE THAT THE STATISTICAL PACAKAGE WILL AUTOMATICALLY USE THE MOST RECENTLY TRANSLATED COPIES OF TEST1.TXT, TEST2.TXT, AND TEST3.TXT. TO ACCESS A PREVIOUSLY TRANSLATED DATA SET, PRIOR TO STEP 3 SELECT AND USE THE OPTION "3. Choose Previously Saved Files".

Press any key to continue...

CAGE QA/QC

CHOICE OF DBASE III FILES

Sept. 1986

1. List of Saved Files
2. Delete Saved Files
3. Choose Previously Saved Files
4. Tests Identification Menu

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter : 1

-----  
List of dbaseIII Saved Files

1-YATES

2-KT4B

3-KT4C

Press Enter

CAGE QA/QC

CHOICE OF DBASE III FILES

Sept. 1986

1. List of Saved Files
2. Delete Saved Files
3. Choose Previously Saved Files
4. Tests Identification Menu

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter : 3

Choose dbaseIII Saved Files

1-YATES

2-KT4B

3-KT4C

Choose an Option (0 - 3) (0=end) : 3

CAGE QA/QC

CHOICE OF DBASE III FILES

Sept. 1986

1. List of Saved Files
2. Delete Saved Files
3. Choose Previously Saved Files
4. Tests Identification Menu

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter : 4

CAGE QA/QC

TESTS IDENTIFICATION

Sept. 1986

1. Choose Tests To Be Used
2. Look At Chosen Tests
3. Choose Results To Analyse
4. Look At Chosen Results
5. Data Analysis (MAIN MENU)
6. Return to Data Base Program

Choose an Option ( 1 , 2 , 3 , 4 , 5 or 6 (Q=QUIT ) ); then Enter : 1

-----  
Choose Tests

Do you want to use previously chosen tests (Y/N) ? N

Do you want to use retests (Y/N) ? Y

-----  
Choose Tests

Number of Tests Chosen : 0  
Number of Tests After Deletion: 0

1. Choose Groups of Tests
2. Add Individual Tests
3. Delete Chosen Tests
4. Return to TEST IDENTIFICATION Menu

Choose an Option : 1

-----  
Choose Tests

Number of Tests Chosen : 0

Tests data is for embankment zone: IMPERVIOUS CORE  
If no other option is selected, all data will be used.

Do you want to choose tests by date (Y/N) ? N

Do you want to choose tests by type of water  
content detection device (Y/N) ? N

-----  
Choose Tests

Number of Tests Chosen : 24  
Number of Tests After Deletion: 24

1. Choose Groups of Tests
2. Add Individual Tests
3. Delete Chosen Tests
4. Return to TEST IDENTIFICATION Menu

Choose an Option : 4

-----

CAGE QA/QC	<u>TESTS IDENTIFICATION</u>	Sept. 1986
<ol style="list-style-type: none"><li>1. Choose Tests To Be Used</li><li>2. Look At Chosen Tests</li><li>3. Choose Results To Analyse</li><li>4. Look At Chosen Results</li><li>5. Data Analysis (MAIN MENU)</li><li>6. Return to Data Base Program</li></ol>		

Choose an Option ( 1 , 2 , 3 , 4 , 5 or 6 (Q=QUIT) ); then Enter : 2

-----  
Look At Tests

Which test number do you want to begin to look at (none=0) ? 1

Look At Tests

No.	emb_zone	report_no	test_no
1	IMPERVIOUS CORE	1	IMP0001
2	IMPERVIOUS CORE	1	IMP0002
3	IMPERVIOUS CORE	1	IMP0003
4	IMPERVIOUS CORE	1	IMP0004
5	IMPERVIOUS CORE	1	IMP0005
6	IMPERVIOUS CORE	1	IMP0006
7	IMPERVIOUS CORE	1	IMP0007
8	IMPERVIOUS CORE	1	IMP0008
9	IMPERVIOUS CORE	1	IMP0009
10	IMPERVIOUS CORE	1	IMP0010

Hit Q (quit) or ENTER

Look At Tests

Do you want a printed hardcopy of the tests chosen (Y/N) ? N

CAGE QA/QC	<u>TESTS IDENTIFICATION</u>	Sept. 1986
<ol style="list-style-type: none"><li>1. Choose Tests To Be Used</li><li>2. Look At Chosen Tests</li><li>3. Choose Results To Analyse</li><li>4. Look At Chosen Results</li><li>5. Data Analysis (MAIN MENU)</li><li>6. Return to Data Base Program</li></ol>		

Choose an Option ( 1 , 2 , 3 , 4 , 5 or 6 (Q=QUIT ) ); then Enter : 3

-----  
Choose Results

How many Results do you want to analyse (0=end, 1 or 2) ? 1

-----  
Choose Results

Result 1

1. 'Field Oven' or 'Quick' data (Dry Dens., Water Cont., ...) or Liquid Limit or Plasticity Index
2. Spec. Gravity or 'Five-pts curve' data or Liquid & Plastic Limits
3. 'SIEVE' data or Test Pit Results

Choose an Option (none = 0) : 1

-----  
Choose Results

1. Field Oven Dry Density
2. Field Oven Water Content
3. Field Quick Dry Density
4. Field Quick Water Content
5. One-Point Dry Density
6. One-Point Water Content
7. One-Point Quick Dry Density
8. One-Point Quick Water Content
9. FOC Maximum Dry Density
10. FOC Optimum Water Content
11. Field Dev. fr. Optimum Water Cont.
12. Field Percent Compaction
13. Quick Maximum Dry Density
14. Quick Optimum Water Content
15. Quick Dev. fr. Optimum Water Content
16. Quick Percent Compaction
17. Liquid Limit
18. Plasticity Index

Choose a Data Set (none = 0) : 6

1. Choose Tests To Be Used
2. Look At Chosen Tests
3. Choose Results To Analyse
4. Look At Chosen Results
5. Data Analysis (MAIN MENU)
6. Return to Data Base Program

Choose an Option ( 1 , 2 , 3 , 4 , 5 or 6 (Q=QUIT ) ); then Enter : 4

Look At Results For Embankment Zone: IMPERVIOUS CORE

Which test number do you want to begin to look at (none = 0) ? 1

Look At Results For Embankment Zone: IMPERVIOUS CORE

No.	rep_no	test_no	One-Point Water Content
1	1	IMP0001	13.8
2	1	IMP0002	15.0
3	1	IMP0003	13.7
4	1	IMP0004	13.8
5	1	IMP0005	14.0
6	1	IMP0006	15.3
7	1	IMP0007	14.8
8	1	IMP0008	16.2
9	1	IMP0009	15.9
10	1	IMP0010	14.8

Hit Q (quit) or ENTER

Look At Results For Embankment Zone: IMPERVIOUS CORE

Do you want a printed hardcopy of the tests chosen (Y/N) ? N

CAGE QA/QC

TESTS IDENTIFICATION

Sept. 1986

1. Choose Tests To Be Used
2. Look At Chosen Tests
3. Choose Results To Analyse
4. Look At Chosen Results
5. Data Analysis (MAIN MENU)
6. Return to Data Base Program

Choose an Option ( 1 , 2 , 3 , 4 , 5 or 6 (Q=QUIT ) ); then Enter : 5

Number of Chosen Results : 1

Number of Data Points in Result 1 : 24

Press ENTER

CAGE QA/QC

MAIN MENU

Sept. 1986

1. Statistical Data Analysis
2. Quality Control Charts
3. Inspection Sampling
4. Return to Test Identification

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter : 1

CAGE QA/QC

STATISTICAL DATA ANALYSIS

Sept. 1986

1. Statistical Descriptions: Univariate Data
2. Statistical Descriptions: Bivariate Data
3. Analytical Probability Distributions
4. Return to Main Menu

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter : 1

CAGE QA/QC

STATISTICAL DESCRIPTIONS: UNIVARIATE DATA

Sept. 1986

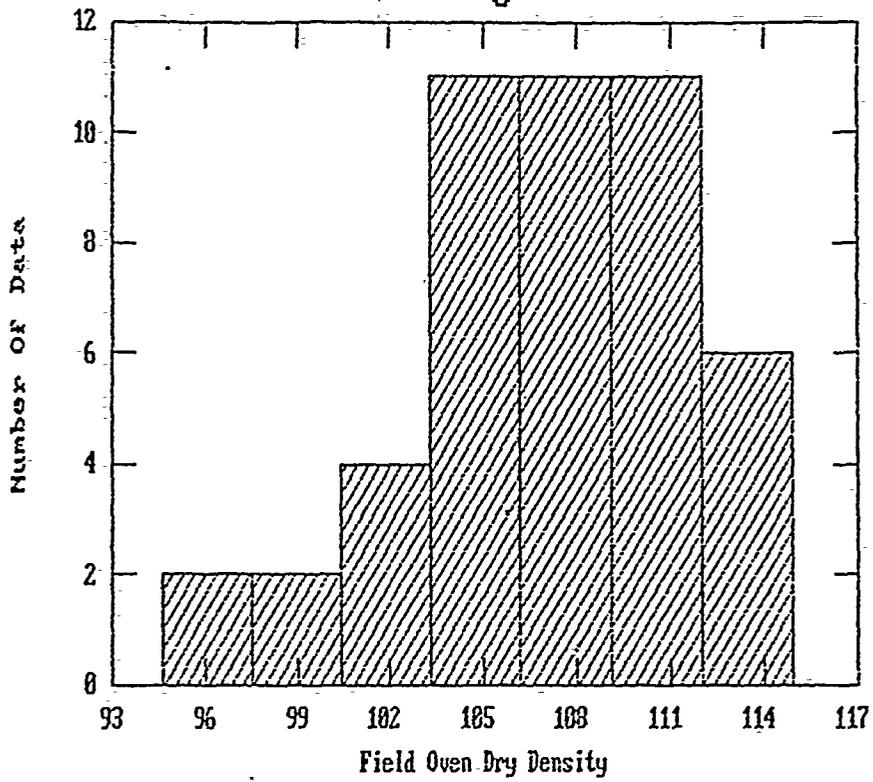
1. Summary Statistics  
Mean, Median, Fractiles (25%, 50%, 75%)  
Standard Deviation (Variance), Range
2. Histogram
3. Cumulative Probability Distribution
4. Return to STATISTICAL DATA ANALYSIS MENU

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter :

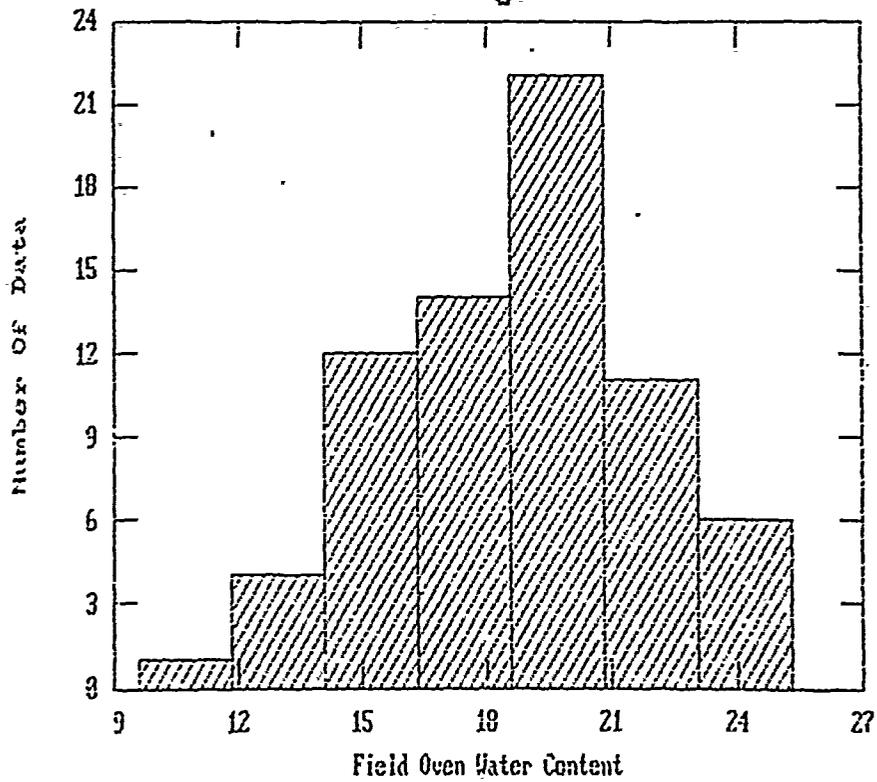
Summary Statistics

Statistical Result	Field Oven Dry Densi	Field Oven Water Con
TOTAL NO. DATA PTS.	70	70
TOTAL NO. PLOT PTS.	47	70
MEAN	107.1	18.6
MEDIAN	108.3	18.8
FRACTILE 25%	104.4	16.3
FRACTILE 75%	110.4	20.7
STANDARD DEVIATION	4.6	3.1
VARIANCE	21.0	9.6
RANGE: Minimum	94.6	9.6
RANGE: Maximum	114.9	25.3

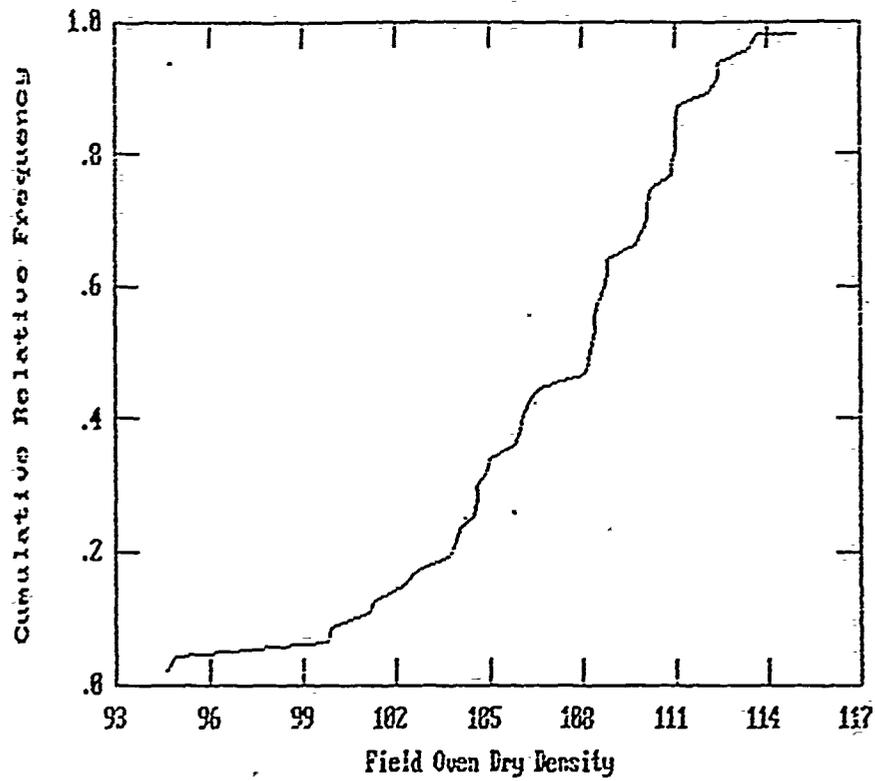
### Histogram



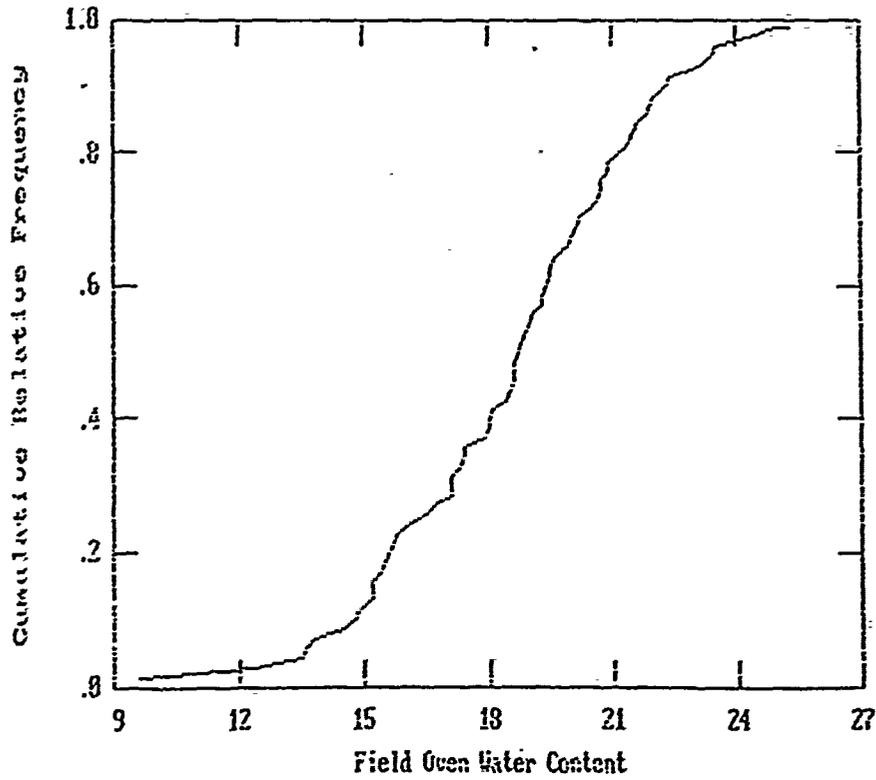
### Histogram



### Observed Cumulative



### Observed Cumulative



CAGE QA/QC

STATISTICAL DATA ANALYSIS

Sept. 1986

1. Statistical Descriptions: Univariate Data
2. Statistical Descriptions: Bivariate Data
3. Analytical Probability Distributions
4. Return to Main Menu

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter : 2

CAGE QA/QC

STATISTICAL DESCRIPTIONS: BIVARIATE DATA

Sept. 1986

1. Summary Statistics  
Mean, Median, Fractiles (25%, 50%, 75%)  
Standard Deviation (Variance), Range  
Correlation Coefficient and Covariance
2. Scatter Plot
3. Linear Regression Analysis
4. Return to STATISTICAL DATA ANALYSIS MENU

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter :

Summary Statistics

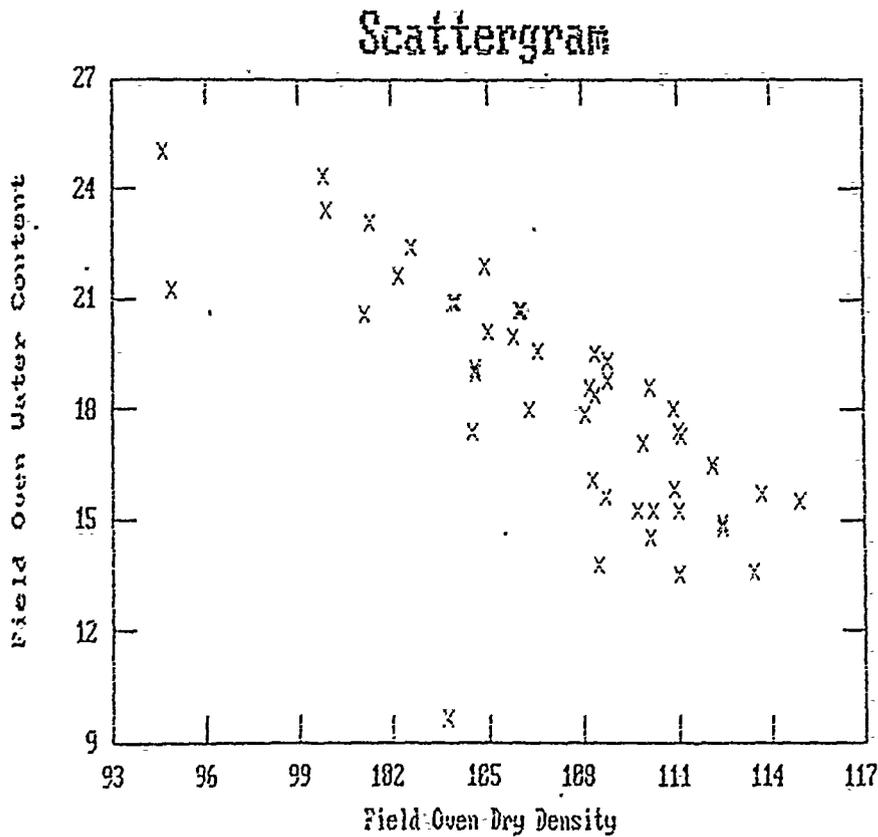
Statistical Result	Field Oven Dry Densi	Field Oven Water Con
TOTAL NO. DATA PTS.	70	70
TOTAL NO. PLOT PTS.	47	47
MEAN	107.1	18.2
MEDIAN	108.3	18.4
FRACTILE 25%	104.4	15.6
FRACTILE 75%	110.4	20.6
STANDARD DEVIATION	4.6	3.2
VARIANCE	21.0	10.2
RANGE: Minimum	94.6	9.6
RANGE: Maximum	114.9	25.0

COVARIANCE : -10.6  
CORRE. COEF. : -.724

Modification Menu  
\*\*\*\*\*

1. Title : Scattergram
2. x-label: Field Oven Dry Density
3. y-label: Field Oven Water Content
4. Left of scattergram = 93.00
5. Right of scattergram = 117.00
6. Bottom of scattergram = 9.00
7. Top of scattergram = 27.00

Choose item to be modified (0=plot,8=end): 0

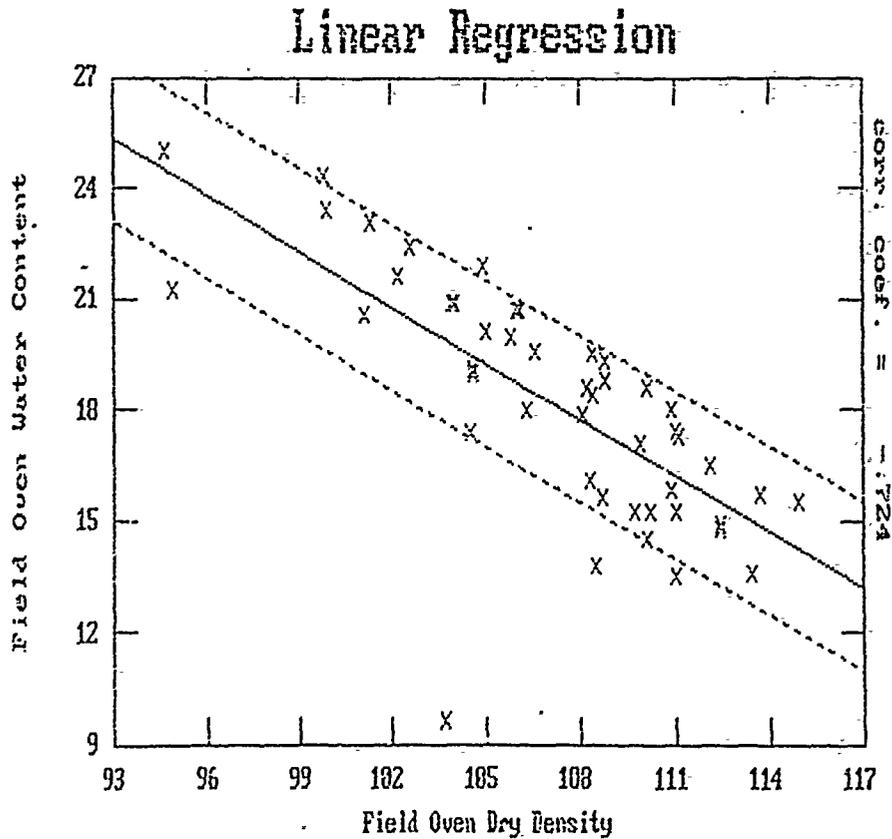


Modification Menu

~~~~~

1. Title : Linear Regression
2. x-label: Field Oven Dry Density
3. y-label: Field Oven Water Content
4. Left of diagram = 93.00
5. Right of diagram = 117.00
6. Bottom of diagram = 9.00
7. Top of diagram = 27.00

Choose item to be modified (0=plot,8=end): 0



CAGE QA/QC

STATISTICAL DATA ANALYSIS

Sept. 1986

1. Statistical Descriptions: Univariate Data
2. Statistical Descriptions: Bivariate Data
3. Analytical Probability Distributions
4. Return to Main Menu

Choose an Option ( 1 , 2 , 3 or 4 {Q=QUIT } ); then Enter : 3

CAGE QA/QC

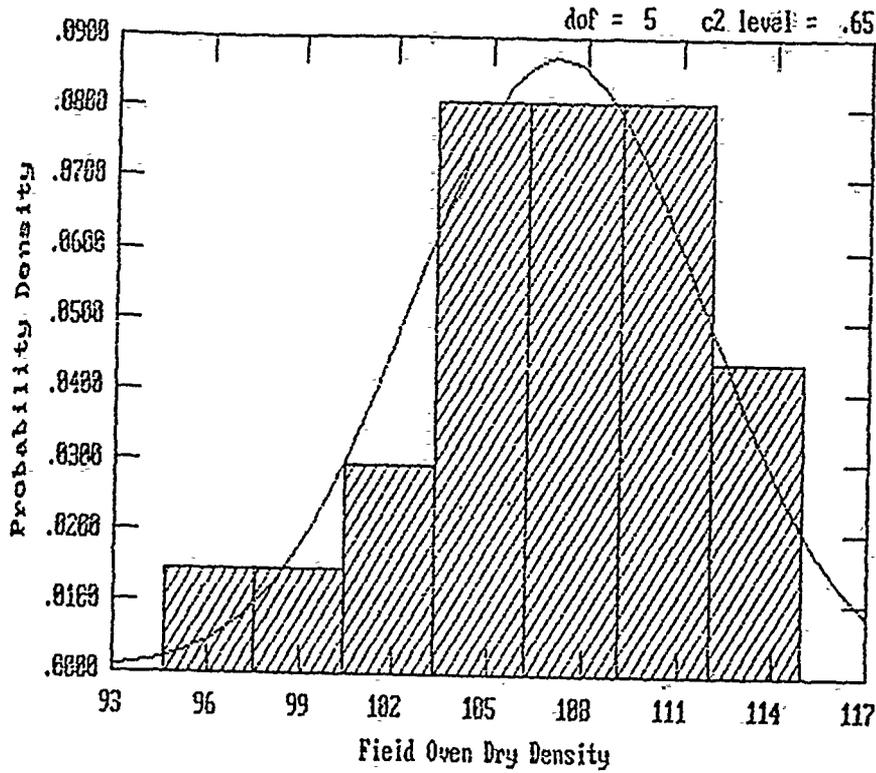
ANALYTICAL PROBABILITY DISTRIBUTIONS

Sept. 1986

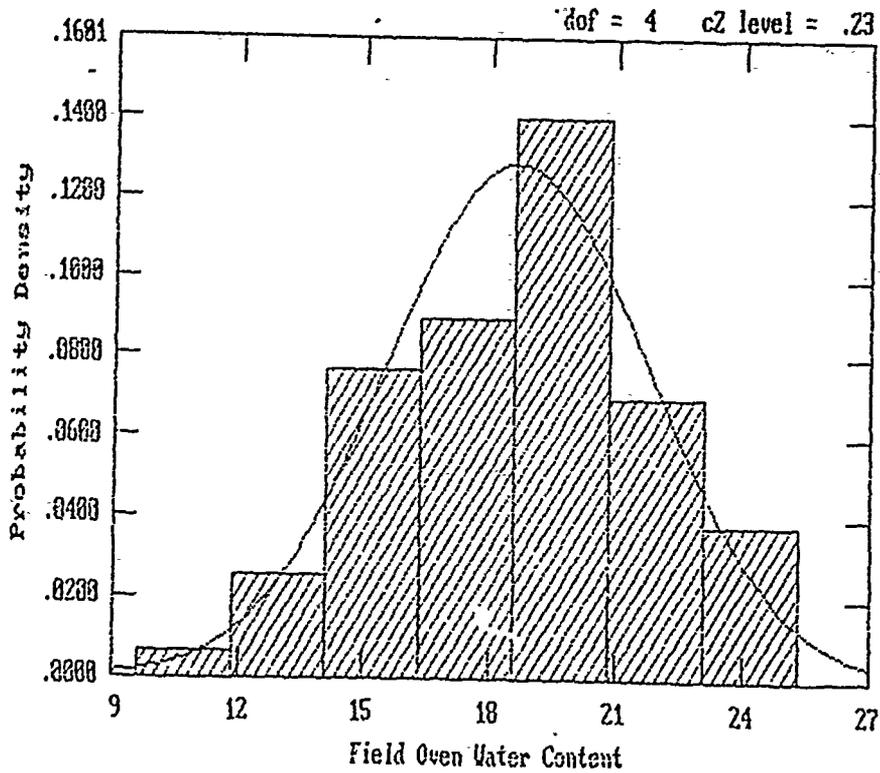
1. Normal
2. LogNormal
3. Gamma
4. Exponential
5. 4-Parameter Beta
6. Weibull
7. Return to STATISTICAL DATA ANALYSIS MENU

Choose an Option ( 1 , 2 , 3 , 4 , 5 , 6 or 7 {Q=QUIT } ); then Enter :

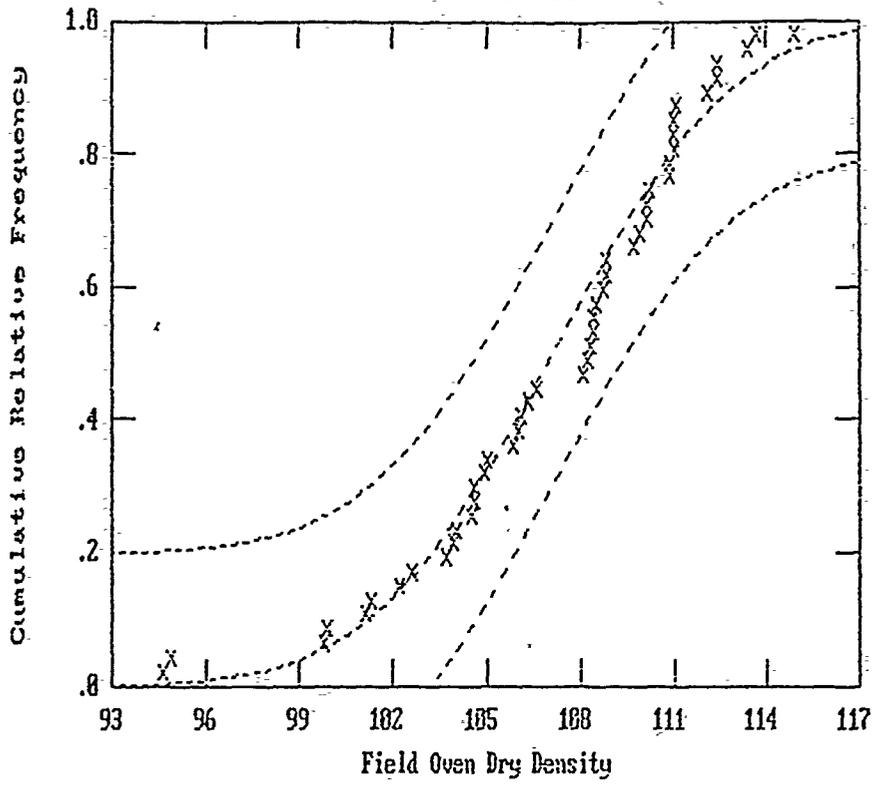
### Analytical And Observed PDF's



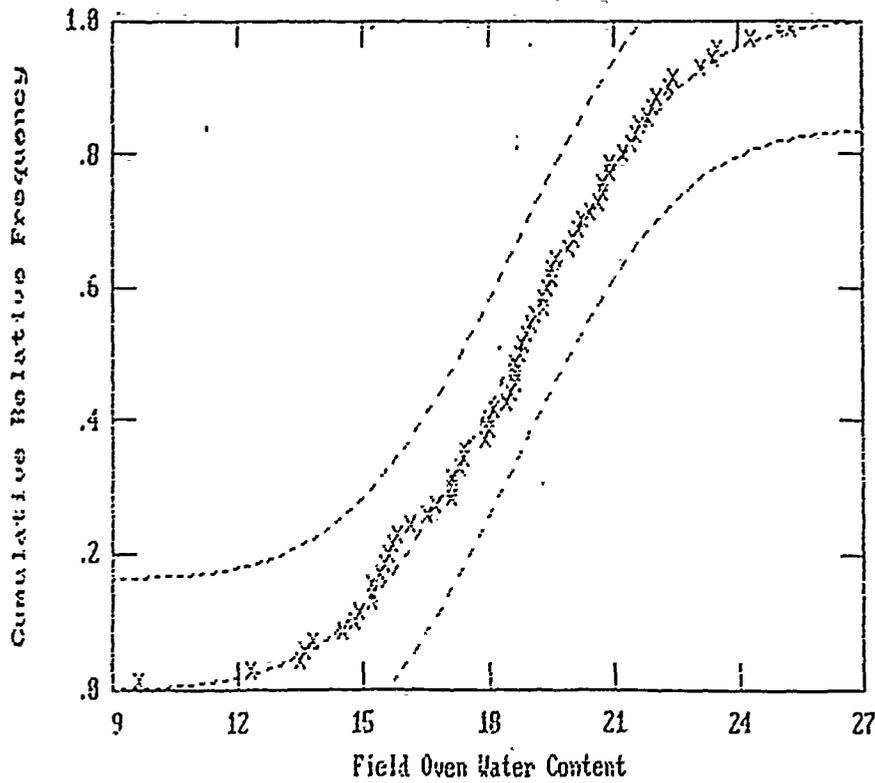
### Analytical And Observed PDF's



### Normal Distribution

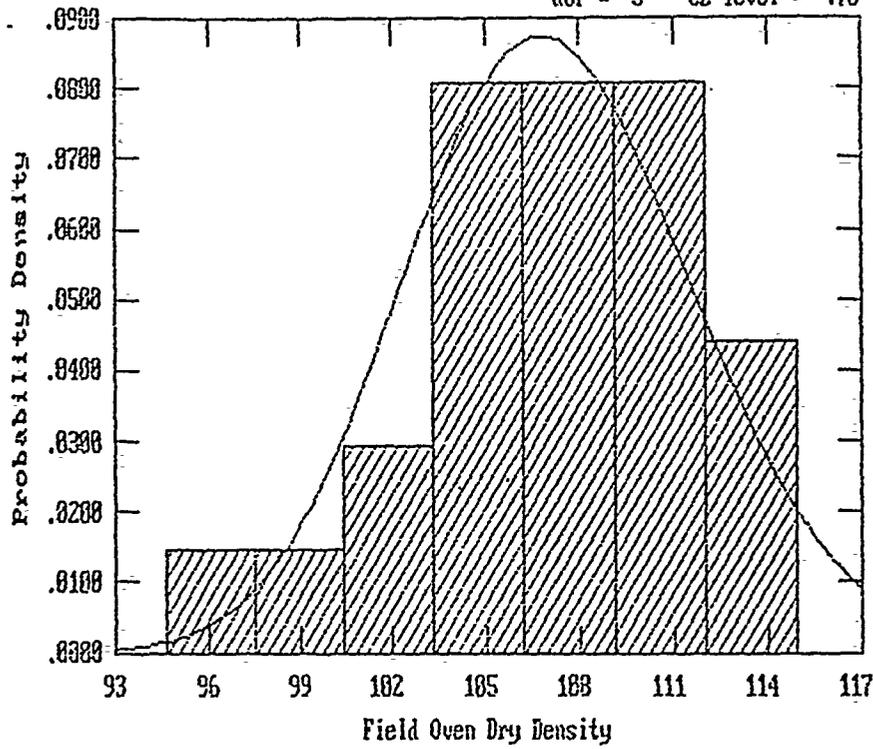


### Normal Distribution



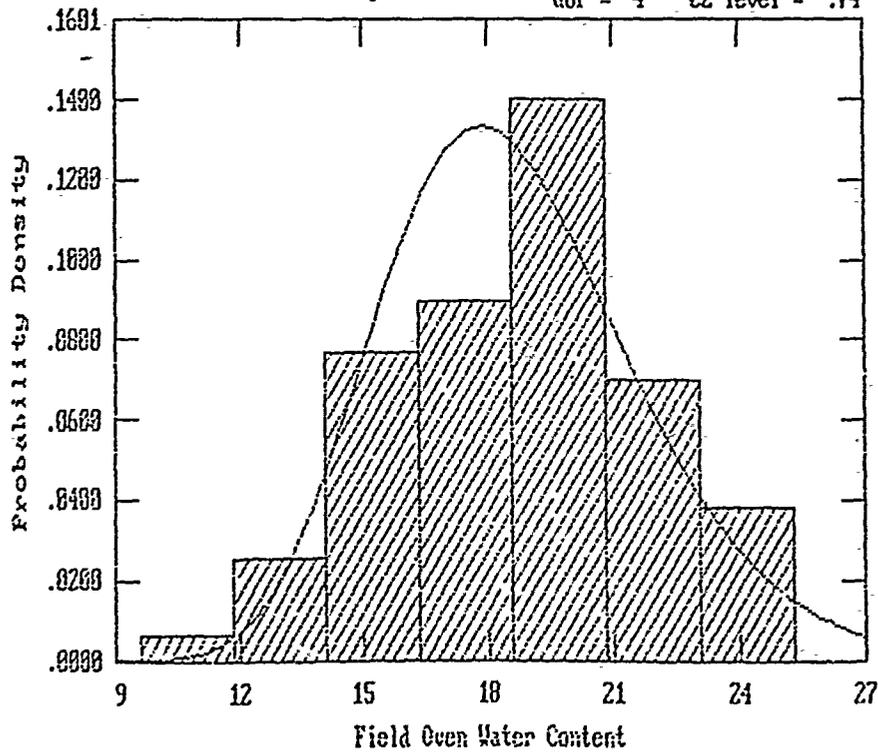
### Analytical And Observed PDF's

dof = 5 c2 level = .78

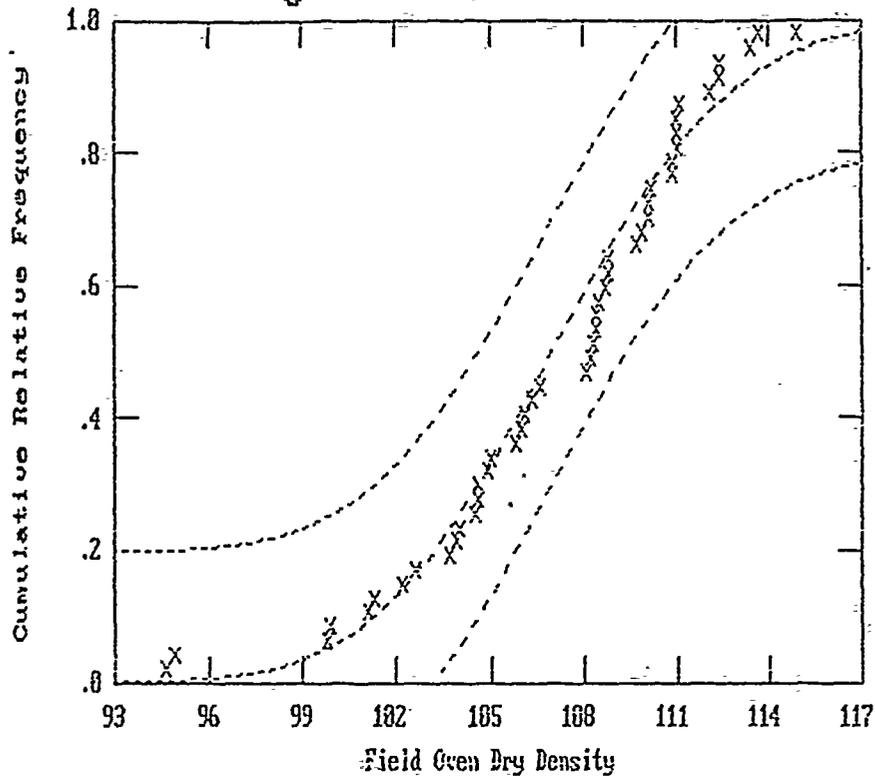


### Analytical And Observed PDF's

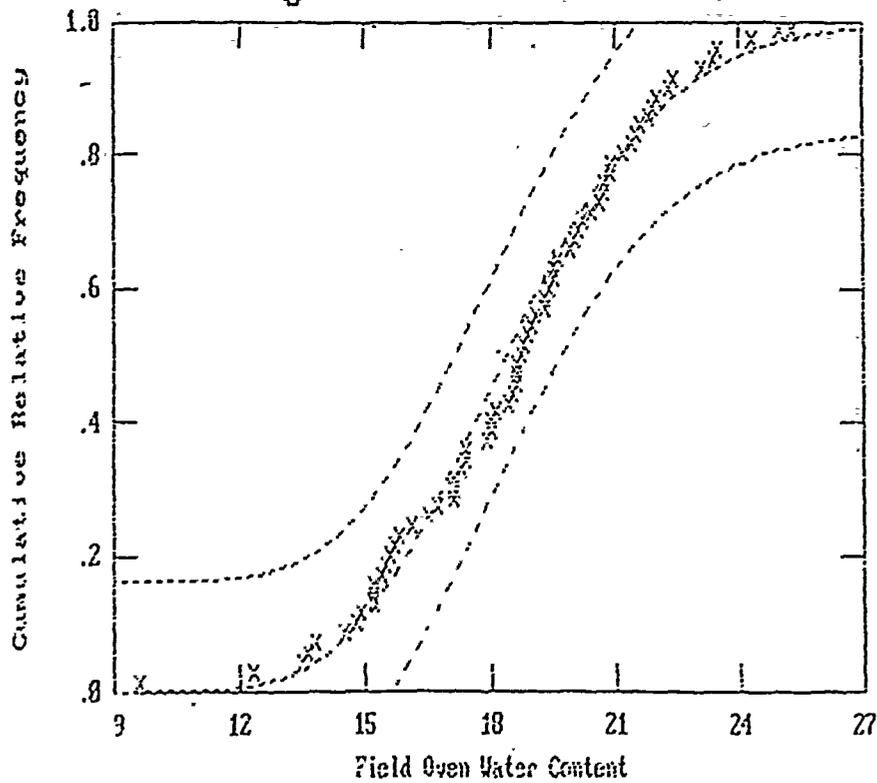
dof = 4 c2 level = .74



# LogNormal Distribution

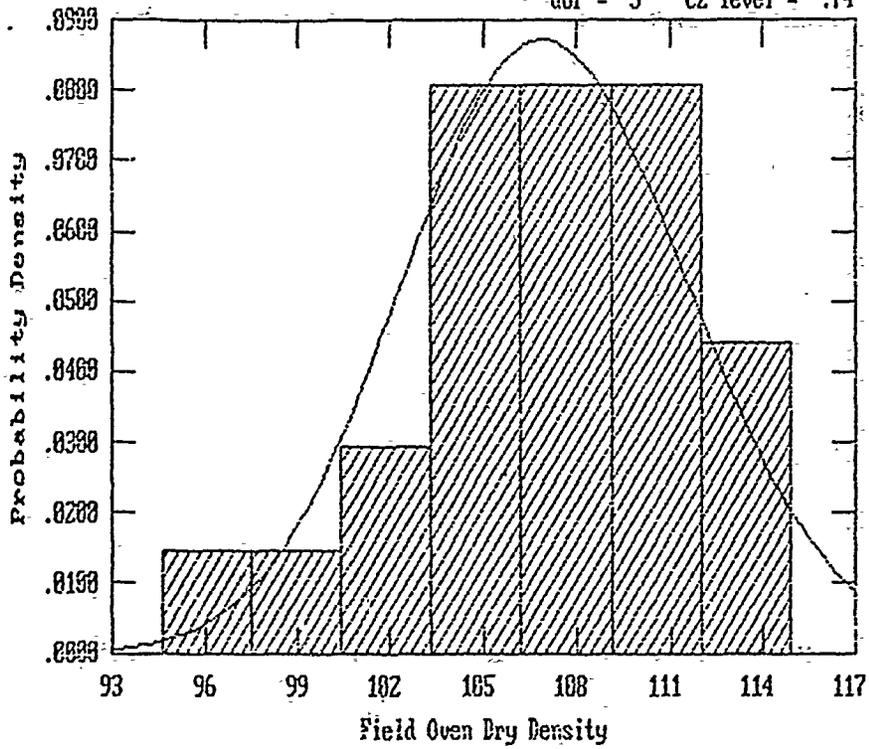


# LogNormal Distribution



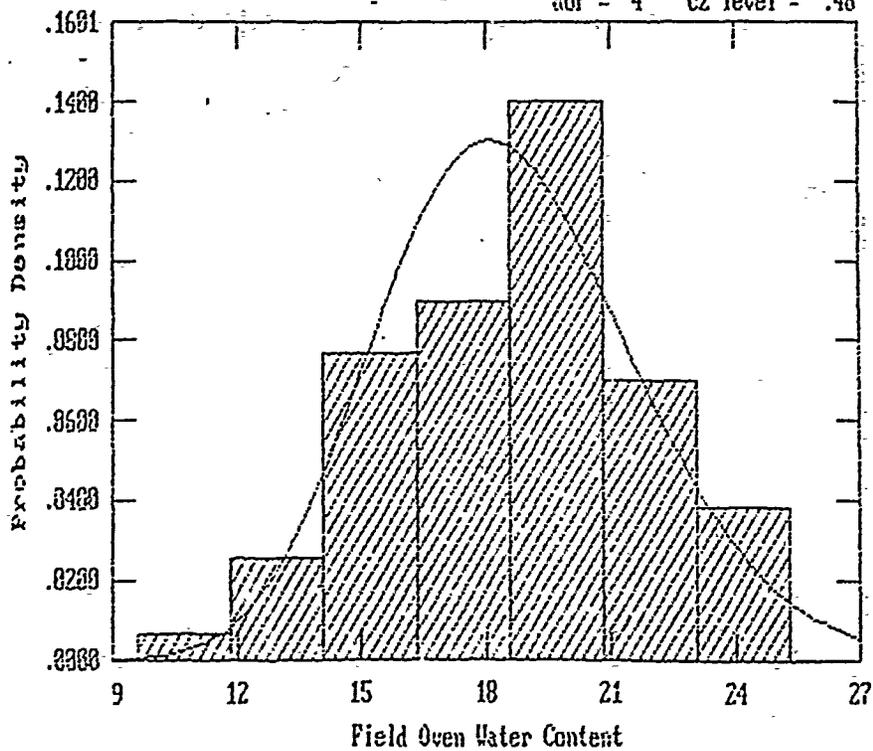
# Analytical And Observed PDF's

dof = 5 c2 level = .74

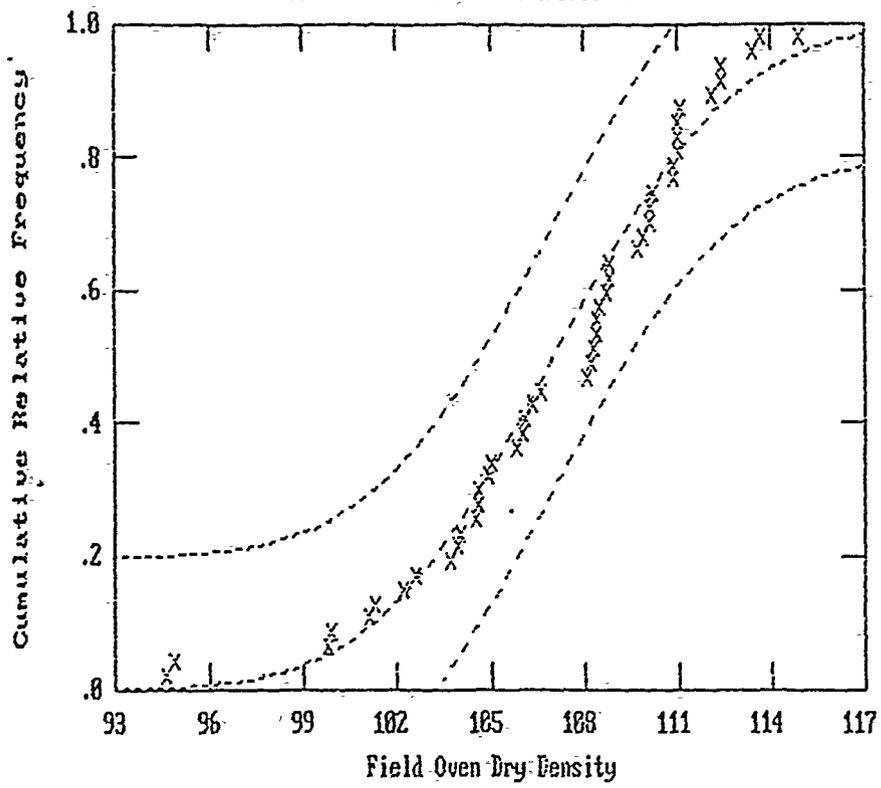


# Analytical And Observed PDF's

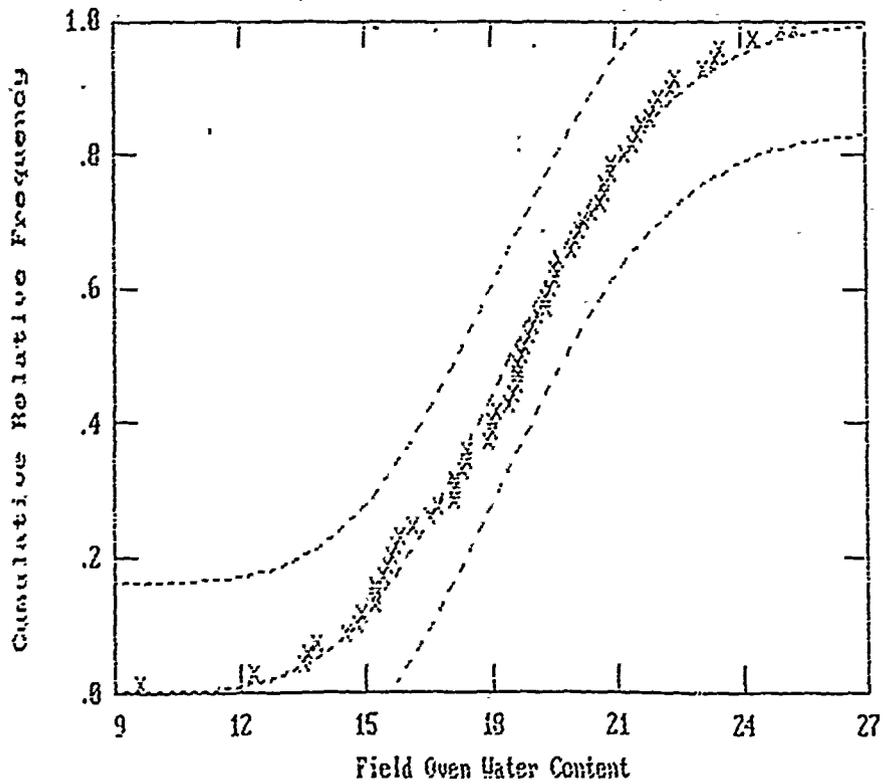
dof = 4 c2 level = .48



### Gamma Distribution

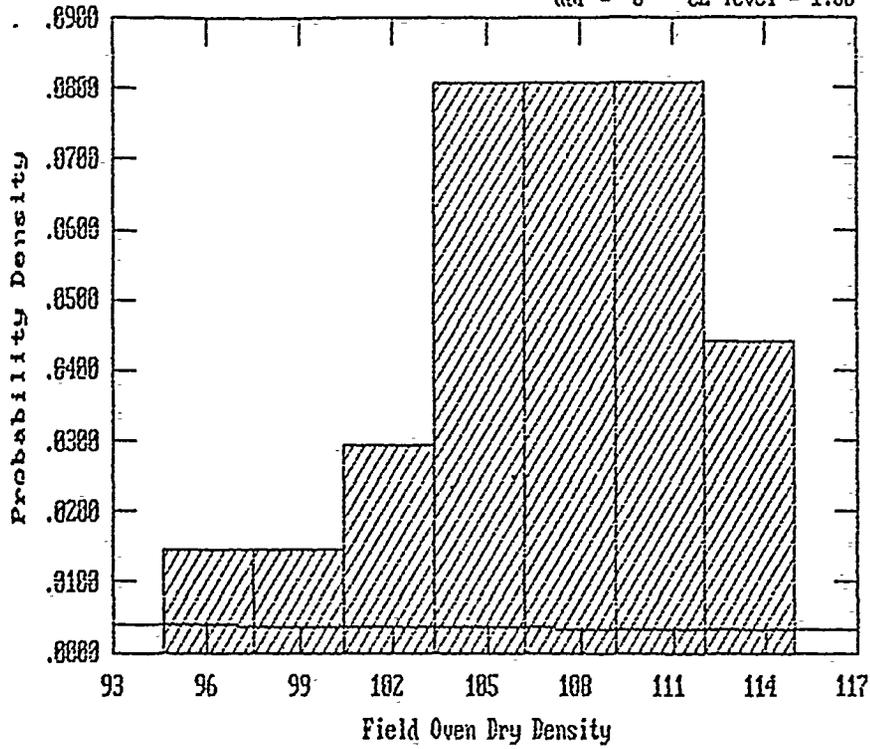


### Gamma Distribution



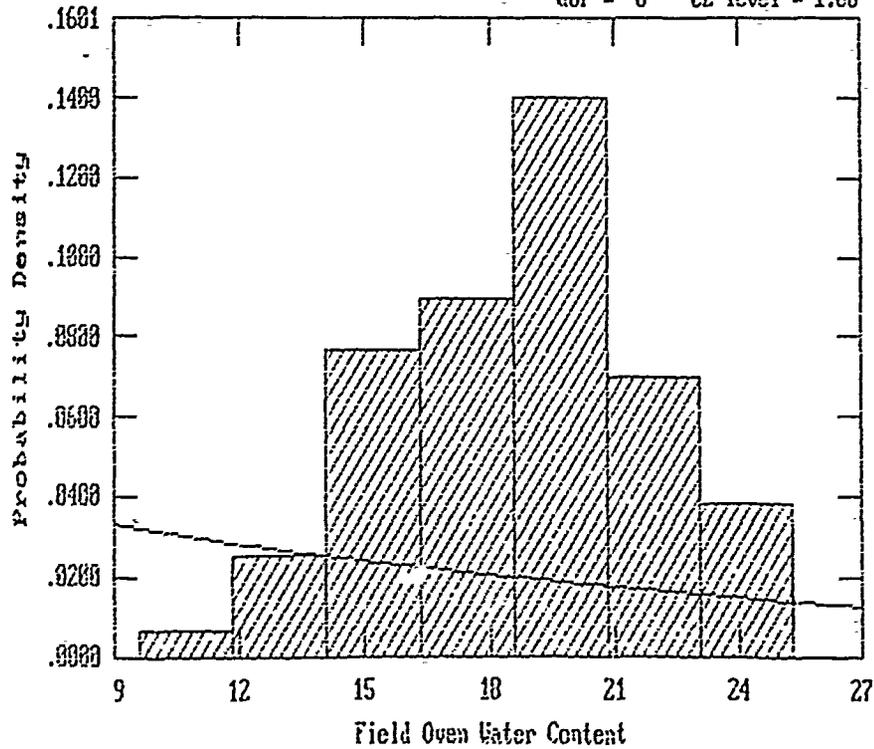
# Analytical And Observed PDF's

def = 6 c2 level = 1.00

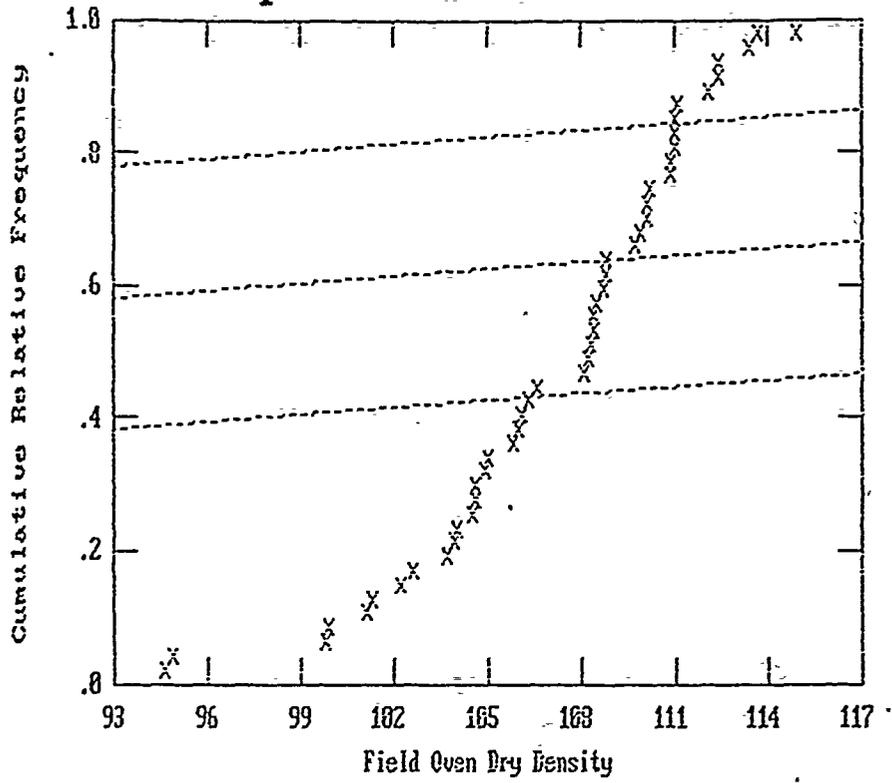


# Analytical And Observed PDF's

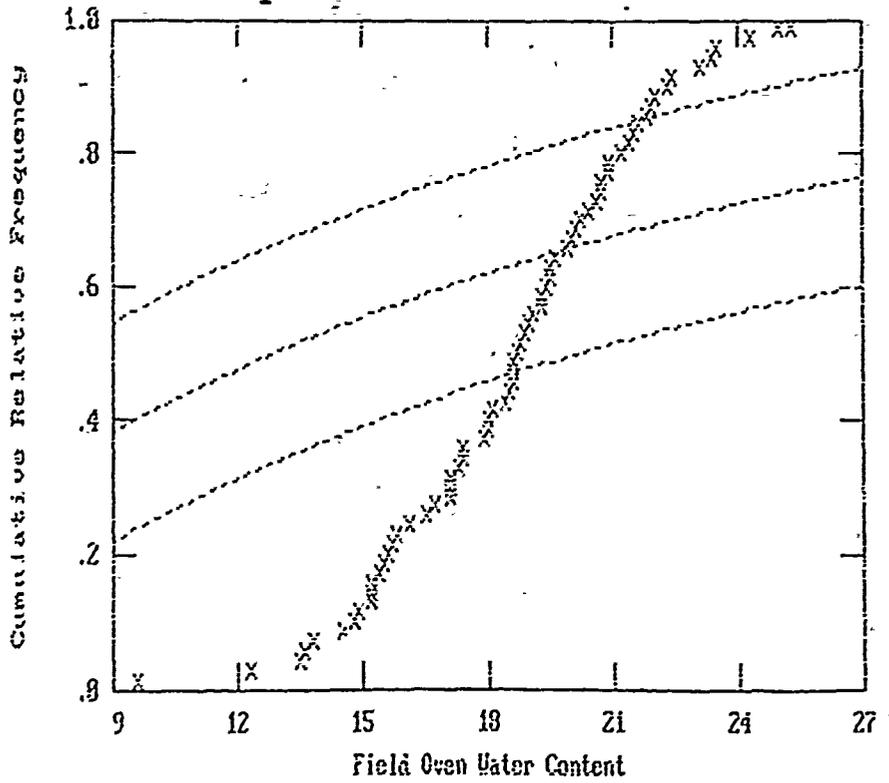
def = 6 c2 level = 1.00



### Exponential Distribution

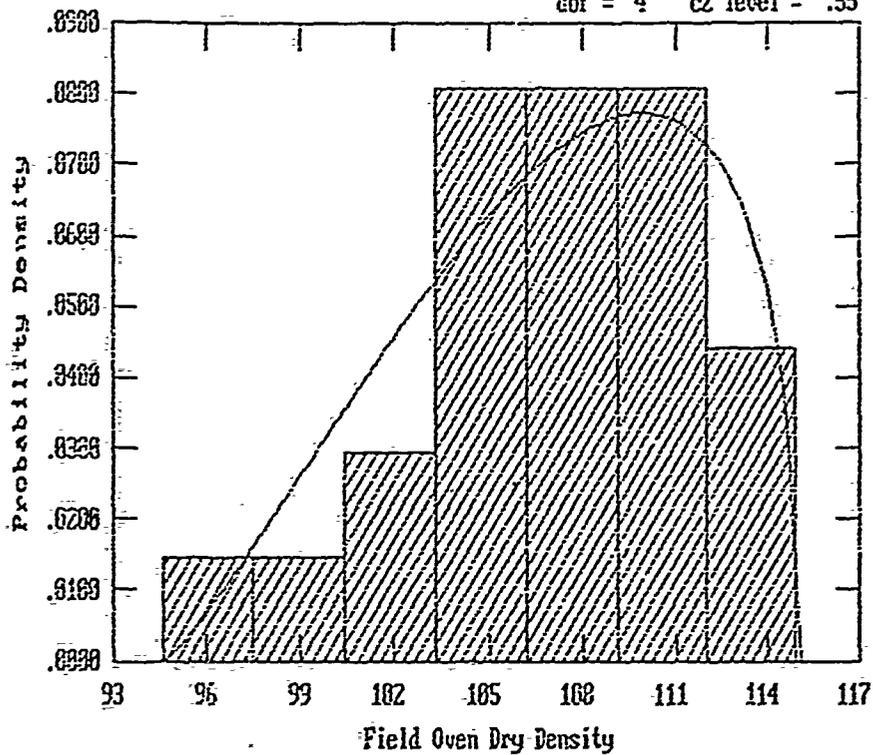


### Exponential Distribution



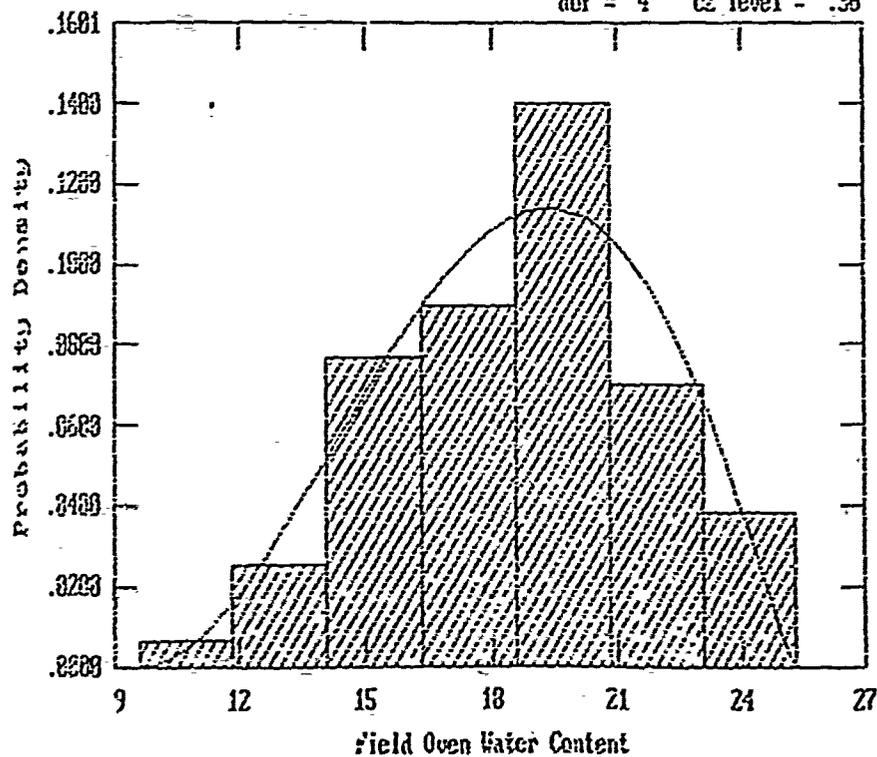
### Analytical And Observed PDF's

df = 4    c2 level = .55

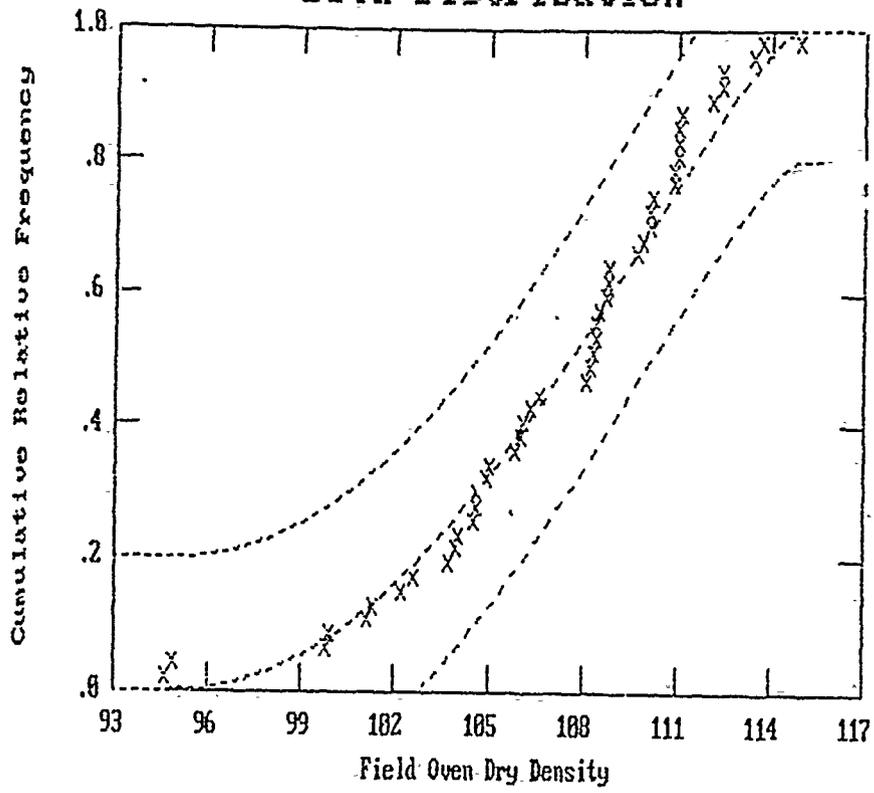


### Analytical And Observed PDF's

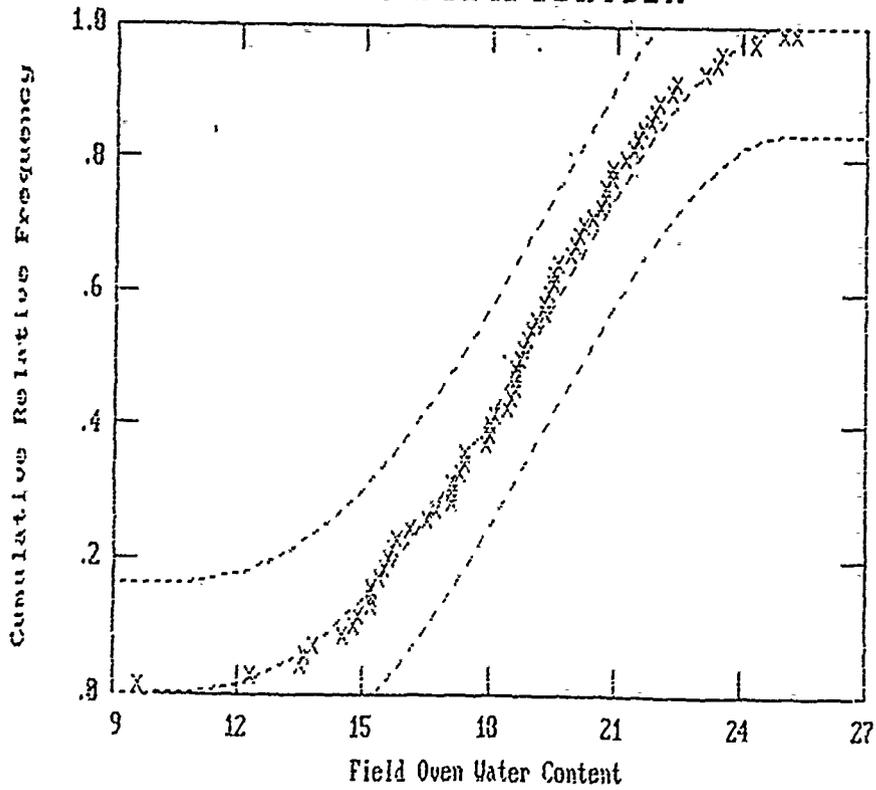
df = 4    c2 level = .36



### Beta Distribution

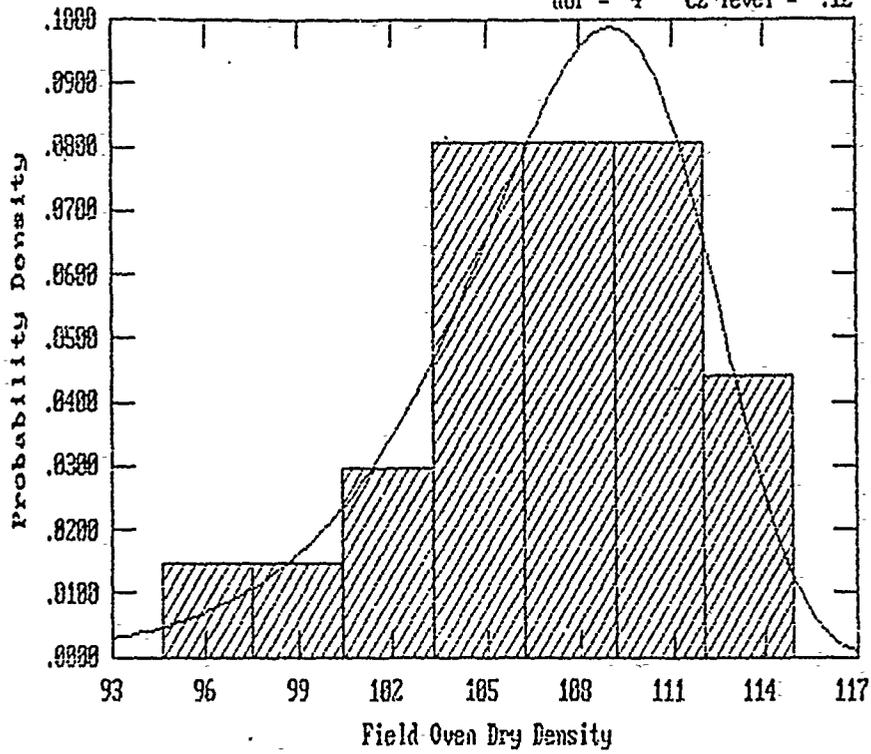


### Beta Distribution



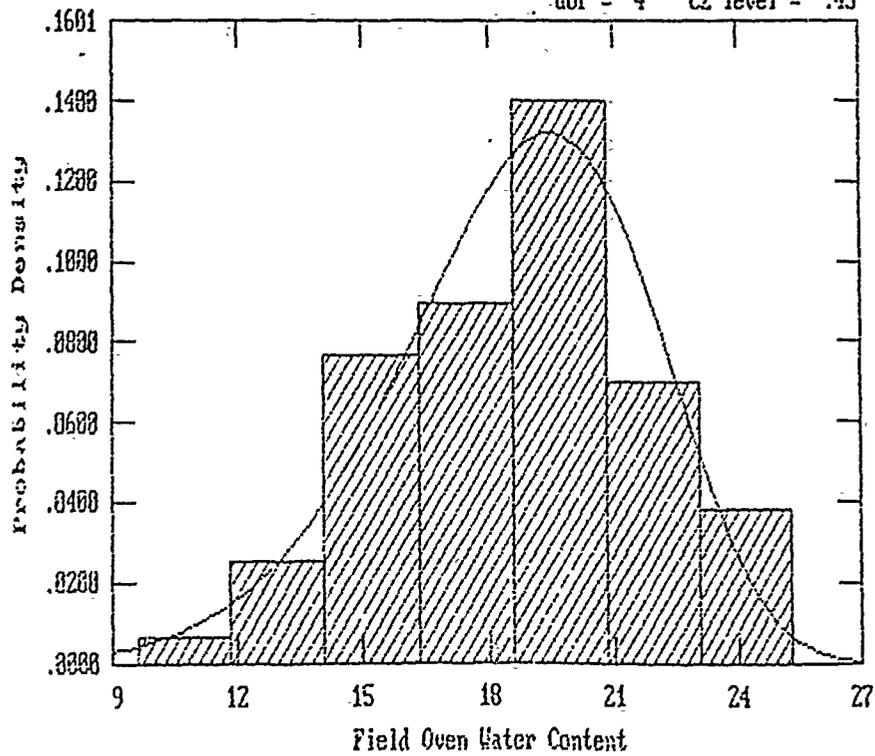
# Analytical And Observed PDF's

dof = 4 c2 level = .12

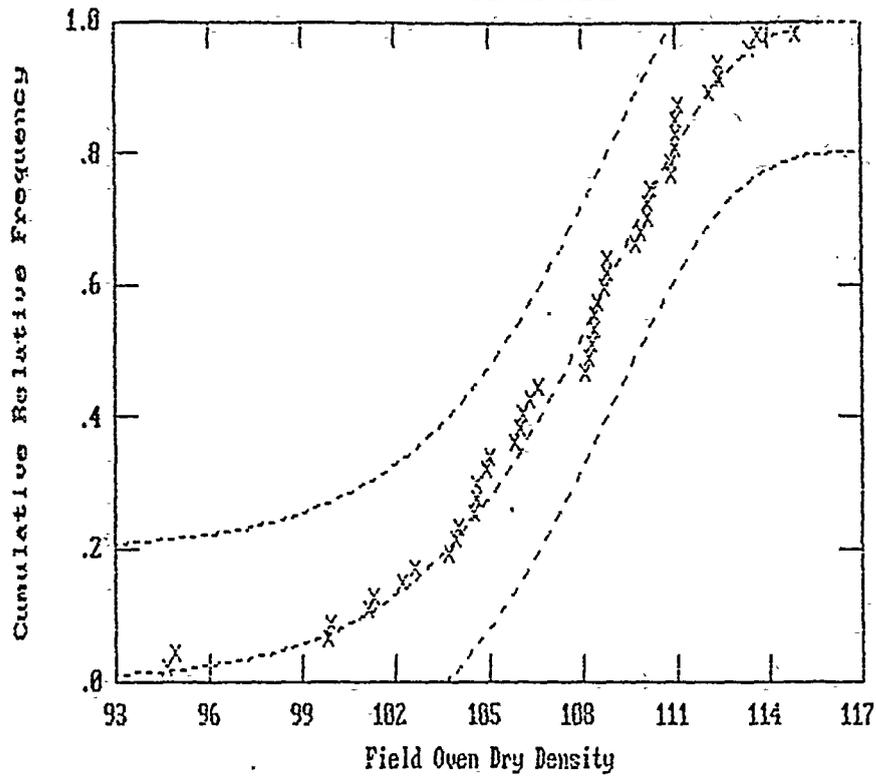


# Analytical And Observed PDF's

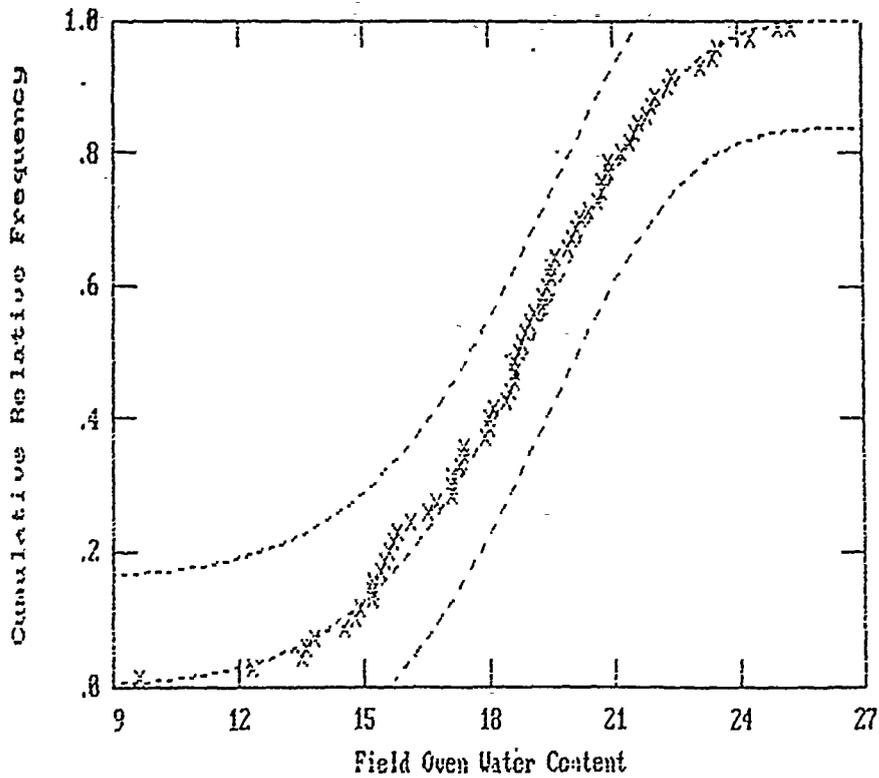
dof = 4 c2 level = .43



# Weibull Distribution



# Weibull Distribution



CAGE QA/QC

MAIN MENU

Sept. 1986

1. Statistical Data Analysis
2. Quality Control Charts
3. Inspection Sampling
4. Return to Test Identification

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter : 2

-----  
CAGE QA/QC

QUALITY CONTROL CHARTS

Sept. 1986

1. Cumulative Reject and Outliers Charts
2. Cumulative Sum (CuSum) Chart
3. Shewhart Control Charts
4. Moving Average and Standard Deviation Charts
5. Return to Main Menu

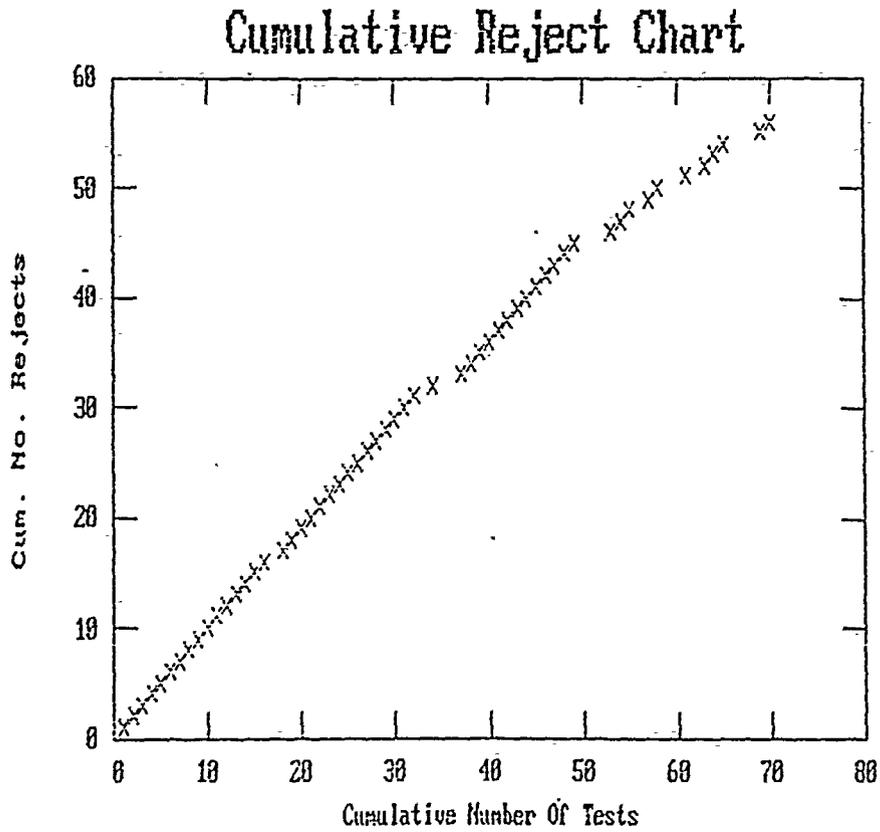
Choose an Option ( 1 , 2 , 3 , 4 or 5 (Q=QUIT ) ); then Enter : 1

Modification Menu

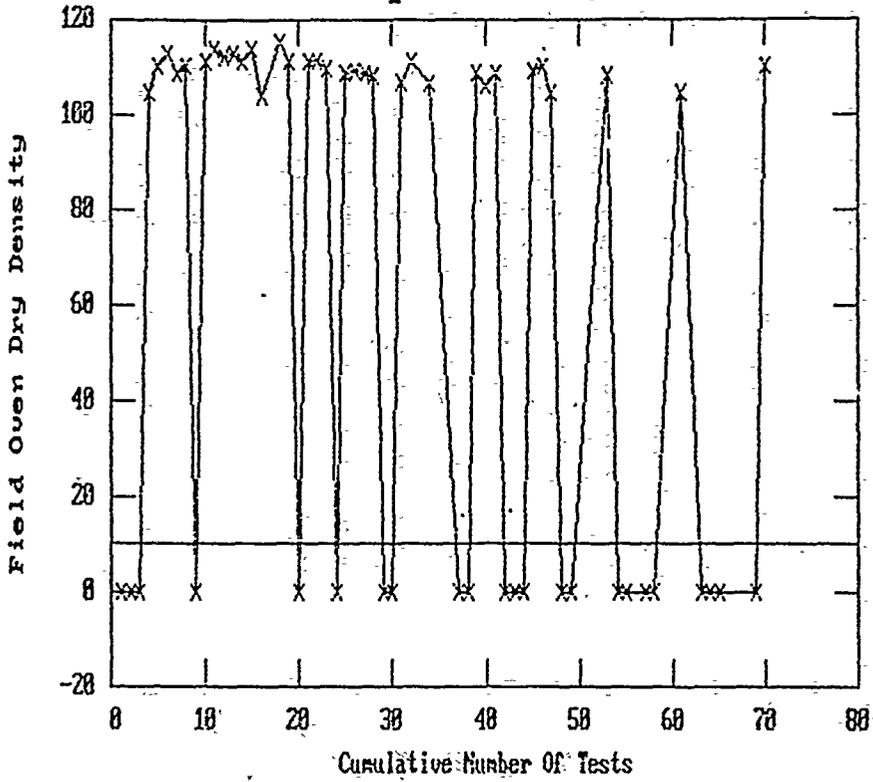
~~~~~

- 1. Title : Cumulative Reject Chart
- 2. x-label: Cumulative Number Of Tests
- 3. y-label: Cum. No. Rejects
- 4. Field Oven Dry Density           Up. Lim.=           115.90
- 5. Field Oven Dry Density           Low. Lim.=          10.00
- 6. Field Oven Water Content        Up. Lim.=          26.30
- 7. Field Oven Water Content        Low. Lim.=          20.00

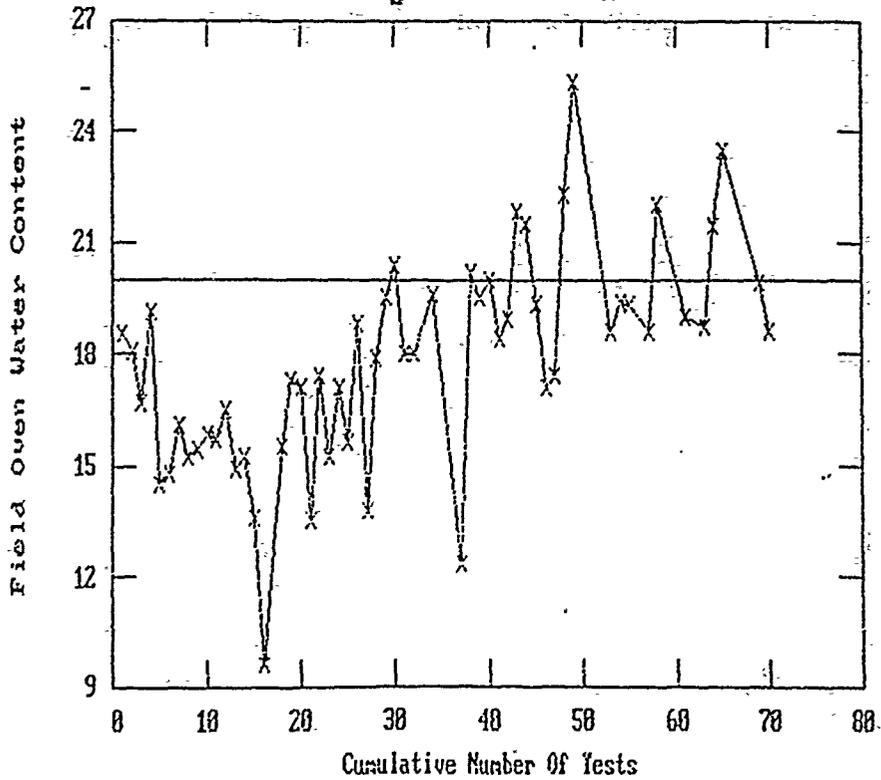
Choose item to be modified (0=plot,8=end):



## Reject Values



## Reject Values



CAGE QA/QC

CUMULATIVE SUM (CUSUM) CHART

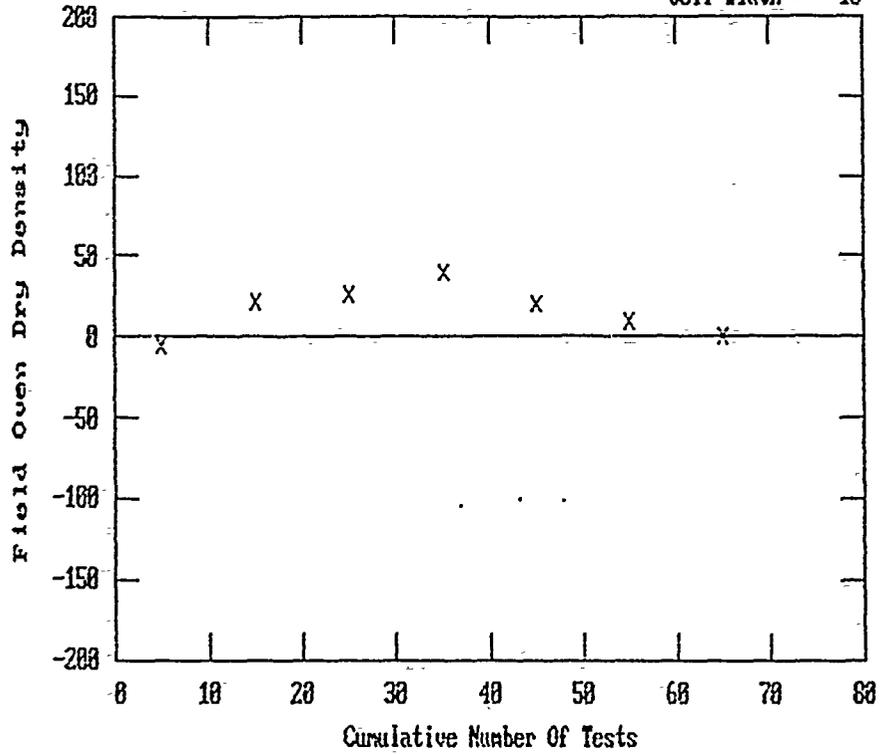
Sept. 1986

1. Cusum Chart of Sample Mean
2. Cusum Chart of Sample Range
3. Cusum Chart of Sample Standard Deviation
4. Return to Quality Control Charts Menu

Choose an Option ( 1 , 2 , 3 or 4 (Q=QUIT ) ); then Enter :

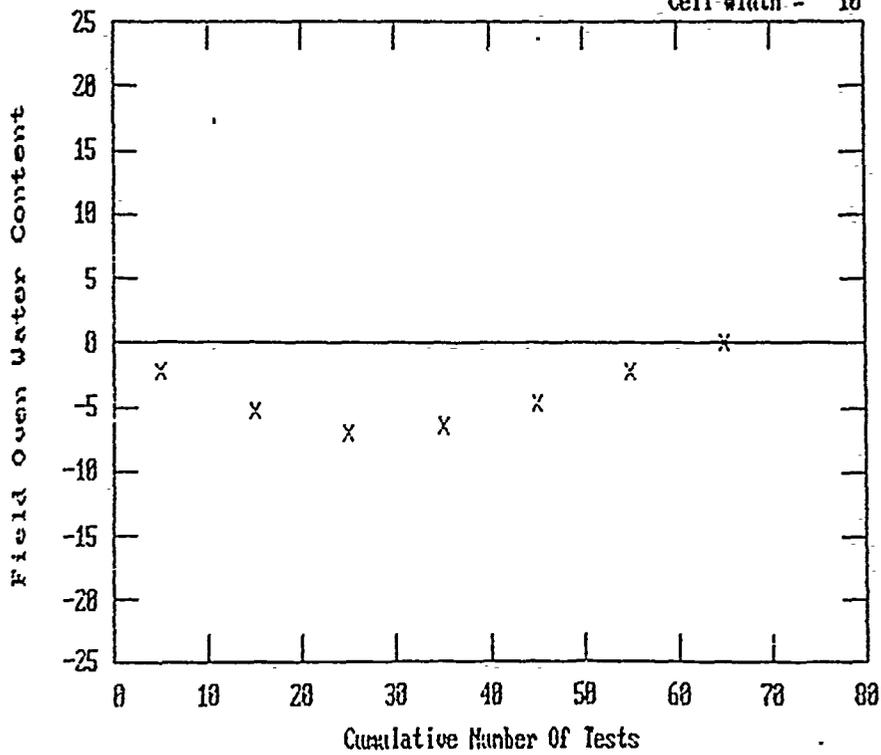
# CumSum Chart - Mean

Cell Width = 10



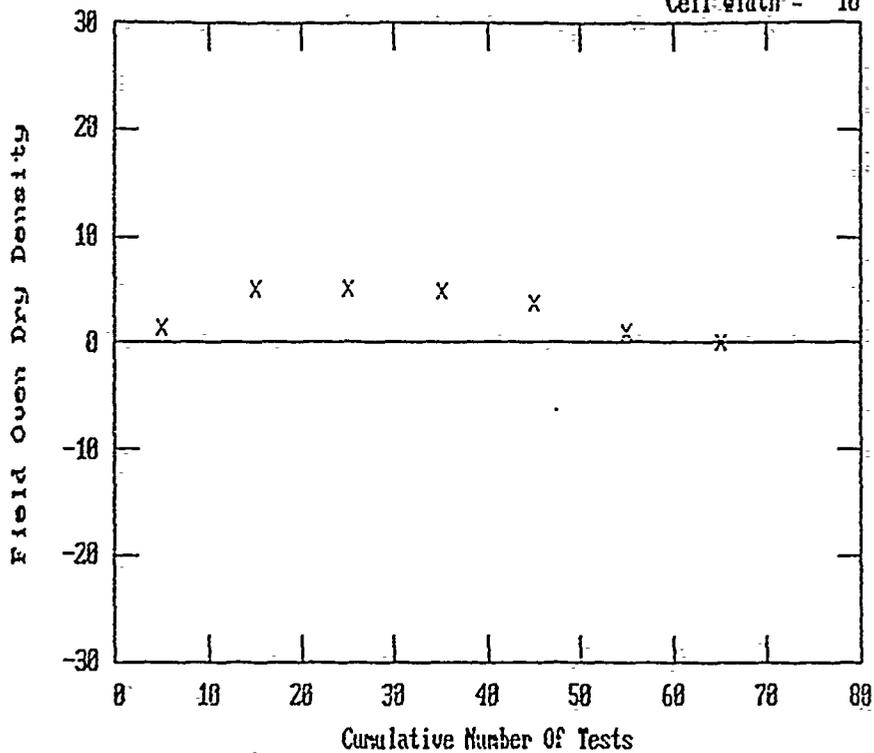
# CumSum Chart - Mean

Cell Width = 10



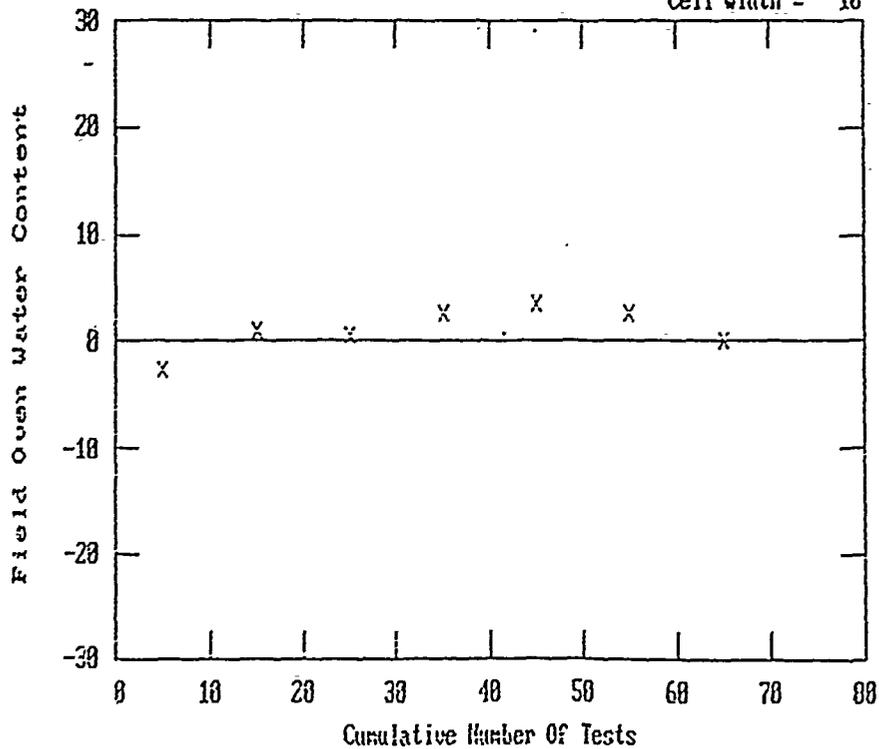
### CumSum Chart - Range

Cell Width = 10



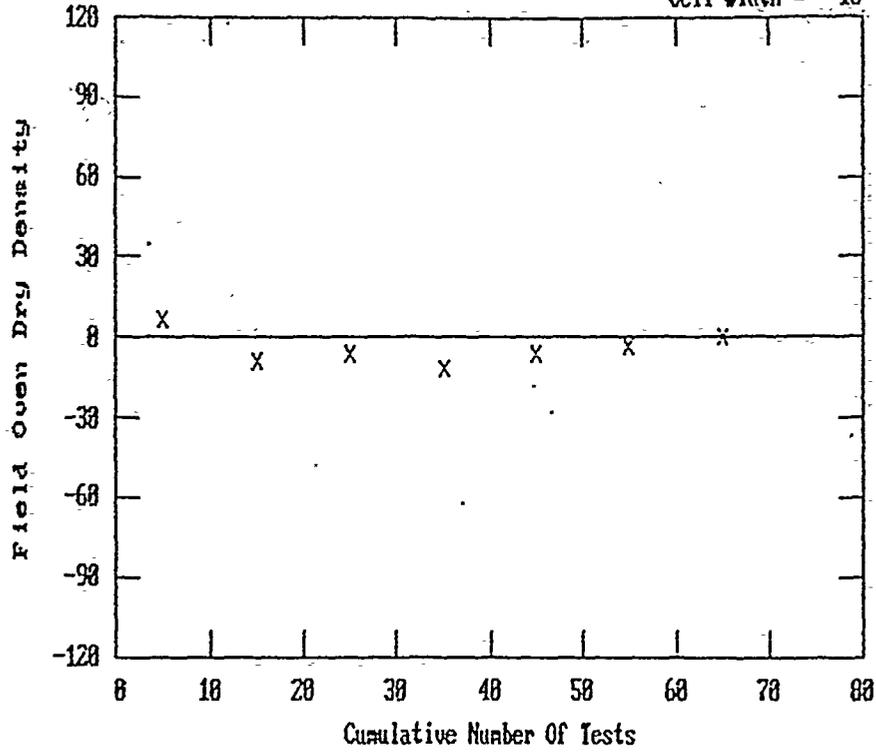
### CumSum Chart - Range

Cell Width = 10



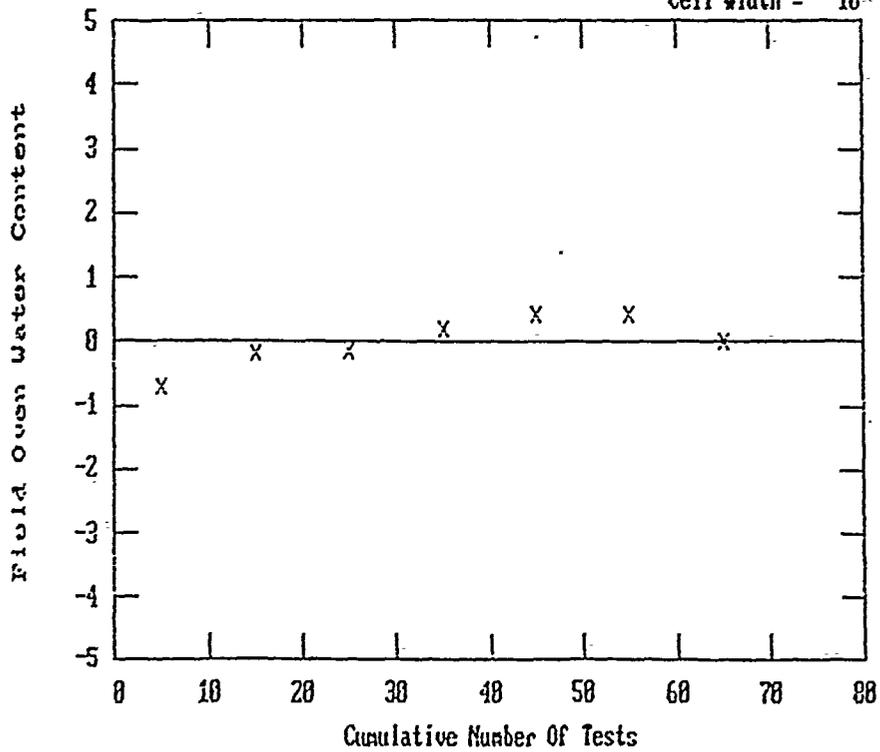
# CumSum Chart - Stand. Dev.

Cell Width = 10



# CumSum Chart - Stand. Dev.

Cell Width = 10



CAGE QA/QC

SHEWHART CONTROL CHARTS

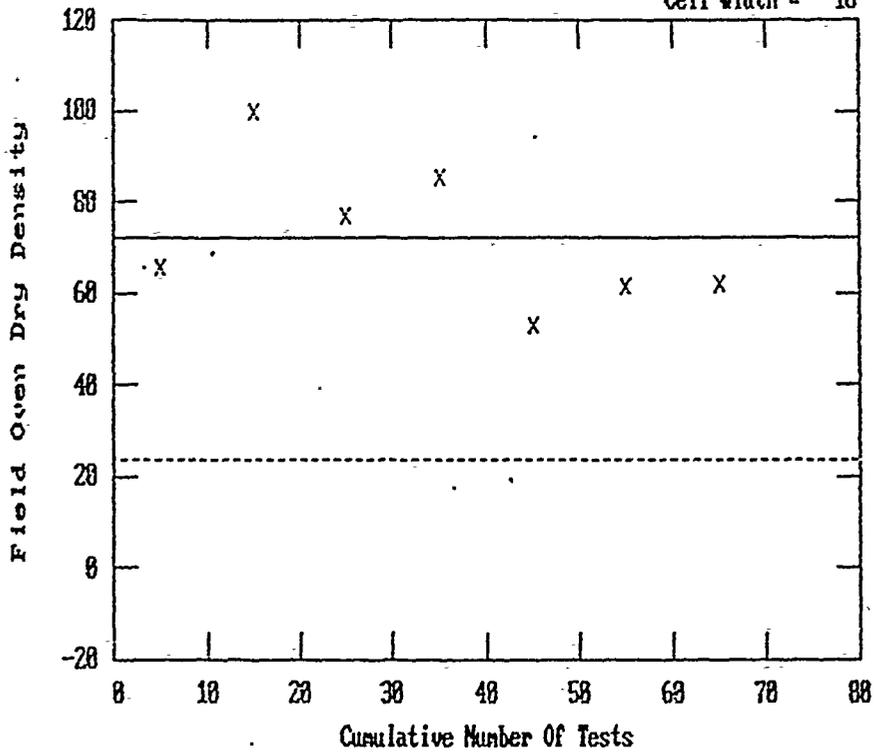
Sept. 1986

1. Control Chart for Sample Mean
2. Control Chart for Sample Range
3. Control Chart for Sample Standard Deviation
4. Return to Quality Control Charts Menu

Choose an Option ( 1 , 2 , 3 or 4 {Q=QUIT } ); then Enter :

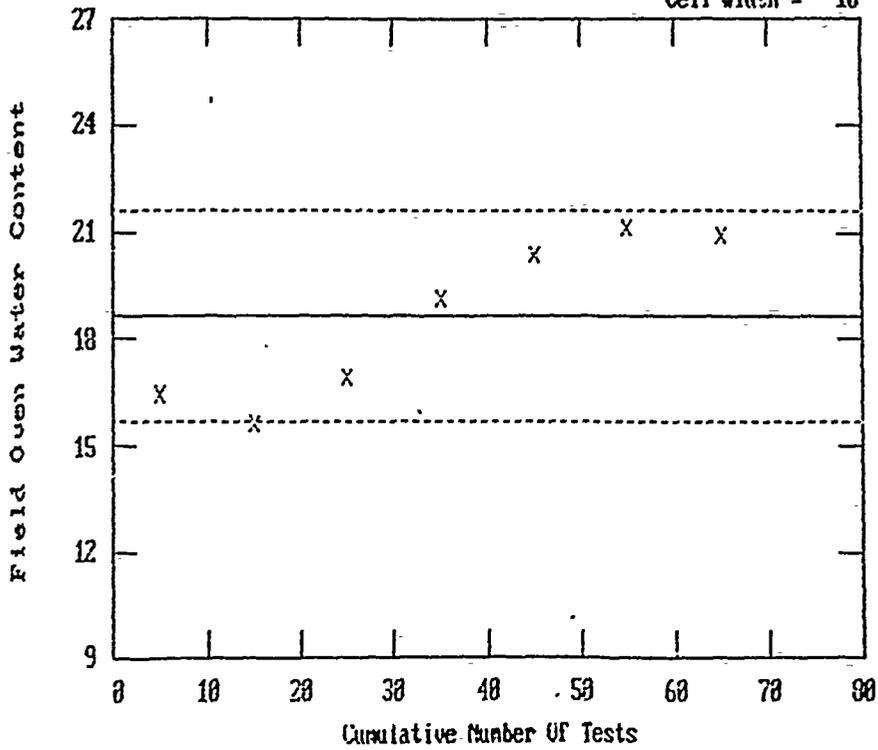
# Control Chart - Mean

Cell Width = 10

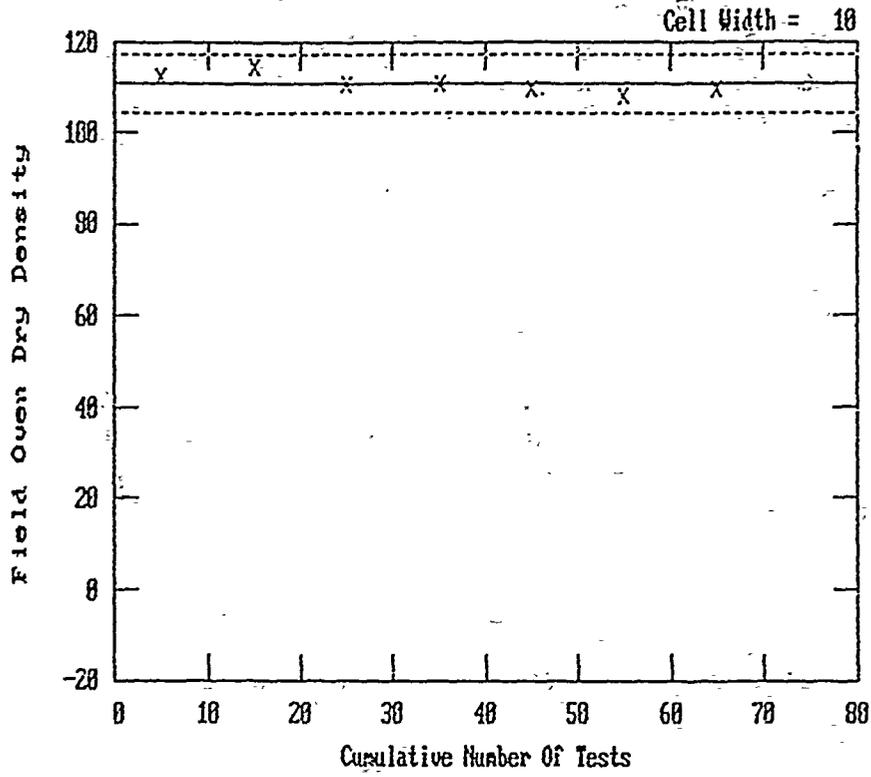


# Control Chart - Mean

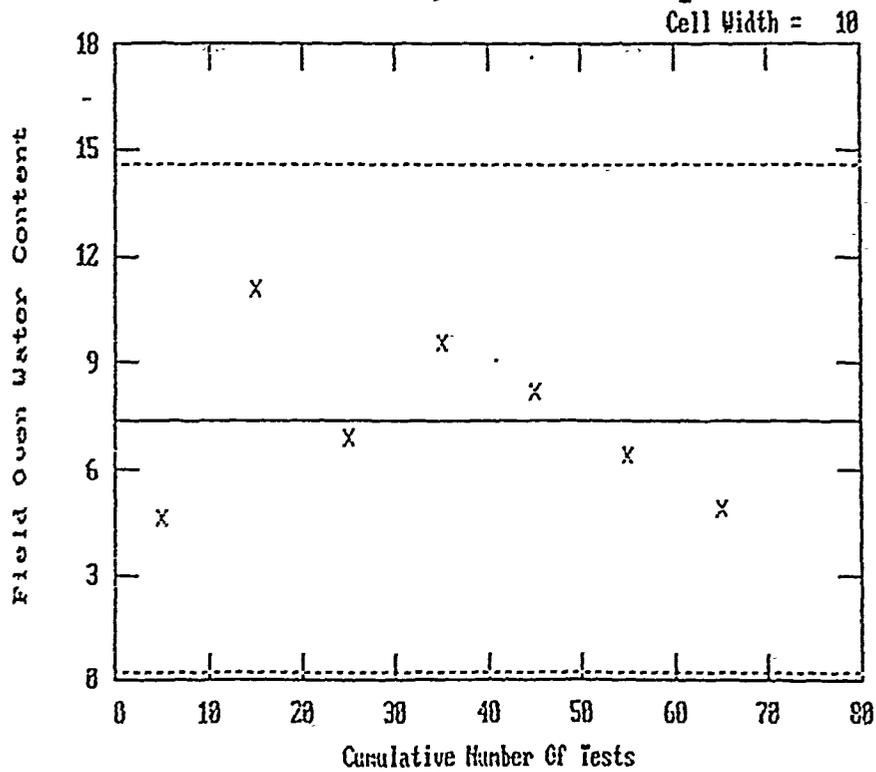
Cell Width = 10



# Control Chart - Range

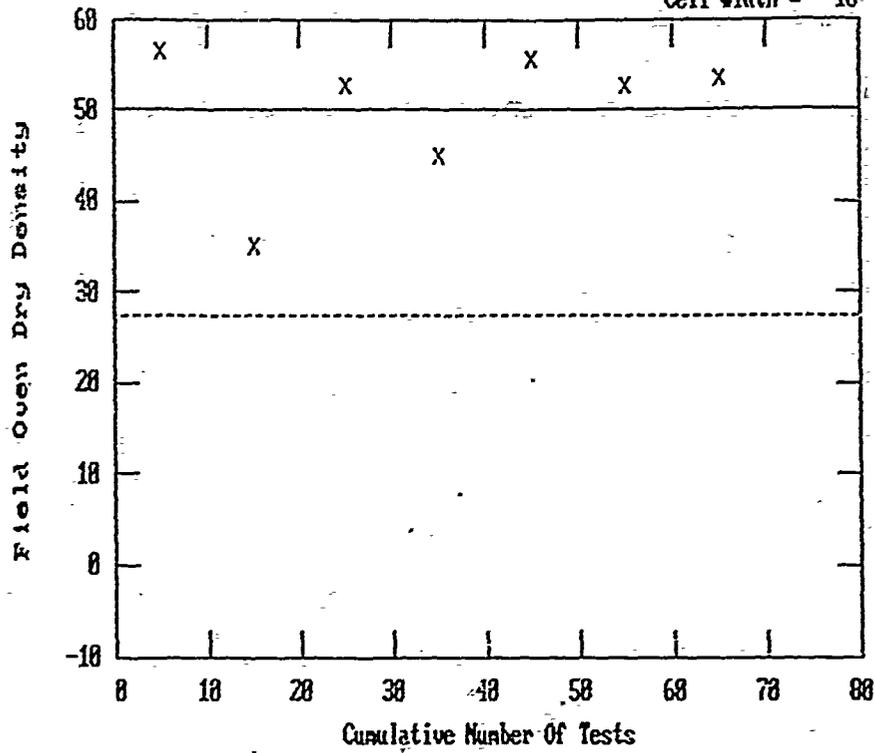


# Control Chart - Range



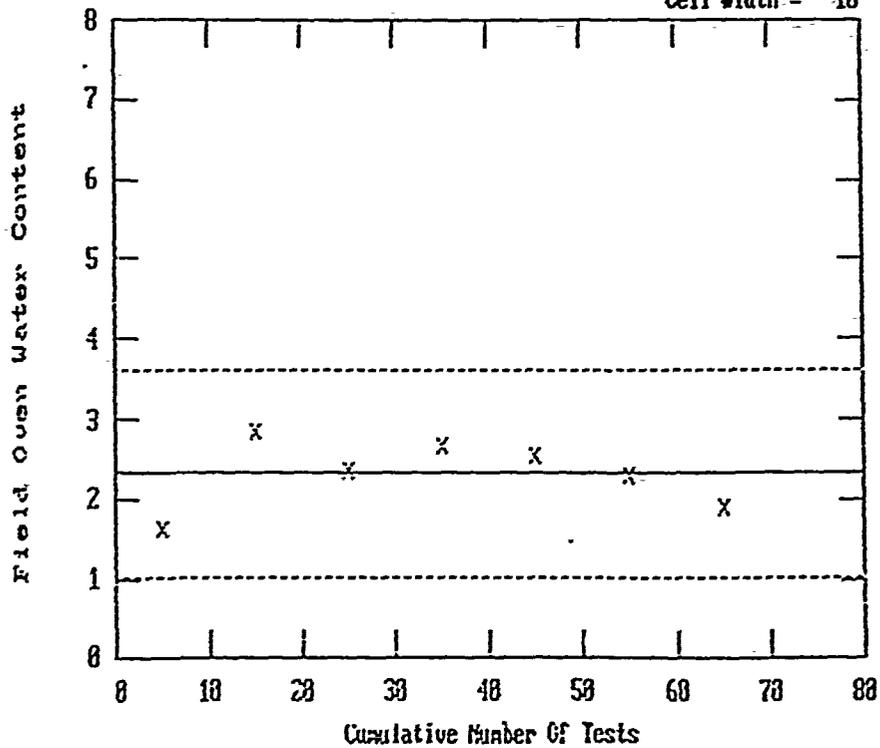
# Control Chart - Stand. Dev.

Cell Width = 10



# Control Chart - Stand. Dev.

Cell Width = 10



CAGE QA/QC

MOVING AVER. AND STANDARD DEV. CHARTS

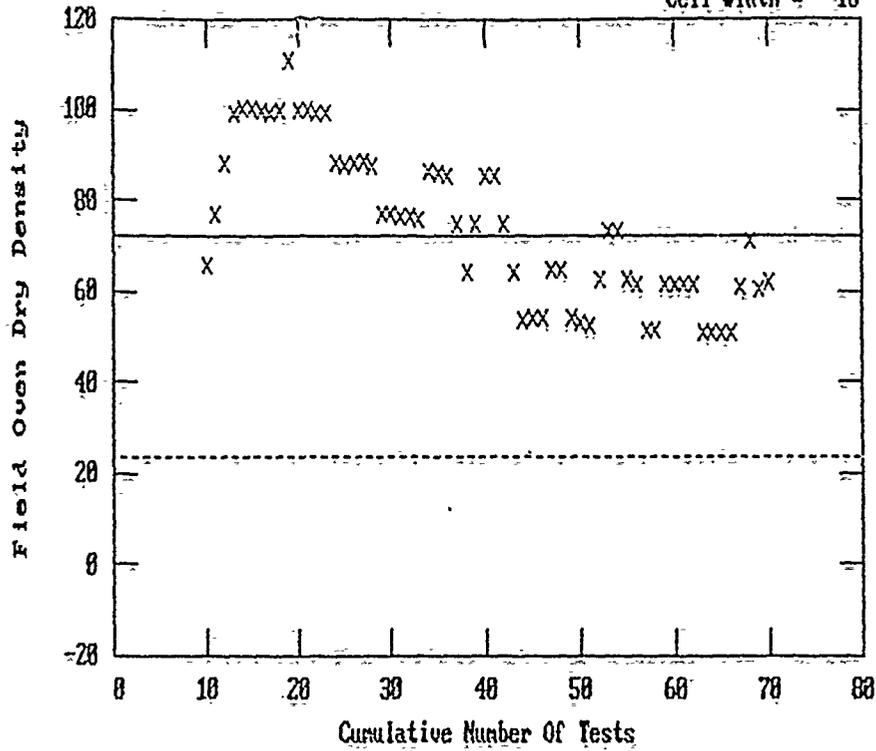
Sept. 1986

1. Moving Average of Sample Mean
2. Moving Average of Sample Standard Deviation
3. Return to Quality Control Charts Menu

Choose an Option ( 1 , 2 or 3 (Q=QUIT ) ); then Enter :

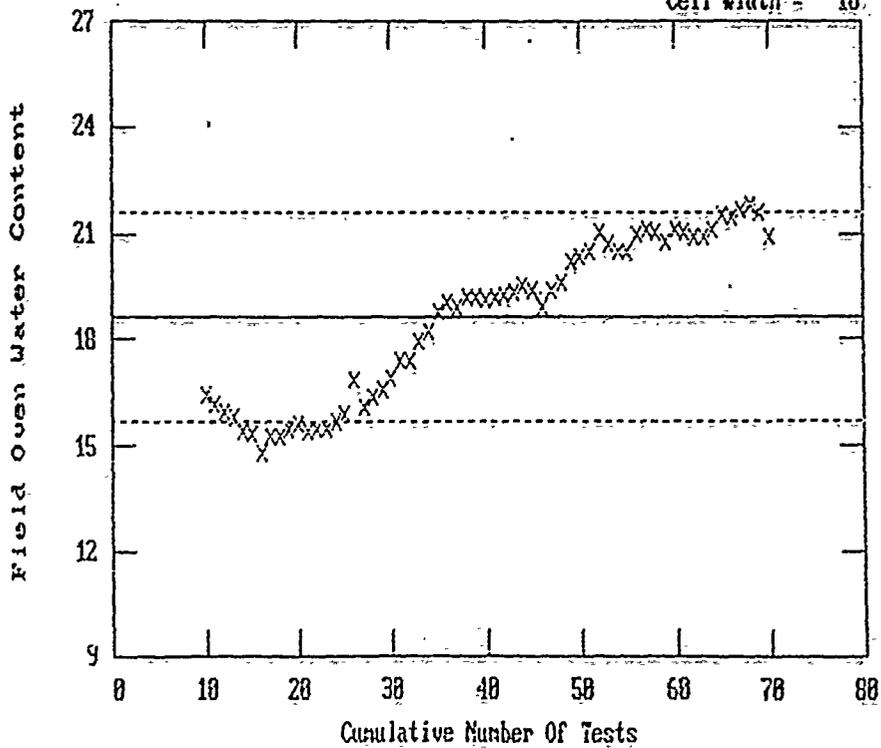
# Moving Average - Mean.

Cell Width = 10



# Moving Average - Mean

Cell Width = 10





APPENDIX D: PROGRAM NAMES AND EXPLANATIONS FOR  
 YATESVILLE LAKE DAM QA PACKAGE

PROGRAM NAMES FOR YATESVILLE QA SYSTEM:

DATABASE PROGRAMS

MAIN	PRG				
PROJECT	PRG				
ZONES	PRG				
REPORTS	PRG				
EDATE	PRG				
TESTS	PRG				
		TESTGP1	PRG		
				TG1_SCR2	PRG
		TESTGP2	PRG		
		TESTGP3	PRG		
REPLT	PRG				
		ZONESPEC	PRG		
		ZONERPT	PRG		
		ADDCOMM	PRG		
		QA4080	PRG		
				NOTE4080	PRG
				ERR4080	PRG
		QA4081	PRG		
				NOTE4081	PRG
		GRADSUMM	PRG		
		QASHOT	PRG		
				REP'TCHK	PRG
				BSHOT	EXE
					SHOTGUN EXE
		XYPLOT	PRG		
				BXPLOT	EXE
					XYPLOT EXE
		CURVFIT	PRG		
				BCURVFIT	EXE
					CURVEFIT BAT
					CURVE EXE
					EPRINT EXE
		QATRANSL	PRG		
		QATIME	PRG		
				BQATIME	EXE
					TIMEPLT EXE
CONVREPT	PRG				
QABACKUP	PRG				
QARESTOR	PRG				

## AUXILIARY PROGRAMS

QAINDEX PRG  
HPLOT BAT  
MODEM EXE  
CHKDSK COM  
EPSON COM  
EPSON ASM

### PROGRAM EXPLANATIONS FOR YATESVILLE QA SYSTEM:

MAIN.PRG MAIN QUALITY ASSURANCE MENU PROGRAM

PROJECT.PRG PROGRAM TO ADD OR MODIFY PROJECT DATA

ZONES.PRG PROGRAM TO ADD OR MODIFY MULTIPLES OF ZONE DATA

REPORTS.PRG PROGRAM TO ADD OR MODIFY MULTIPLES OF REPORT DATA FOR EACH ZONE

LDATE.PRG PROGRAM TO ADD THE ENDING DATE OF A REPORT FOR A ZONE

TESTS.PRG PROGRAM TO ADD OR MODIFY MULTIPLES OF TEST #1, #2, AND #3 DATA FOR EACH REPORT

TESTGP1.PRG ENTRY SCREEN FOR TEST #1 DATA

TG1\_SCR2.PRG PROGRAM DISPLAYS THE CALCULATED VALUES AND DETERMINES THE STATUS OF A TEST AND THE TYPE OF A RETEST FOR TEST #1 DATA

TESTGP2.PRG ENTRY SCREEN FOR TEST #2 DATA

TESTGP3.PRG ENTRY SCREEN FOR TEST #3 DATA

REPLT.PRG MENU FOR REPORTS AND PLOT FORMATTING PROGRAMS

ZONESPEC.PRG PROGRAM TO LIST ZONE SPECIFICATIONS

ZONERPT.PRG PROGRAM TO LIST ZONES AND REPORTS

ADDCOMM.PRG PROGRAM TO ADD OR UPDATE COMMENTS TO BE ADDED TO THE COMPUTER GENERATED REVISED ENG 4080 REPORT FORM OR THE ENG 4081 REPORT FORM

QA4080.PRG PROGRAM TO GENERATE THE REVISED ENG 4080 REPORT

NOTE4080.PRG PROGRAM TO PRINT THE ENG 4080 COLUMN EXPLANATION TABLE AND SPECIAL COMMENTS CREATED IN ADDCOMM.PRG

PROGRAM EXPLANATIONS FOR YATESVILLE QA SYSTEM (con't):

---

ERR4080.PRG      PROGRAM TO PRINT THE FAILED TESTS AND RETESTS

QA4081.PRG      PROGRAM TO GENERATE THE ENG 4081 REPORT (SUMMARY OF  
FIELD COMPACTION CONTROL TESTS)

NOTE4081.PRG    PROGRAM TO PRINT THE ENG 4081 COLUMN EXPLANATION TABLE  
AND SPECIAL COMMENTS CREATED IN ADDCOMM.PRG

GRADSUMM.PRG    PROGRAM TO GENERATE THE SUMMARY OF GRADATION RESULTS

QASHOT.PRG      PROGRAM TO ORGANIZE DATA FOR THE SHOTGUN PLOT  
(SHOTGUN.EXE)

REPTCHK.PRG     PROGRAM TO DETERMINE THE CUMULATIVE VALUES OF THE  
STATUS OF TESTS AND TYPES OF RETESTS FOR EACH REPORT  
AND ZONE

BSHOT.EXE       PROGRAM TO FORMAT DATA FOR THE SHOTGUN PLOT

SHOTGUN.EXE     SHOTGUN PLOT PROGRAM

XYPLOT.PRG      PROGRAM TO ORGANIZE DATA FOR THE X-Y PLOT

BXYPLOT.EXE     PROGRAM TO FORMAT DATA FOR THE X-Y PLOT

XYPLOT.EXE      X-Y PLOT PROGRAM

CURVFIT.PRG     PROGRAM TO ORGANIZE DATA FOR THE CURVE PLOT

BCURVFIT.EXE    PROGRAM TO FORMAT DATA FOR THE CURVE PLOT

CURVEFIT.BAT    BATCH FILE TO SET-UP THE PRINTER FOR A SCREEN DUMP  
AND TO RUN THE CURVE PLOT

CURVE.EXE       CURVE PLOT PROGRAM

EPRINT.EXE      PROGRAM TO PRINT A FILE DUMP OF THE CURVE PLOT

QATRANSL.PRG    PROGRAM TO ORGANIZE AND FORMAT DATA FOR THE STATISTICAL  
ANALYSIS PACKAGE

QATIME.PRG      PROGRAM TO ORGANIZE DATA FOR THE TIME SERIES PLOT

BQATIME.EXE     PROGRAM TO FORMAT DATA FOR THE TIME SERIES PLOT

TIMEPLT.EXE     TIME SERIES PLOT PROGRAM

CONVREPT.PRG    PROGRAM TO CORRECT REPORT NUMBERS ON TESTS

PROGRAM EXPLANATIONS FOR YATESVILLE QA SYSTEM (con't):

---

QABACKUP.PRG    PROGRAM TO BACKUP THE \*.DBF FILES USED FROM THE MAIN  
                 DRIVE TO FLOPPY DISKETTES

QARESTOR.PRG   PROGRAM TO RESTORE THE \*.DBF FILES USED FROM FLOPPY  
                 DISKETTES TO THE MAIN DRIVE

QAINDEX.PRG    PROGRAM TO CREATE THE NECESSARY INDEX FILES

HPLOT.BAT      BATCH FILE SETS THE MODE OF THE PLOTTING DEVICE

MODEM.EXE      PROGRAM TO RESET THE SYSTEM AFTER A "BAD" RUN

CHKDSK.COM     DOS OPTION TO CHECK THE STATUS OF A DISK

EPSON.COM      AN EGA GRAPHICS ROUTINE SPECIFICALLY FOR EPSON  
                 PRINTERS

EPSON.ASM      TO BE USED WHEN A SCREEN DUMP RESULTS IN A HALF-PAGE  
                 PRINTOUT

APPENDIX E: GLOSSARY

DOW	Deviation from optimum water content
FDD	Field dry density
FMD	Field maximum density
FMDD	Field maximum dry density
FOC	Family of curves
FOW	Field optimum water content
FWC	Field water content
M.S.	Mold size
Opt W.C.	Optimum water content
PC	Percent compaction
QFD	Quick field density
W.C.	Water content