NUREG/CR-6147
Vol. 5

Characterization of Class A Low-Level Radioactive Waste 1986–1990

Appendix F

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Prepared for
U.S. Nuclear Regulatory Commission

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FOREWORD

This report characterizes Class A Low Level waste shipped for disposal from 1986 through 1990. It was developed as part of a Nuclear Regulatory Commission (NRC) sponsored study to develop a technical information base useful to persons and organizations involved in the management and disposal of Low-Level radioactive waste and in the regulation of these activities.

This NUREG report is not a substitute for NRC regulations, and compliance is not required. The approaches and/or methods described in this NUREG are provided for information only. Publication of this report does not necessarily constitute NRC approval or agreement with the information contained herein.

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ABSTRACT

Under contract to the U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, the firms of S. Cohen & Associates, Inc. (SC&A) and Eastern Research Group (ERG) have compiled a report that describes the physical, chemical, and radiological properties of Class-A low-level radioactive waste. The report also presents information characterizing various methods and facilities used to treat and dispose non-radioactive waste.

The characterization of Class-A low-level waste is based primarily on information contained in the Manifest Information Management System (MIMS), an electronic database compiled by the National Low-Level Waste Management Program. The Program is managed by EG&G Idaho, Inc. for the Department of Energy. Supplementary sources of information include reports and studies conducted under the auspices of the Nuclear Regulatory Commission, Department of Energy, regional low-level waste Compacts and unaffiliated States, and trade organizations. The database characterizes low-level waste shipped for disposal from 1986 to 1990.

A database management program was developed for use in accessing, sorting, analyzing, and displaying the electronic data provided by EG&G. The program was used to present and aggregate data characterizing the radiological, physical, and chemical properties of the waste from descriptions contained in shipping manifests. The data thus retrieved are summarized in tables, histograms, and cumulative distribution curves presenting radionuclide concentration distributions in Class-A waste as a function of waste streams, by category of waste generators, and regions of the United States.

The report also provides information characterizing methods and facilities used to treat and dispose non-radioactive waste, including industrial, municipal, and hazardous waste regulated under Subparts C and D of the Resource Conservation and Recovery Act (RCRA). The information includes a list of disposal options, the geographical locations of the processing and disposal facilities, and a description of the characteristics of such processing and disposal facilities.

Volume 1 contains the Executive Summary, Volume 2 presents the Class-A waste database, Volume 3 presents the information characterizing non-radioactive waste management practices and facilities, and Volumes 4 through 7 contain Appendices A through P with supporting information.

VOLUME 5 APPENDIX

Appendix F presents additional information for the Executive Summary (Vol. 1) and Main Report (Vol. 2 and 3).

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M Municipal Solid Waste Landfills in 1986 Survey
N State Comments on Landfill Capacity
O Municipal Solid Waste Landfills - 1992 Listing
P Cross-Reference List of Geographical Locations for Treatment and Disposal Facilities

PREFACE

Section 10 of the Low-Level Radioactive Waste Plicy Amendments Act (LLRWPAA) of 1985 directed the Commission to develop criteria and procedures to act upon petitions "to exempt specific radioactive waste streams from regulations ... due to the presence of radionuclides ... in sufficiently low concentrations or quantities as to be below regulatory concern." The Commission responded to this statutory provision by issuing a policy statement on August 29, 1986 (51 FR 30839) that contained criteria for evaluating such petitions. On December 2, 1986 (51 FR 43367), the commission published an advance notice of proposed rulemaking (ANPR) entitled "Radioactive Waste Below Regulatory Concern: Generic Rulemaking" (RIN 3150-AC35). In July 1990, the Commission issued a second policy statement addressing the below regulatory concern issue, "General Statement of Policy on Below Regulatory Concern," July 3, 1990 (55 FR 27522).

In July 1988, the NRC's Office of Nuclear Regulatory Research contracted S. Cohen & Associates (SC&A) to develop technical information concerning Class A low-level radioactive waste which could be used to support NRC technical evaluations of petitions for exempt waste streams. In May 1990, the contract was modified to include the development of information which could be used in establishing a basis for a generic NRC rule governing the disposal of radioactive waste determined to be Below Regulatory Concern (BRC).

In October 1992, the congress enacted the energy Policy Act of 1992. Section 2901 of the Act revoked the Commission's 1986 and 1990 BRC Policy Statements, and in August 1993, the Commission formally withdrew the two BRC Policy Statements. The Commission also terminated the rulemaking action that was initiated to implement the 1986 BRC Policy and withdrew the December 2, 1986 ANPR.

Although it effectively revoked the 1986 BRC Policy Statement, Section 2901 of the energy Policy Act did not either (1) explicitly remove the Commission's obligation under Section 10 of the Low-Level Radioactive Waste Policy Amendments Act of 1985 to develop criteria and procedures for evaluating exemption requests for specific radioactive waste streams on an expedited basis, or (2) revoke the Commission's authority under the Atomic Energy Act to exempt classes of materials from licensing.

By early 1993, SC&A had already accumulated a substantial amount of information concerning Class A low-level waste. Since the information contained in this report should be useful to the NRC staff and others involved in the regulation or disposal of low-level radioactive waste, the NRC, in July 1993, authorized SC&A to compile and present this information in a NUREG/CR report.

ACKNOWLEDGEMENTS

S. Cohen & Associates, Inc. would like to take this opportunity to acknowledge the efforts and participation of the Nuclear Regulatory Commission staff, namely Messrs. Robert Meck, James Malaro, Paul Kovach, and Steve Klementowicz.

In addition, we would like to thank Mr. Ronald Fuchs and Ms. Miriam Muneta of EG&G Idaho, Inc. for their assistance in generating the low-level waste database for this project.

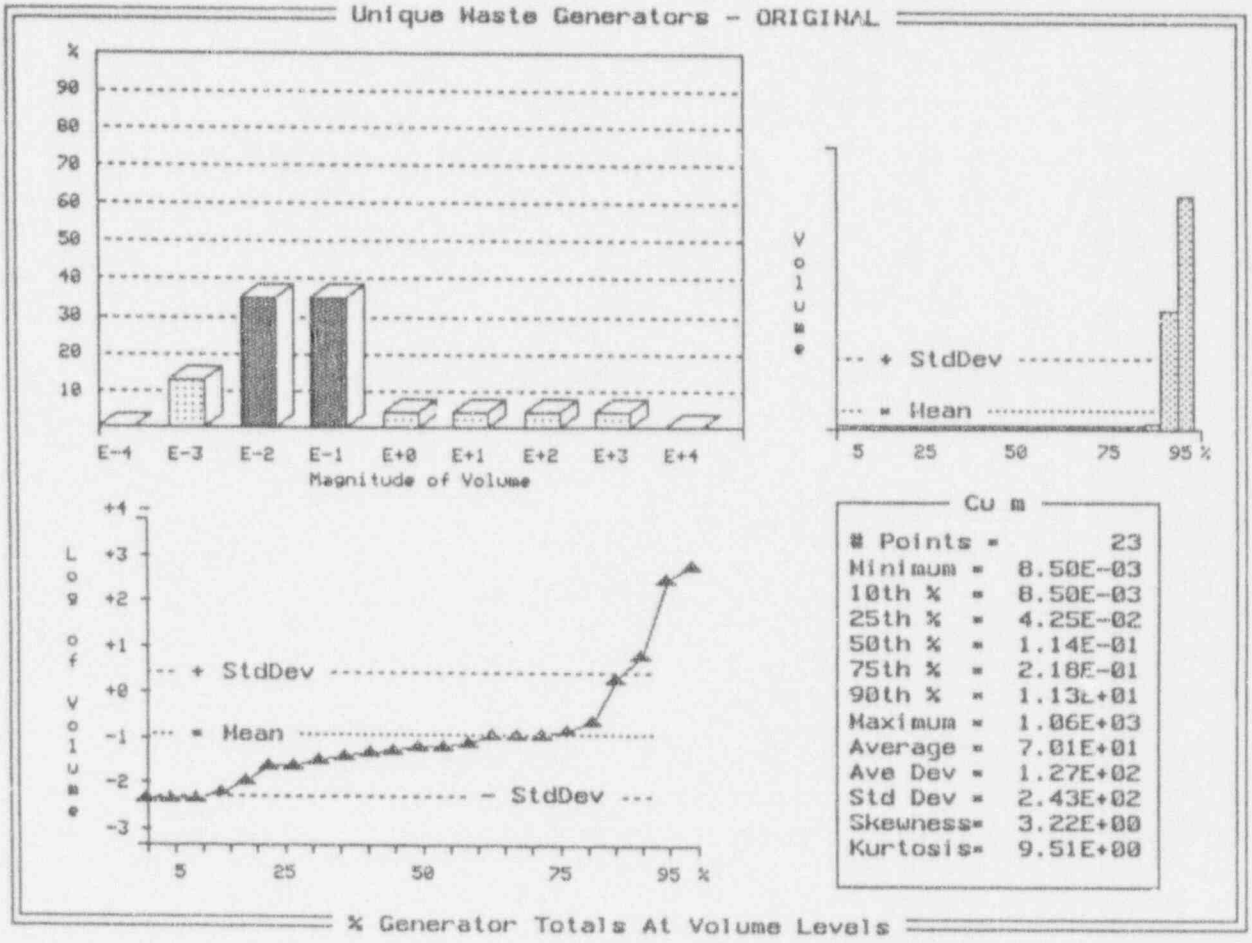
APPENDIX F

Waste Radionuclide Concentrations by Compact Regions and States
(Shipment Level Analyses - Aggregate Practices 1986 - 1990)
(All Disposal Sites and Non-brokered Wastes)

Exhibit F-1
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Northwest
Waste generator class:	Government
Total number of waste generators:	23
Total associated waste volume (m^3):	1,646
Total associated waste activity (Ci):	364
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	5
Percent of total(%):	22
Total number of shipping records:	87
Number of shipping records with container data:	87
Number of waste containers:	2,468
Weight of shipments (kg):	688,300
Total waste volume (m^3):	1,600
Fractional waste volume (%): (this analysis/total)	97
Total waste activity (Ci):	91
Fractional waste activity (%): (this analysis/total)	25

Exhibit F-1 (Continued)



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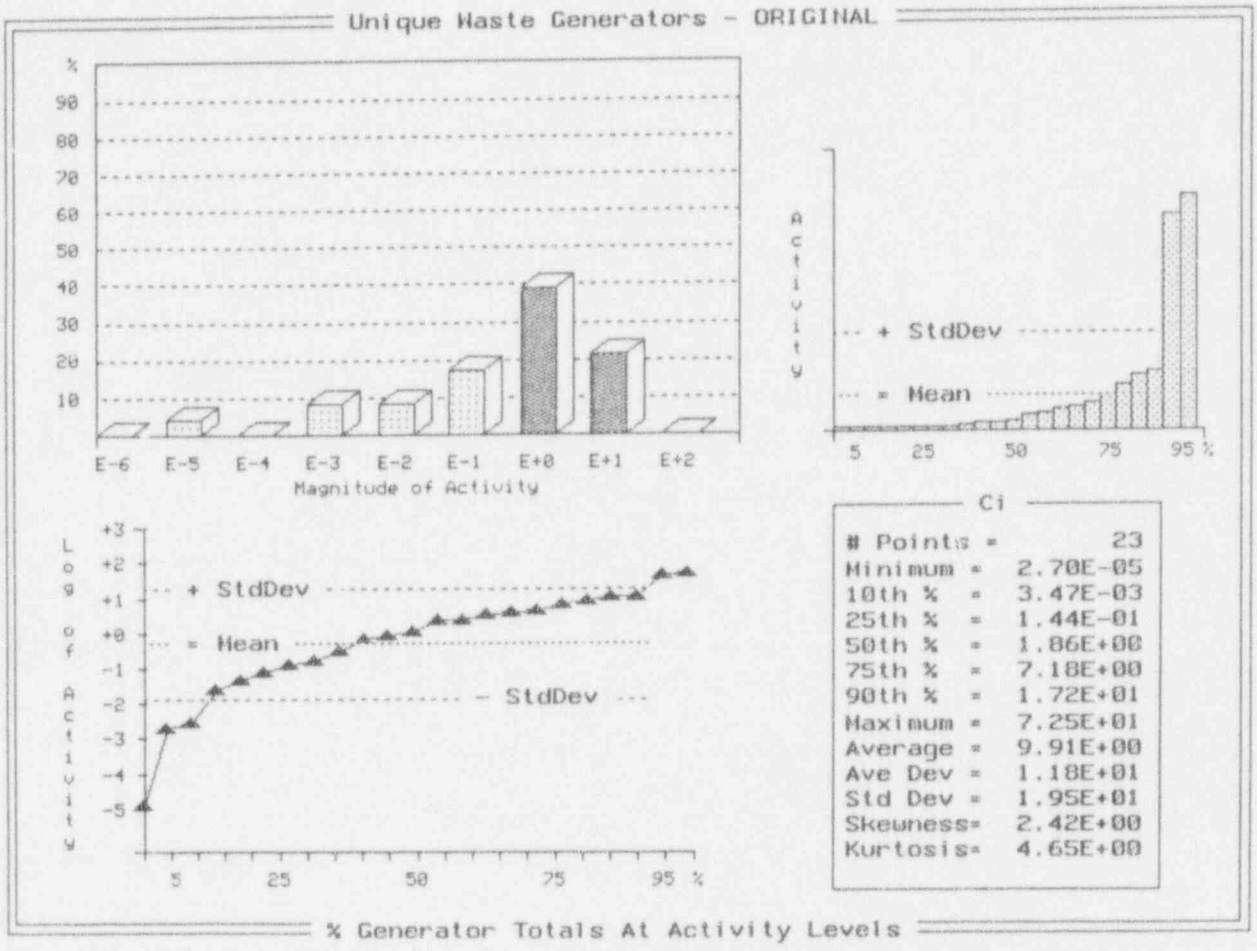
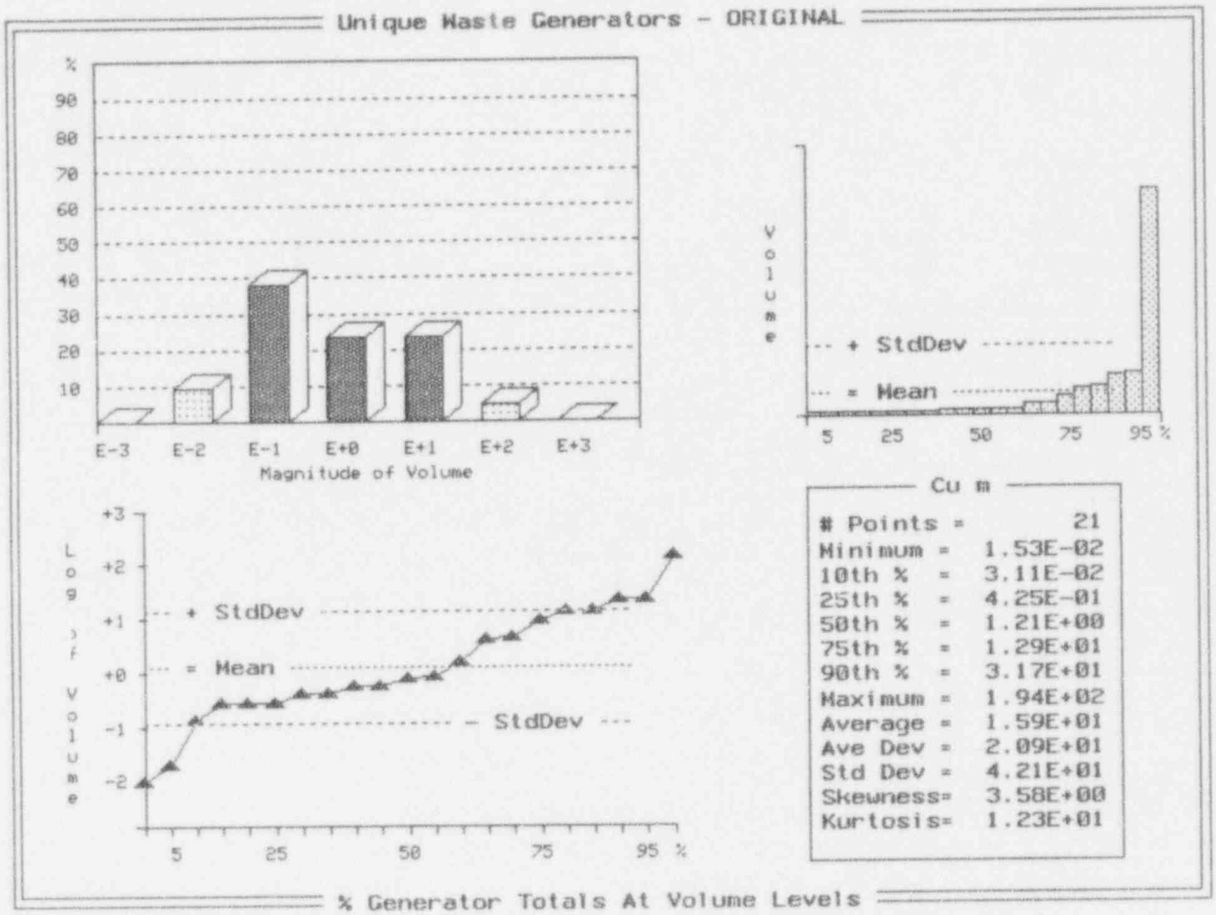


Exhibit F-2
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Northwest
Waste generator class:	Academic
Total number of waste generators:	21
Total associated waste volume (m^3):	333
Total associated waste activity (Ci):	57.2
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	8
Percent of total(%):	38
Total number of shipping records:	27
Number of shipping records with container data:	11
Number of waste containers:	1,679
Weight of shipments (kg):	145,500
Total waste volume (m^3):	256
Fractional waste volume (%): (this analysis/total)	77
Total waste activity (Ci):	39
Fractional waste activity (%): (this analysis/total)	68

Exhibit F-2 (Continued)



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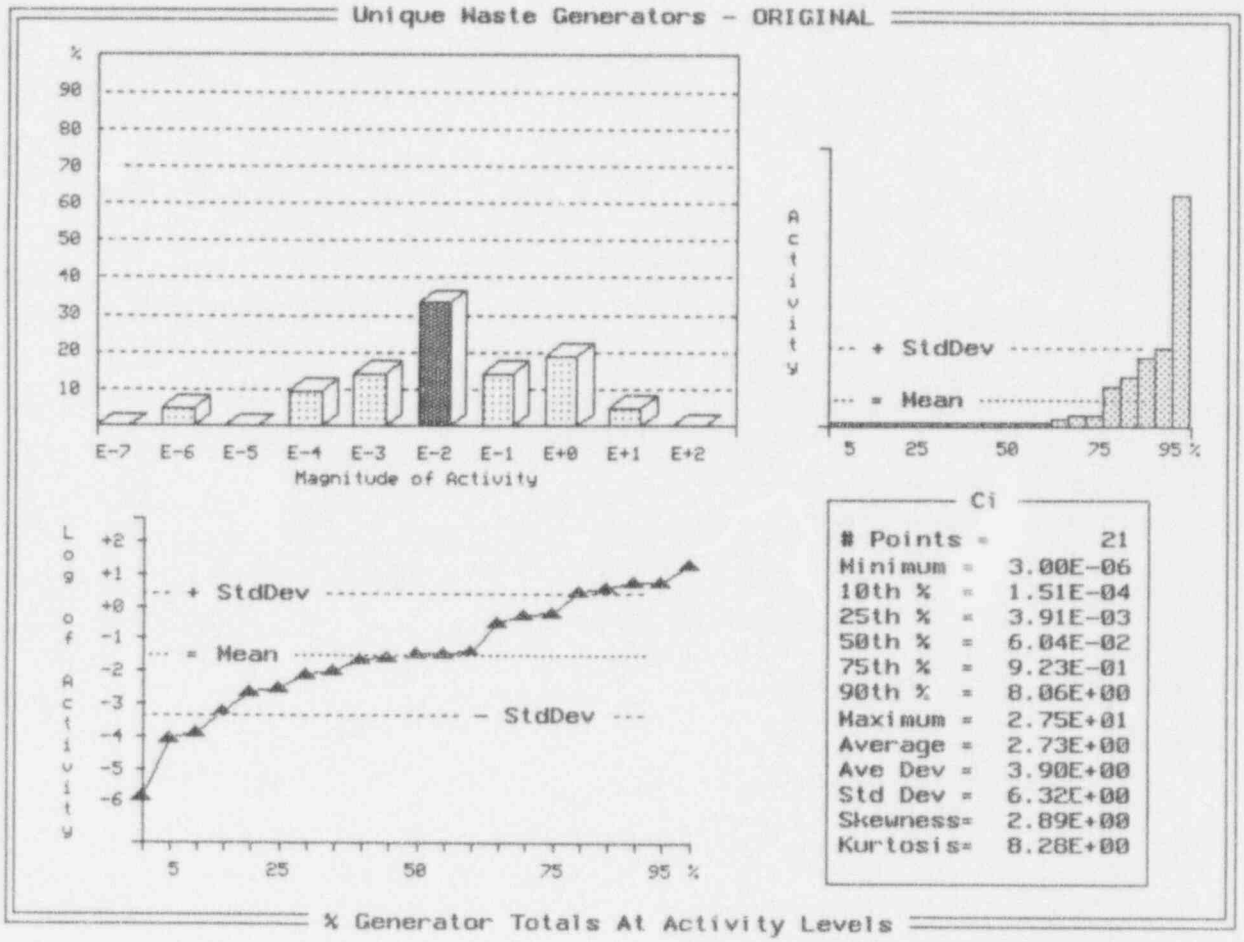
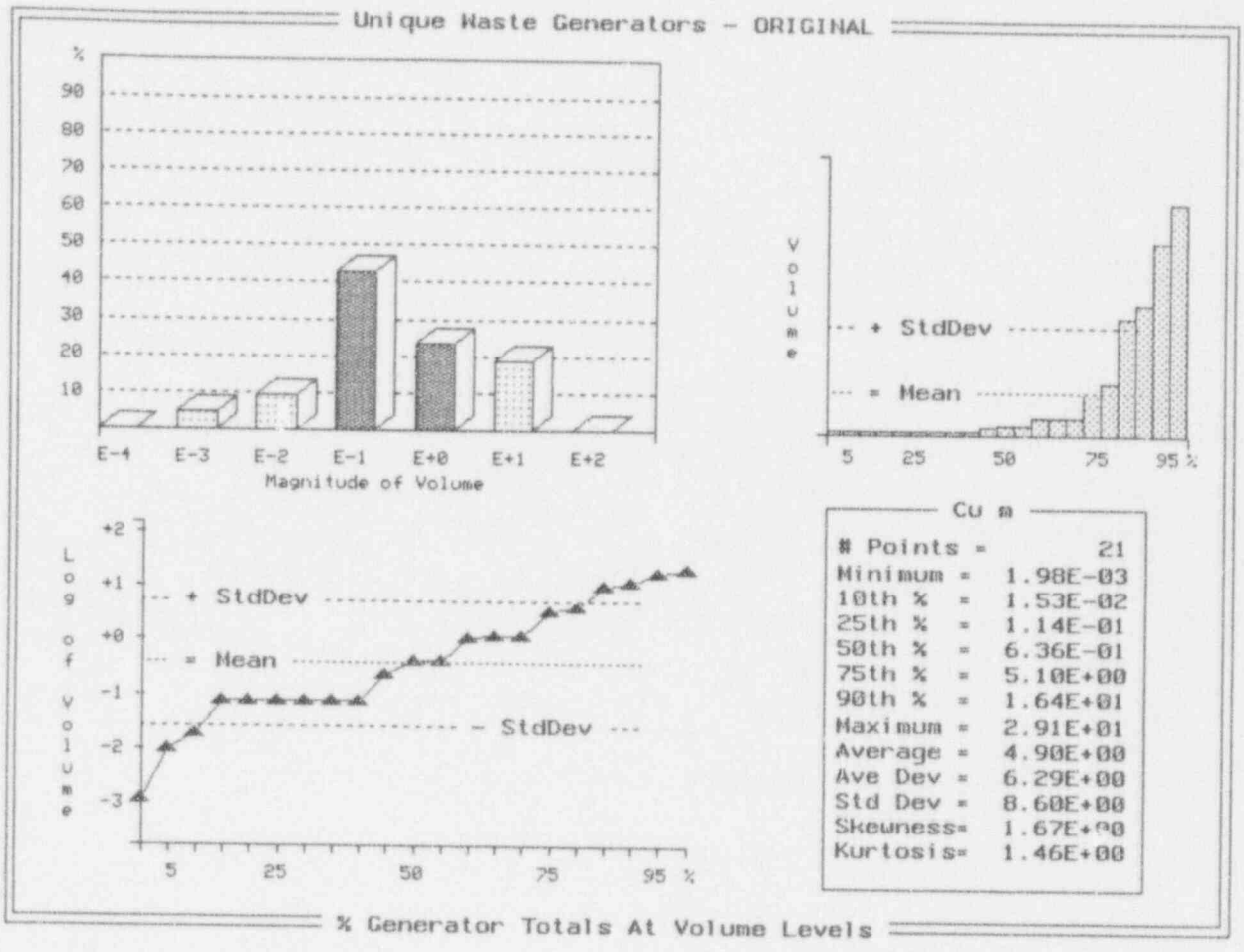


Exhibit F-3
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Northwest
Waste generator class:	Medical
Total number of waste generators:	21
Total associated waste volume (m^3):	103
Total associated waste activity (Ci):	2.1
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	9
Percent of total(%):	41
Total number of shipping records:	50
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	29,880
Total waste volume (m^3):	38.6
Fractional waste volume (%): (this analysis/total)	37
Total waste activity (Ci):	0.97
Fractional waste activity (%): (this analysis/total)	44

Exhibit F-3 (Continued)



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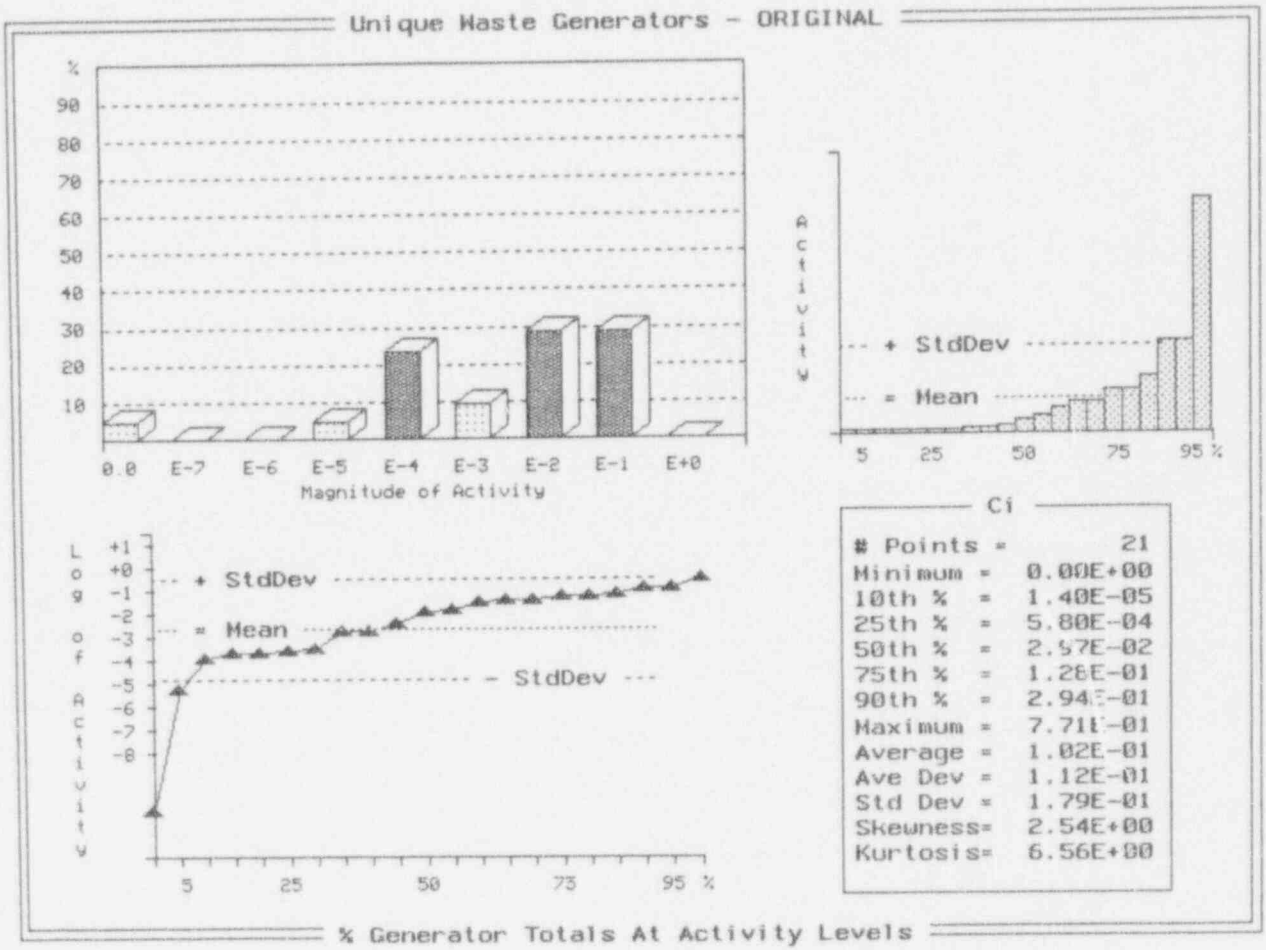


Exhibit F-4
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Northwest
Waste generator class:	Industrial
Total number of waste generators:	91
Total associated waste volume (m^3):	12,820
Total associated waste activity (Ci):	553
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	31
Percent of total(%):	34
Total number of shipping records:	
Number of shipping records with container data:	51
Number of waste containers:	1,181
Weight of shipments (kg):	1,395,000
Total waste volume (m^3):	1,364
Fractional waste volume (%): (this analysis/total)	11
Total waste activity (Ci):	24.4
Fractional waste activity (%): (this analysis/total)	4.4

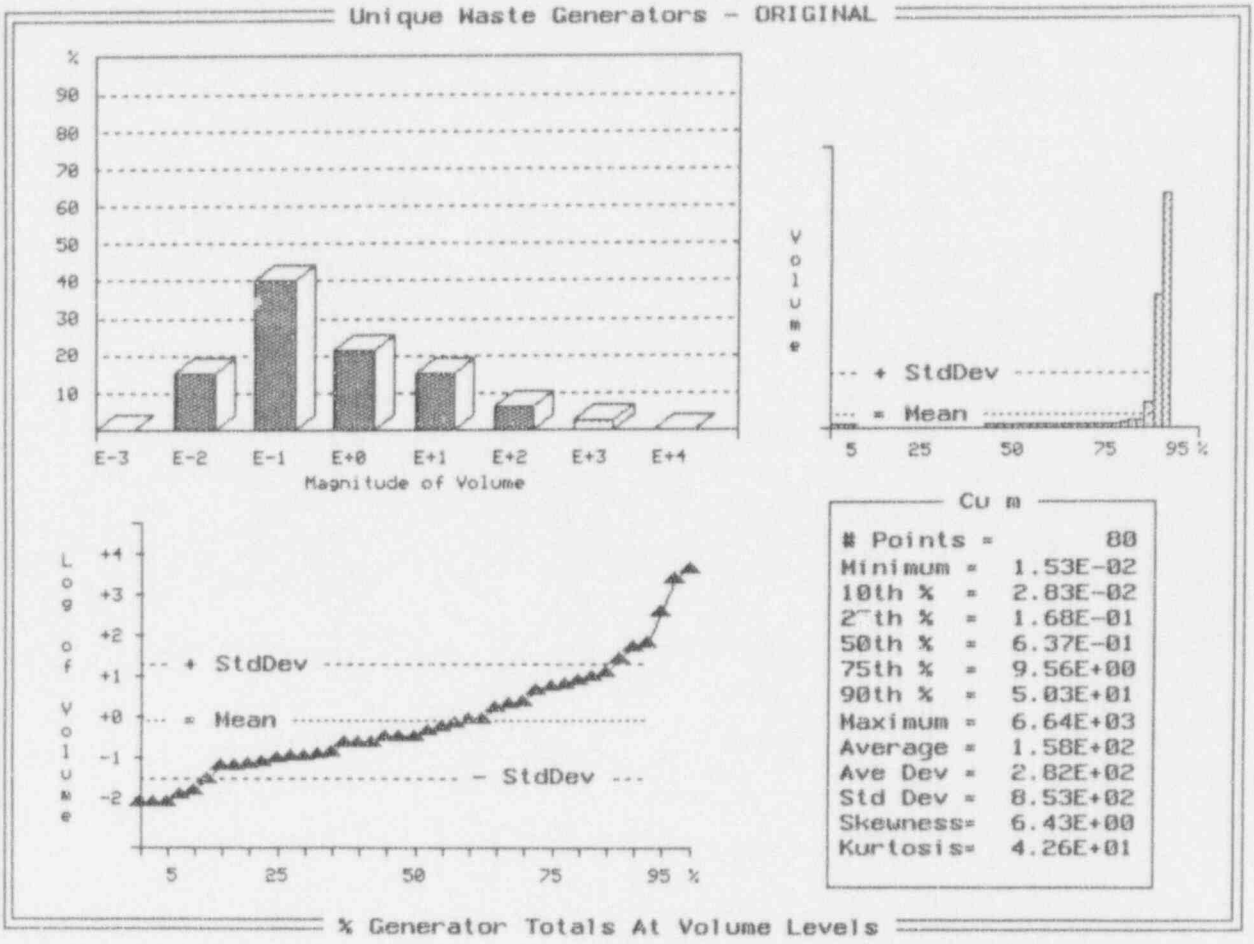

Unique Waste Generators - ORIGINAL
%
90
80
70
60
50
40
30
20
10
E-3
E-2
E-1
E+0
E+1
E+2
E+3
E+4
Magnitude of Volume
Volume
+ StdDev
= Mean
5
25
50
75
95 %
Log of Volume
+4
+3
+2
+1
+0
-1
-2
+ StdDev
= Mean
- StdDev
5
25
50
75
95 %
Cu m
# Points = 80
Minimum = 1.53E-02
10th % = 2.83E-02
20th % = 1.68E-01
50th % = 6.37E-01
75th % = 9.56E+00
90th % = 5.03E+01
Maximum = 6.64E+03
Average = 1.58E+02
Ave Dev = 2.82E+02
Std Dev = 8.53E+02
Skewness= 6.43E+00
Kurtosis= 4.26E+01
% Generator Totals At Volume Levels

Exhibit F-4 (Continued)

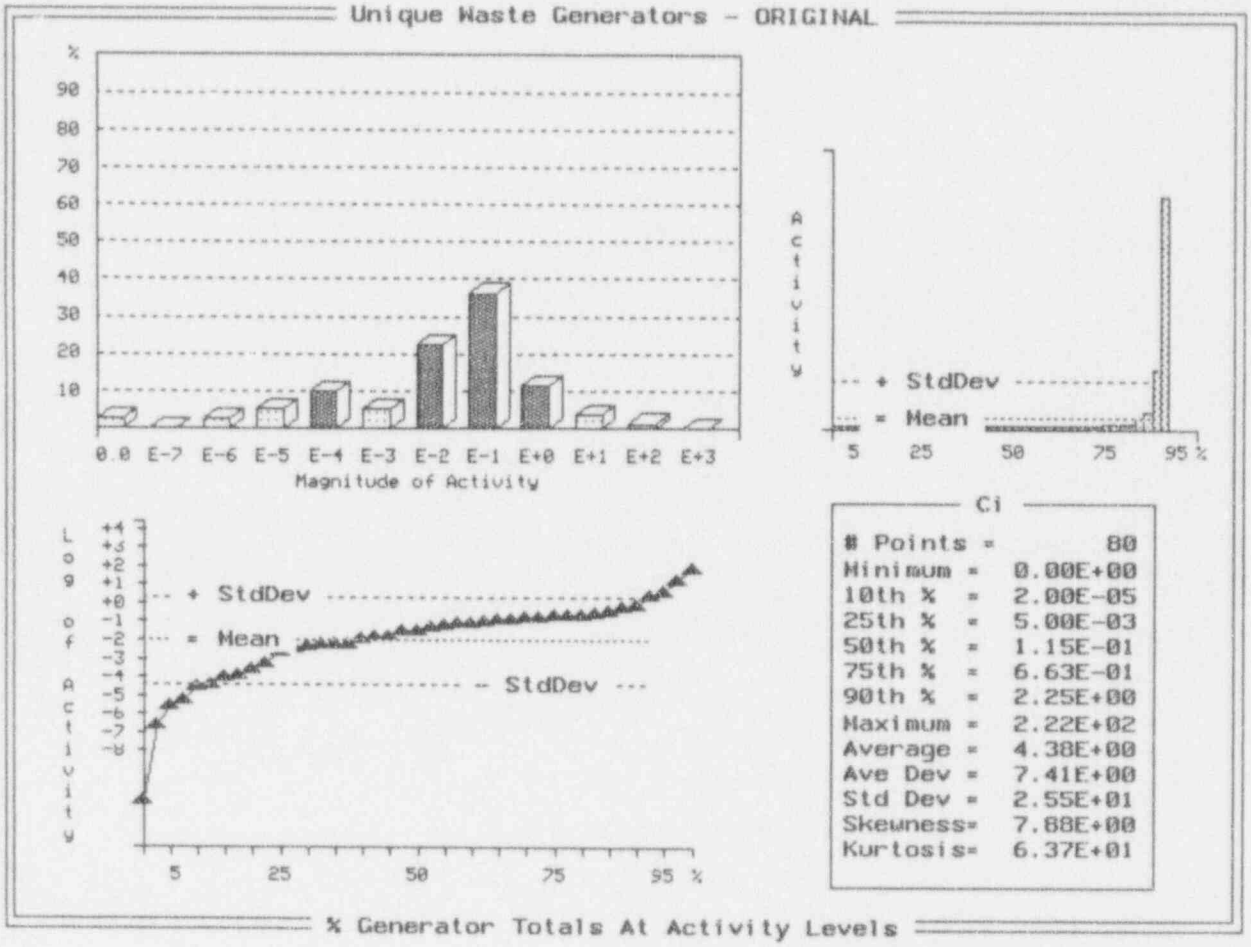
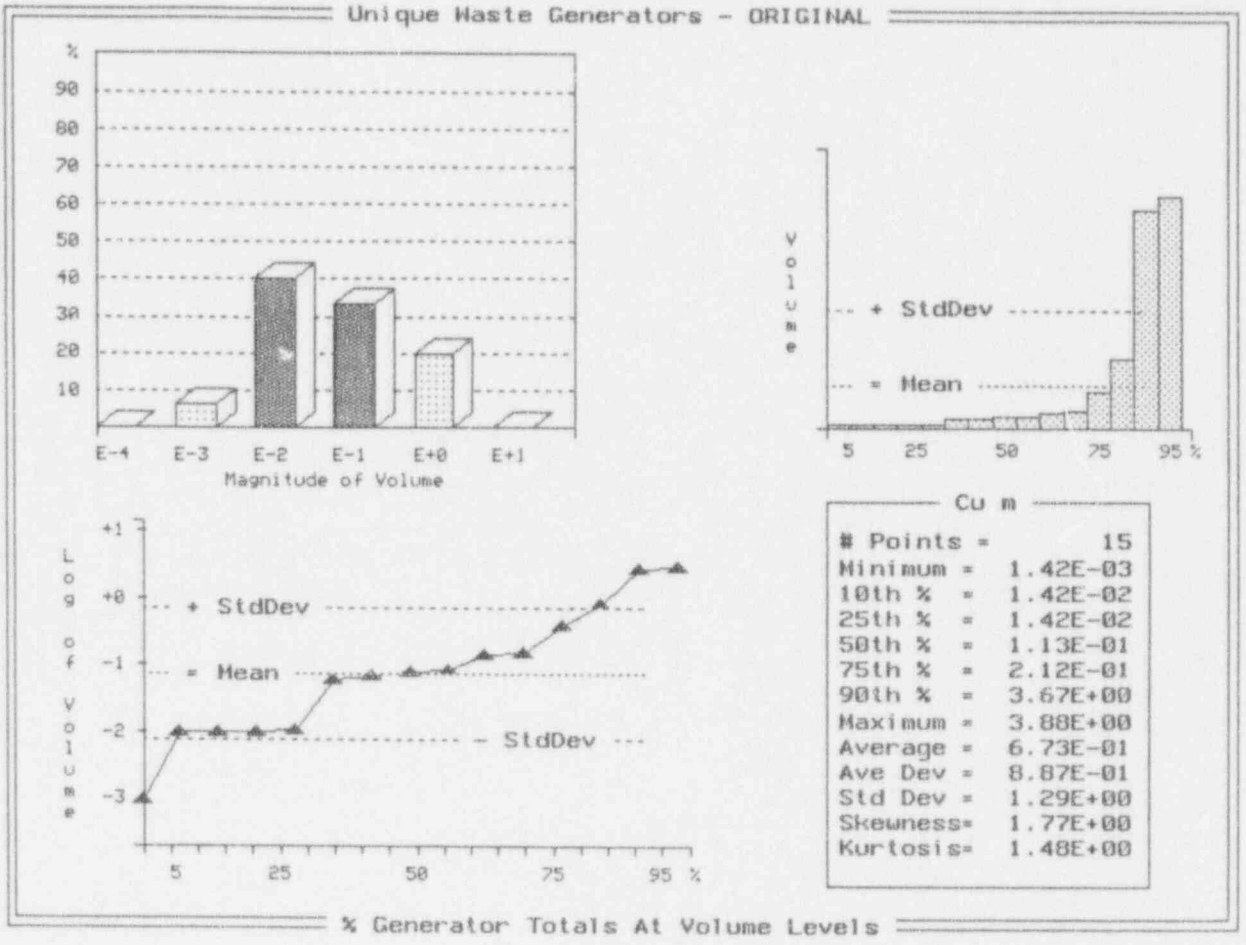


Exhibit F-5
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Rocky Mountain
Waste generator class:	Government
Total number of waste generators:	15
Total associated waste volume (m^3):	10.0
Total associated waste activity (Ci):	1,888
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-5 (Continued)



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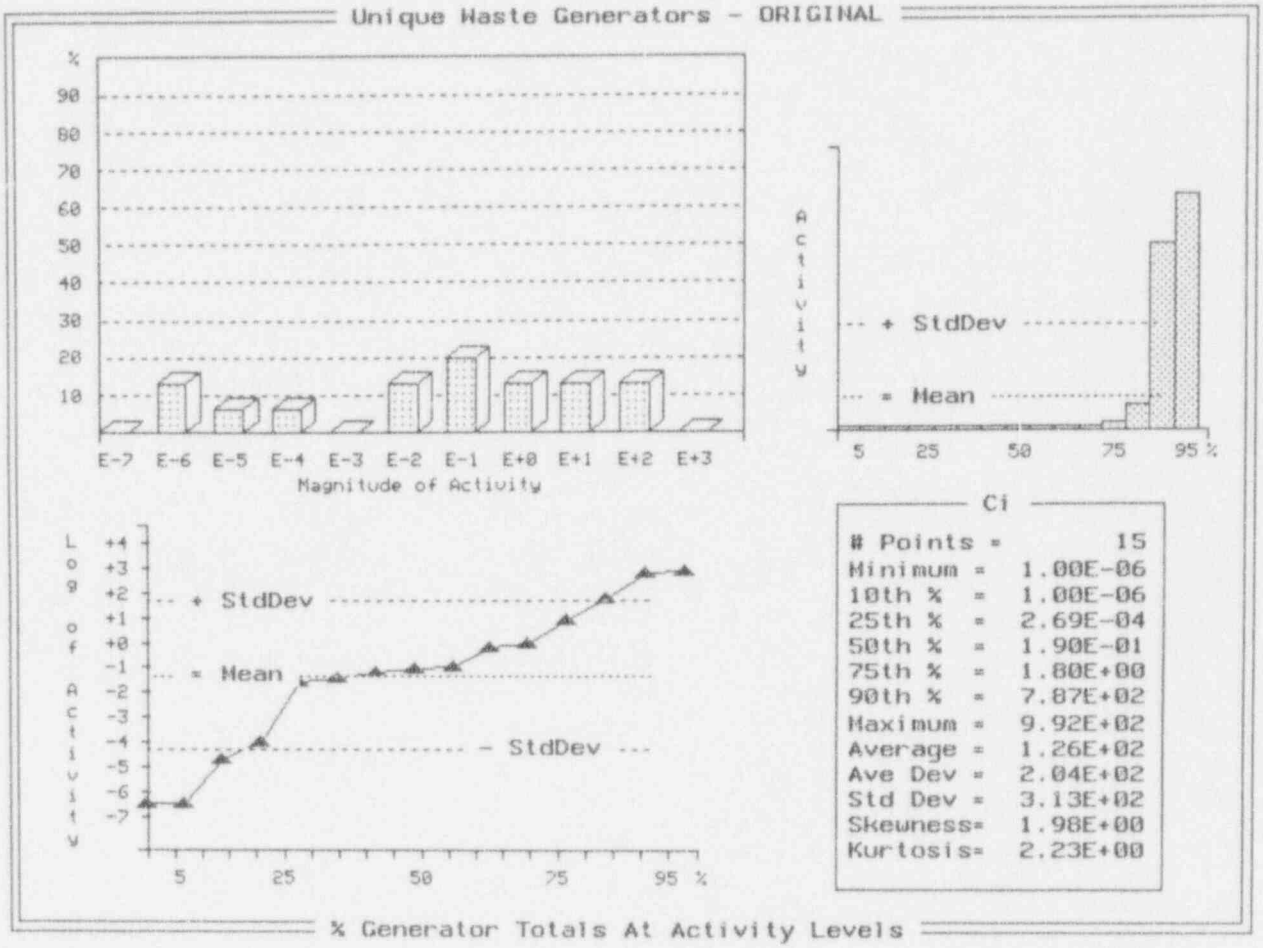


Exhibit F-6
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Rocky Mountain
Waste generator class:	Academic
Total number of waste generators:	13
Total associated waste volume (m^3):	278
Total associated waste activity (Ci):	537
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	8
Total number of shipping records:	3
Number of shipping records with container data:	2
Number of waste containers:	167
Weight of shipments (kg):	45,000
Total waste volume (m^3):	64.2
Fractional waste volume (%): (this analysis/total)	23
Total waste activity (Ci):	1.5
Fractional waste activity (%): (this analysis/total)	0.3

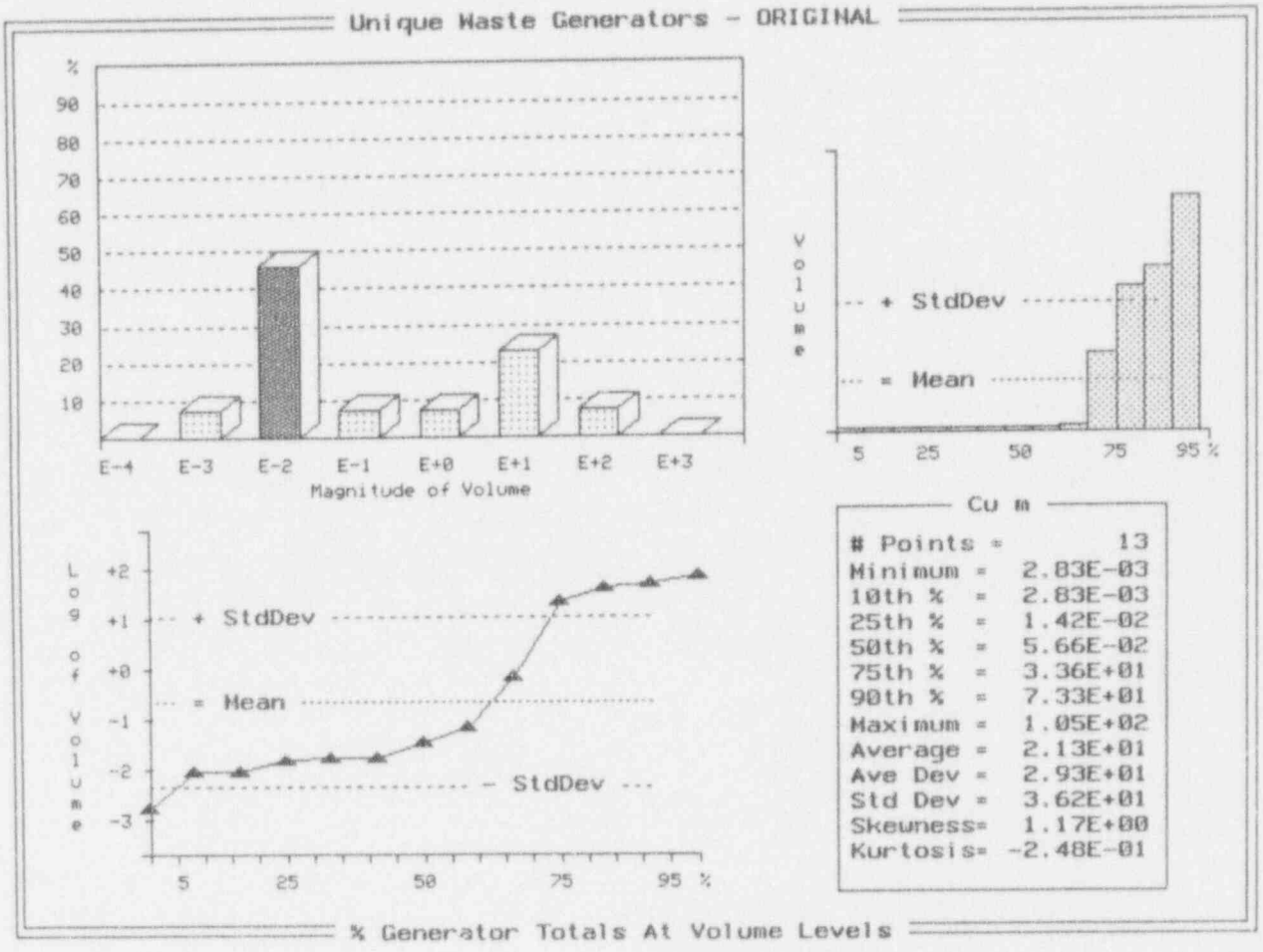

Unique Waste Generators - ORIGINAL
%
90
80
70
60
50
40
30
20
10
E-4
E-3
E-2
E-1
E+0
E+1
E+2
E+3
Magnitude of Volume
Volume
+ StdDev
= Mean
5
25
50
75
95 %
Log of Volume
+2
+1
+0
-1
-2
-3
+ StdDev
= Mean
- StdDev
5
25
50
75
95 %
Cu m
# Points = 13
Minimum = 2.83E-03
10th % = 2.83E-03
25th % = 1.42E-02
50th % = 5.66E-02
75th % = 3.36E+01
90th % = 7.33E+01
Maximum = 1.05E+02
Average = 2.13E+01
Ave Dev = 2.93E+01
Std Dev = 3.62E+01
Skewness= 1.17E+00
Kurtosis= -2.48E-01
% Generator Totals At Volume Levels

Exhibit F-6 (Continued)

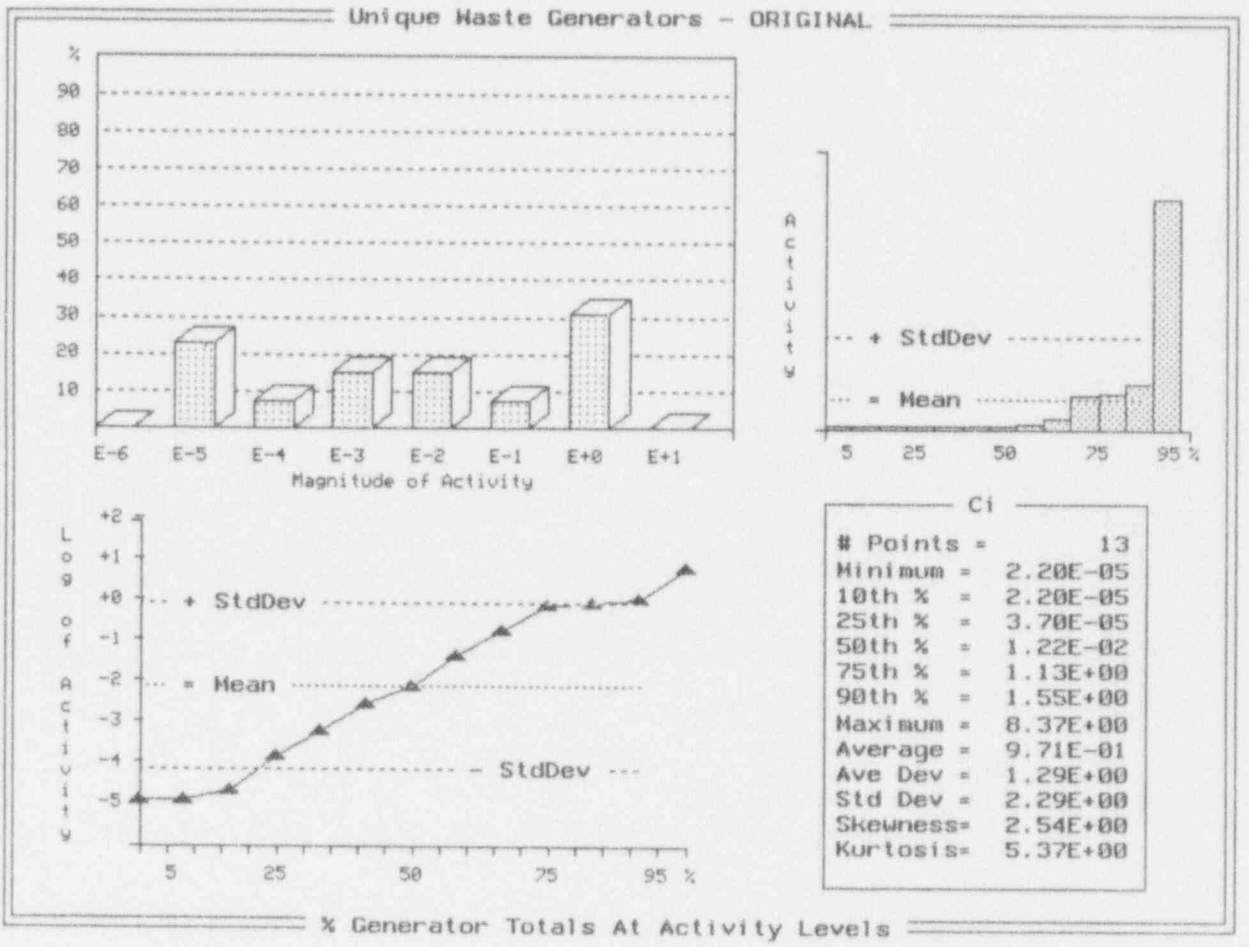


Exhibit F-7
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Rocky Mountain
Waste generator class:	Medical
Total number of waste generators:	16
Total associated waste volume (m^3):	9.9
Total associated waste activity (Ci):	0.66
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-7 (Continued)

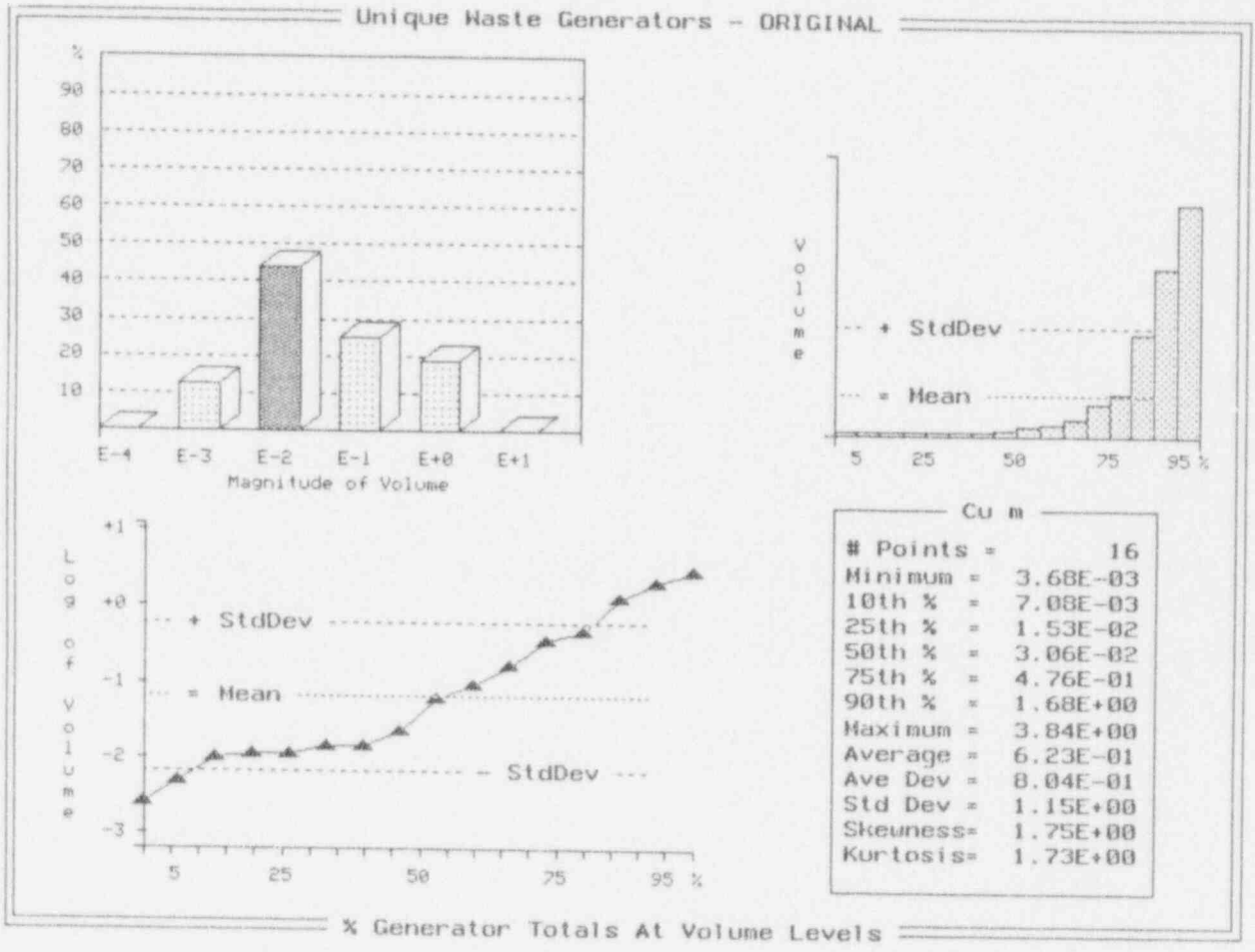


Exhibit F-7 (Continued)

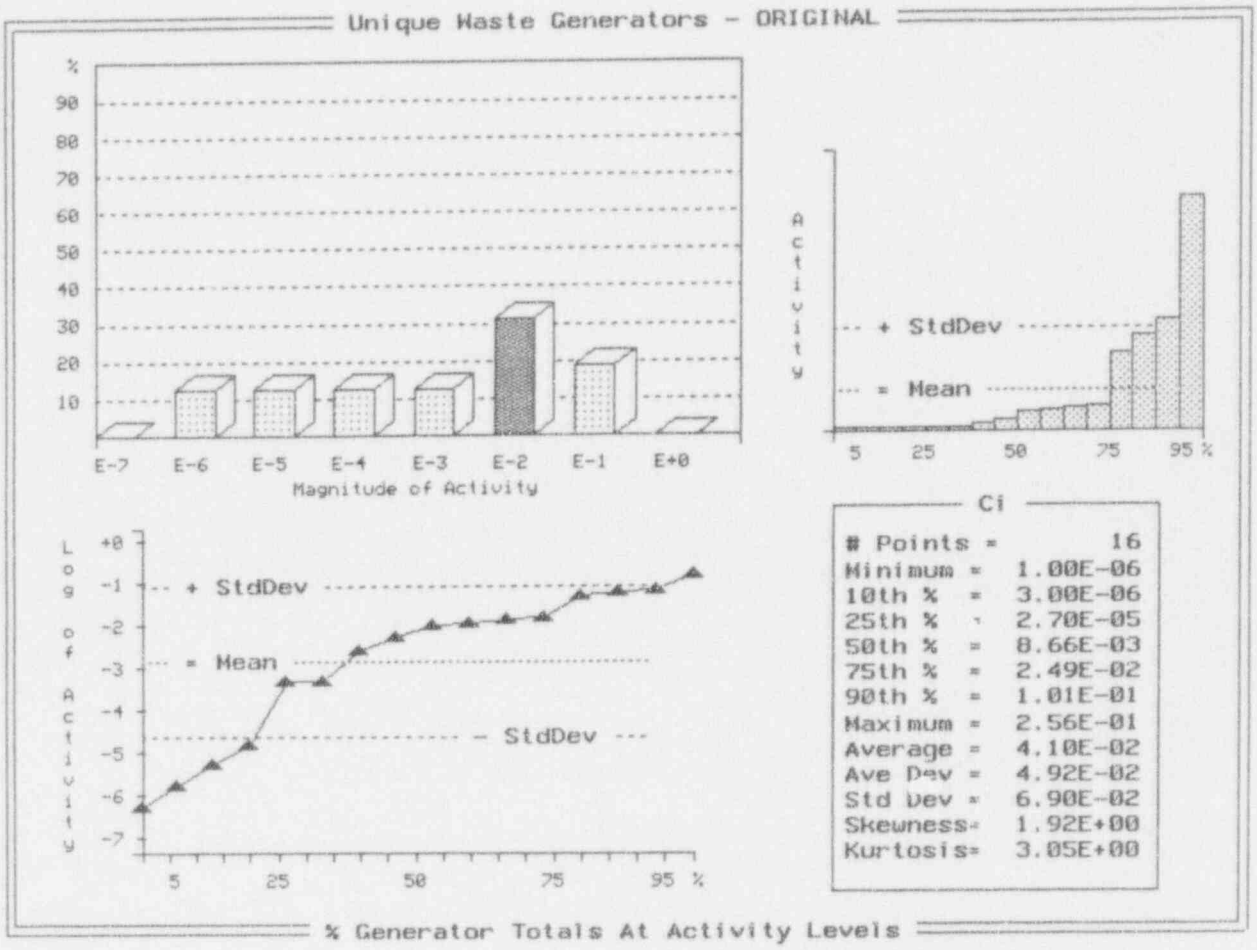


Exhibit F-8
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Rocky Mountain
Waste generator class:	Industrial
Total number of waste generators:	68
Total associated waste volume (m^3):	296
Total associated waste activity (Ci):	3,395
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	4
Percent of total(%):	6
Total number of shipping records:	6
Number of shipping records with container data:	1
Number of waste containers:	84
Weight of shipments (kg):	56,050
Total waste volume (m^3):	55
Fractional waste volume (%): (this analysis/total)	18
Total waste activity (Ci):	0.8
Fractional waste activity (%): (this analysis/total)	0.02

Exhibit F-8 (Continued)

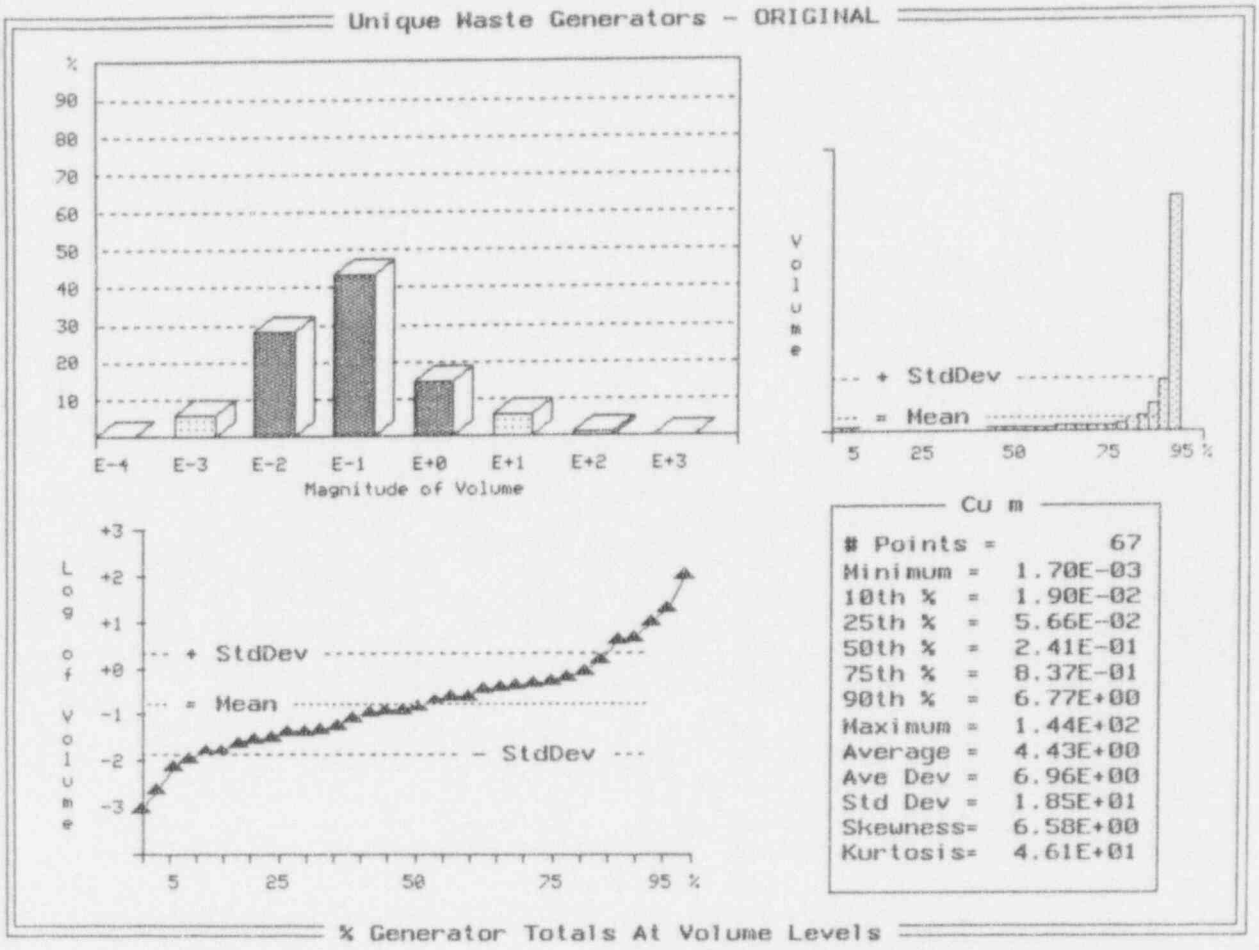


Exhibit F-8 (Continued)

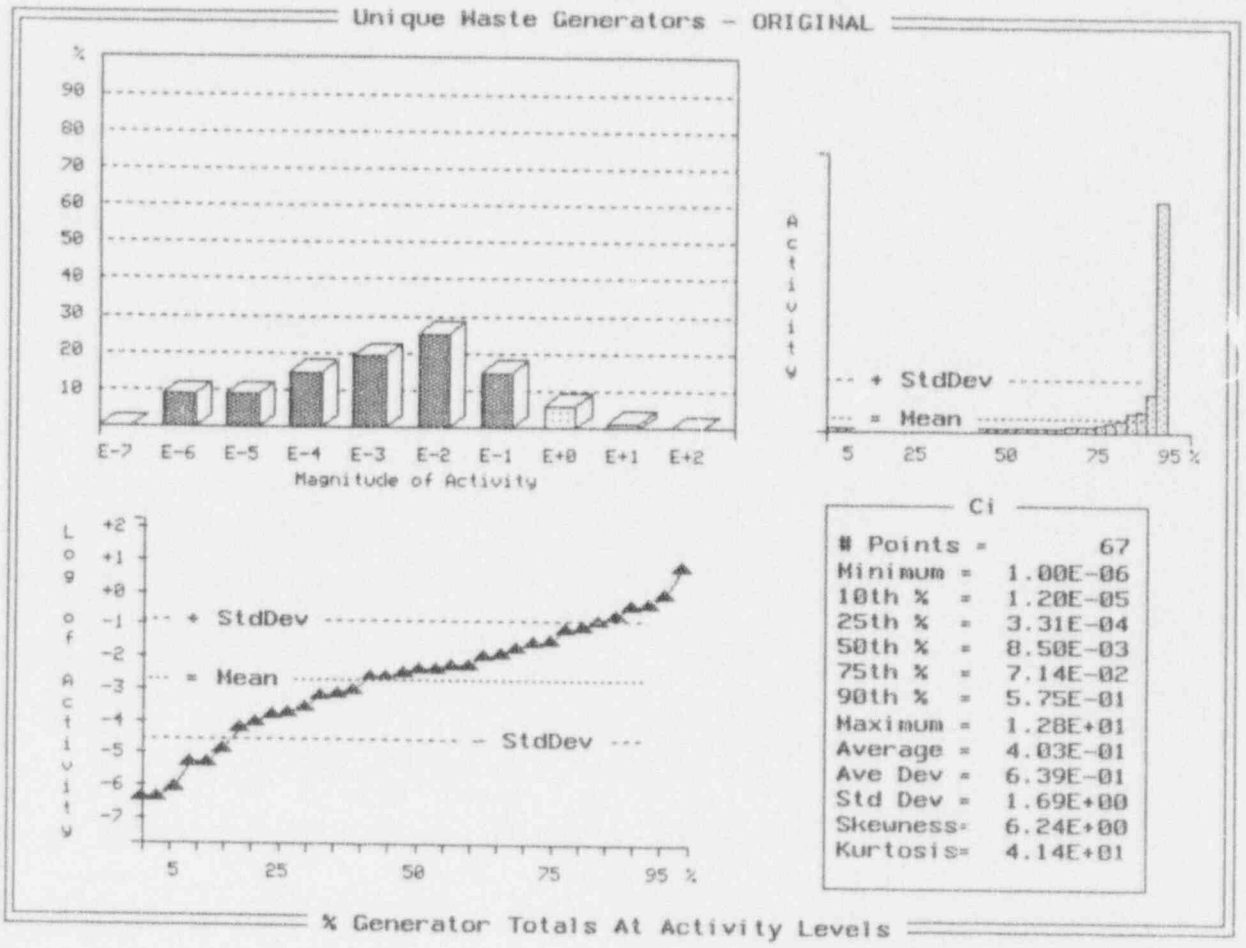


Exhibit F-9
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Central
Waste generator class:	Government
Total number of waste generators:	12
Total associated waste volume (m^3):	362
Total associated waste activity (Ci):	489
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	8
Total number of shipping records:	1
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	5,896
Total waste volume (m^3):	8.4
Fractional waste volume (%): (this analysis/total)	2
Total waste activity (Ci):	0.02
Fractional waste activity (%): (this analysis/total)	<0.01

Exhibit F-9 (Continued)

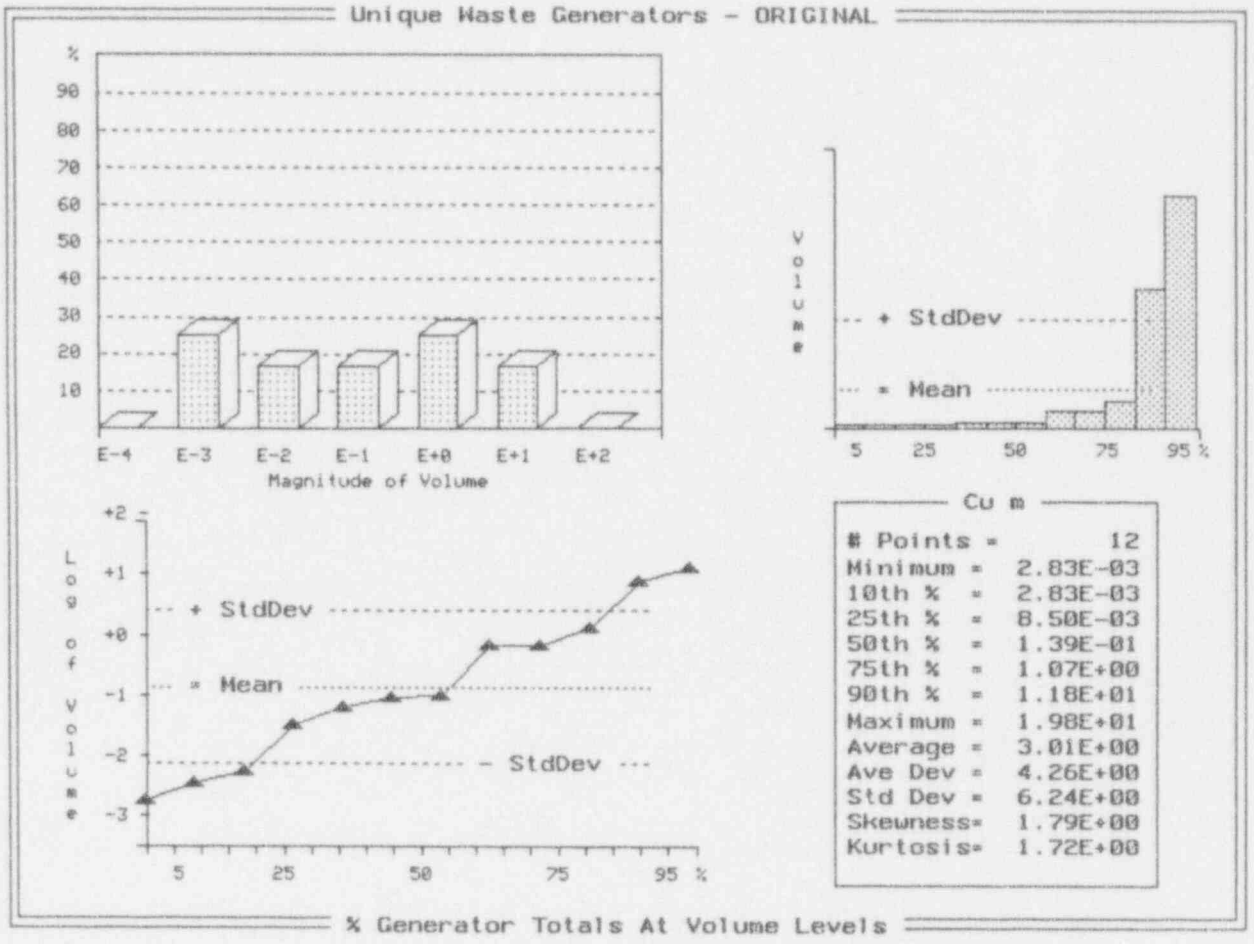


Exhibit F-9 (Continued)

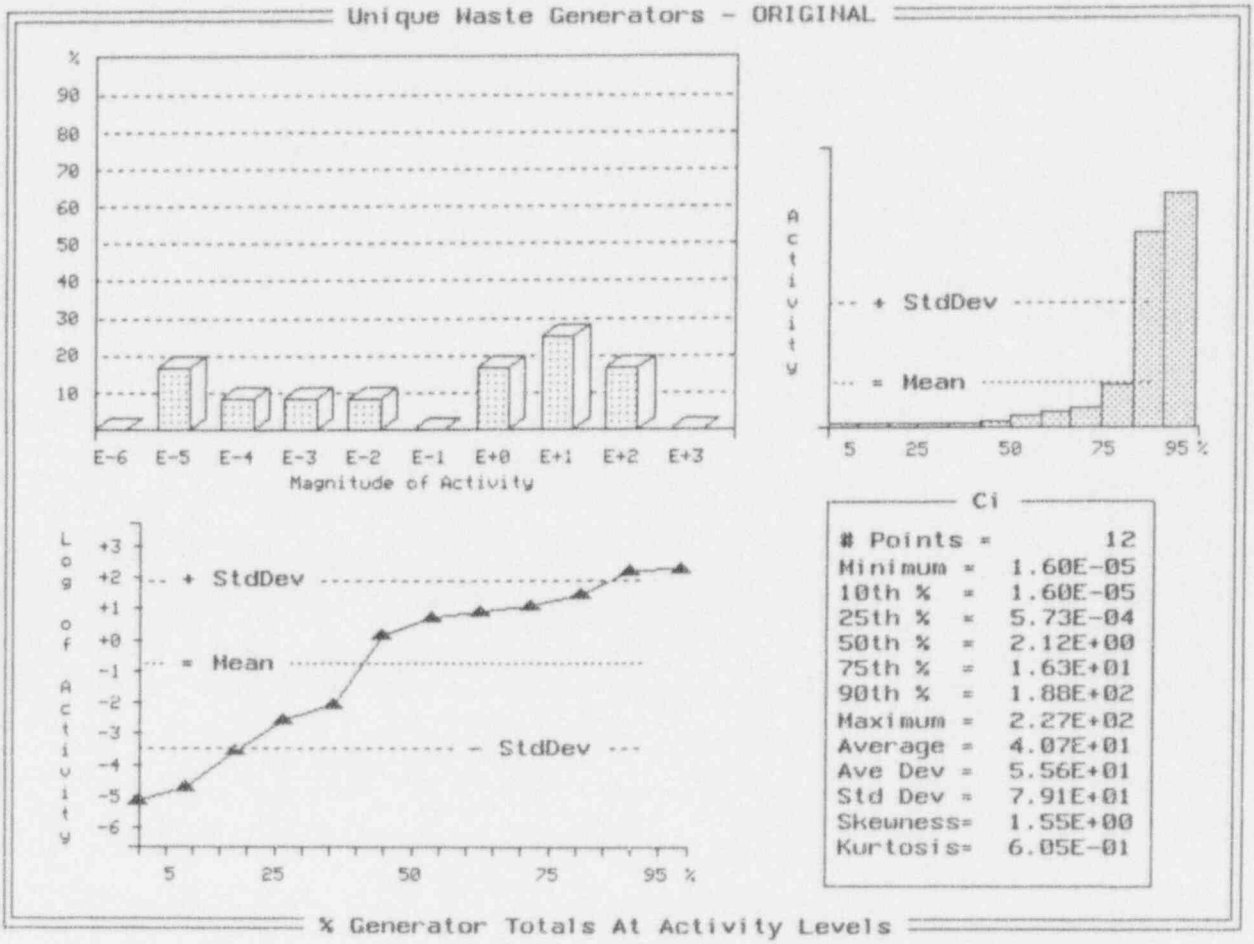


Exhibit F-10
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Central
Waste generator class:	Academic
Total number of waste generators:	14
Total associated waste volume (m^3):	334
Total associated waste activity (Ci):	5.5
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	7
Total number of shipping records:	1
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	1,086
Total waste volume (m^3):	1.9
Fractional waste volume (%): (this analysis/total)	0.6
Total waste activity (Ci):	0.45
Fractional waste activity (%): (this analysis/total)	8.2

Exhibit F-10 (Continued)

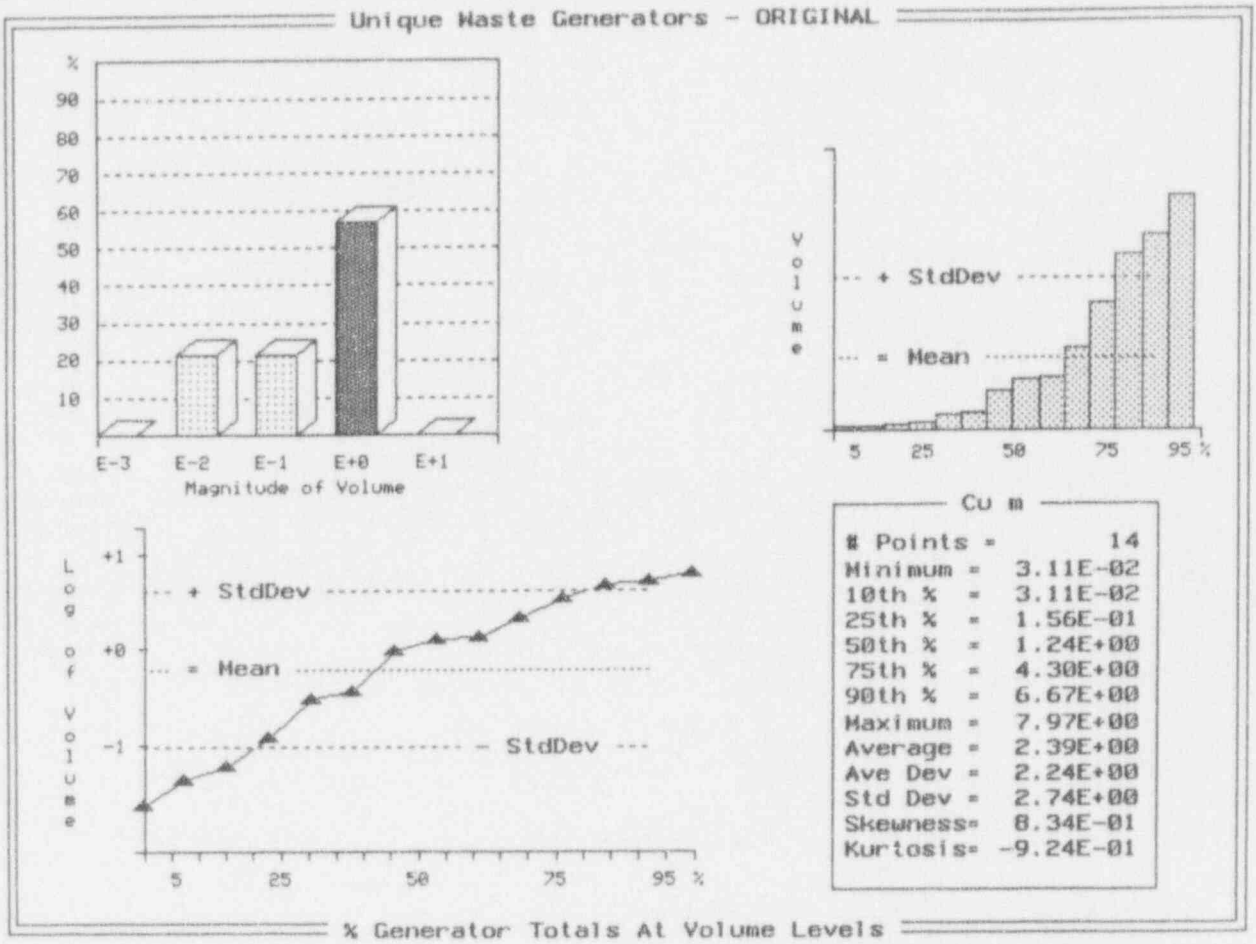


Exhibit F-10 (Continued)

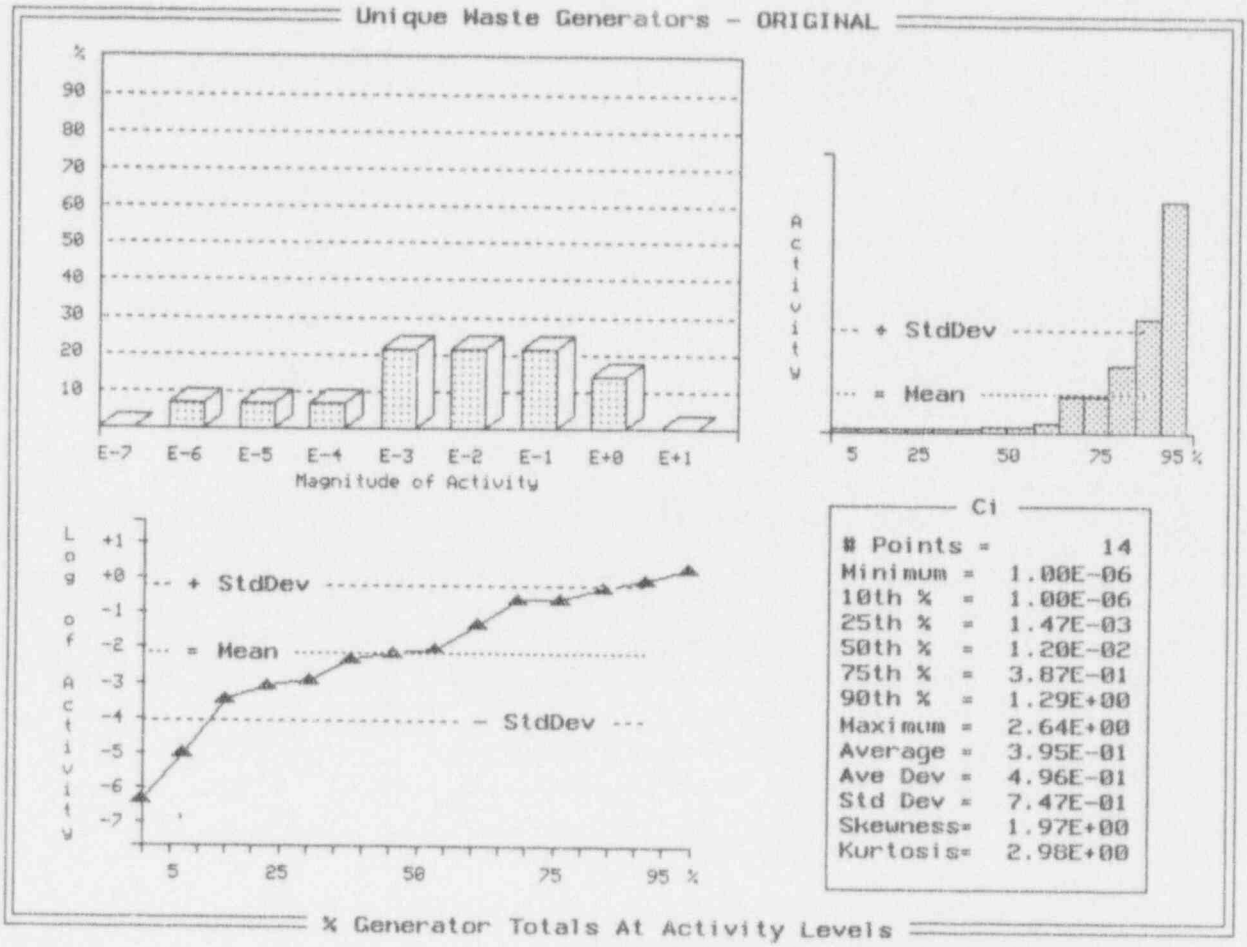


Exhibit F-11
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Central
Waste generator class:	Medical
Total number of waste generators:	16
Total associated waste volume (m^3):	9.0
Total associated waste activity (Ci):	2.57
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-11 (Continued)

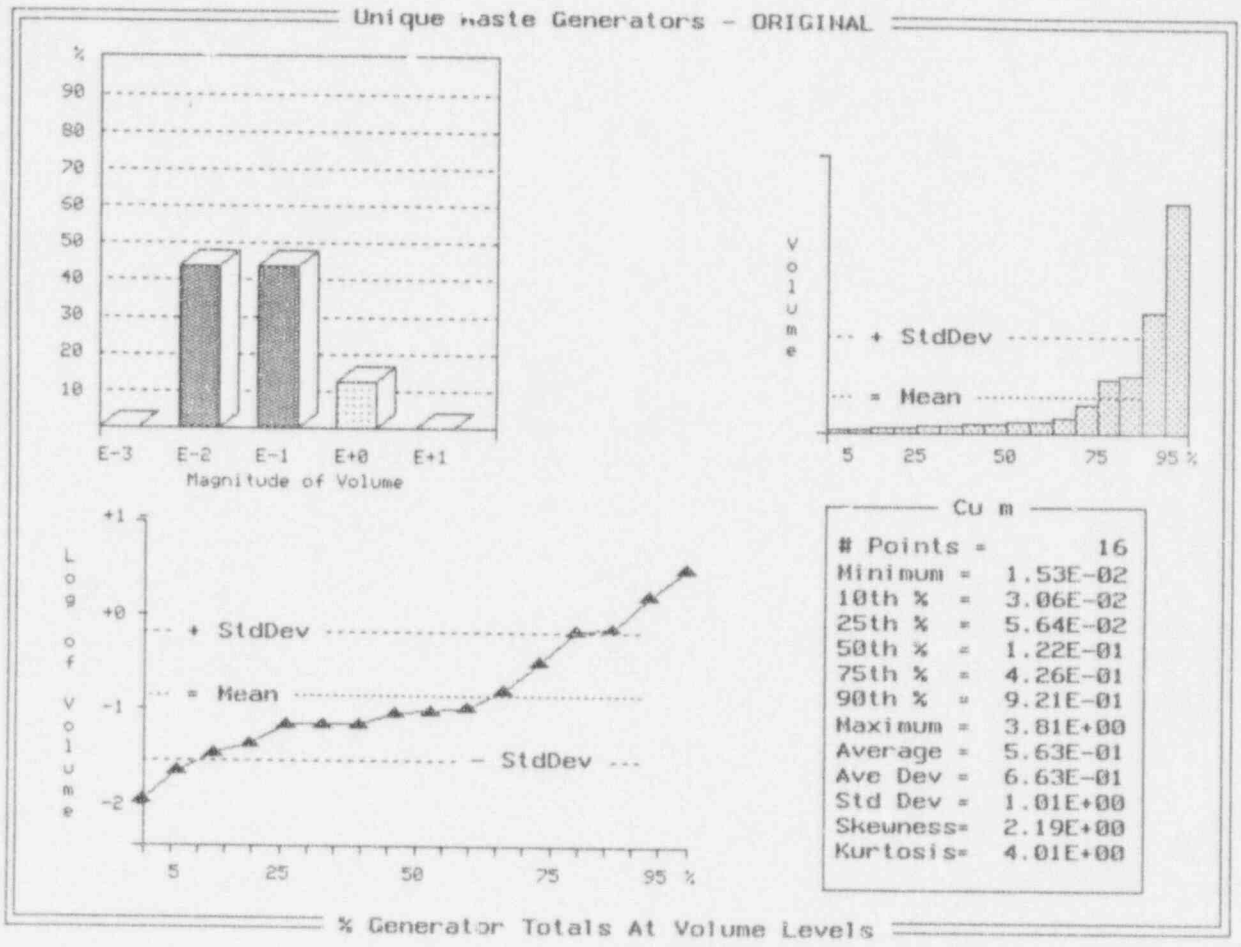


Exhibit F-11 (Continued)

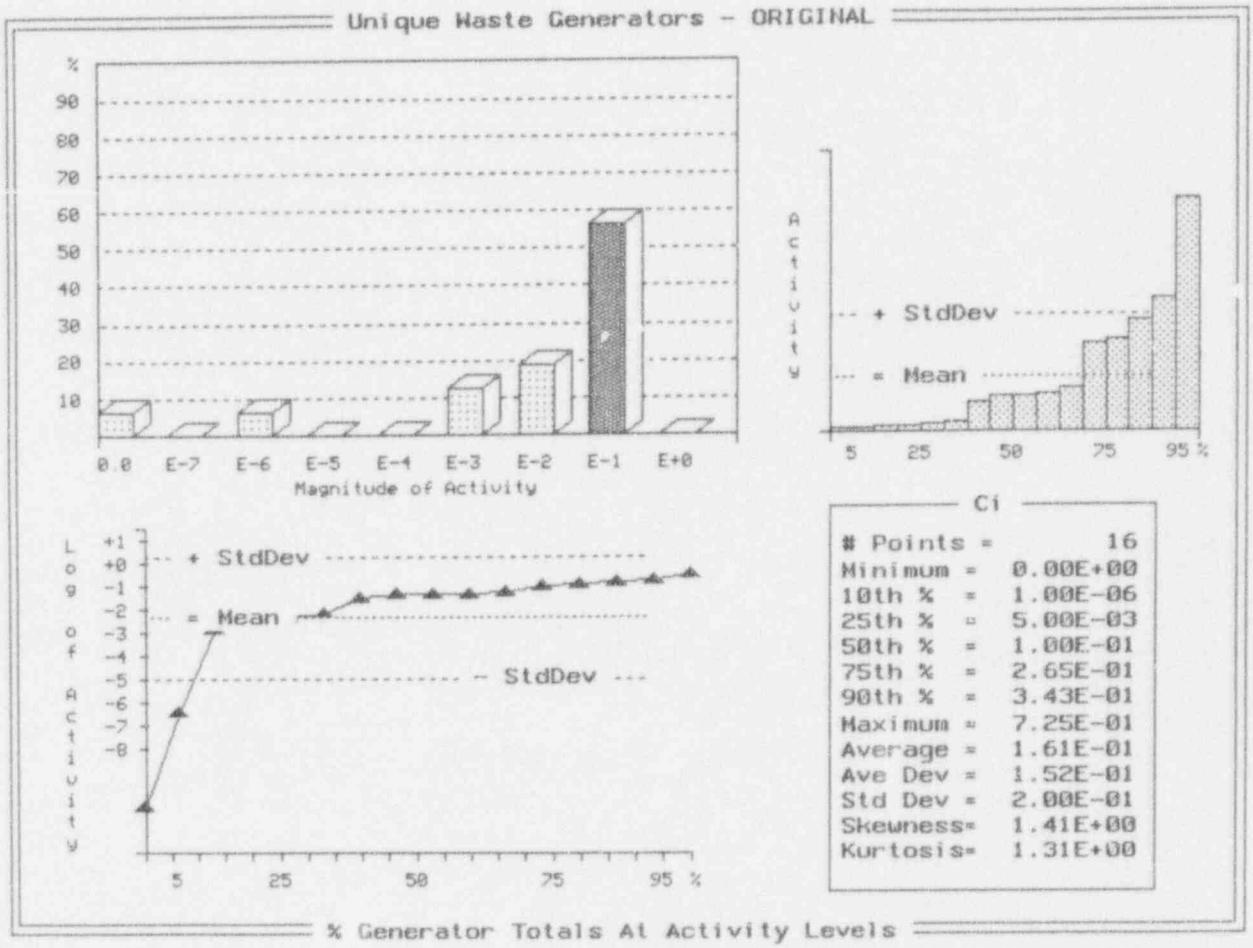


Exhibit F-12
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Central
Waste generator class:	Industrial
Total number of waste generators:	28
Total associated waste volume (m^3):	5,975
Total associated waste activity (Ci):	54
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	6
Percent of total(%):	21
Total number of shipping records:	452
Number of shipping records with container data:	13
Number of waste containers:	869
Weight of shipments (kg):	5,713,000
Total waste volume (m^3):	5,584
Fractional waste volume (%): (this analysis/total)	93
Total waste activity (Ci):	24
Fractional waste activity (%): (this analysis/total)	44

Exhibit F-12 (Continued)

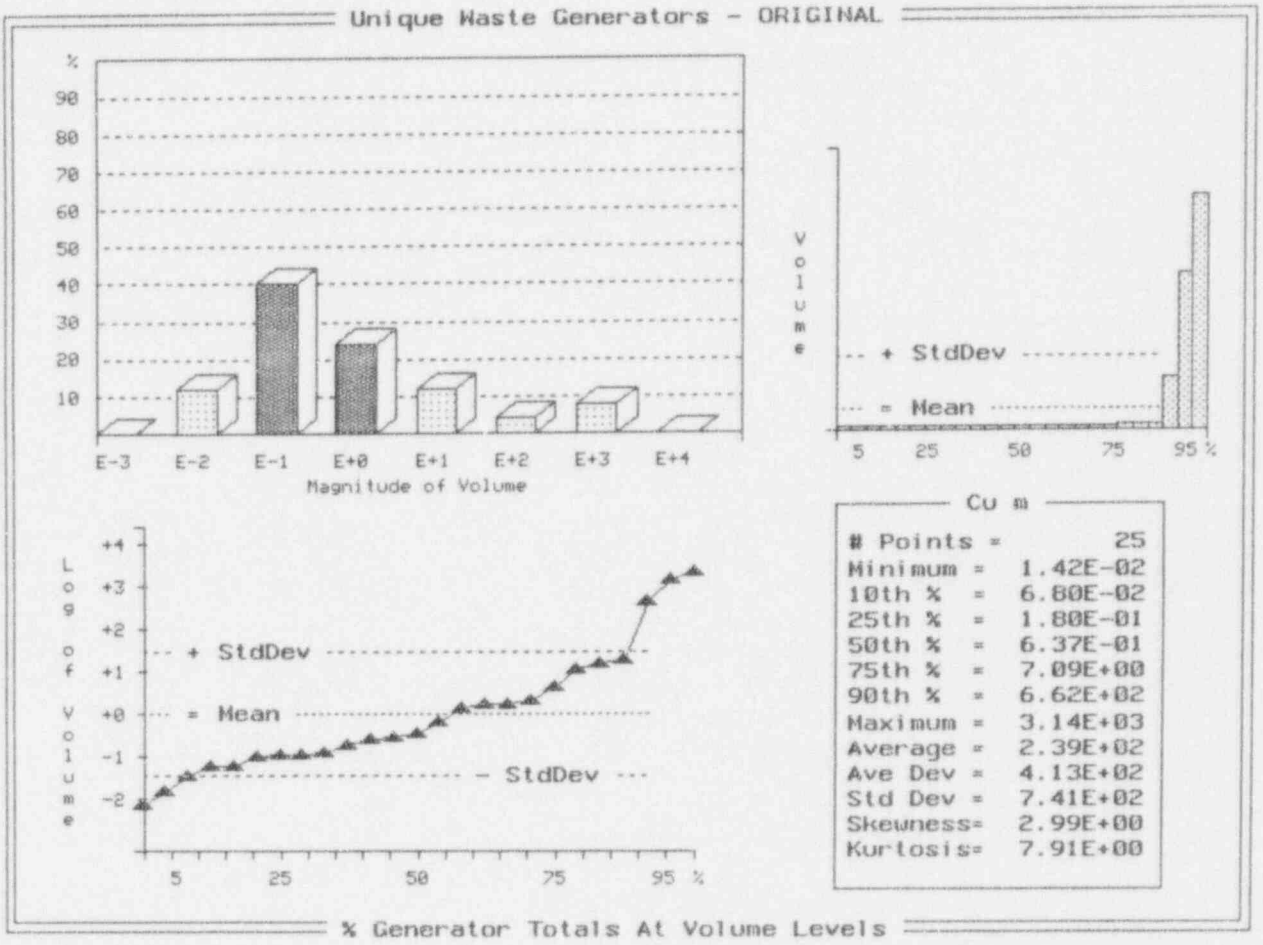


Exhibit F-12 (Continued)

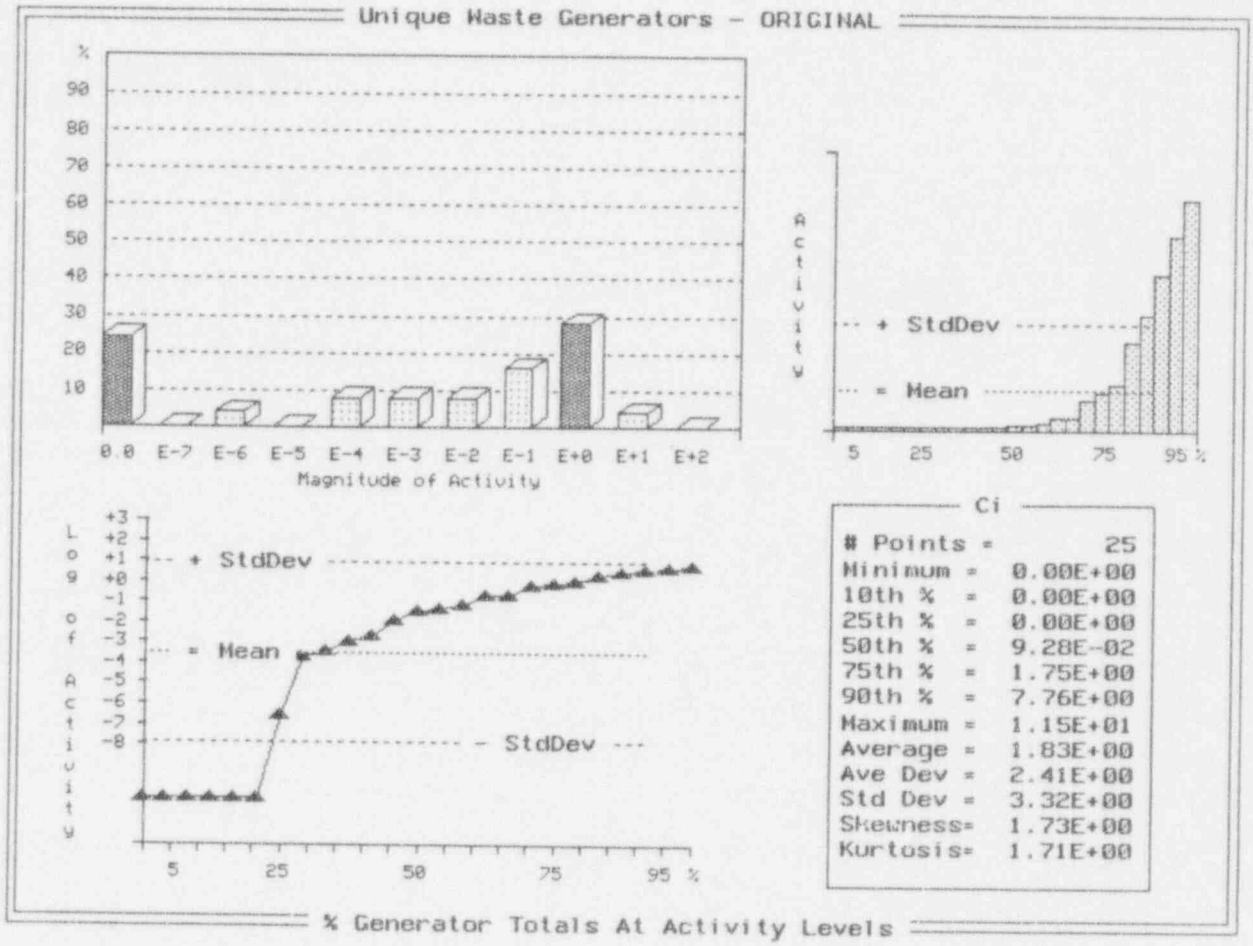


Exhibit F-12 (Continued)

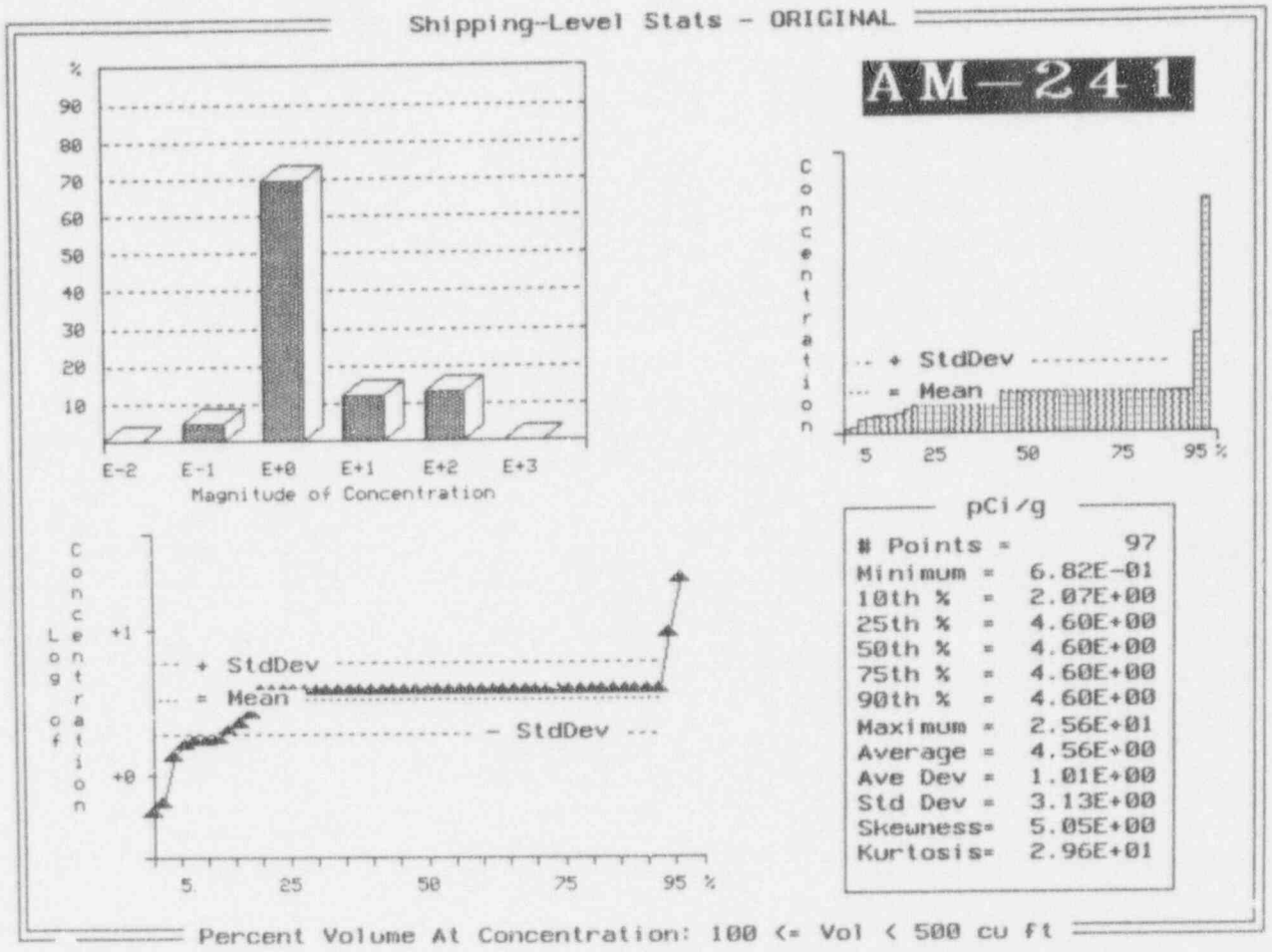


Exhibit F-12 (Continued)

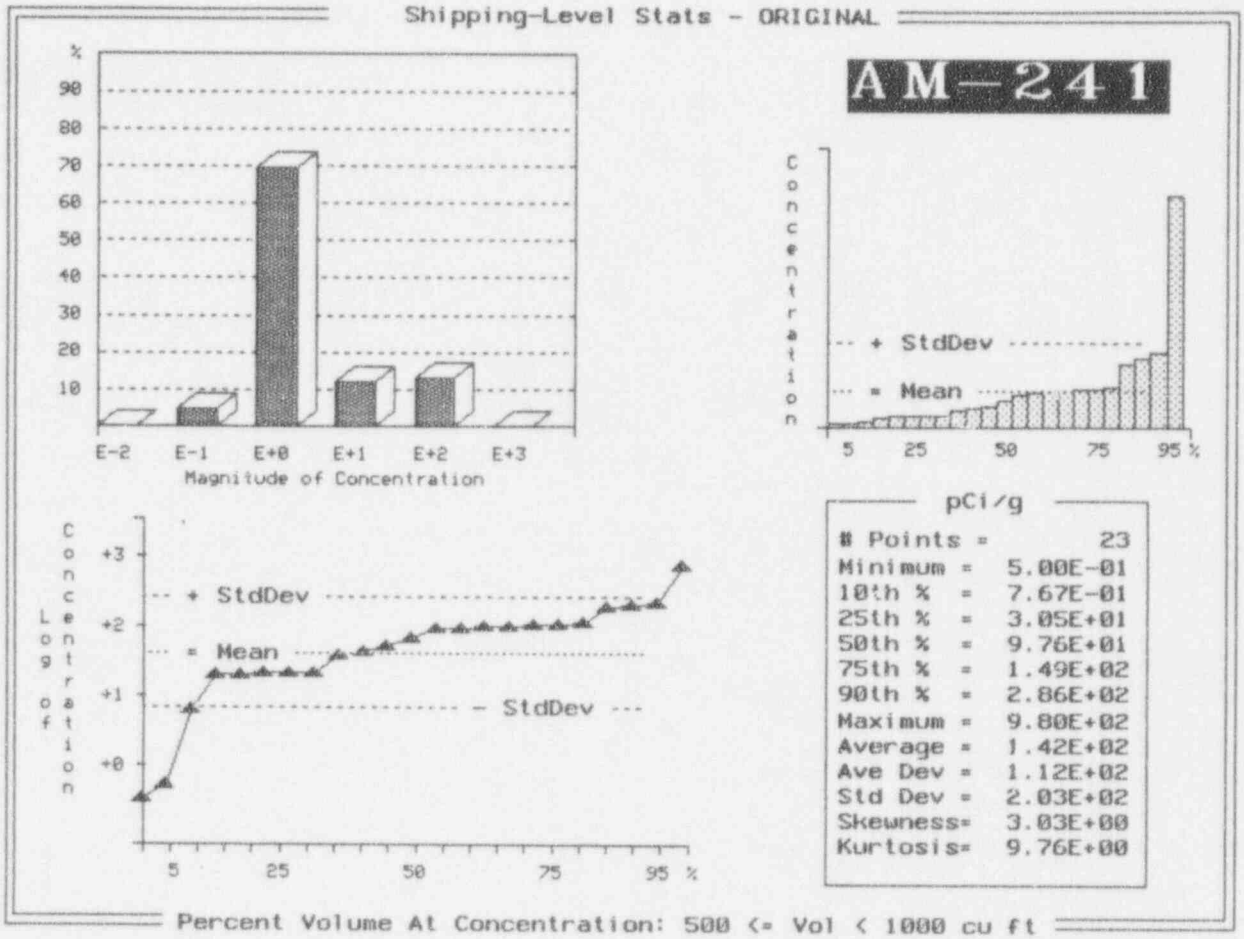


Exhibit F-12 (Continued)

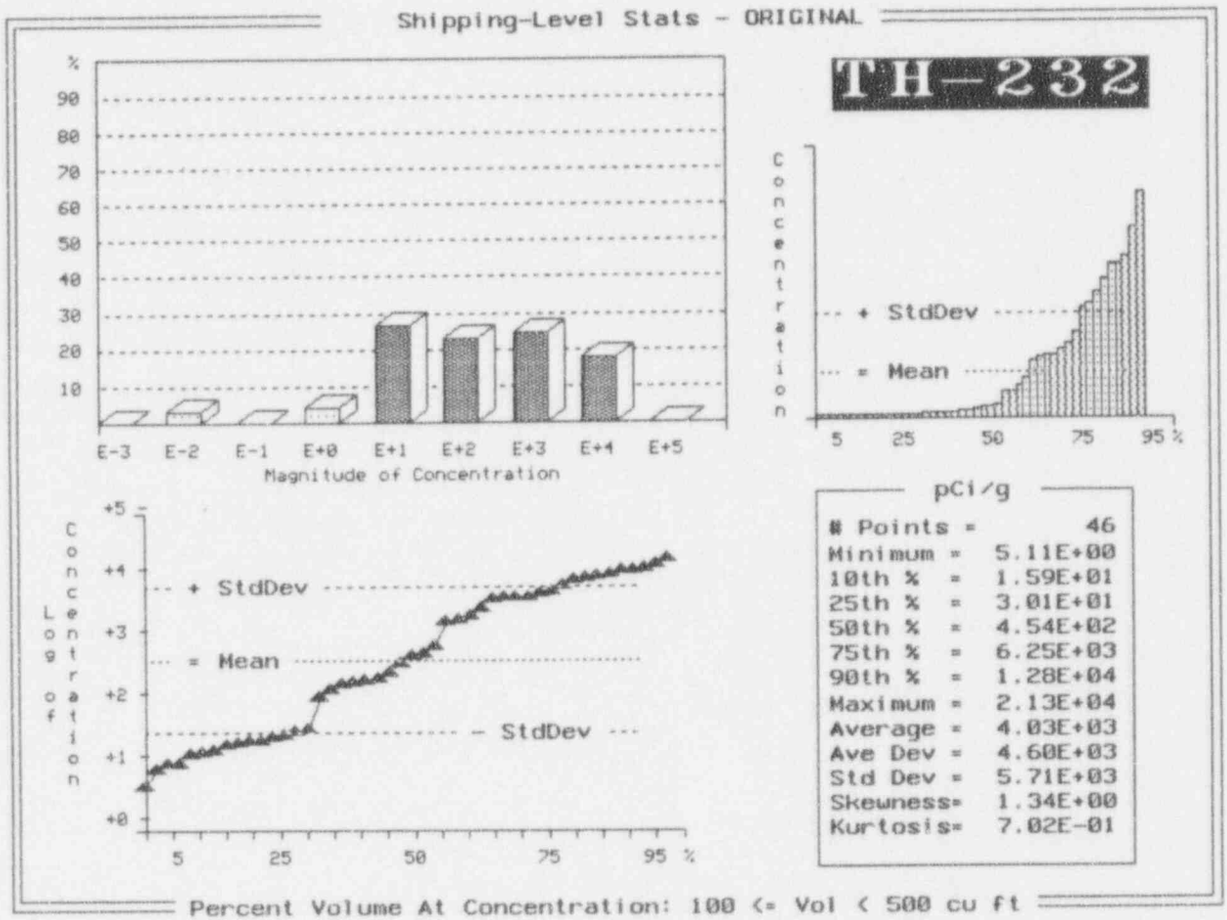


Exhibit F-12 (Continued)

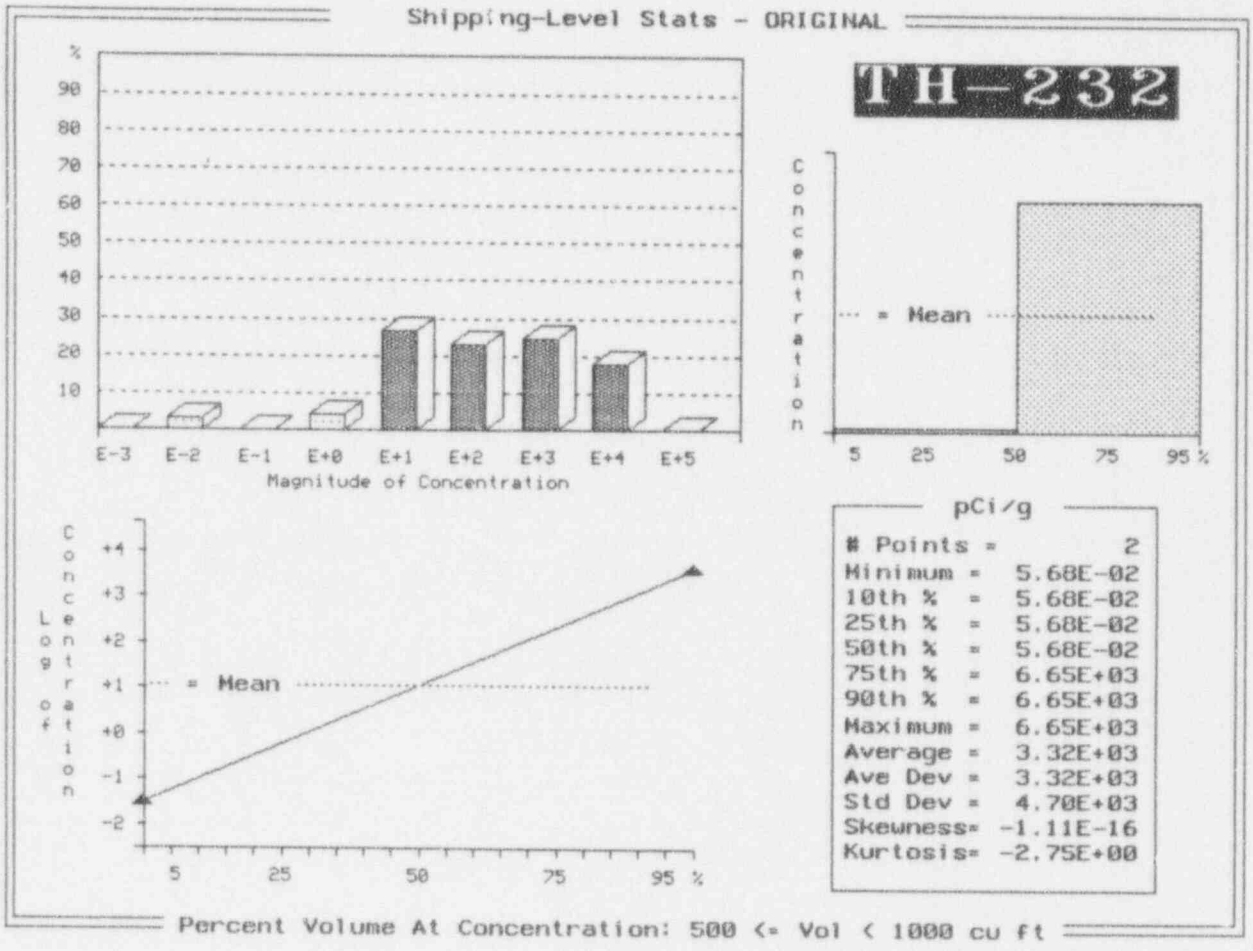


Exhibit F-12 (Continued)

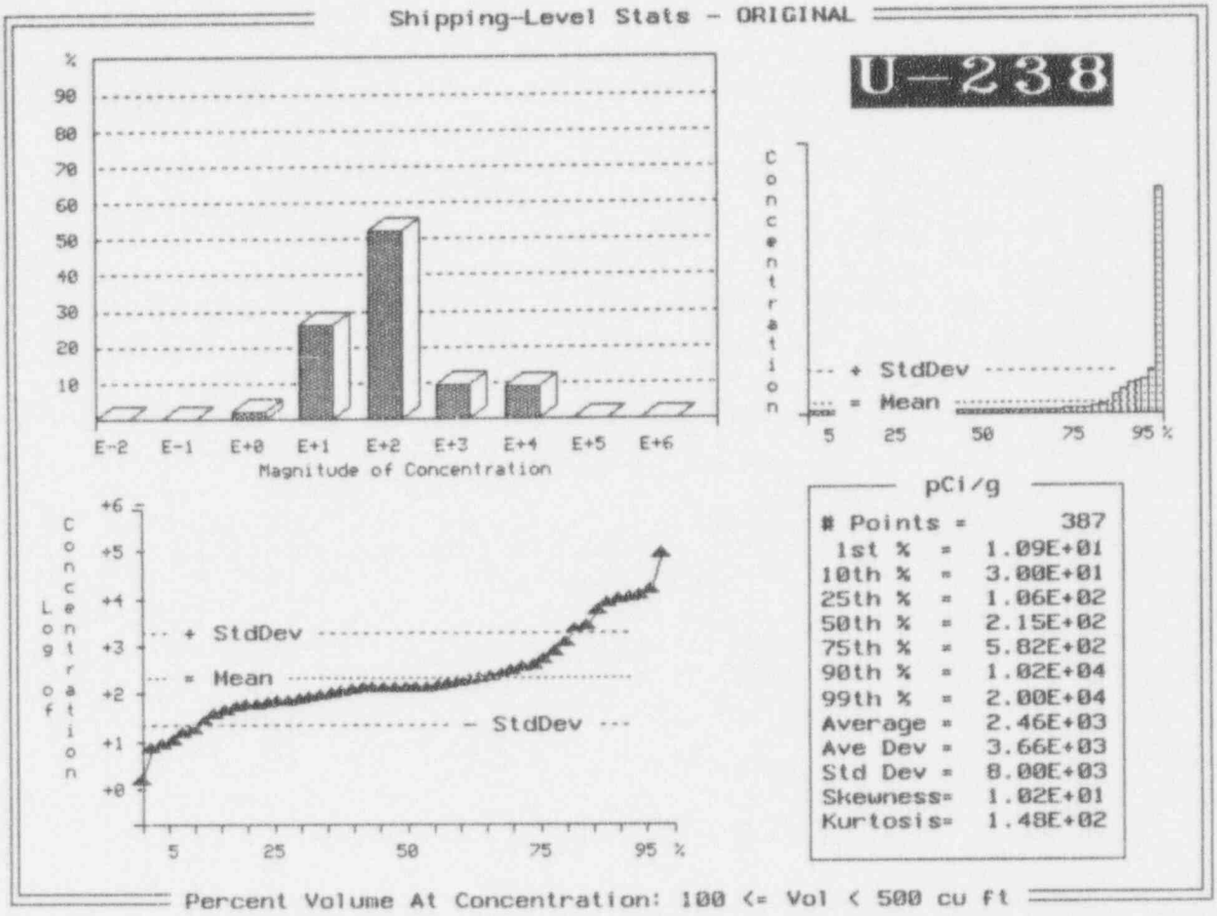


Exhibit F-12 (Continued)

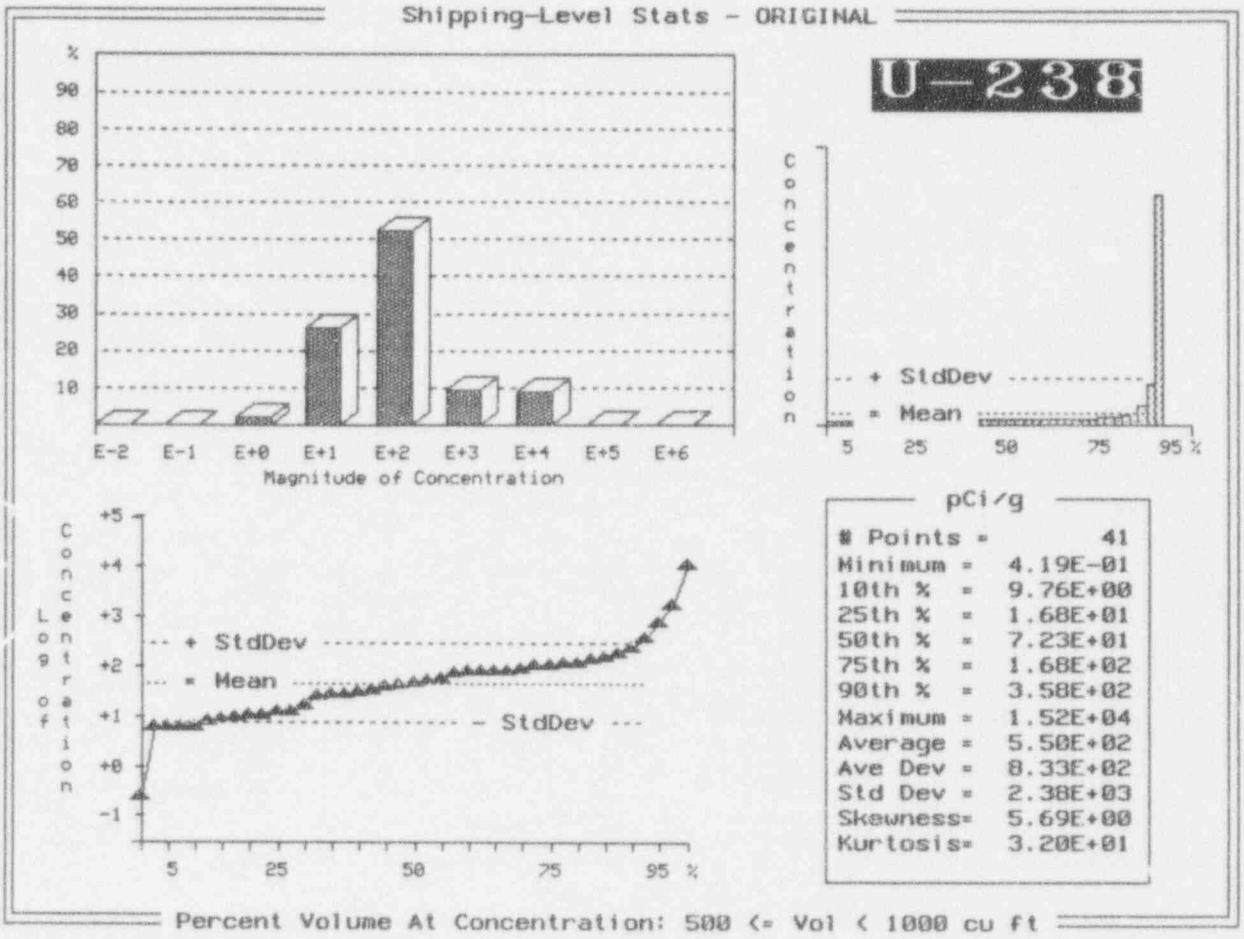


Exhibit F-12 (Continued)

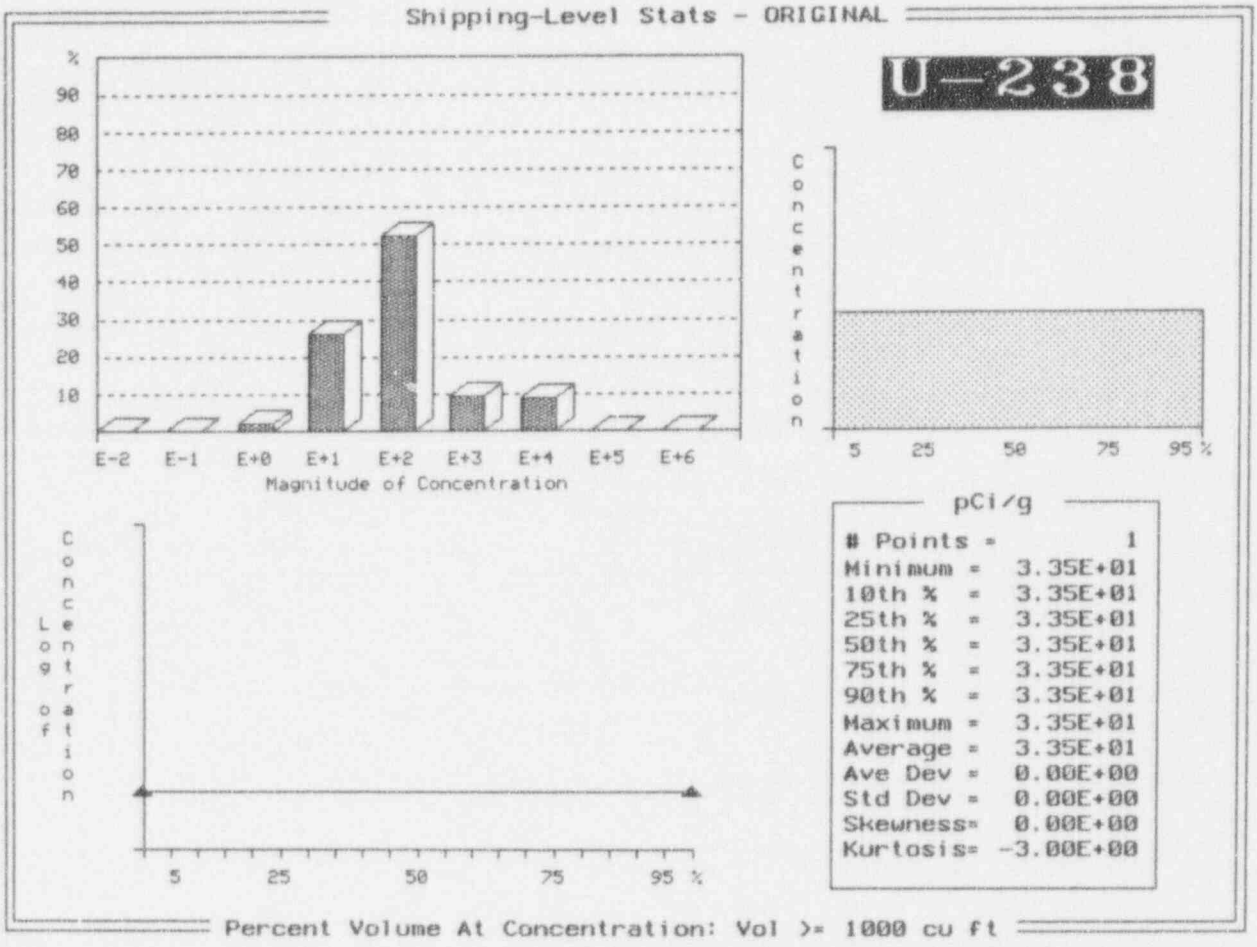


Exhibit F-13
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Midwest
Waste generator class:	Government
Total number of waste generators:	31
Total associated waste volume (m^3):	915
Total associated waste activity (Ci):	494
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	4
Percent of total(%):	13
Total number of shipping records:	4
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	30,490
Total waste volume (m^3):	43.5
Fractional waste volume (%): (this analysis/total)	4.8
Total waste activity (Ci):	4.7
Fractional waste activity (%): (this analysis/total)	0.9

Exhibit F-13 (Continued)

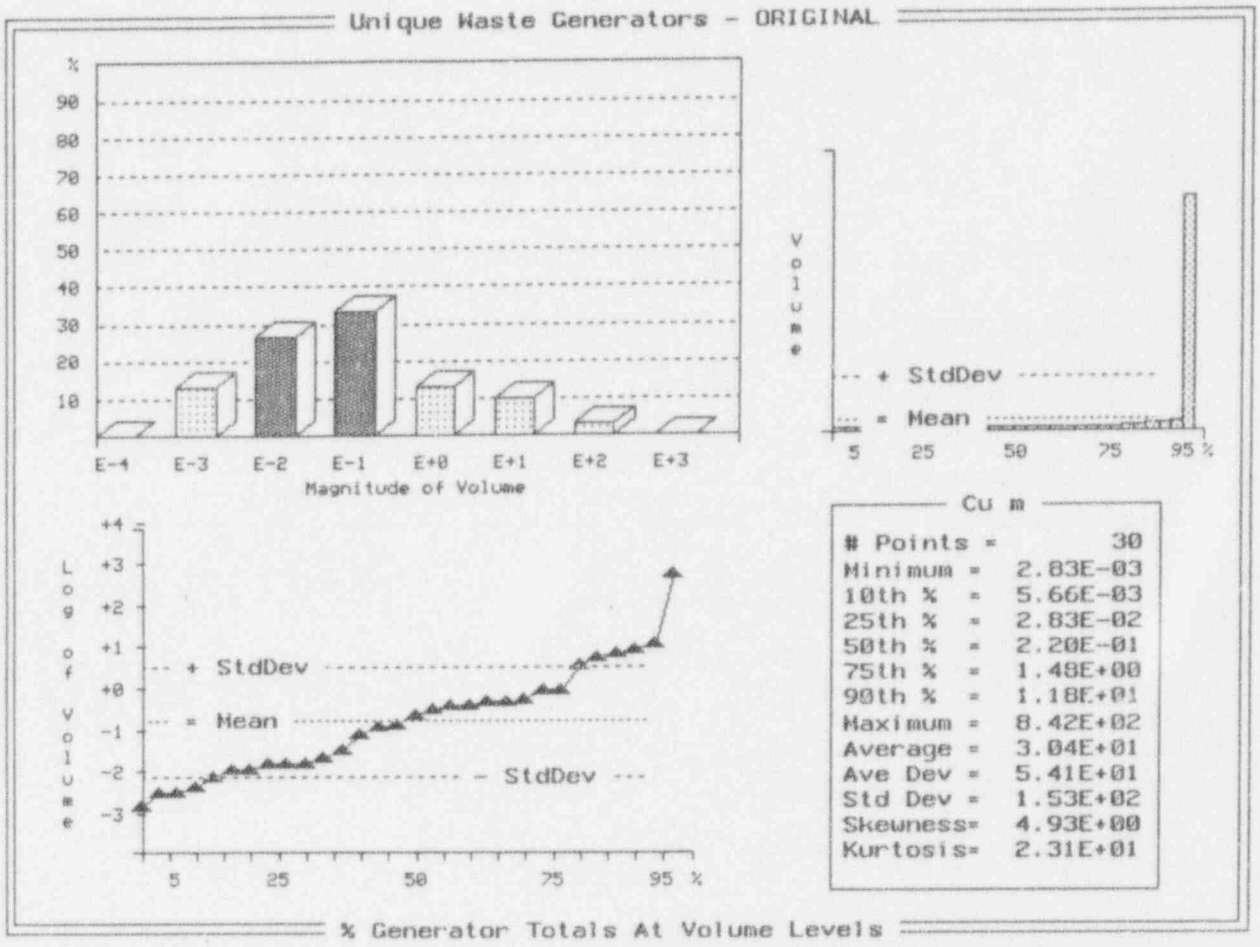


Exhibit F-13 (Continued)

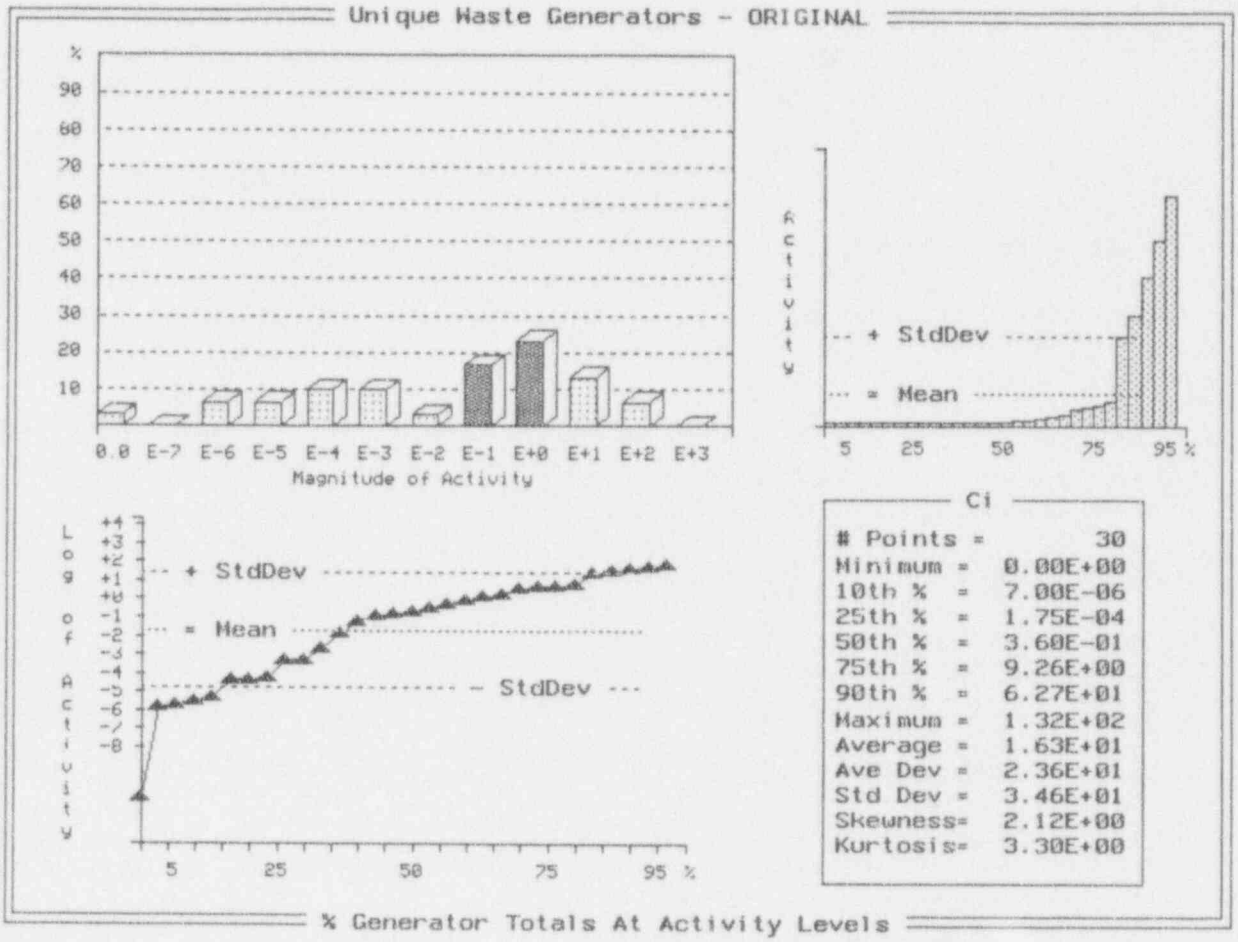


Exhibit F-14
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Midwest
Waste generator class:	Academic
Total number of waste generators:	65
Total associated waste volume (m^3):	927
Total associated waste activity (Ci):	296
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	8
Percent of total(%):	12
Total number of shipping records:	9
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	21,960
Total waste volume (m^3):	38.7
Fractional waste volume (%): (this analysis/total)	4.2
Total waste activity (Ci):	3.5
Fractional waste activity (%): (this analysis/total)	1.2

Exhibit F-14 (Continued)

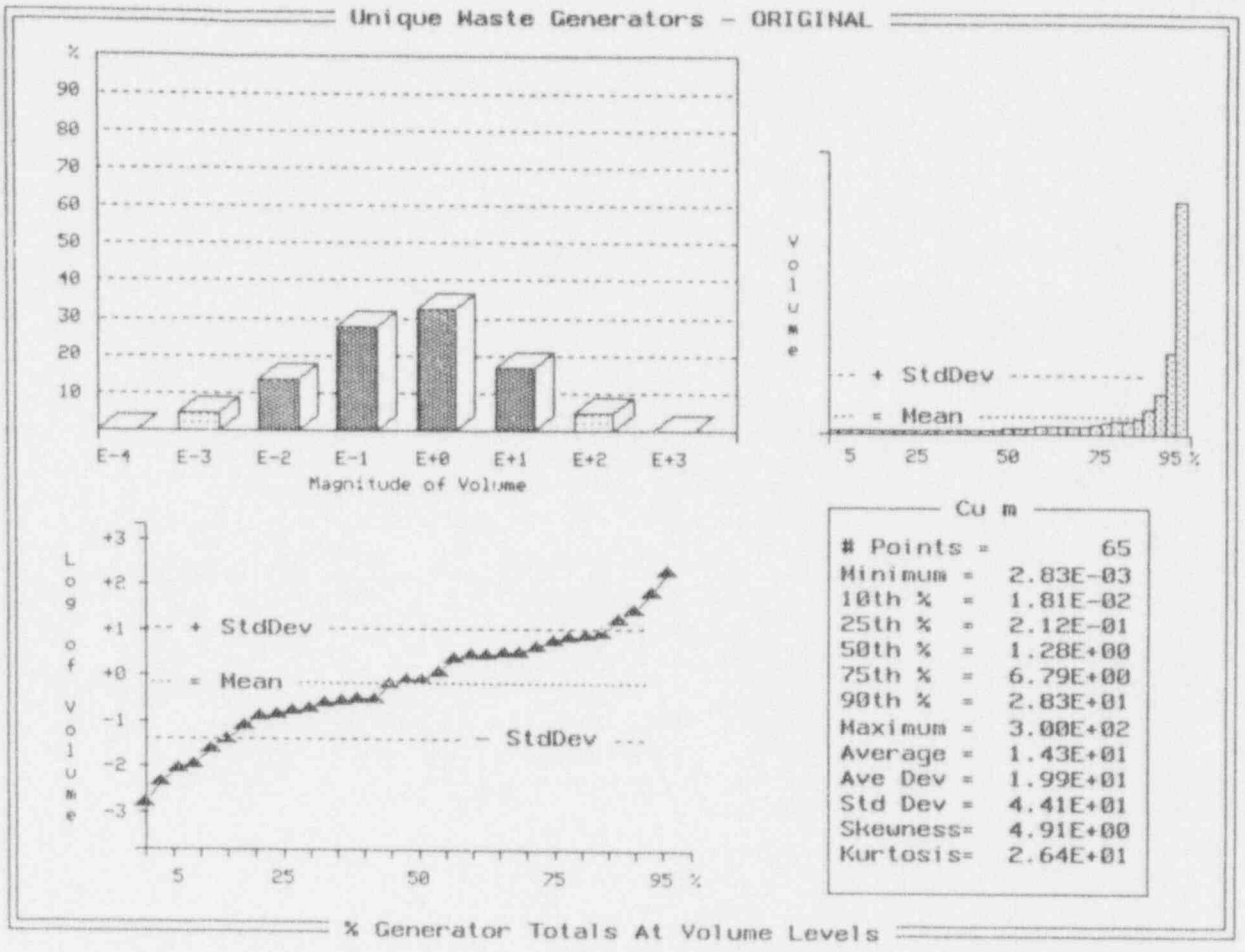


Exhibit F-14 (Continued)

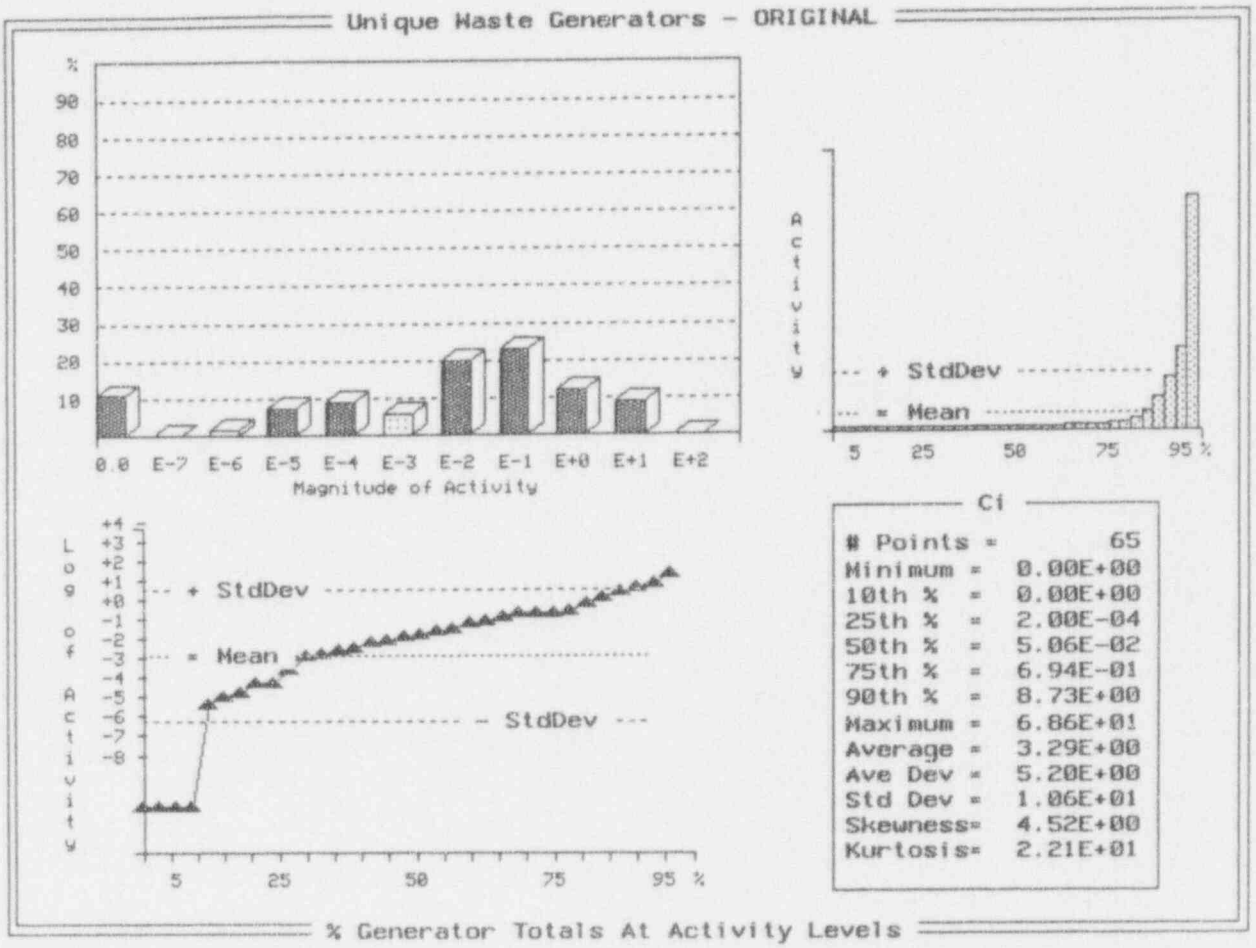


Exhibit F-15
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Midwest
Waste generator class:	Medical
Total number of waste generators:	91
Total associated waste volume (m^3):	438
Total associated waste activity (Ci):	76.9
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	5
Percent of total(%):	5
Total number of shipping records:	11
Number of shipping records with container data:	1
Number of waste containers:	109
Weight of shipments (kg):	122,000
Total waste volume (m^3):	157.4
Fractional waste volume (%): (this analysis/total)	36
Total waste activity (Ci):	13.2
Fractional waste activity (%): (this analysis/total)	17

Exhibit F-15 (Continued)

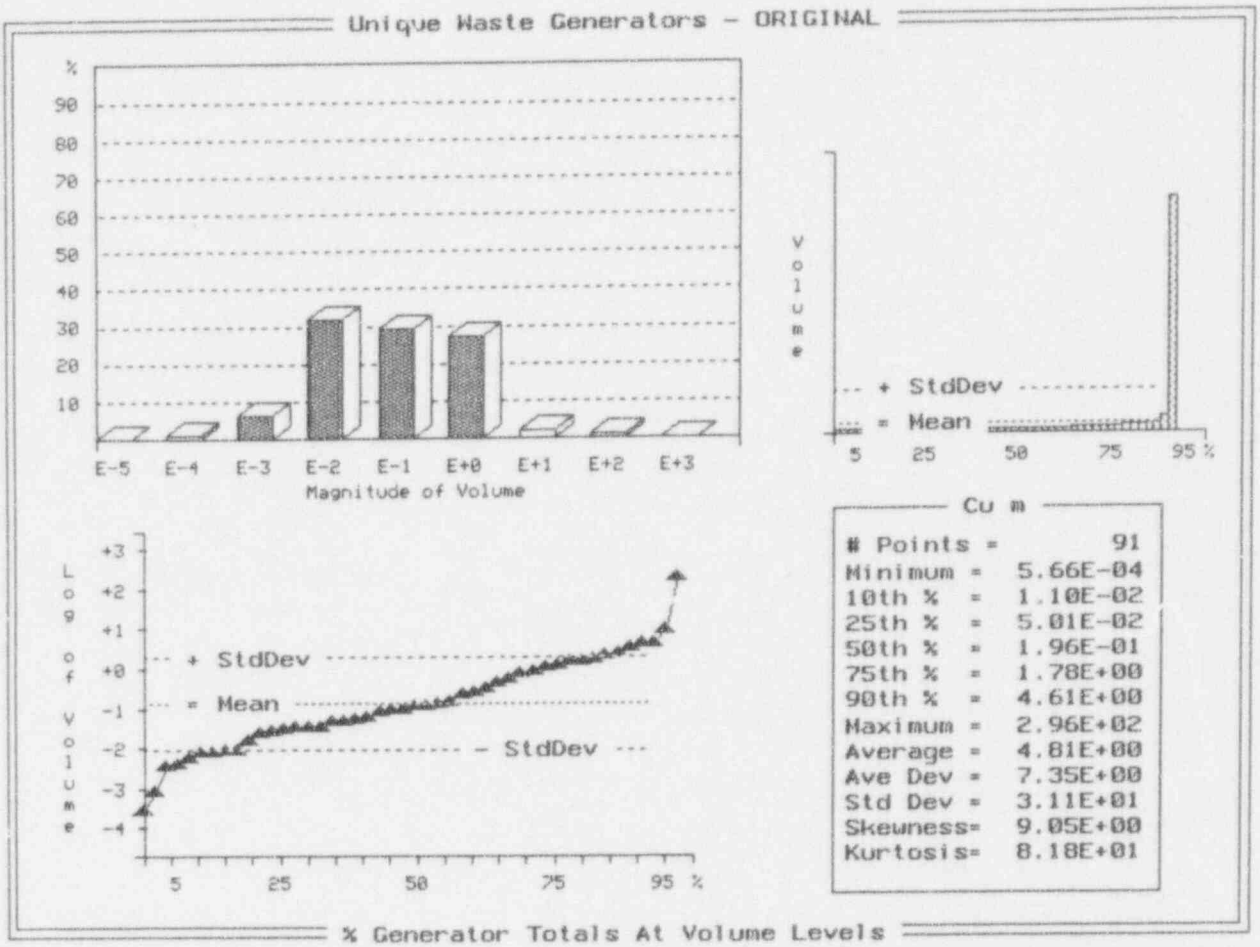


Exhibit F-15 (Continued)

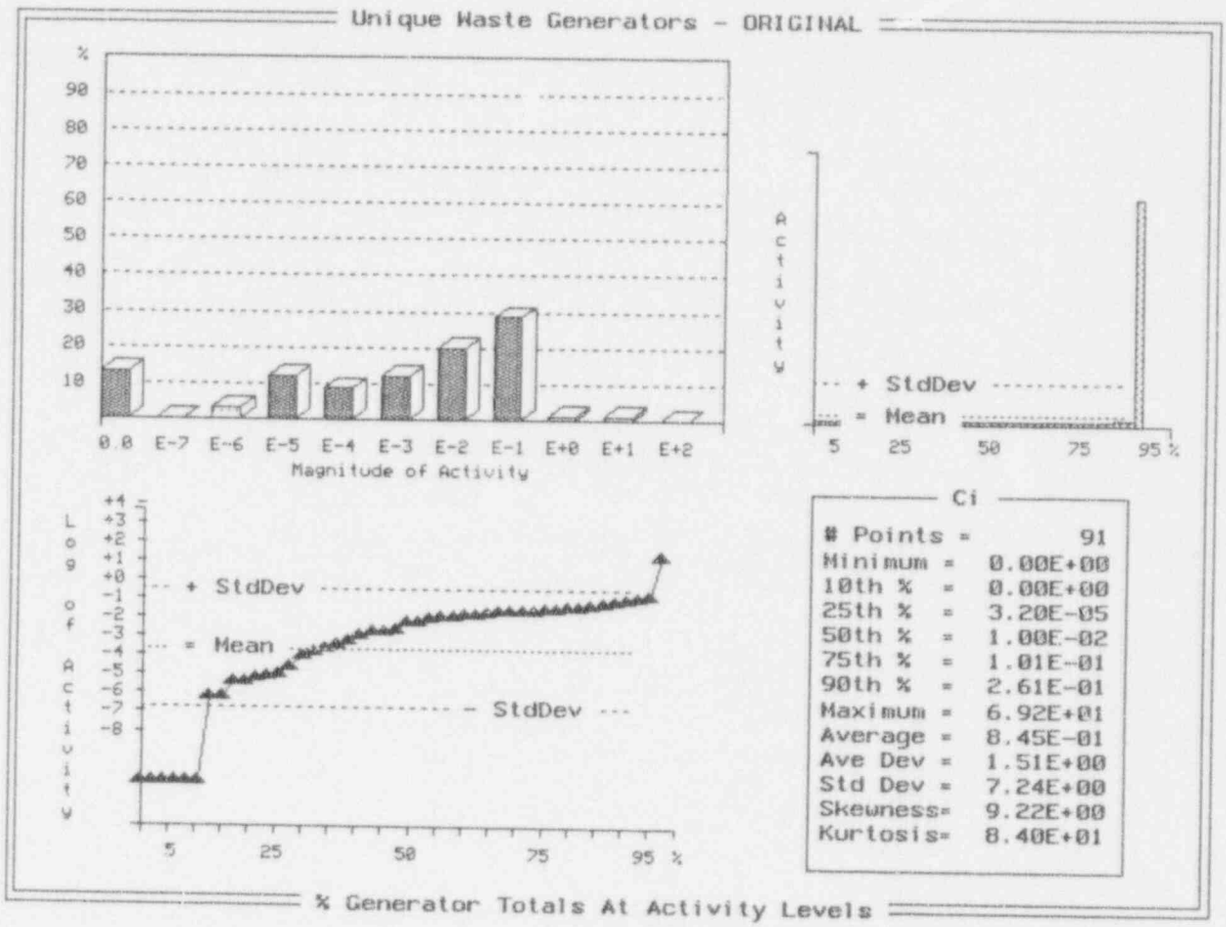


Exhibit F-16
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Midwest
Waste generator class:	Industrial
Total number of waste generators:	242
Total associated waste volume (m^3):	4,484
Total associated waste activity (Ci):	5,586
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	45
Percent of total(%):	19
Total number of shipping records:	284
Number of shipping records with container data:	63
Number of waste containers:	1,435
Weight of shipments (kg):	1,133,000
Total waste volume (m^3):	3,588
Fractional waste volume (%): (this analysis/total)	80
Total waste activity (Ci):	373
Fractional waste activity (%): (this analysis/total)	7

Exhibit F-16 (Continued)

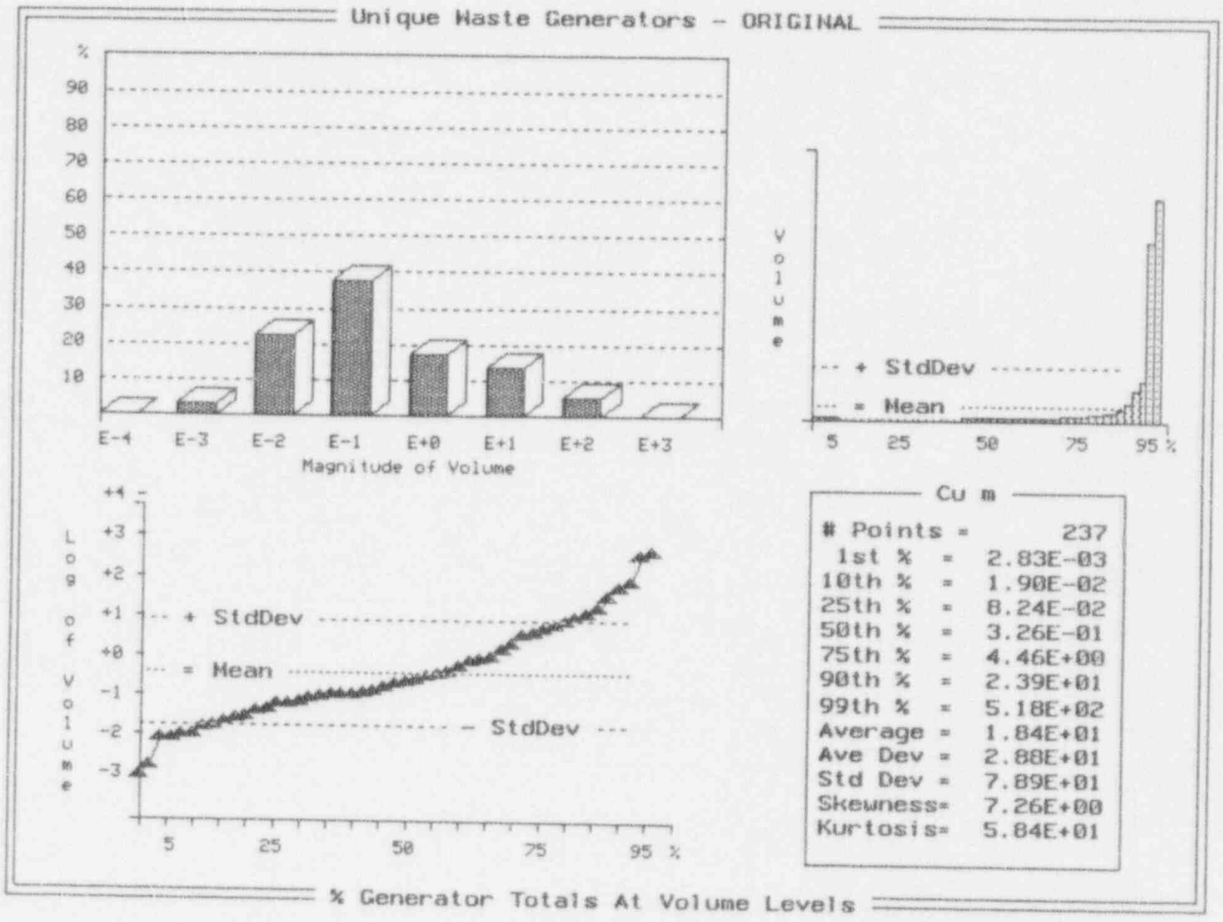
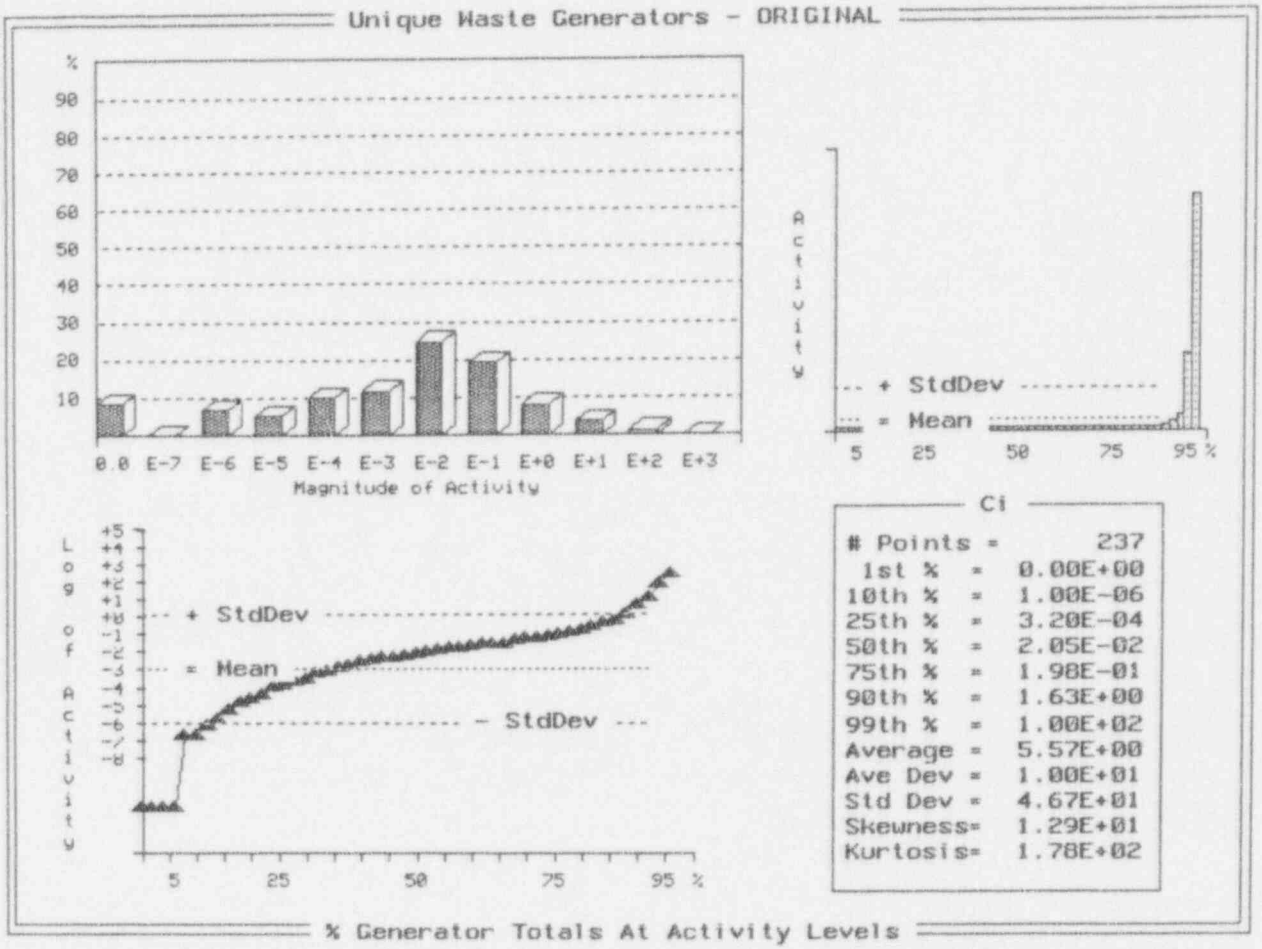


Exhibit F-16 (Continued)



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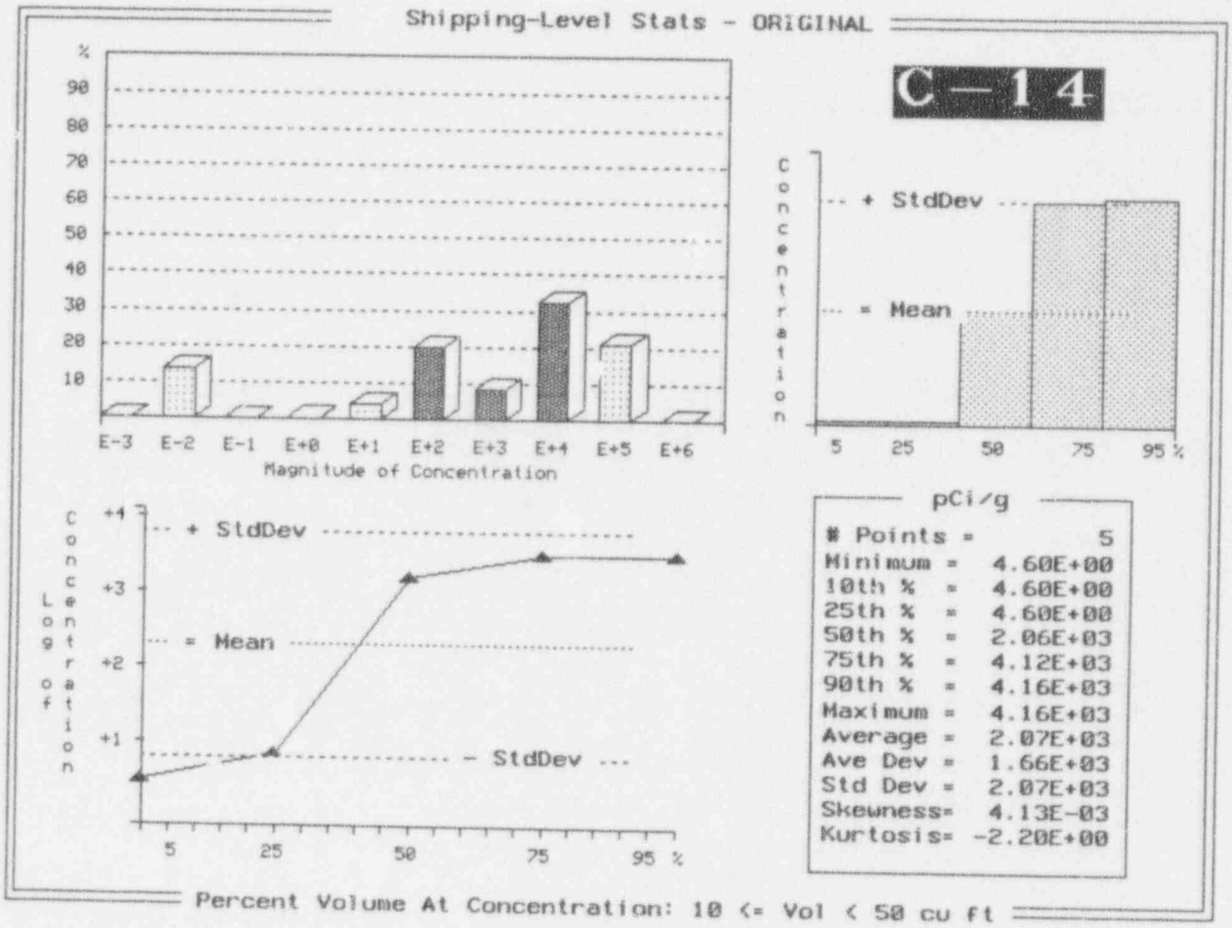


Exhibit F-16 (Continued)

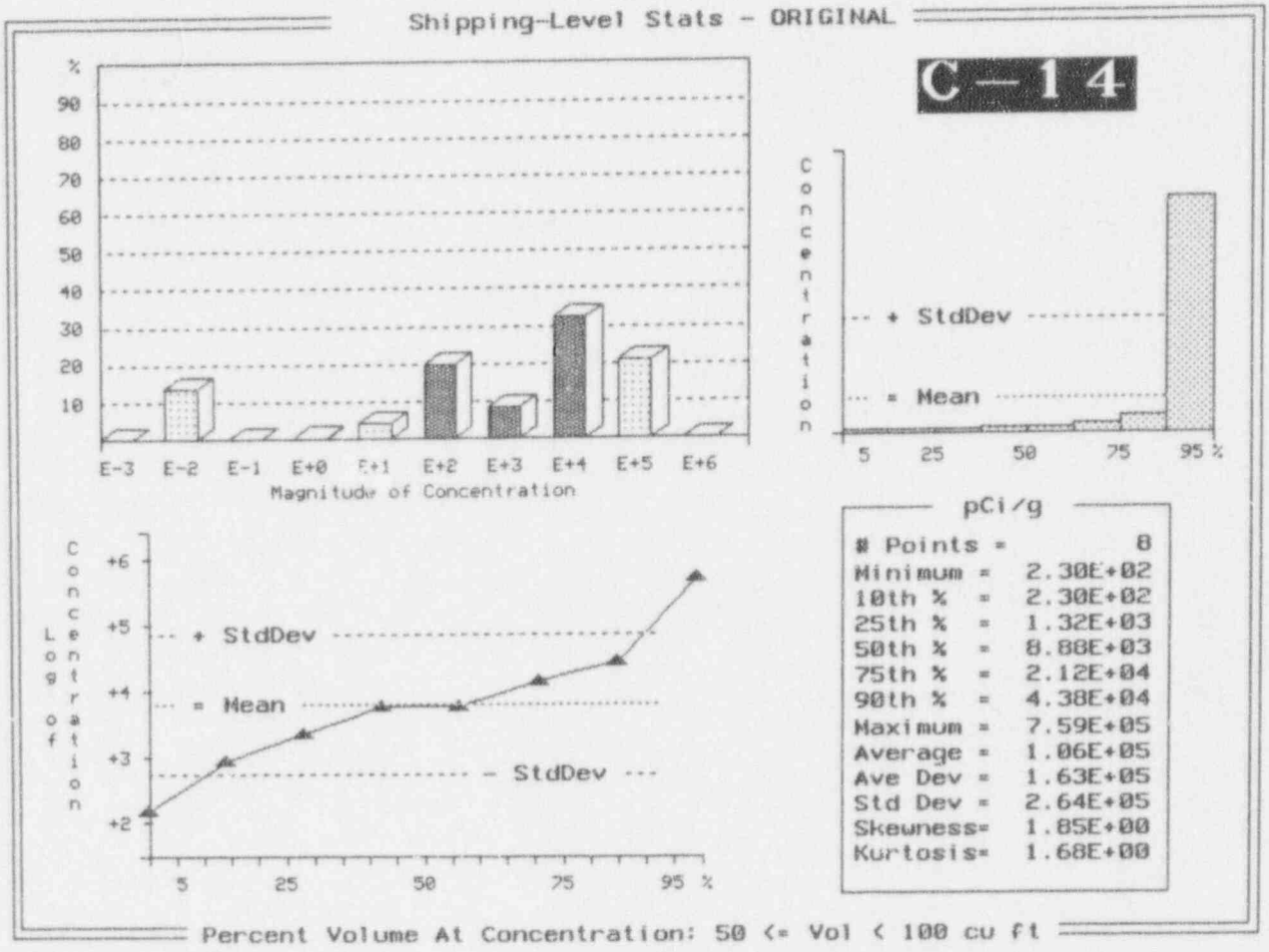
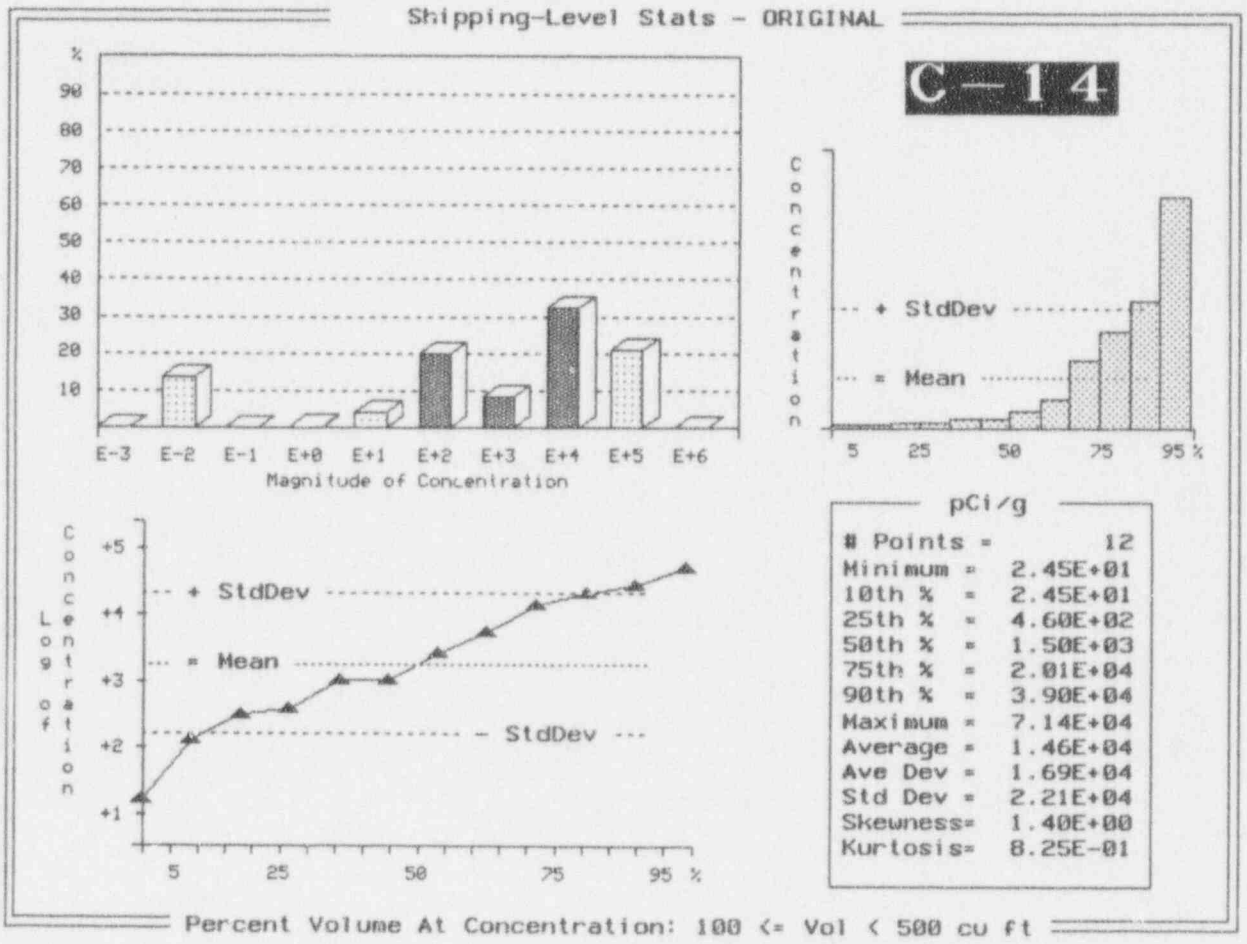


Exhibit F-16 (Continued)



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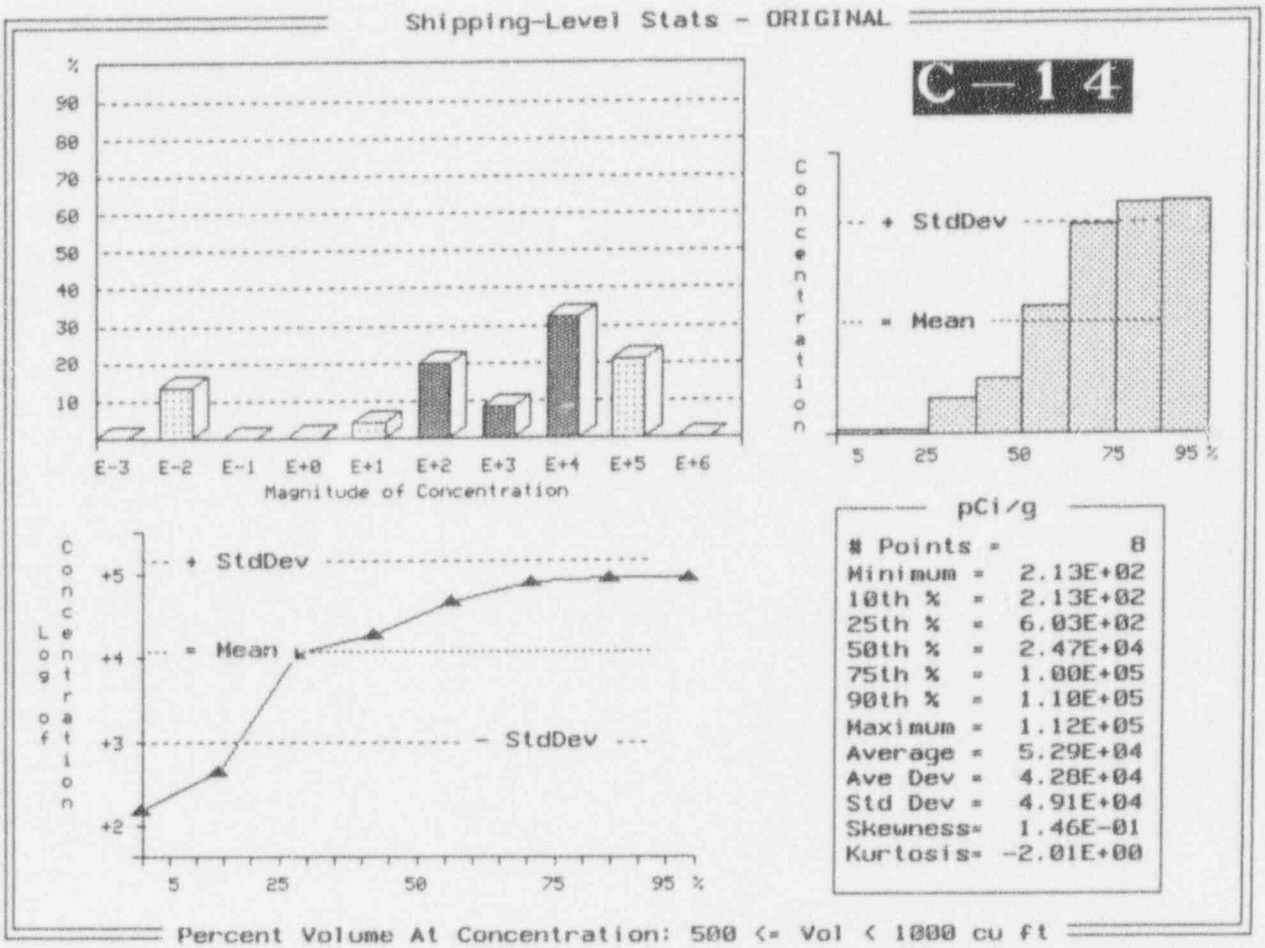


Exhibit F-16 (Continued)

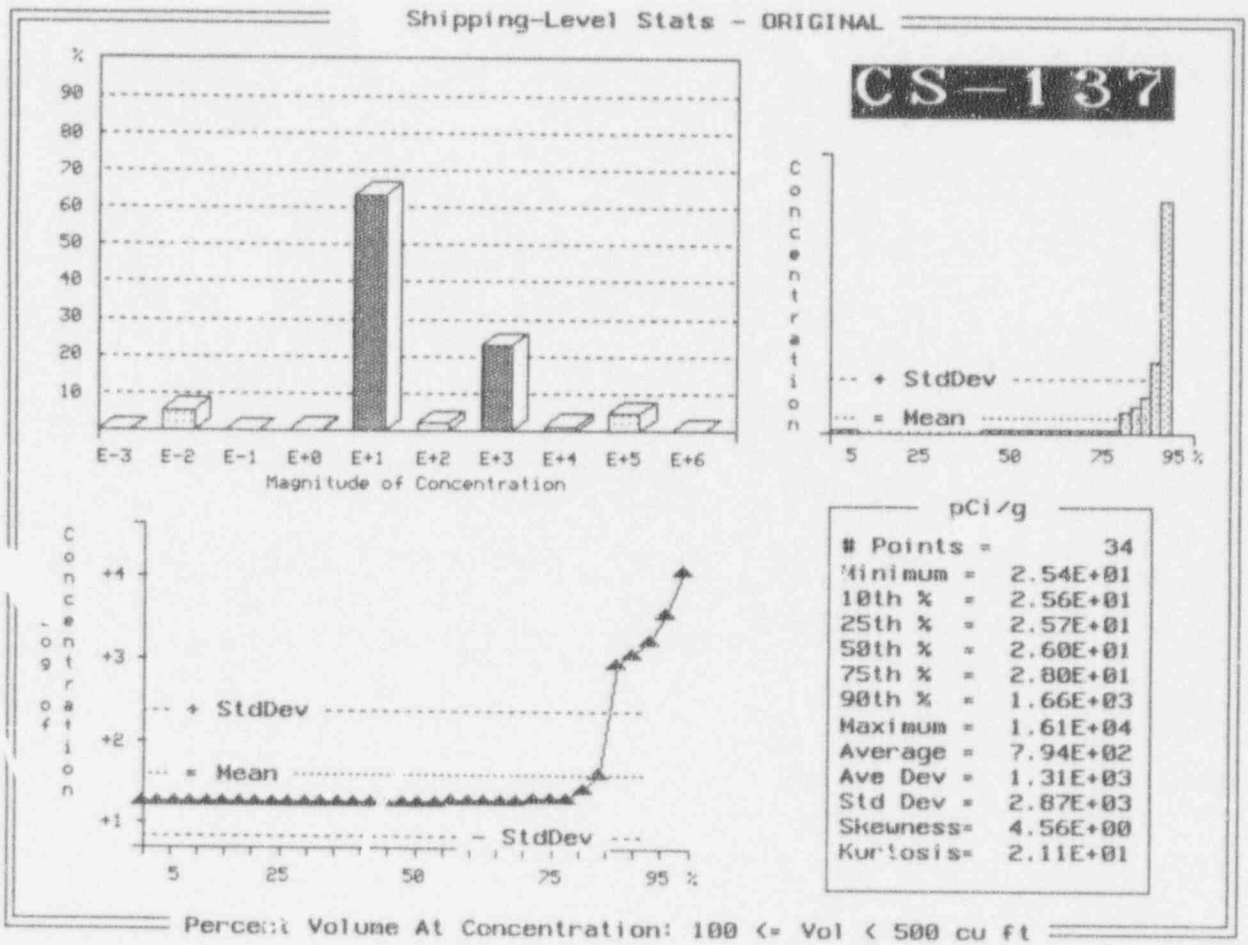


Exhibit F-16 (Continued)

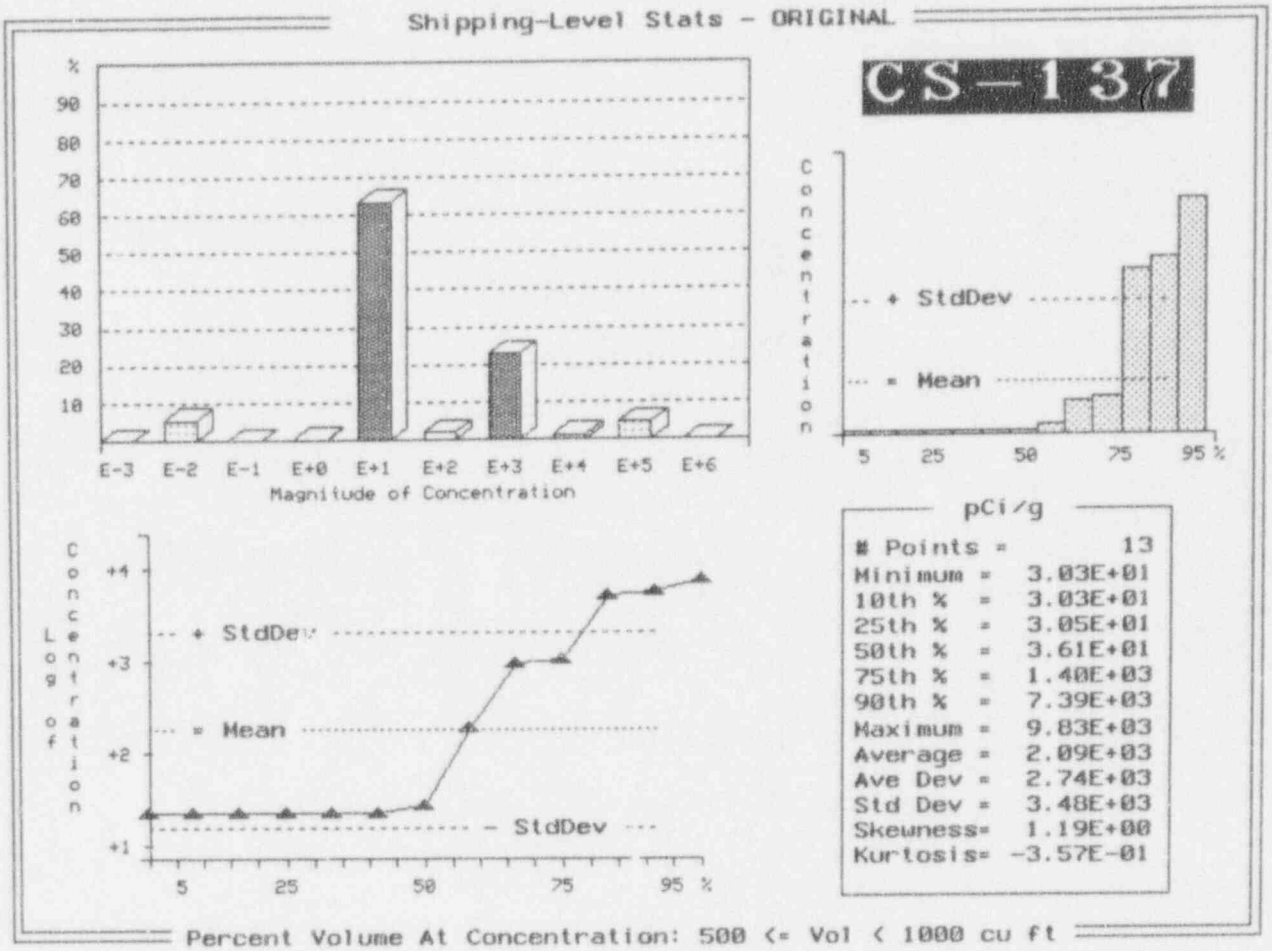
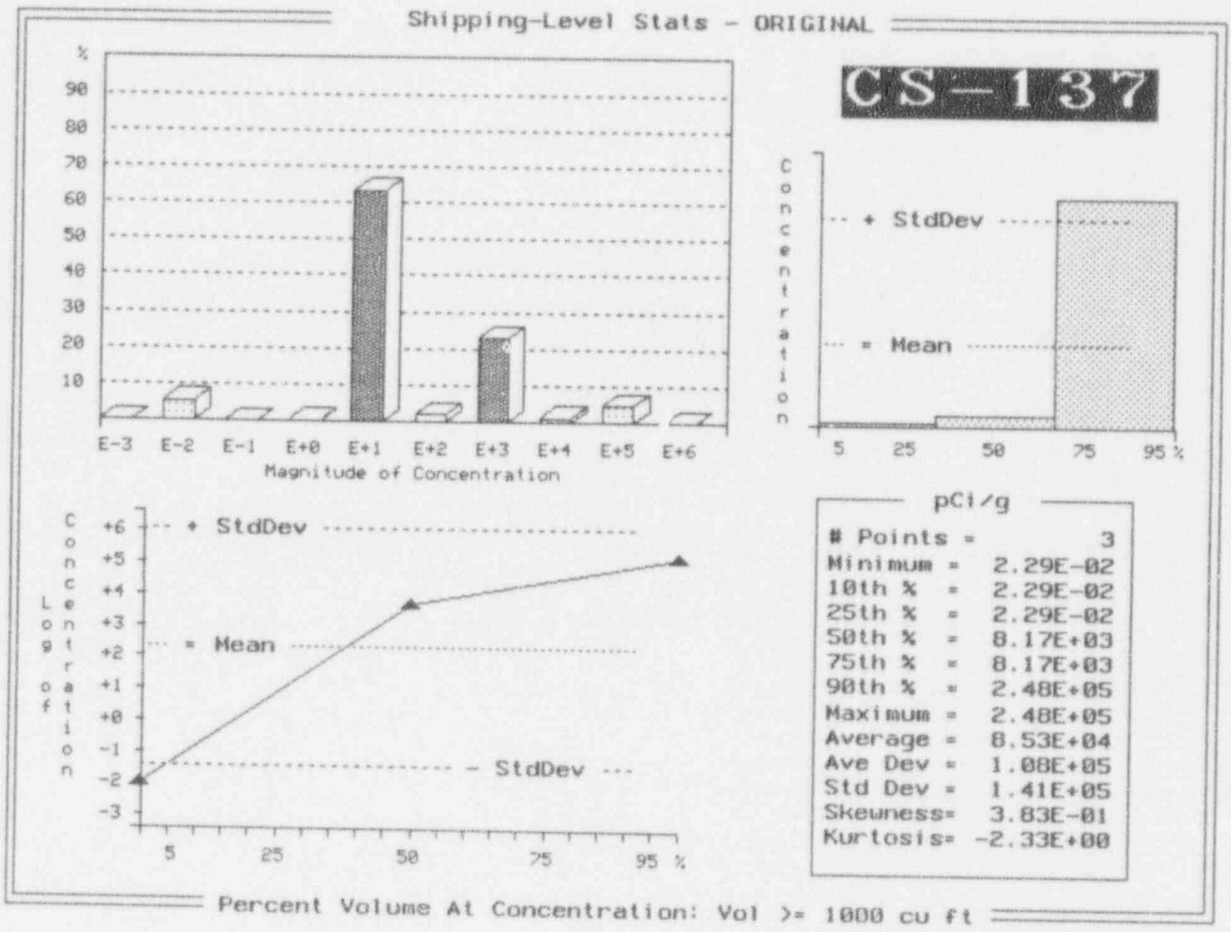


Exhibit F-16 (Continued)



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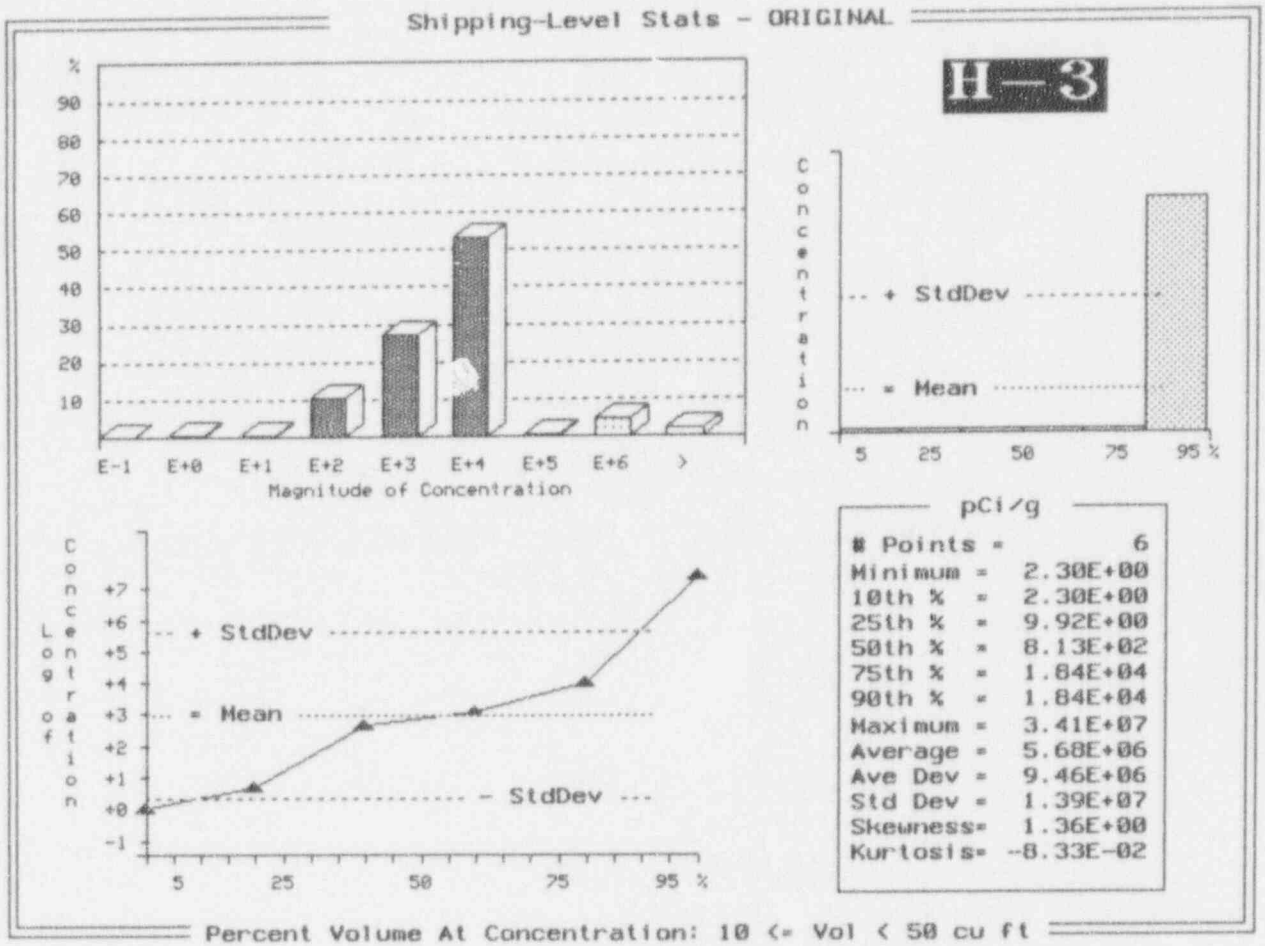
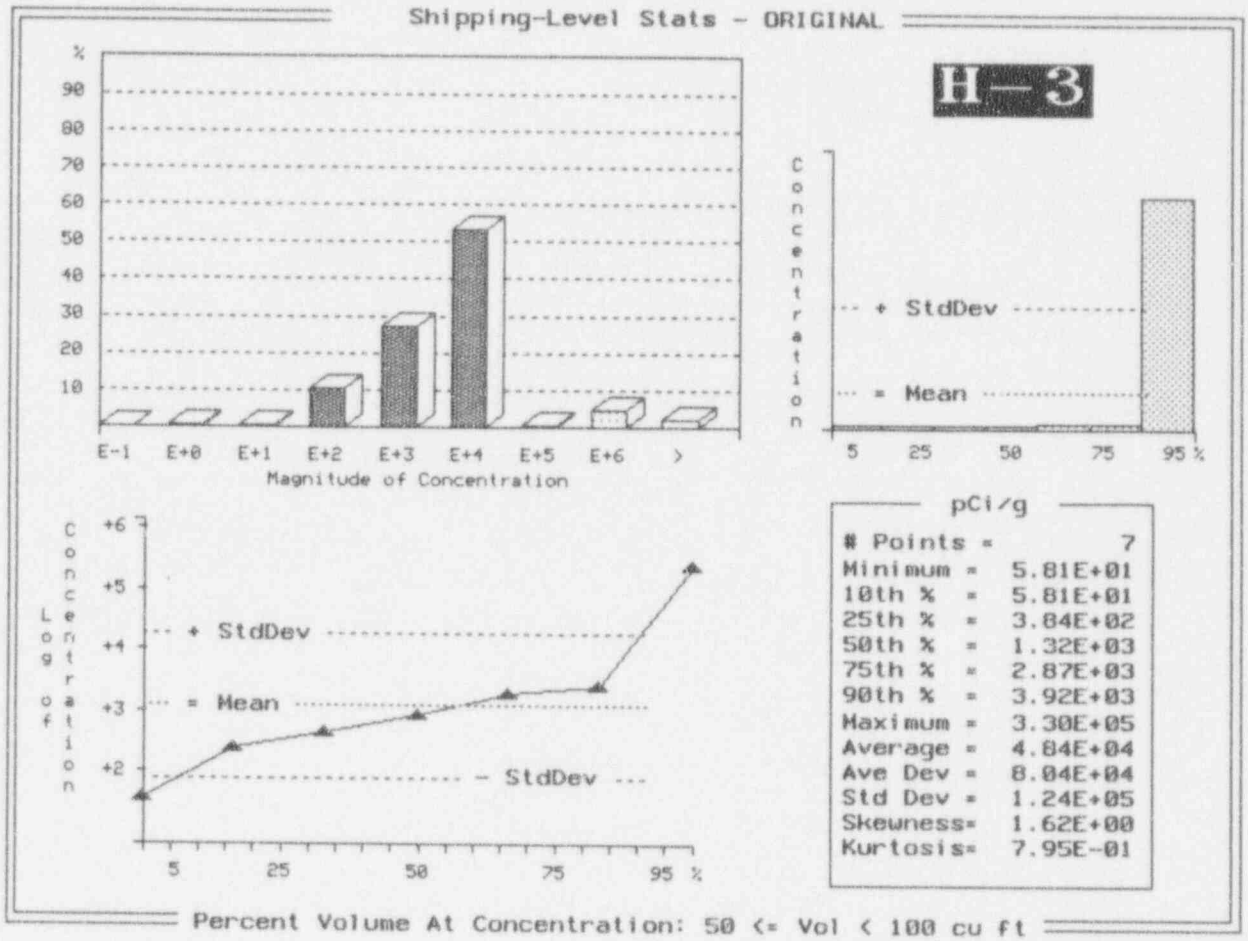


Exhibit F-16 (Continued)



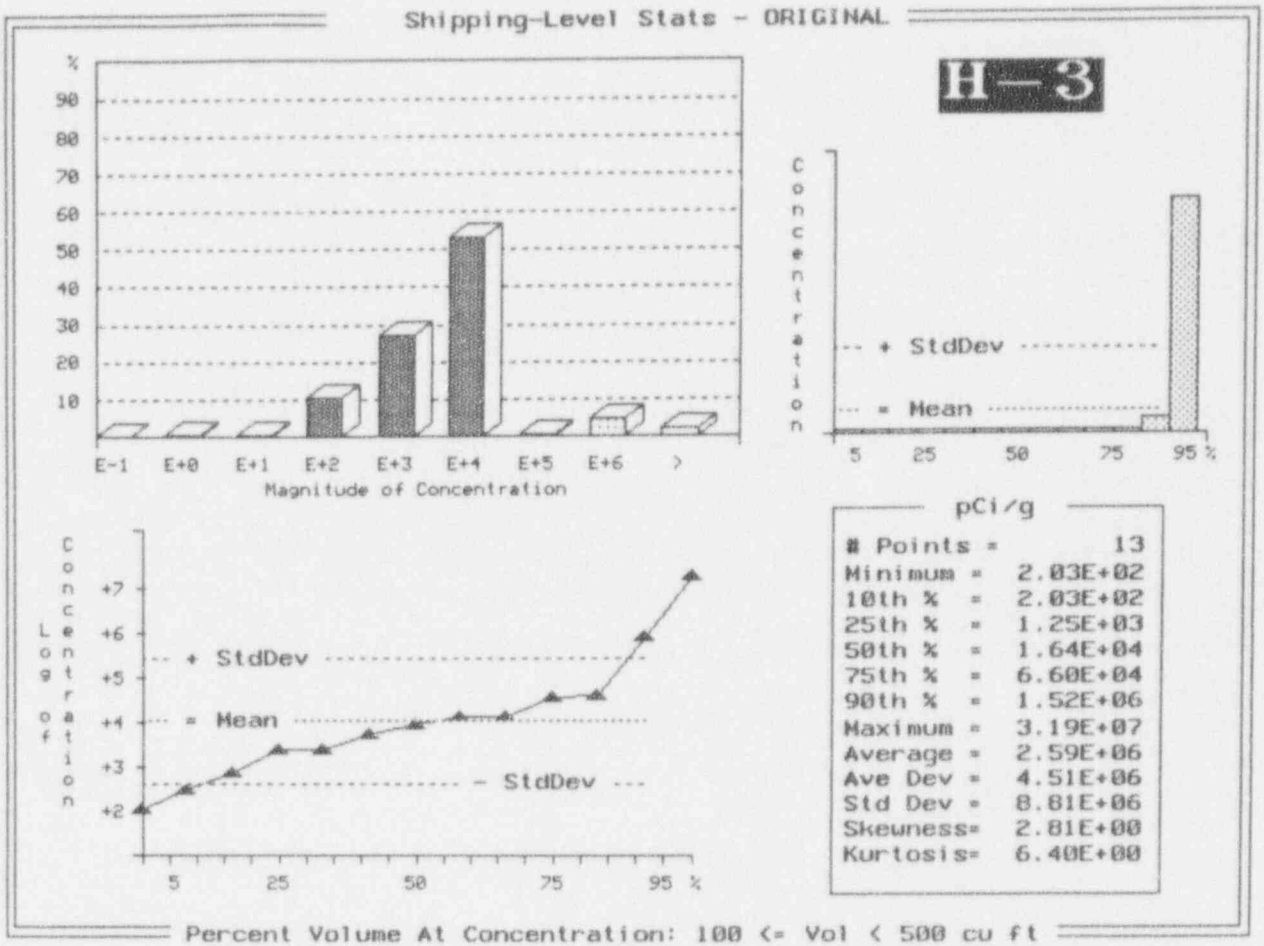

Shipping-Level Stats - ORIGINAL
H-3
%
90
80
70
60
50
40
30
20
10
E-1 E+0 E+1 E+2 E+3 E+4 E+5 E+6 >
Magnitude of Concentration
Concentration
+ StdDev
= Mean
5 25 50 75 95 %
Log of Concentration
+7
+6
+5
+4
+3
+2
+ StdDev
= Mean
- StdDev
5 25 50 75 95 %
pCi/g
# Points = 13
Minimum = 2.03E+02
10th % = 2.03E+02
25th % = 1.25E+03
50th % = 1.64E+04
75th % = 6.60E+04
90th % = 1.52E+06
Maximum = 3.19E+07
Average = 2.59E+06
Ave Dev = 4.51E+06
Std Dev = 8.81E+06
Skewness= 2.81E+00
Kurtosis= 6.40E+00
Percent Volume At Concentration: 100 <= Vol < 500 cu ft

Exhibit F-16 (Continued)

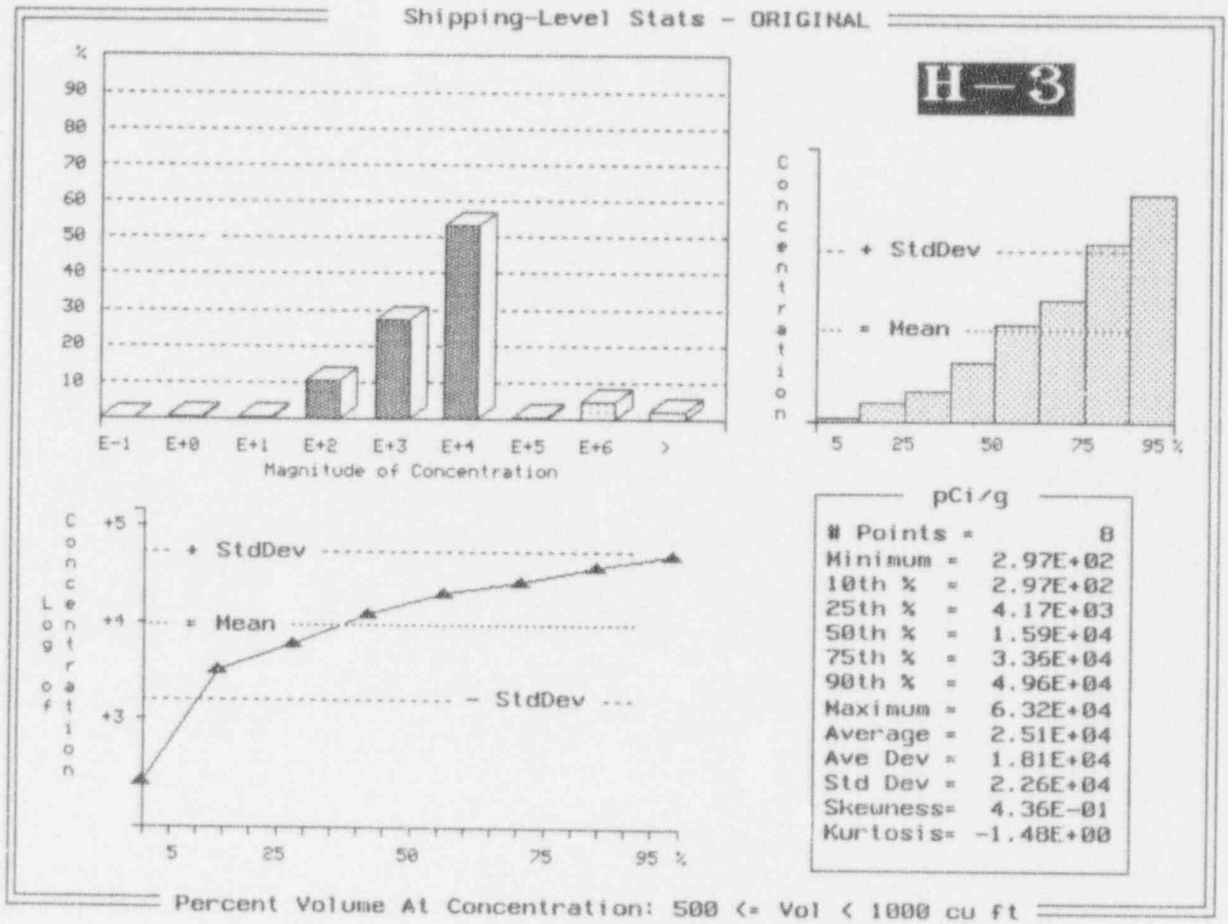


Exhibit F-16 (continued)

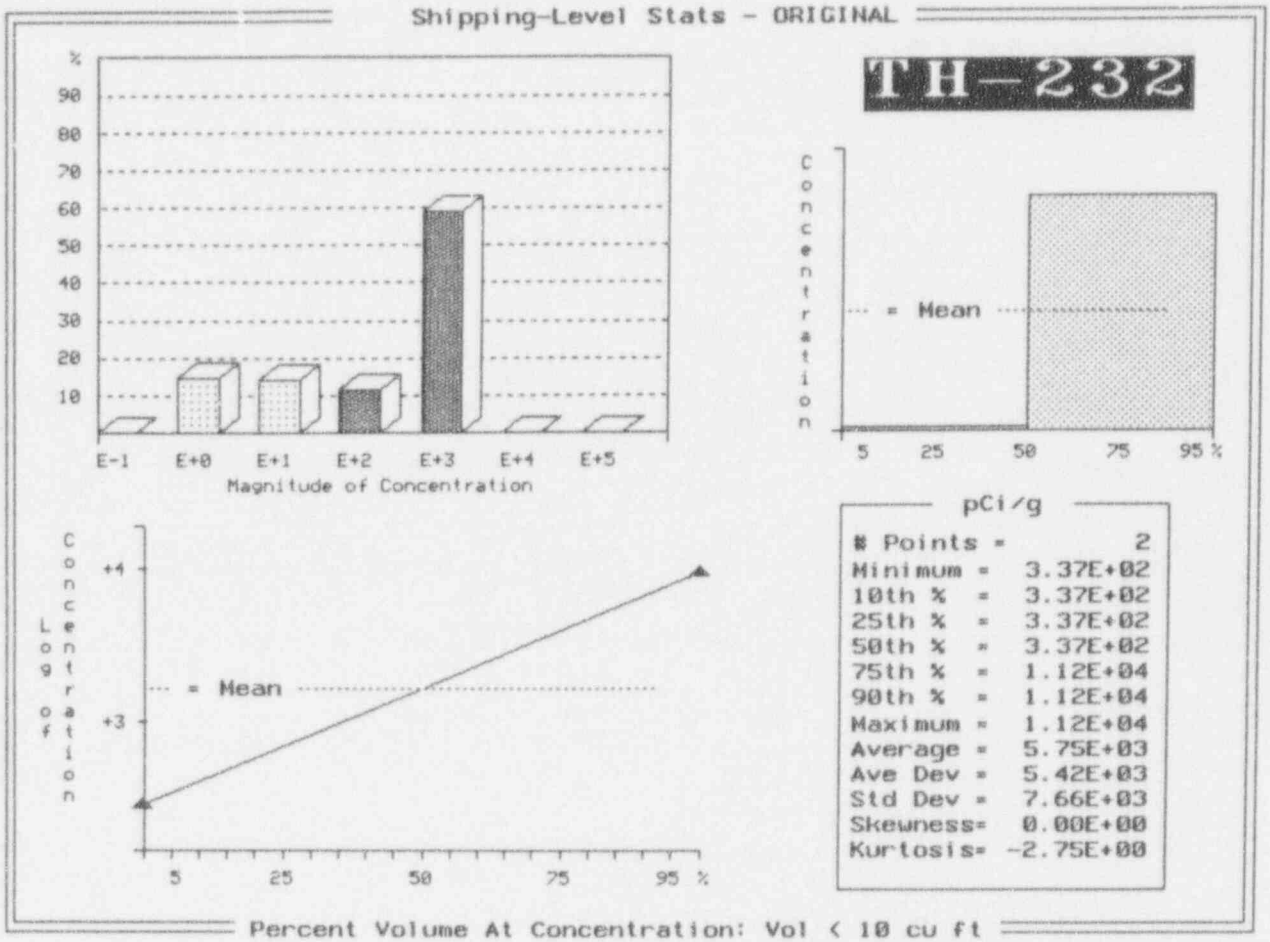


Exhibit F-16 (Continued)

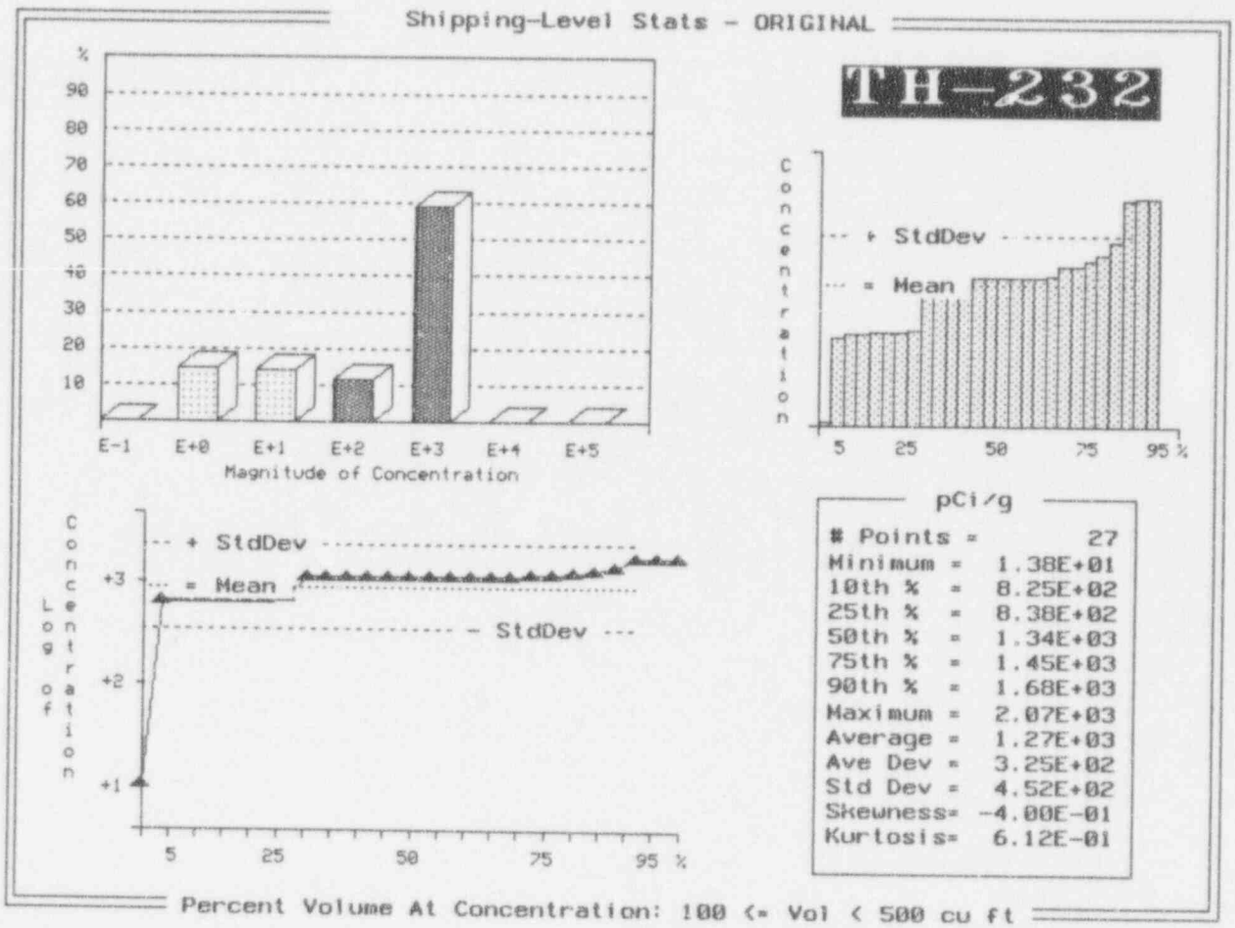


Exhibit F-16 (Continued)

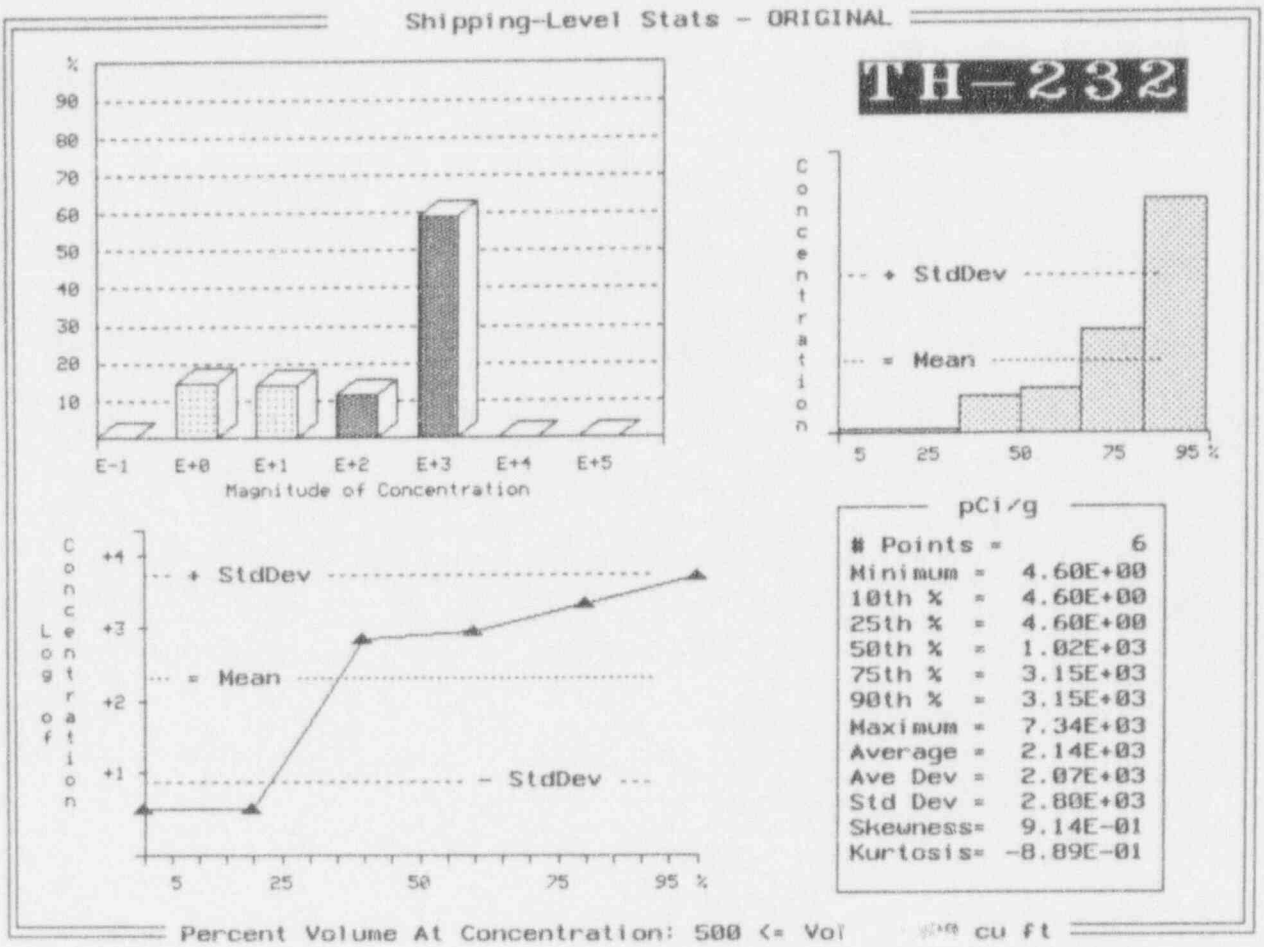


Exhibit F-16 (Continued)

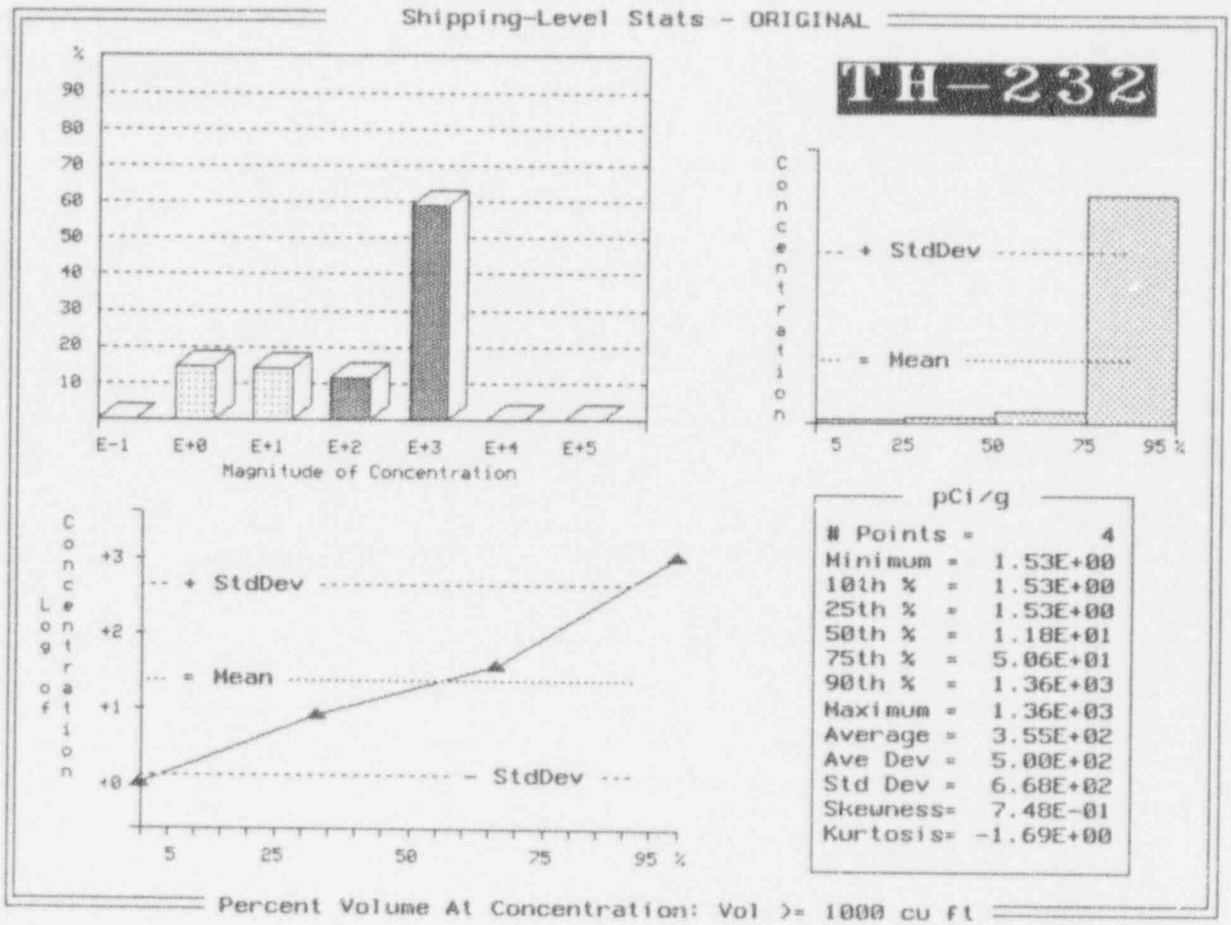
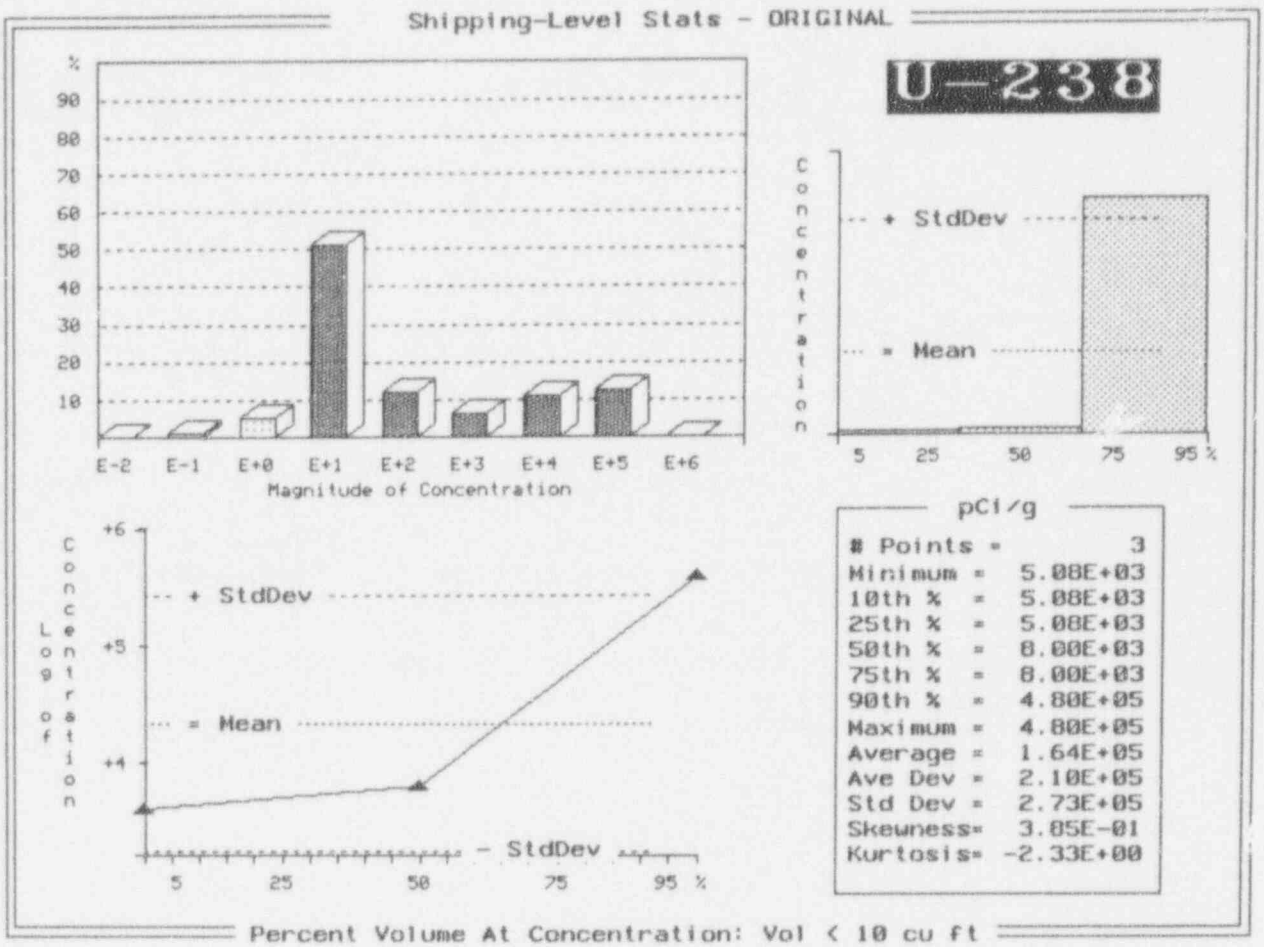


Exhibit F-16 (Continued)



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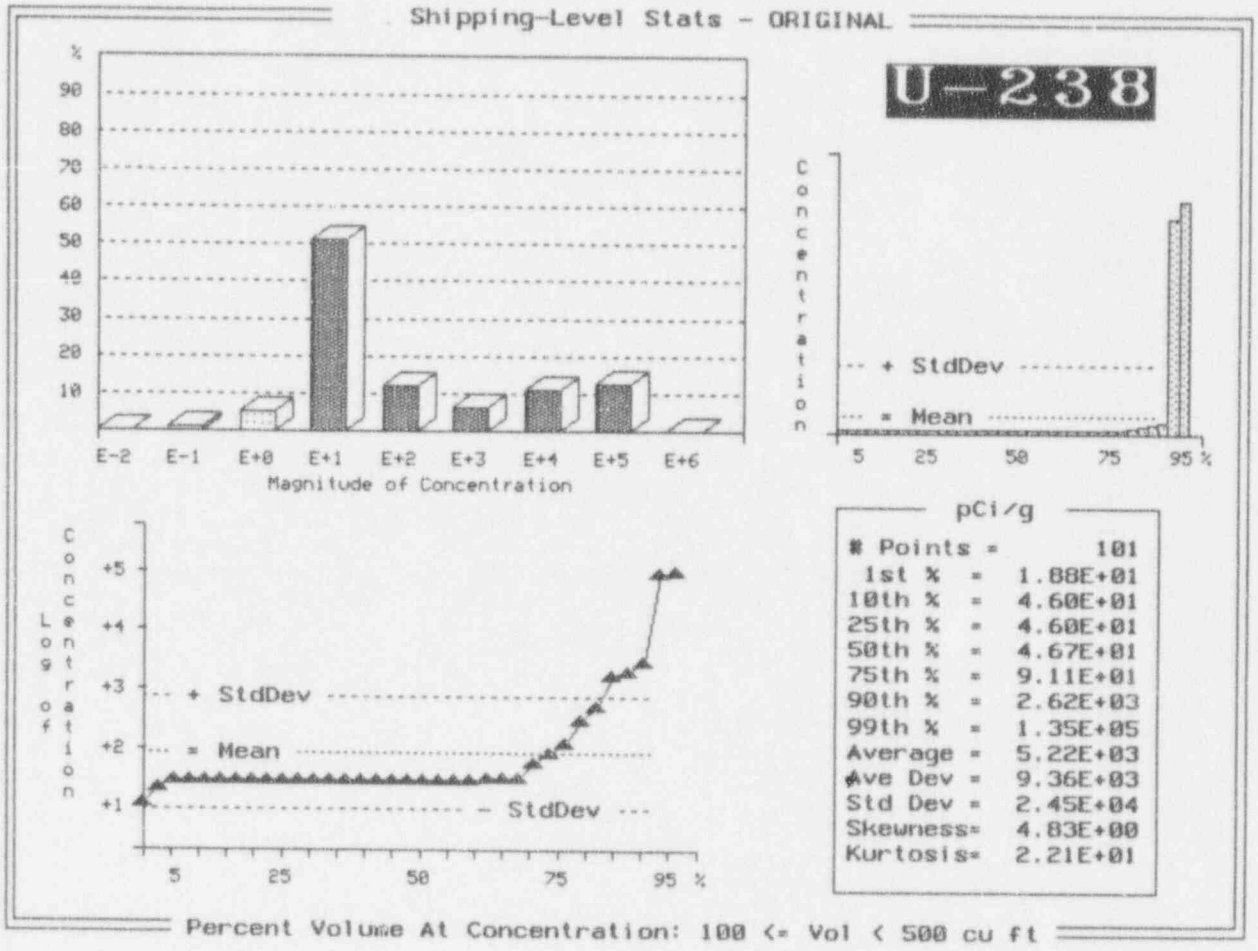


Exhibit F-16 (Continued)

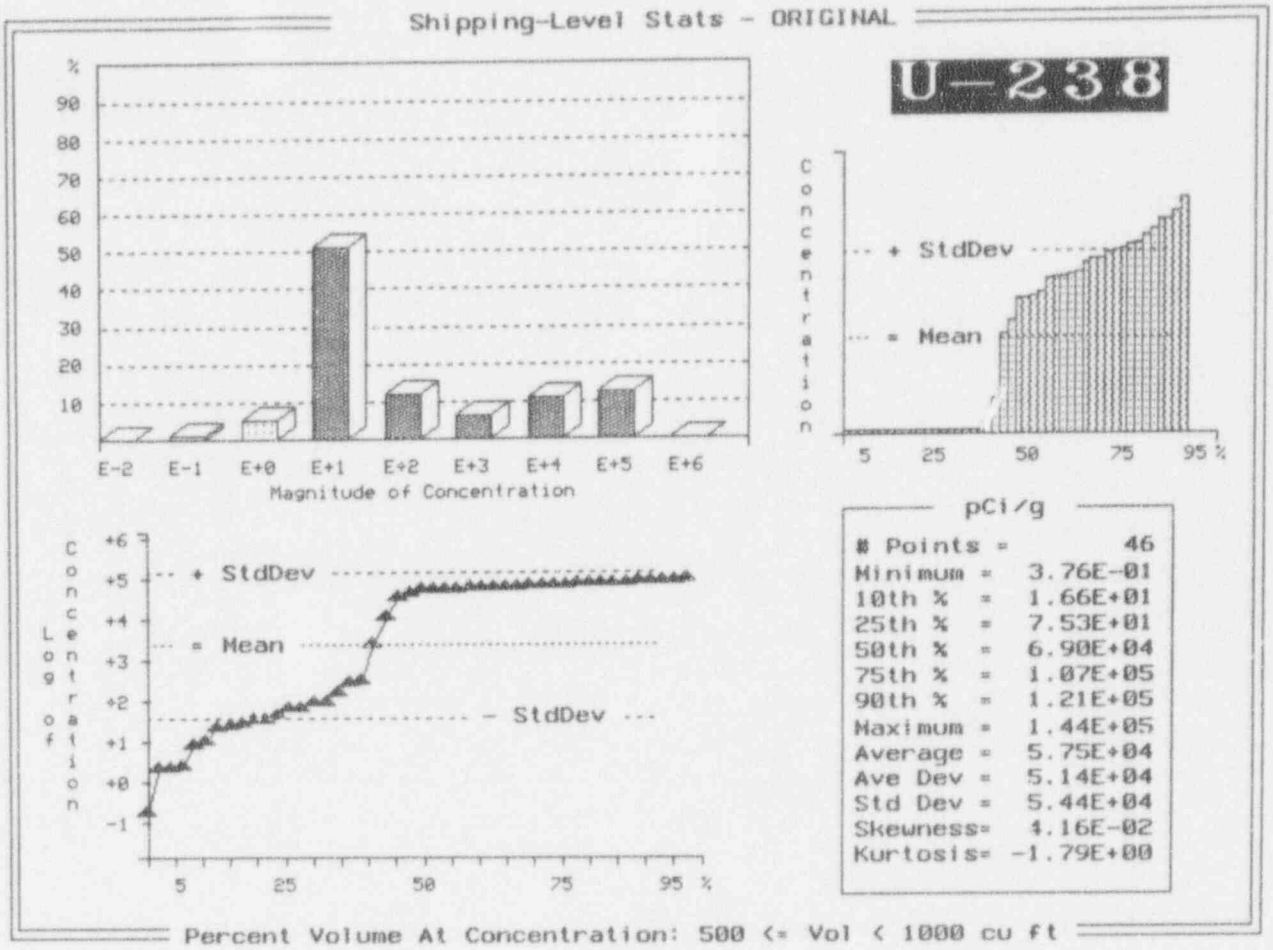


Exhibit F-16 (Continued)

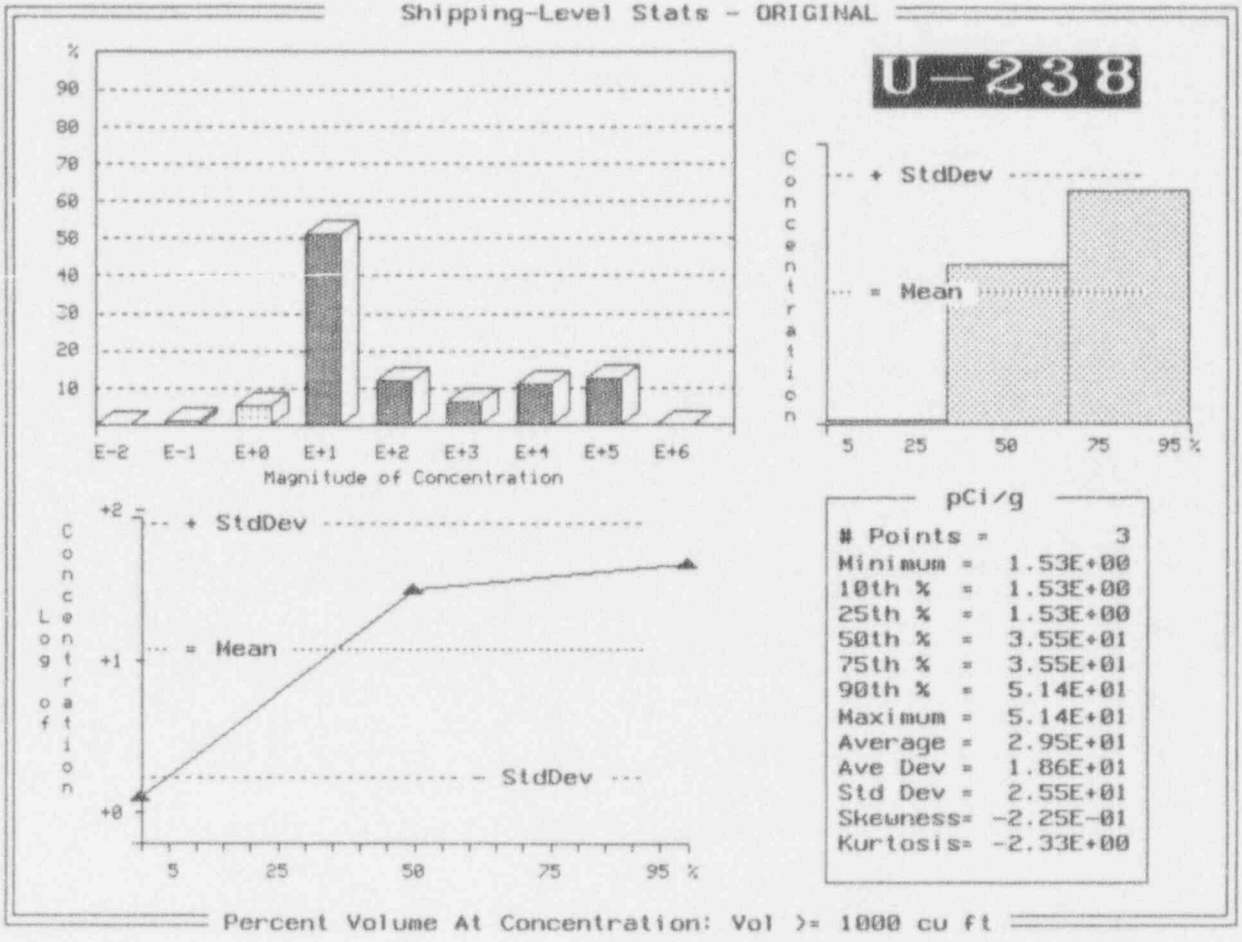


Exhibit F-17
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Central Midwest
Waste generator class:	Government
Total number of waste generators:	18
Total associated waste volume (m^3):	211
Total associated waste activity (Ci):	1,898
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	3
Percent of total(%):	17
Total number of shipping records:	7
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	42,990
Total waste volume (m^3):	61.3
Fractional waste volume (%): (this analysis/total)	29
Total waste activity (Ci):	575
Fractional waste activity (%): (this analysis/total)	30

Exhibit F-17 (Continued)

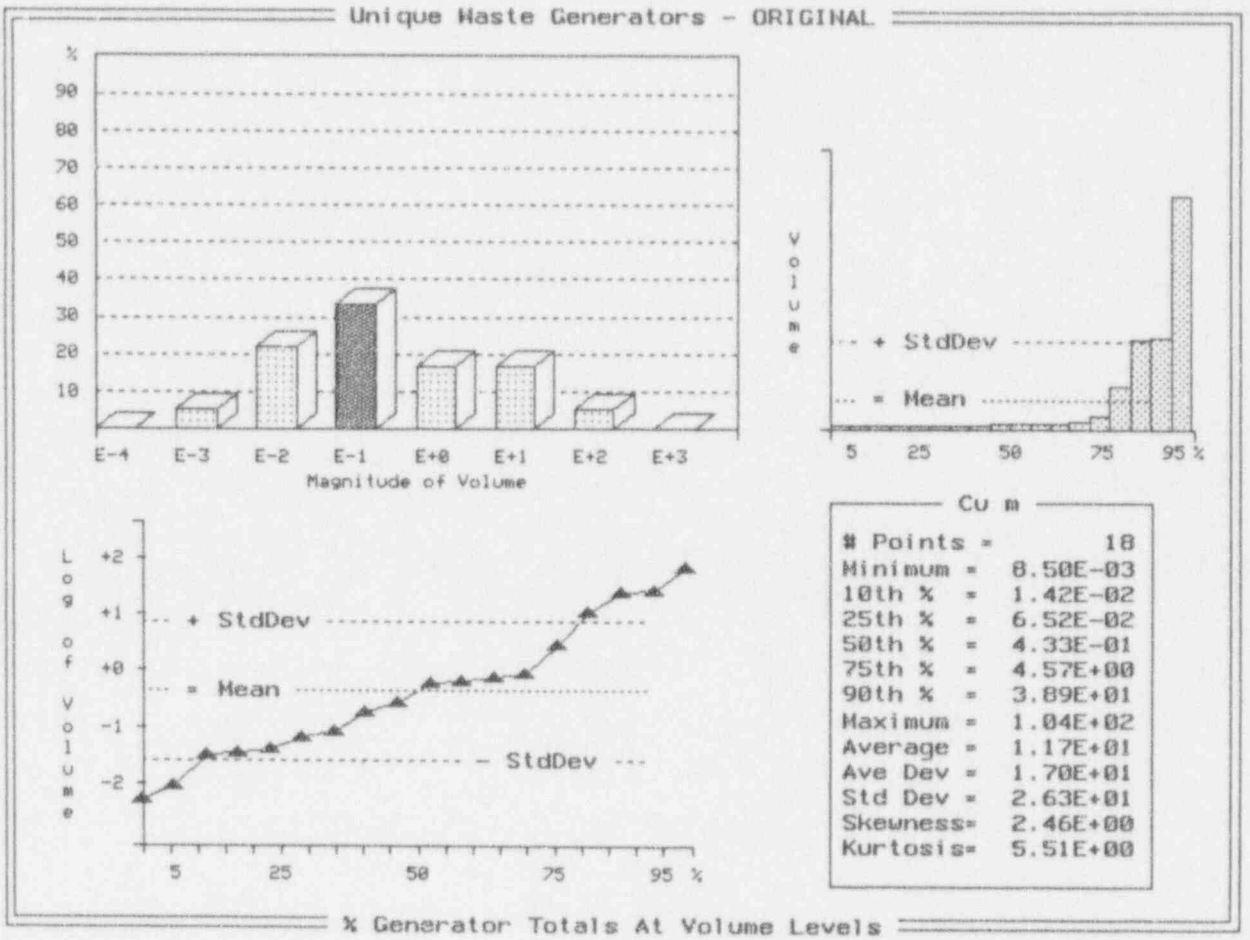


Exhibit F-17 (Continued)

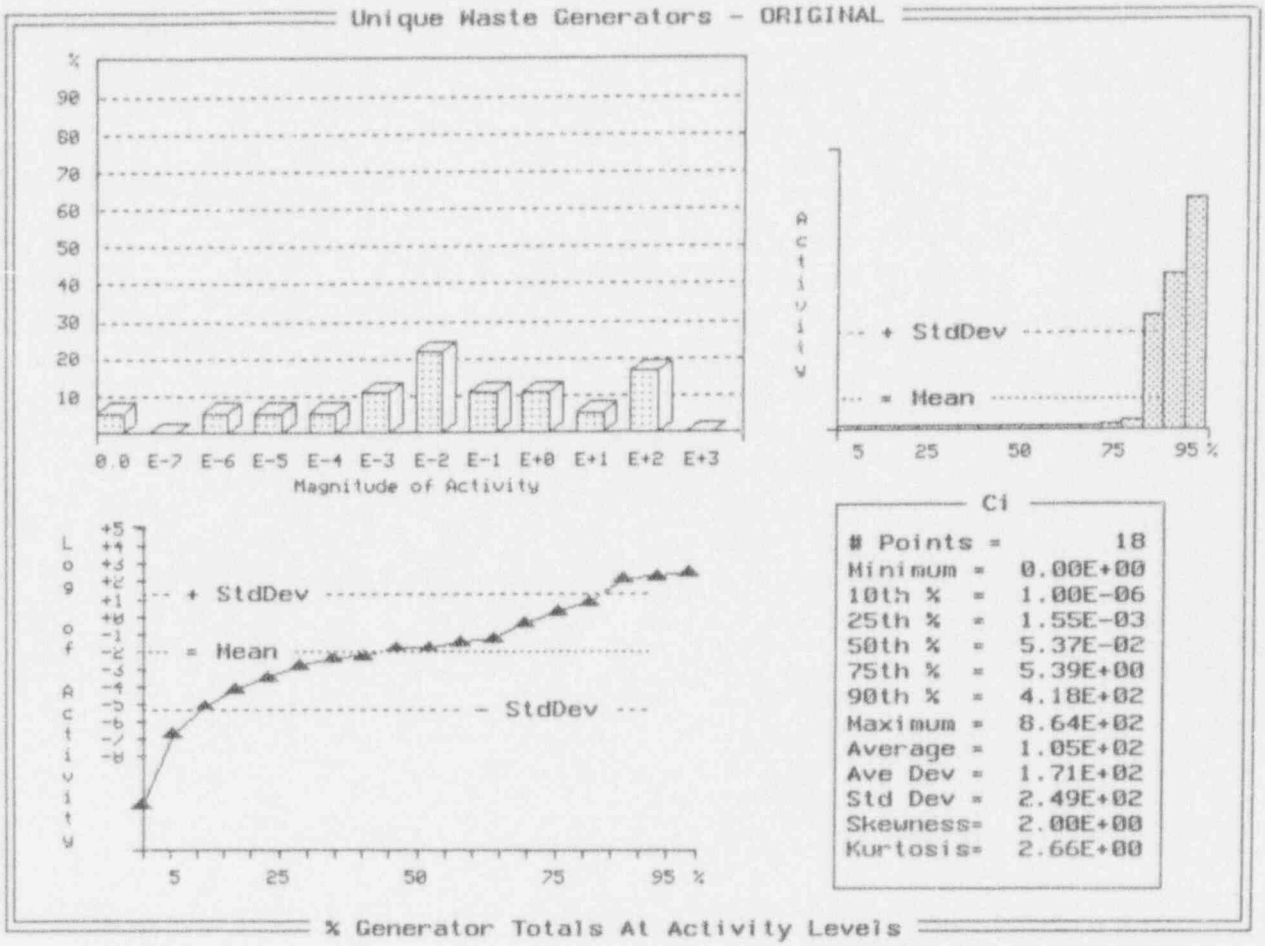


Exhibit F-18
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Central Midwest
Waste generator class:	Academic
Total number of waste generators:	28
Total associated waste volume (m^3):	242
Total associated waste activity (Ci):	16.0
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	7
Total number of shipping records:	3
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	12,060
Total waste volume (m^3):	21.2
Fractional waste volume (%): (this analysis/total)	8.8
Total waste activity (Ci):	0.37
Fractional waste activity (%): (this analysis/total)	2.5

Exhibit F-18 (Continued)

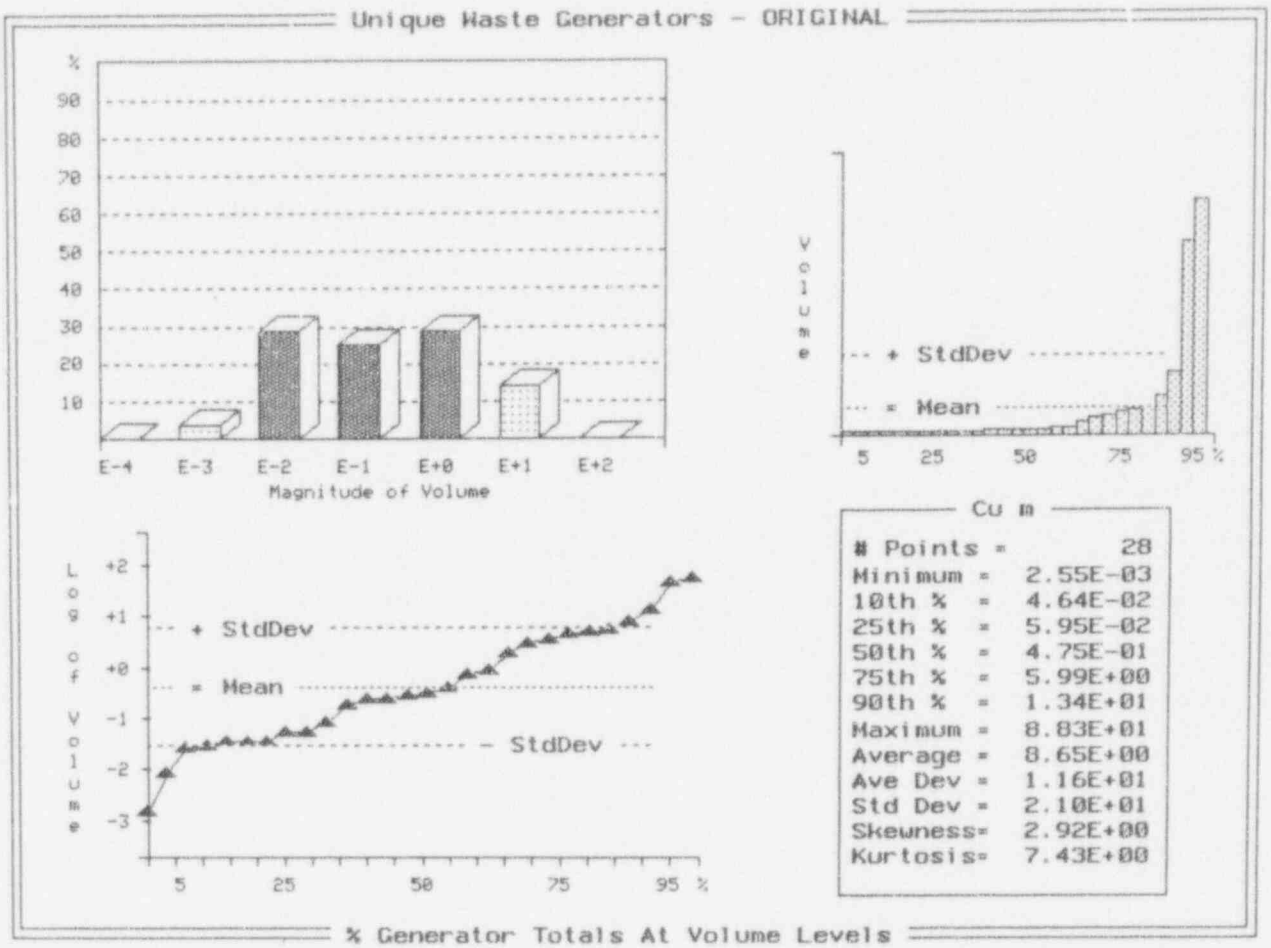


Exhibit F-18 (Continued)

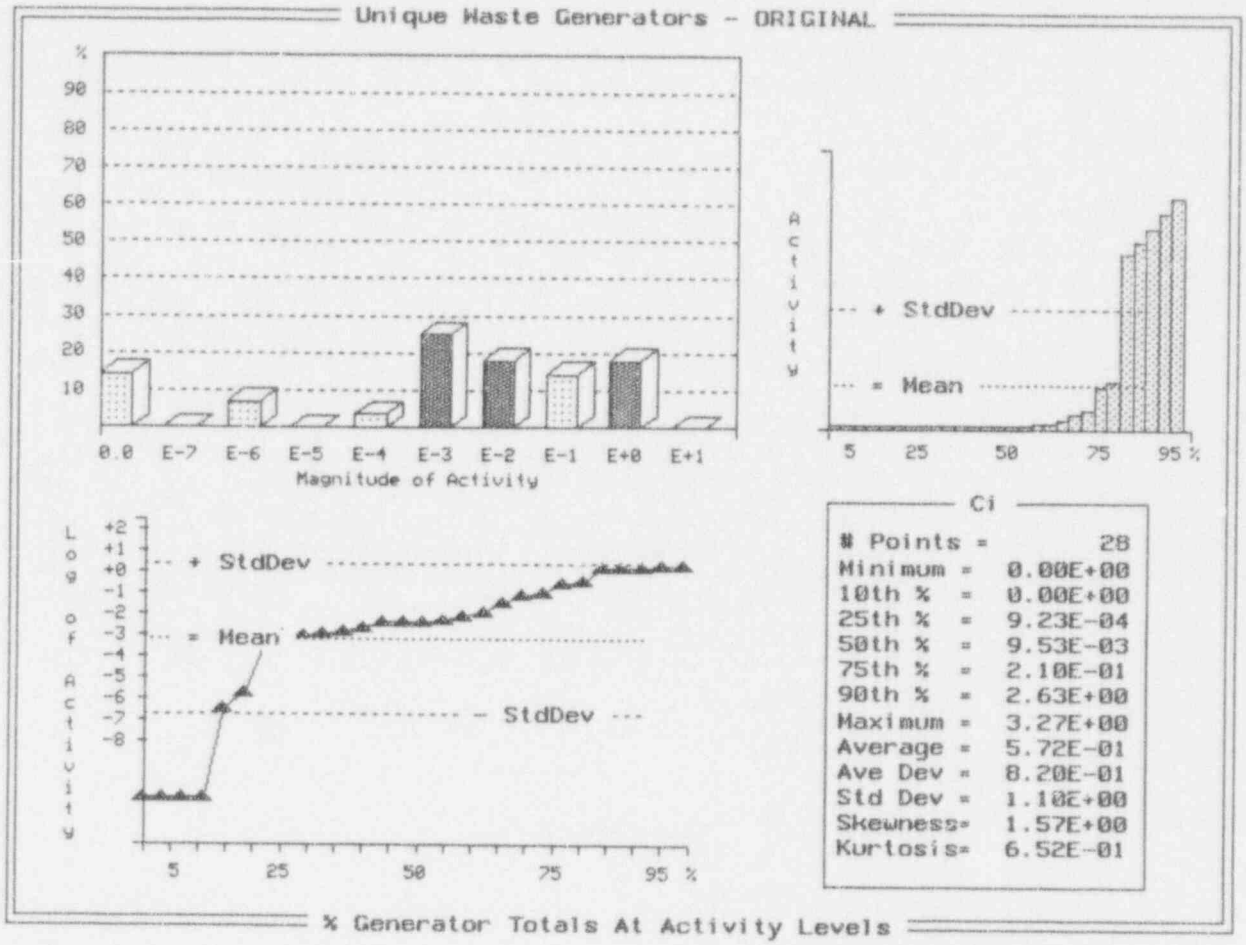


Exhibit F-19
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Central Midwest
Waste generator class:	Medical
Total number of waste generators:	50
Total associated waste volume (m^3):	177
Total associated waste activity (Ci):	7.4
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	4
Total number of shipping records:	3
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	1,405
Total waste volume (m^3):	1.8
Fractional waste volume (%): (this analysis/total)	1
Total waste activity (Ci):	0.003
Fractional waste activity (%): (this analysis/total)	0.04

Exhibit F-19 (Continued)

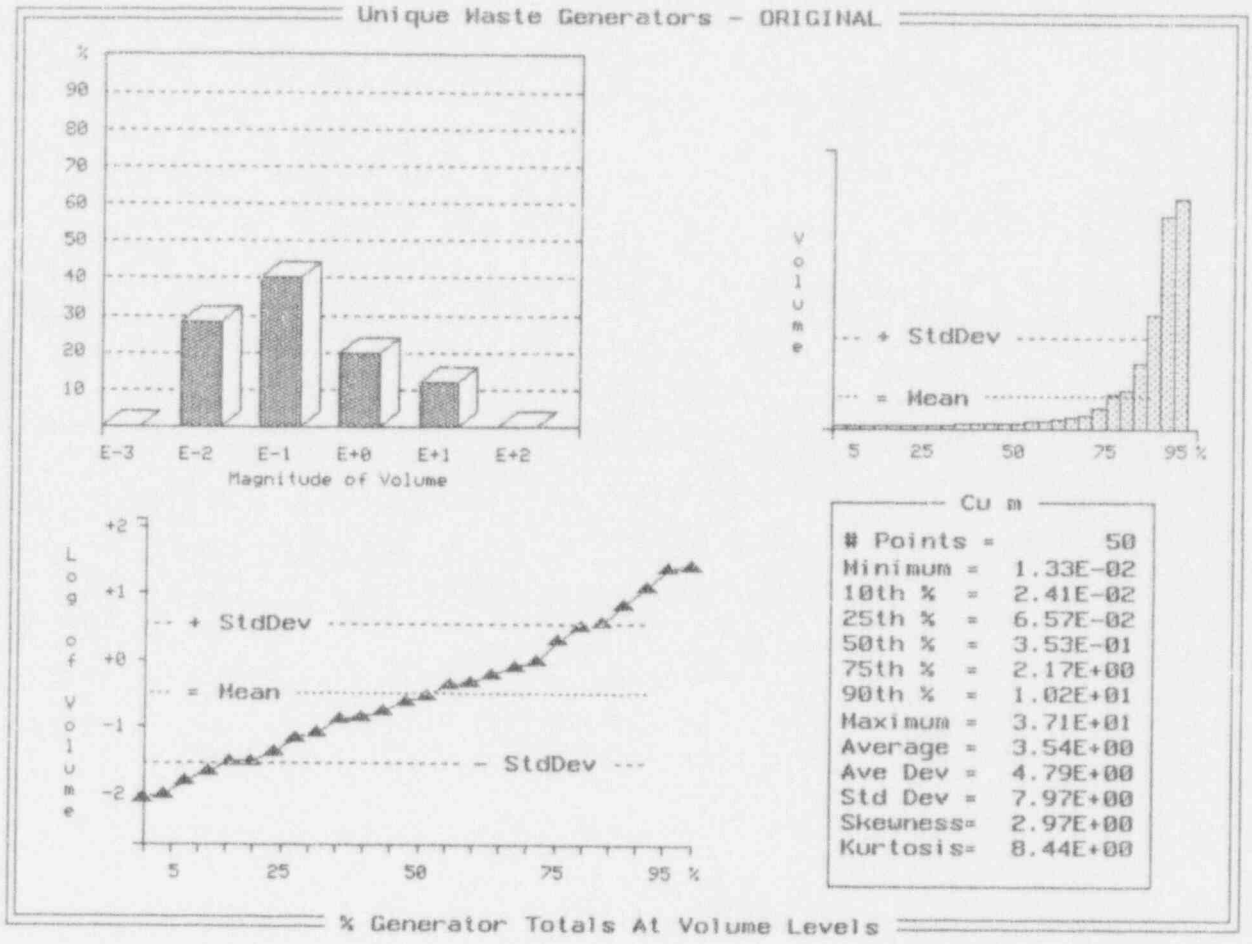


Exhibit F-19 (Continued)

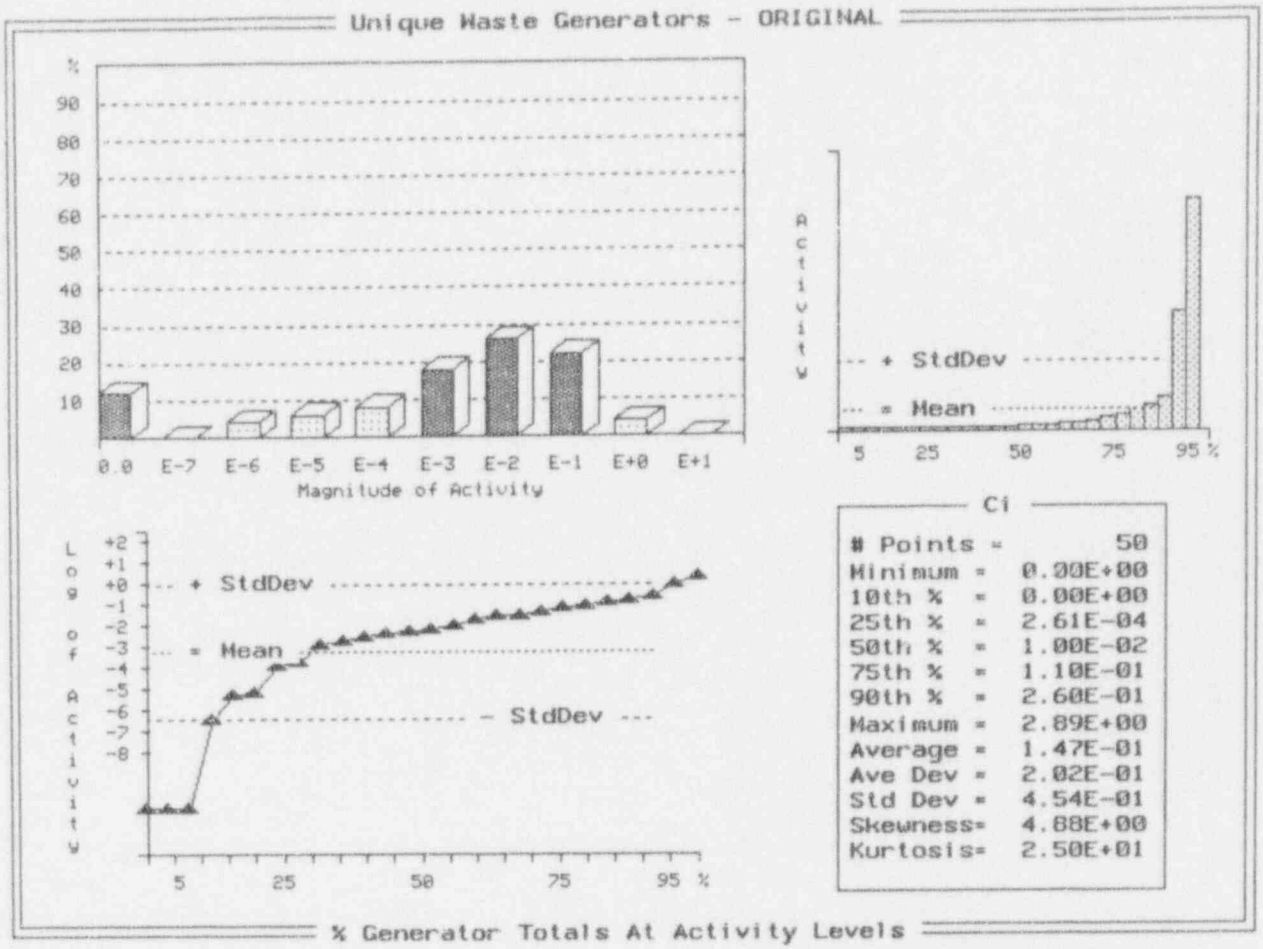


Exhibit F-20
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Central Midwest
Waste generator class:	Industrial
Total number of waste generators:	99
Total associated waste volume (m^3):	2,696
Total associated waste activity (Ci):	171
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	18
Percent of total(%):	18
Total number of shipping records:	55
Number of shipping records with container data:	12
Number of waste containers:	630
Weight of shipments (kg):	615,900
Total waste volume (m^3):	602
Fractional waste volume (%): (this analysis/total)	22
Total waste activity (Ci):	14
Fractional waste activity (%): (this analysis/total)	8

Exhibit F-20 (Continued)

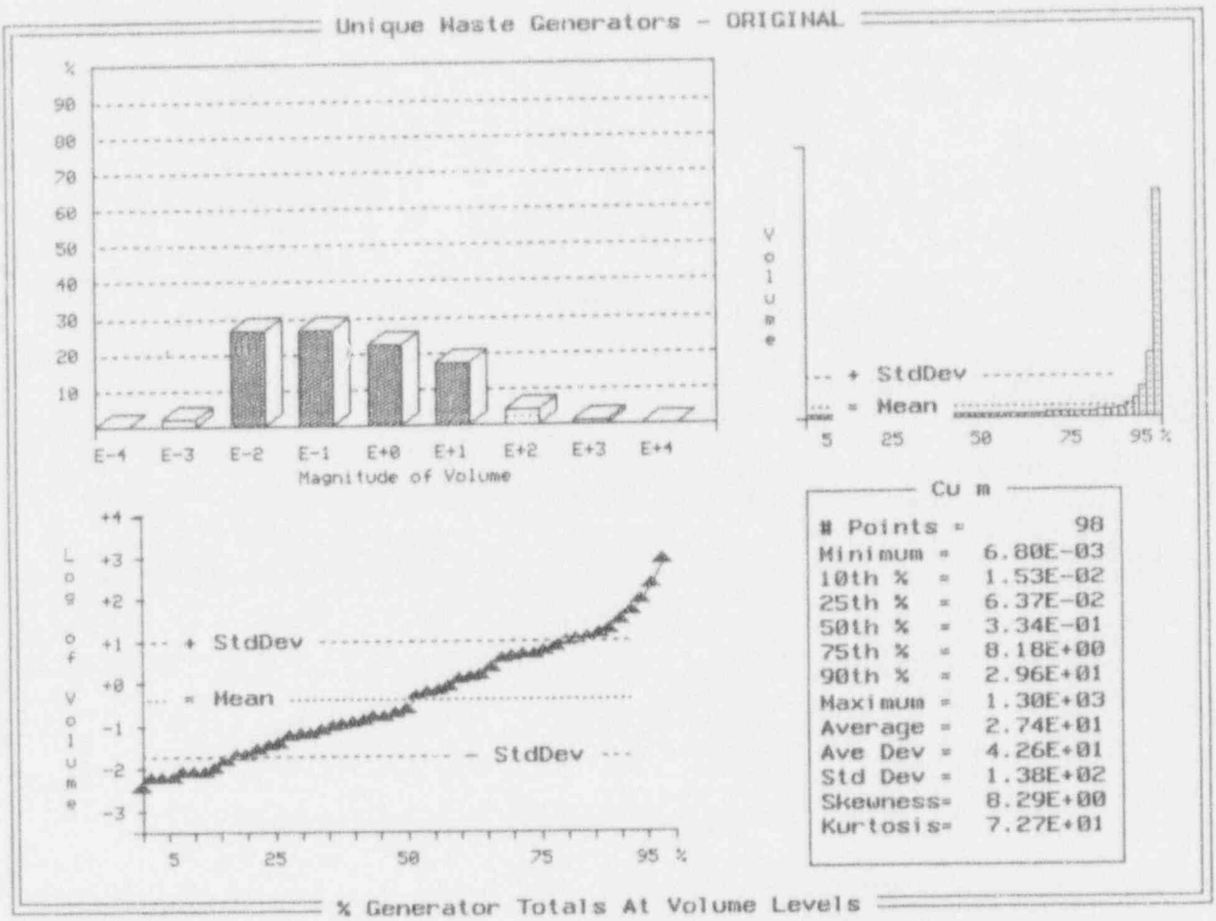


Exhibit F-20 (Continued)

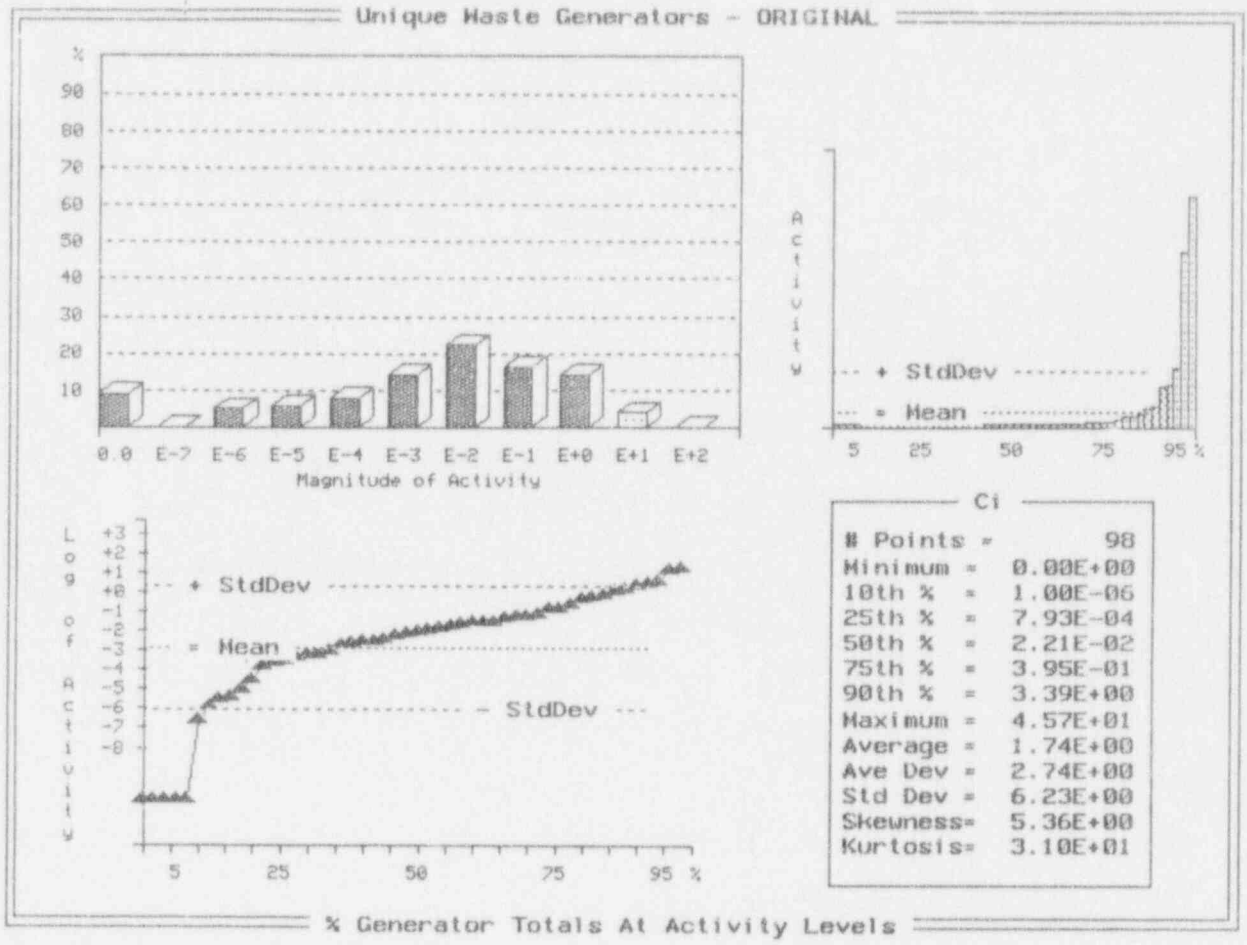


Exhibit F-21
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Southeast
Waste generator class:	Government
Total number of waste generators:	49
Total associated waste volume (m^3):	4,950
Total associated waste activity (Ci):	11,800
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	14
Percent of total(%):	29
Total number of shipping records:	183
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	2,478,000
Total waste volume (m^3):	3,534
Fractional waste volume (%): (this analysis/total)	71
Total waste activity (Ci):	49.5
Fractional waste activity (%): (this analysis/total)	0.4

Exhibit F-21 (Continued)

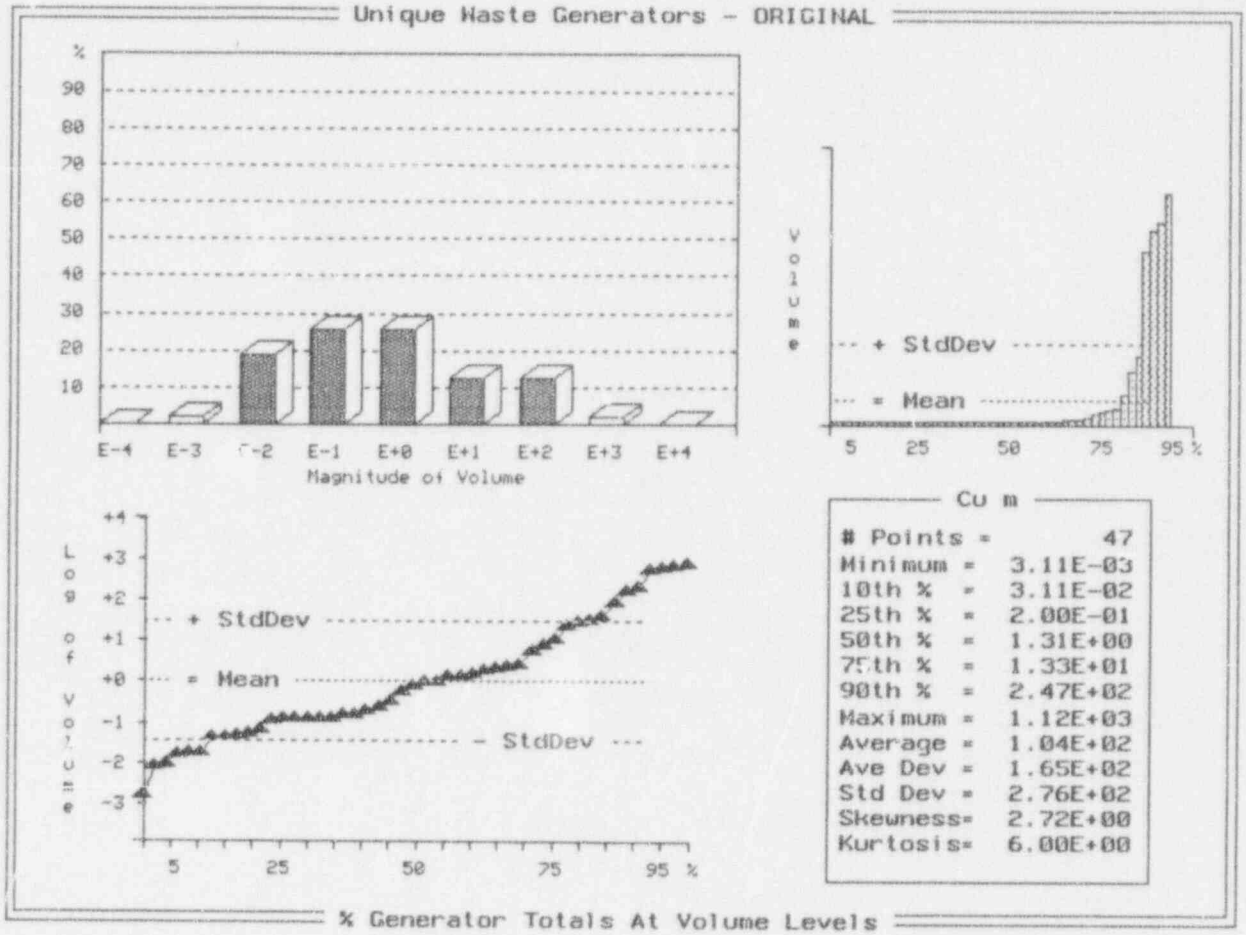


Exhibit F-21 (Continued)

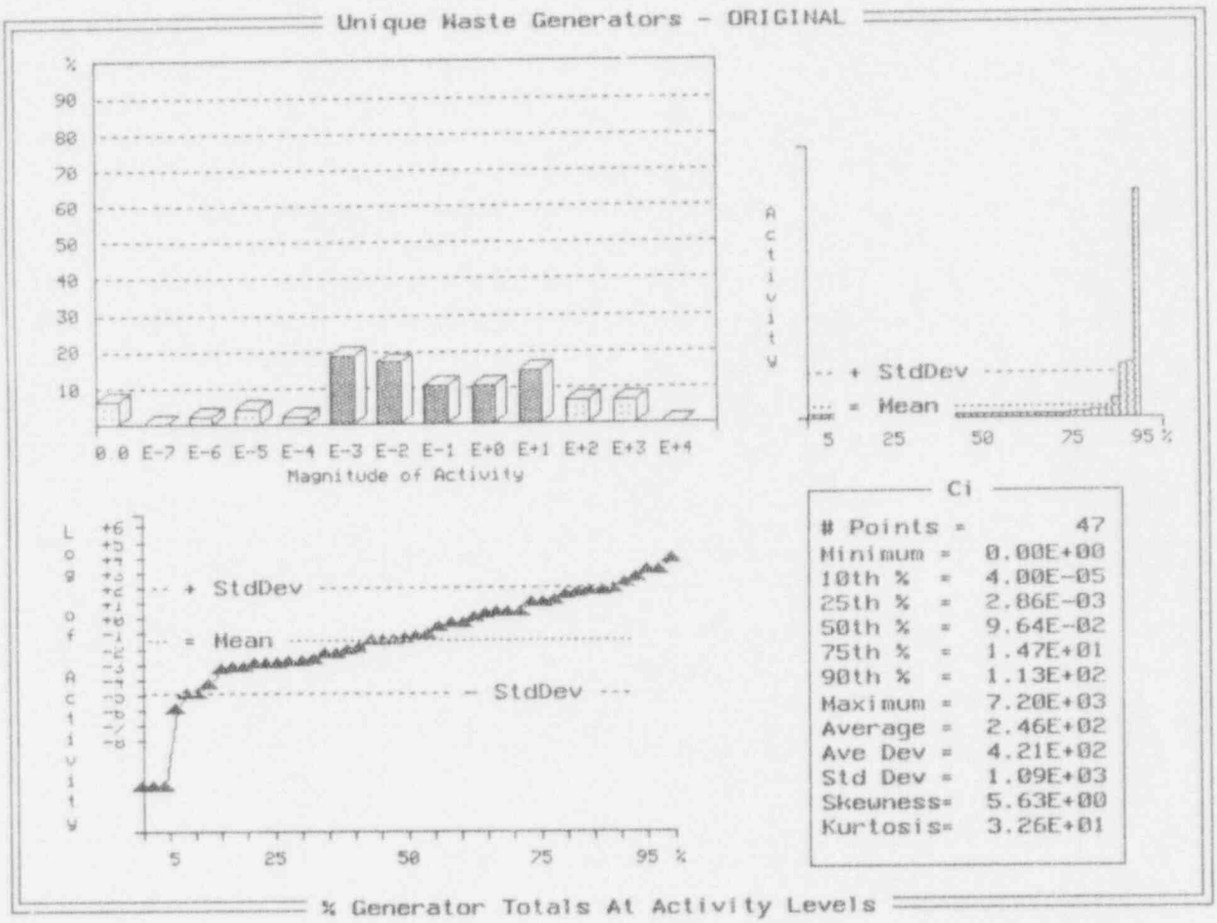


Exhibit F-21 (Continued)

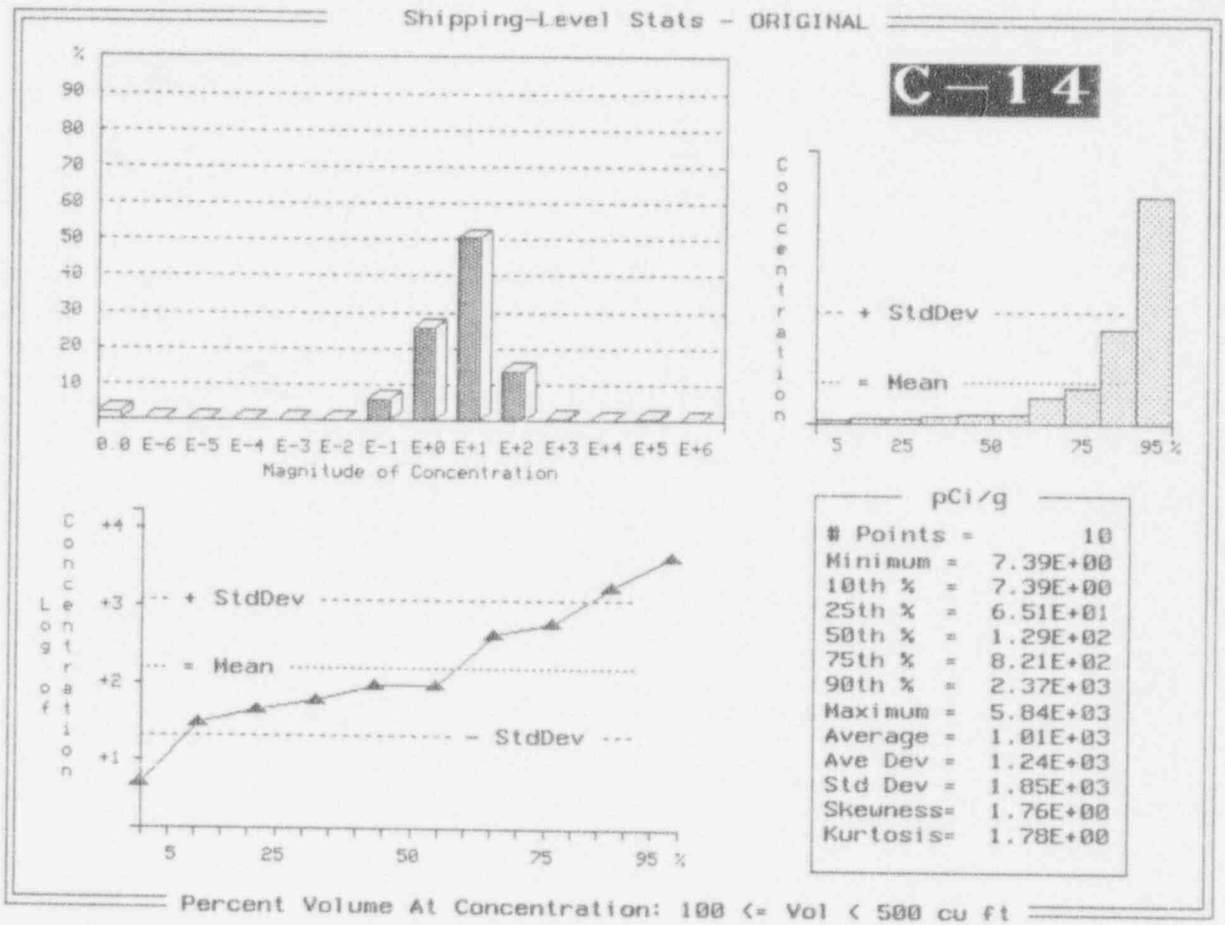
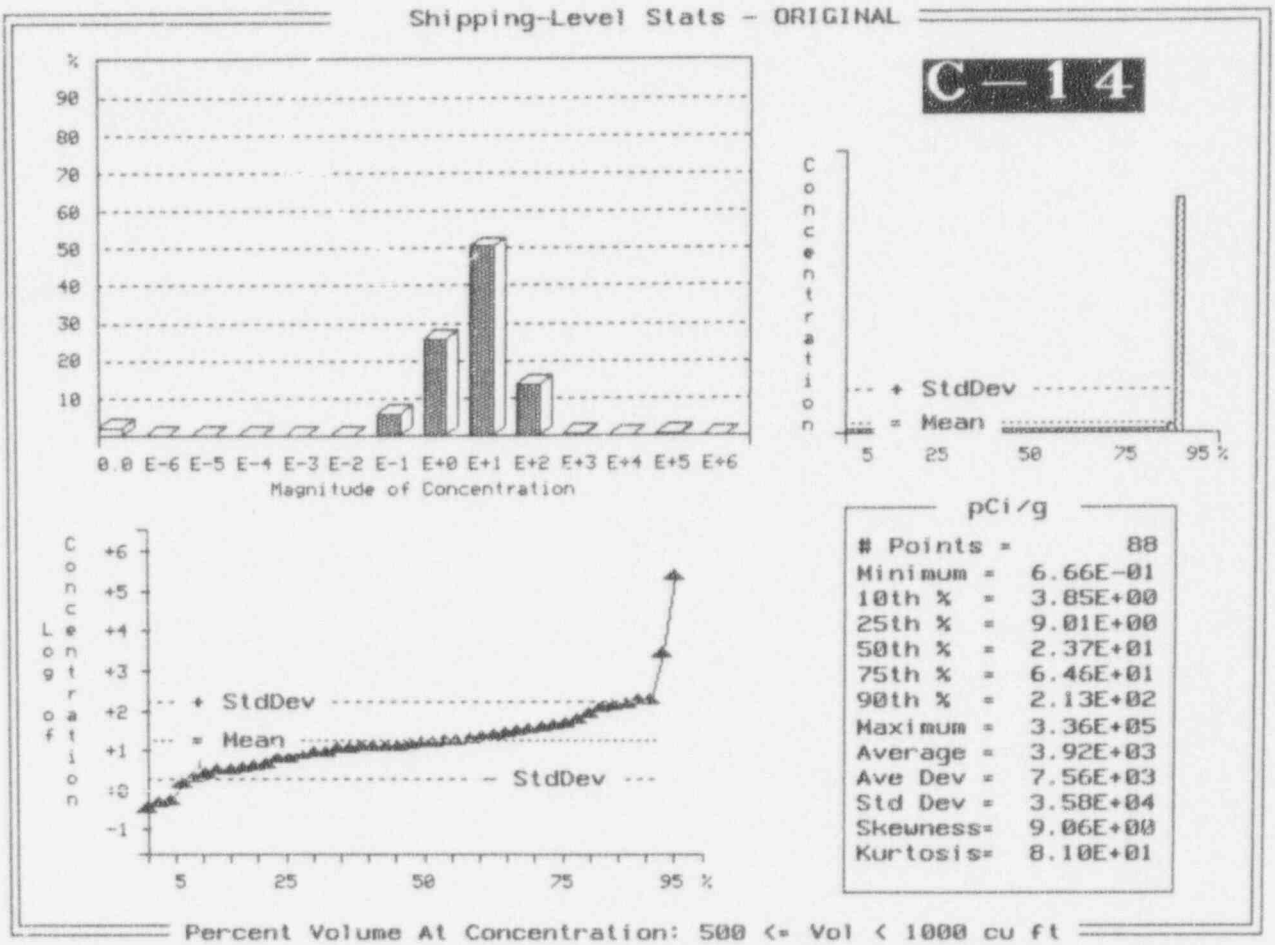


Exhibit F-21 (Continued)



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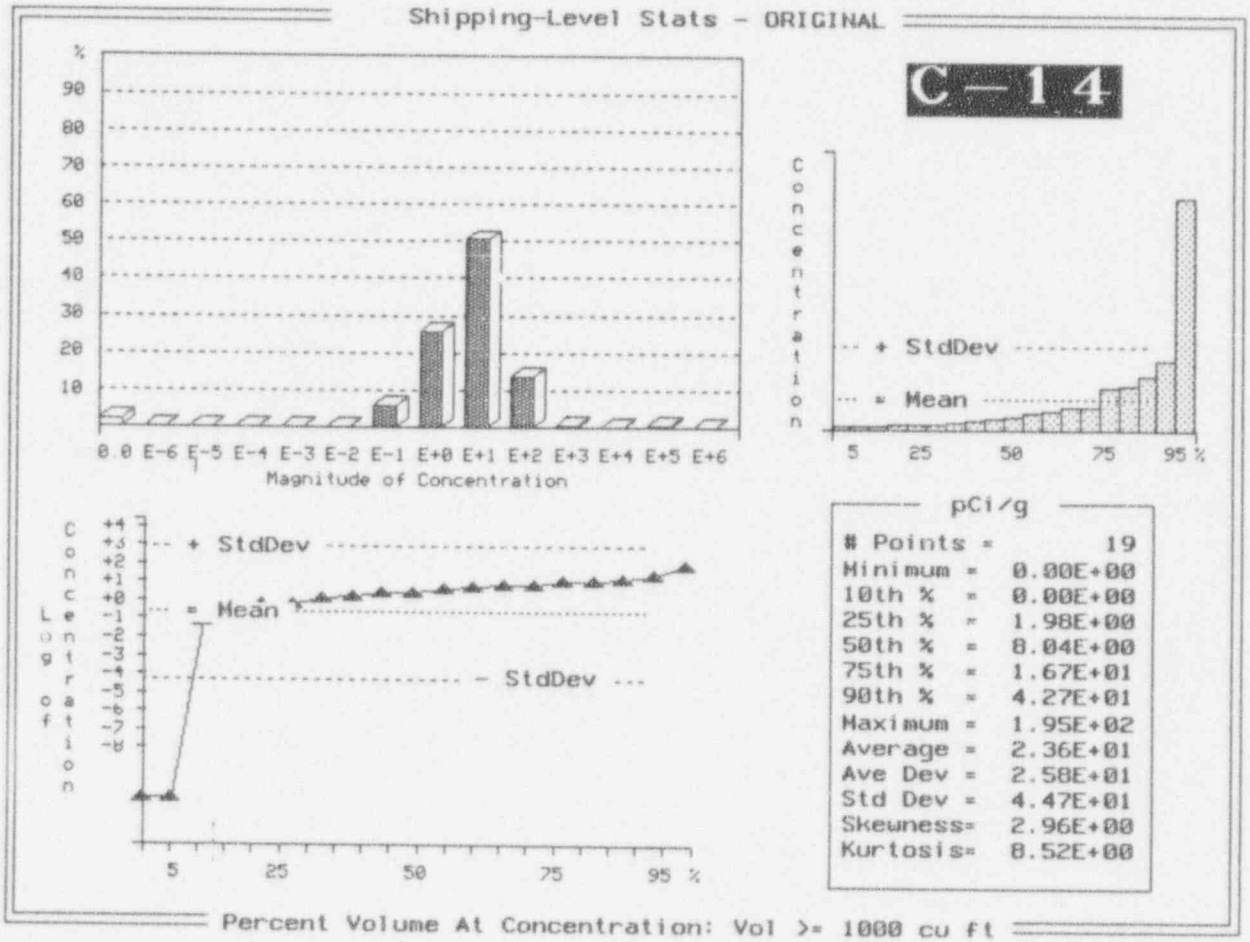

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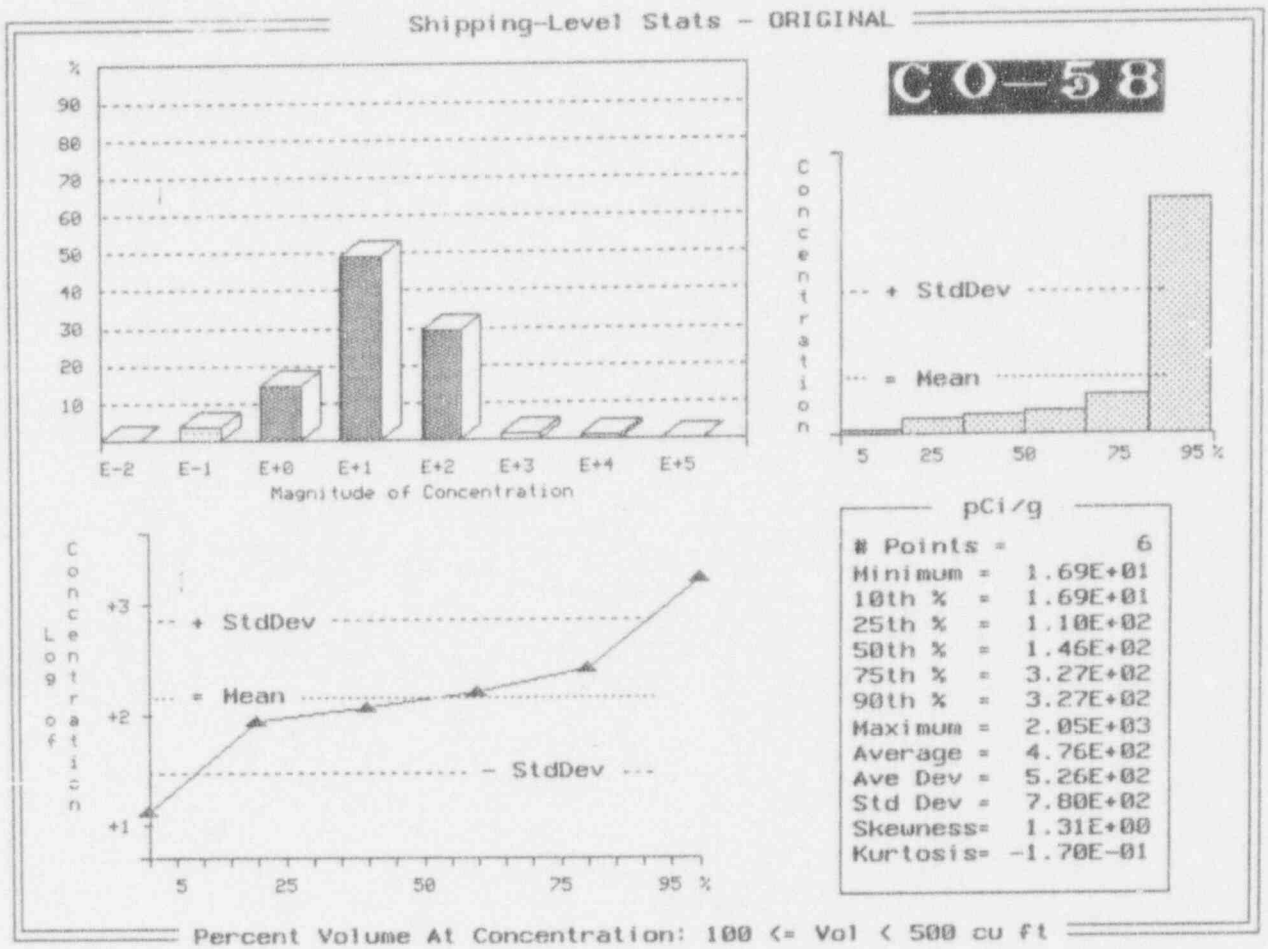

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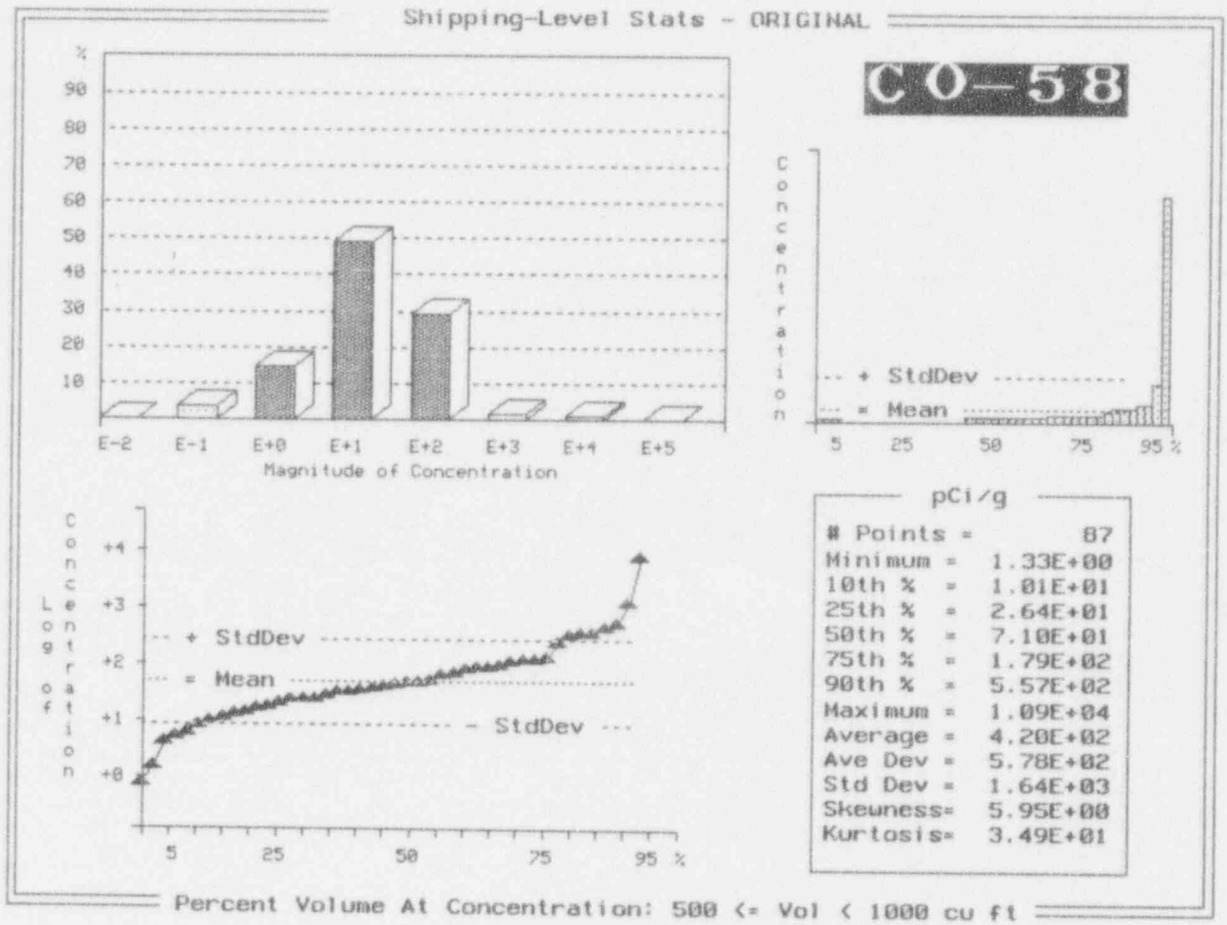

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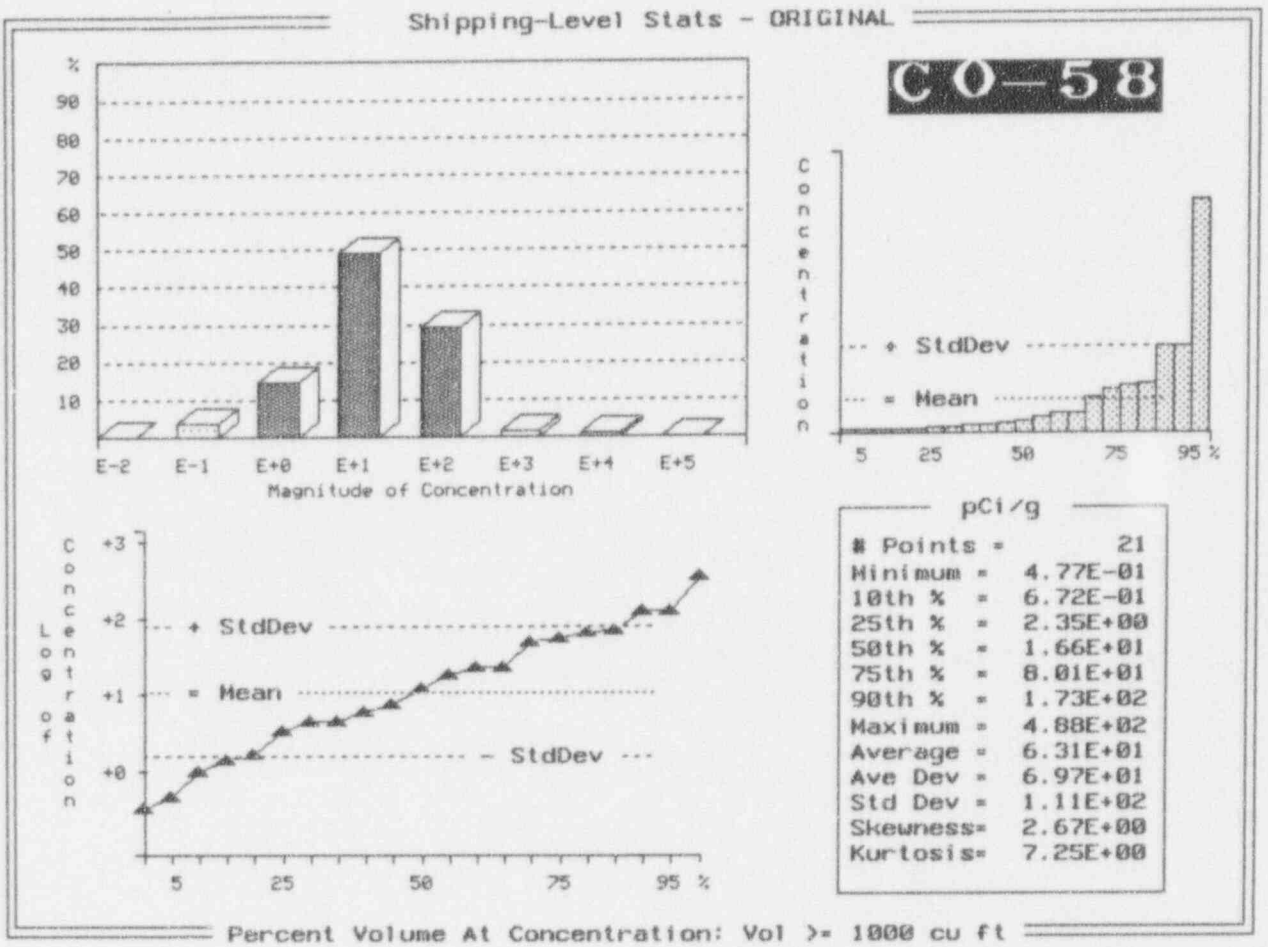

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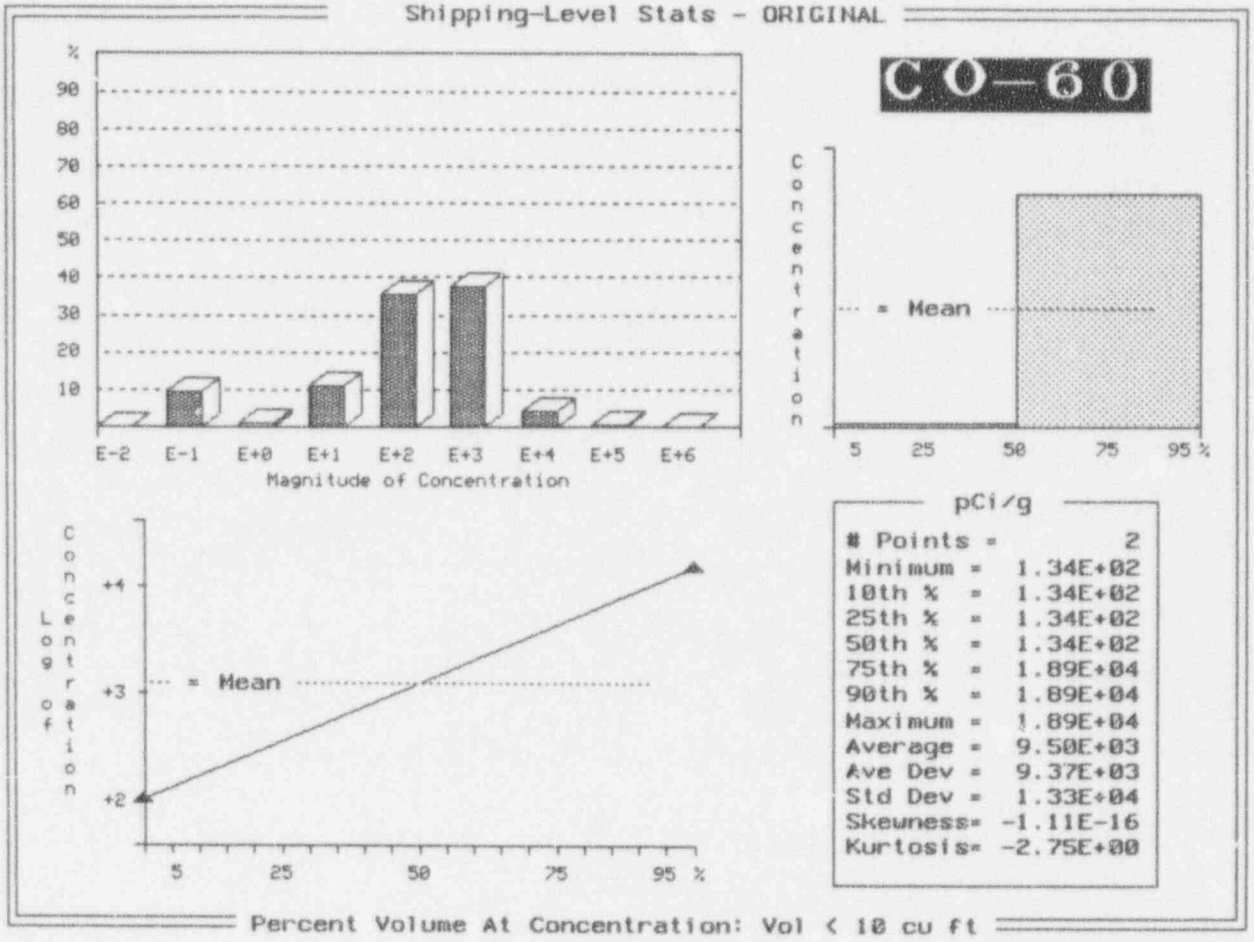

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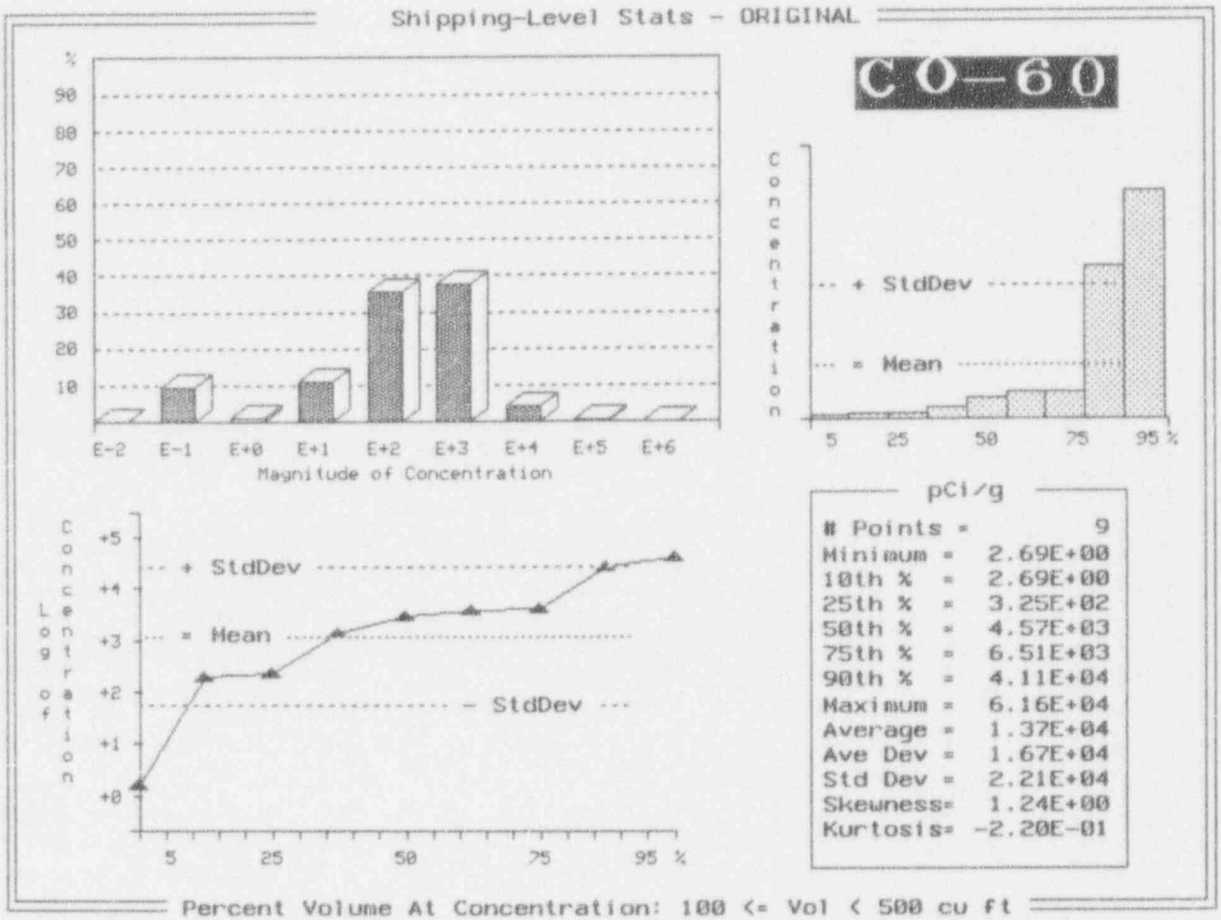
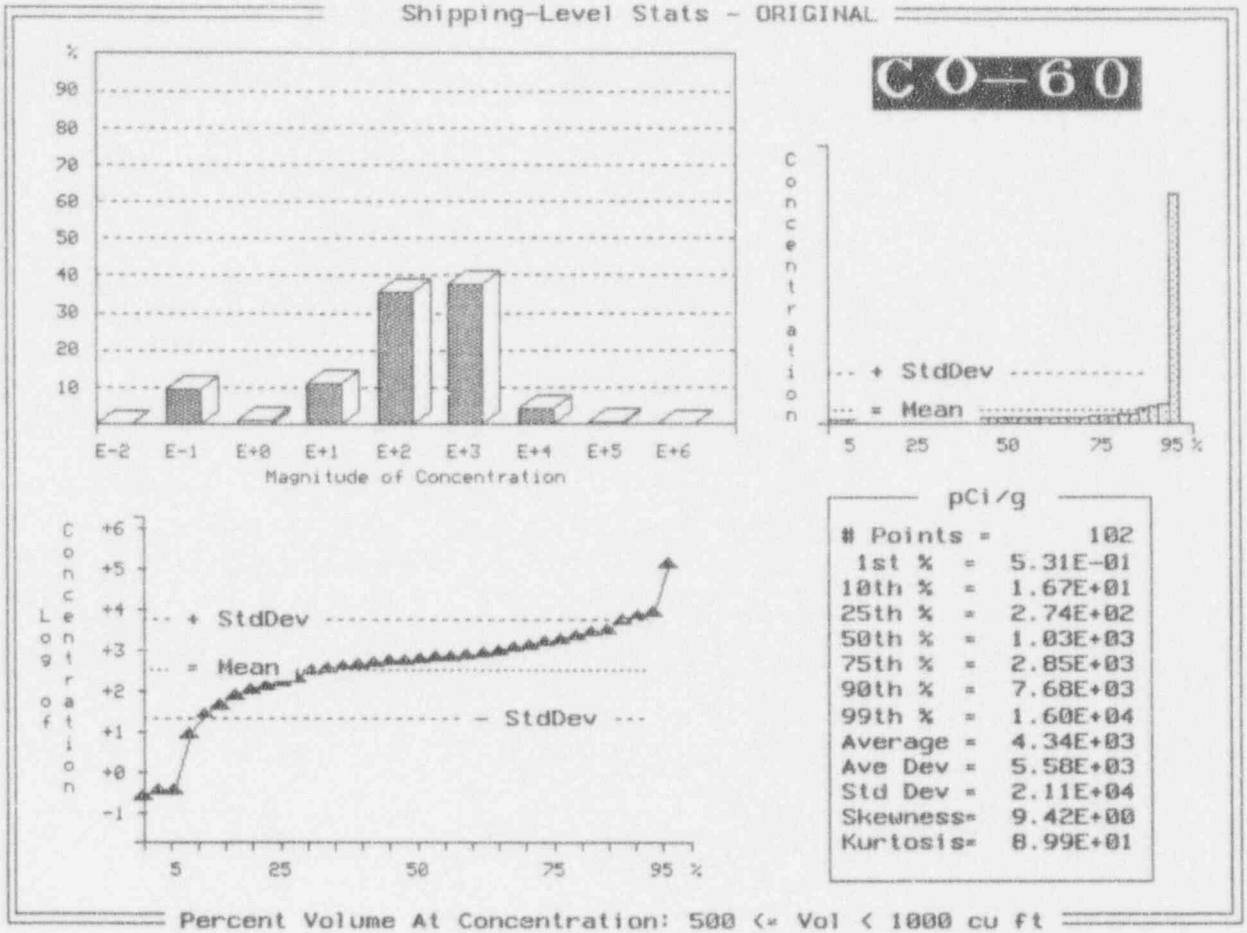


Exhibit F-21 (Continued)



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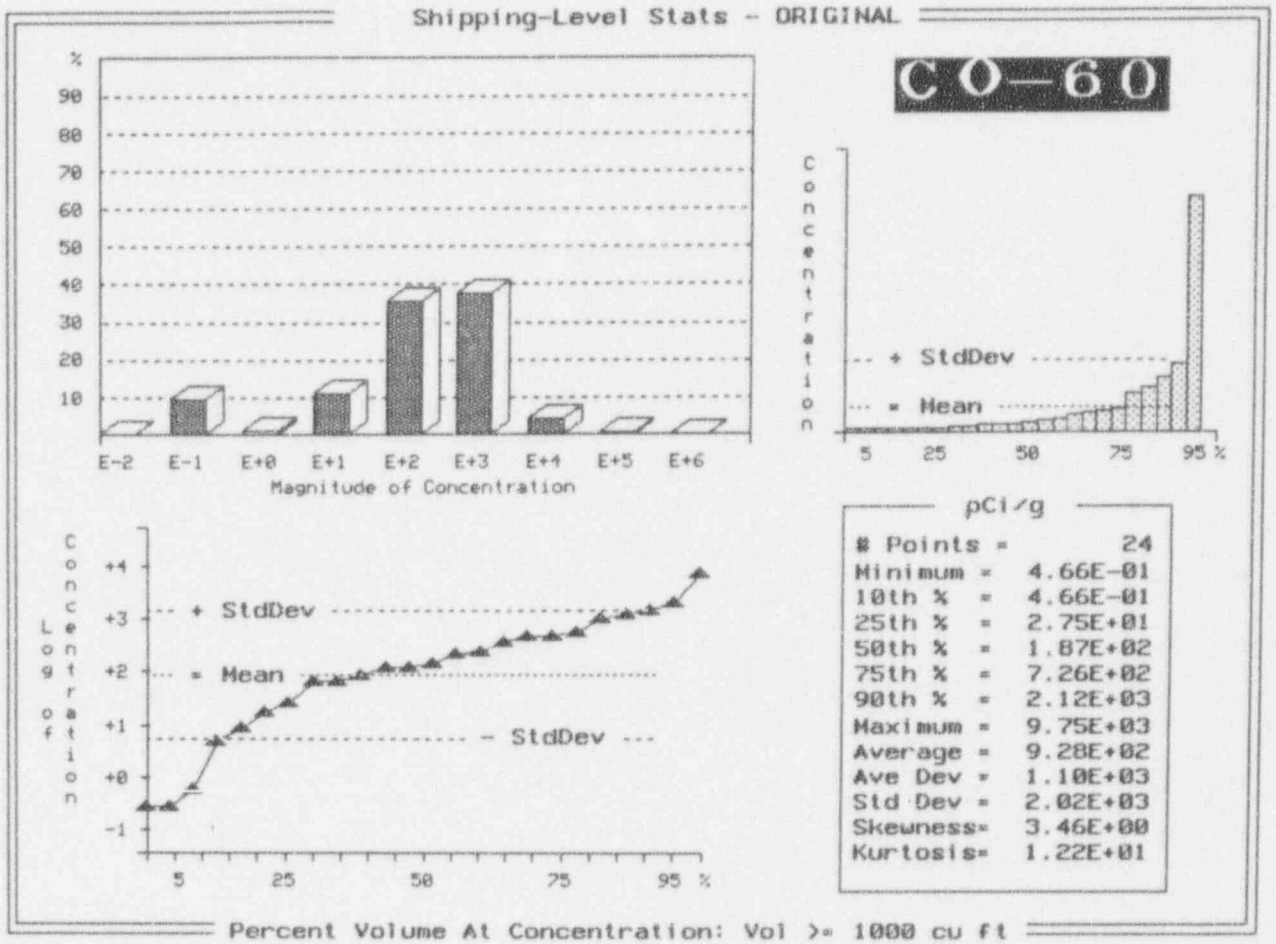

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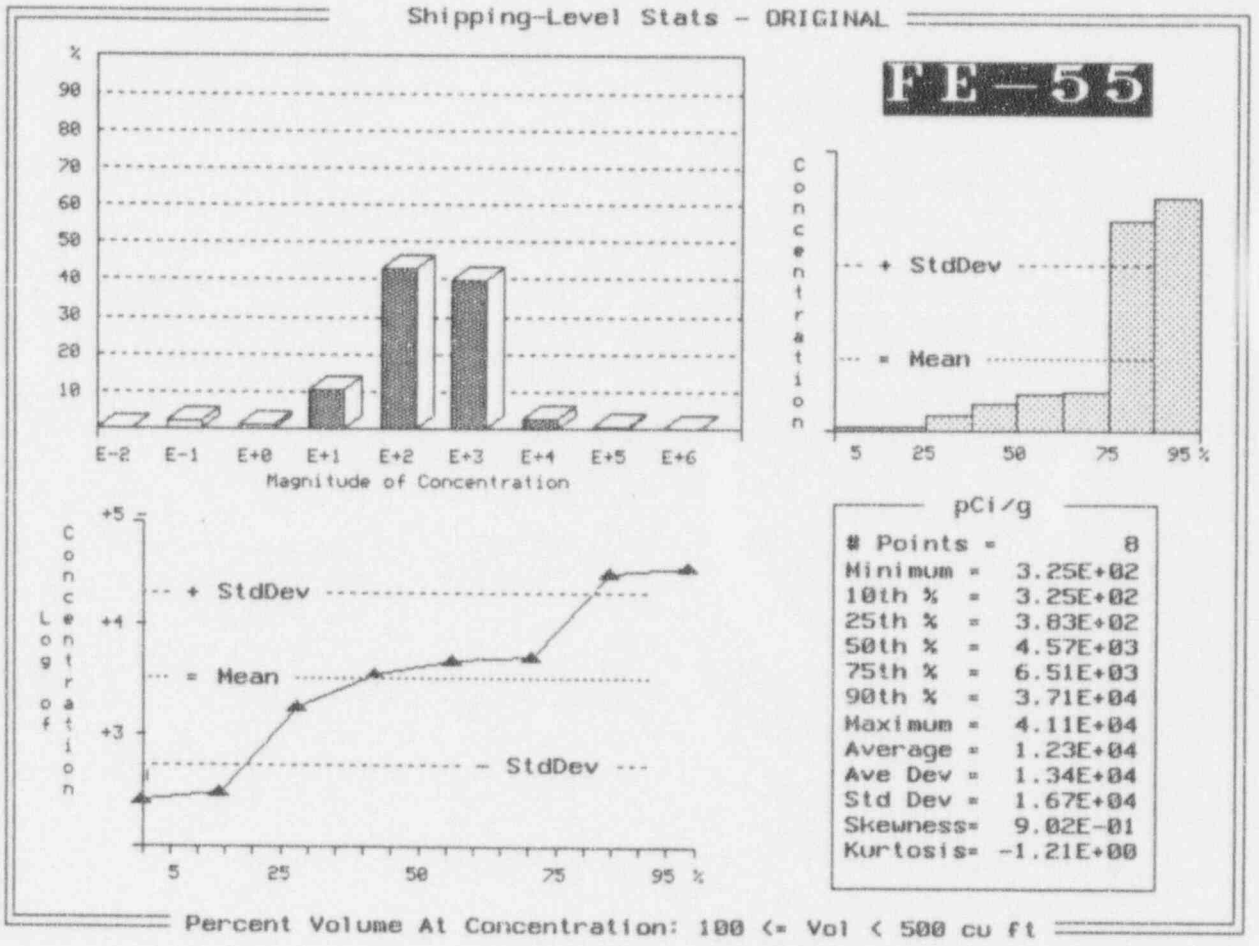

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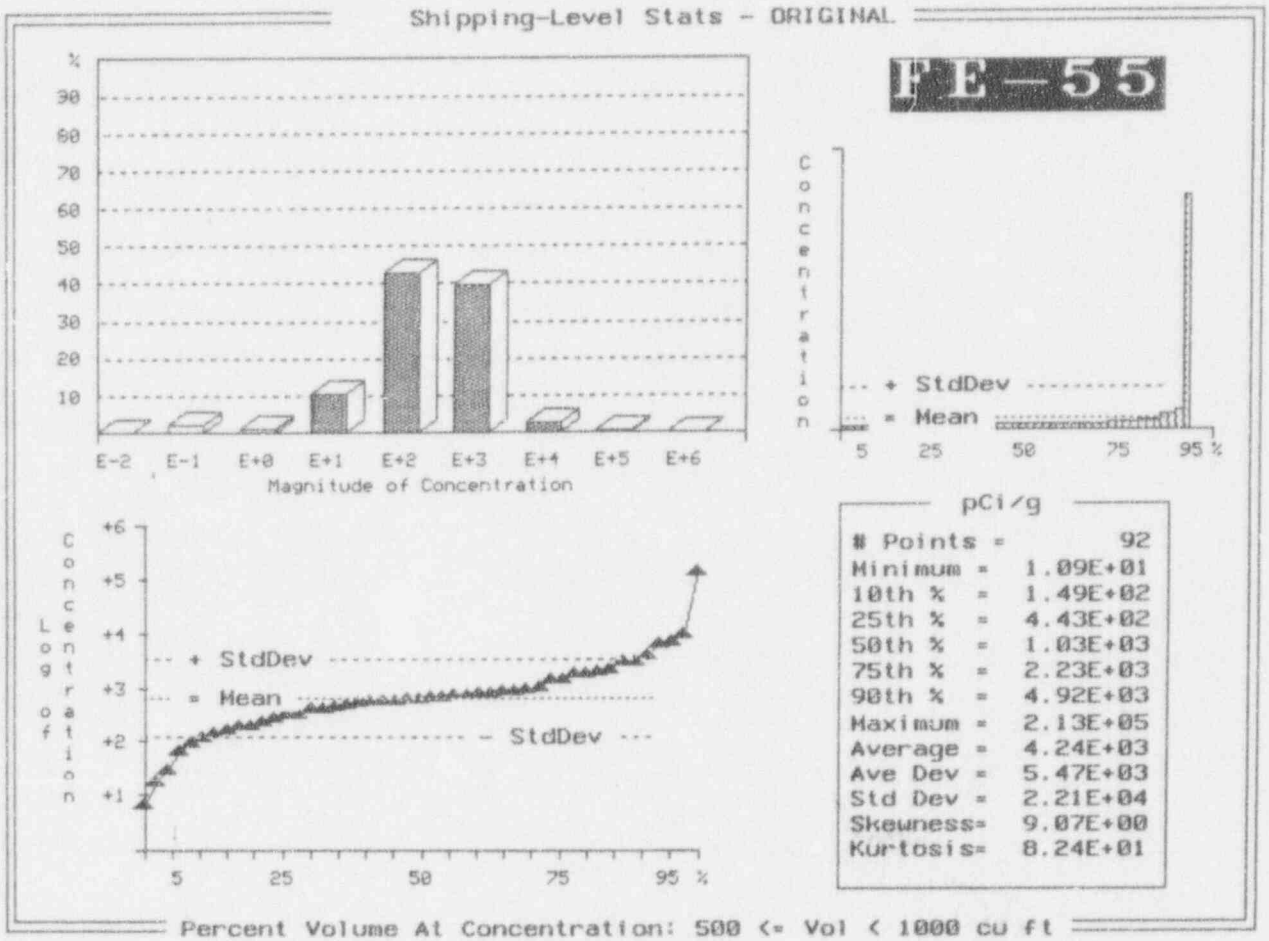

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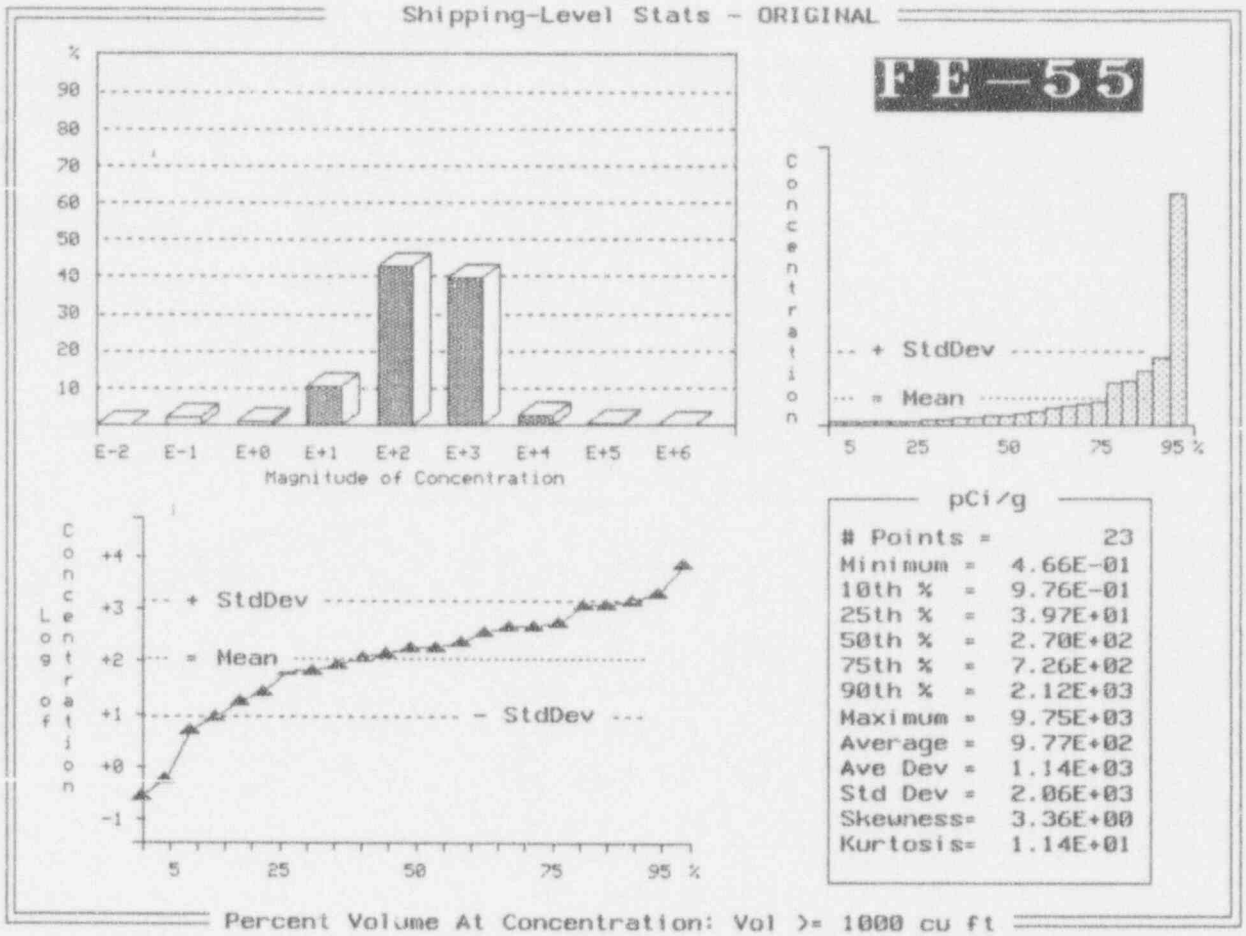

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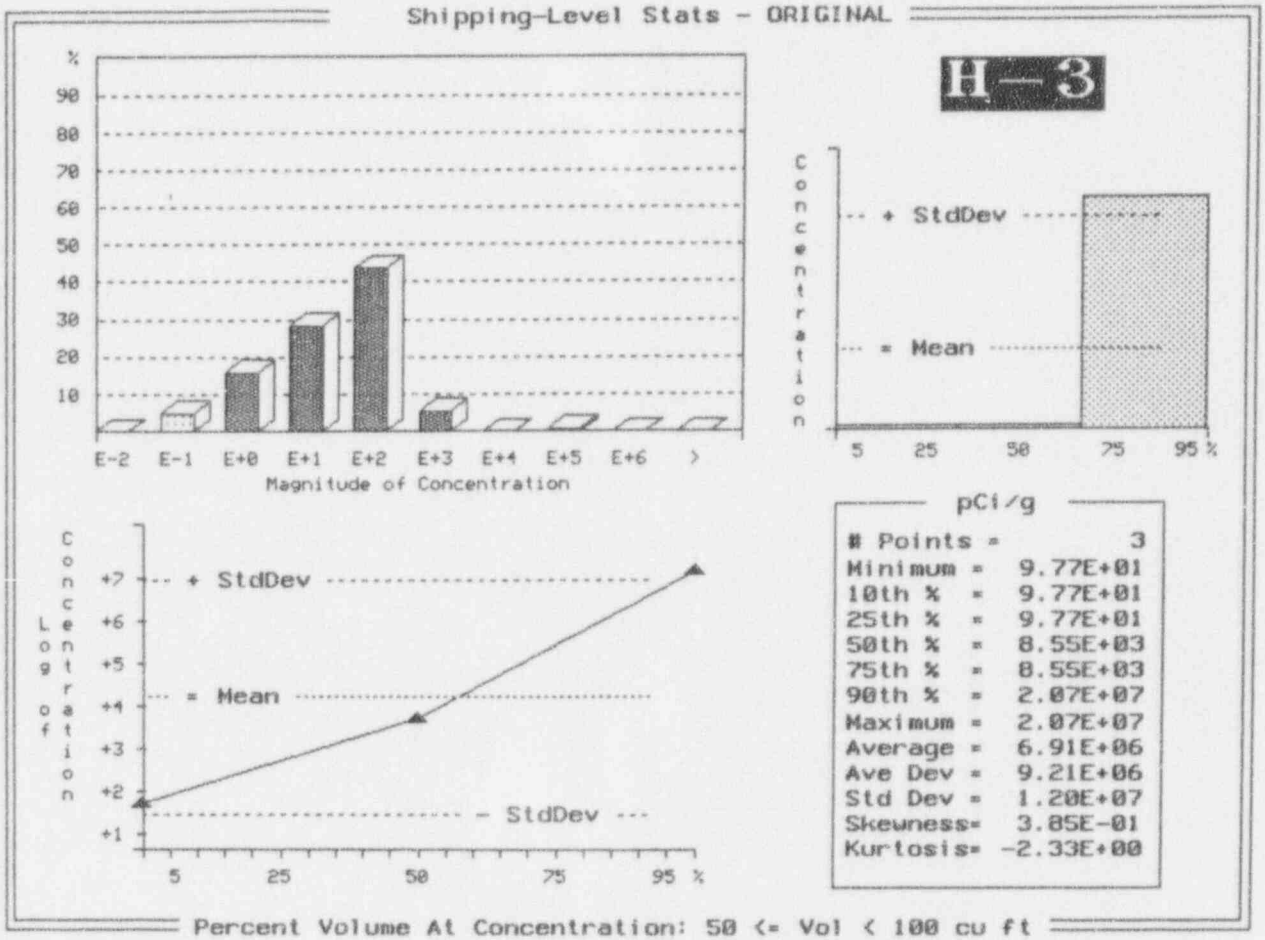

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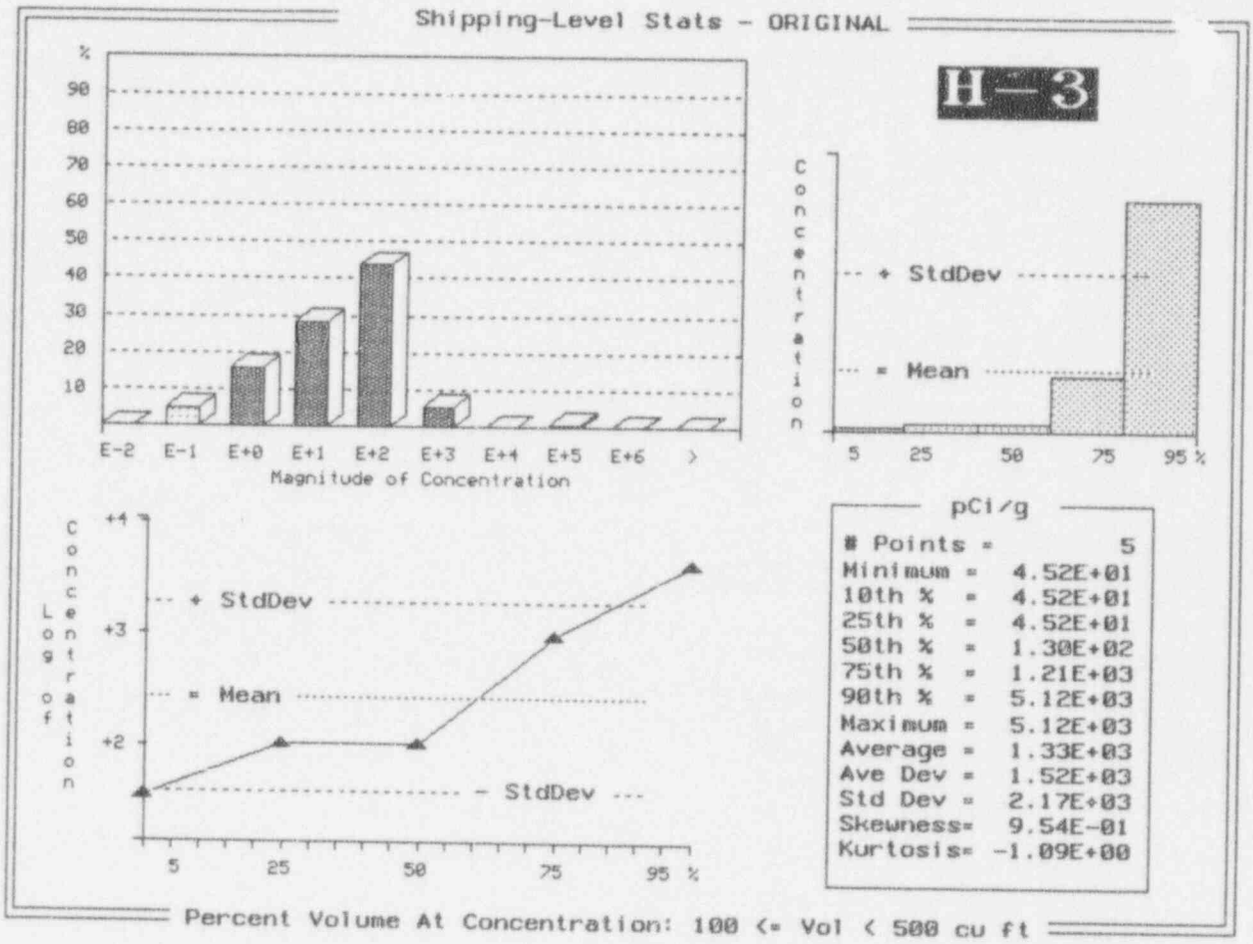

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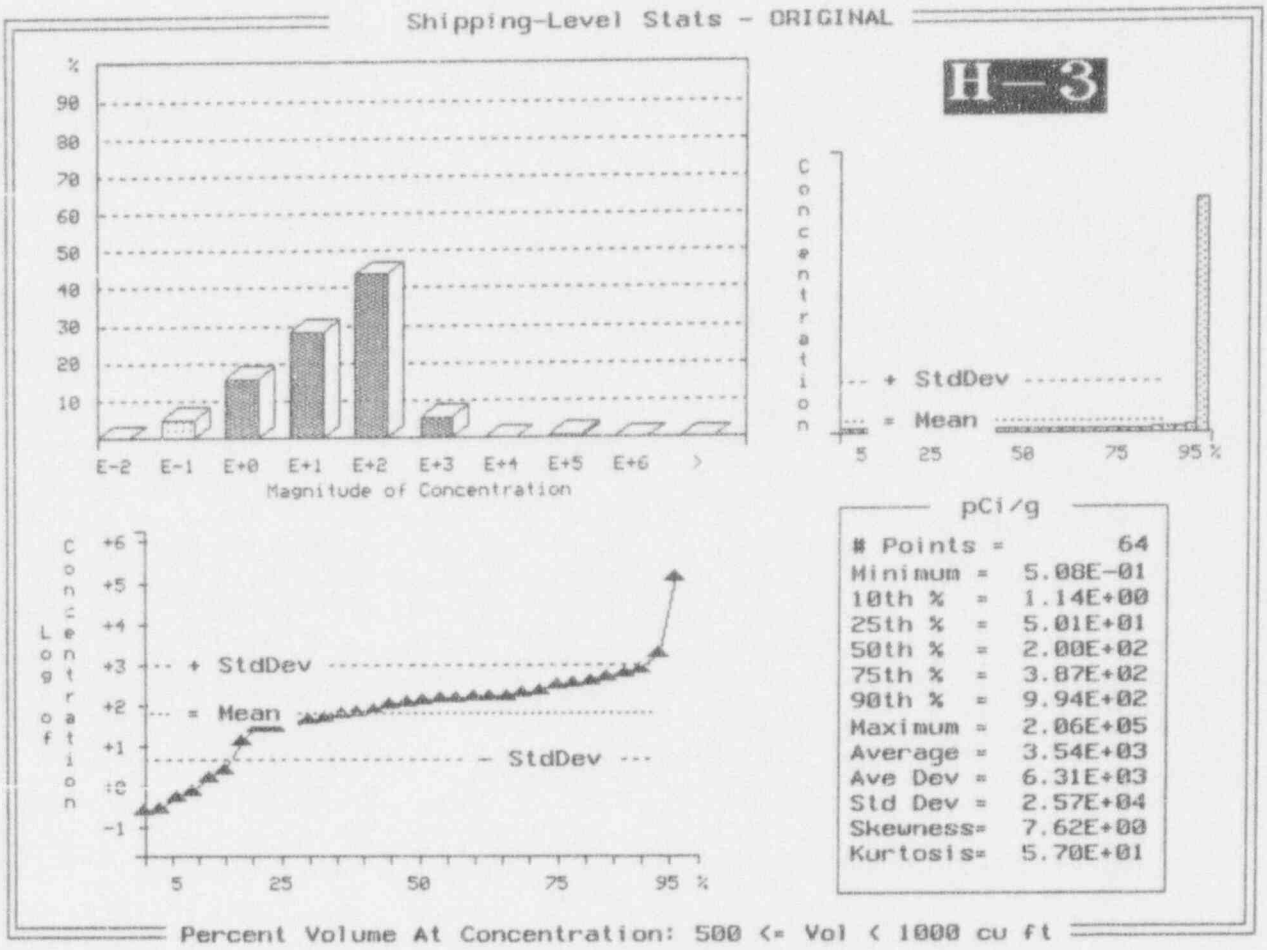
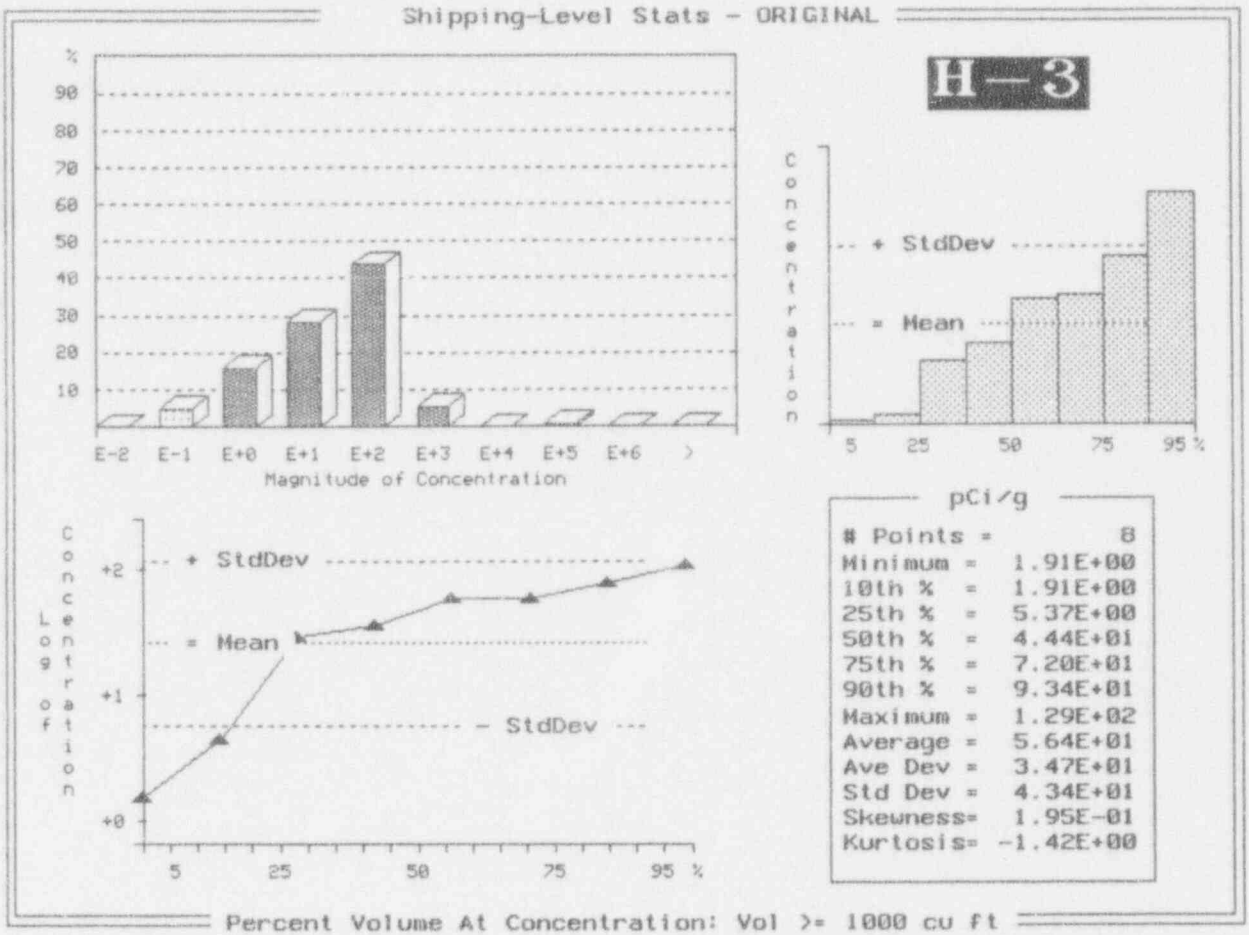


Exhibit F-21 (Continued)



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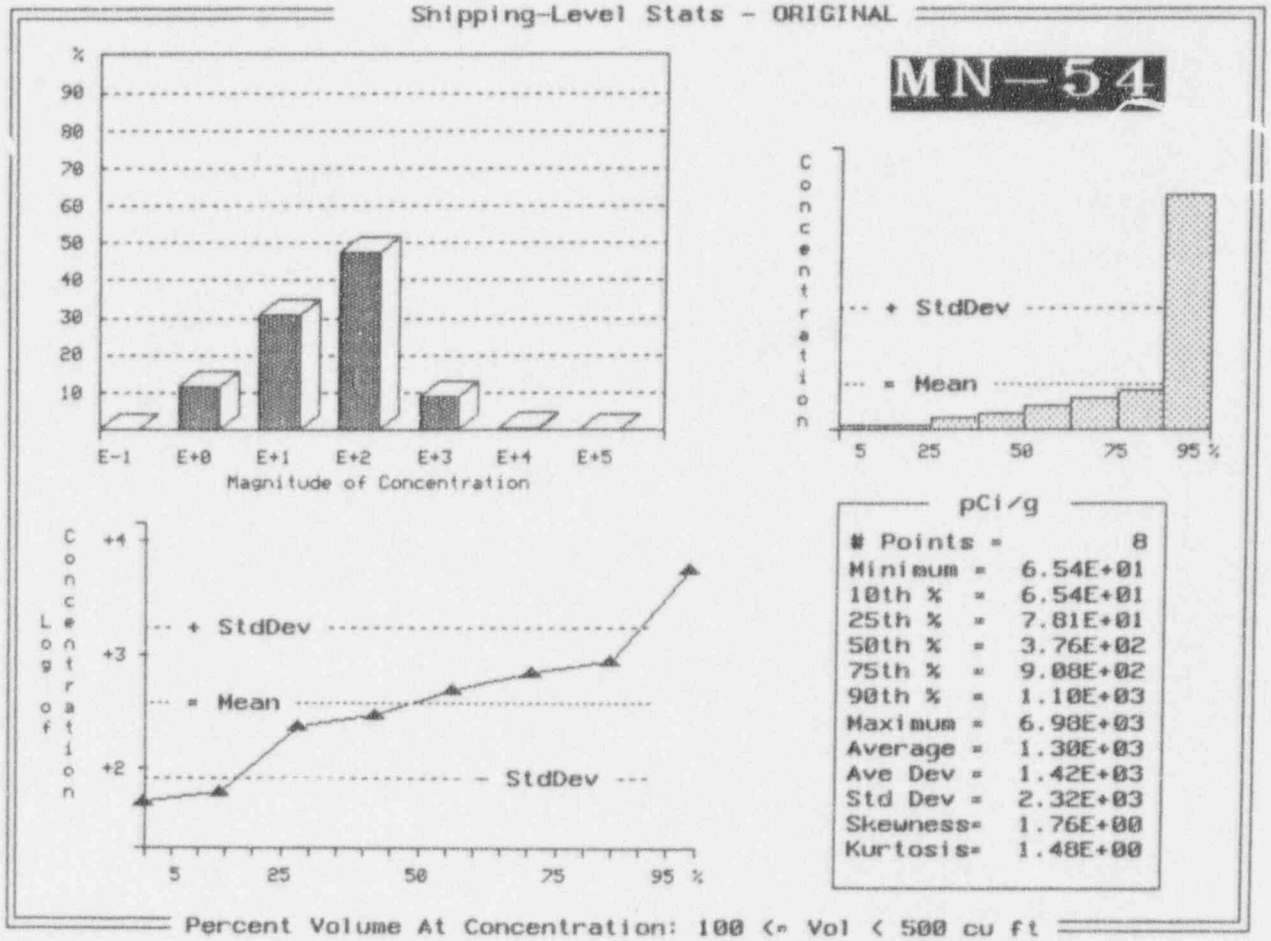

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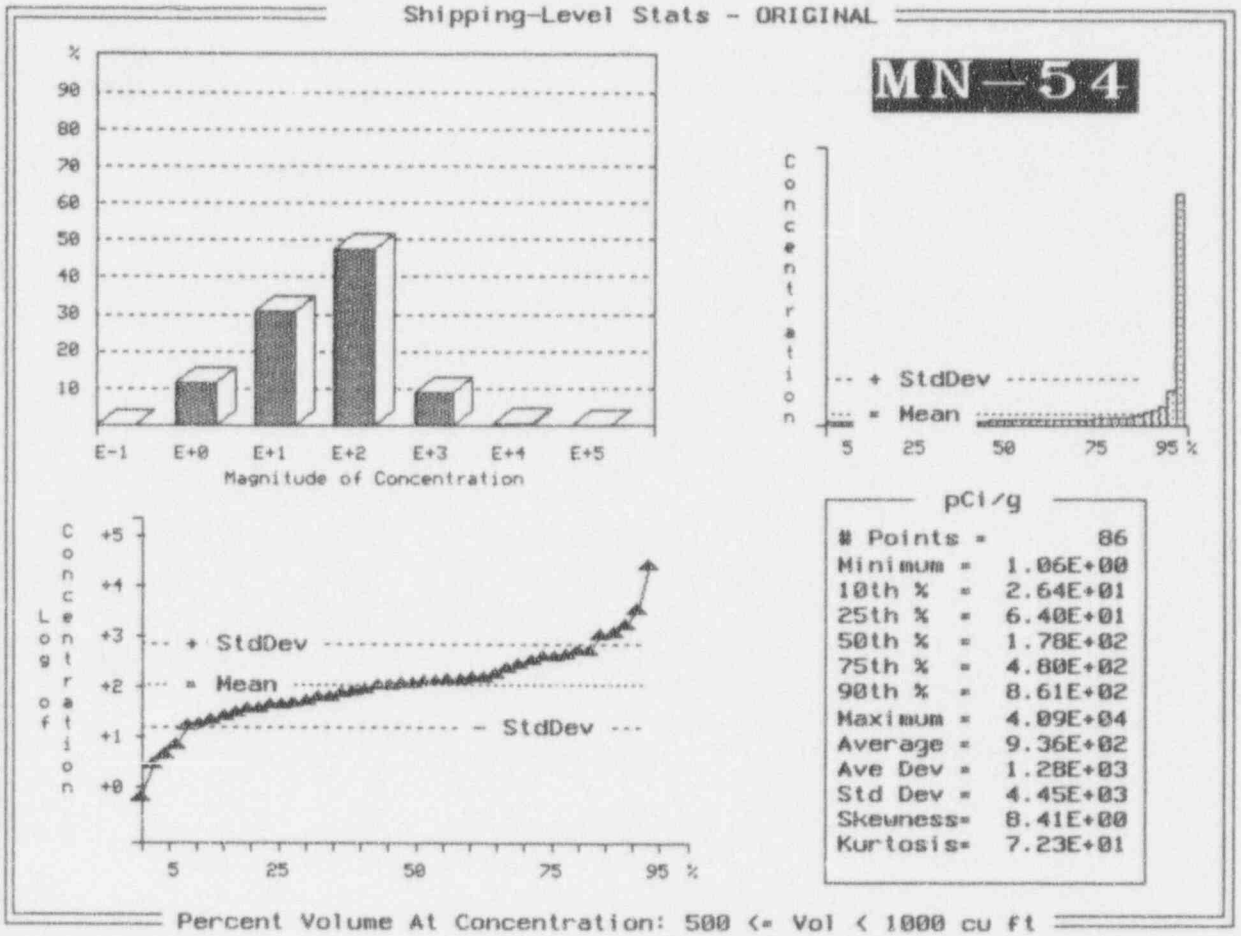
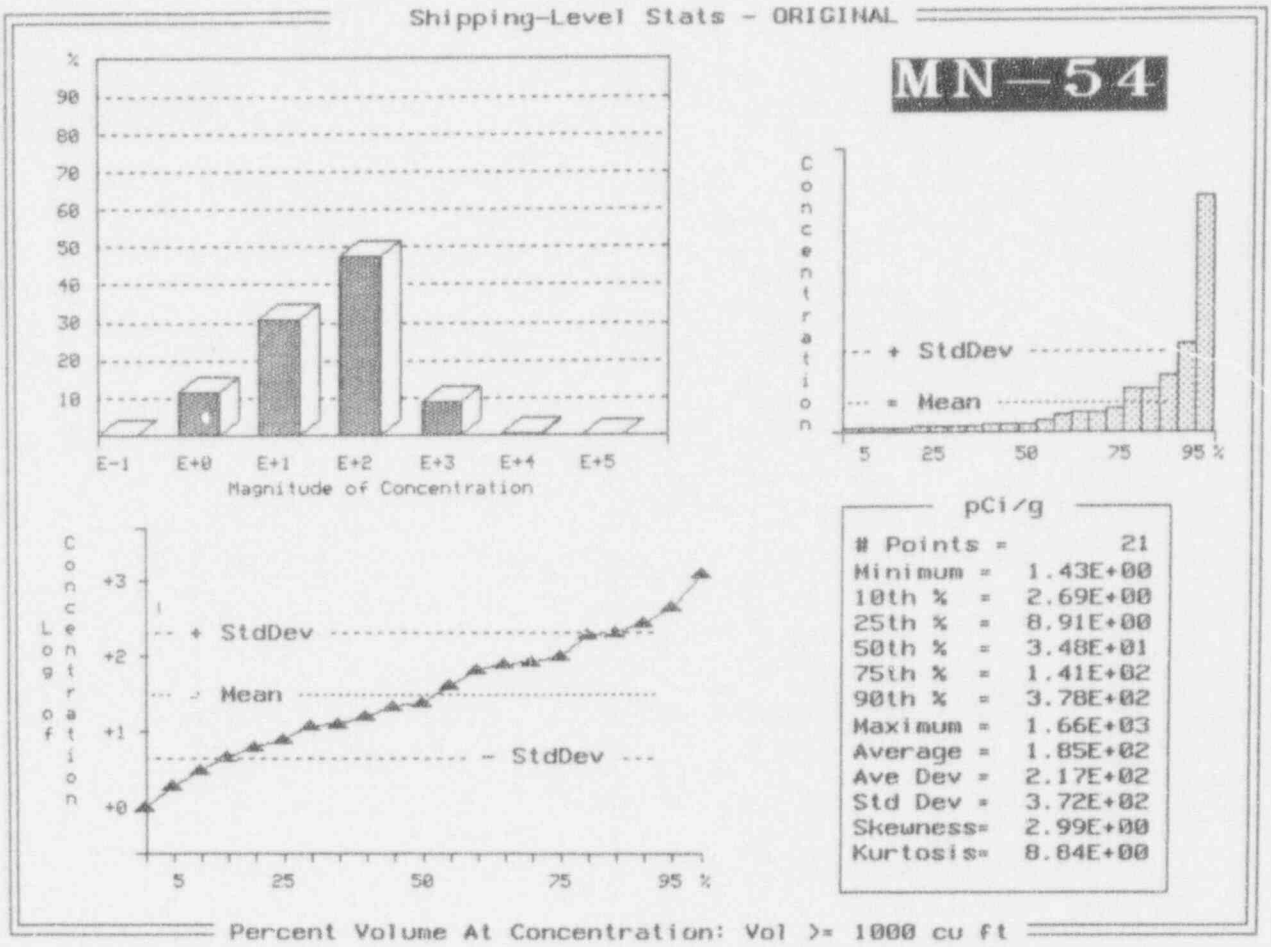


Exhibit F-21 (Continued)



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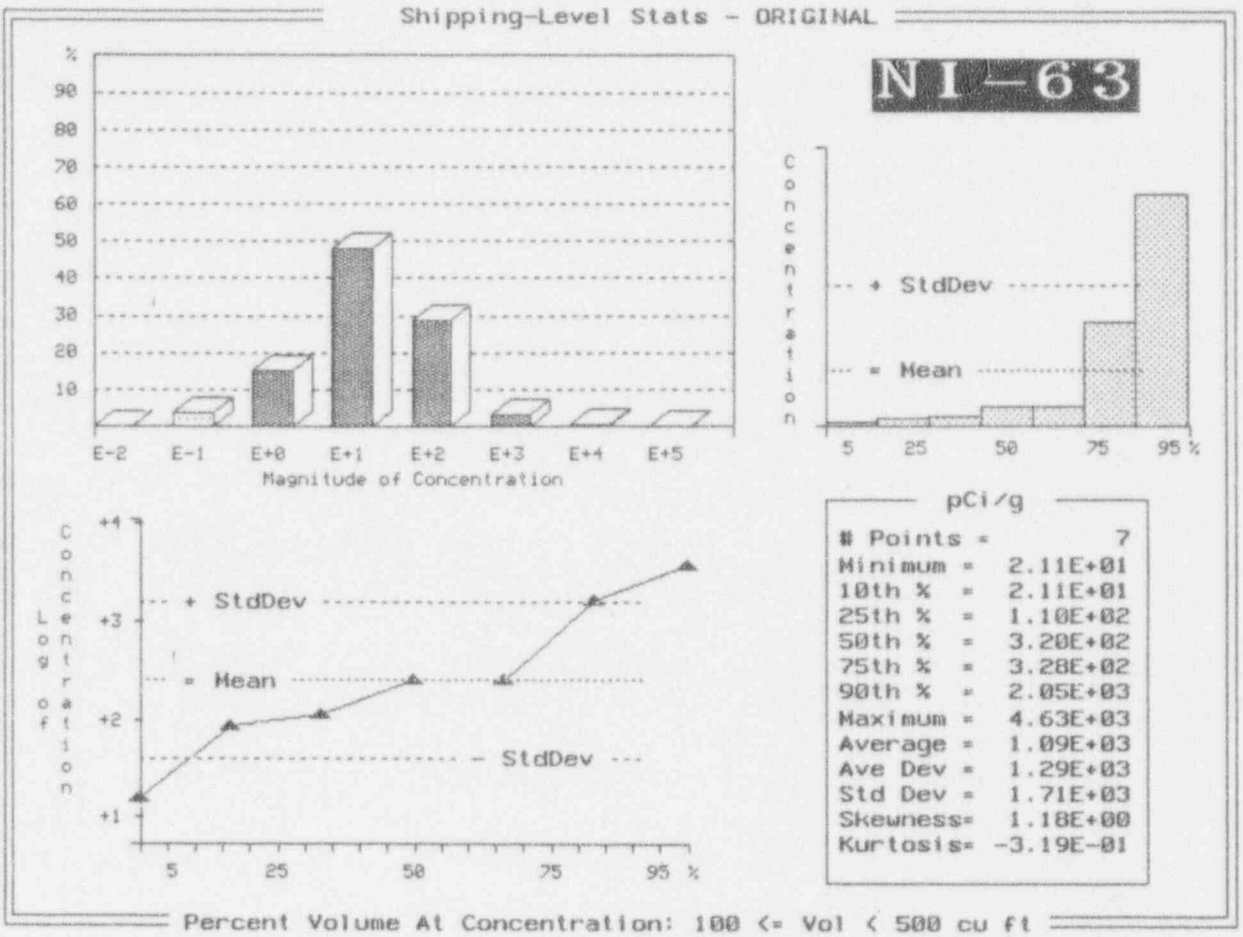

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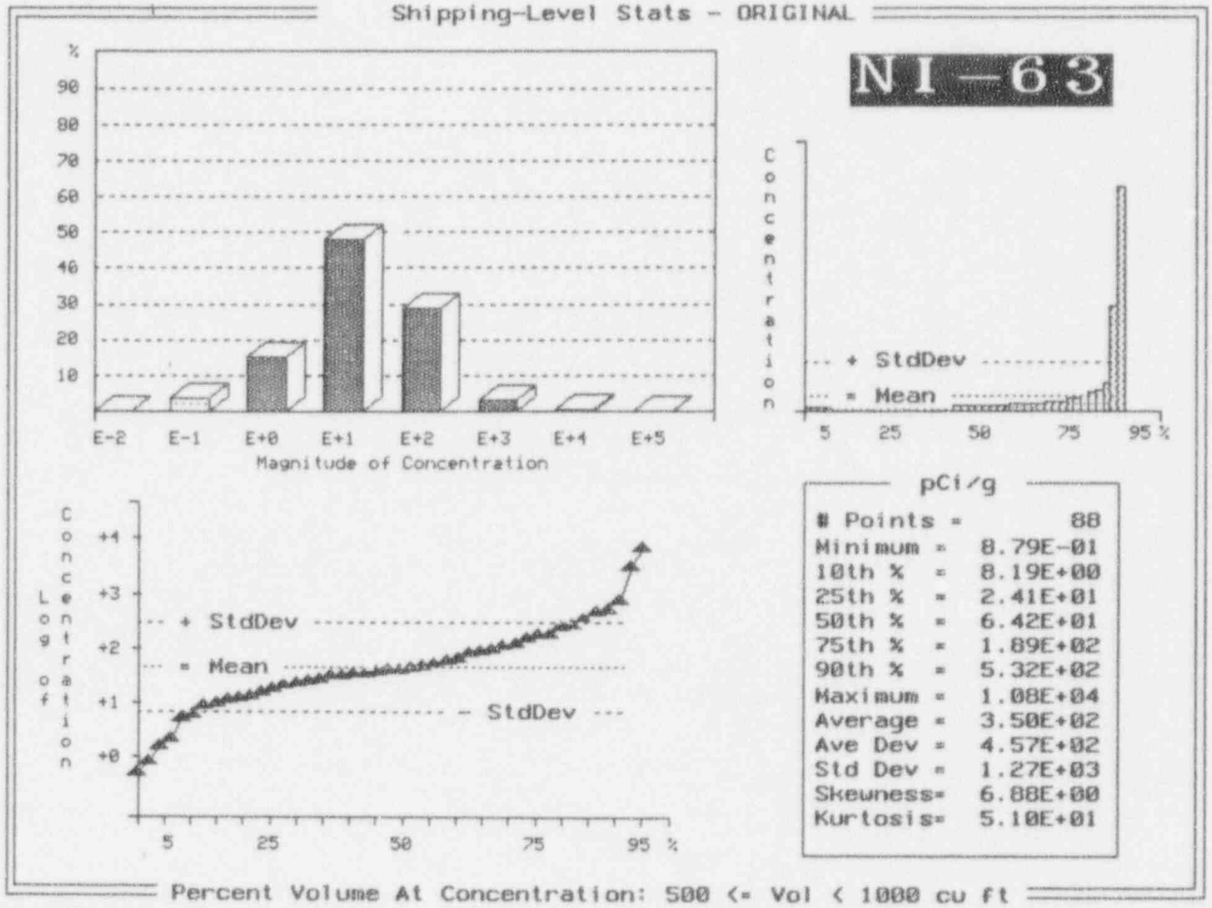


Exhibit F-21 (Continued)

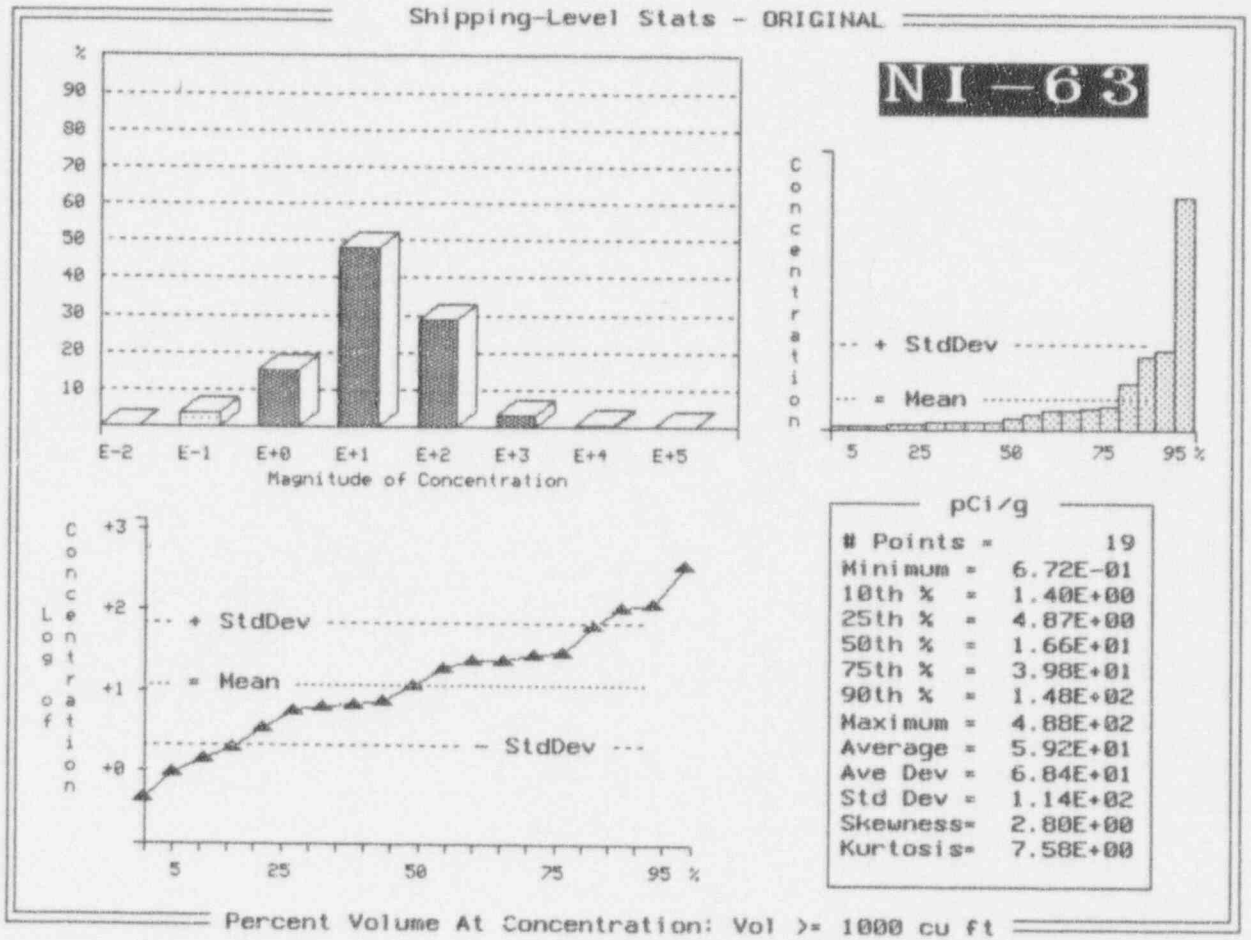
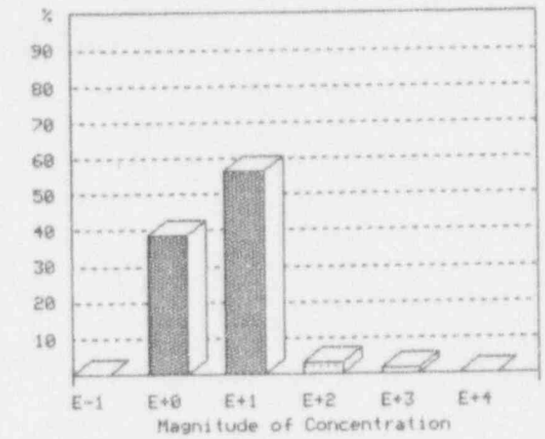


Exhibit F-21 (Continued)

Shipping-Level Stats - ORIGINAL



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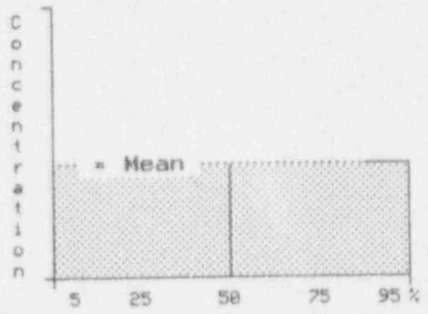
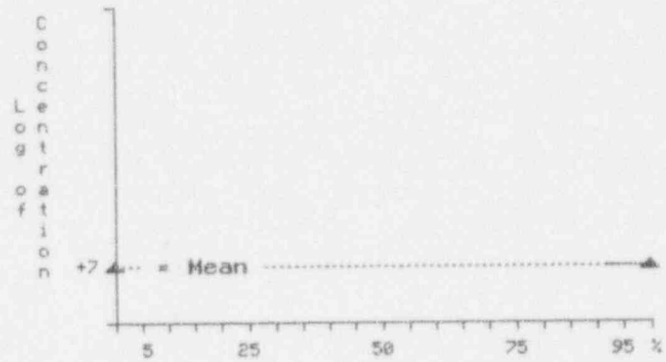




pCi/g

# Points =	2
Minimum =	6.72E+01
10th % =	6.72E+01
25th % =	6.72E+01
50th % =	6.72E+01
75th % =	6.72E+01
90th % =	6.72E+01
Maximum =	6.72E+01
Average =	6.72E+01
Ave Dev =	0.00E+00
Std Dev =	0.00E+00
Skewness=	0.00E+00
Kurtosis=	-3.00E+00

Percent Volume At Concentration: Vol < 10 cu ft

Exhibit F-21 (Continued)

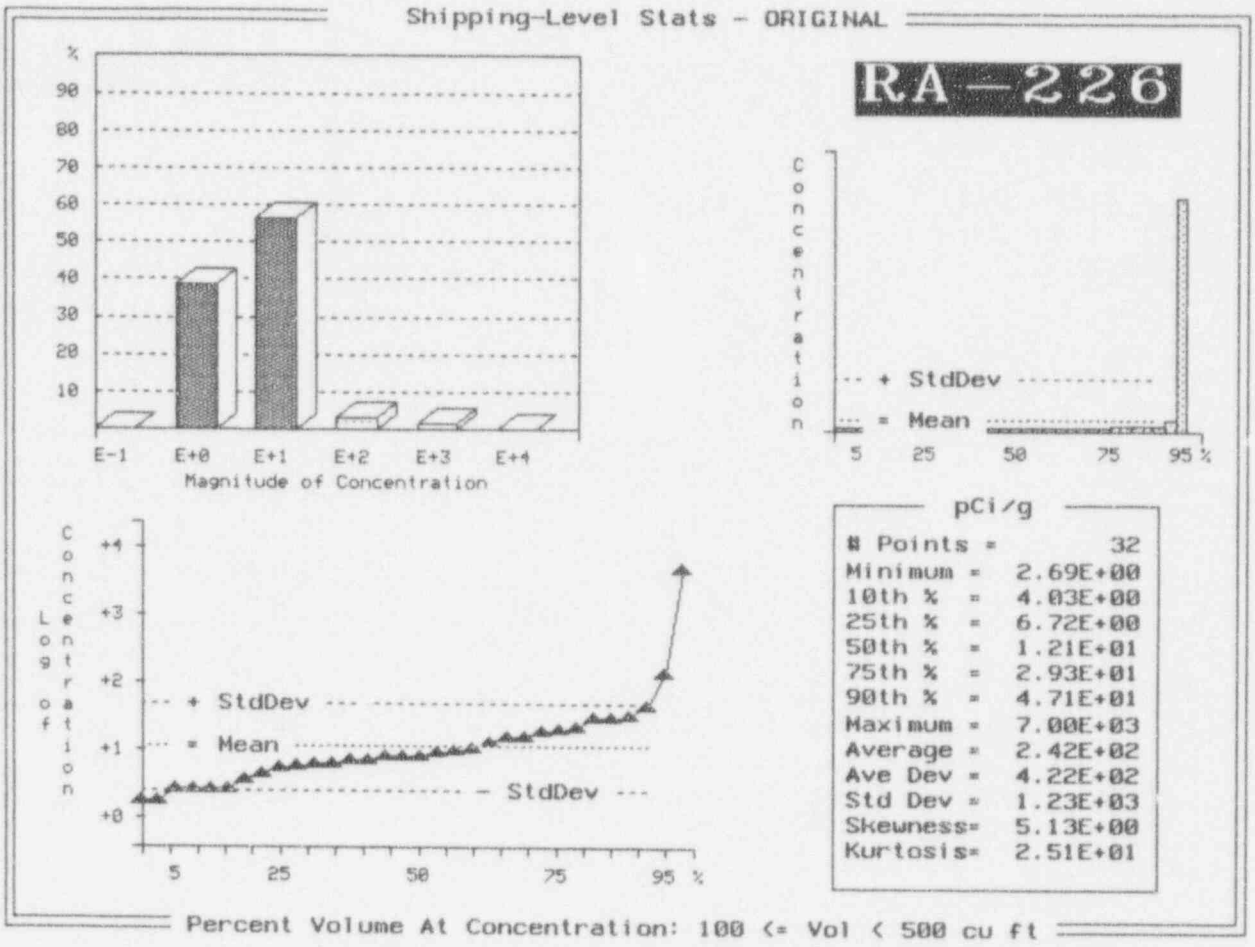


Exhibit F-21 (Continued)

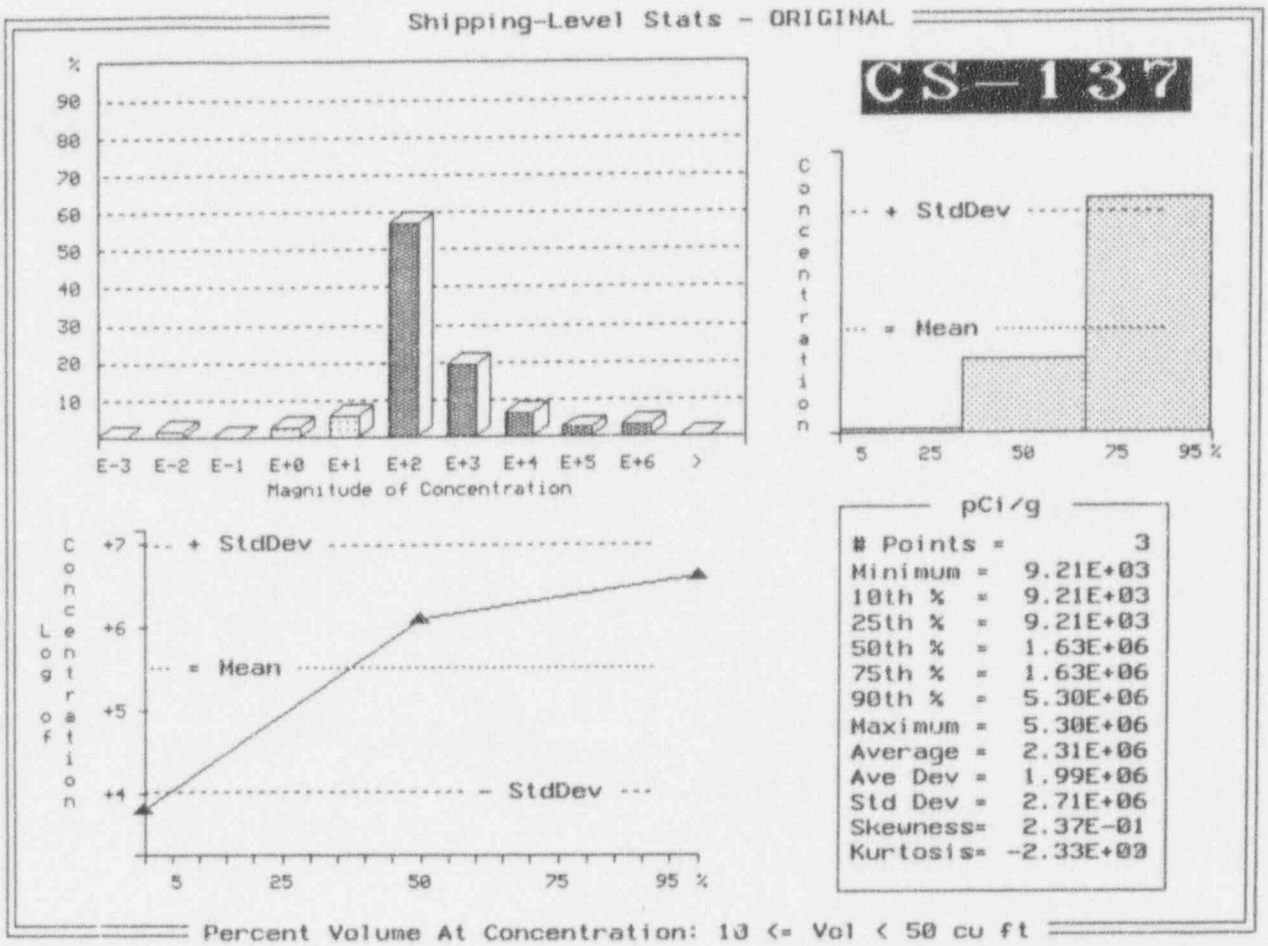


Exhibit F-21 (Continued)

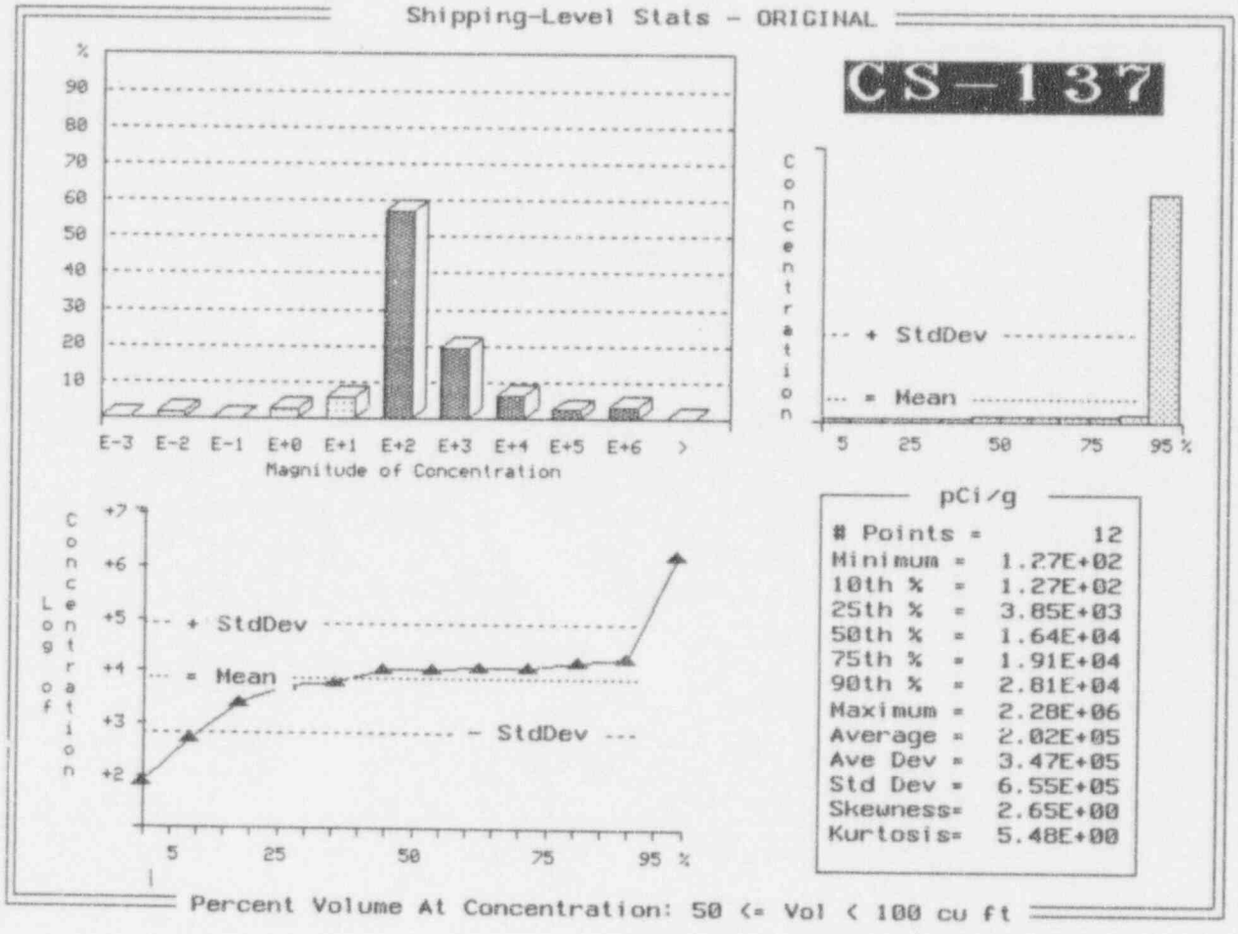


Exhibit F-21 (Continued)

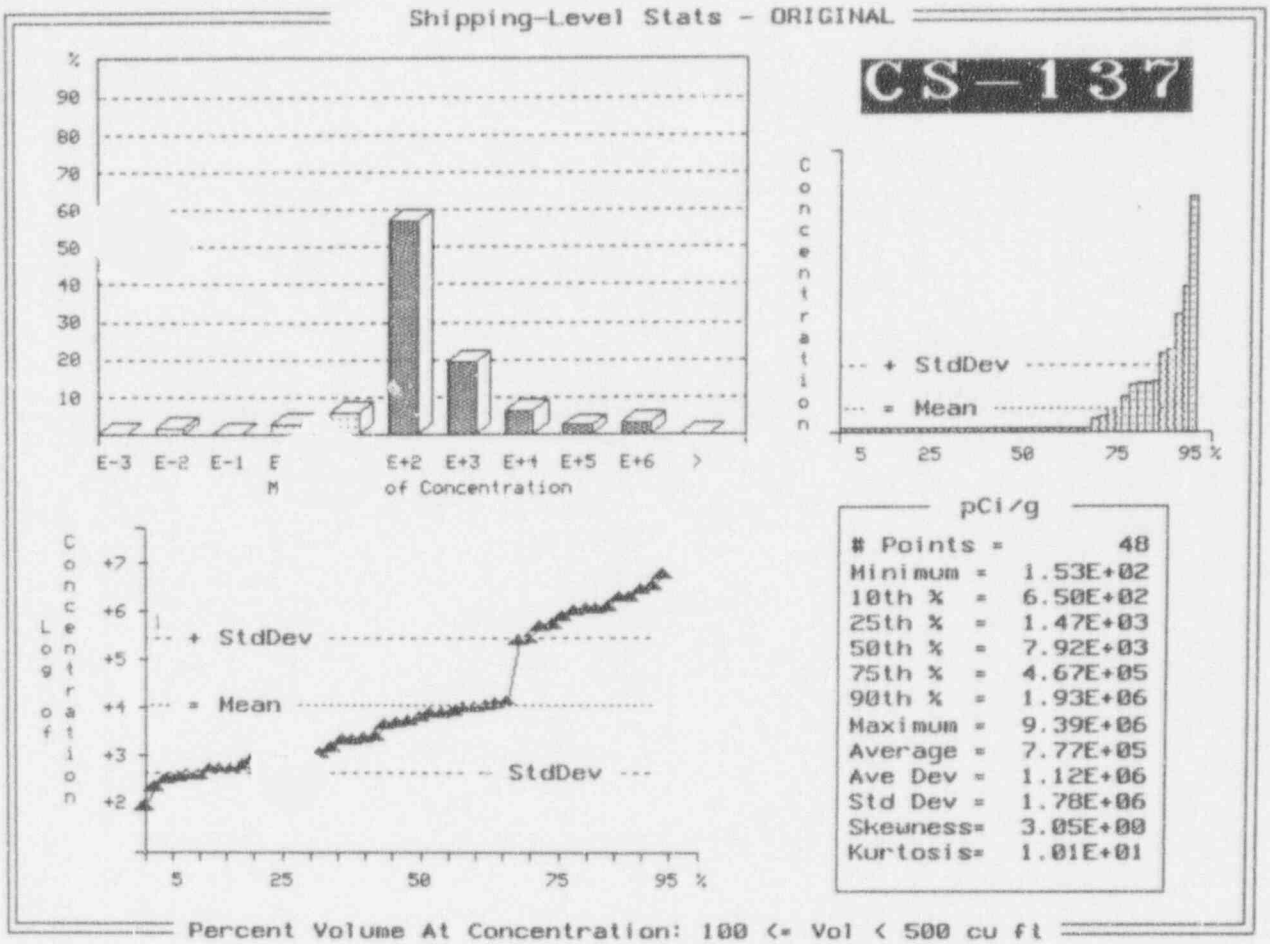


Exhibit F-21 (Continued)

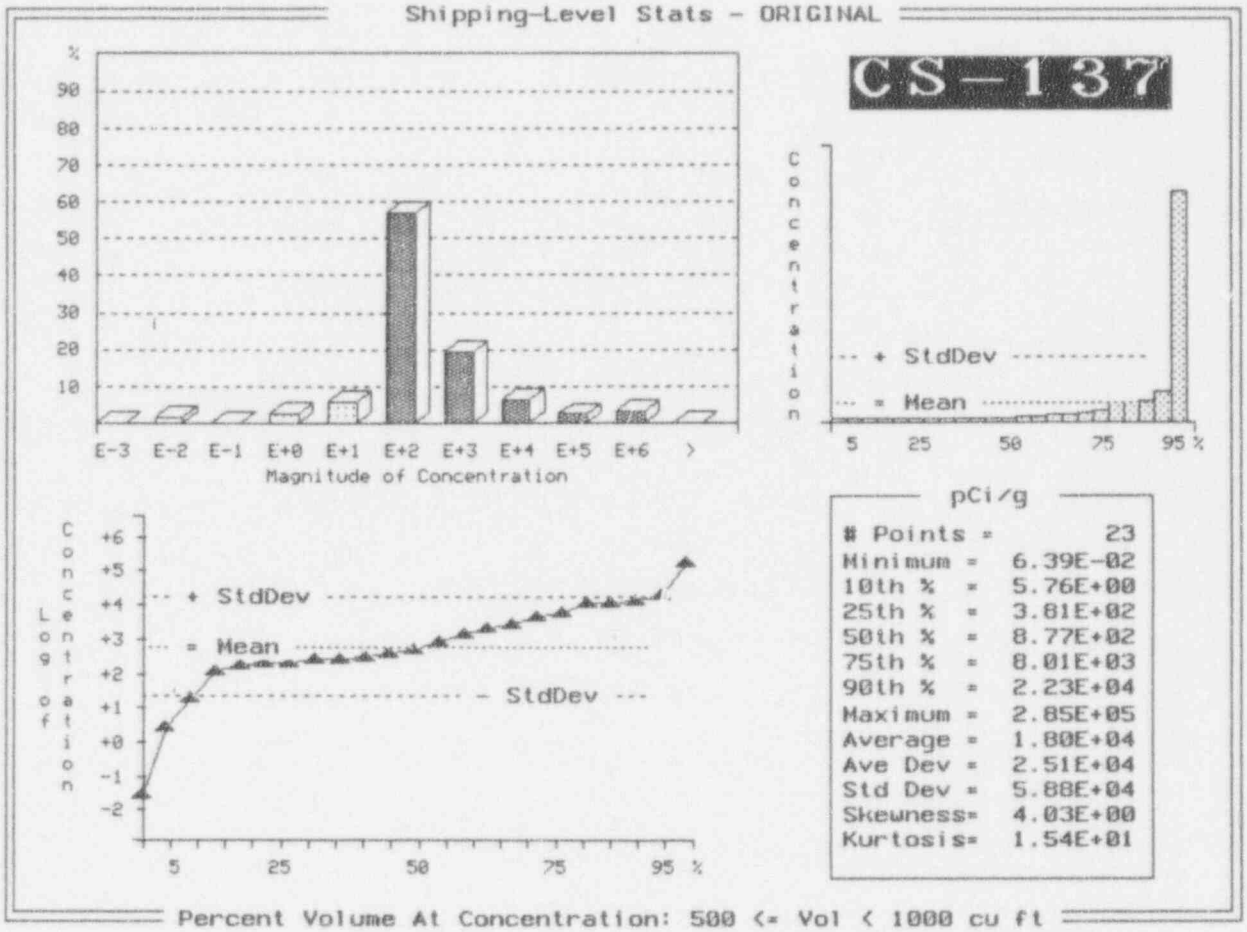
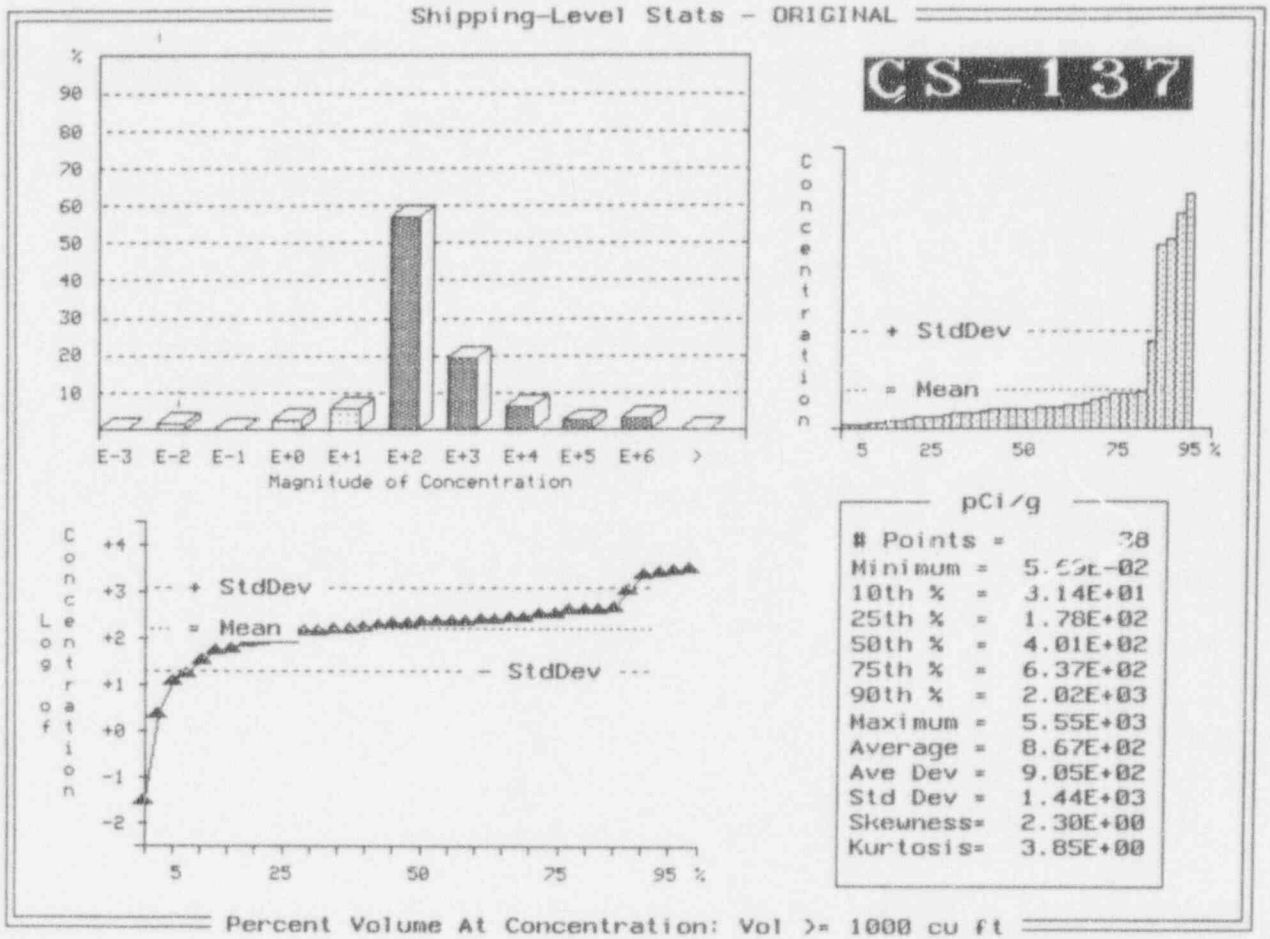


Exhibit F-21 (Continued)



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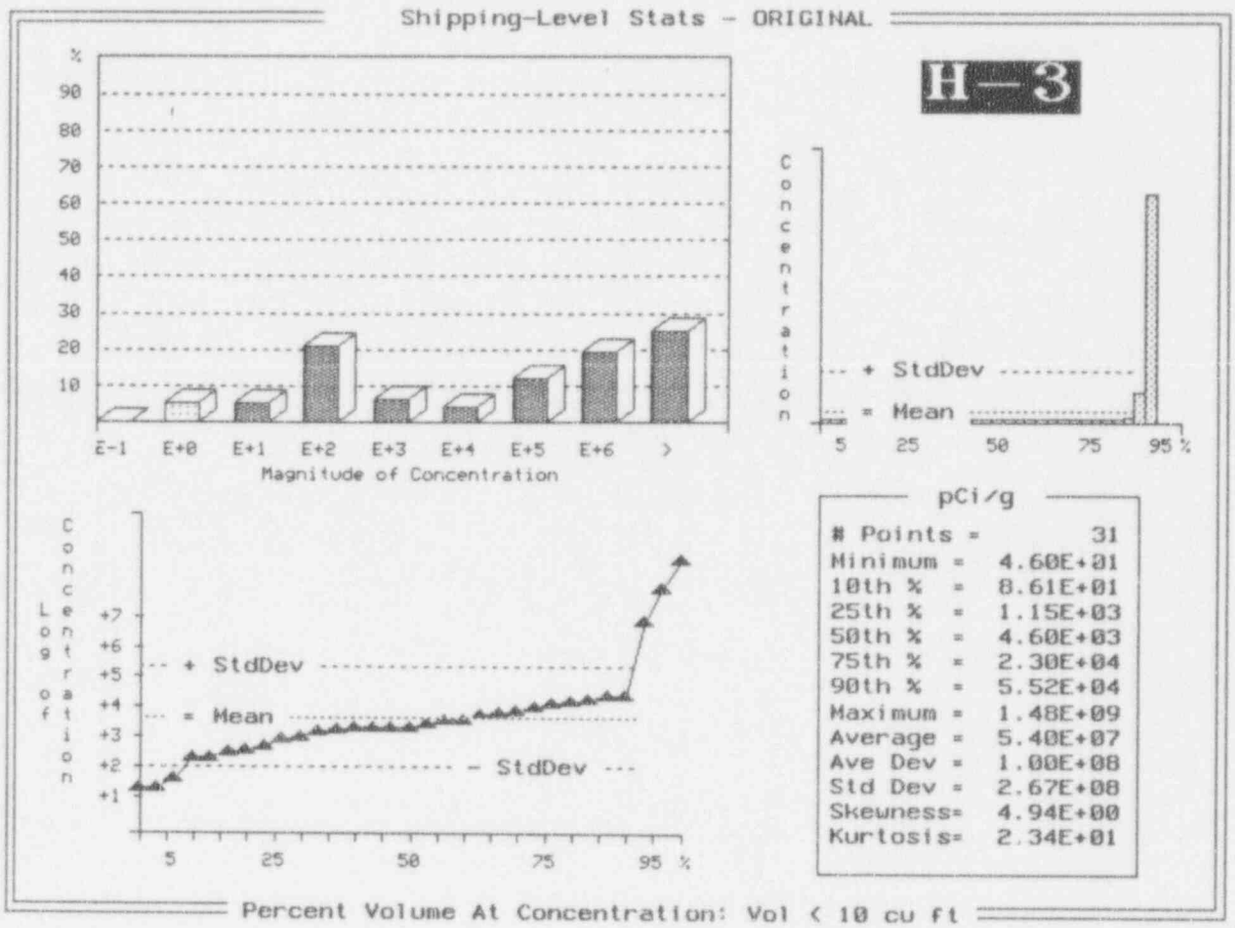

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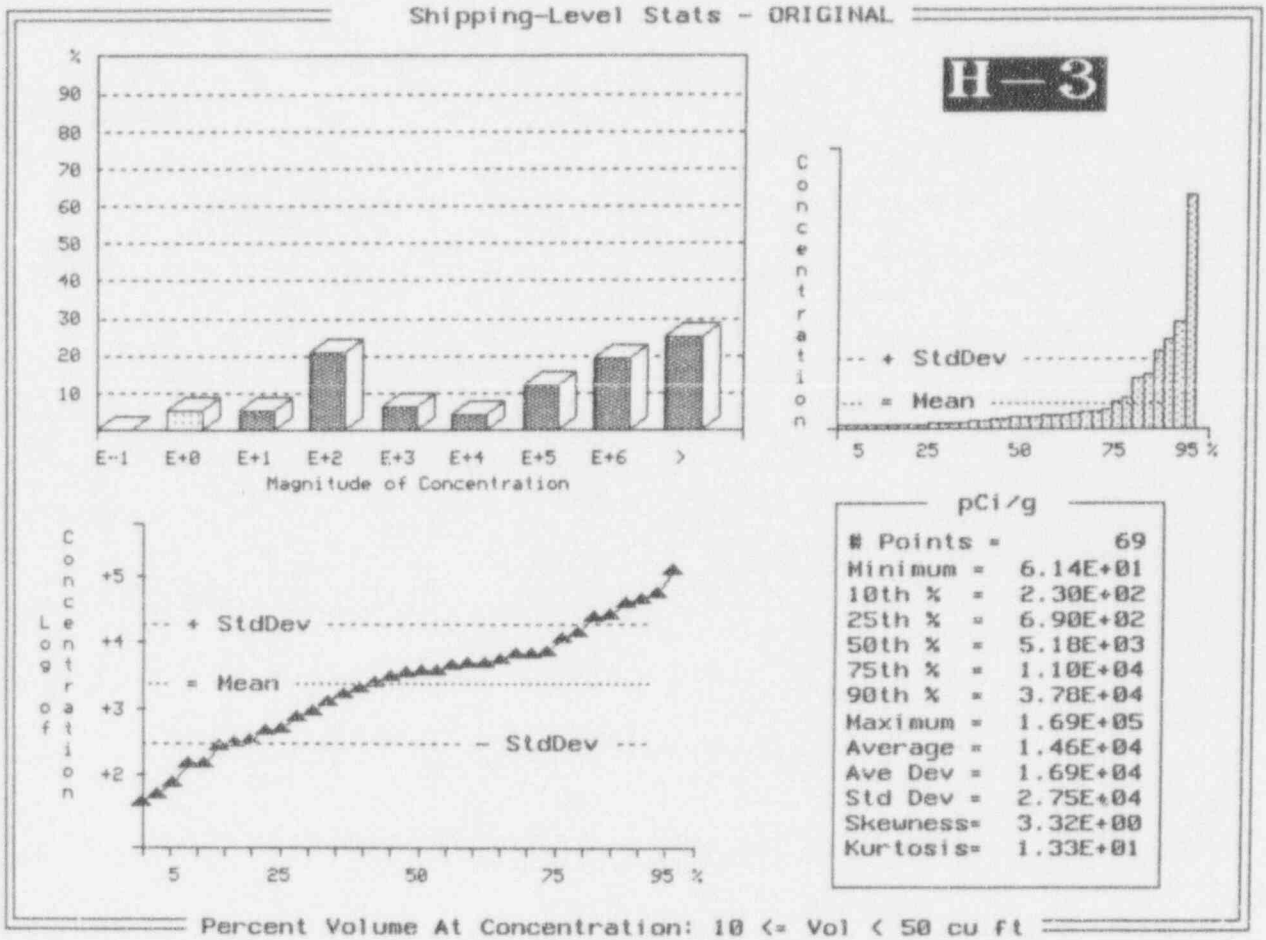

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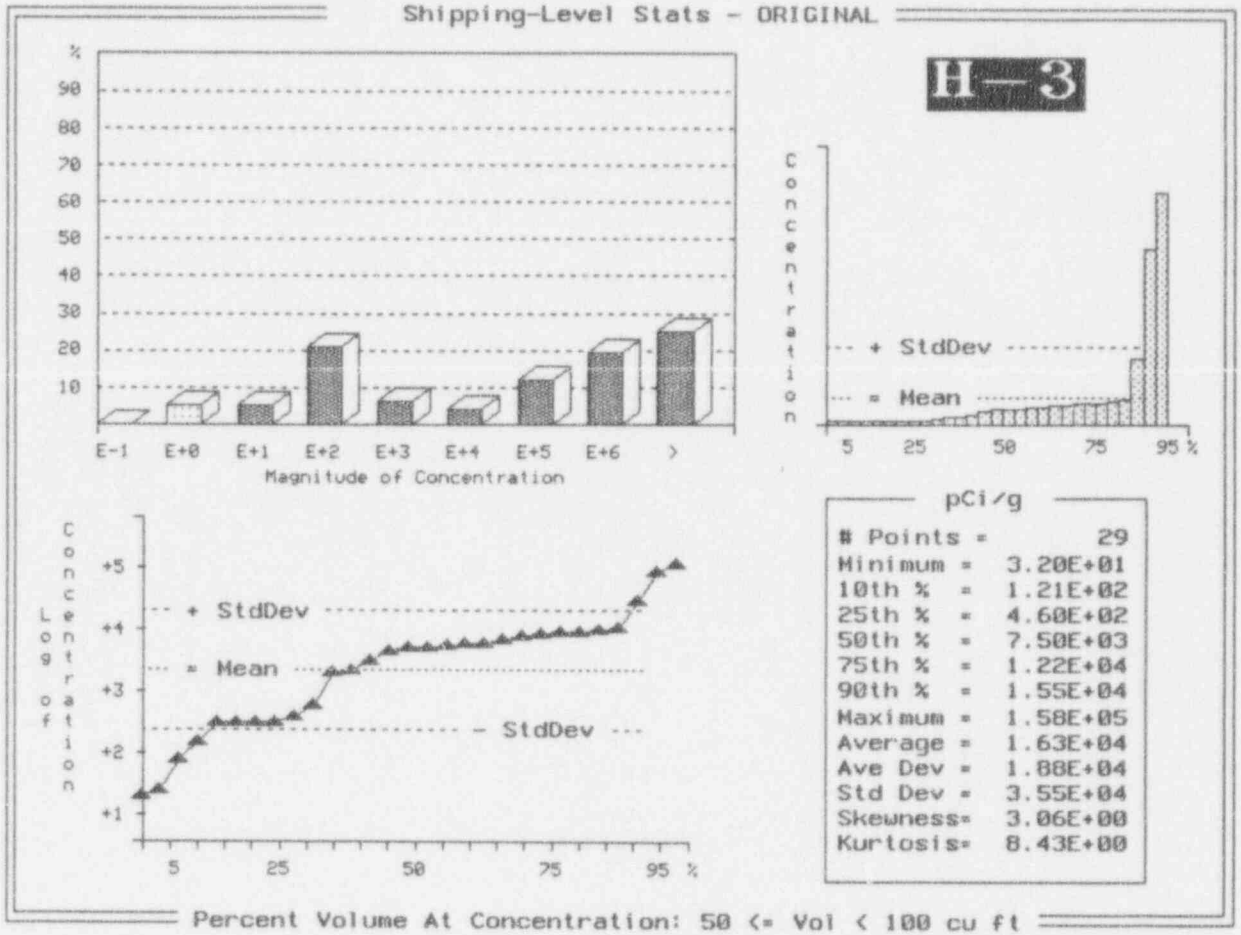
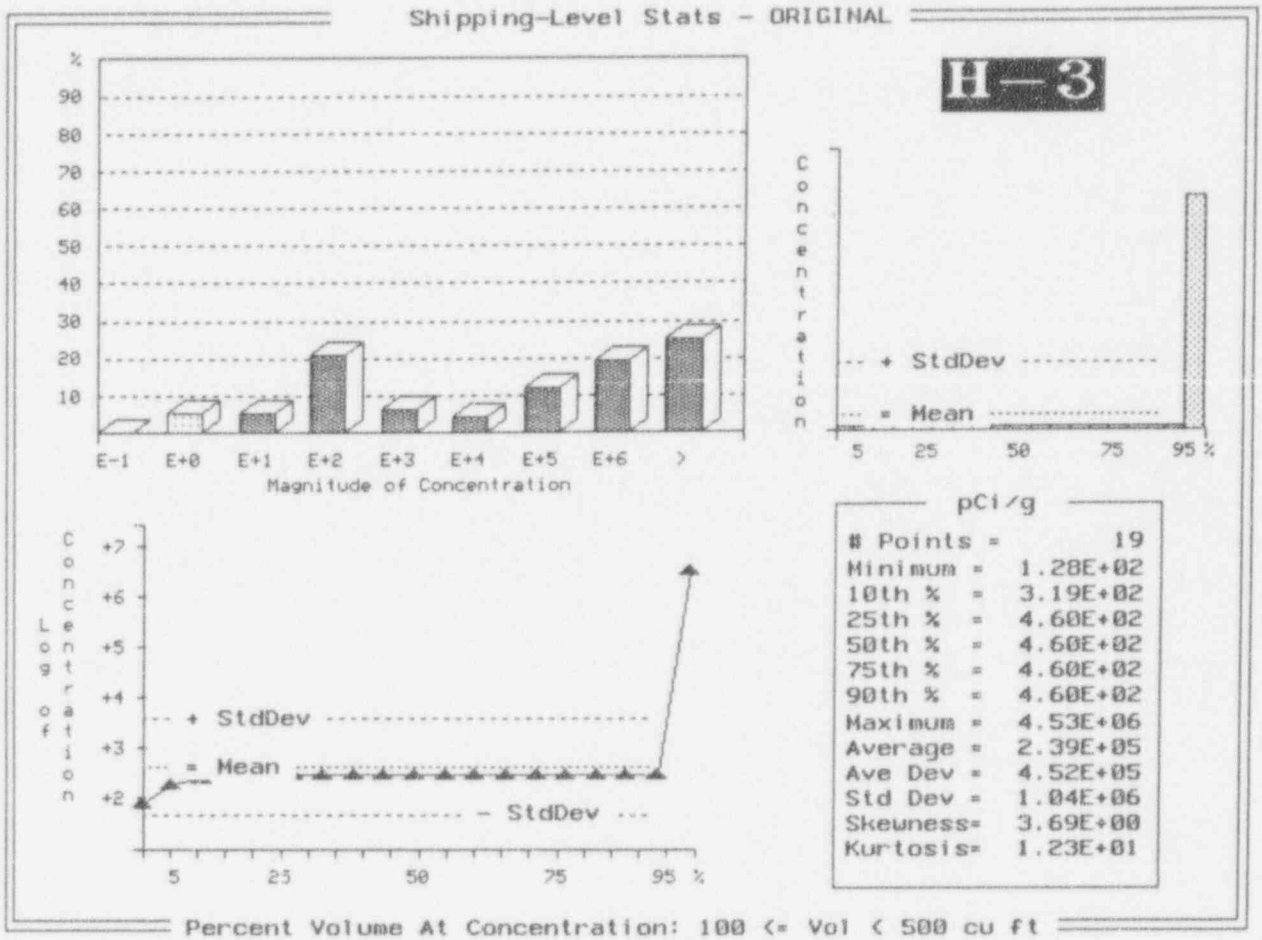


Exhibit F-21 (Continued)



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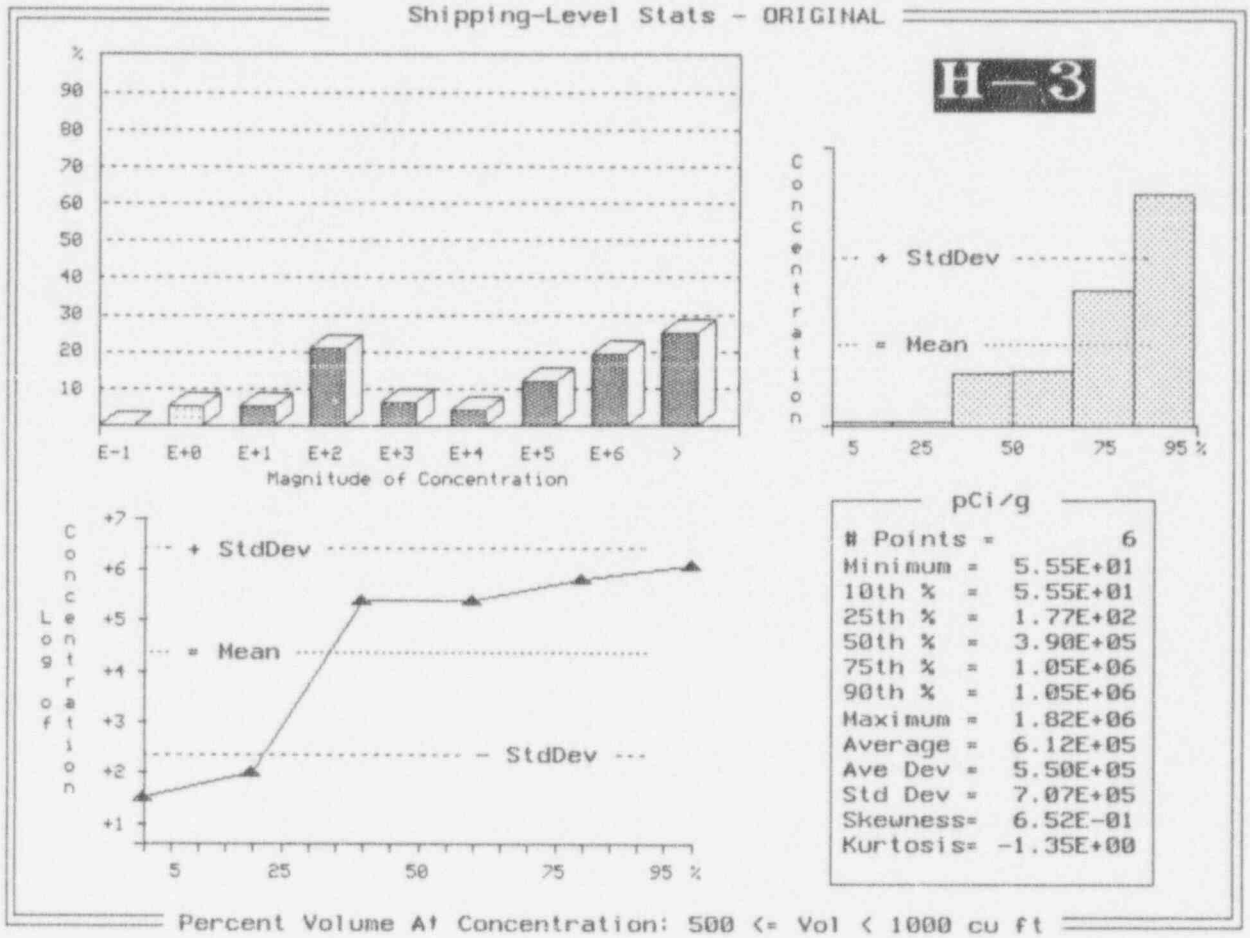

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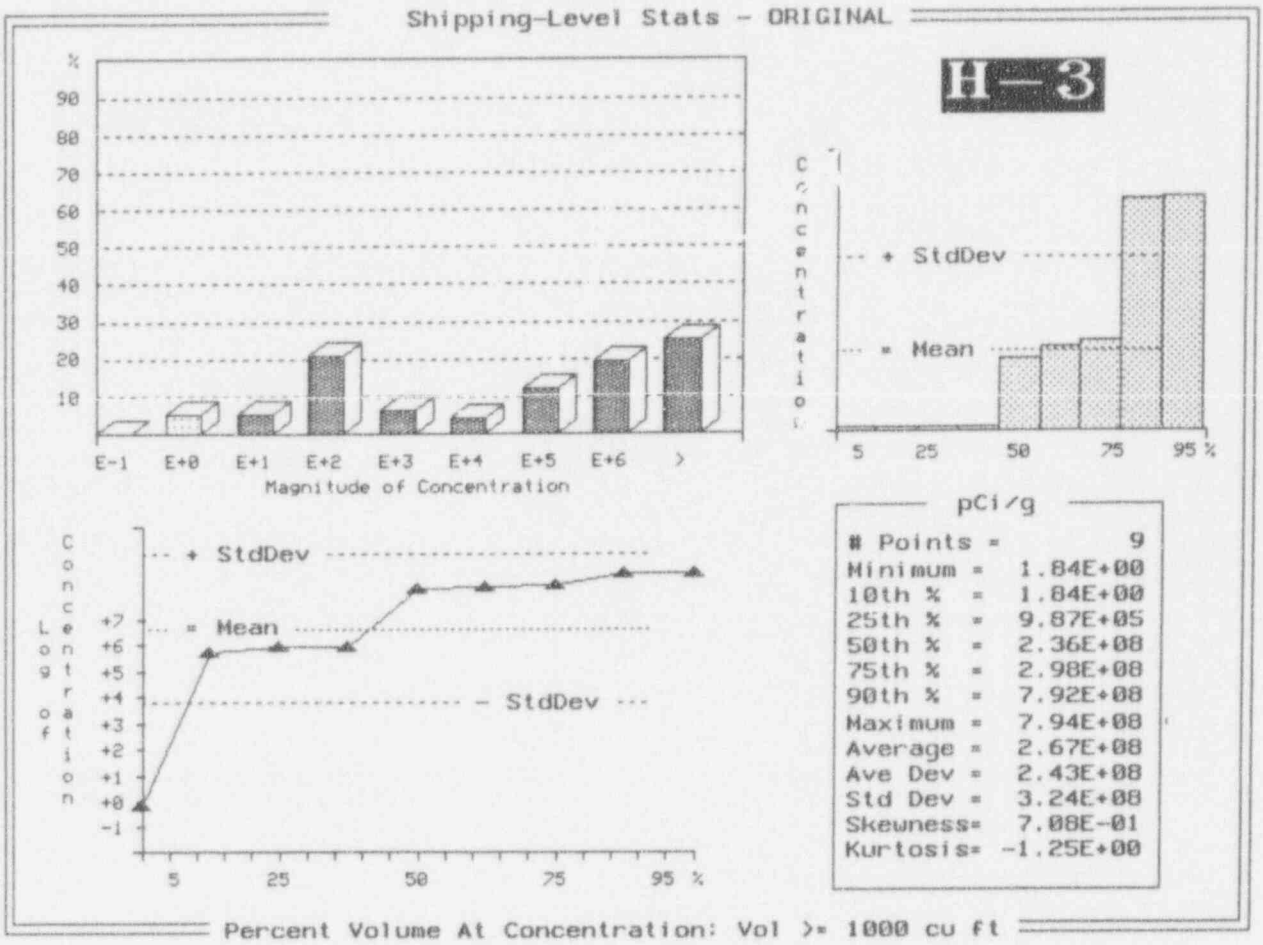
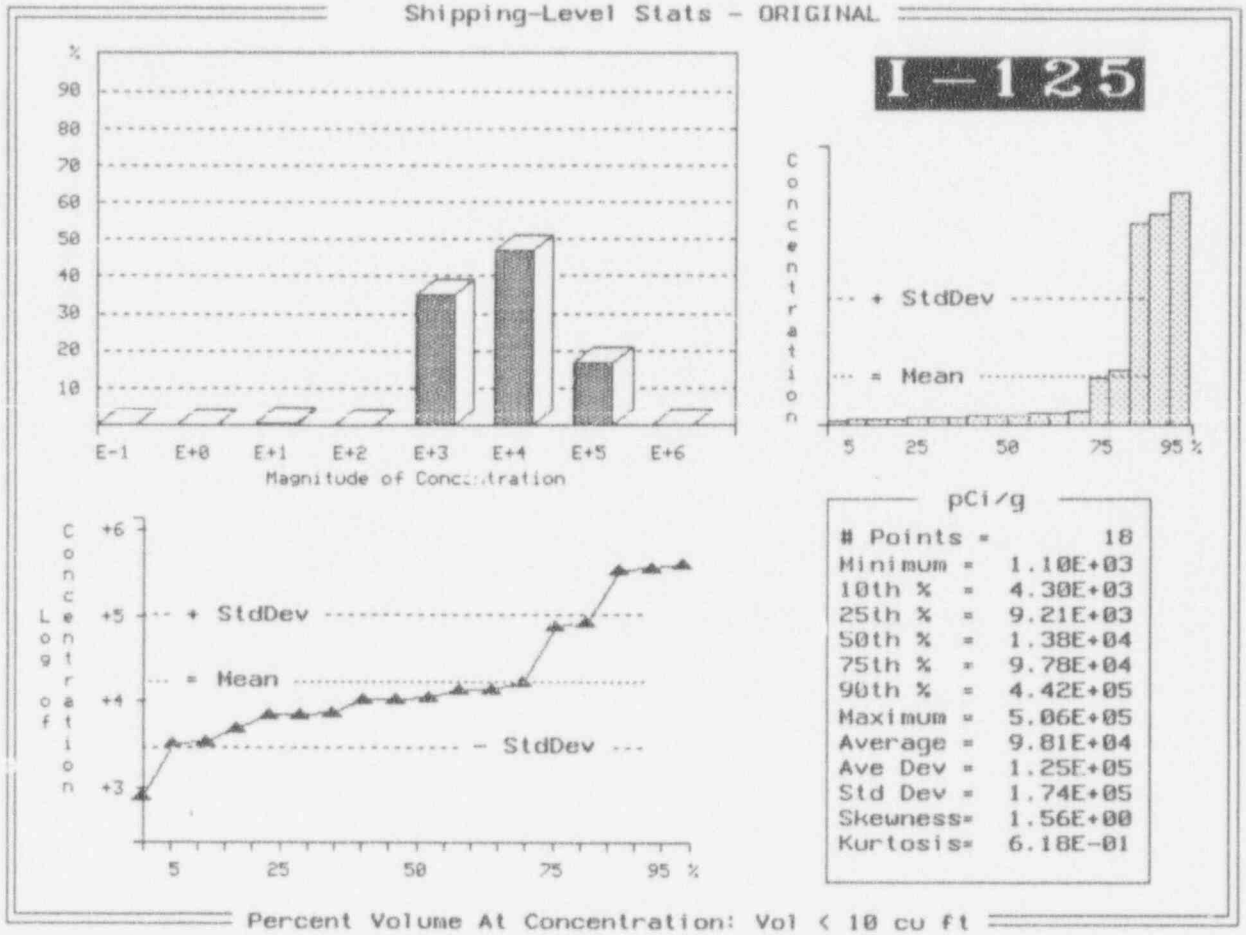


Exhibit F-21 (Continued)



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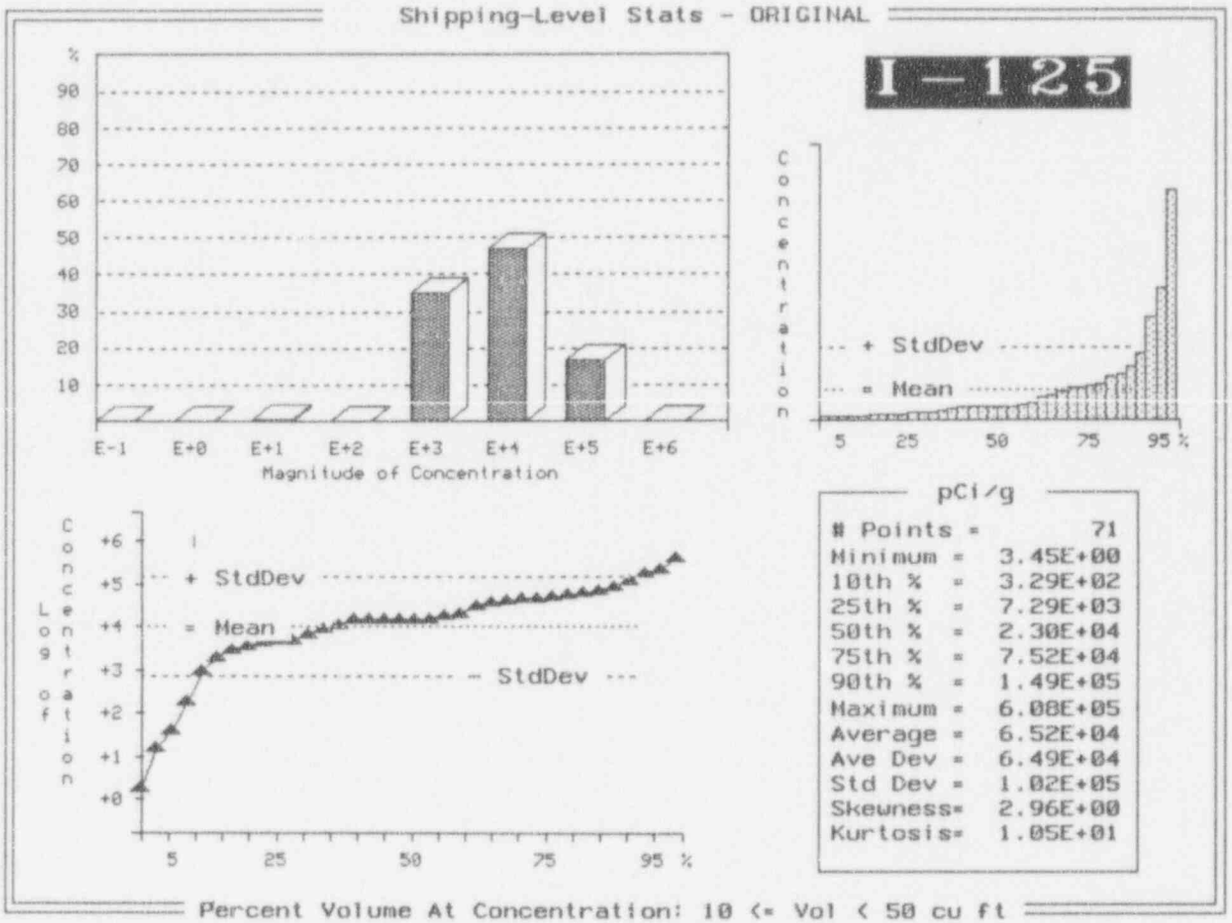
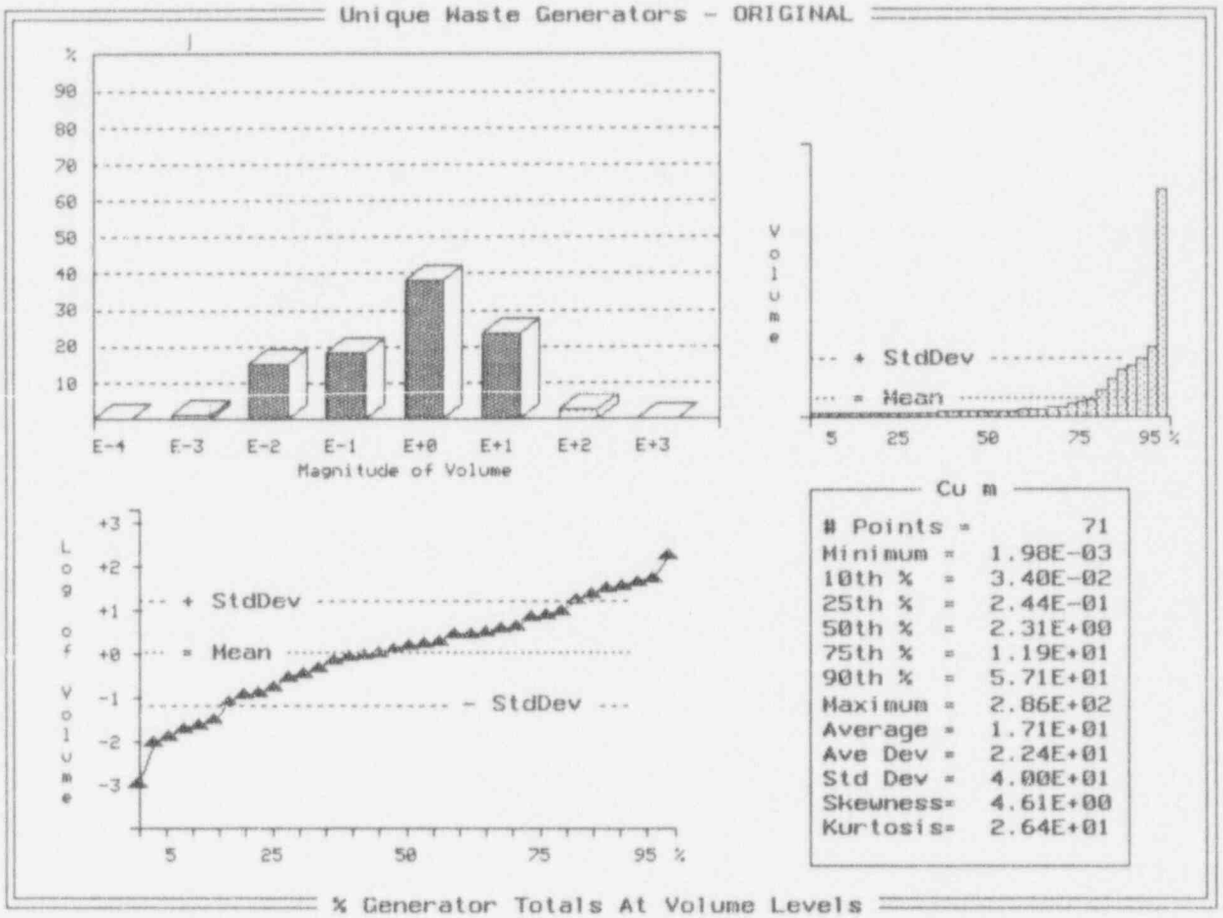


Exhibit F-22
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Southeast
Waste generator class:	Academic
Total number of waste generators:	75
Total associated waste volume (m^3):	1,212
Total associated waste activity (Ci):	1,246
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	31
Percent of total(%):	41
Total number of shipping records:	140
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	515,600
Total waste volume (m^3):	908
Fractional waste volume (%): (this analysis/total)	75
Total waste activity (Ci):	53
Fractional waste activity (%): (this analysis/total)	4

Exhibit F-22 (Continued)



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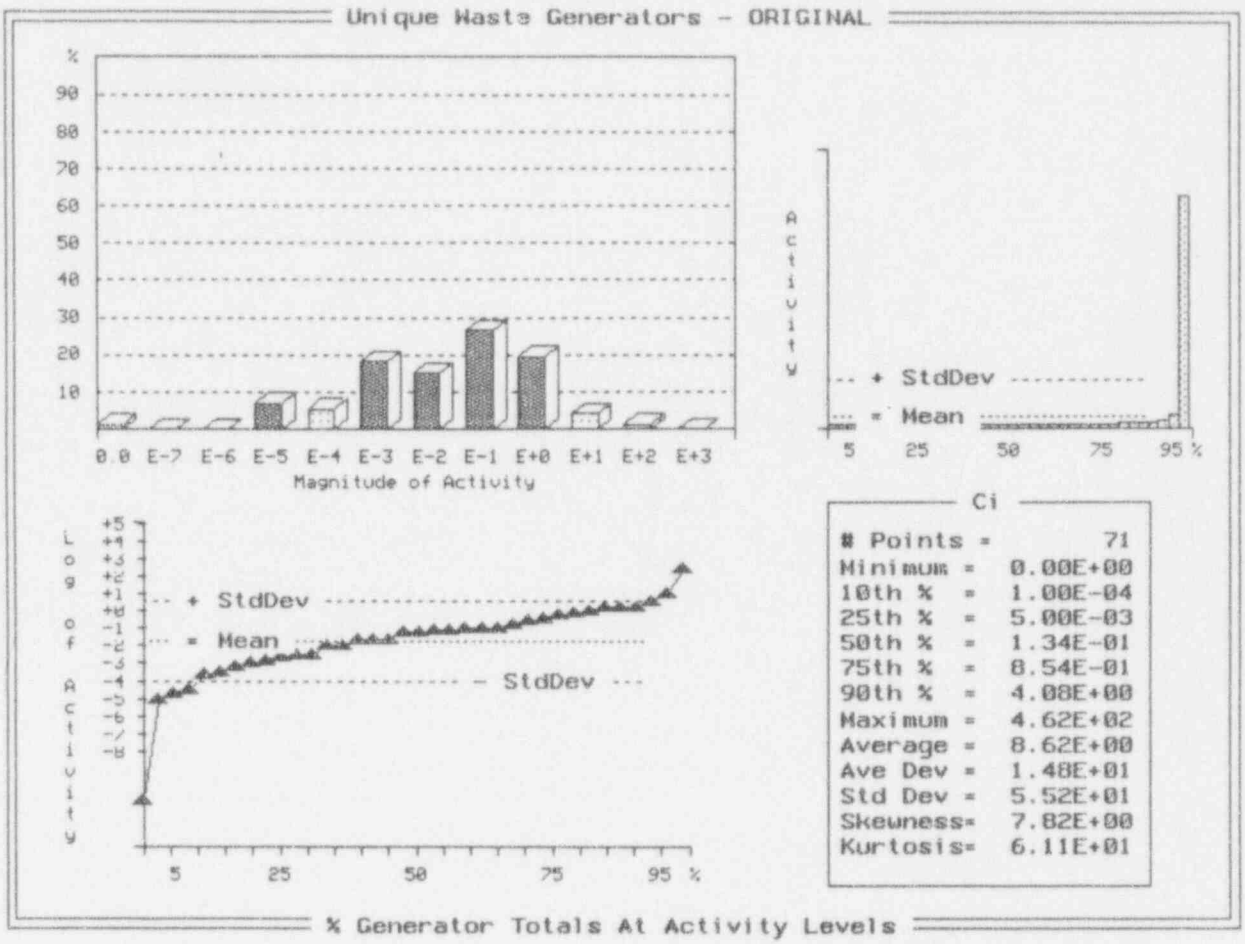

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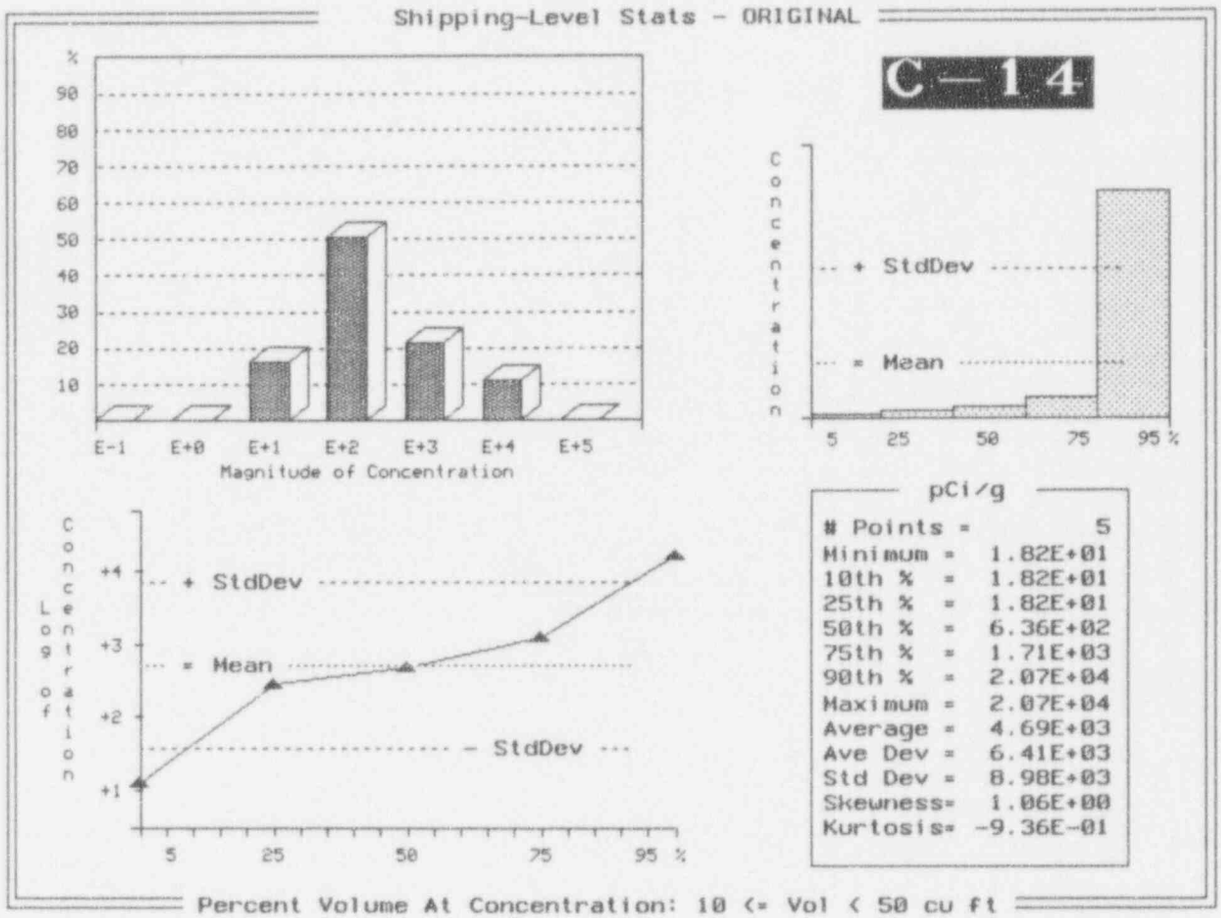

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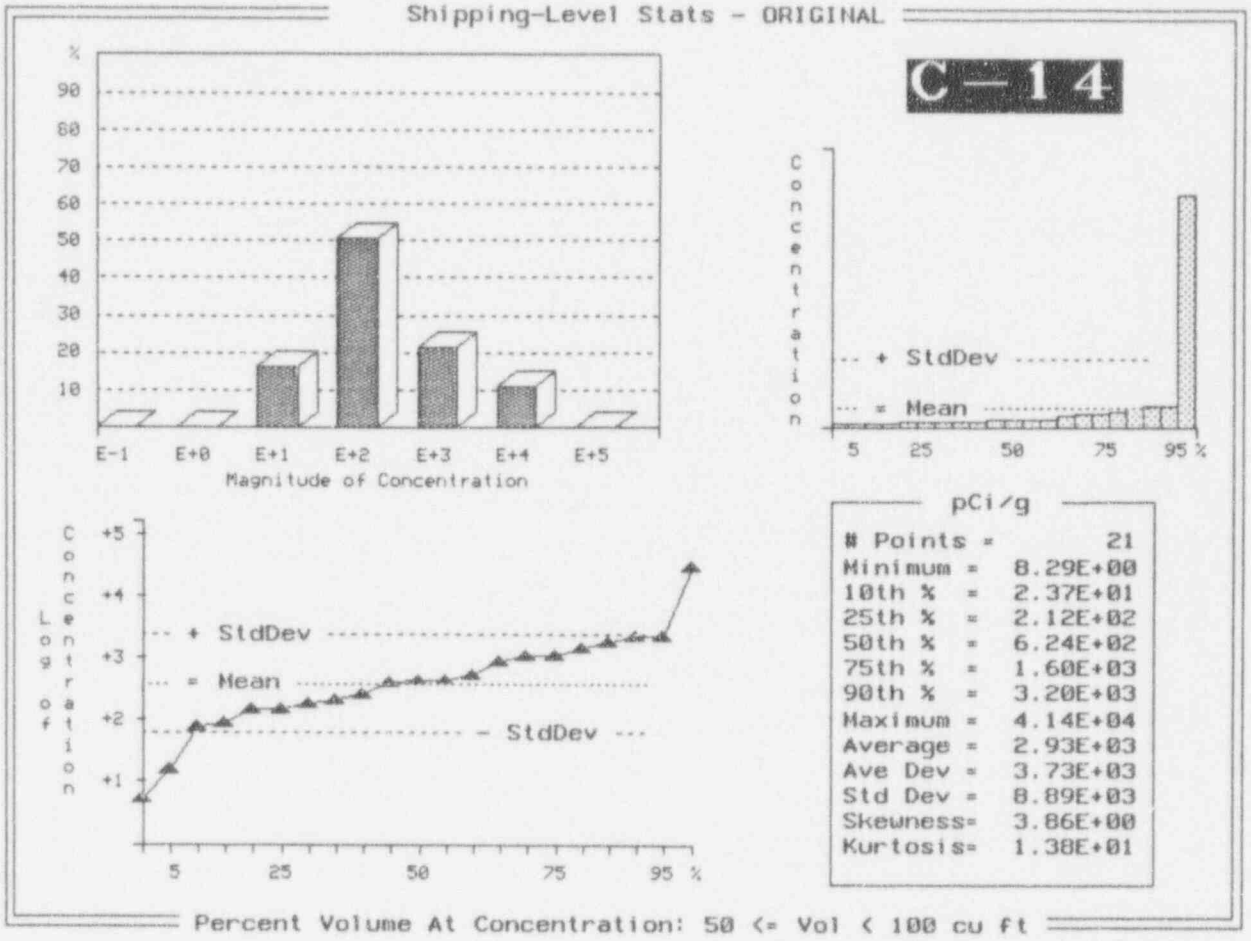

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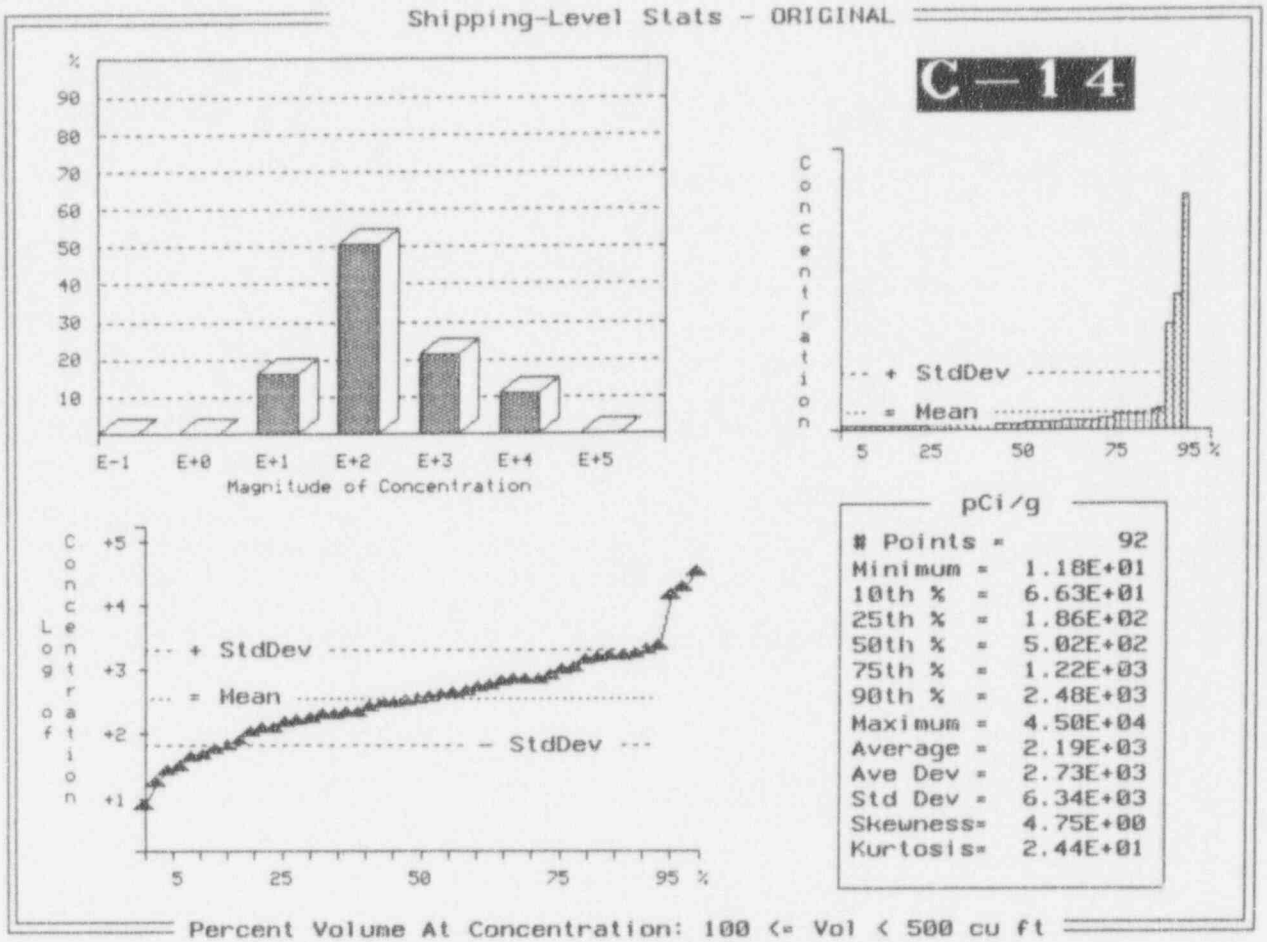
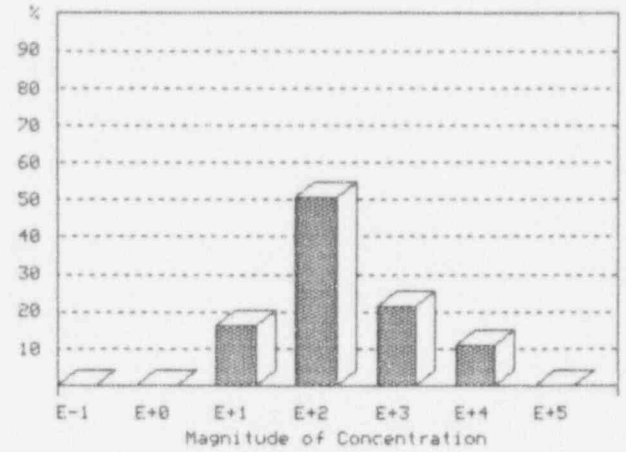
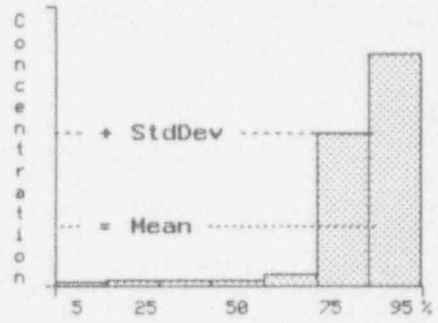


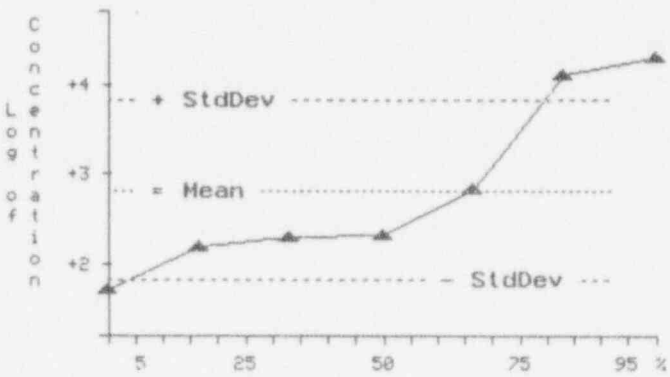
Exhibit F-22 (Continued)

Shipping-Level Stats - ORIGINAL



C-14



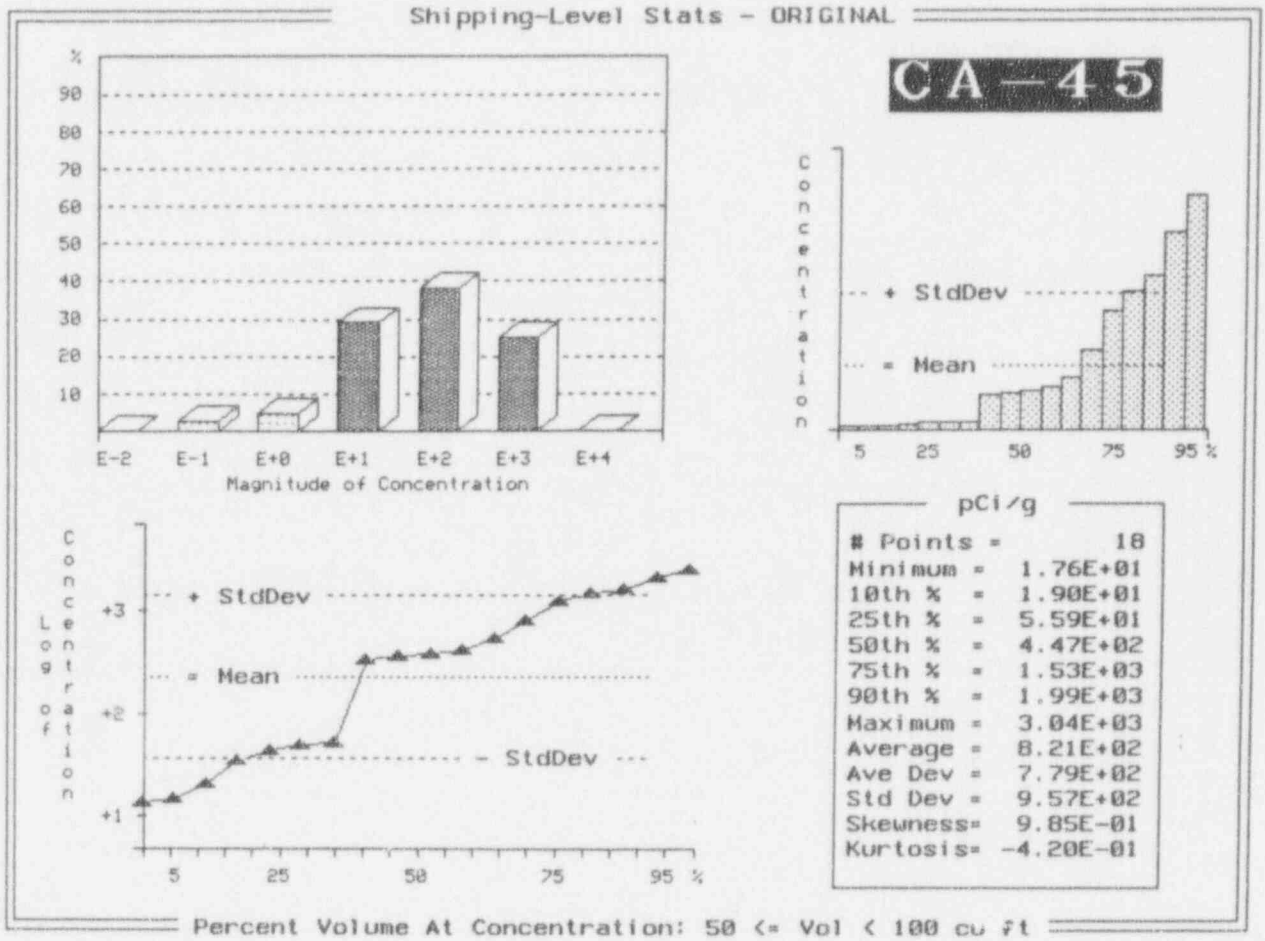


pCi/g

# Points =	7
Minimum =	7.33E+01
10th % =	7.33E+01
25th % =	2.18E+02
50th % =	2.78E+02
75th % =	9.20E+02
90th % =	1.62E+04
Maximum =	2.47E+04
Average =	6.10E+03
Ave Dev =	8.20E+03
Std Dev =	1.01E+04
Skewness=	9.00E-01
Kurtosis=	-1.15E+00

Percent Volume At Concentration: 500 <= Vol < 1000 cu ft

Exhibit F-22 (Continued)



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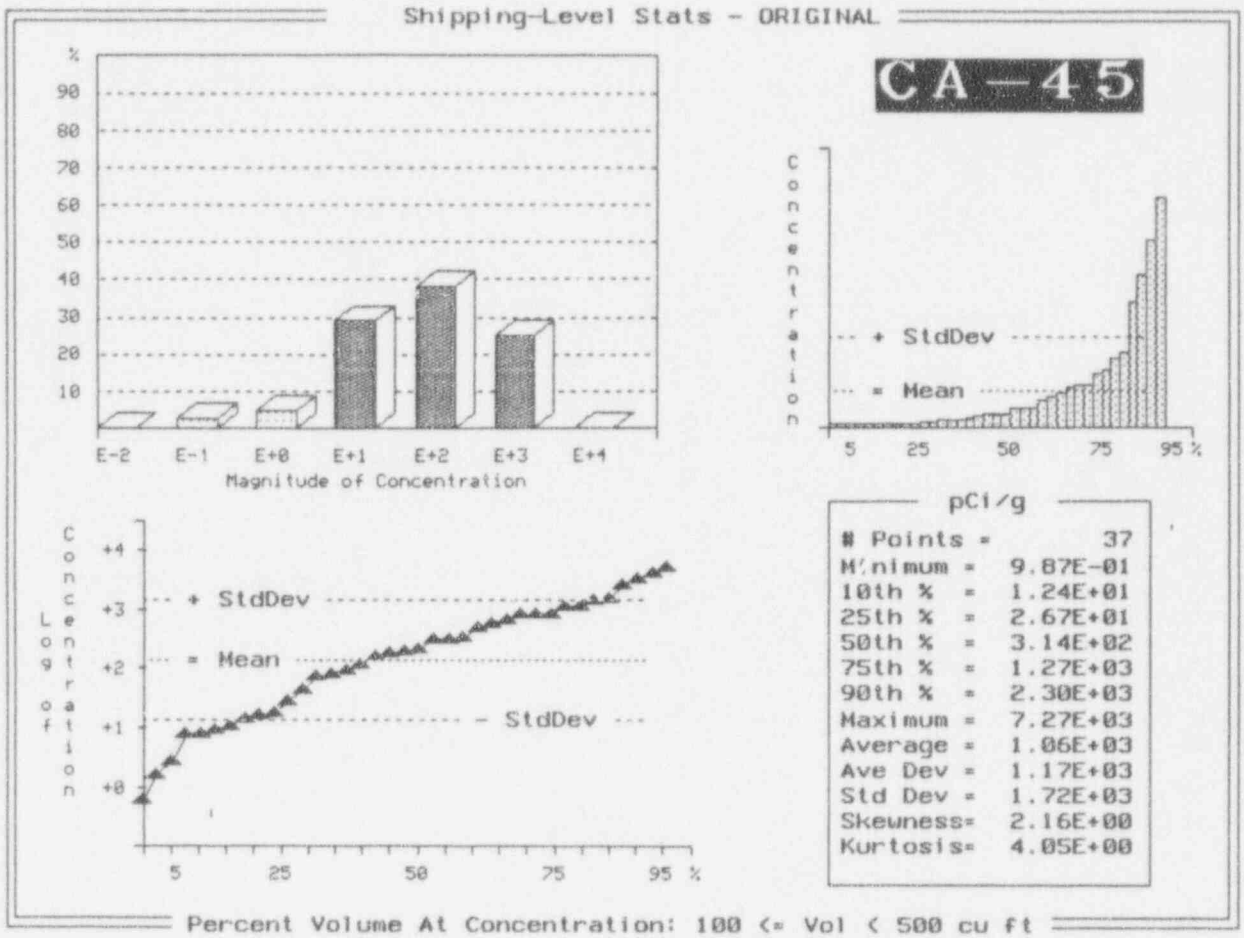

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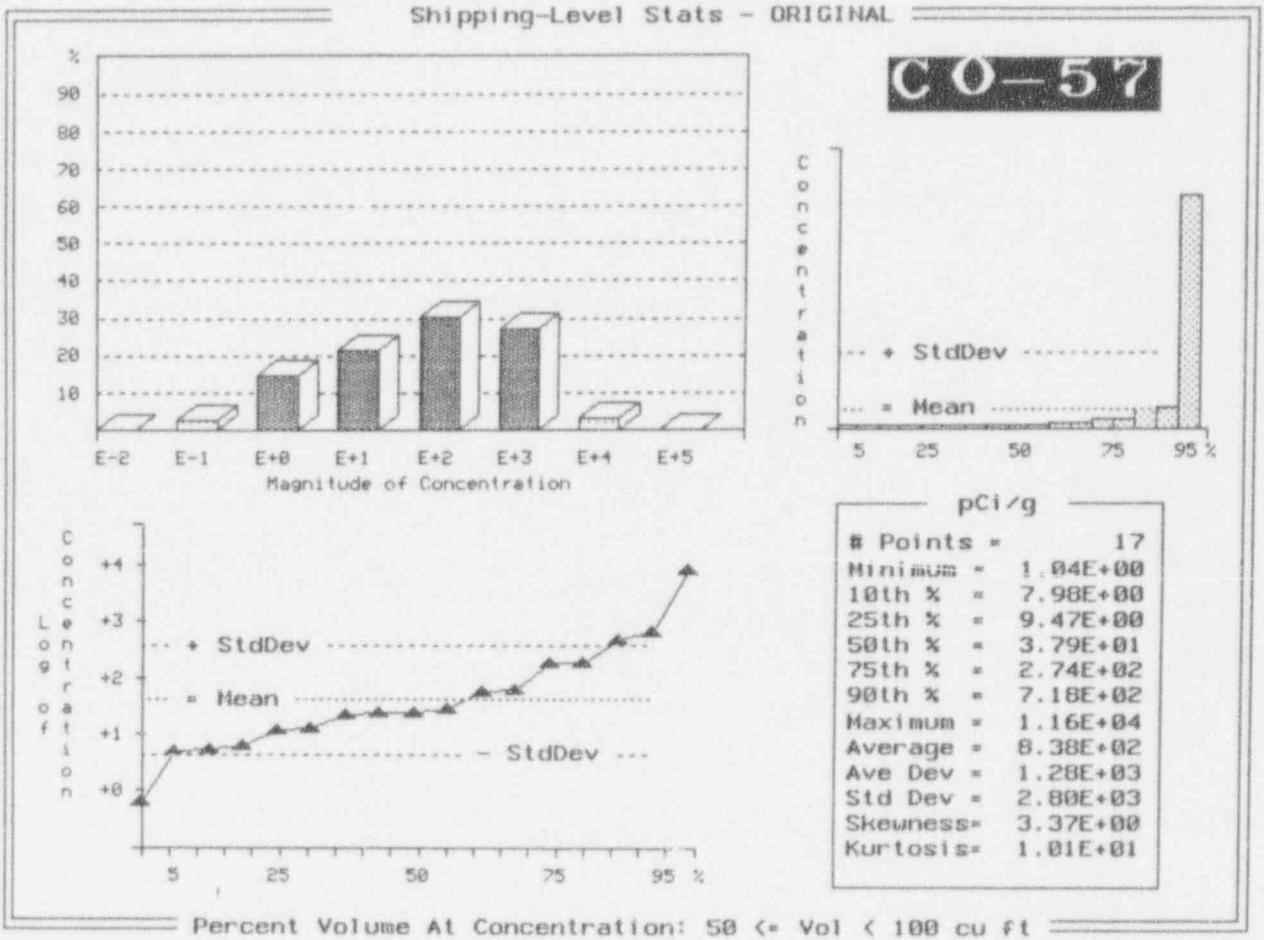

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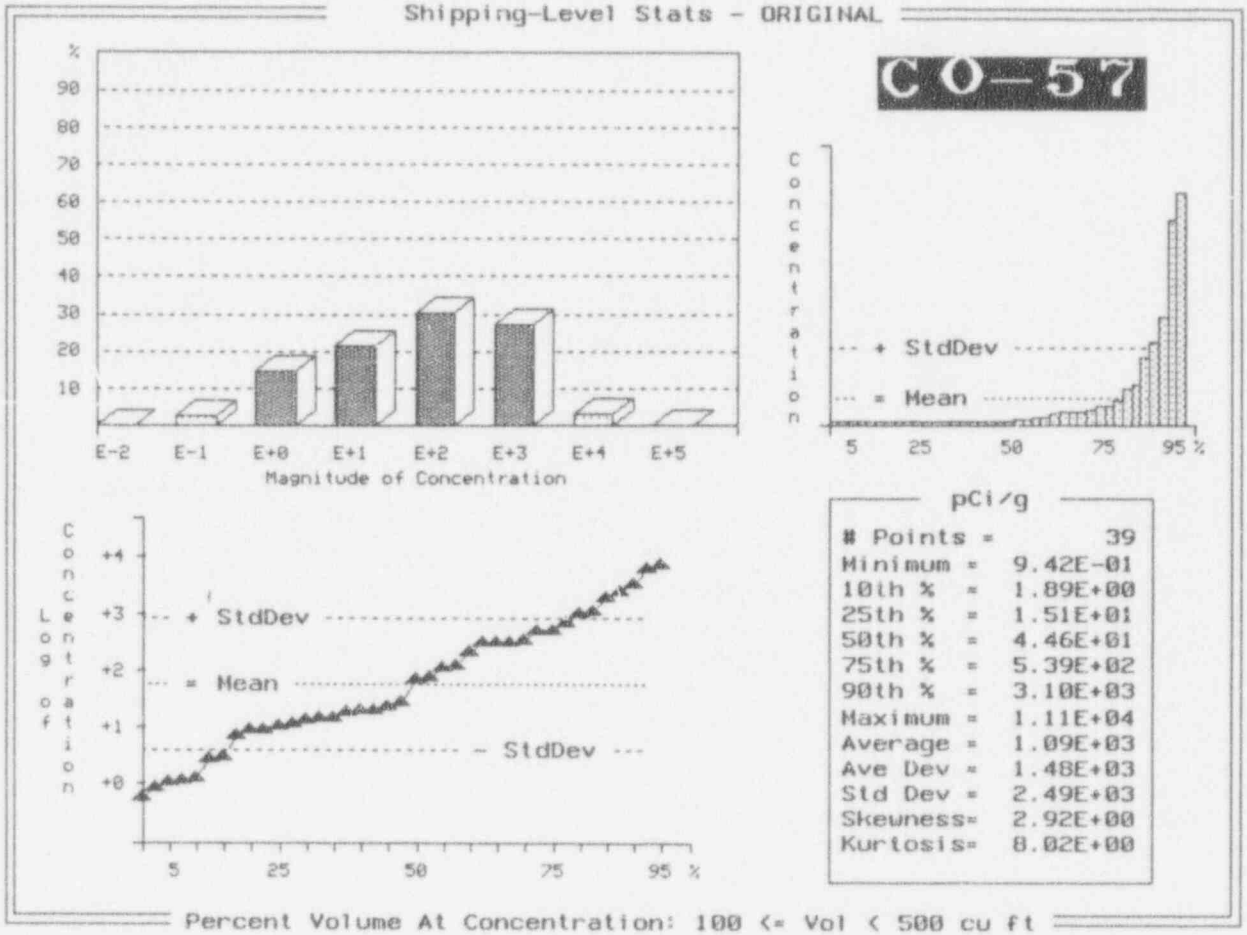
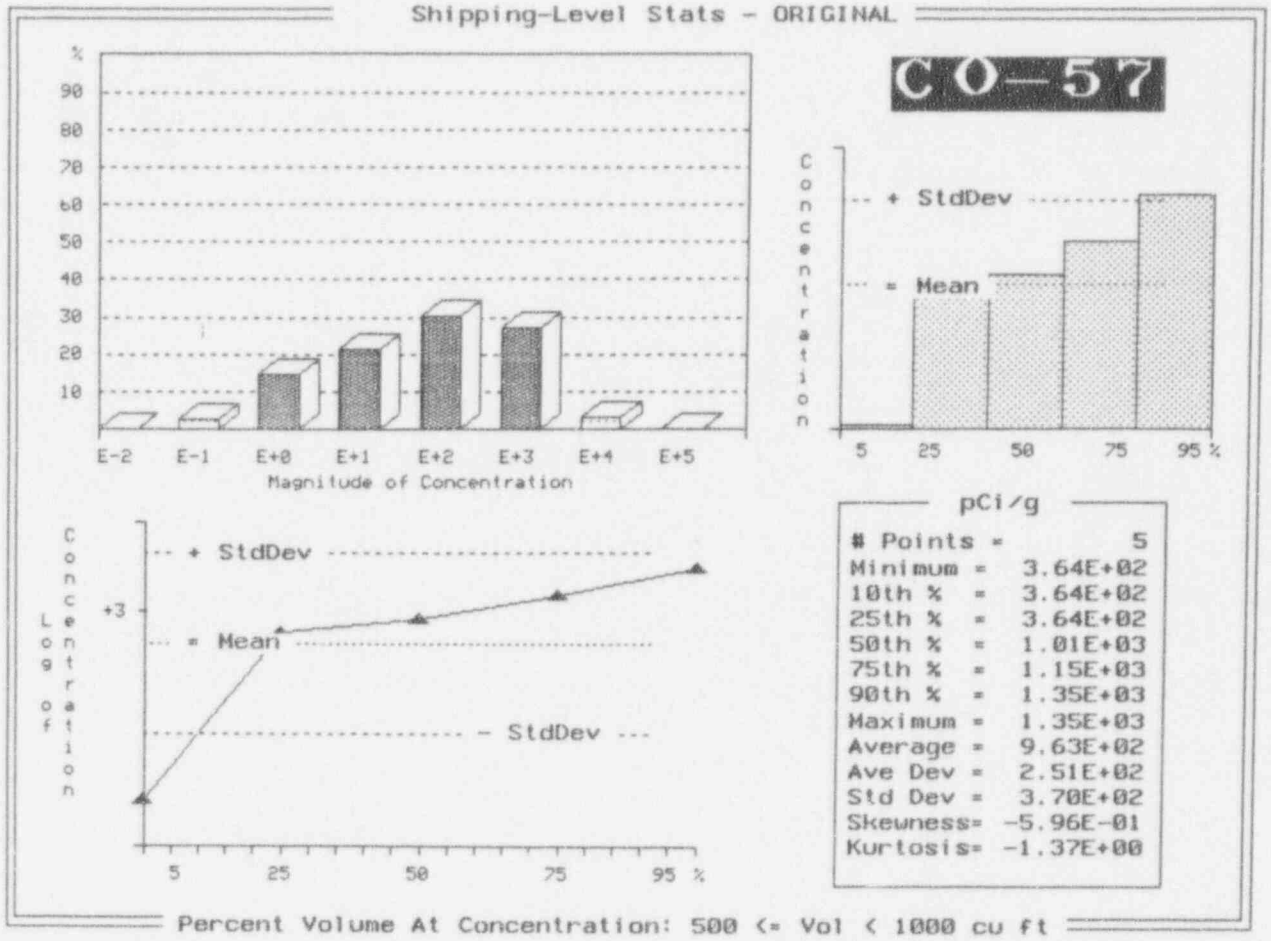


Exhibit F-22 (Continued)



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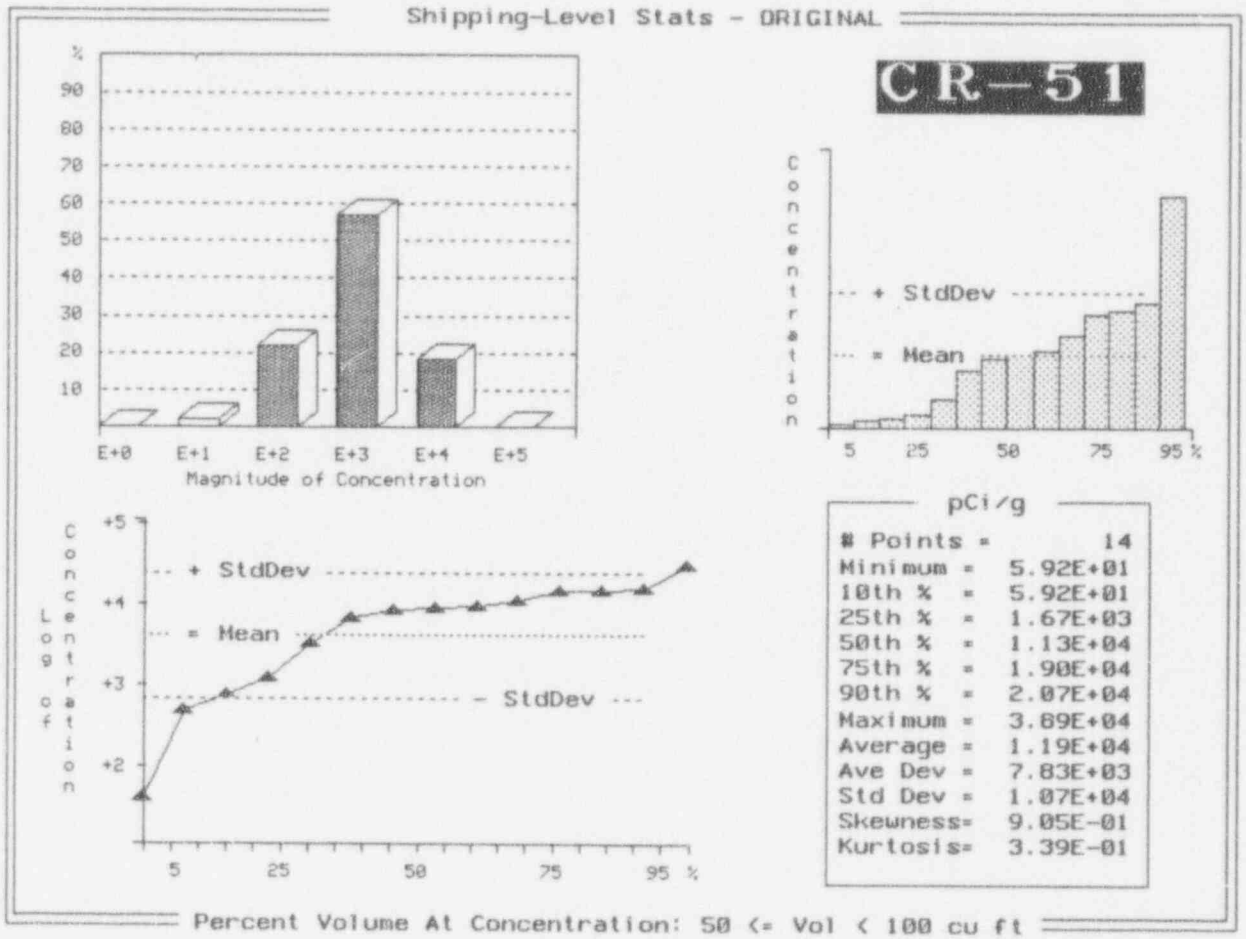

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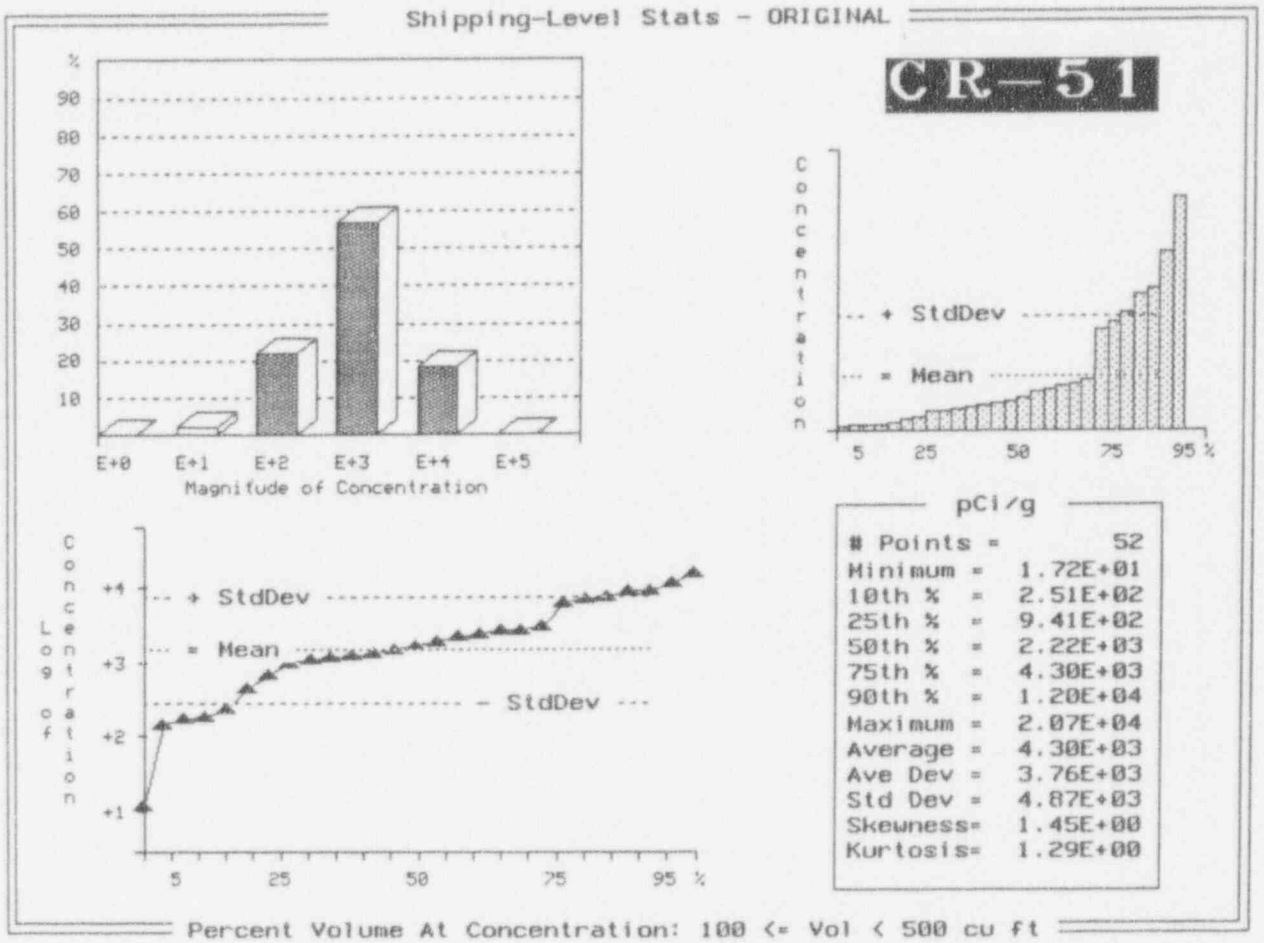

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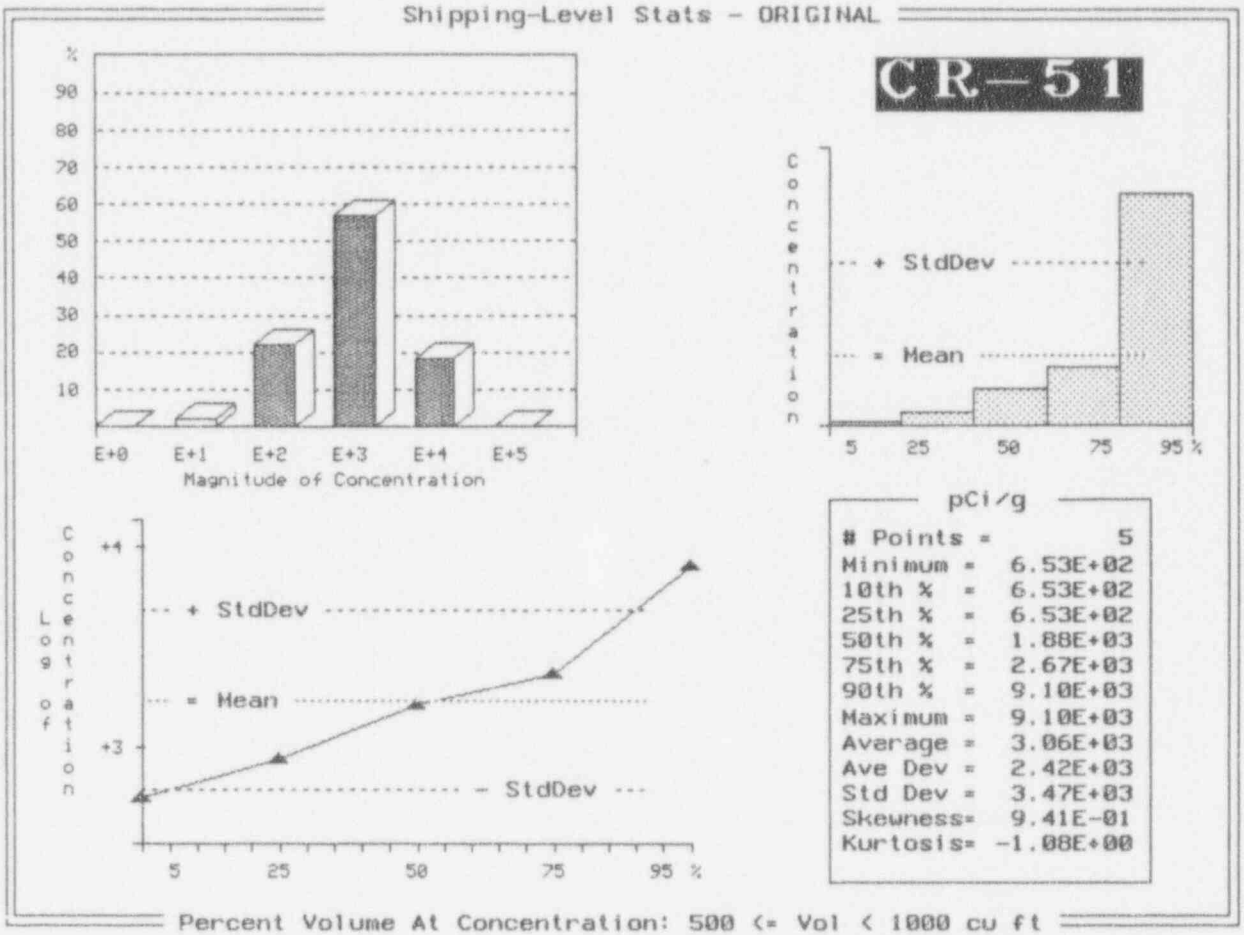

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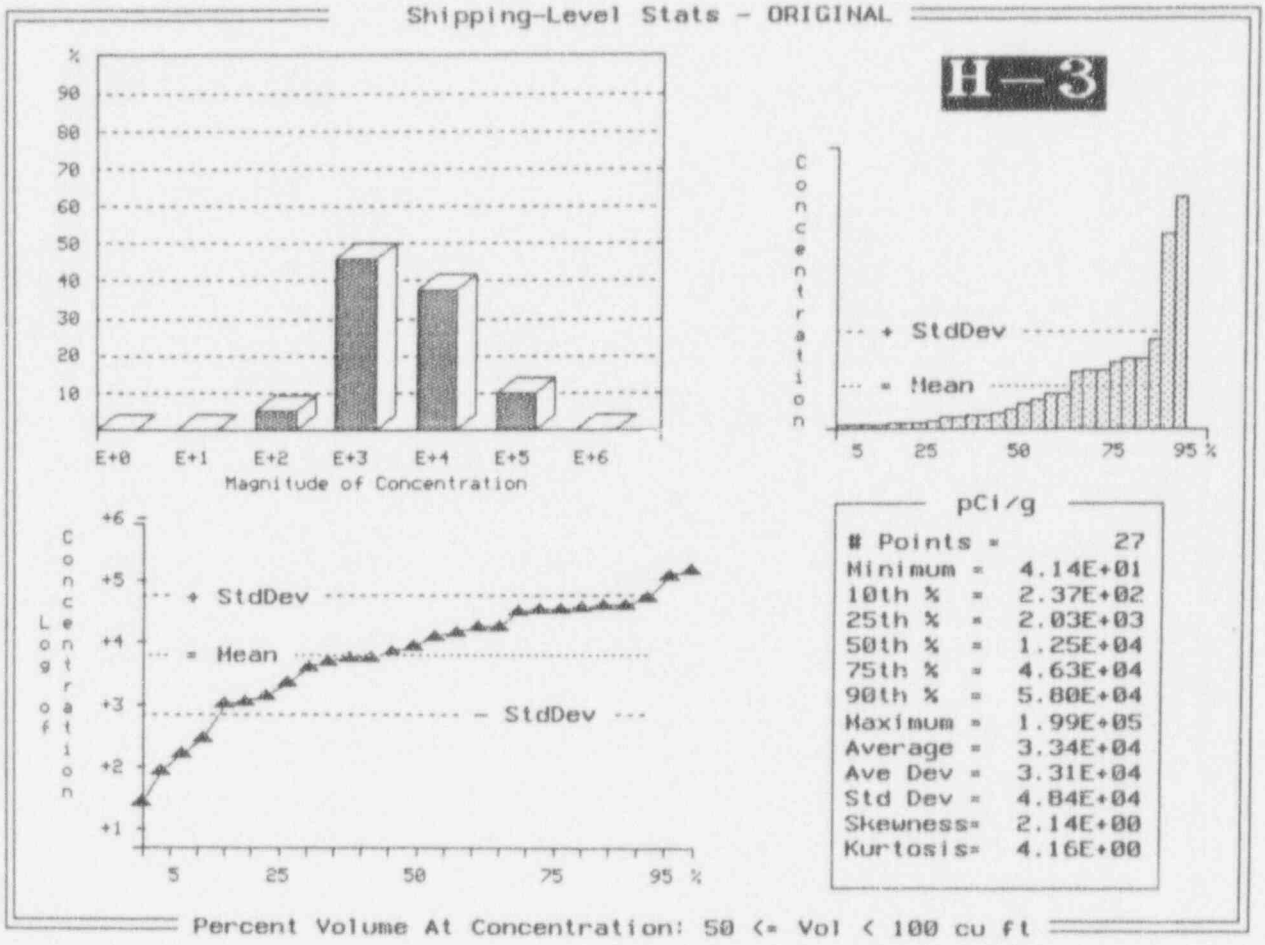

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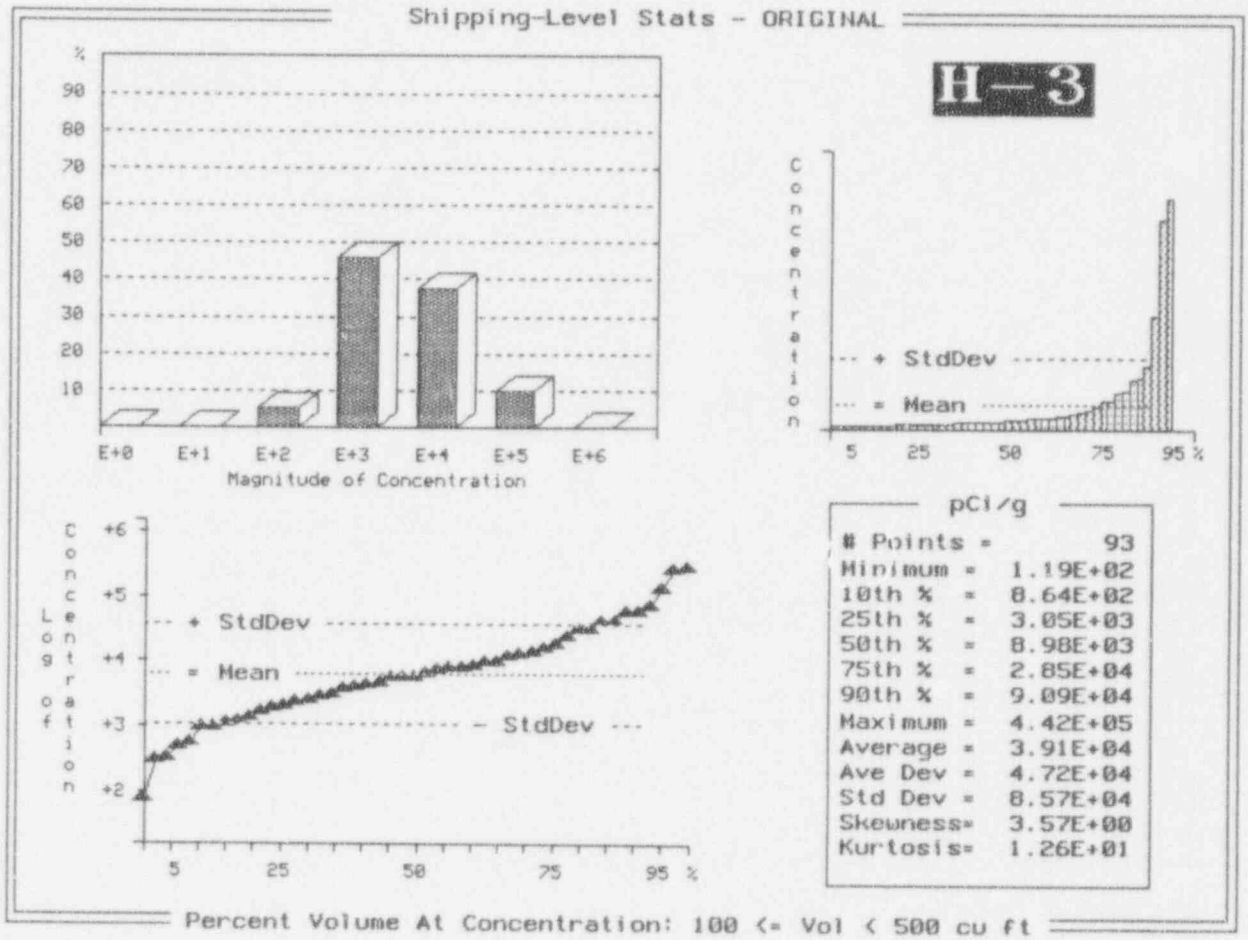
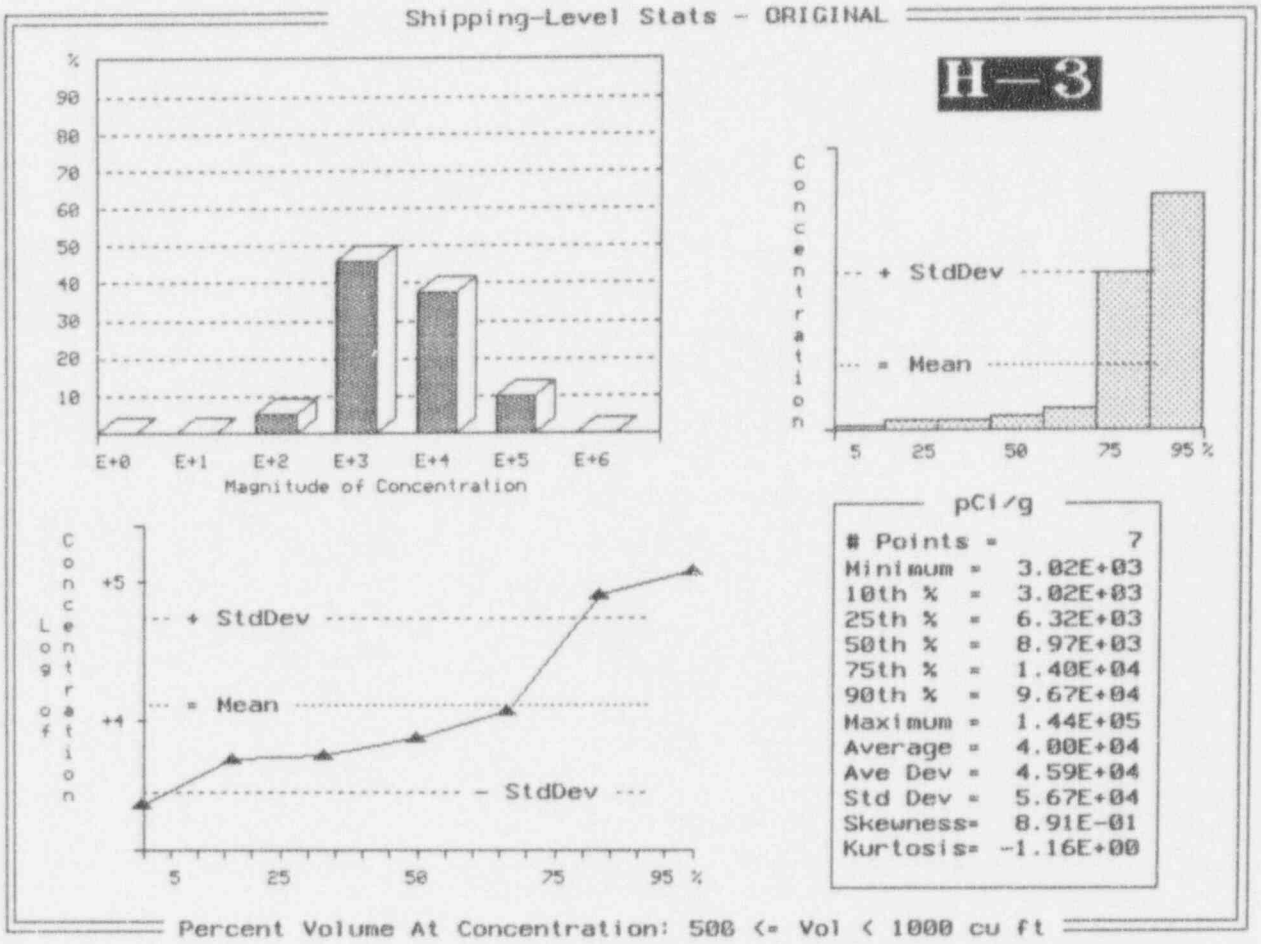


Exhibit F-22 (Continued)



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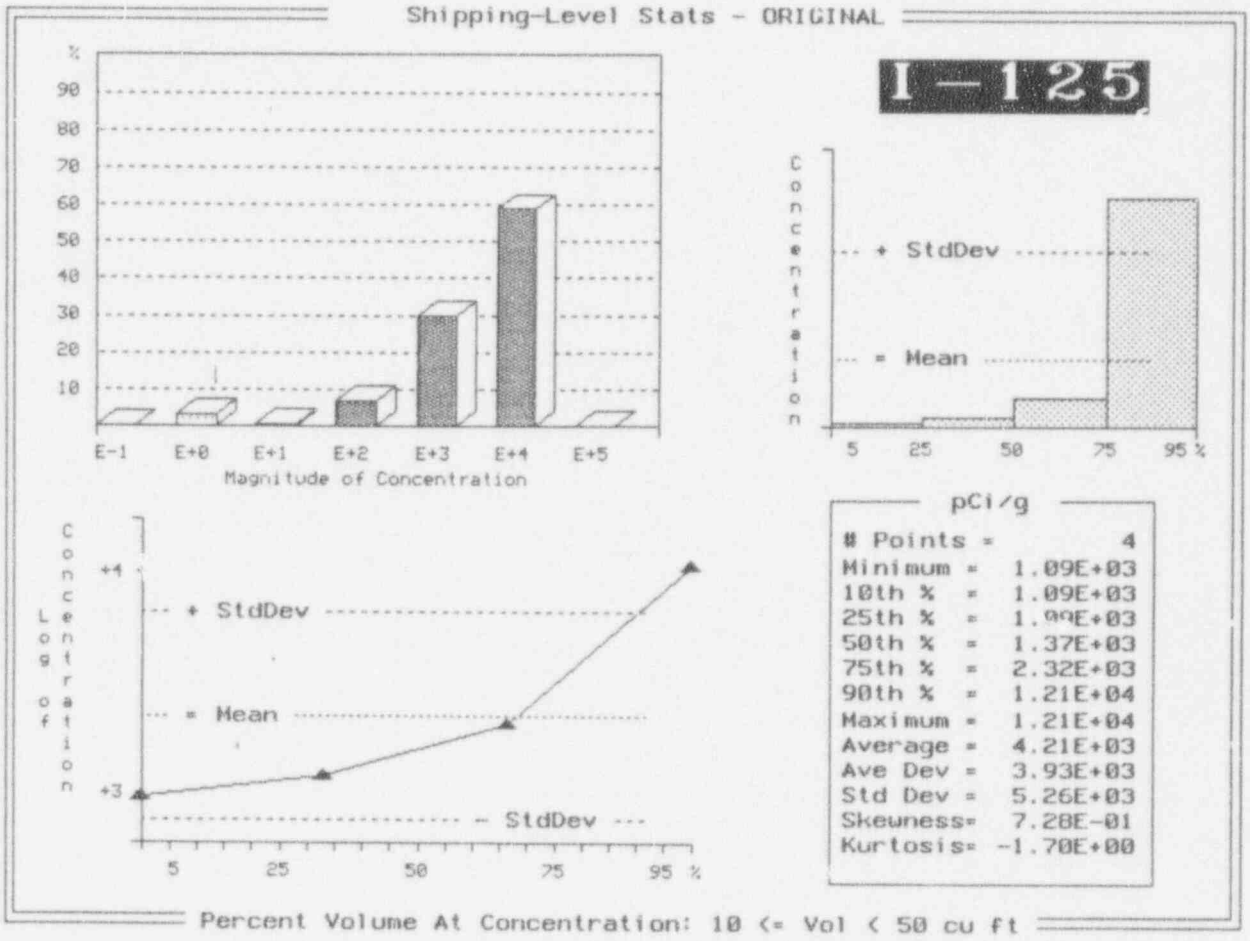

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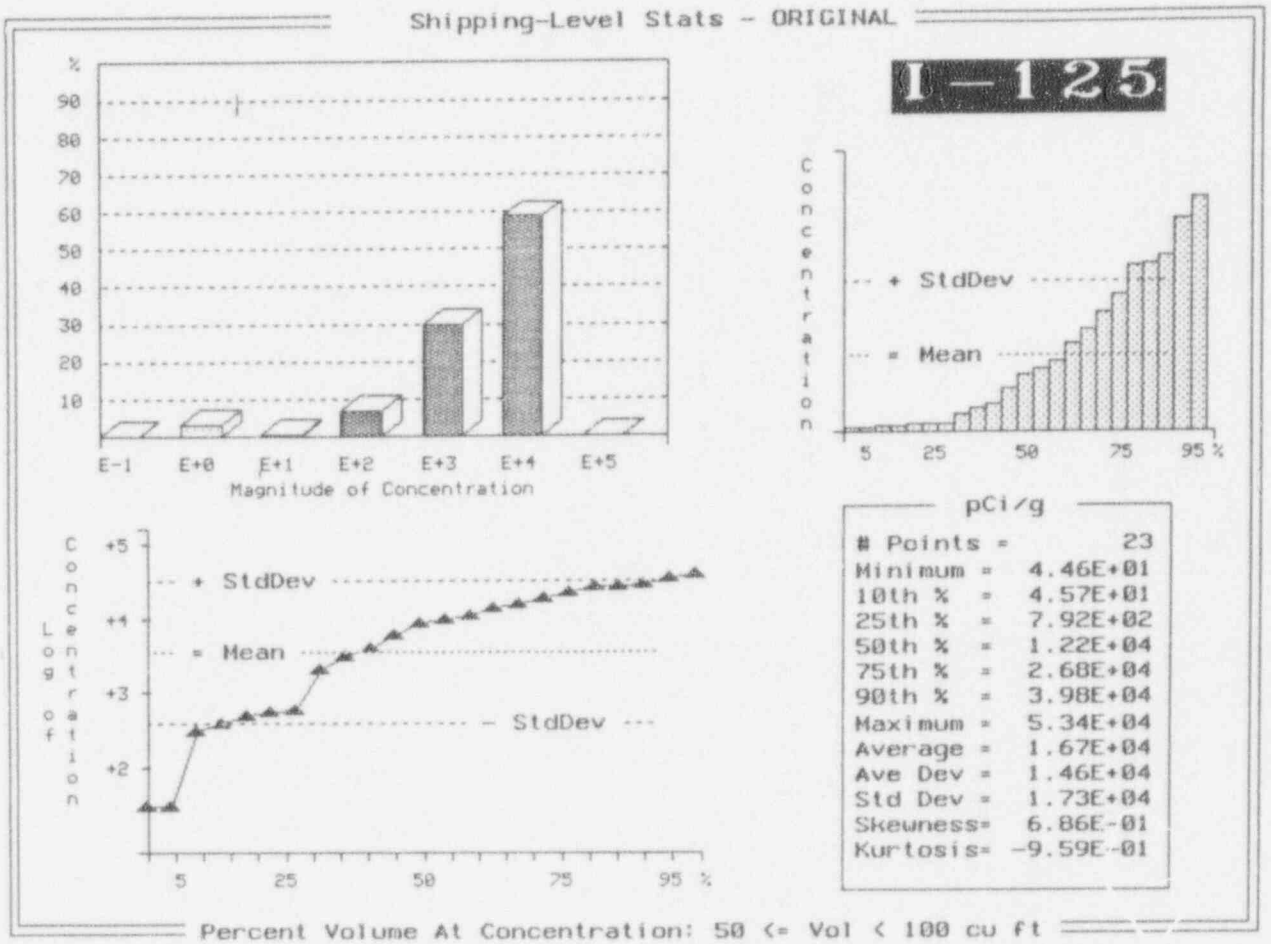

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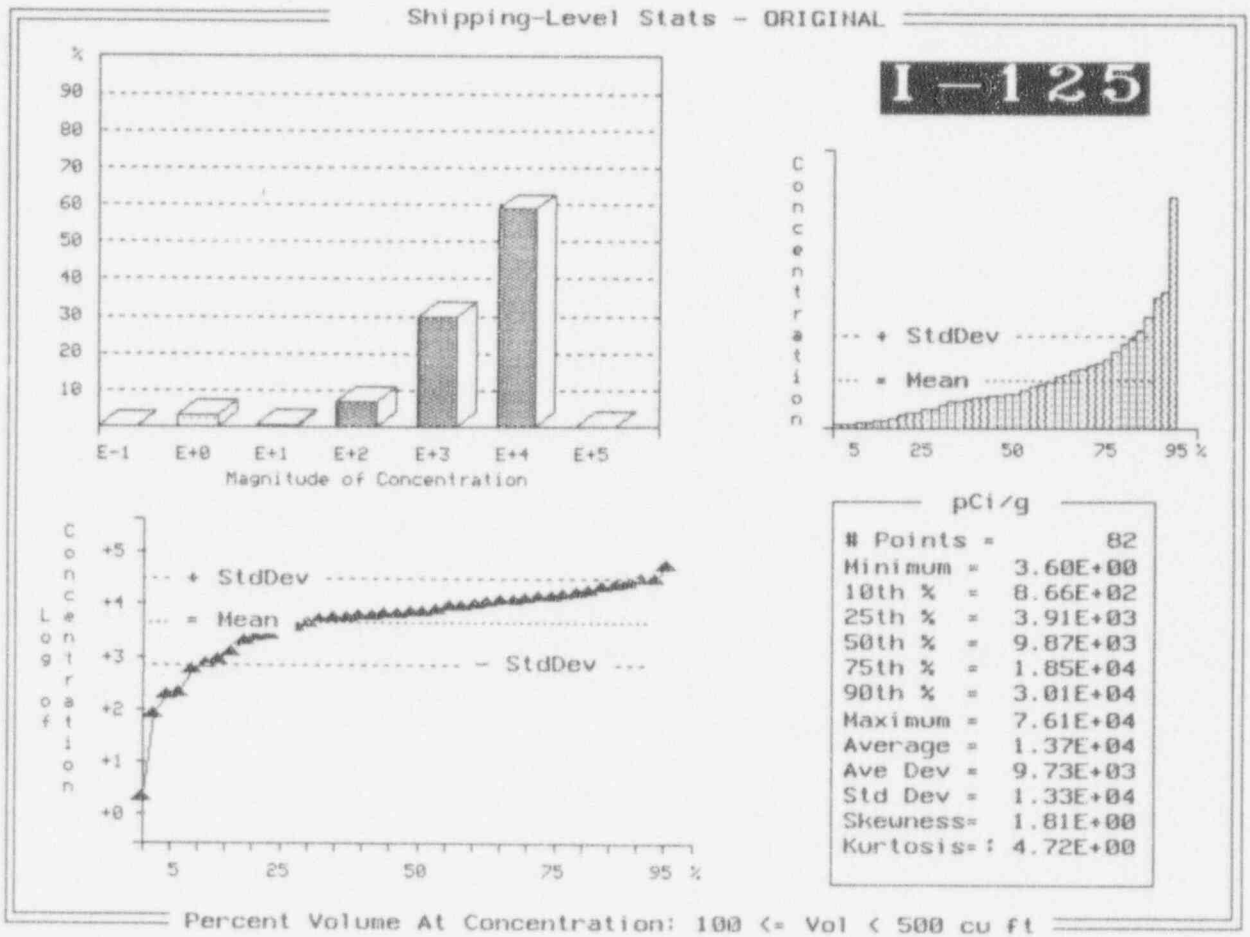

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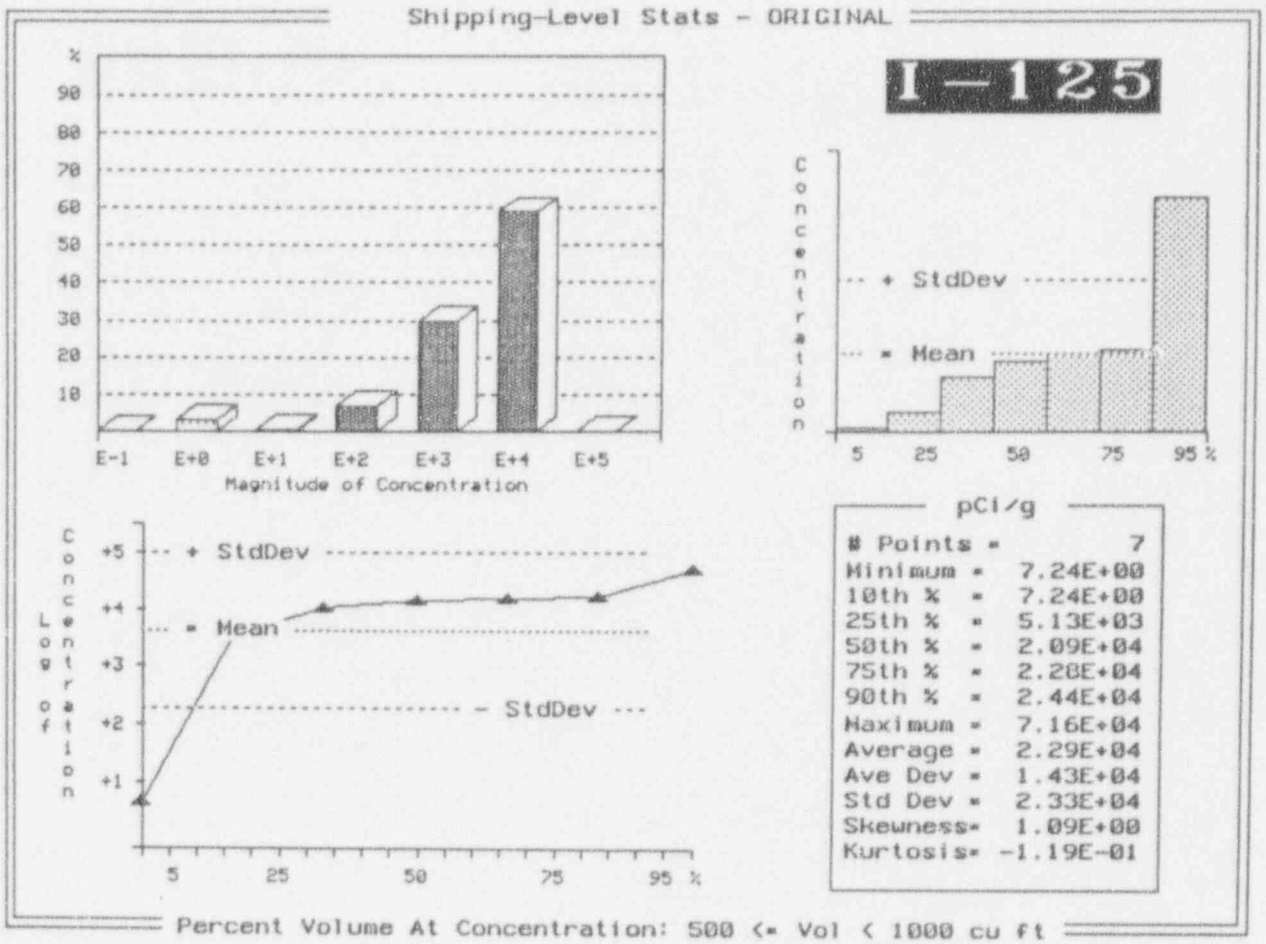

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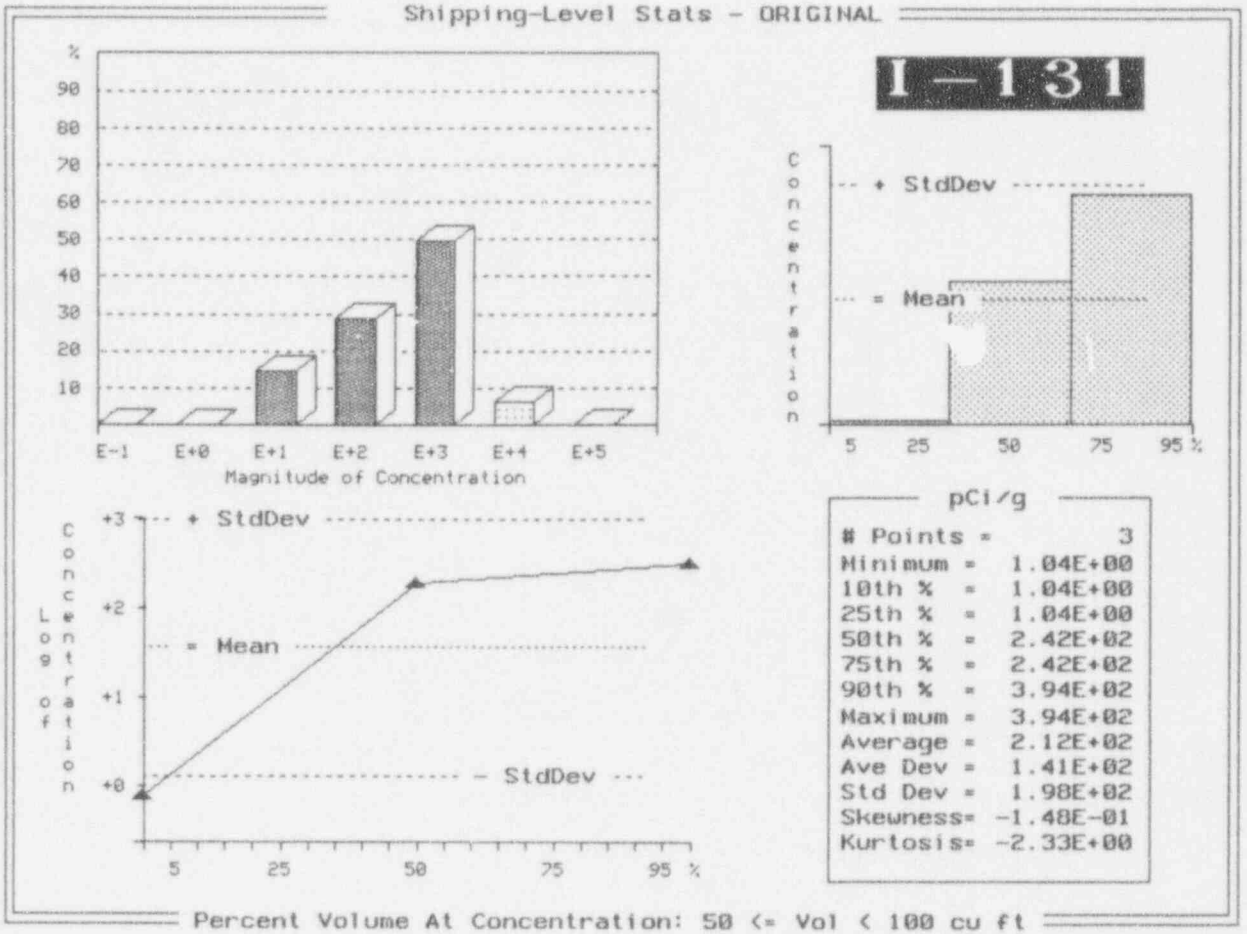

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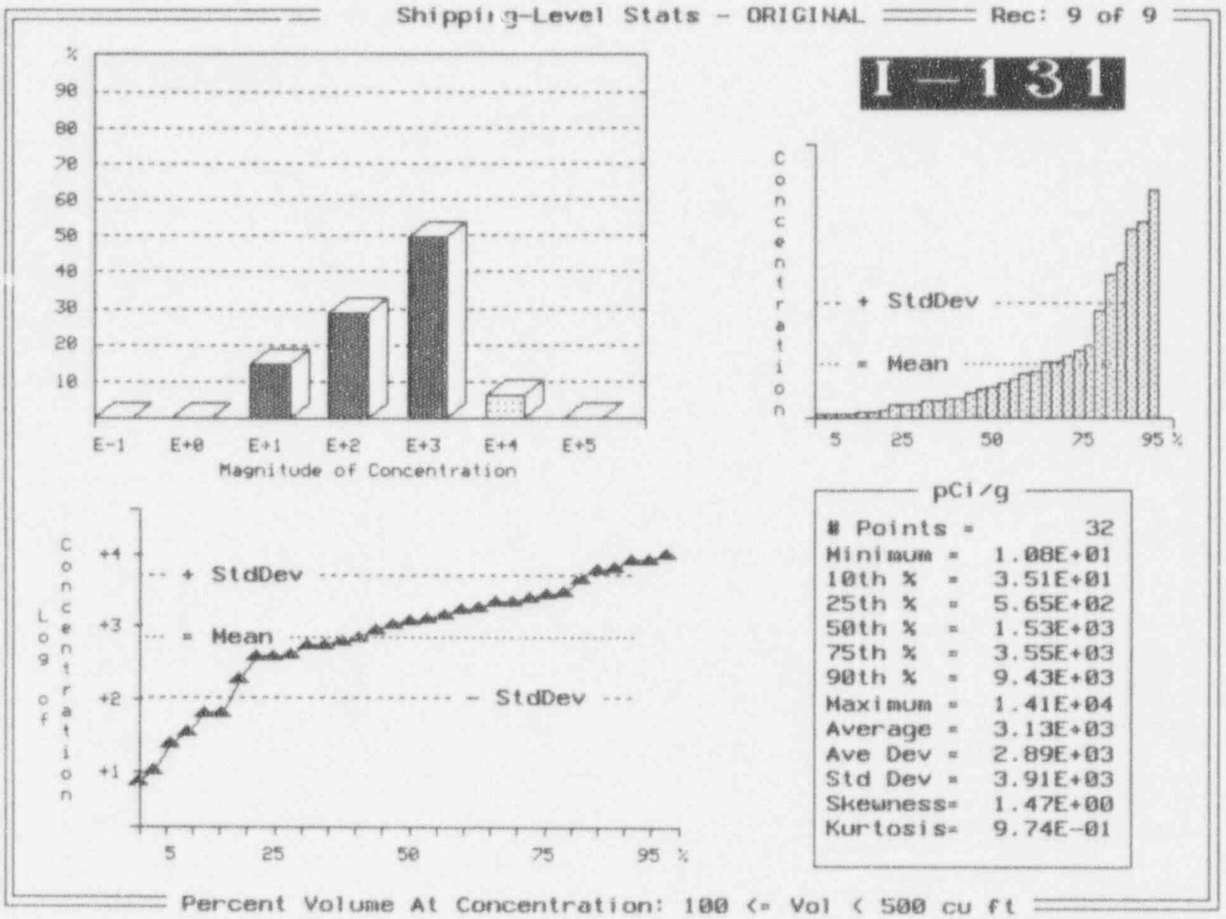

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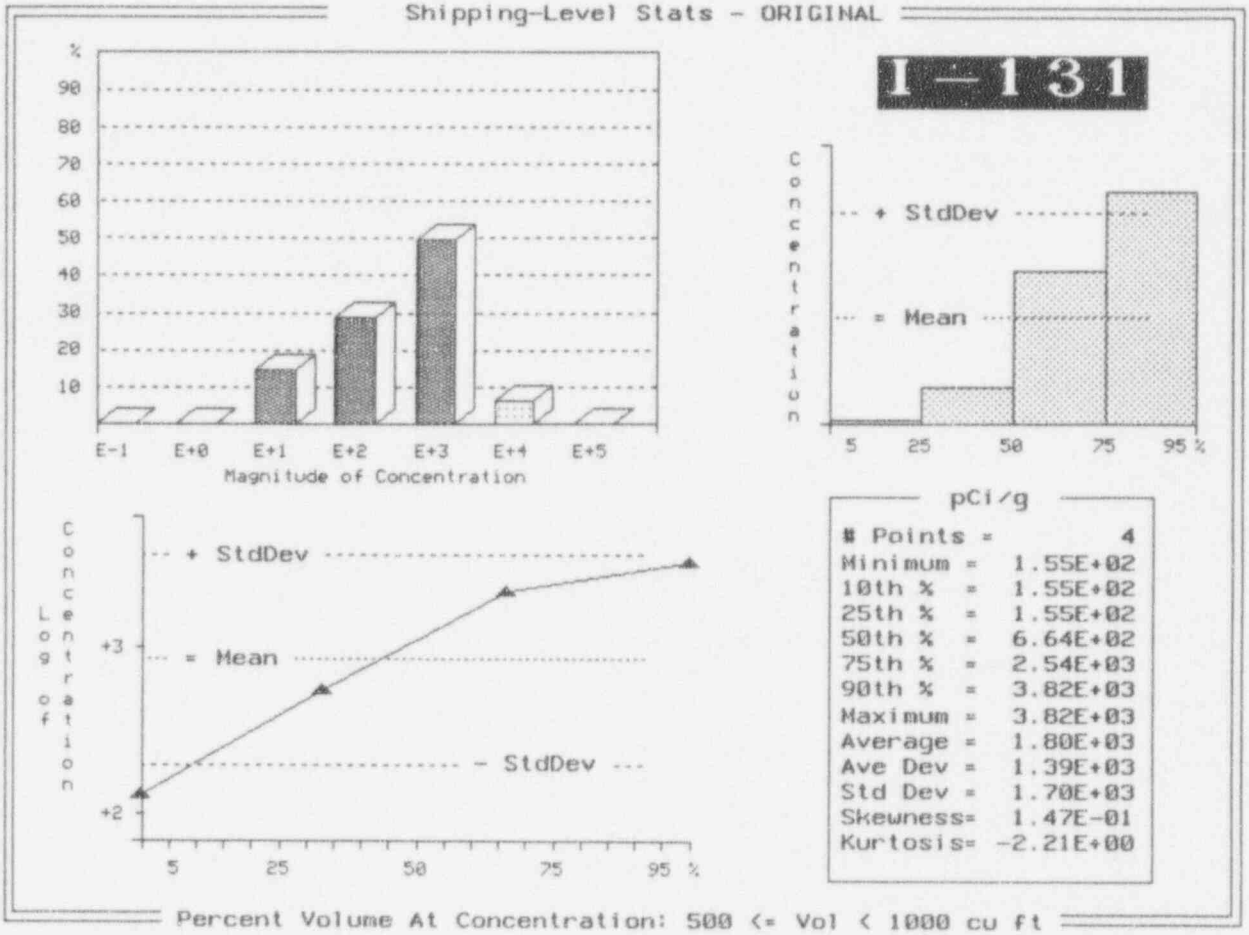

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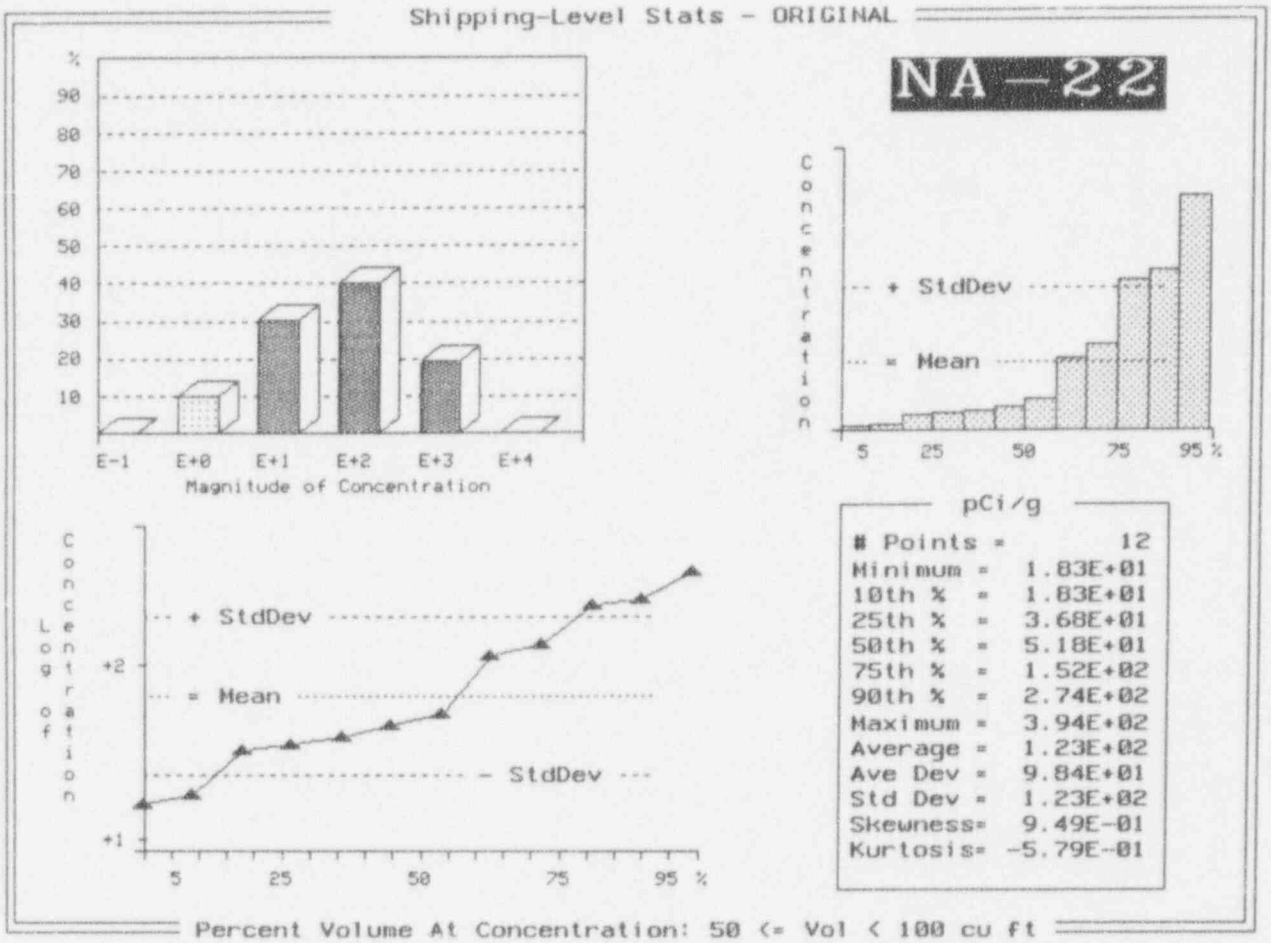

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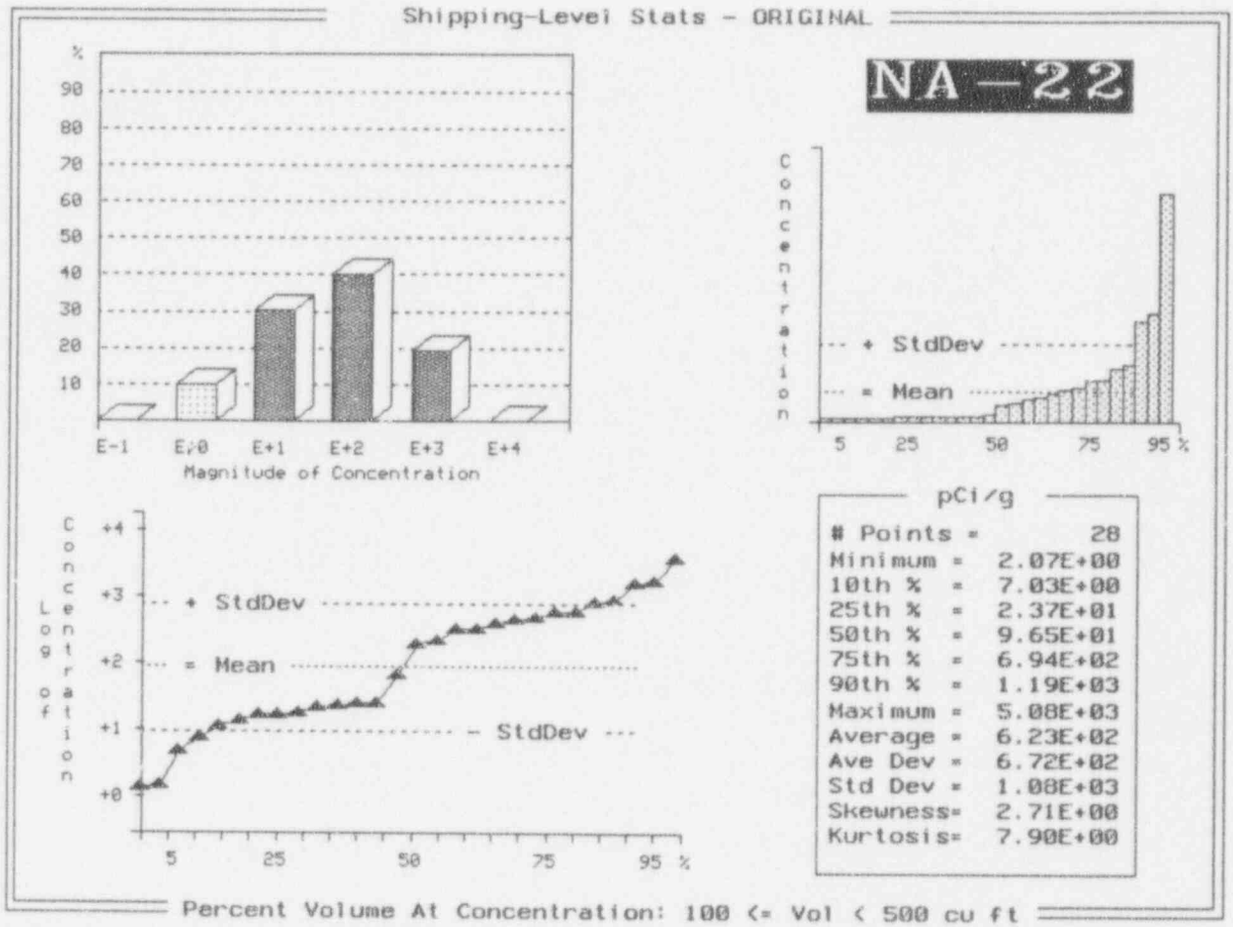

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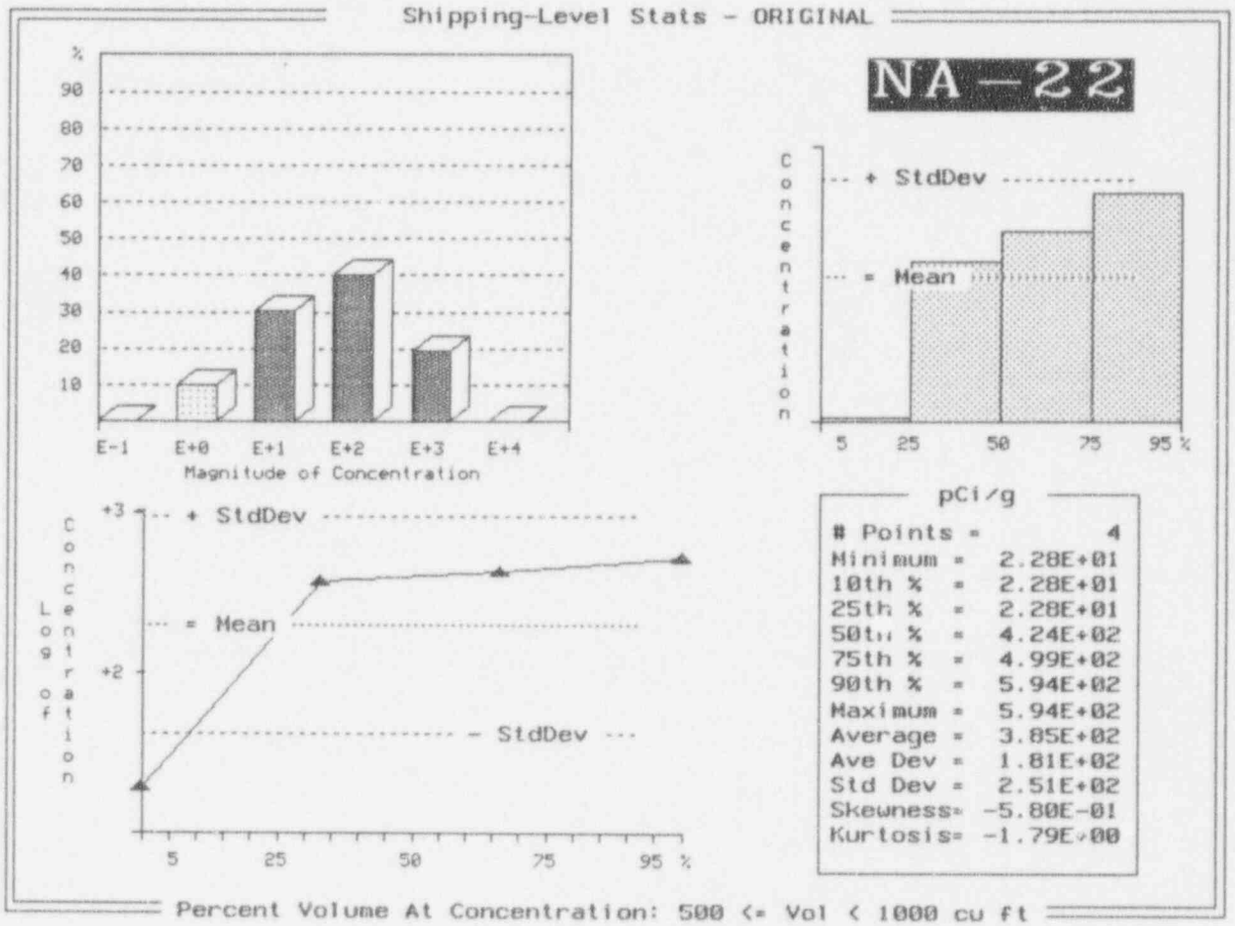

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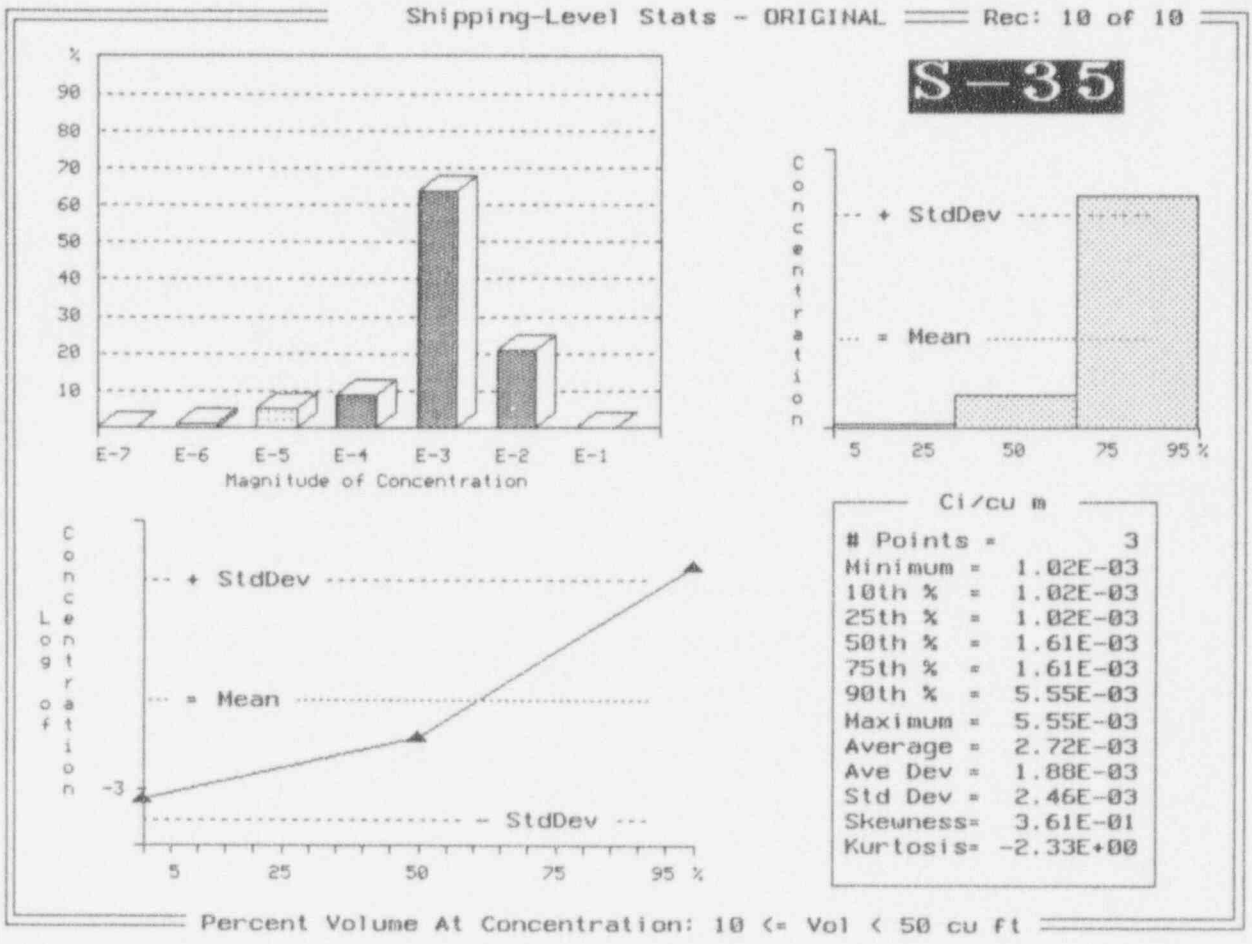

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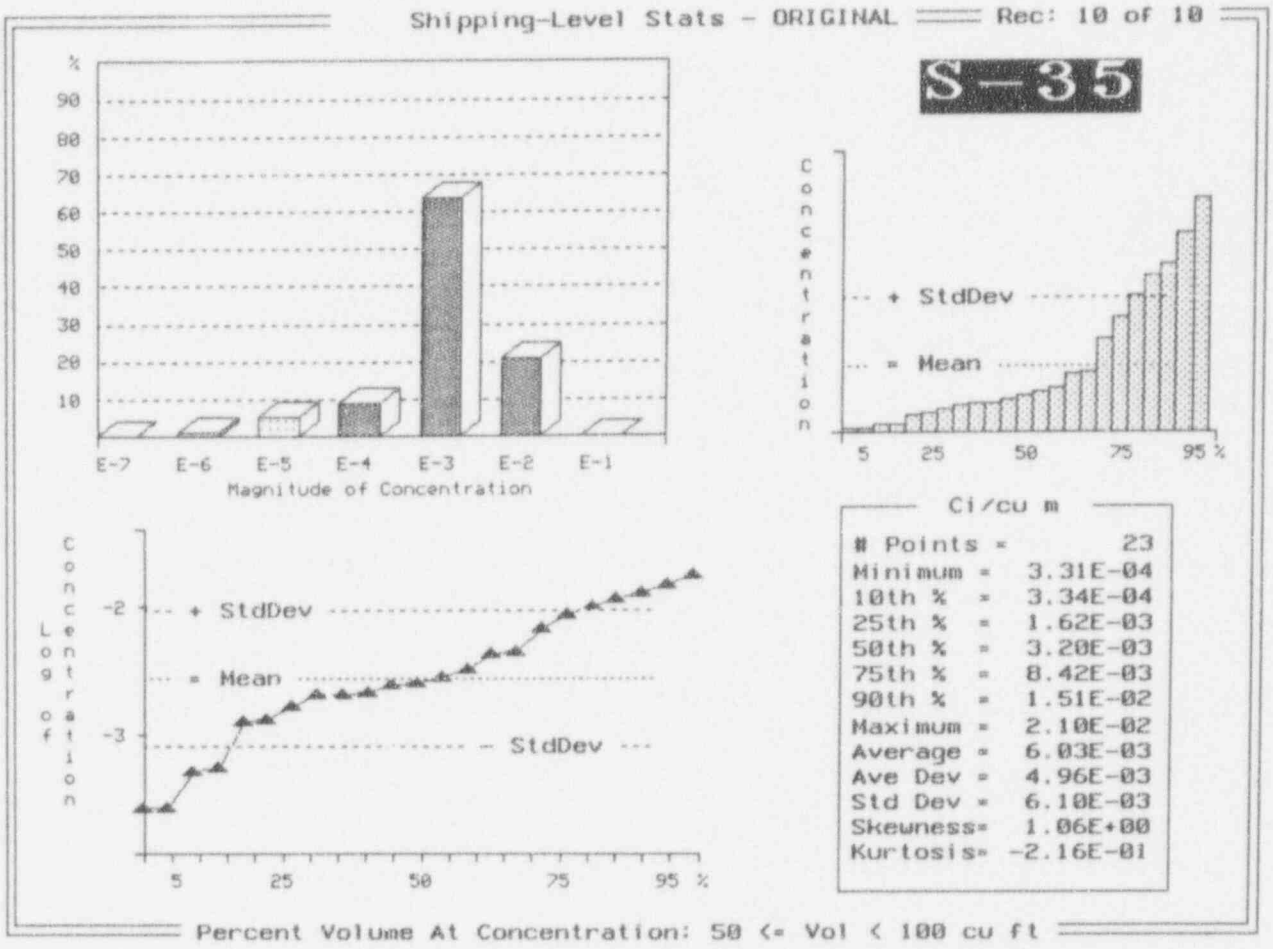


Exhibit F-22 (Continued)

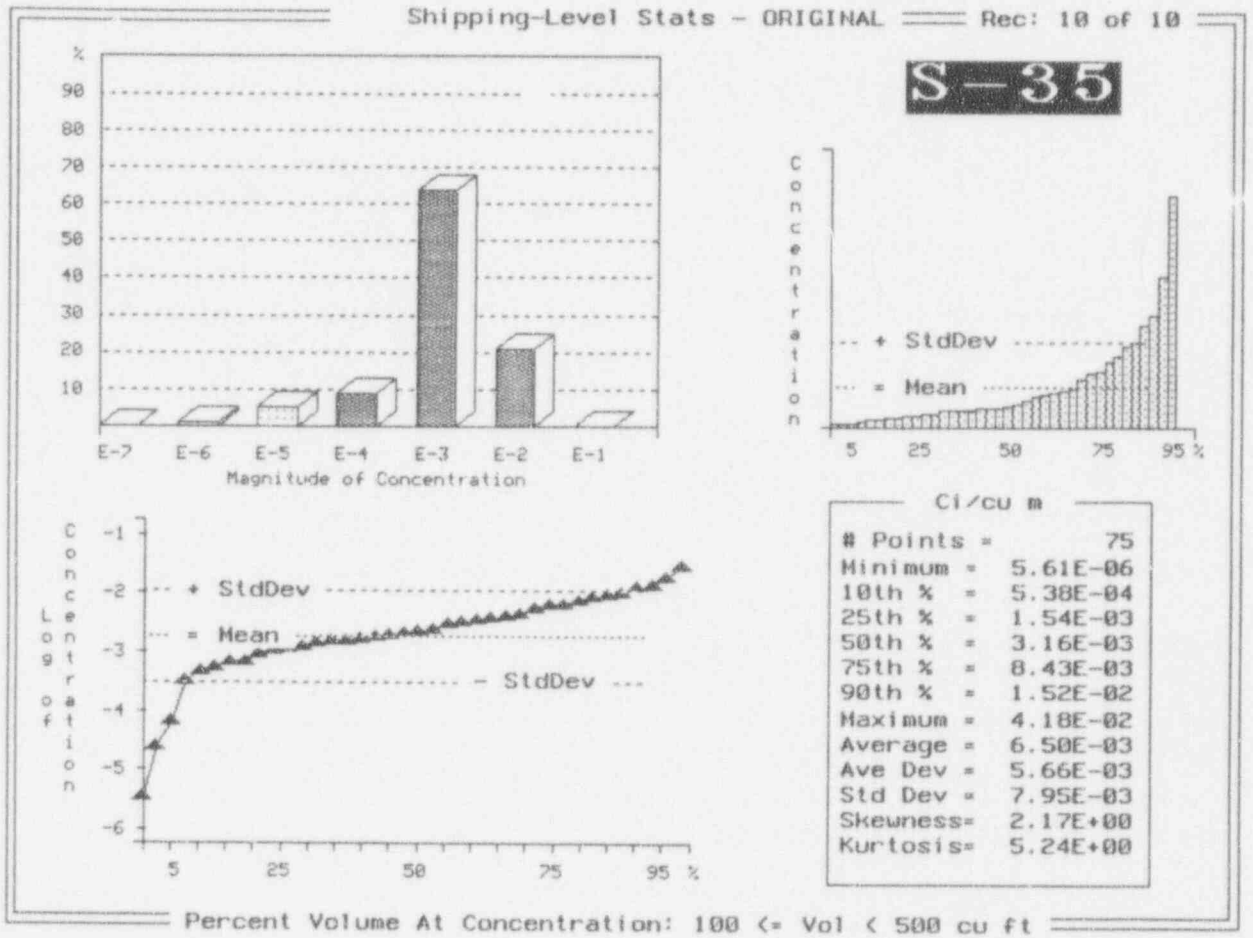
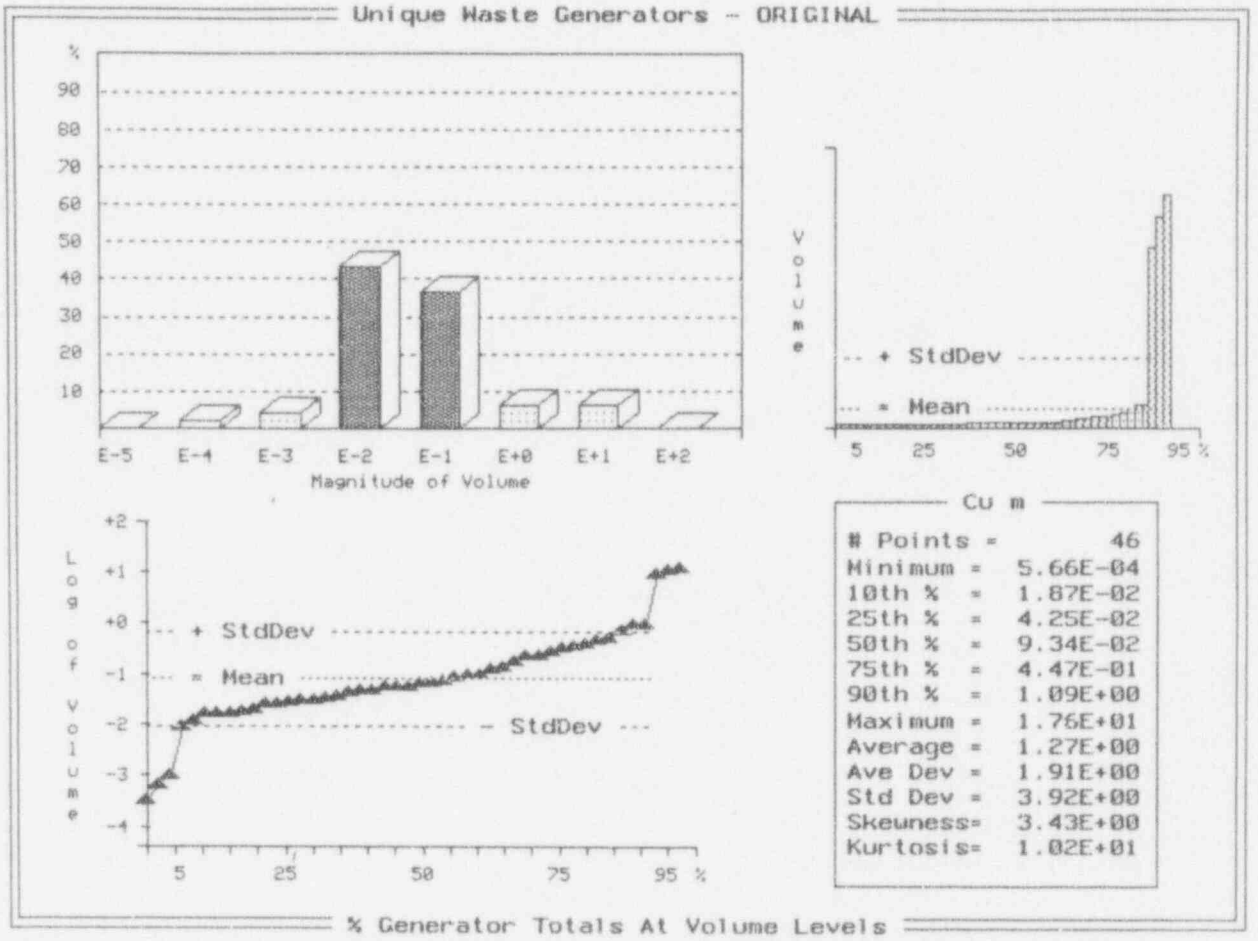


Exhibit F-23
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Southeast
Waste generator class:	Medical
Total number of waste generators:	49
Total associated waste volume (m^3):	59.1
Total associated waste activity (Ci):	4.5
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	3
Percent of total(%):	6
Total number of shipping records:	3
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	13,830
Total waste volume (m^3):	18
Fractional waste volume (%): (this analysis/total)	30
Total waste activity (Ci):	0.7
Fractional waste activity (%): (this analysis/total)	16

Exhibit F-23 (Continued)



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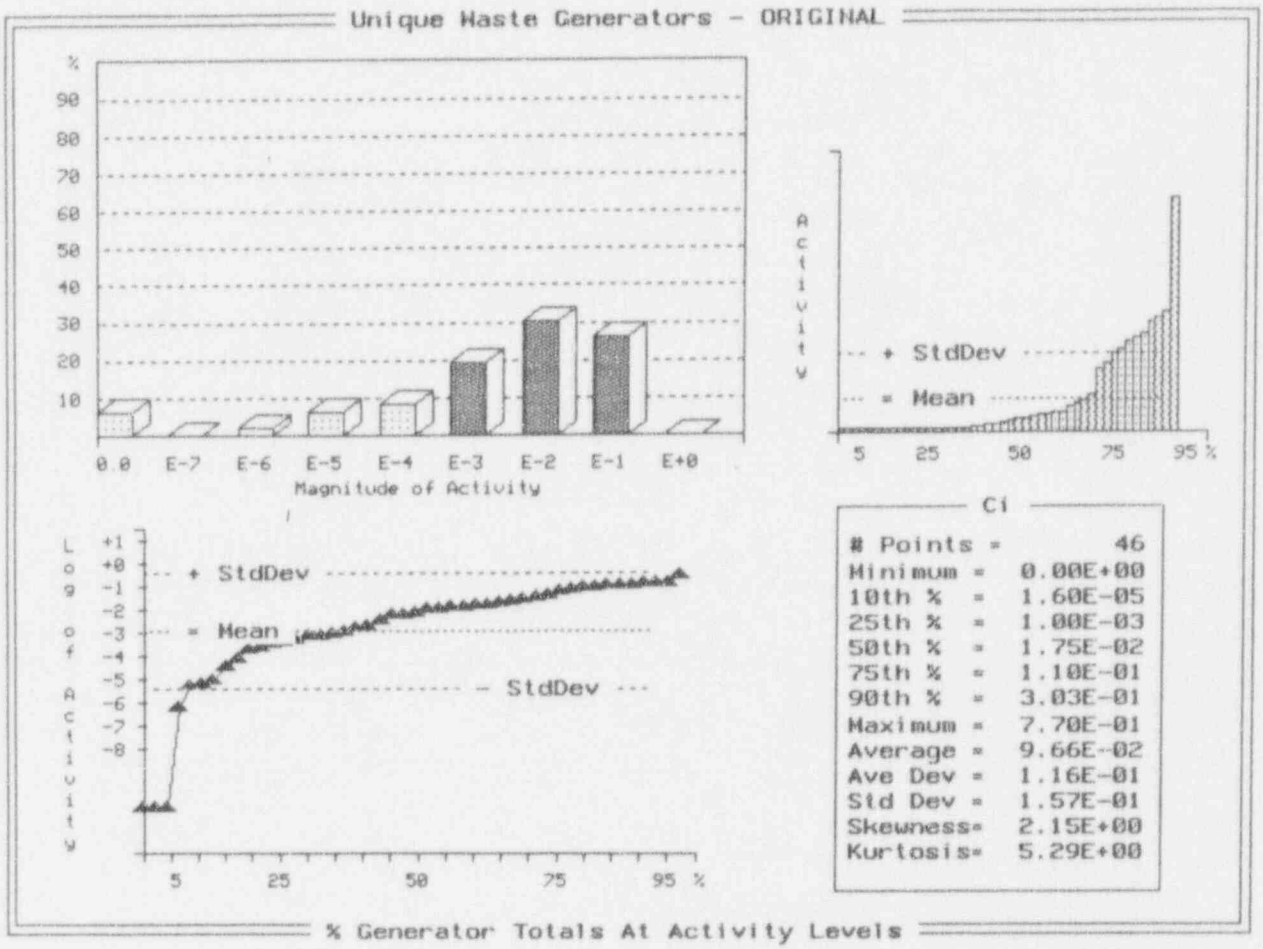
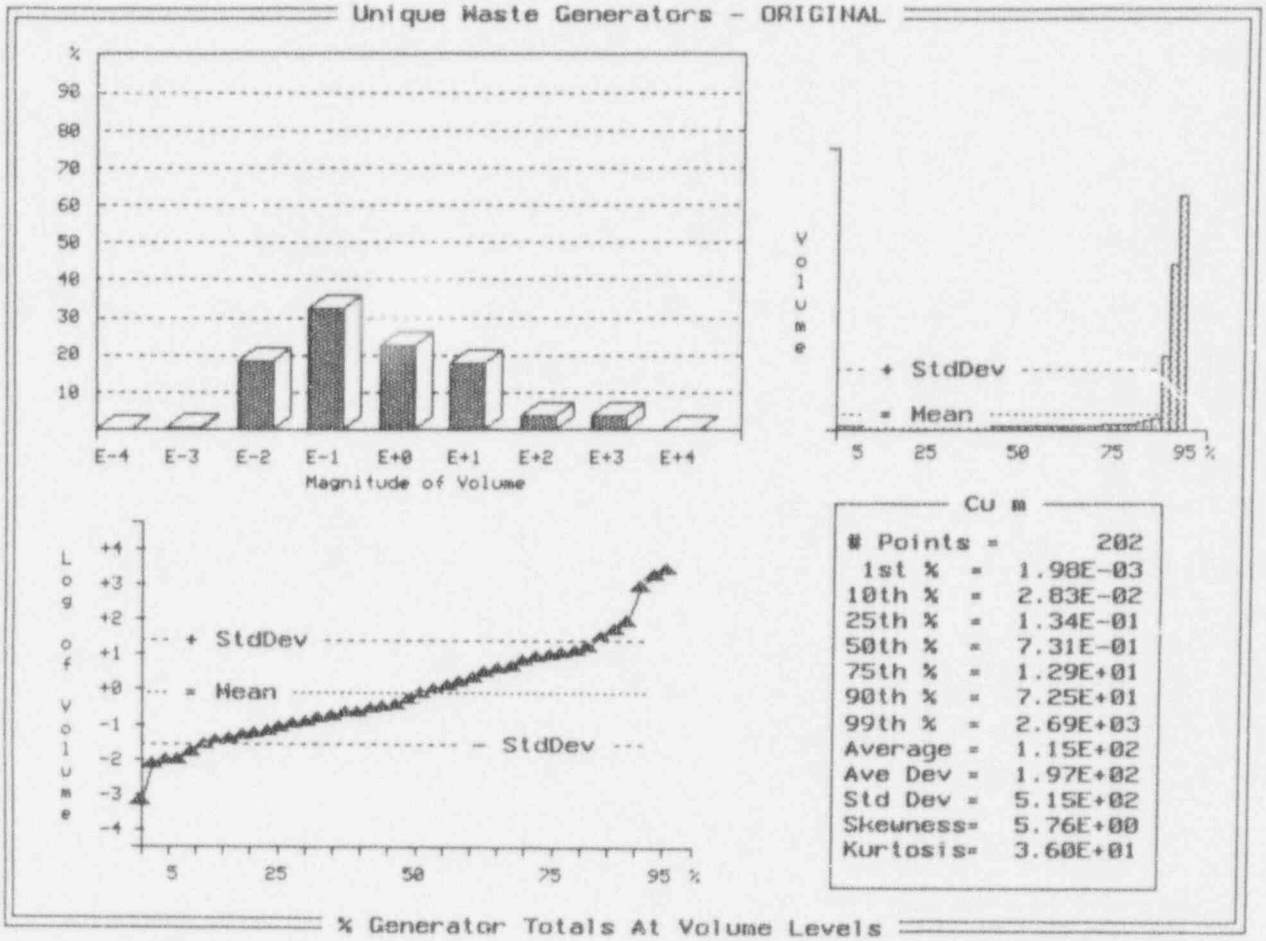


Exhibit F-24
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Southeast
Waste generator class:	Industrial
Total number of waste generators:	224
Total associated waste volume (m^3):	23,310
Total associated waste activity (Ci):	3,320
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	95
Percent of total(%):	42
Total number of shipping records:	1,147
Number of shipping records with container data:	3
Number of waste containers:	81
Weight of shipments (kg):	15,340,000
Total waste volume (m^3):	14,990
Fractional waste volume (%): (this analysis/total)	64
Total waste activity (Ci):	2,176
Fractional waste activity (%): (this analysis/total)	65

Exhibit F-24 (Continued)



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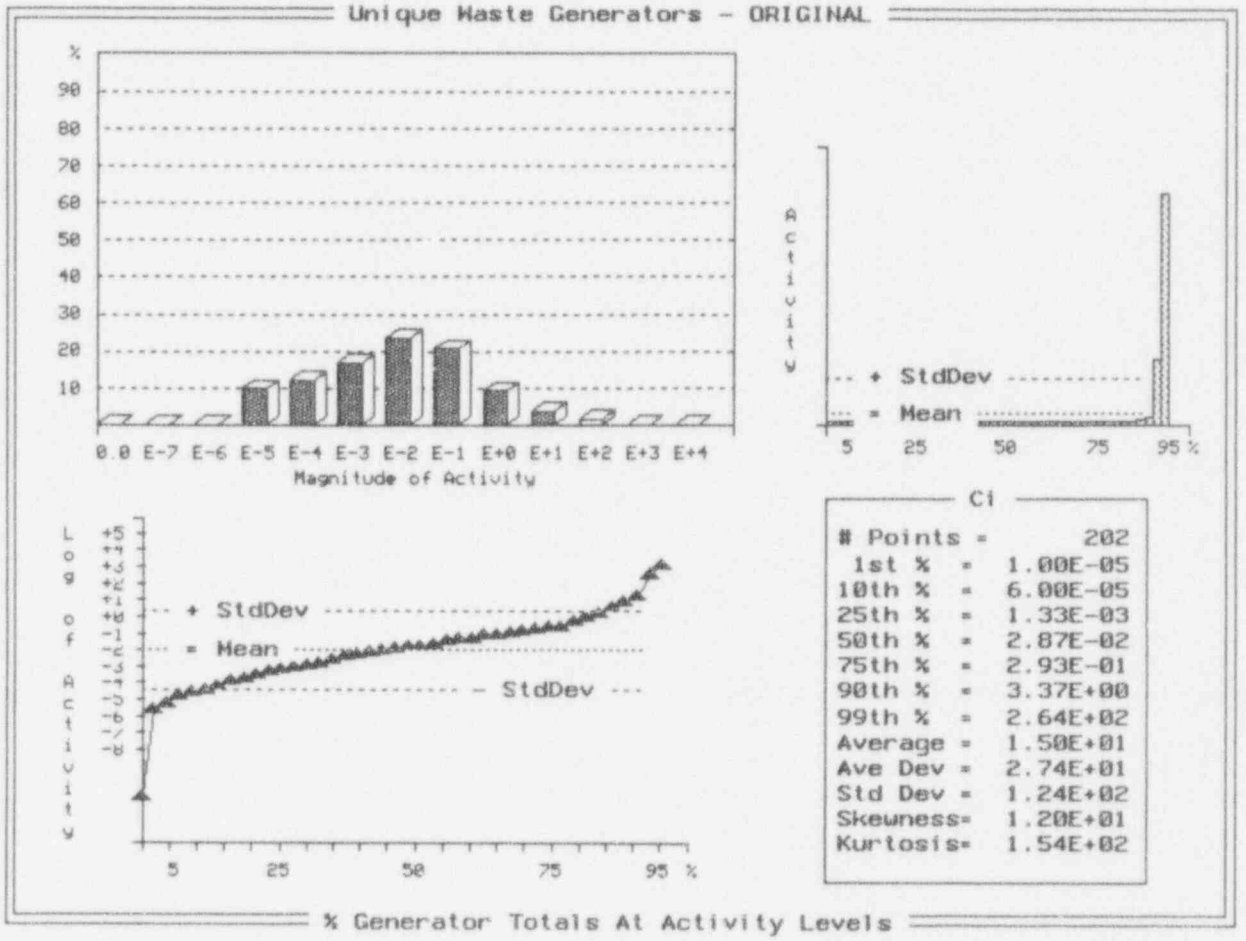

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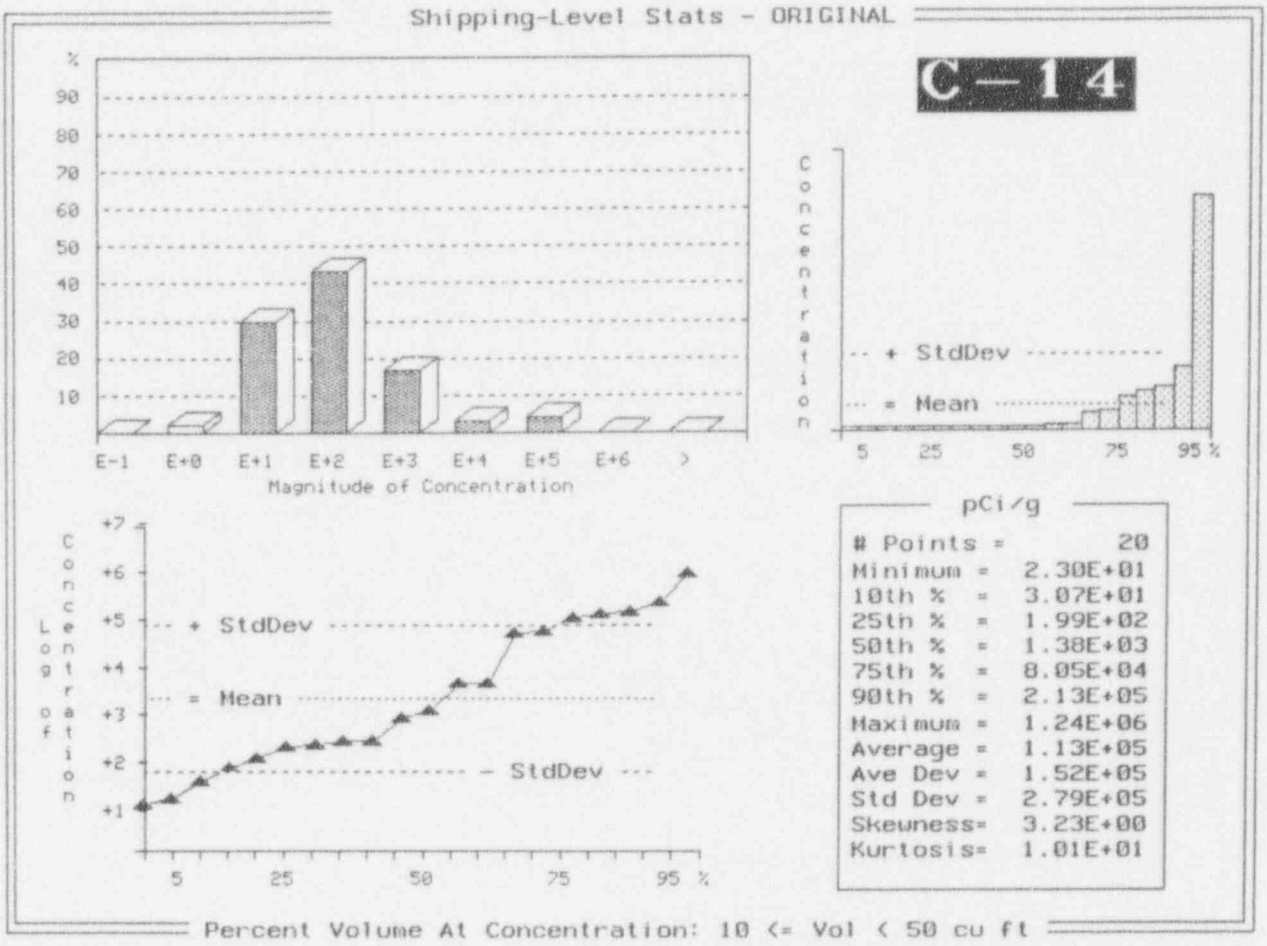


Exhibit F-24 (Continued)

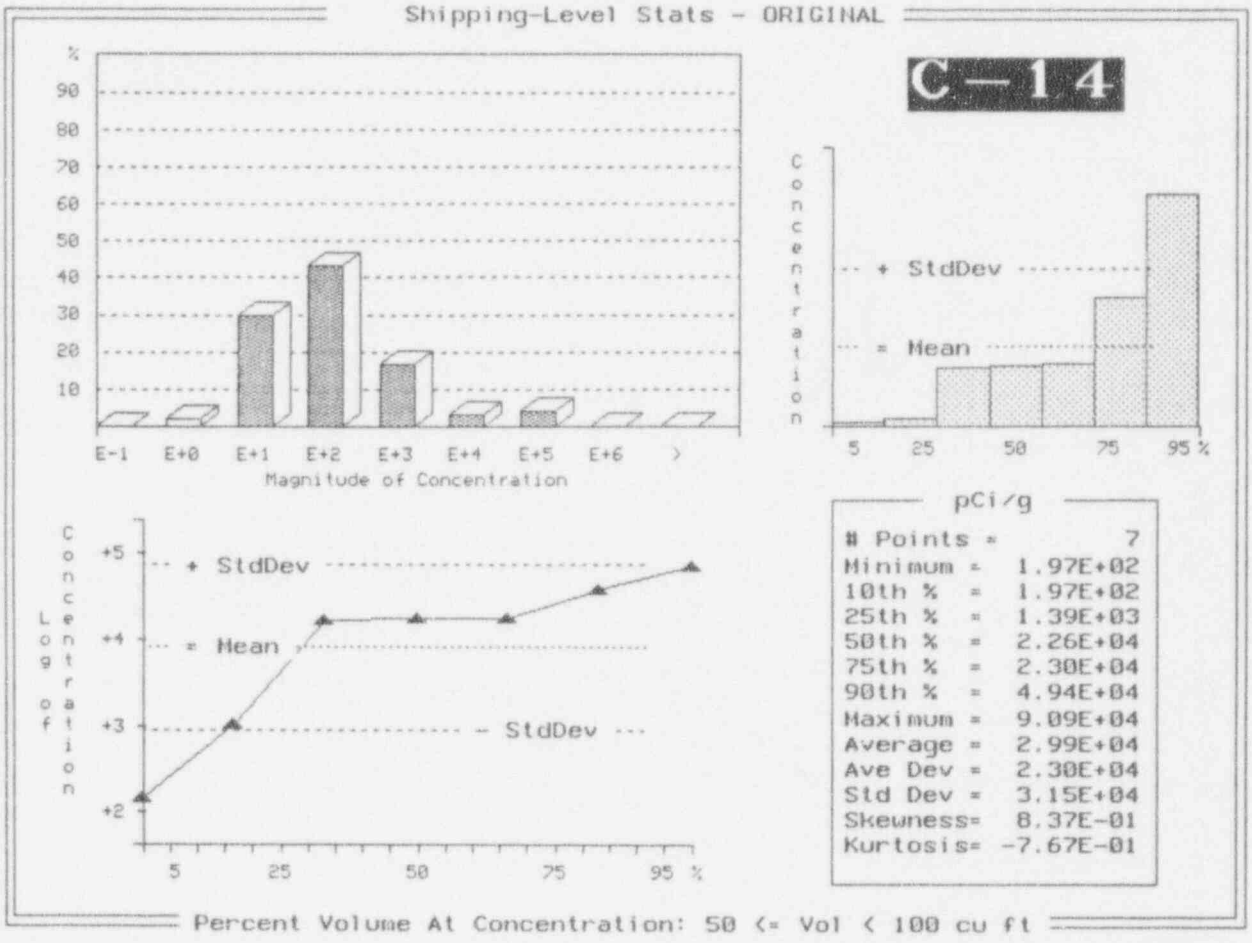
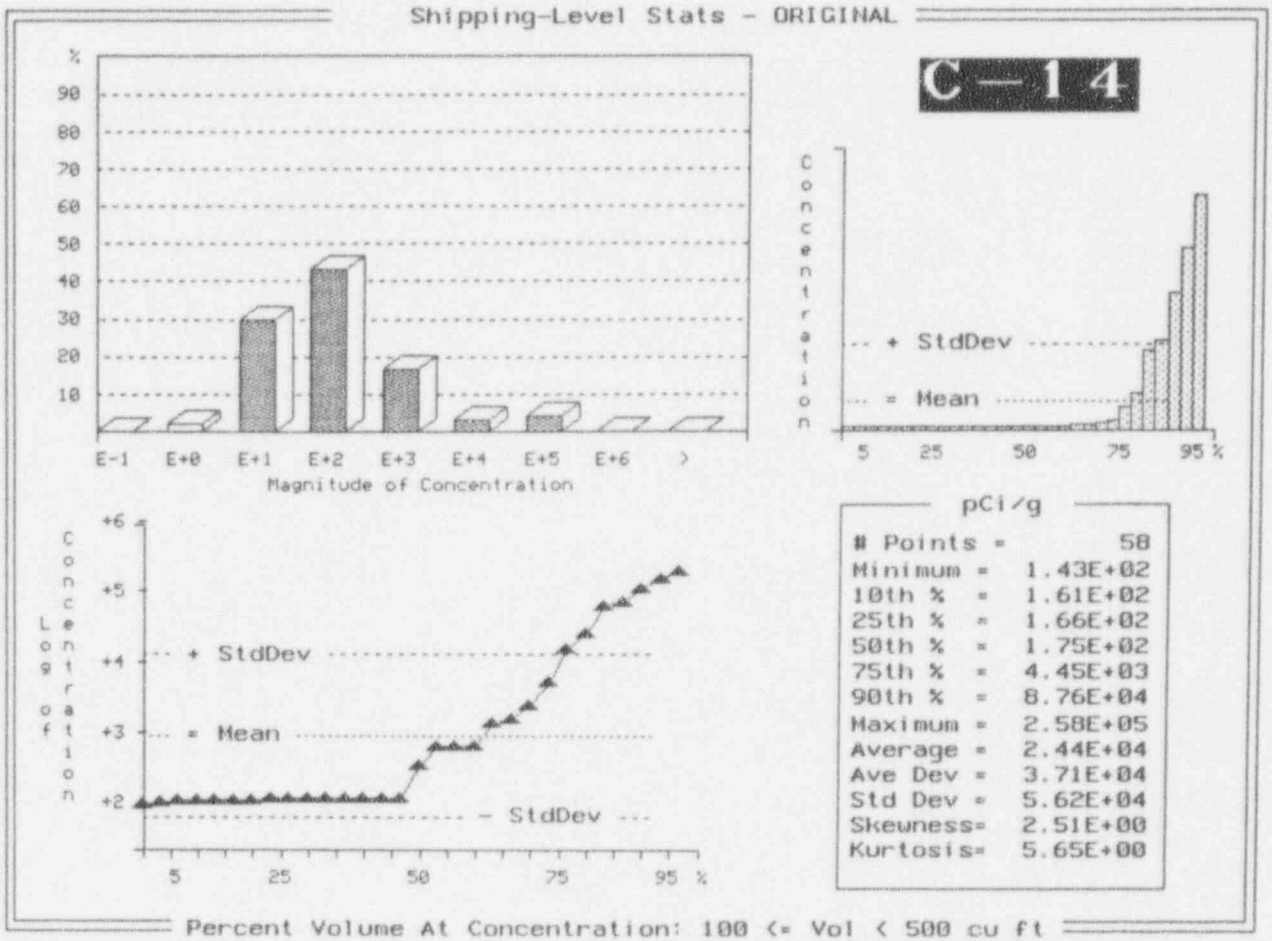


Exhibit F-24 (Continued)



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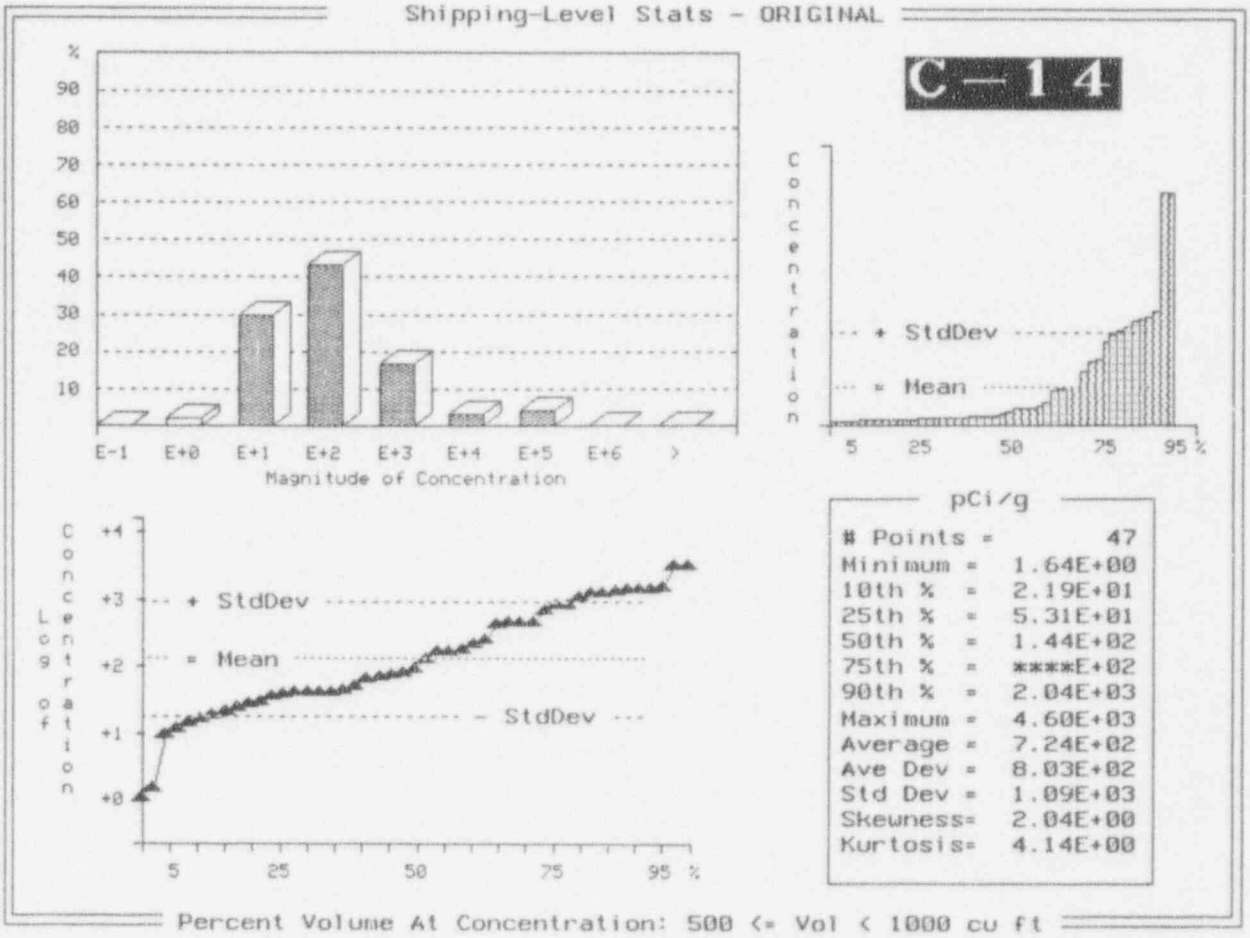

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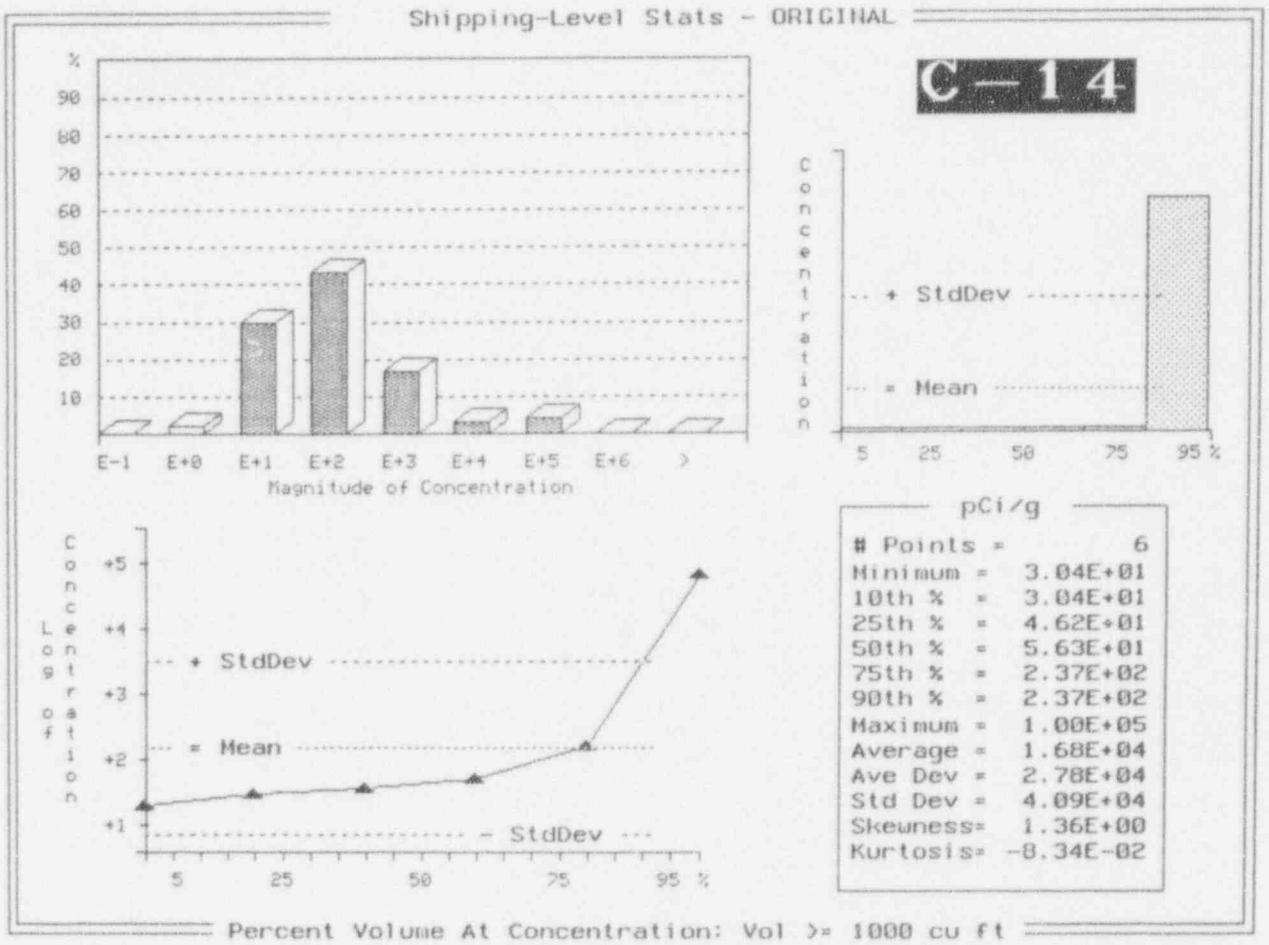

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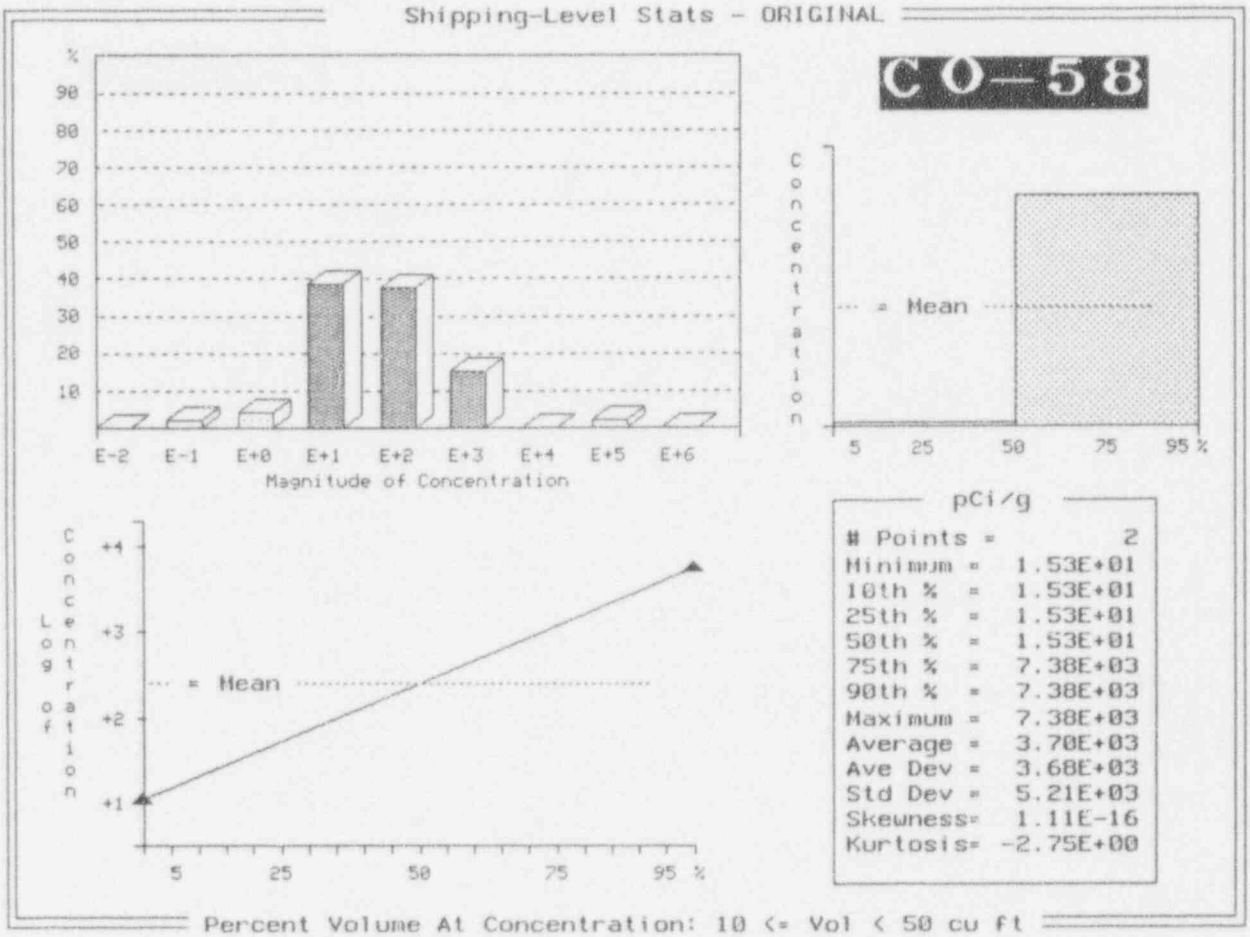
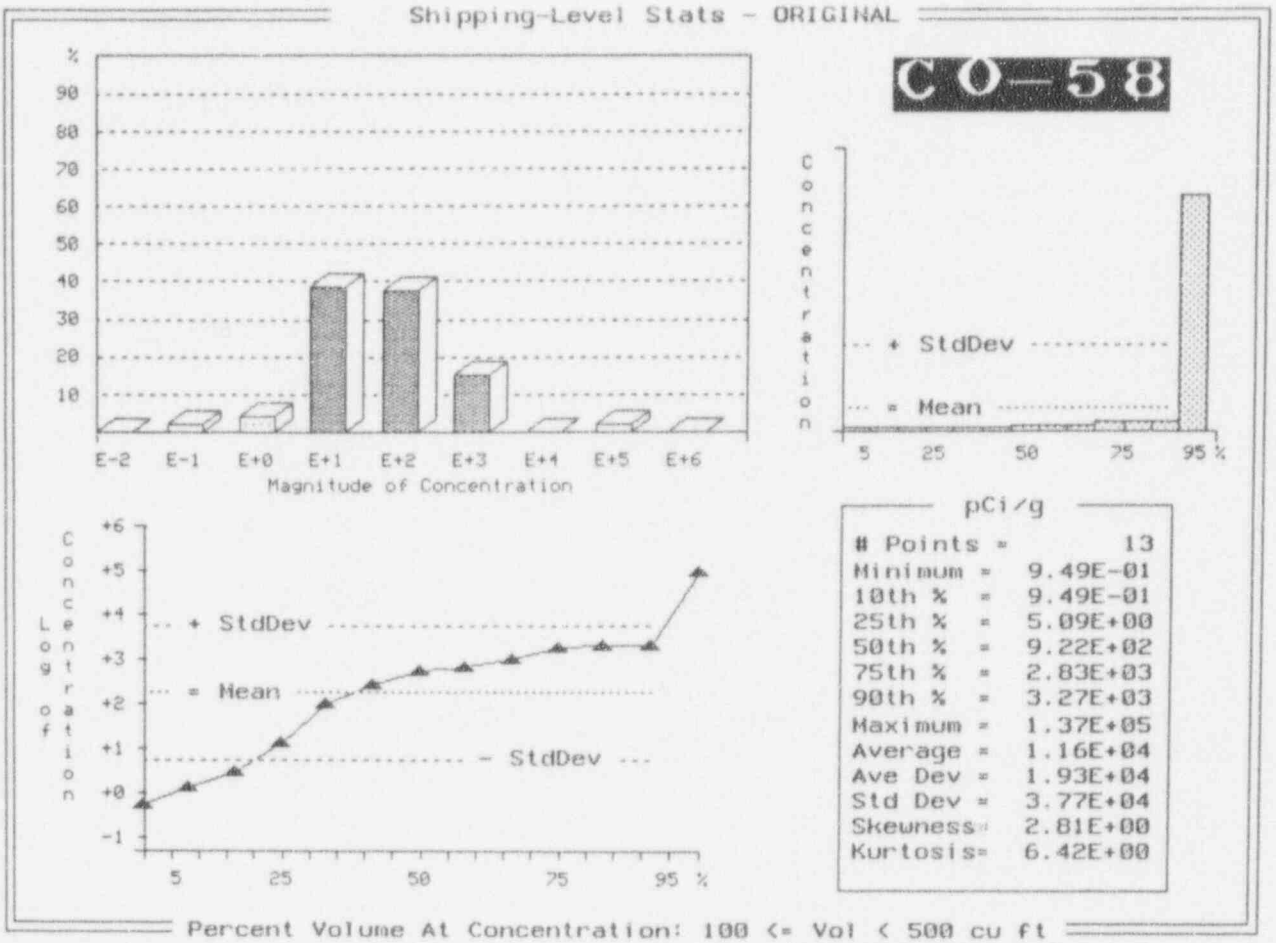


Exhibit F-24 (Continued)



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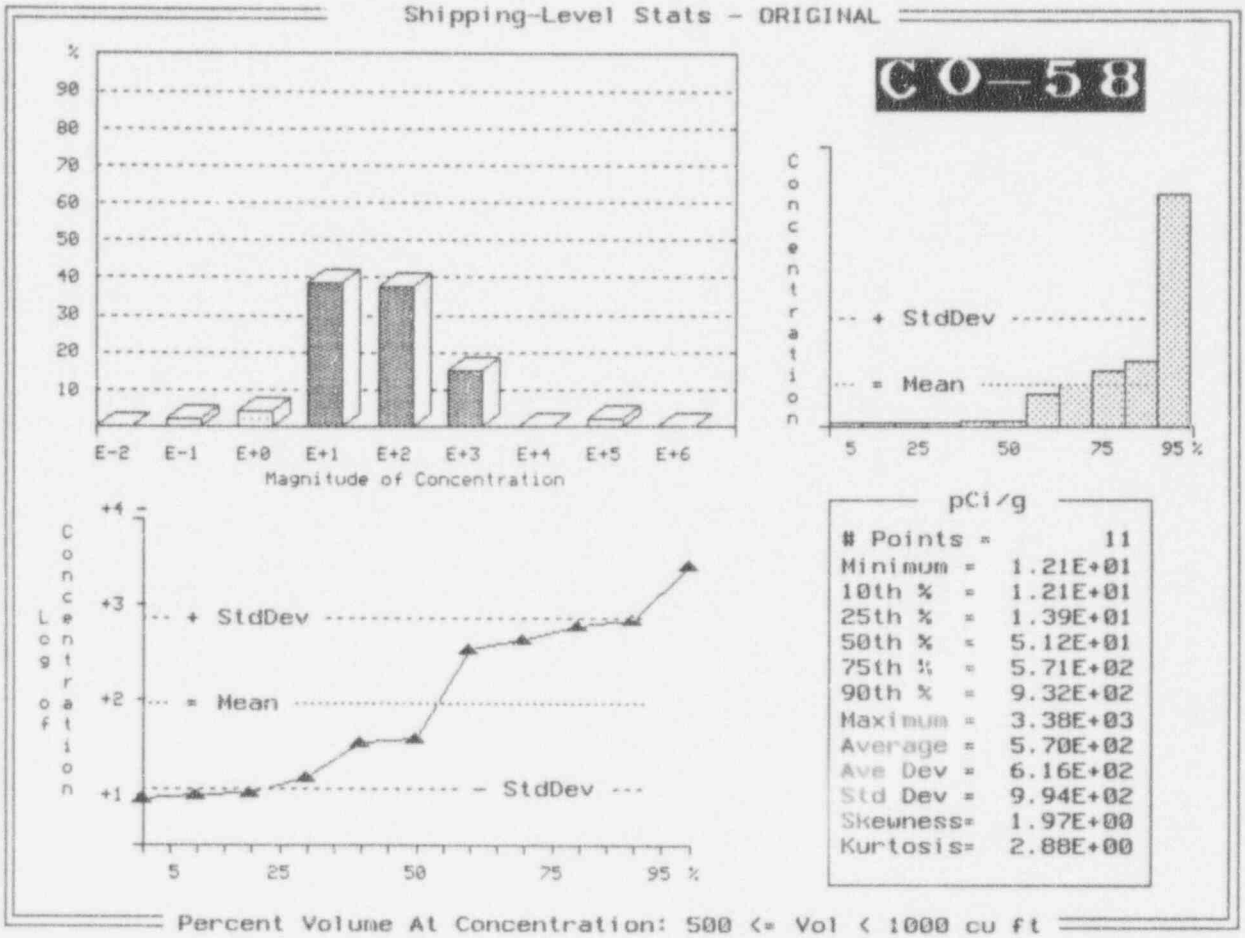

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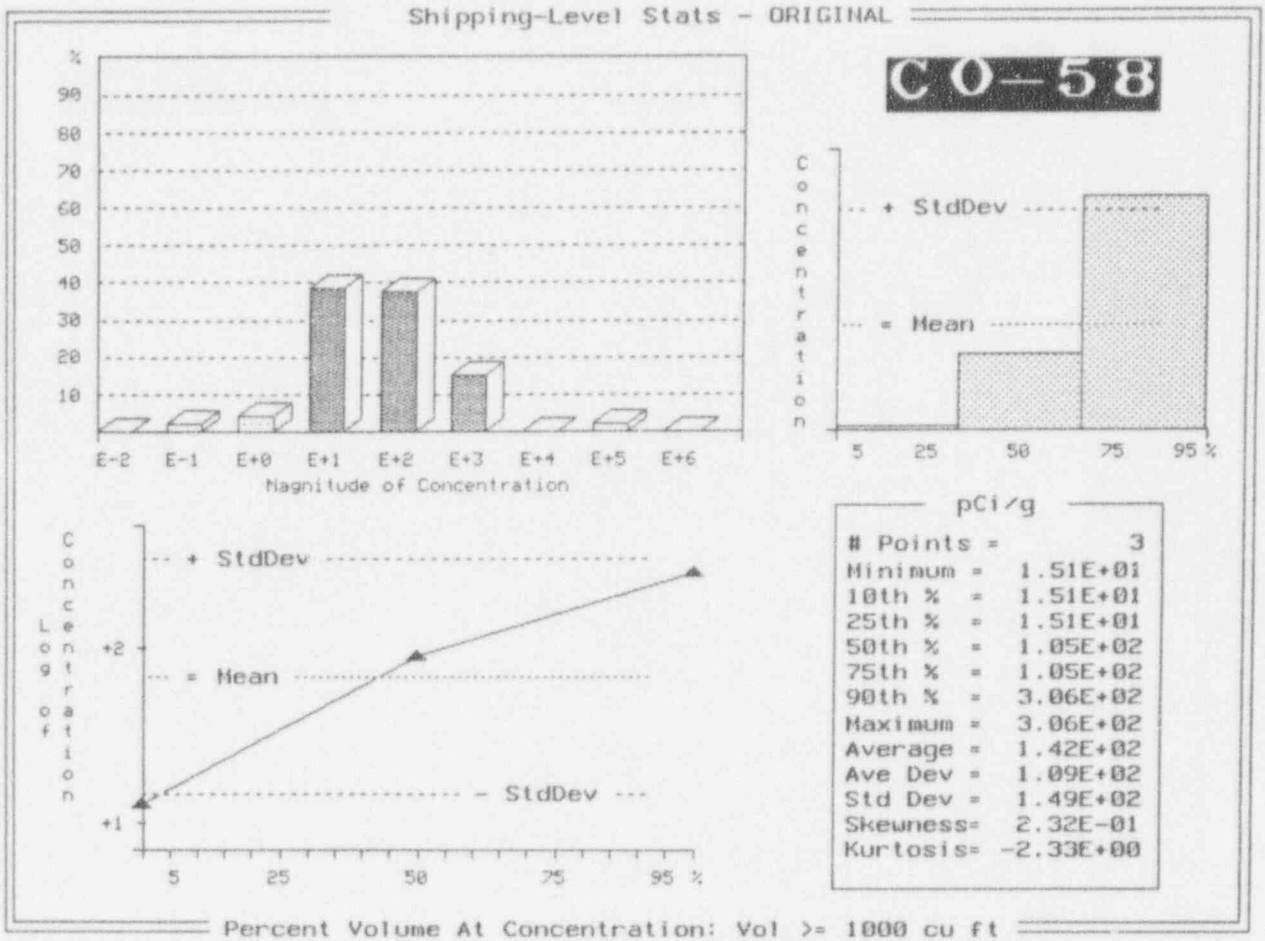

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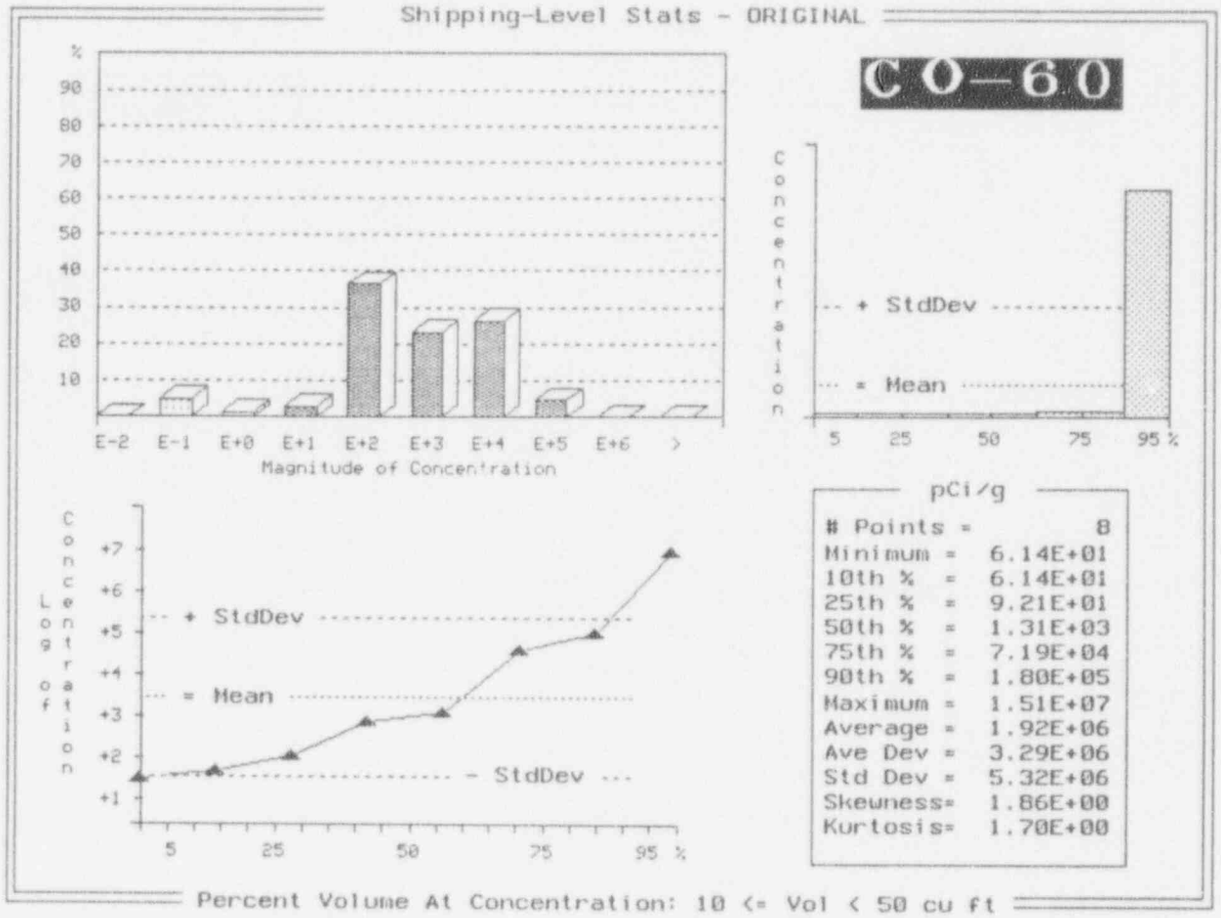

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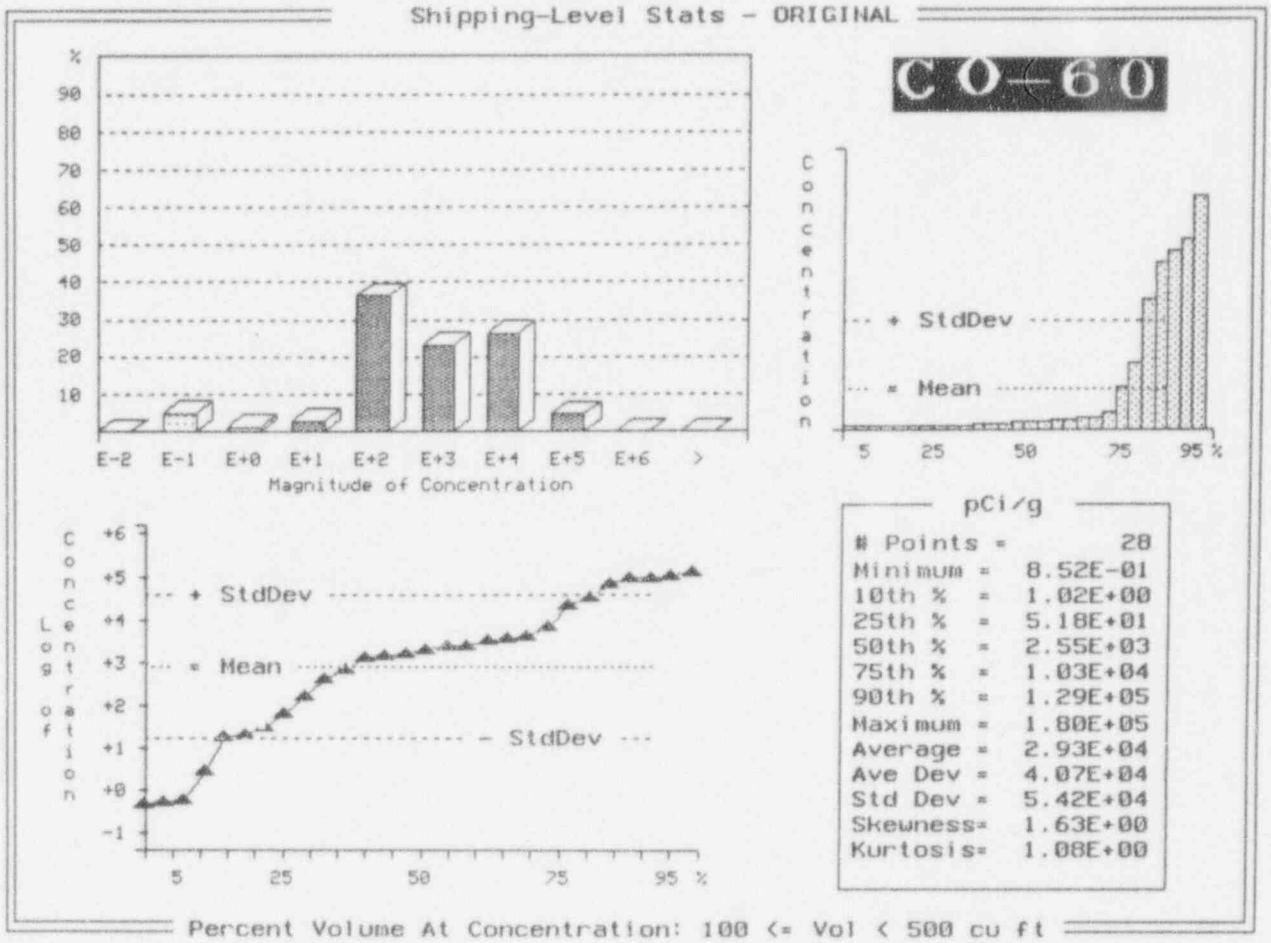

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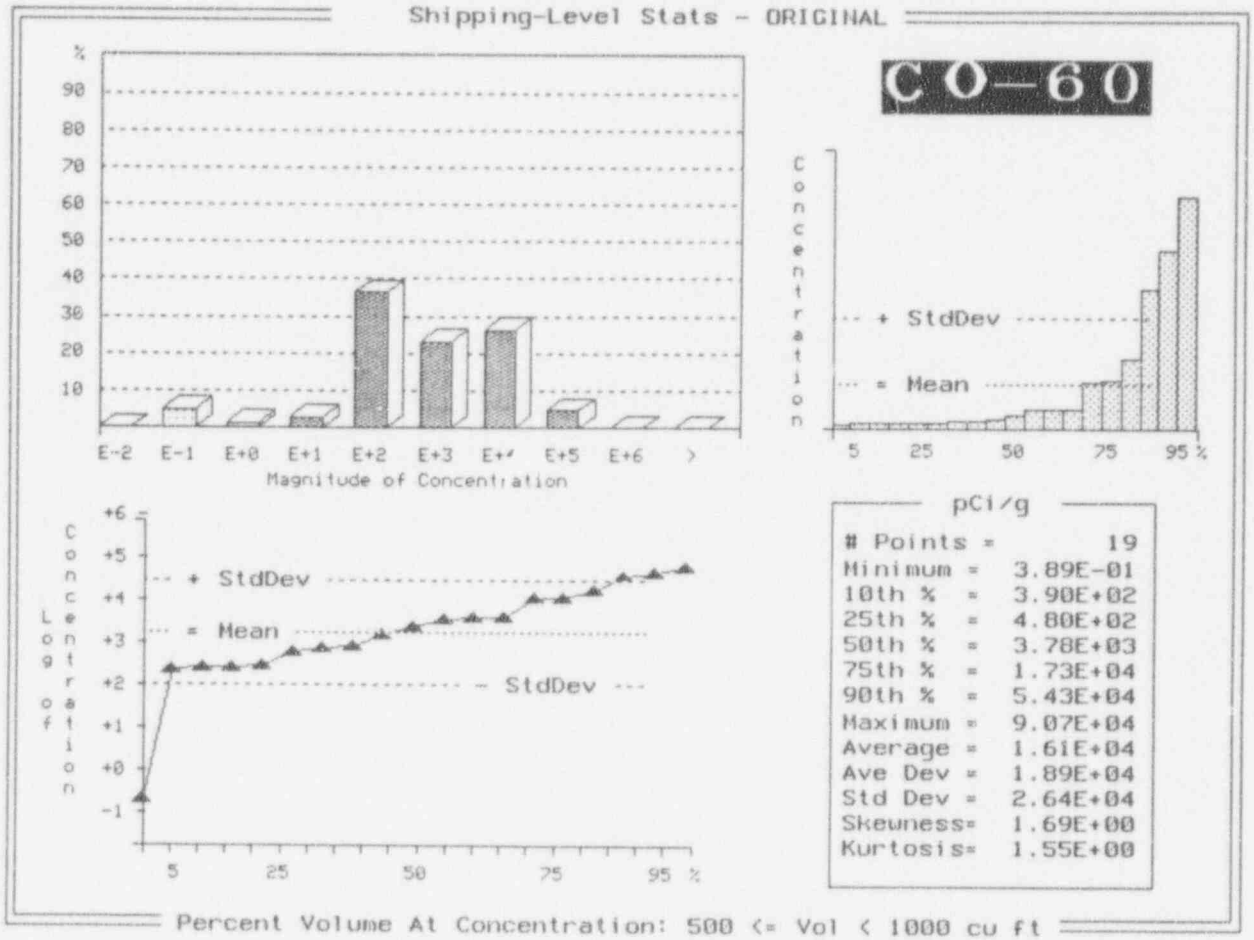

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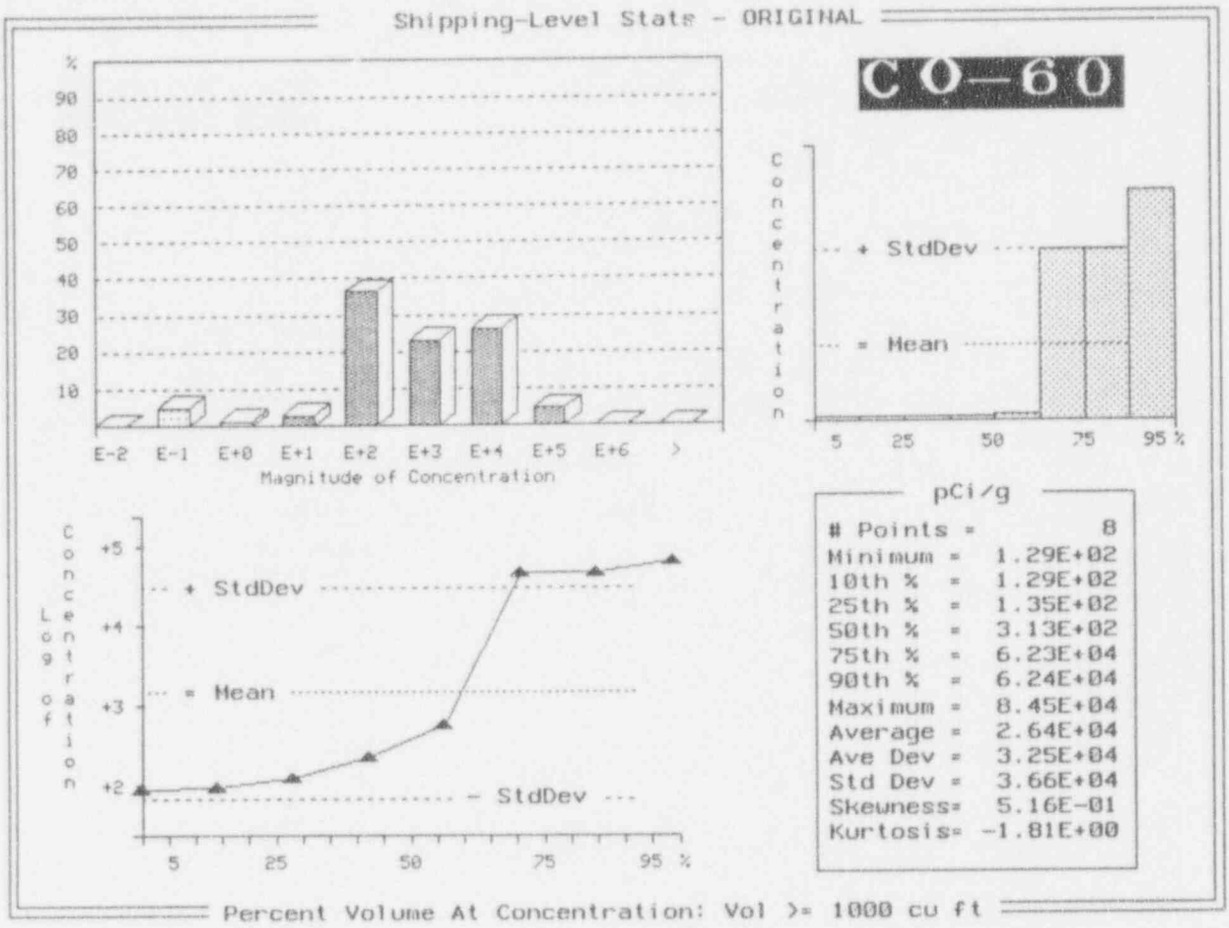

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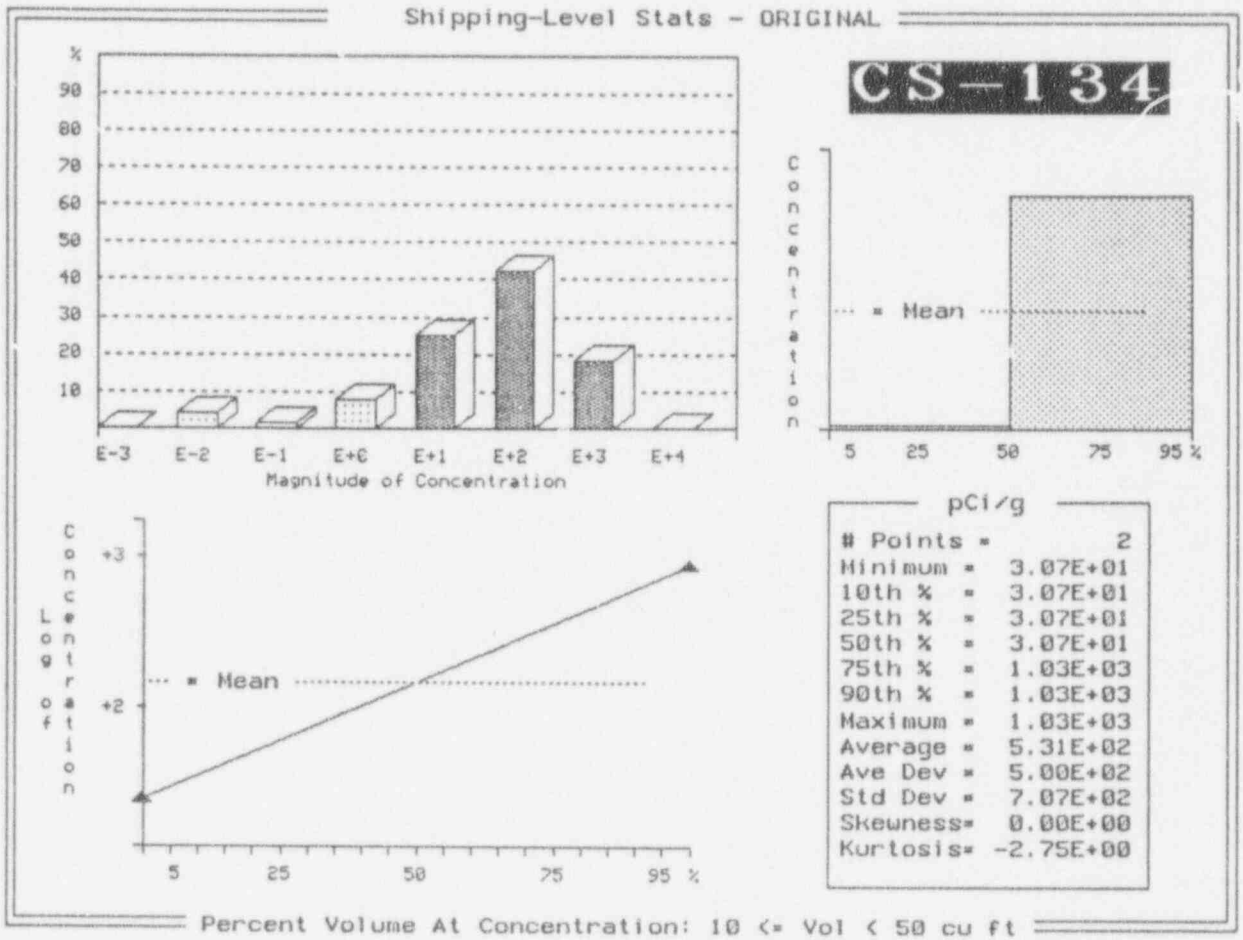

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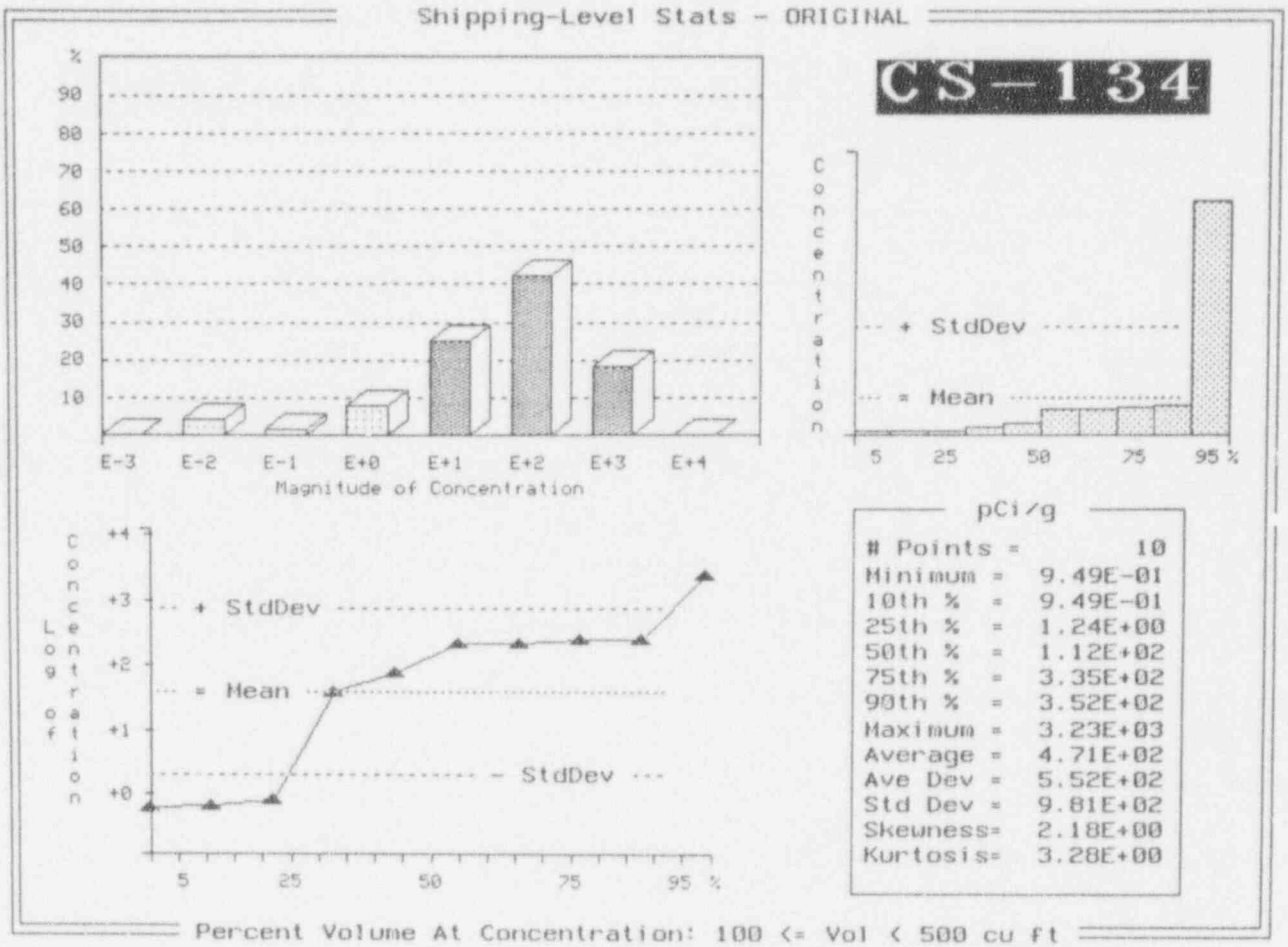

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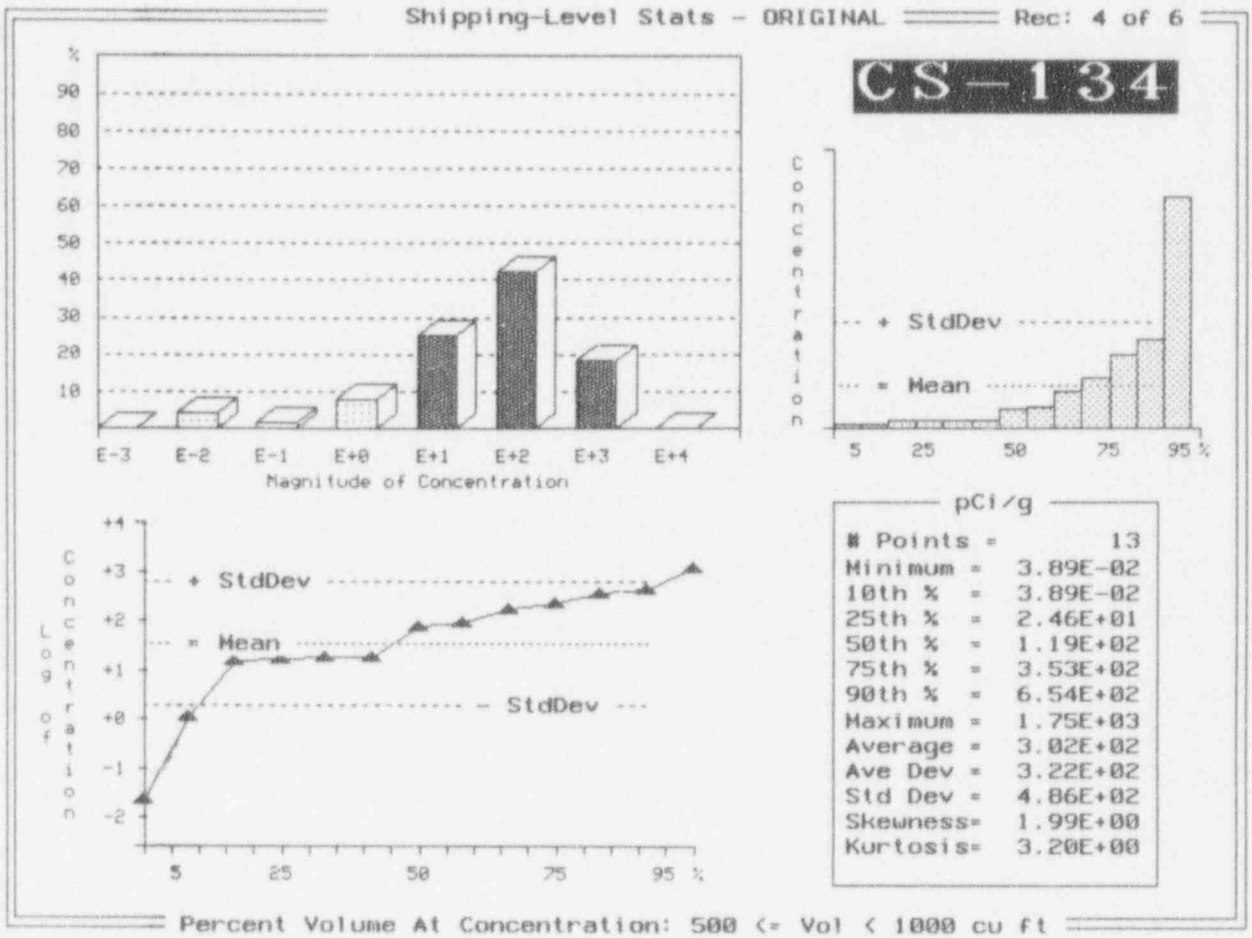

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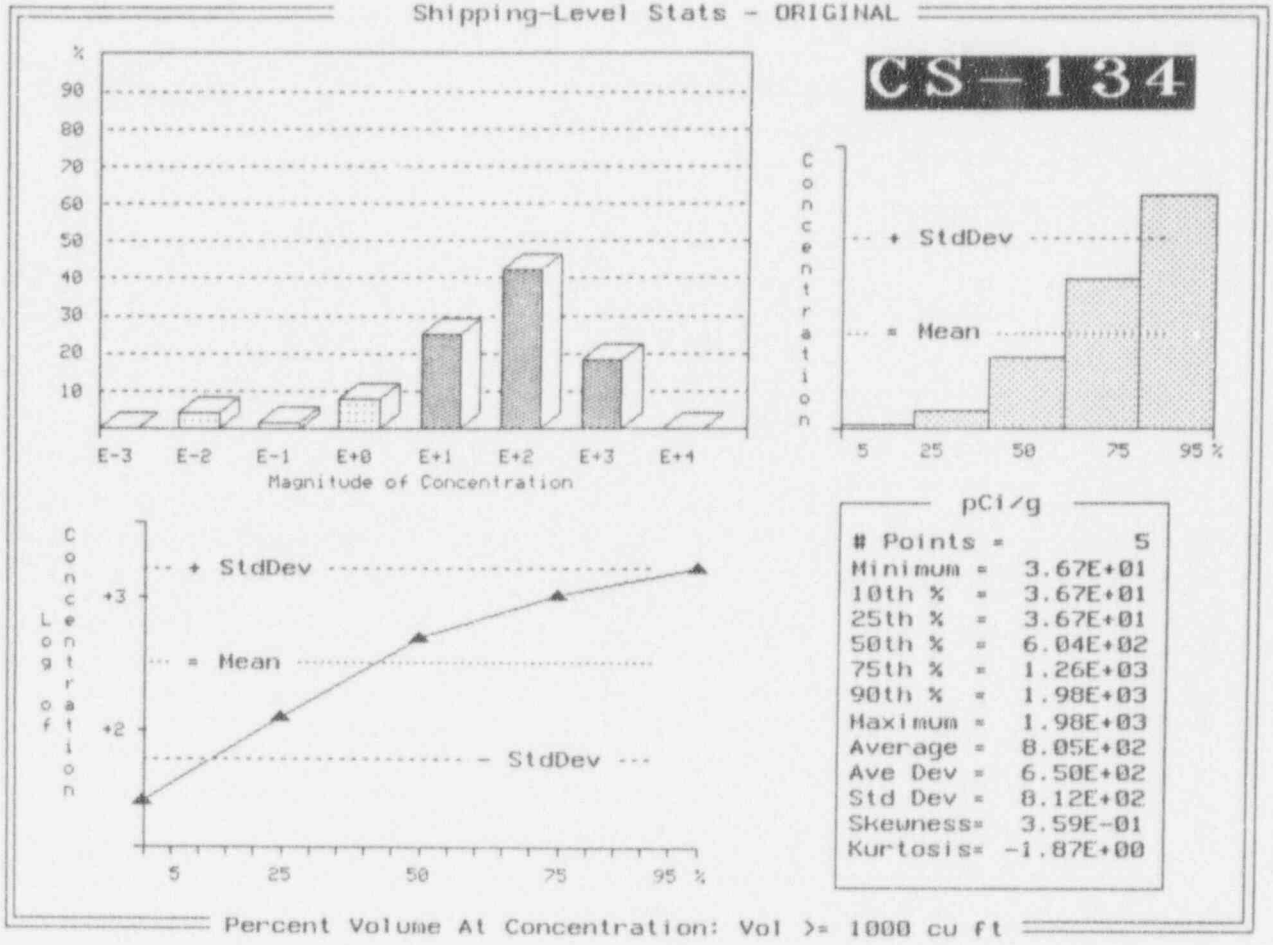

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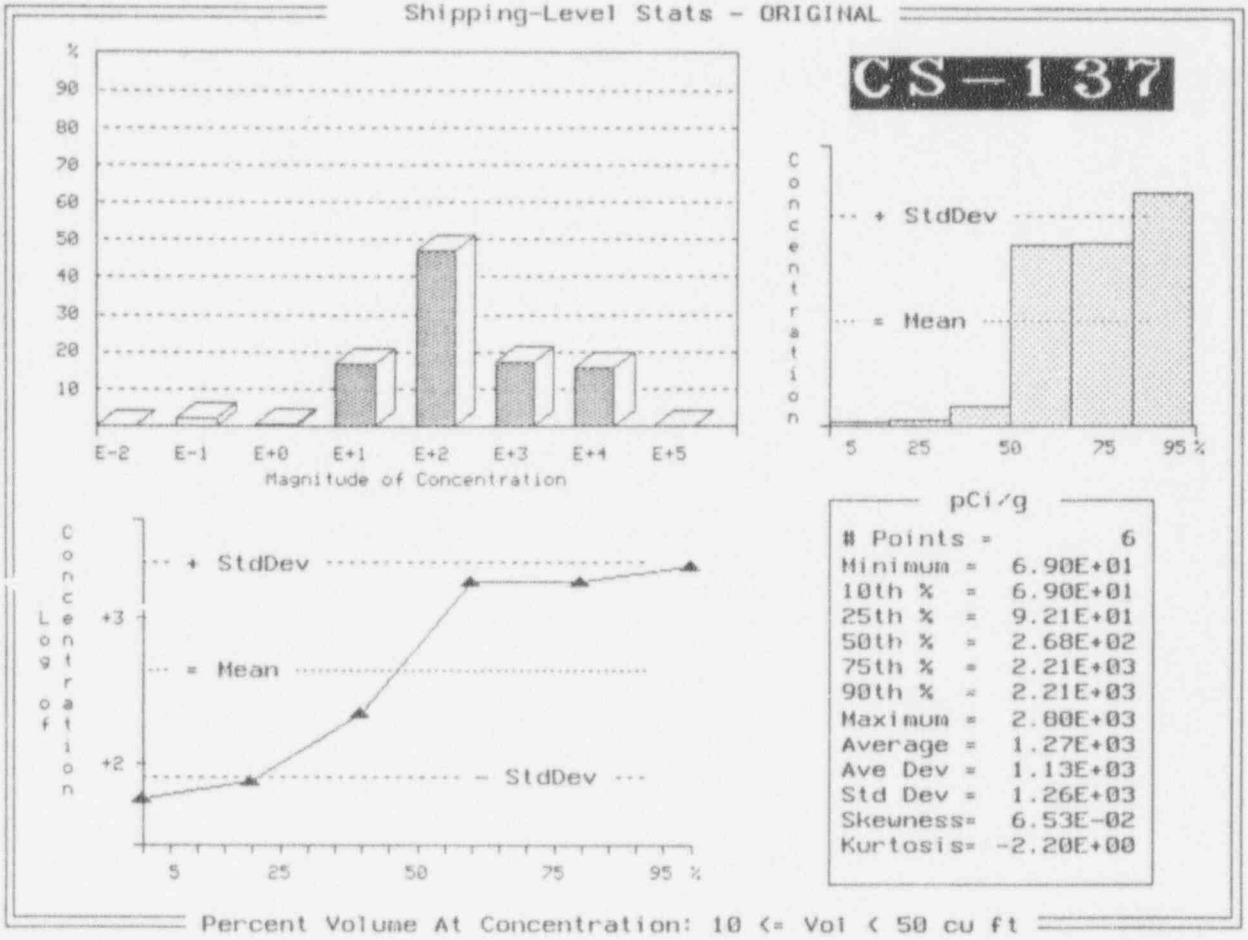

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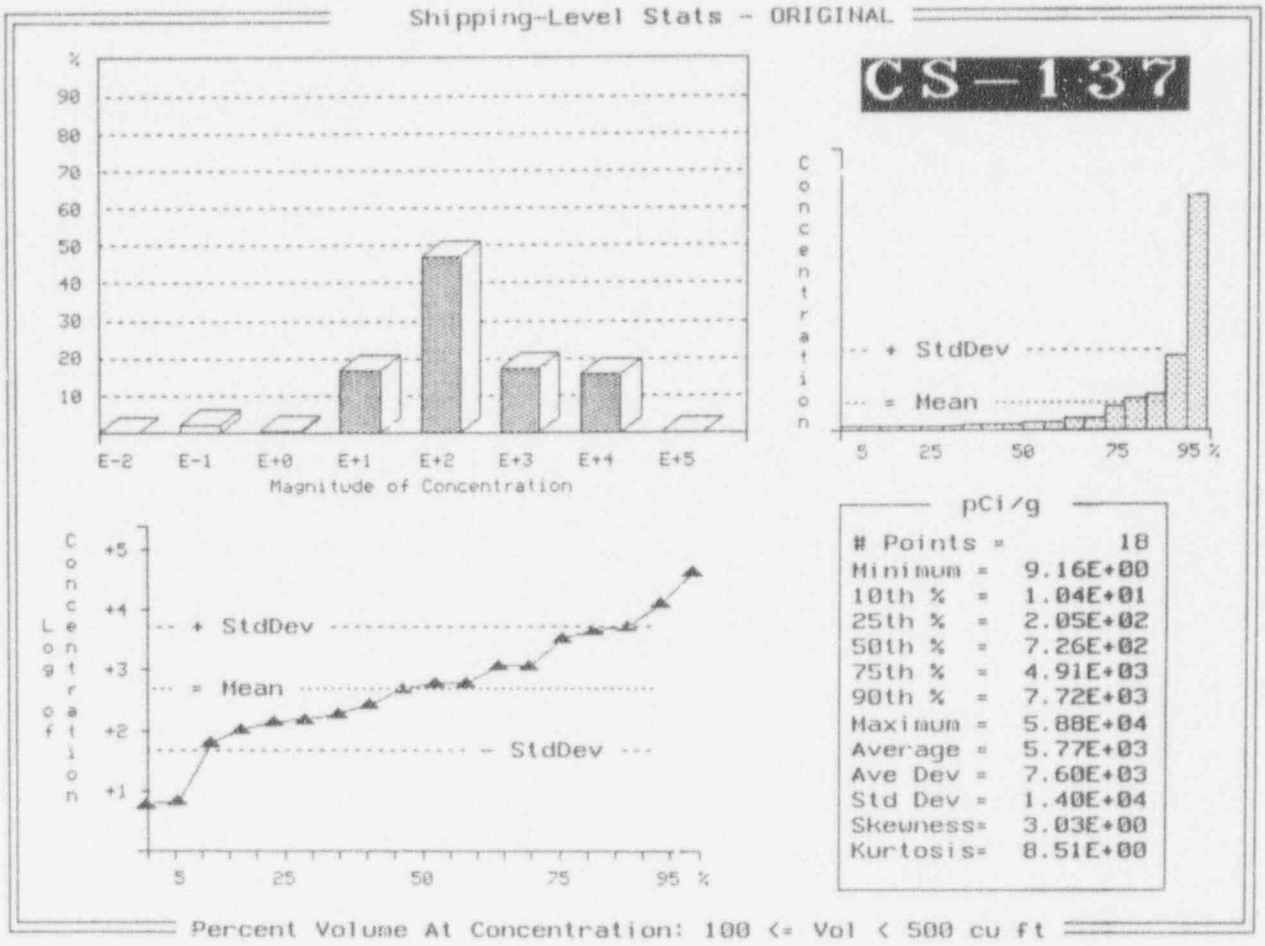

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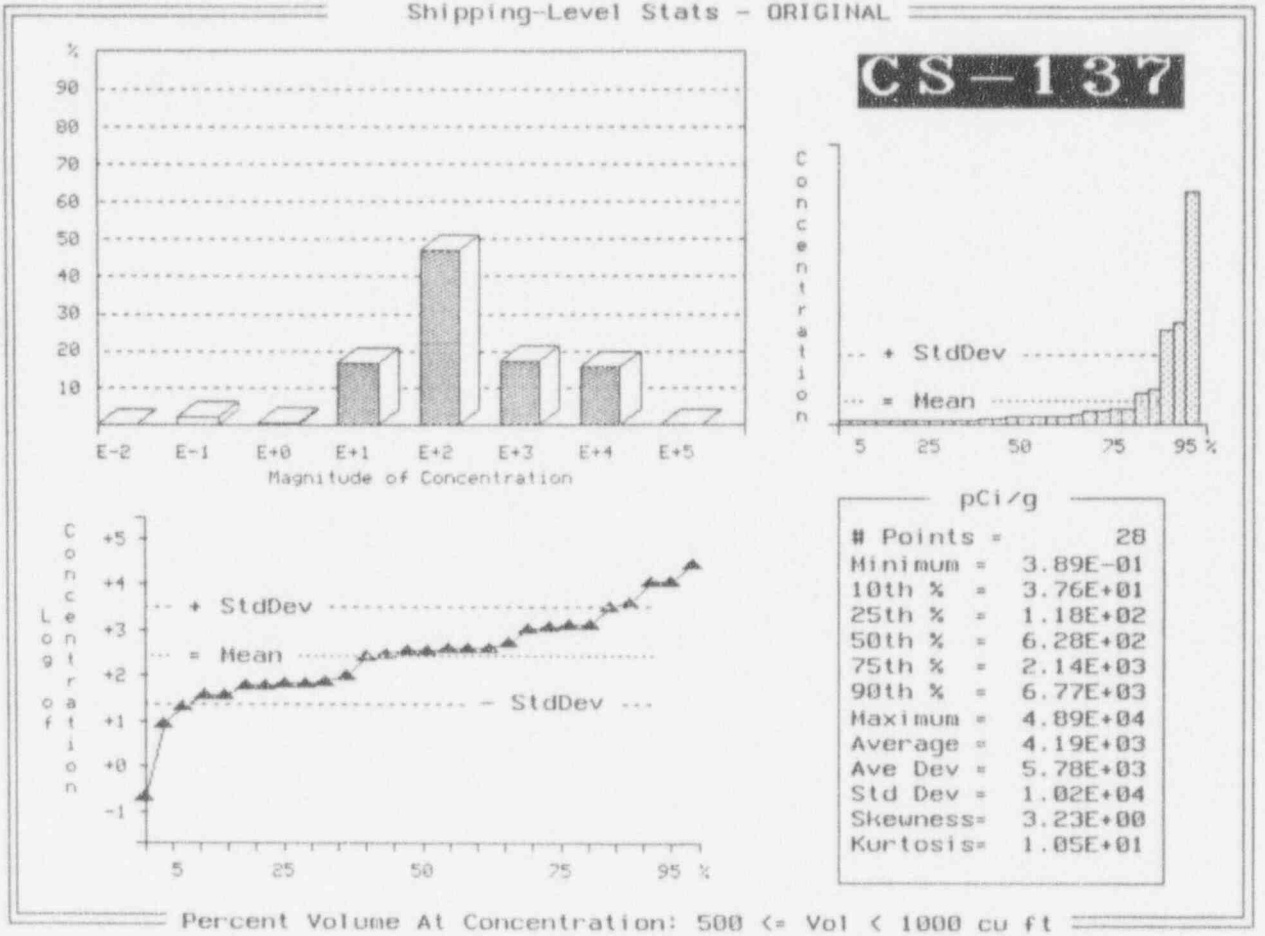

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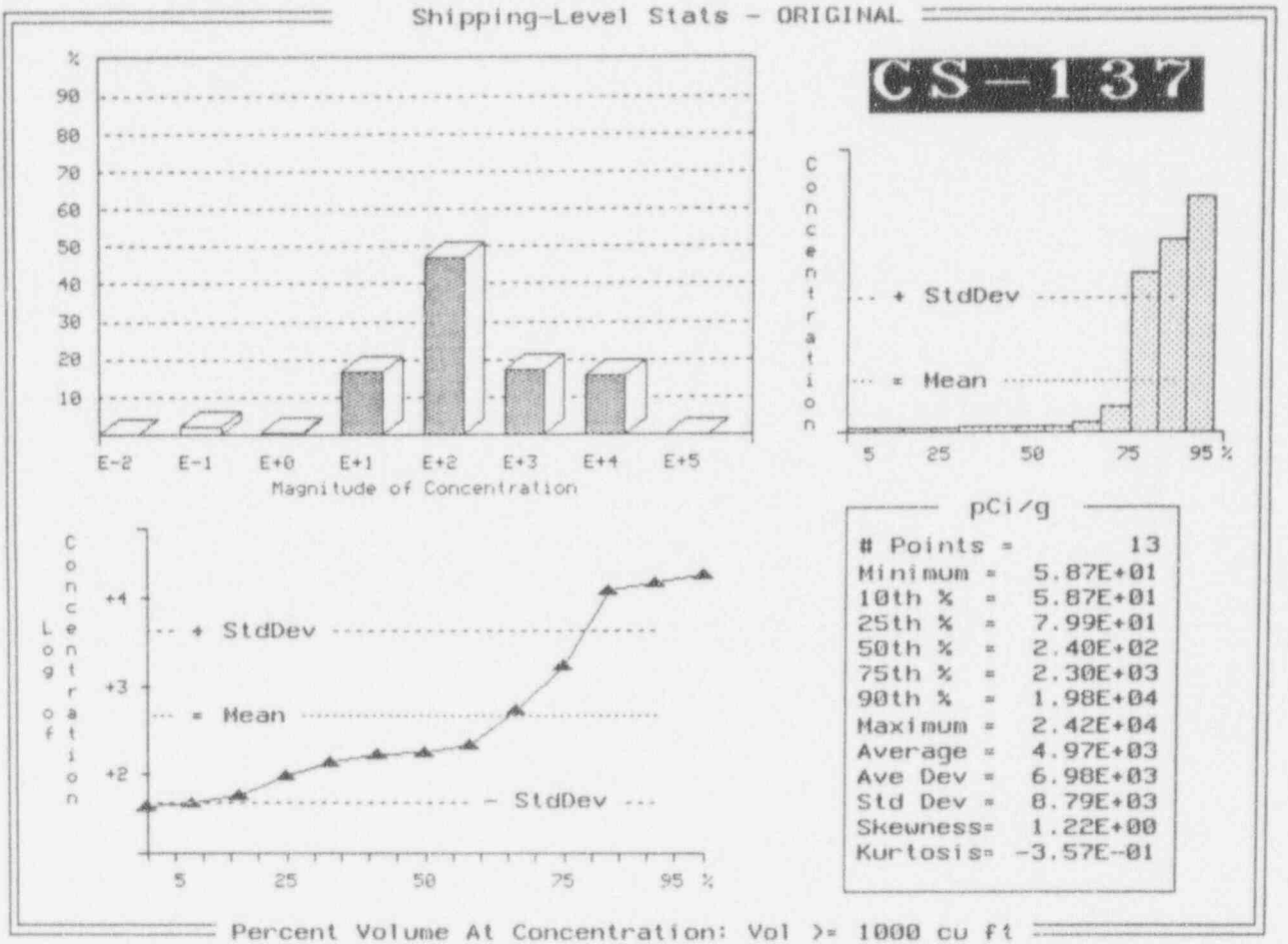

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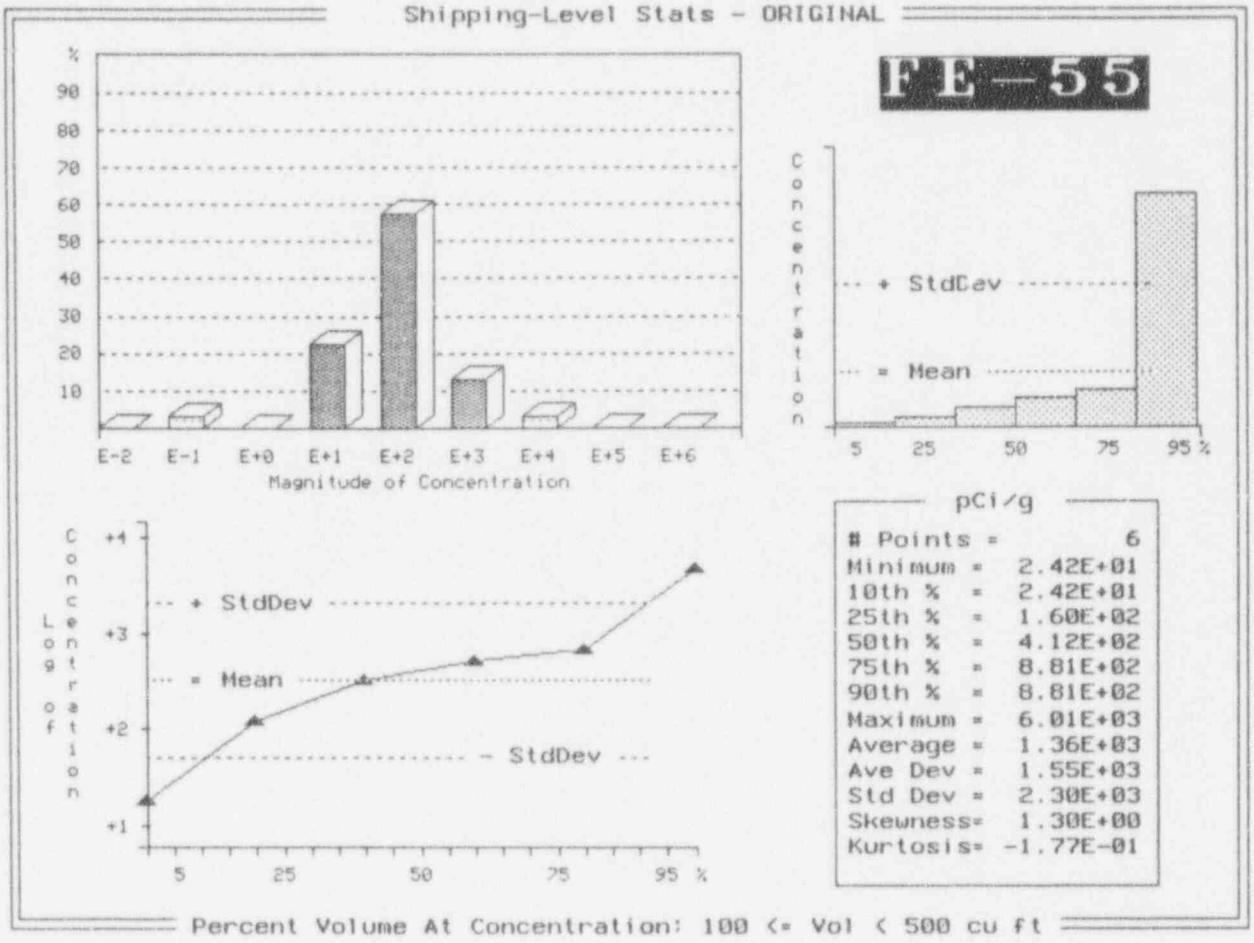

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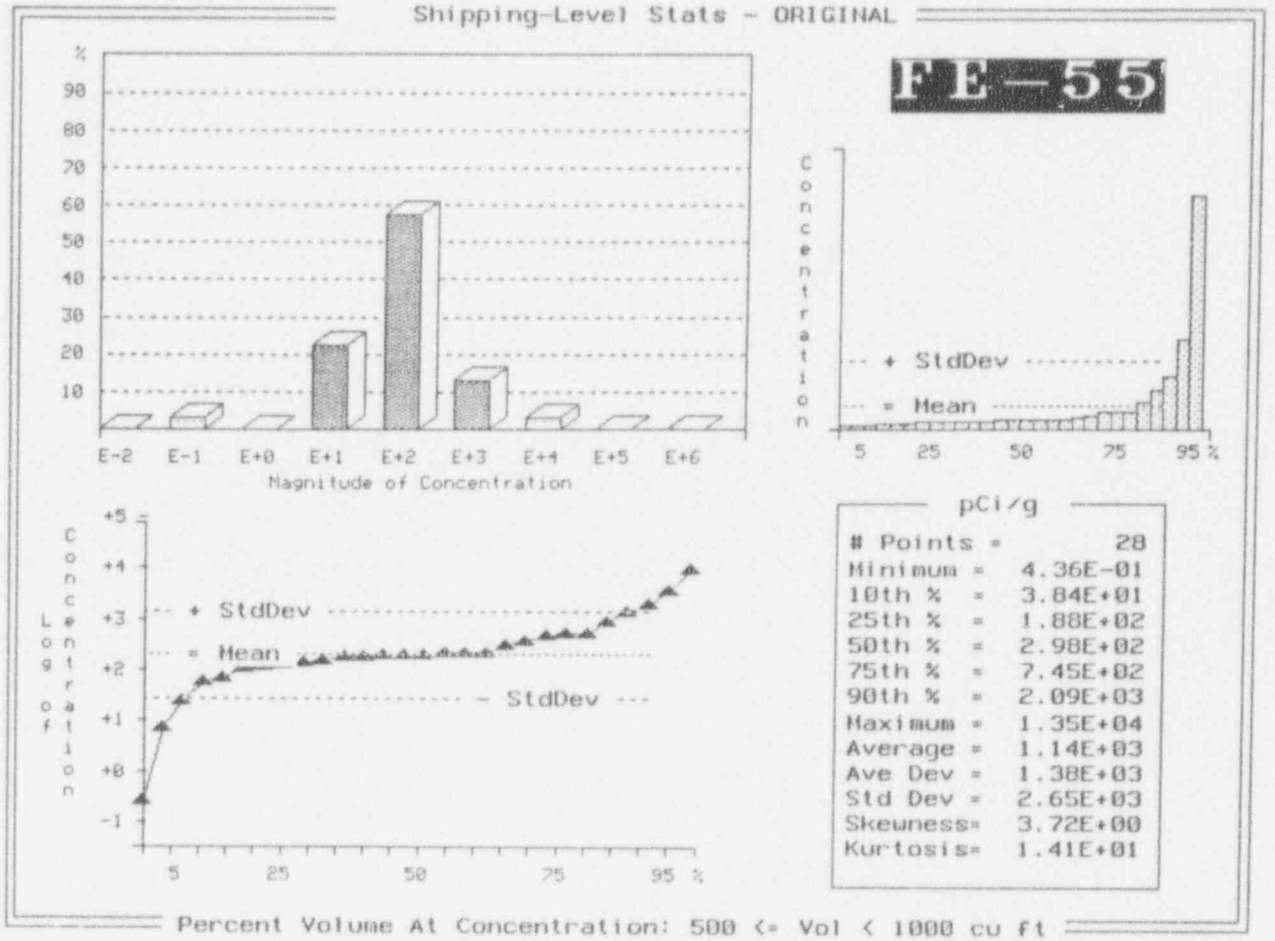

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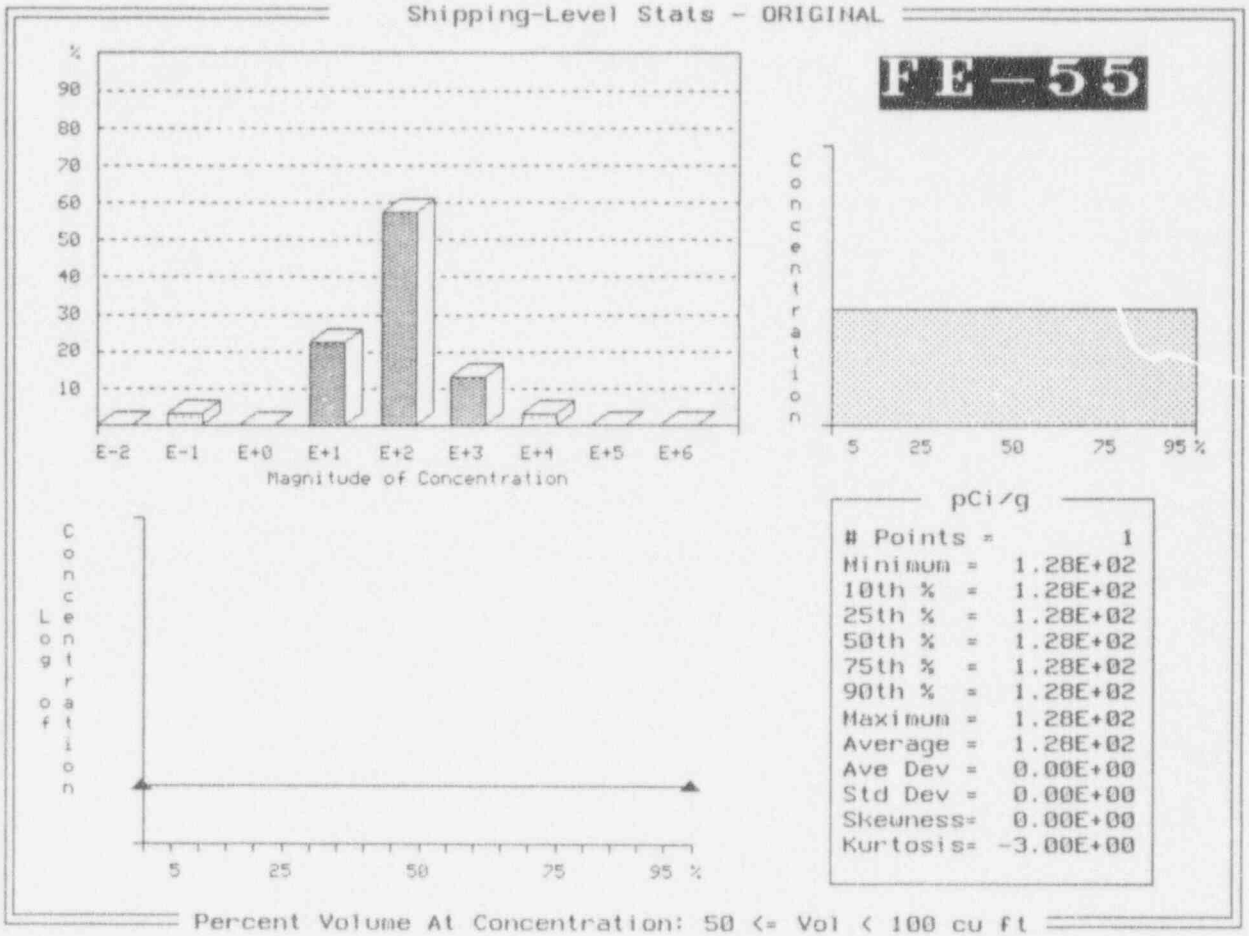

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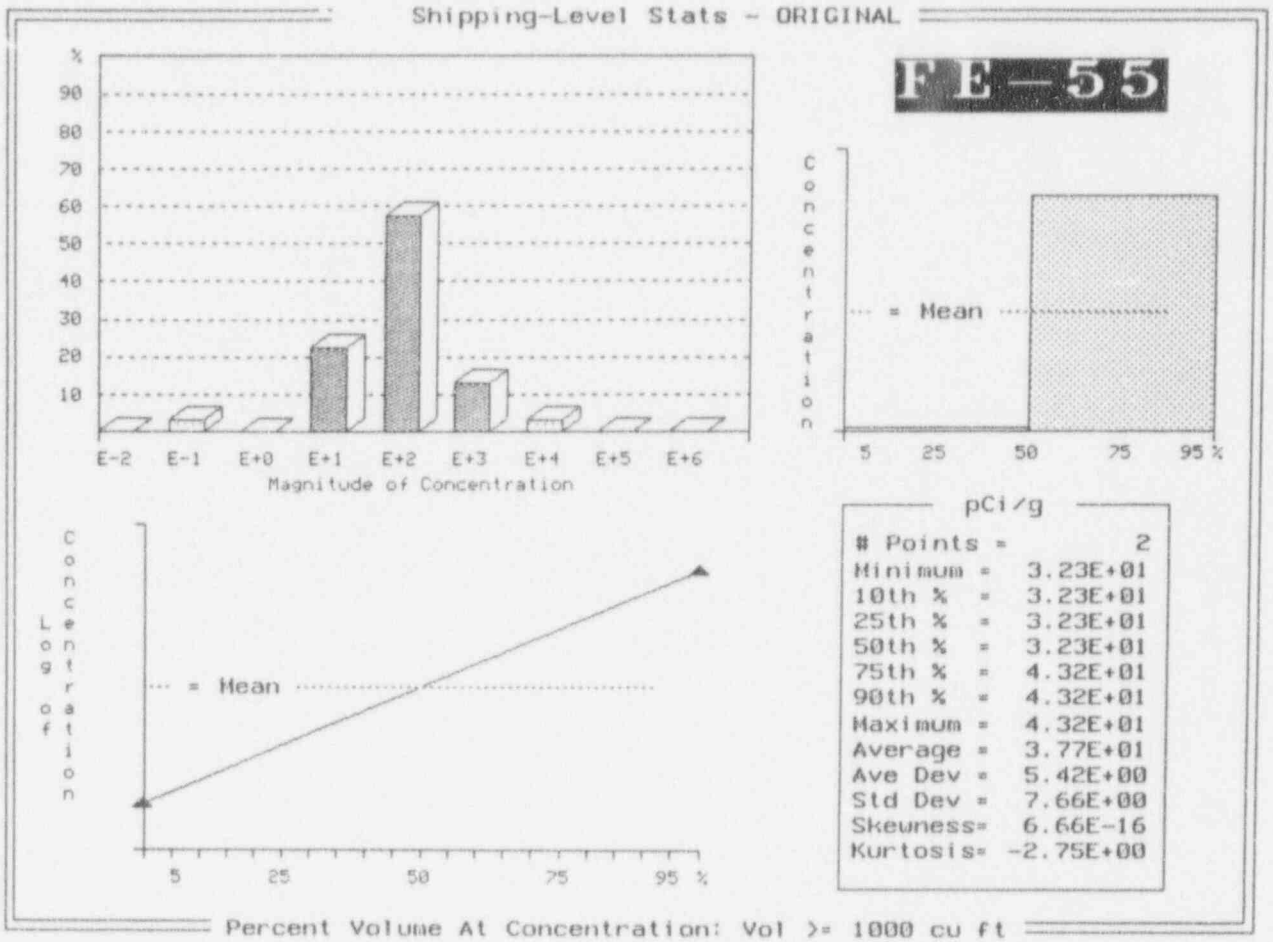

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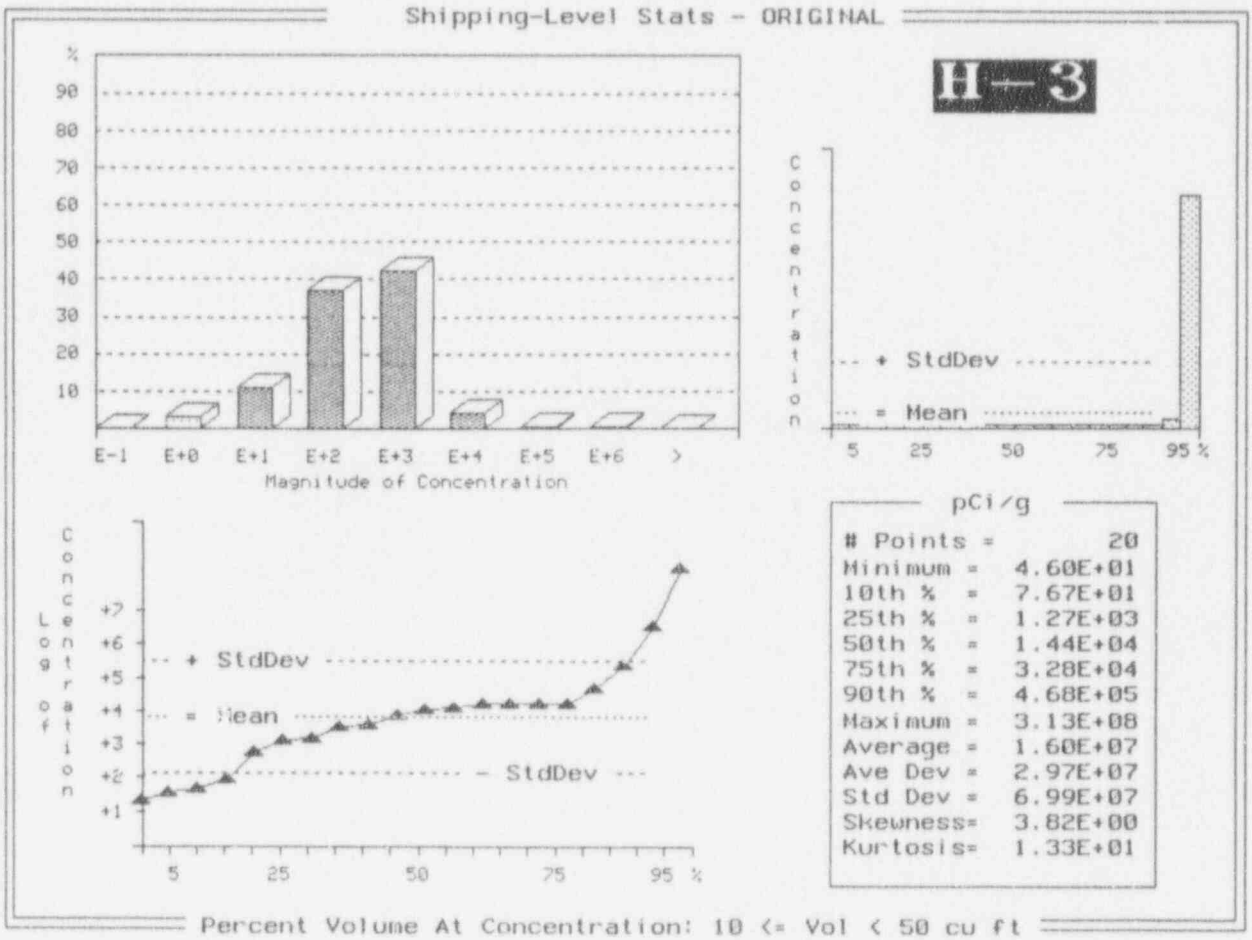

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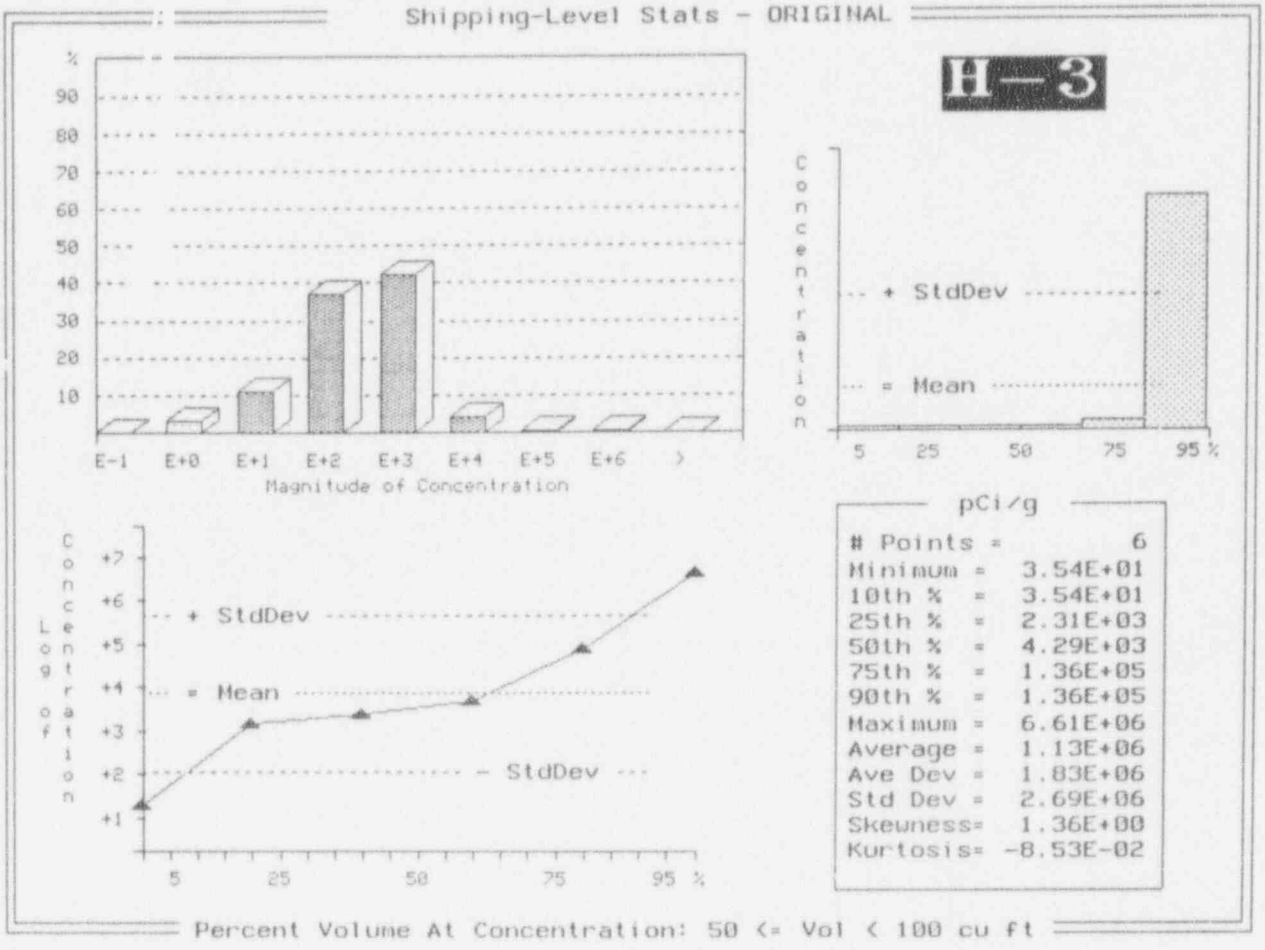

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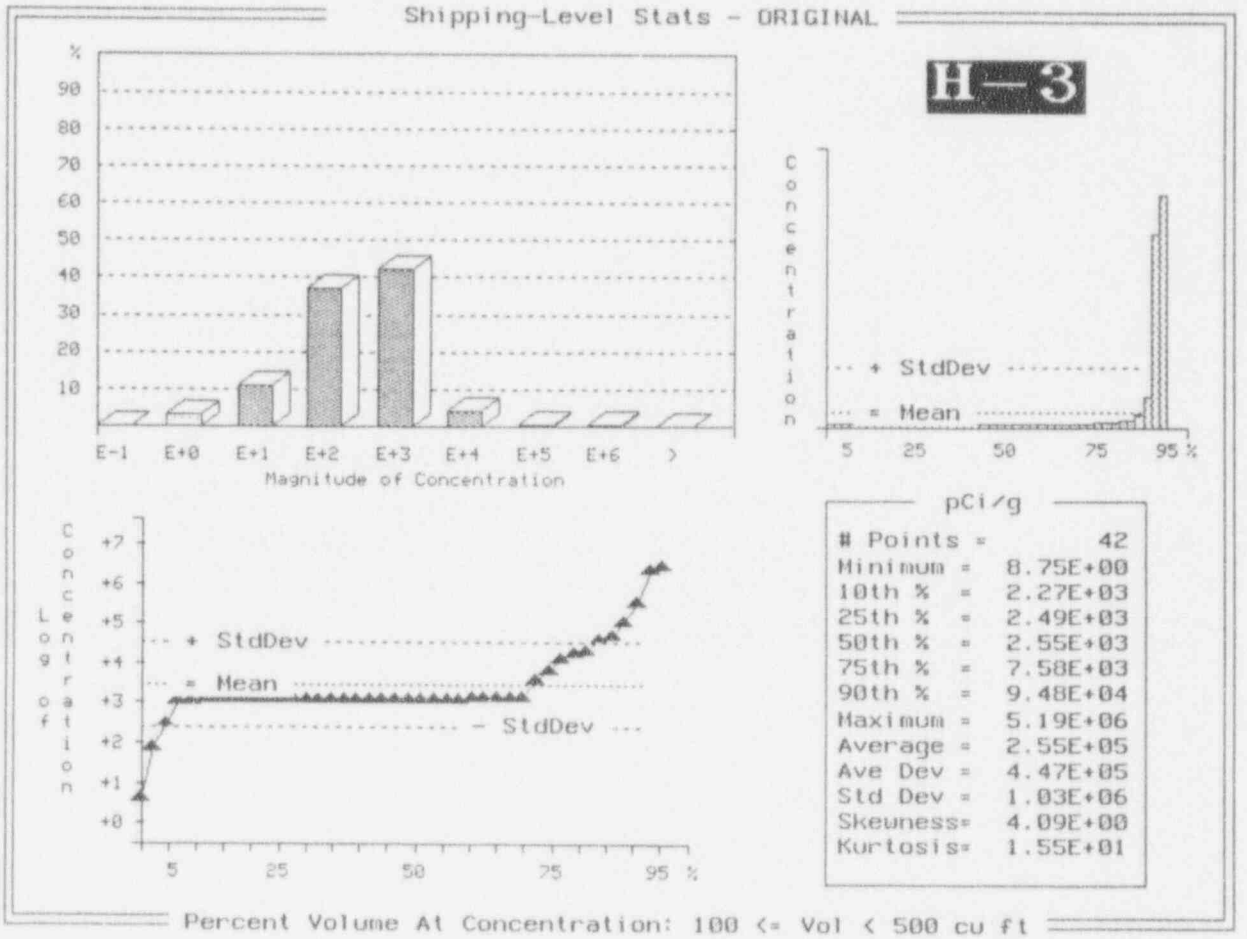

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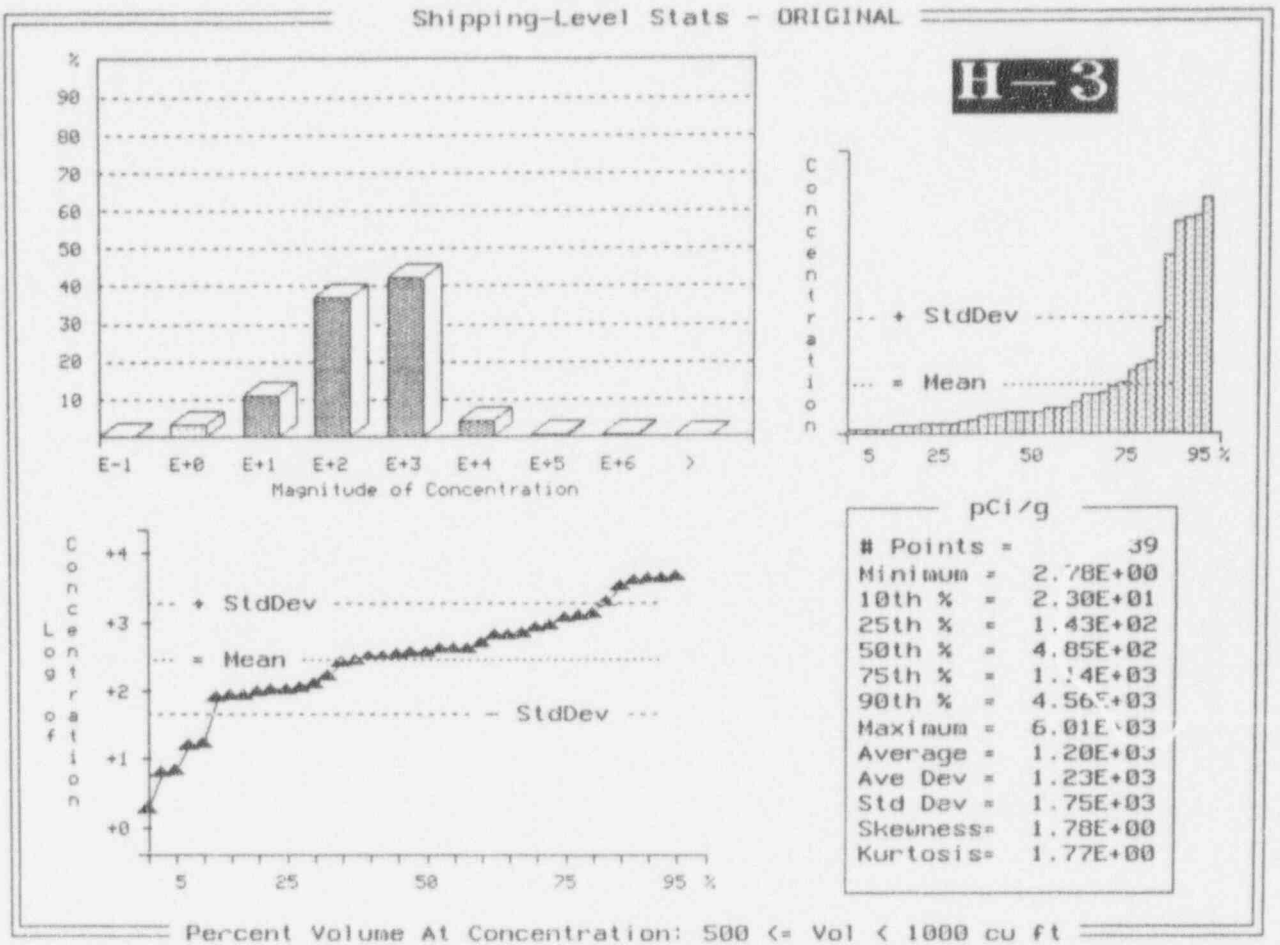

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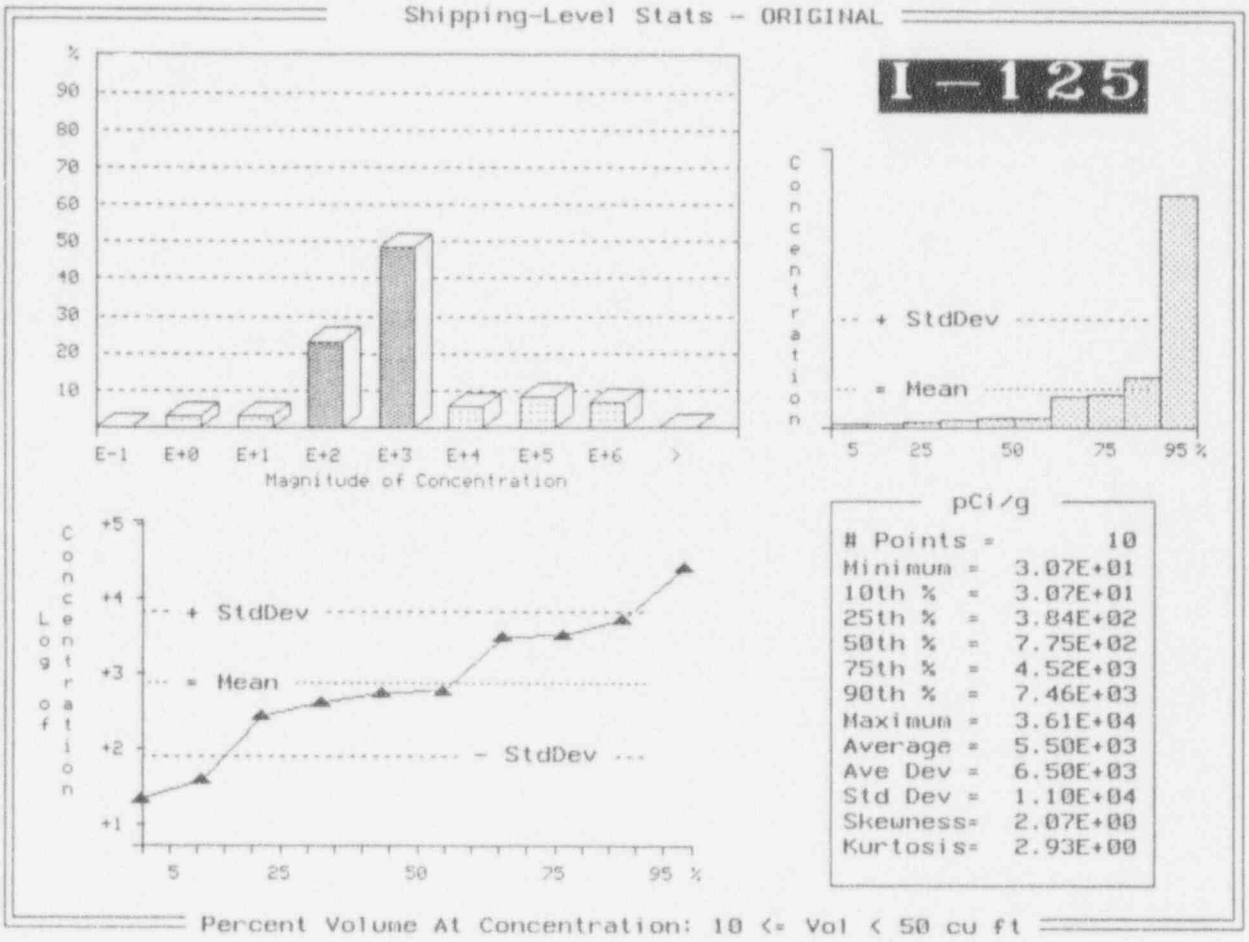

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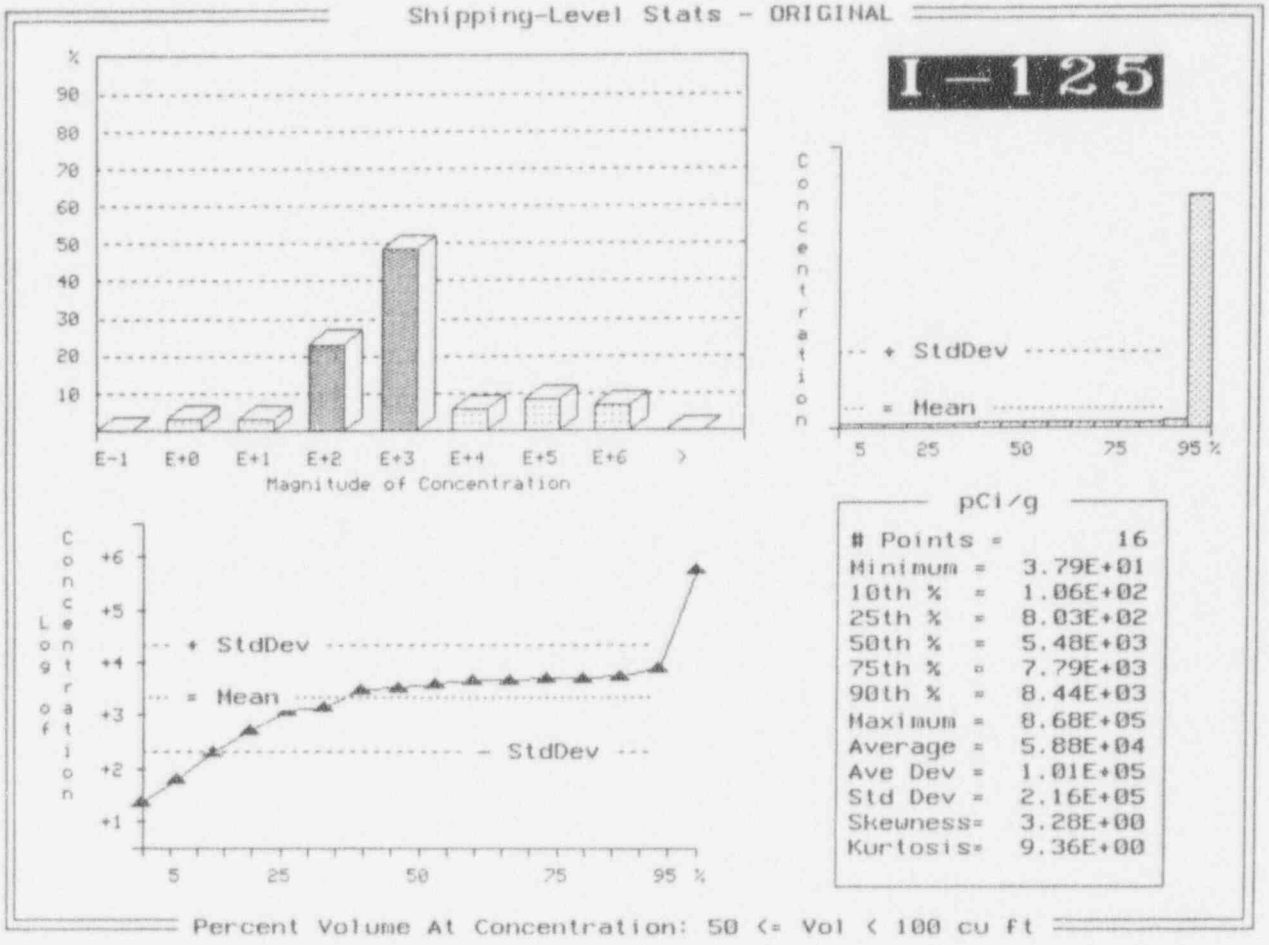

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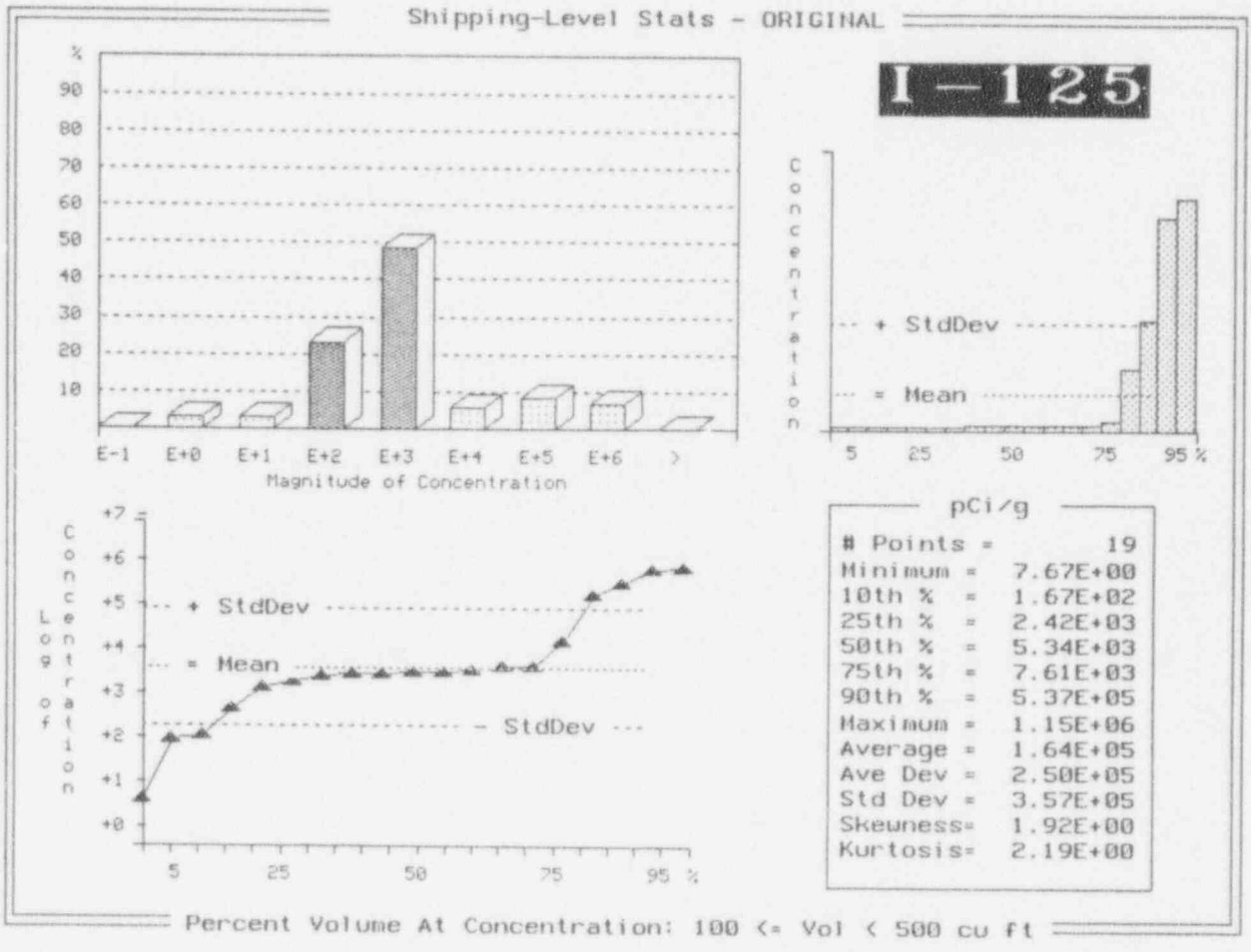

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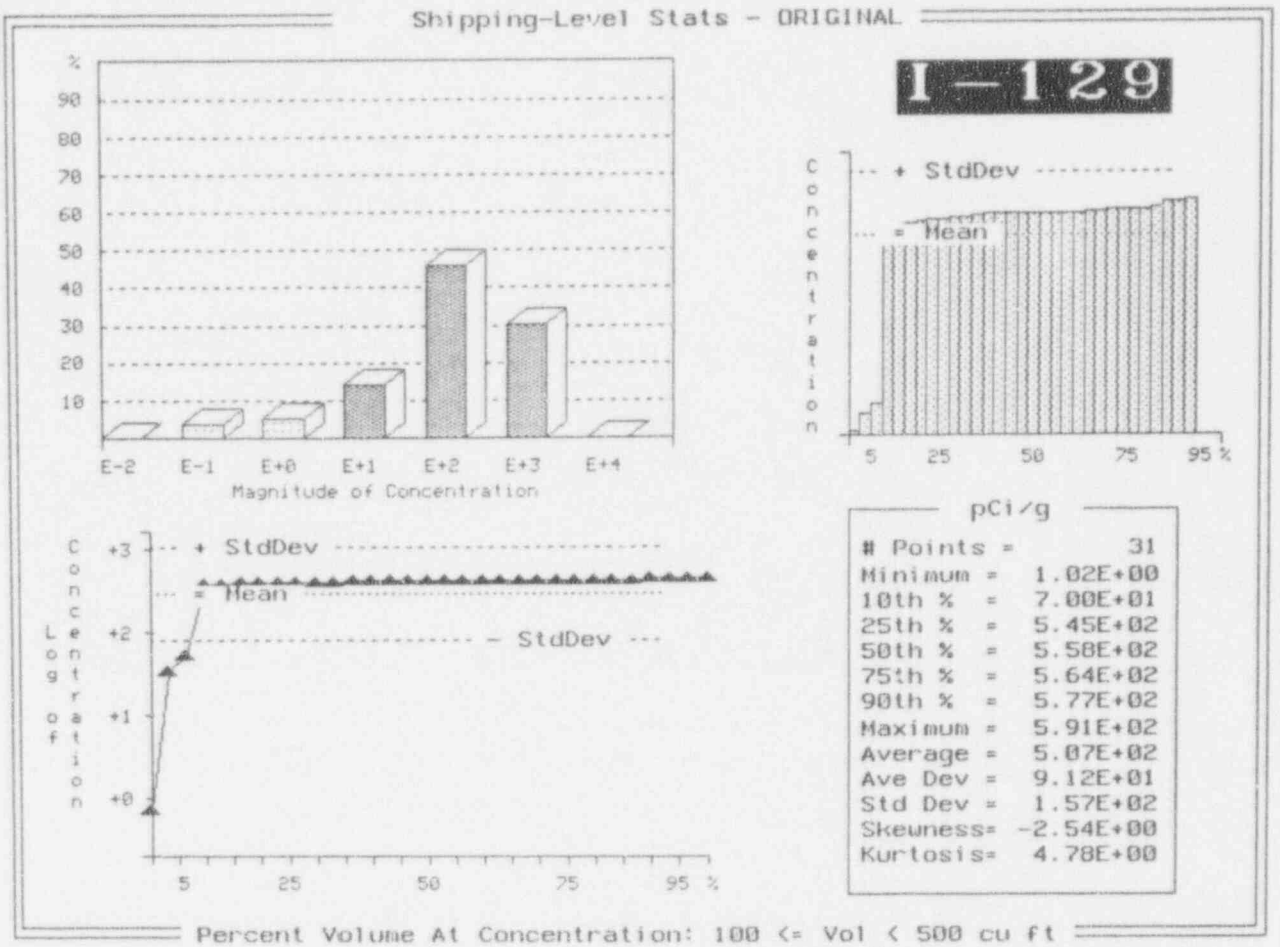

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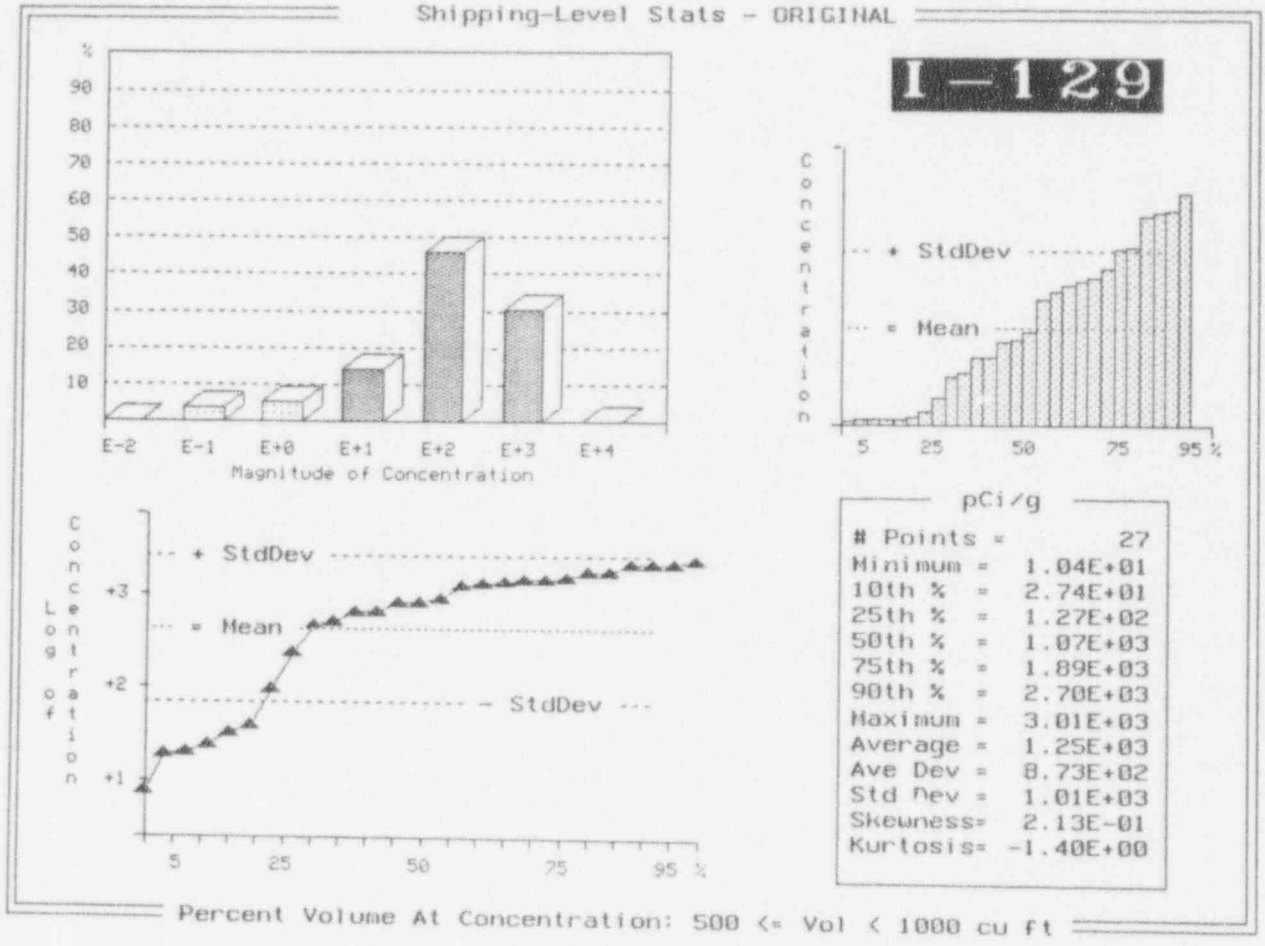
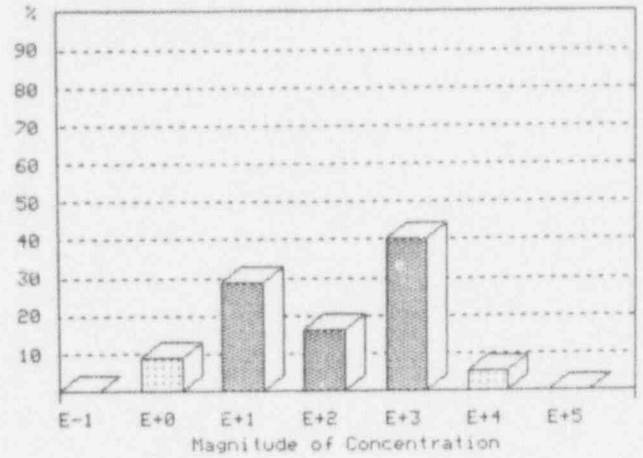
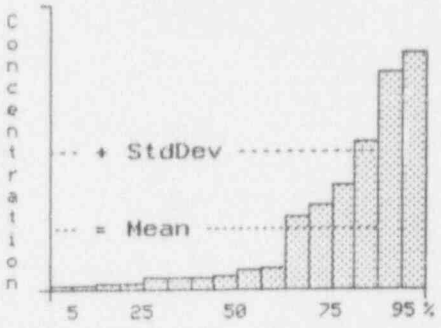


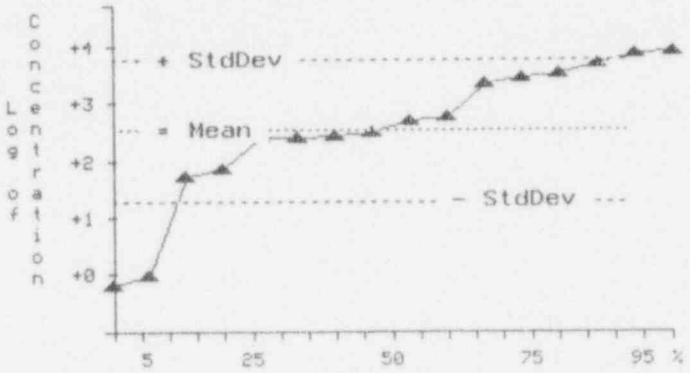
Exhibit F-24 (Continued)

Shipping-Level Stats - ORIGINAL



MN-54





pCi/g

# Points =	16
Minimum =	1.02E+00
10th % =	1.51E+00
25th % =	1.10E+02
50th % =	5.16E+02
75th % =	4.30E+03
90th % =	7.62E+03
Maximum =	1.23E+04
Average =	3.00E+03
Ave Dev =	3.30E+03
Std Dev =	4.12E+03
Skewness=	1.15E+00
Kurtosis=	-1.43E-01

Percent Volume At Concentration: 100 <= Vol < 500 cu ft

Exhibit F-24 (Continued)

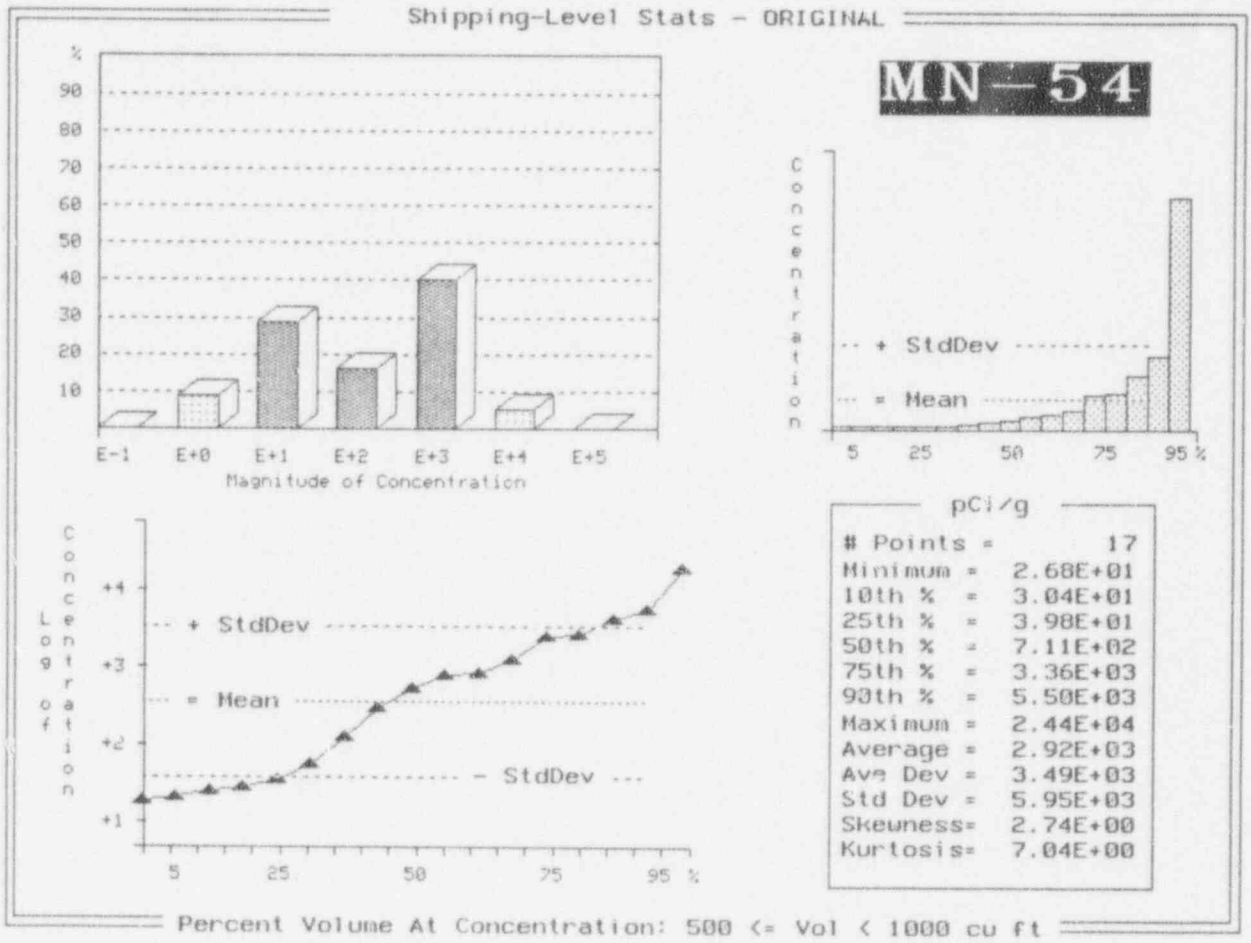
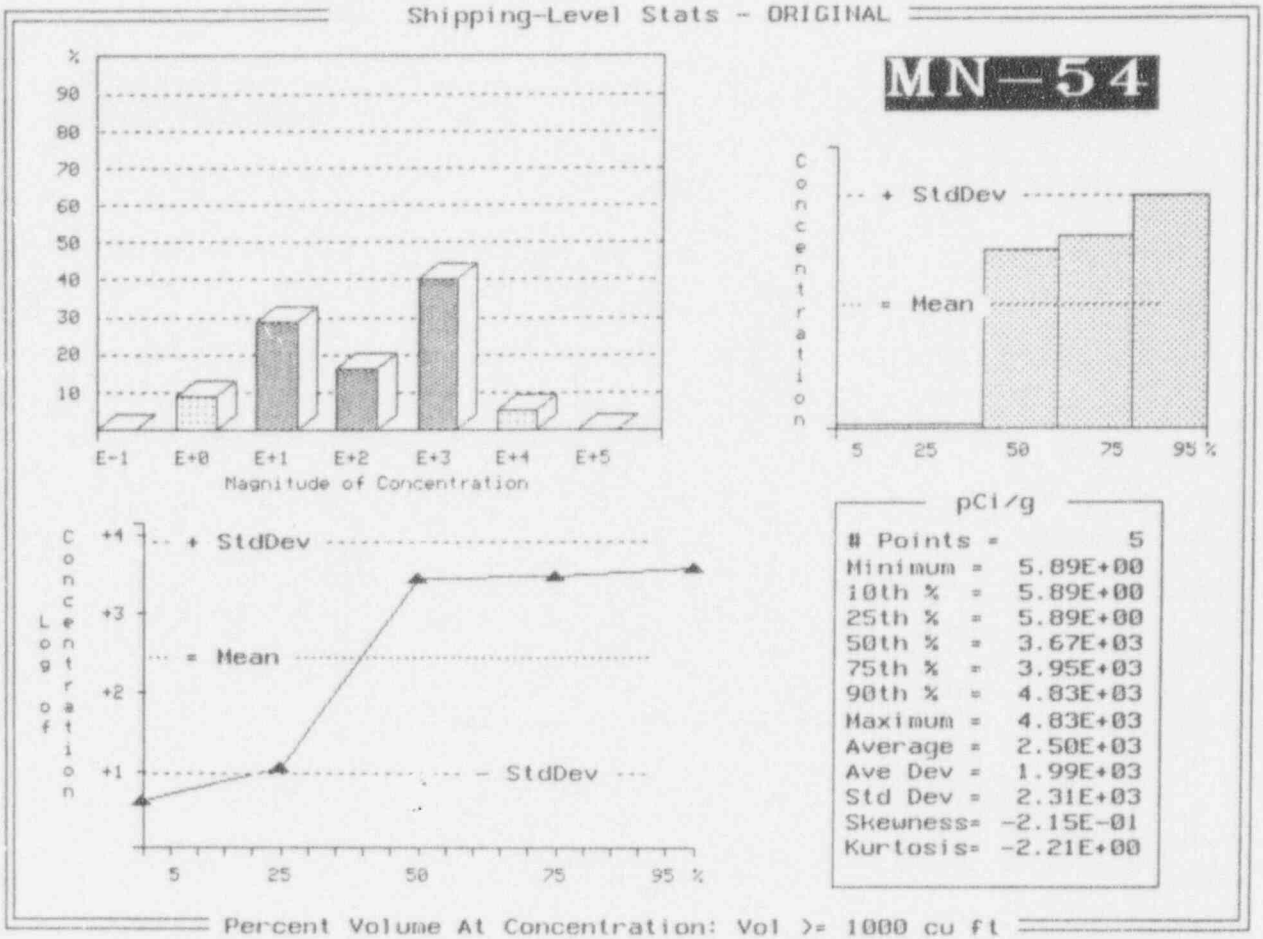


Exhibit F-24 (Continued)



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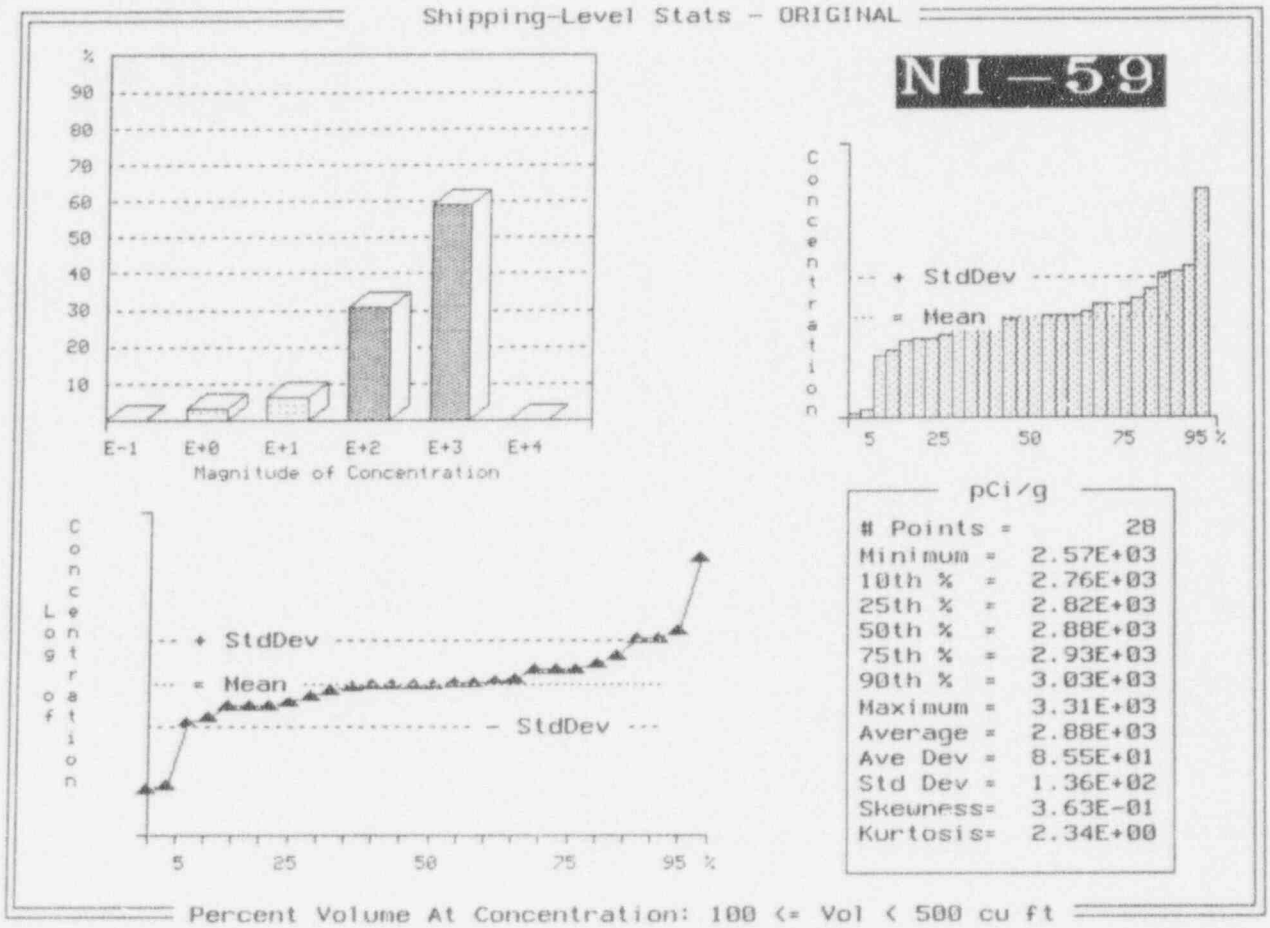

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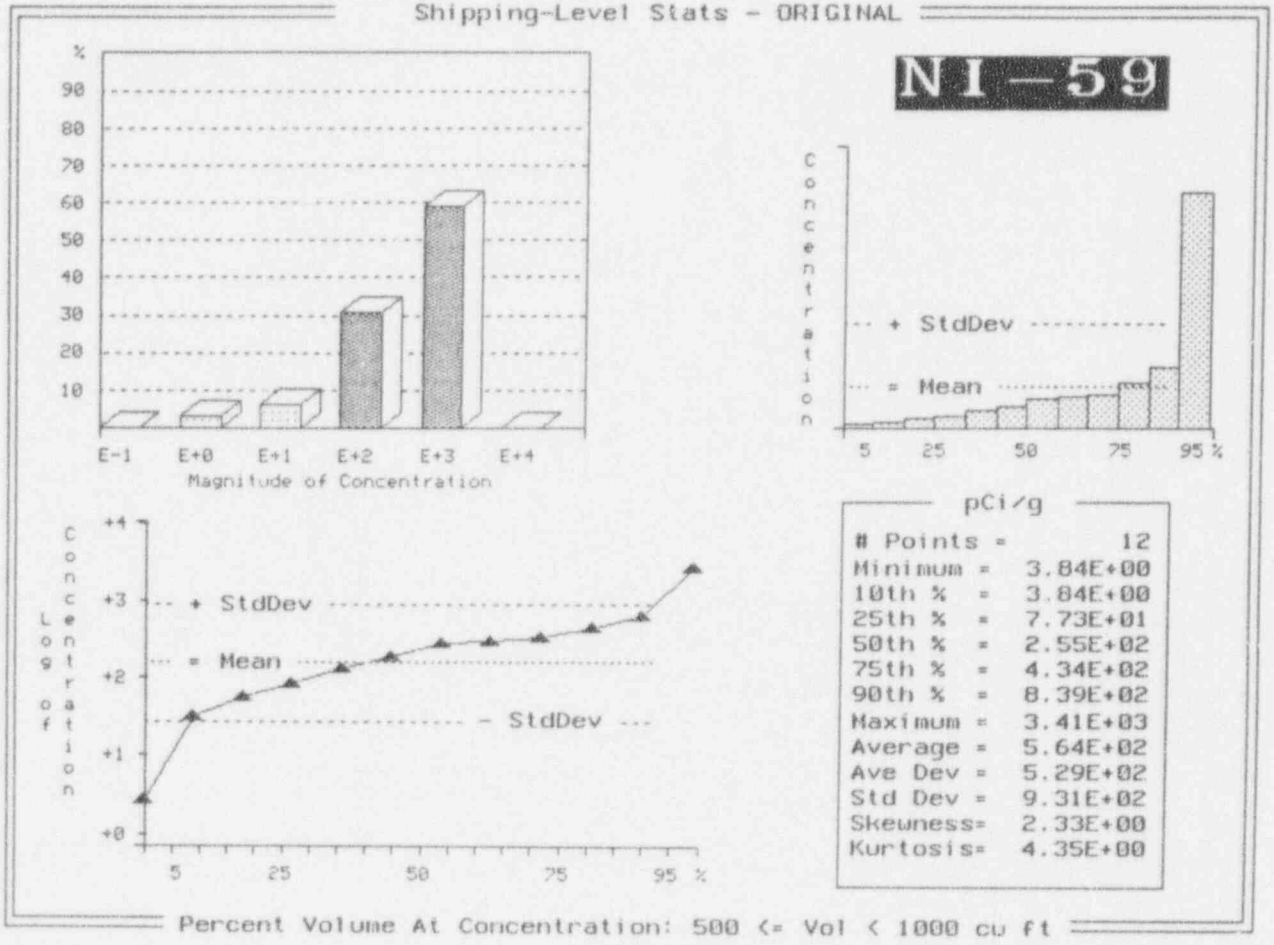

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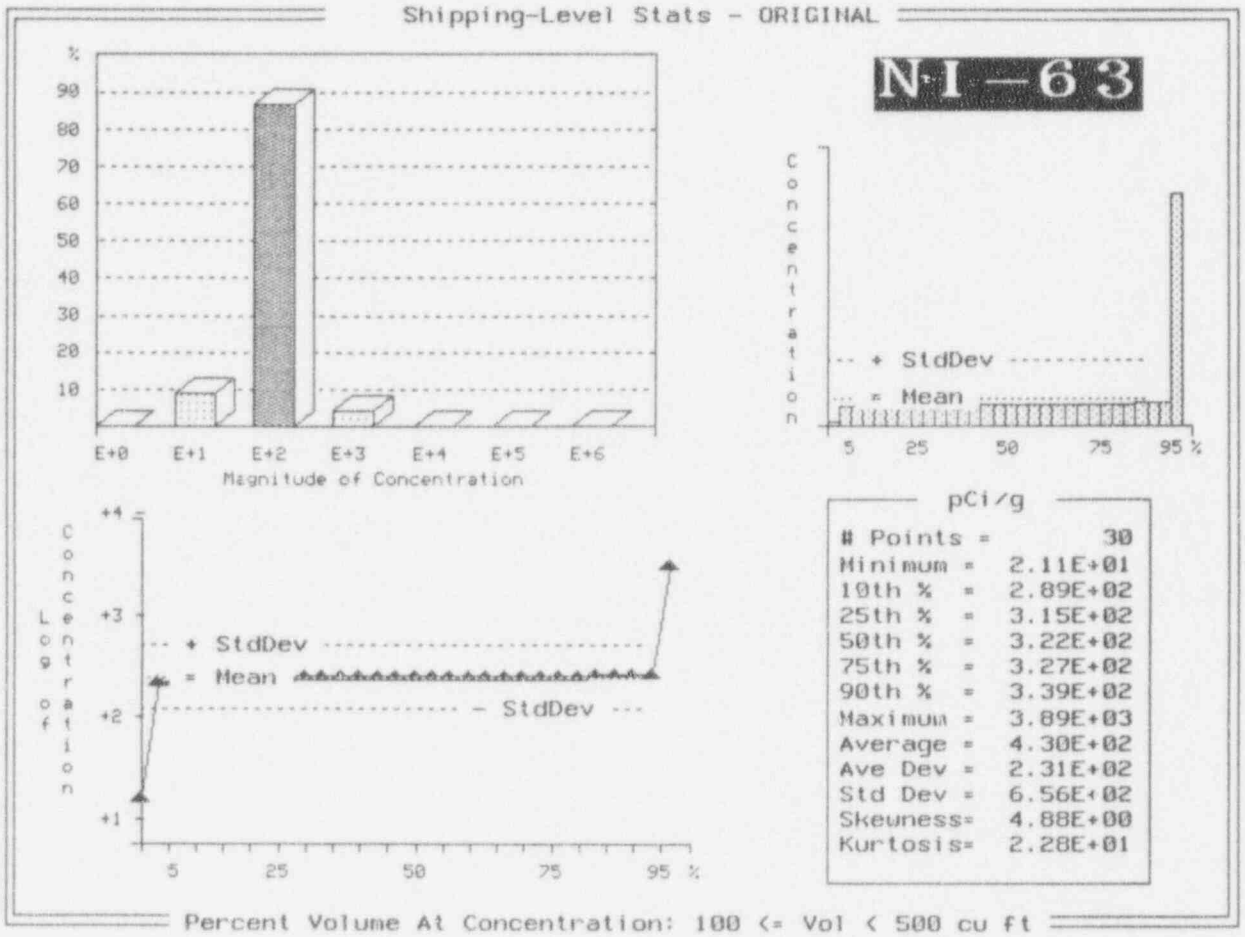

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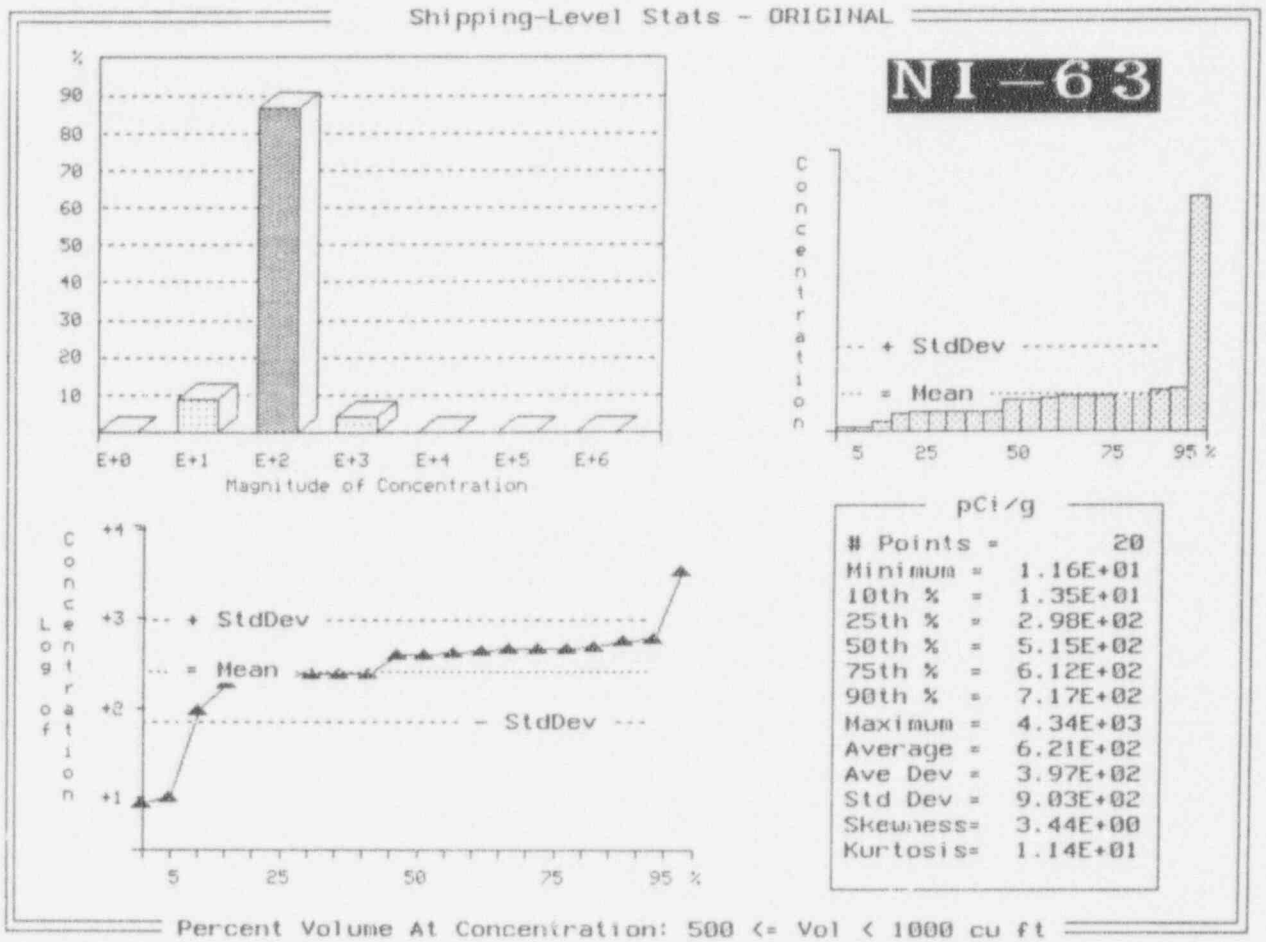


Exhibit F-24 (Continued)

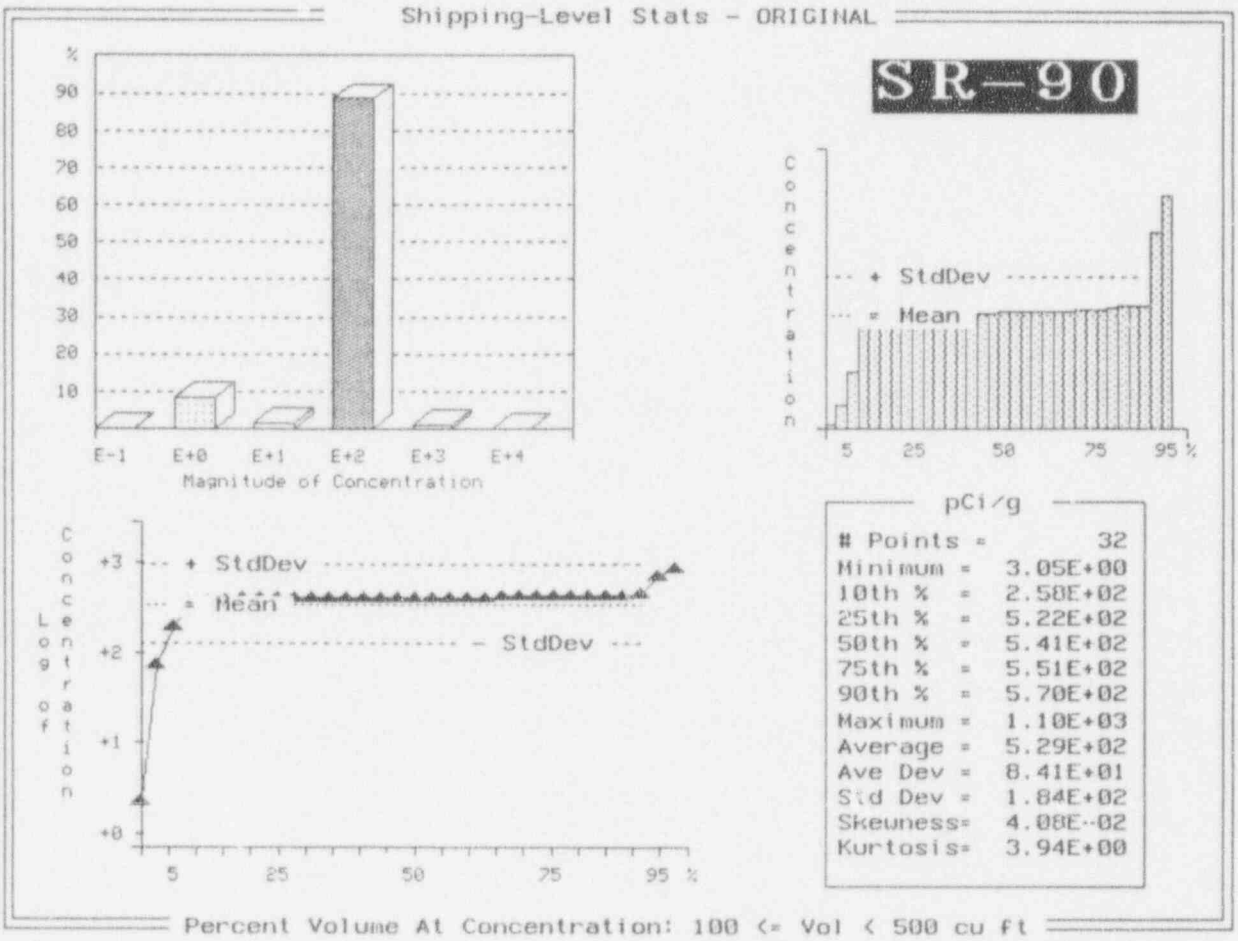


Exhibit F-24 (Continued)

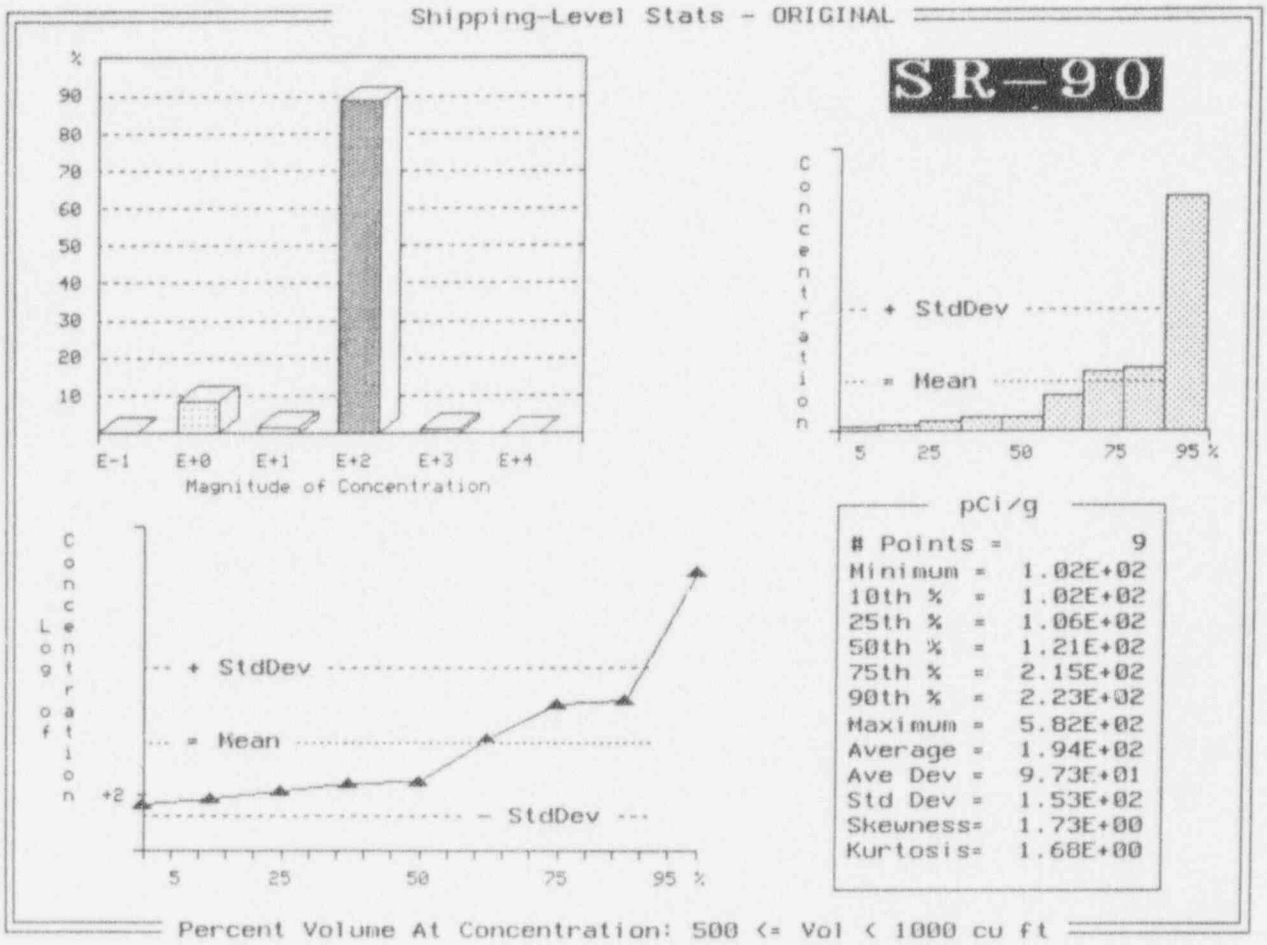


Exhibit F-24 (Continued)

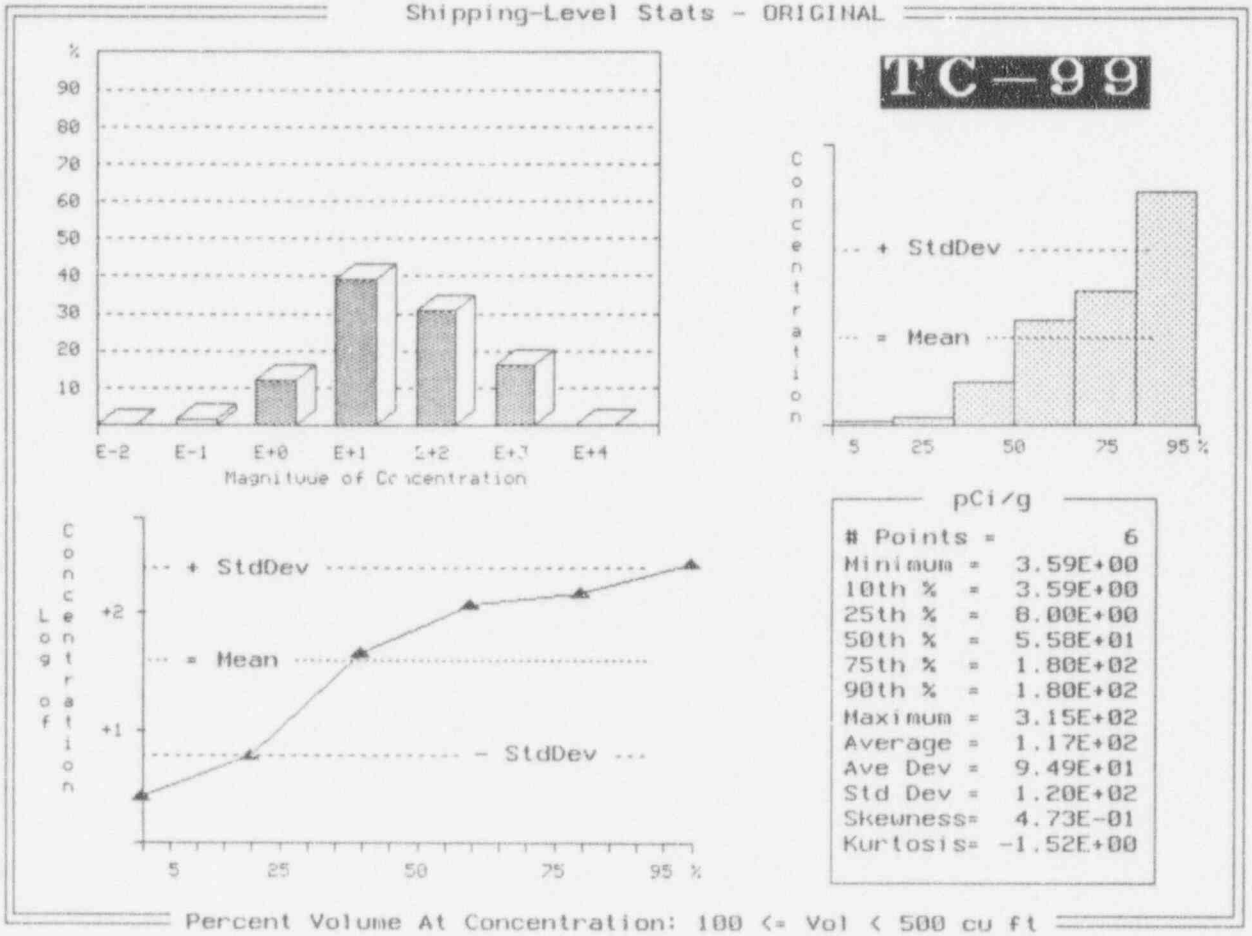


Exhibit F-24 (Continued)

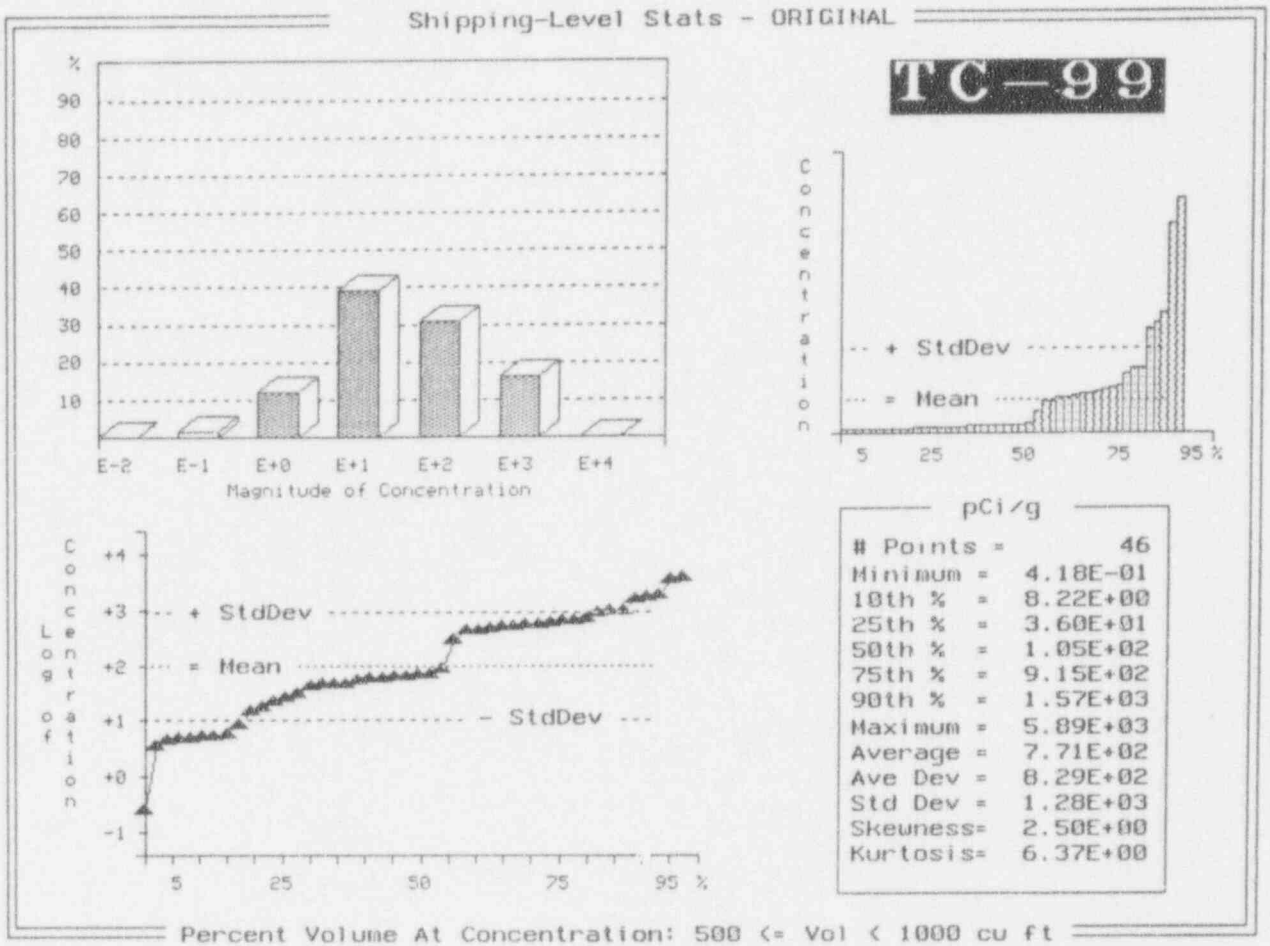


Exhibit F-24 (Continued)

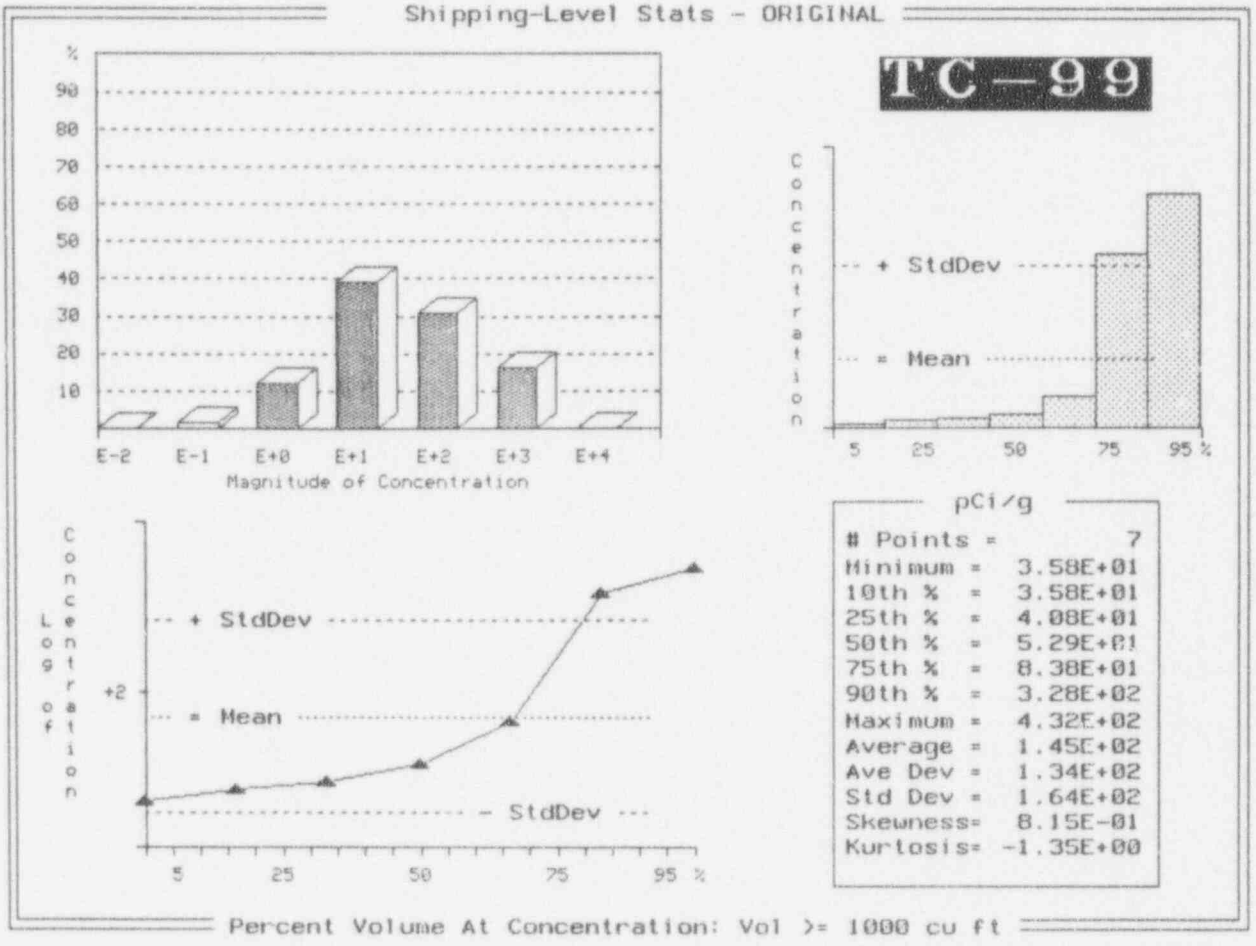


Exhibit F-24 (Continued)

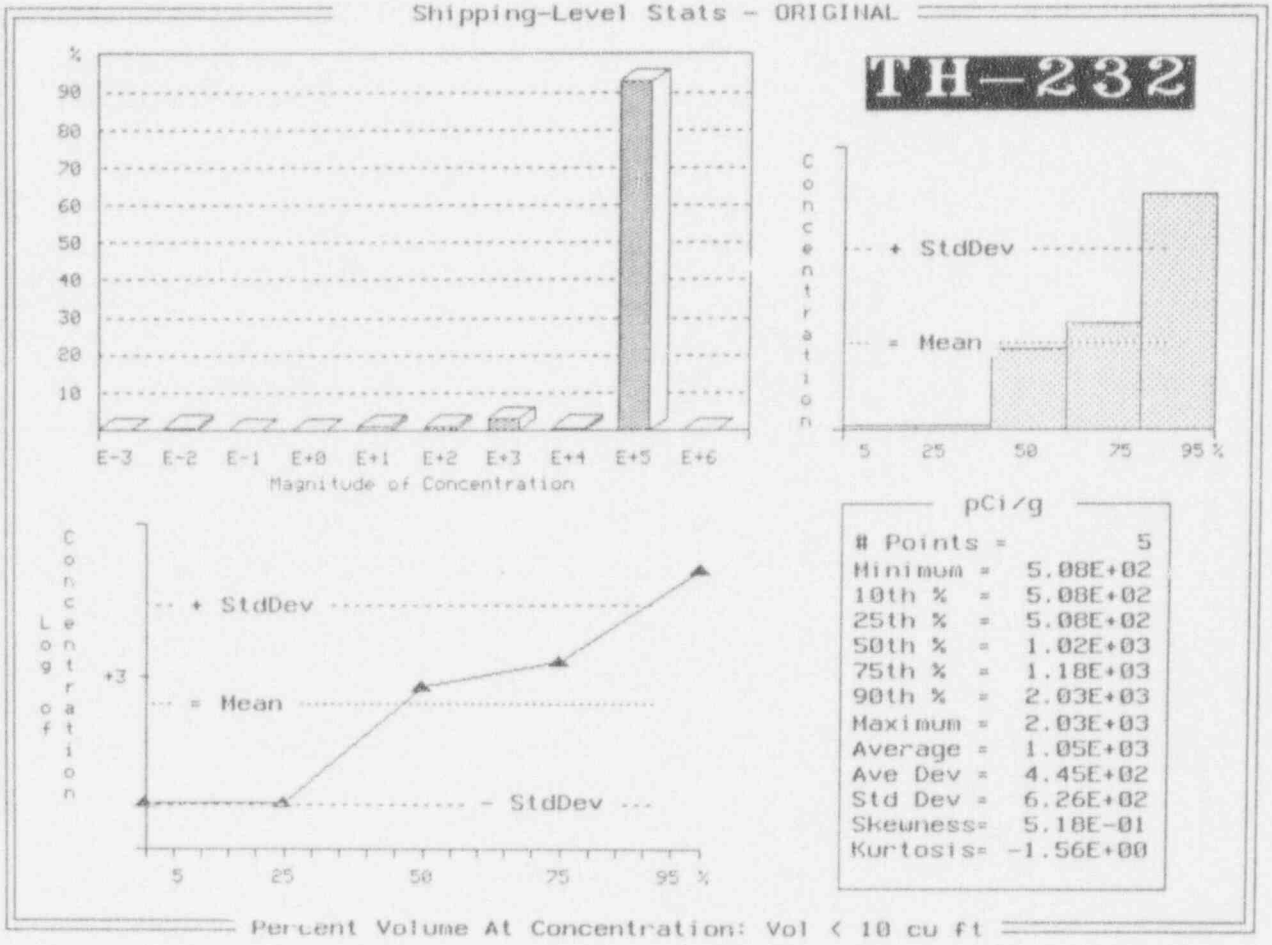


Exhibit F-24 (Con' .nued)

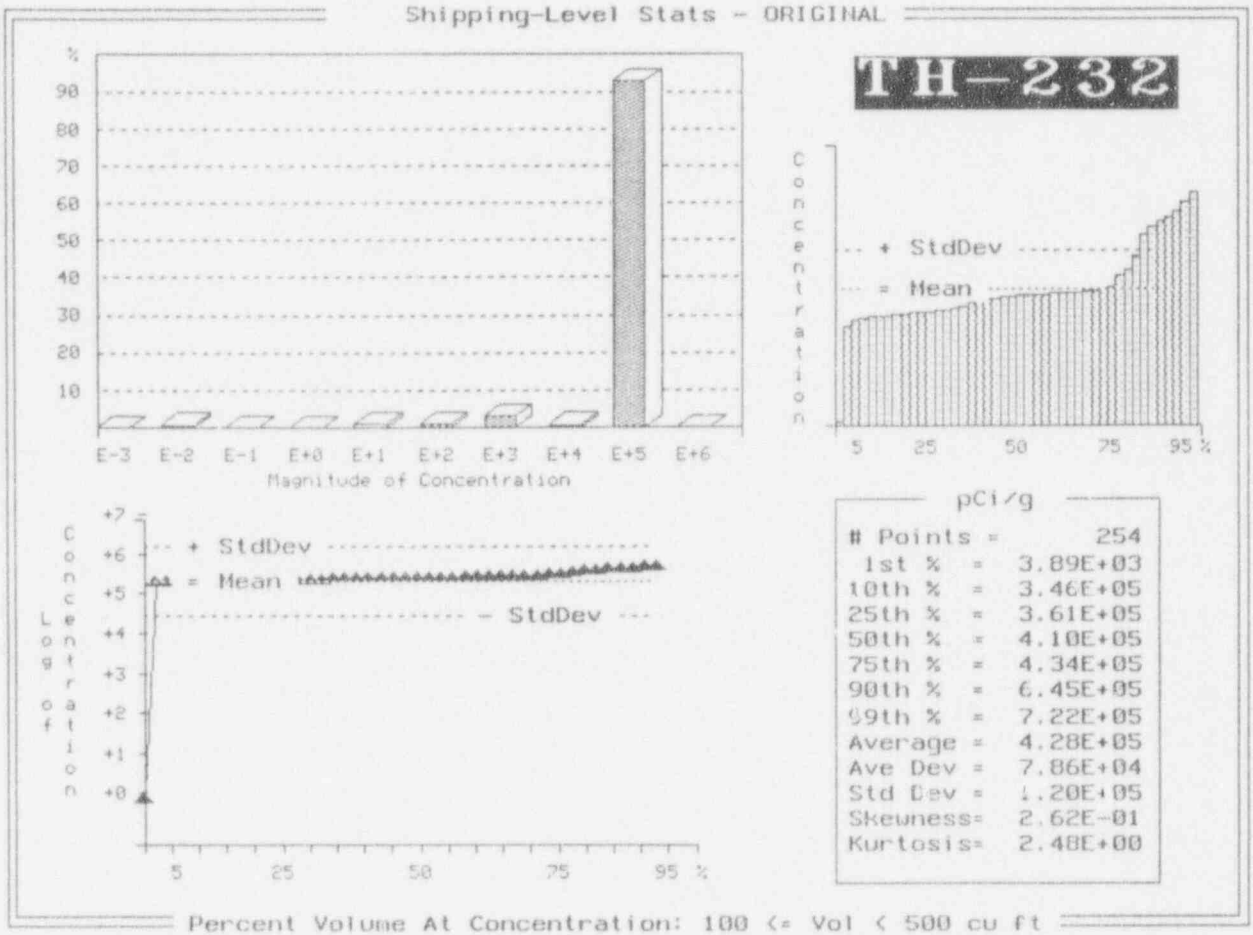


Exhibit F-24 (Continued)

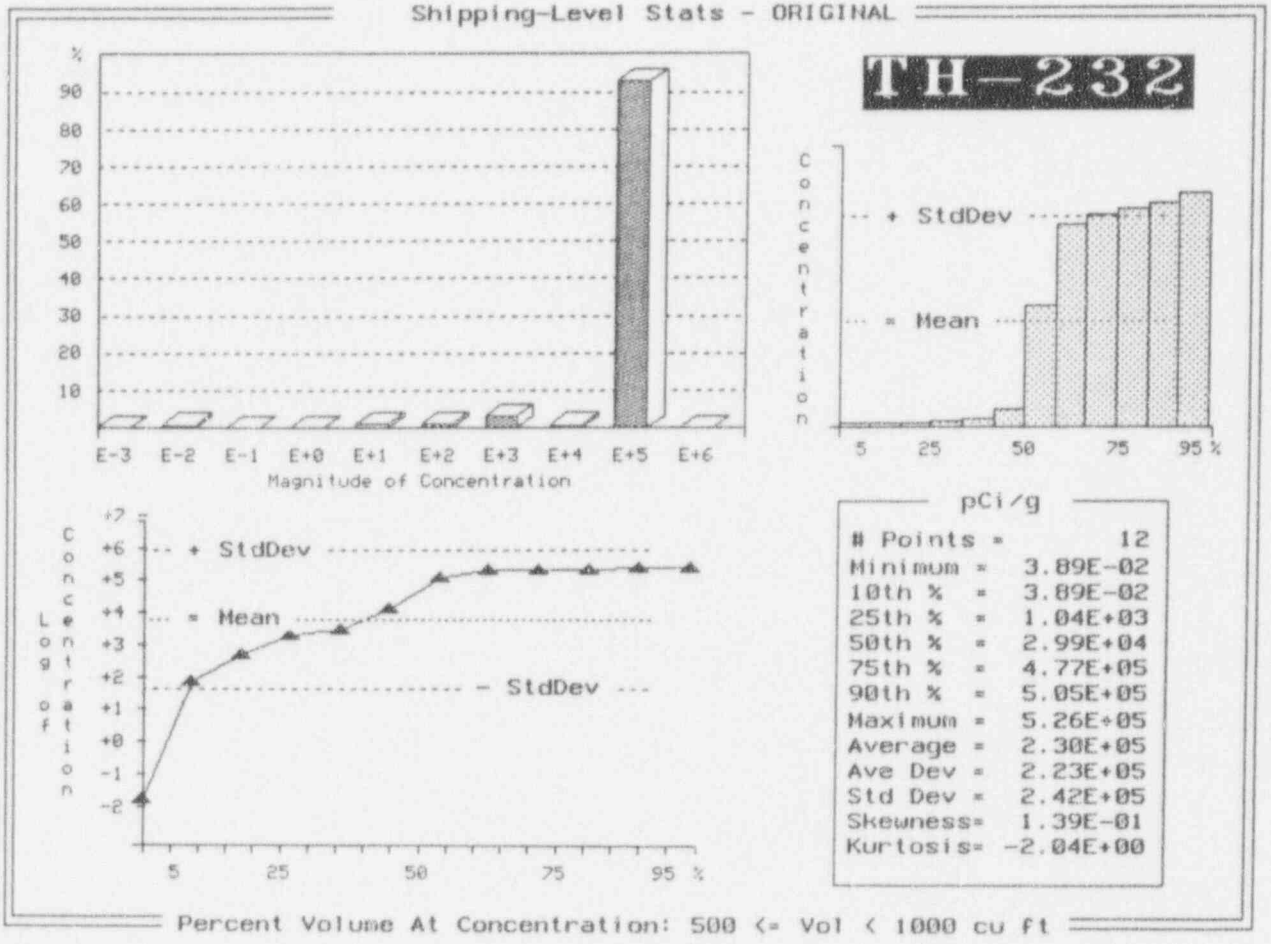


Exhibit F-24 (Continued)

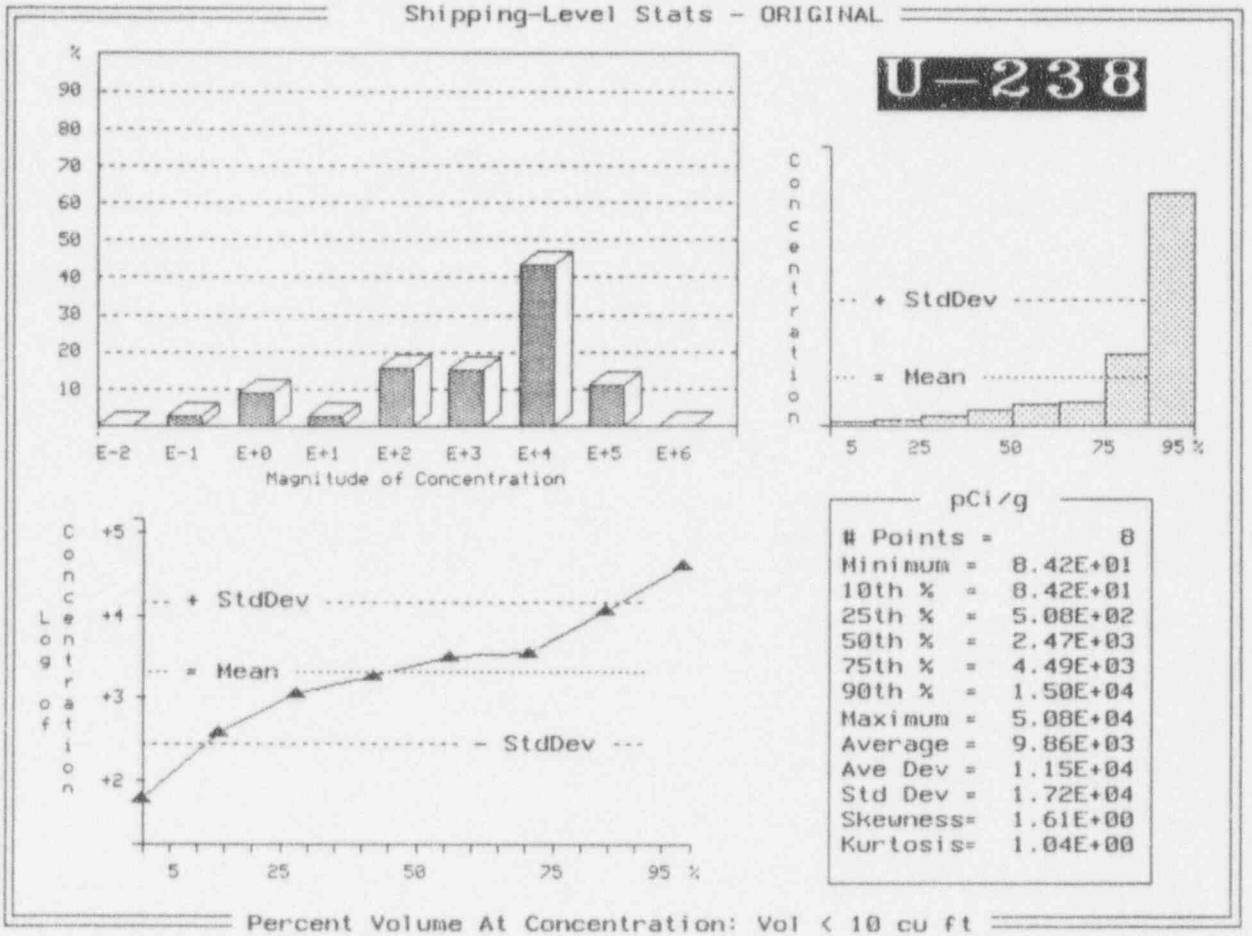


Exhibit F-24 (Continued)

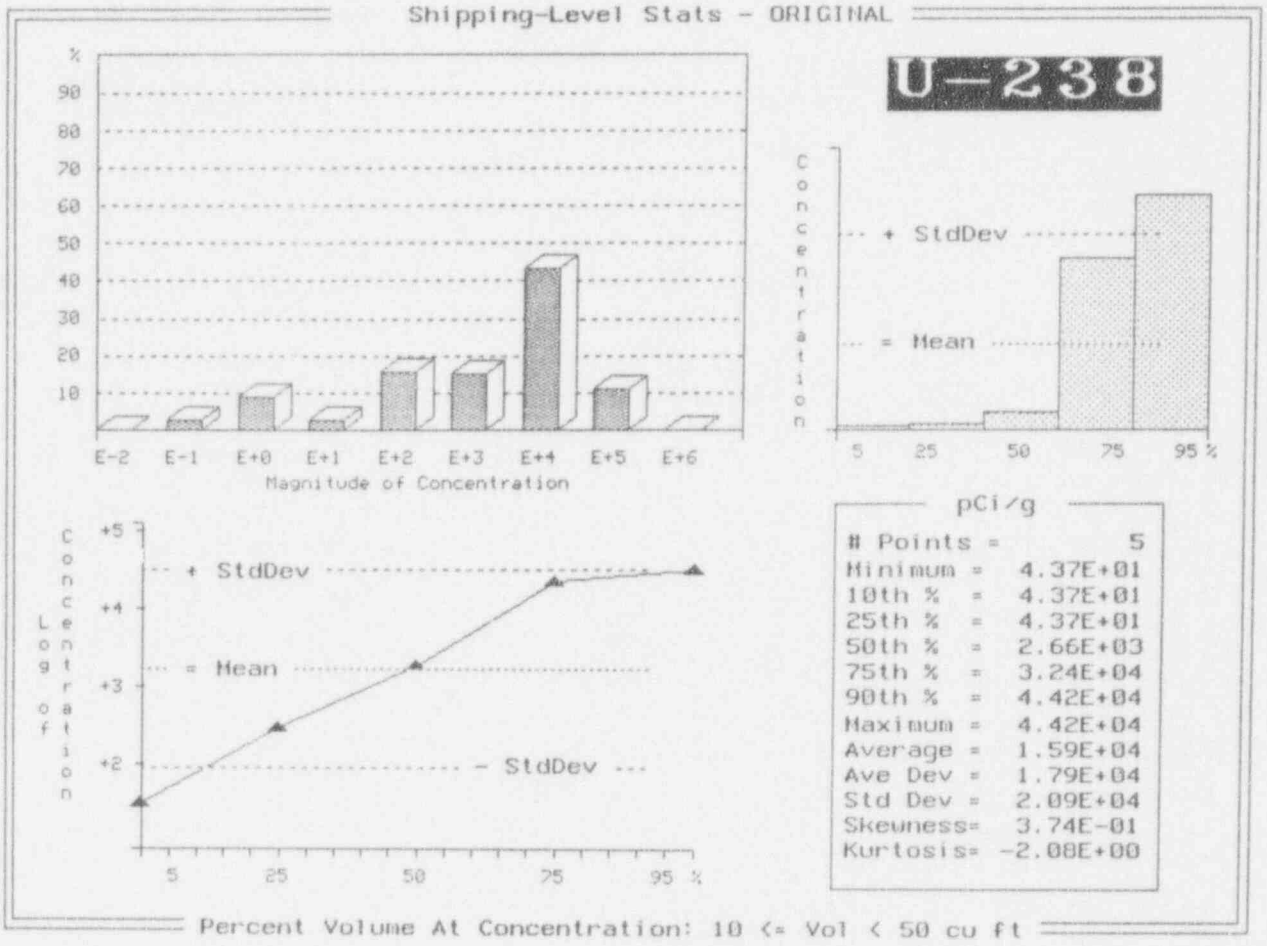
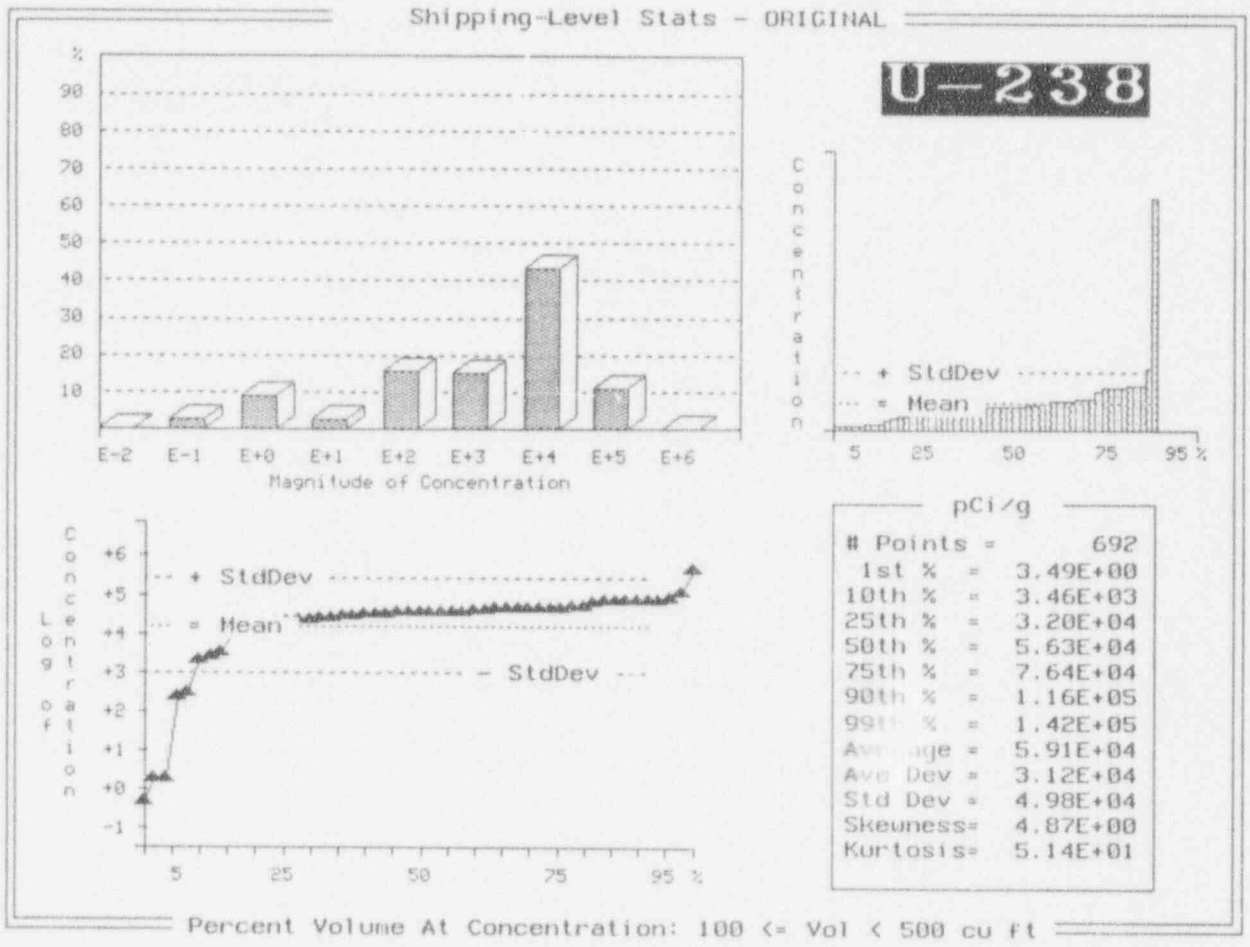


Exhibit F-24 (Continued)



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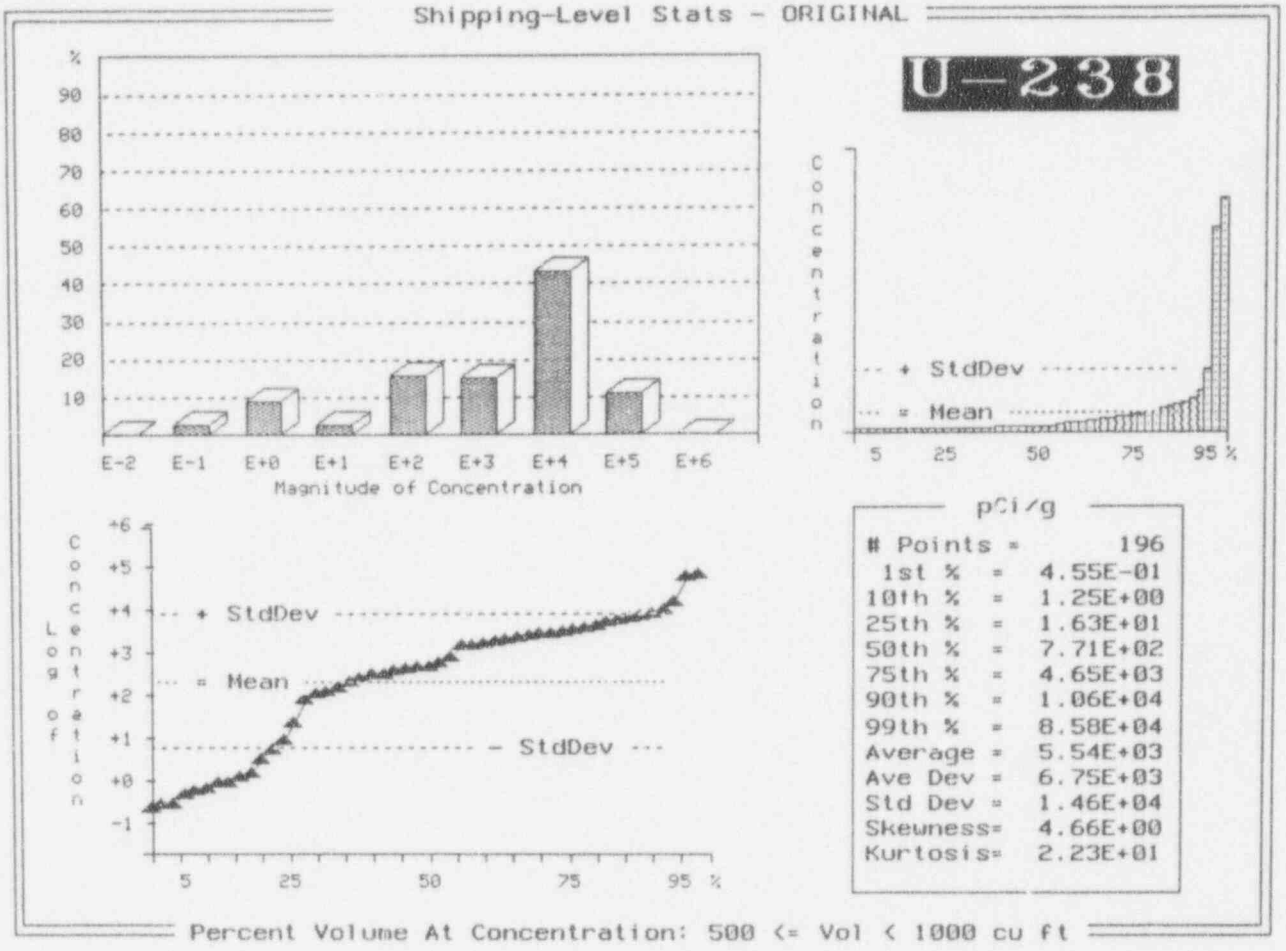


Exhibit F-24 (Continued)

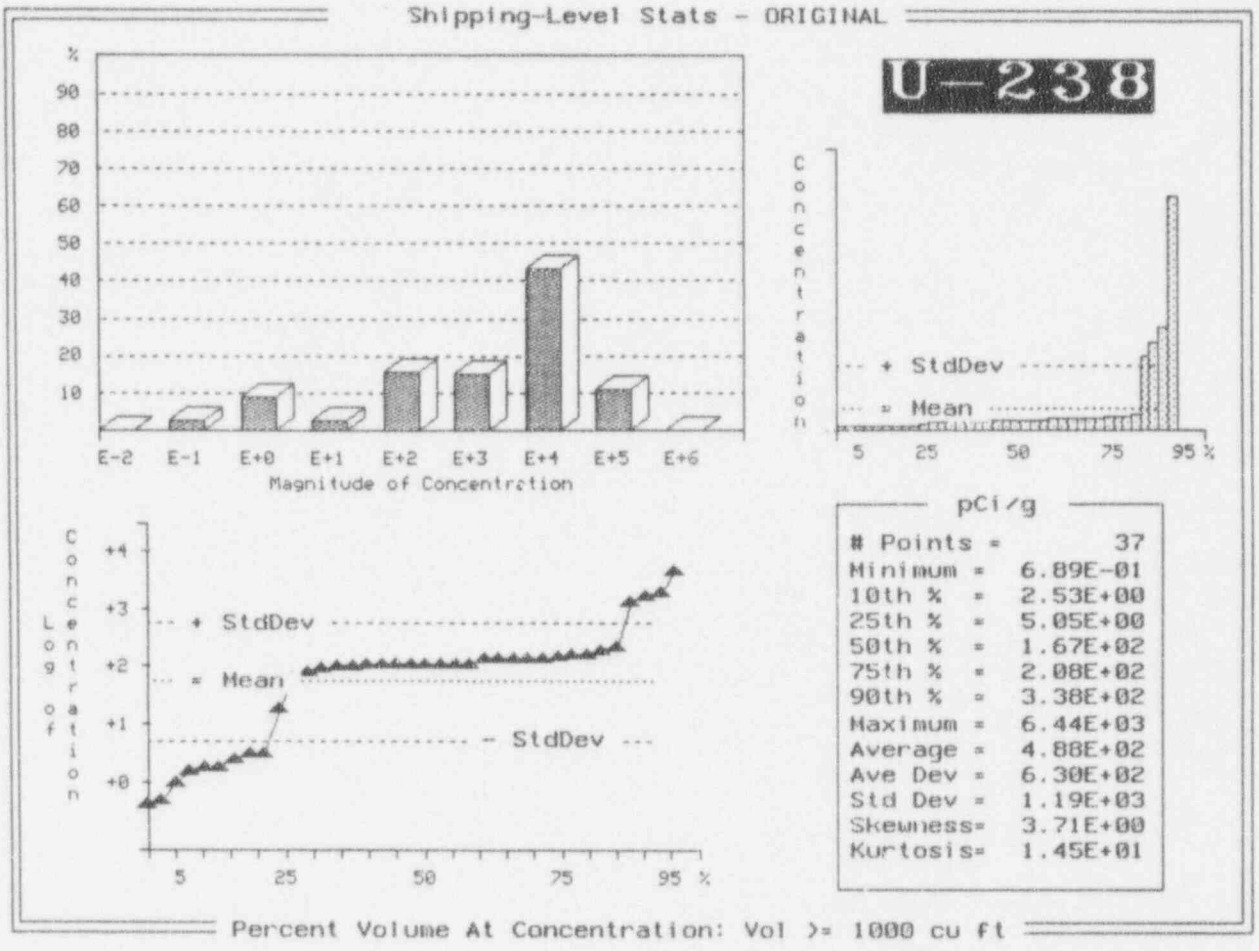


Exhibit F-25
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Northeast
Waste generator class:	Government
Total number of waste generators:	11
Total associated waste volume (m^3):	176
Total associated waste activity (Ci):	1,907
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	5
Percent of total(%):	45
Total number of shipping records:	6
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	52,010
Total waste volume (m^3):	74
Fractional waste volume (%): (this analysis/total)	42
Total waste activity (Ci):	0.9
Fractional waste activity (%): (this analysis/total)	0.05

Exhibit F-25 (Continued)

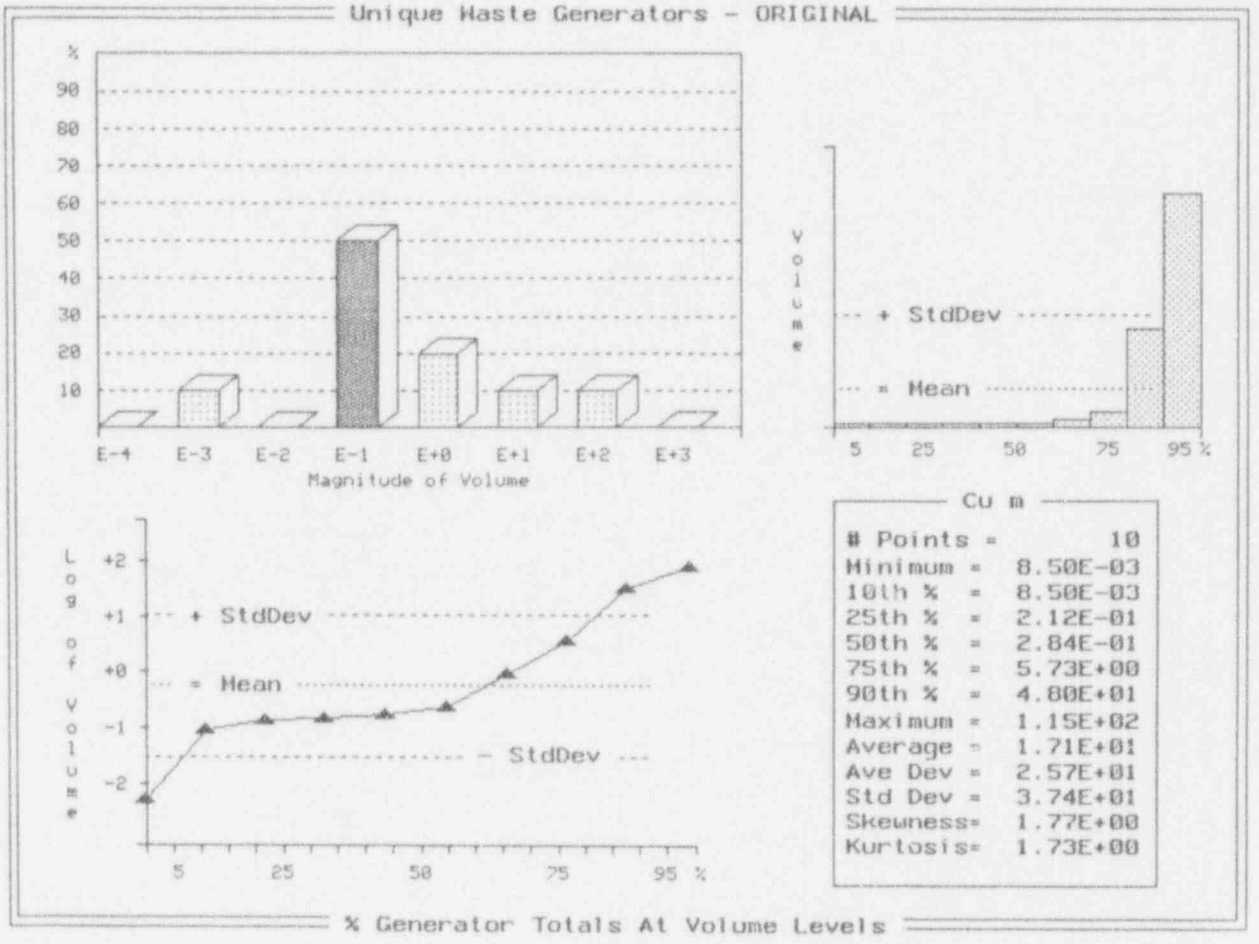


Exhibit F-25 (Continued)

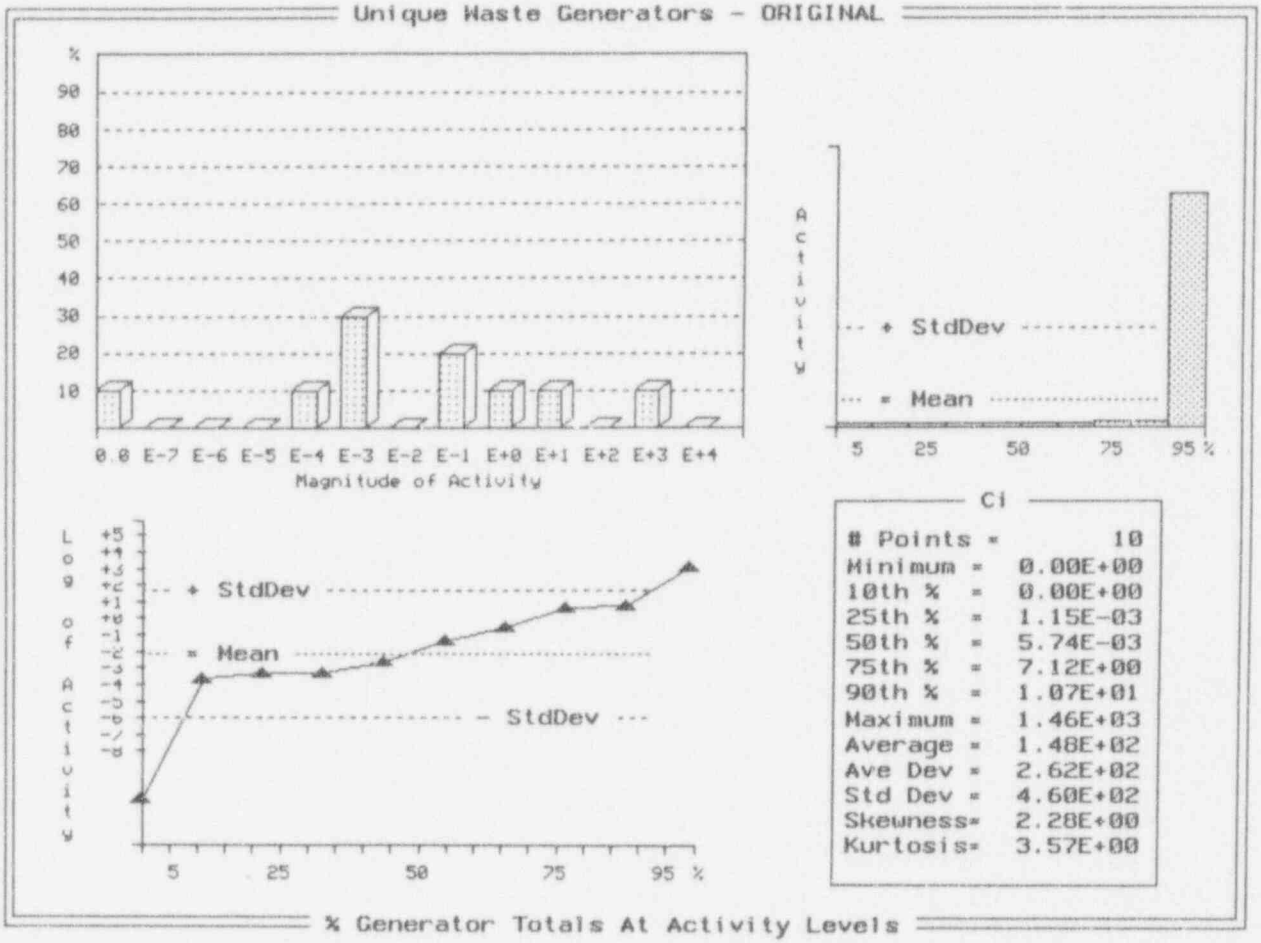


Exhibit F-26
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Northeast
Waste generator class:	Academic
Total number of waste generators:	24
Total associated waste volume (m^3):	890
Total associated waste activity (Ci):	50
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	10
Percent of total(%):	42
Total number of shipping records:	127
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	294,400
Total waste volume (m^3):	518
Fractional waste volume (%): (this analysis/total)	58
Total waste activity (Ci):	11.8
Fractional waste activity (%): (this analysis/total)	23

Exhibit F-26 (Continued)

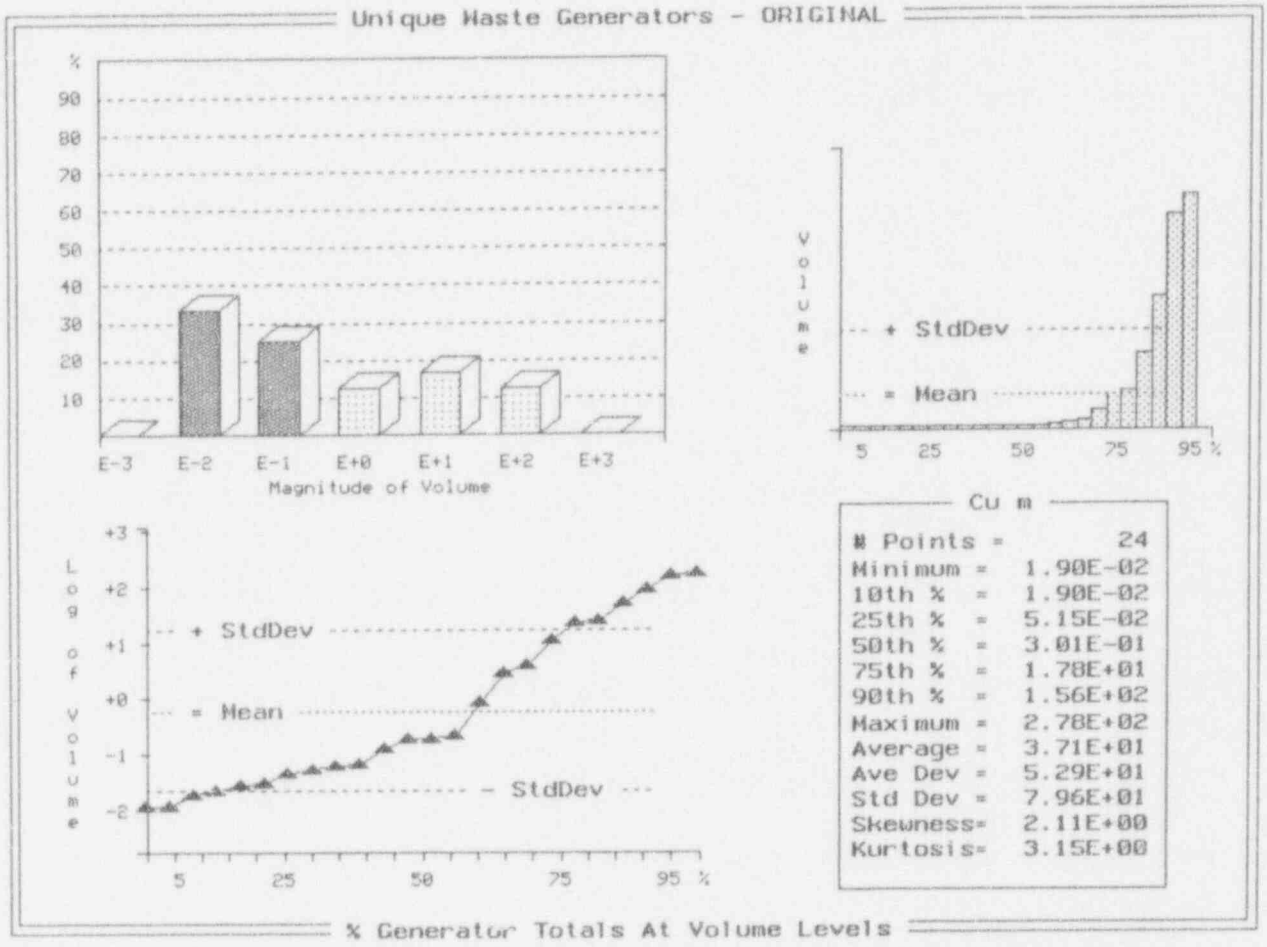


Exhibit F-26 (Continued)

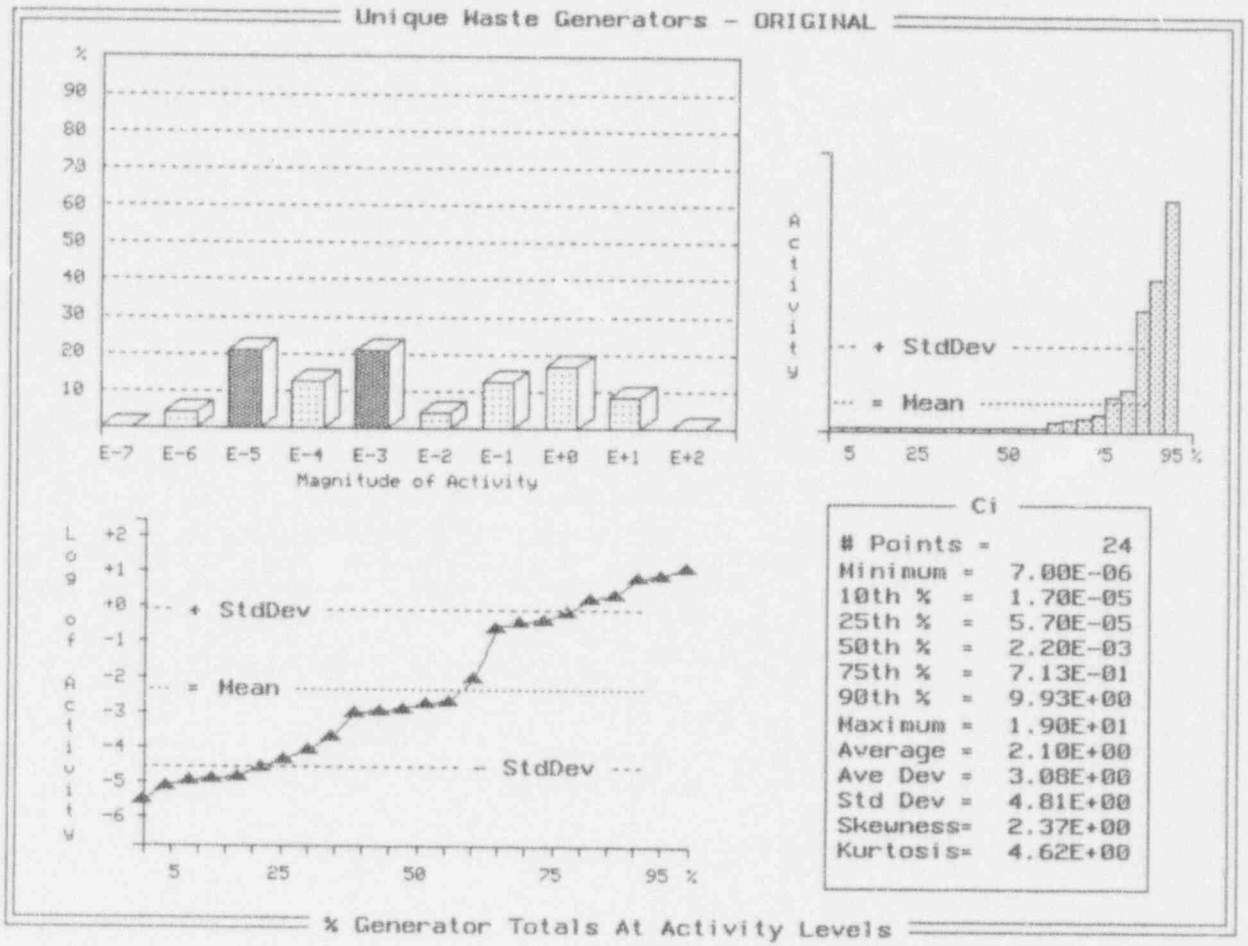


Exhibit F-26 (Continued)

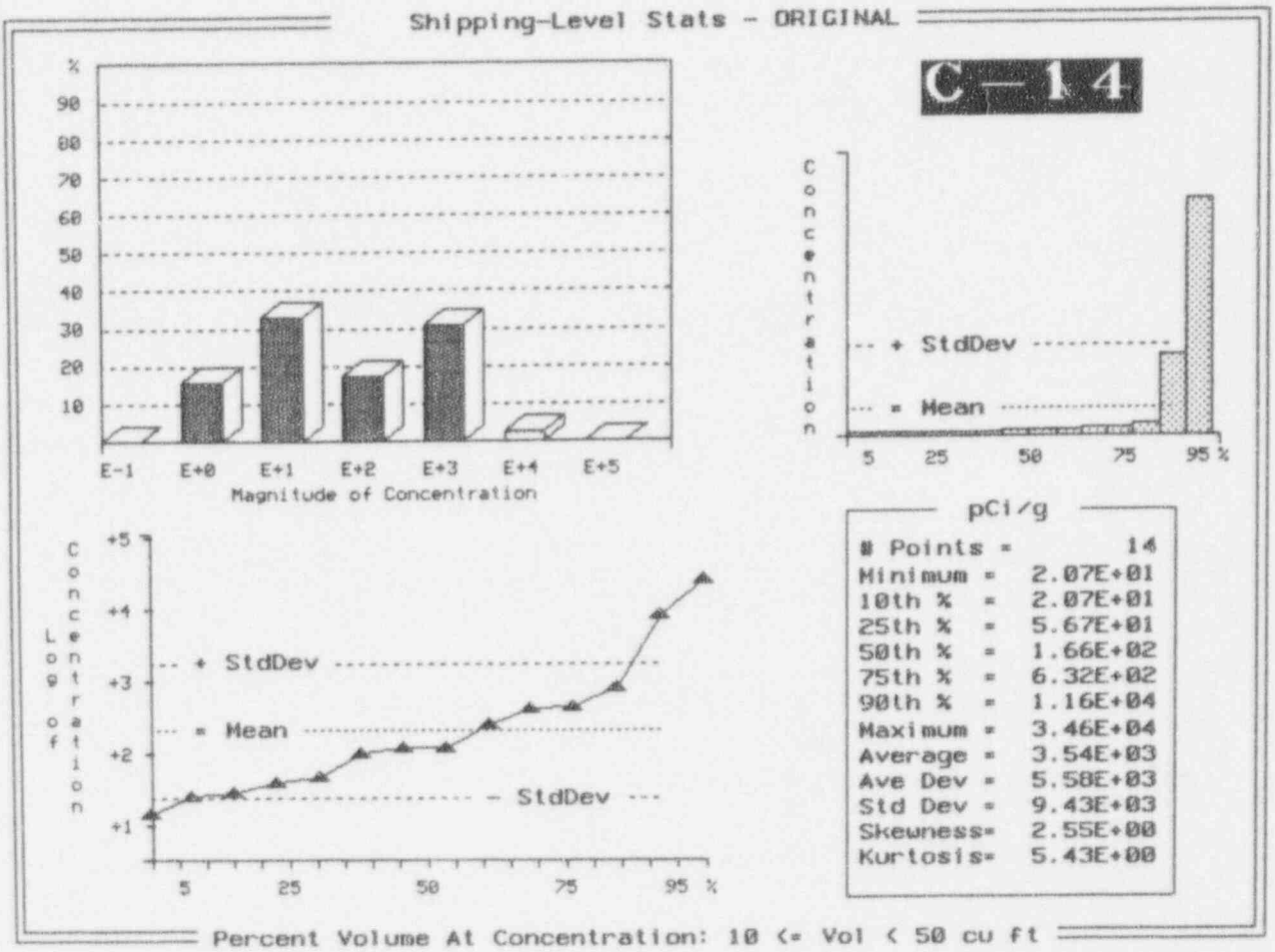


Exhibit F-26 (Continued)

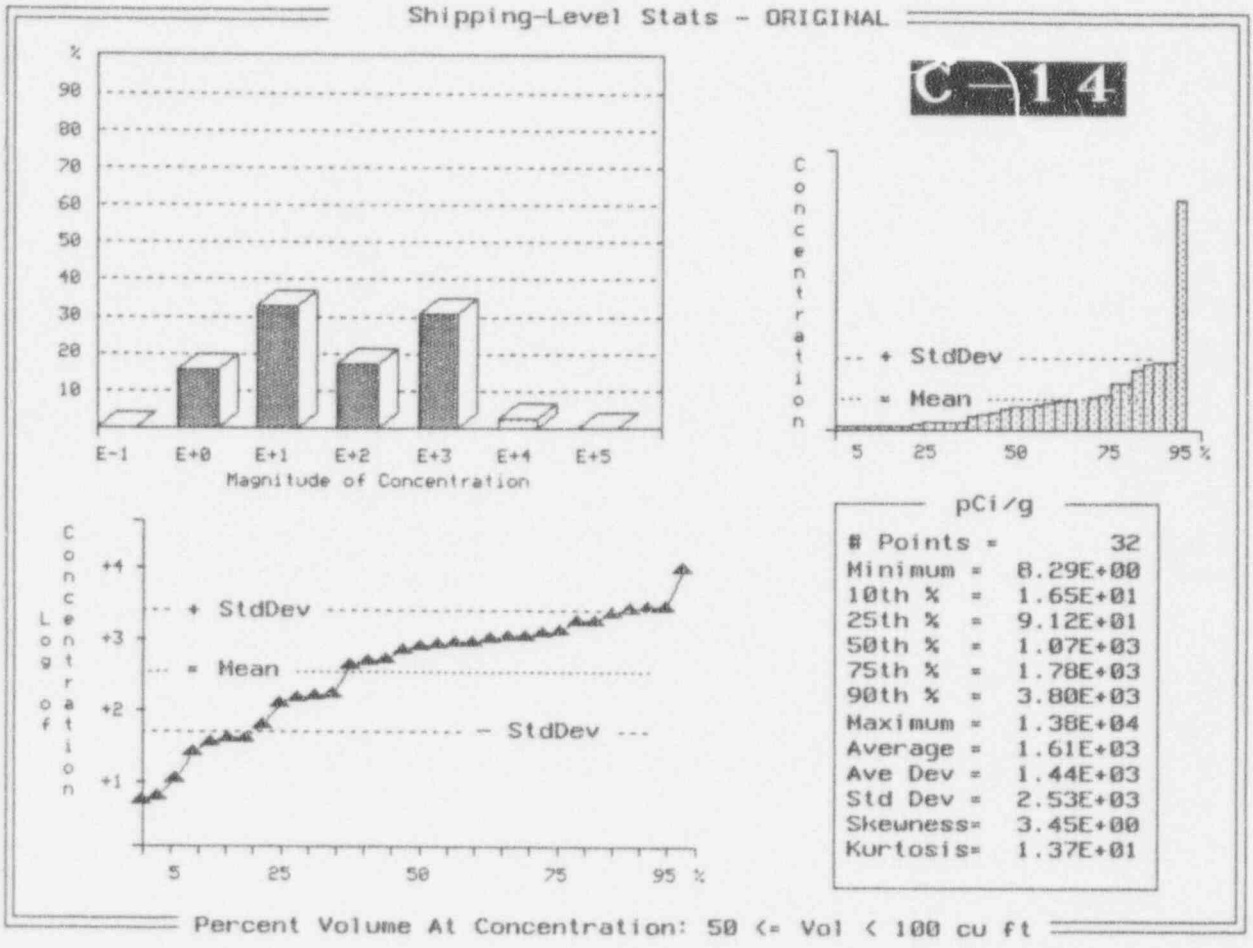


Exhibit F-26 (Continued)

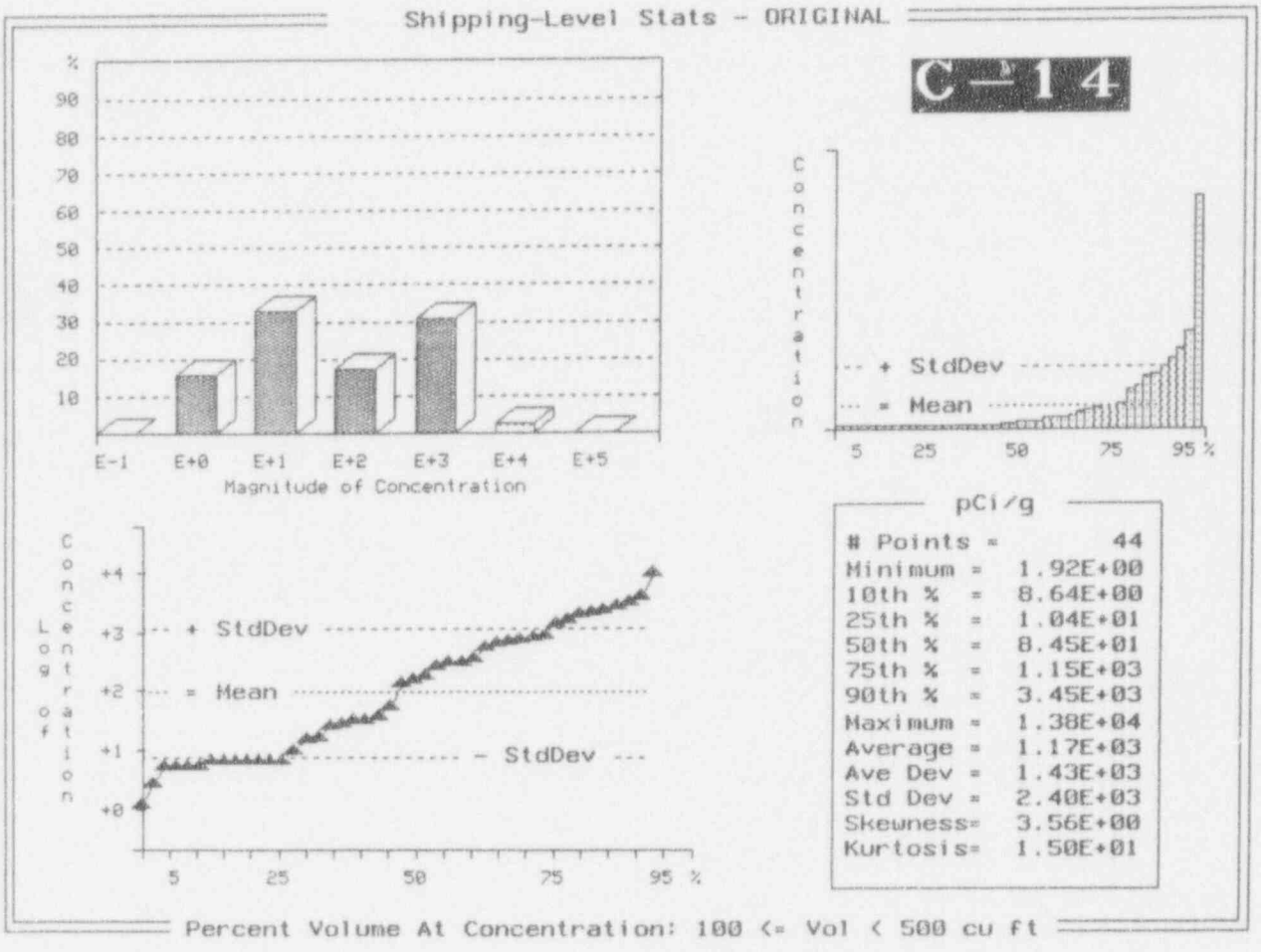


Exhibit F-26 (Continued)

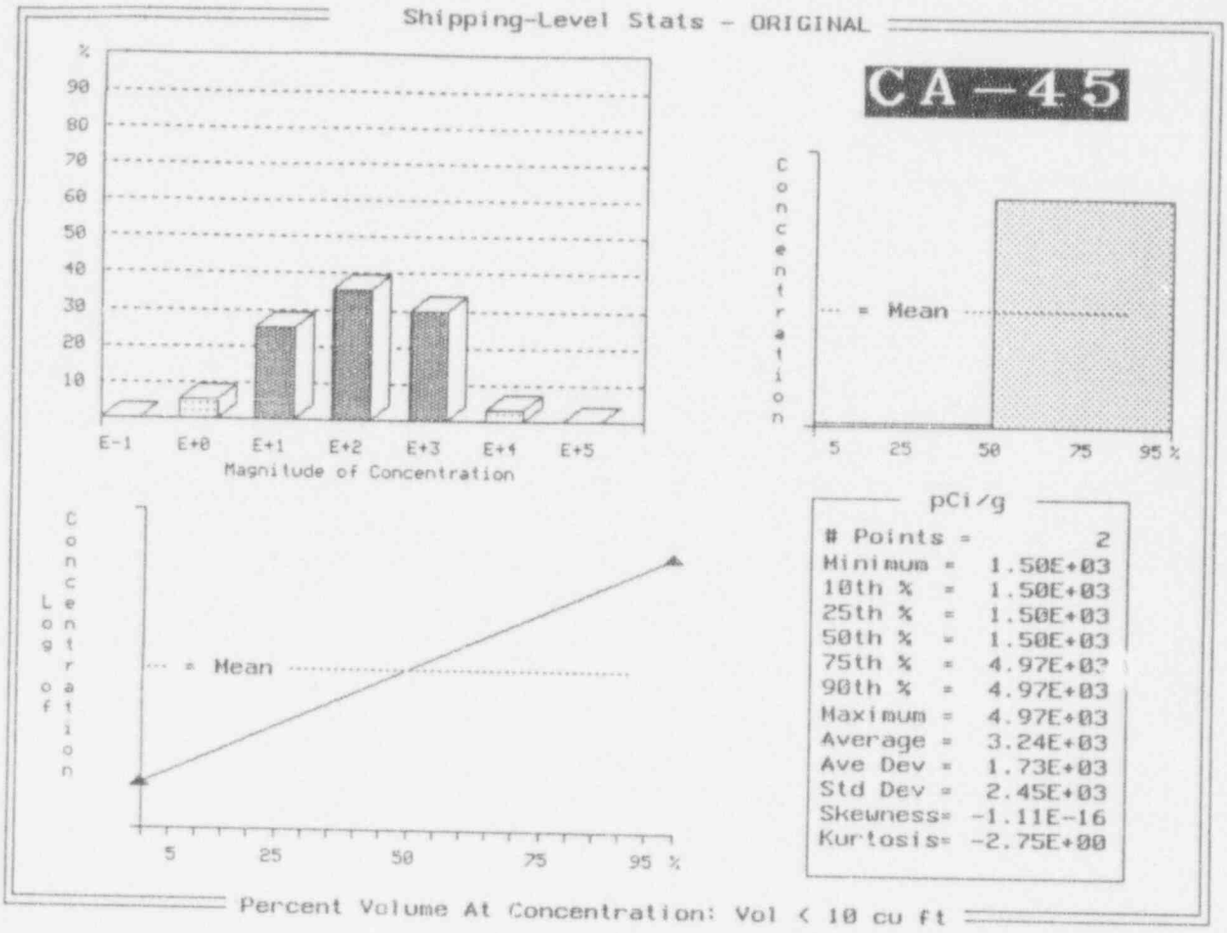


Exhibit F-26 (Continued)

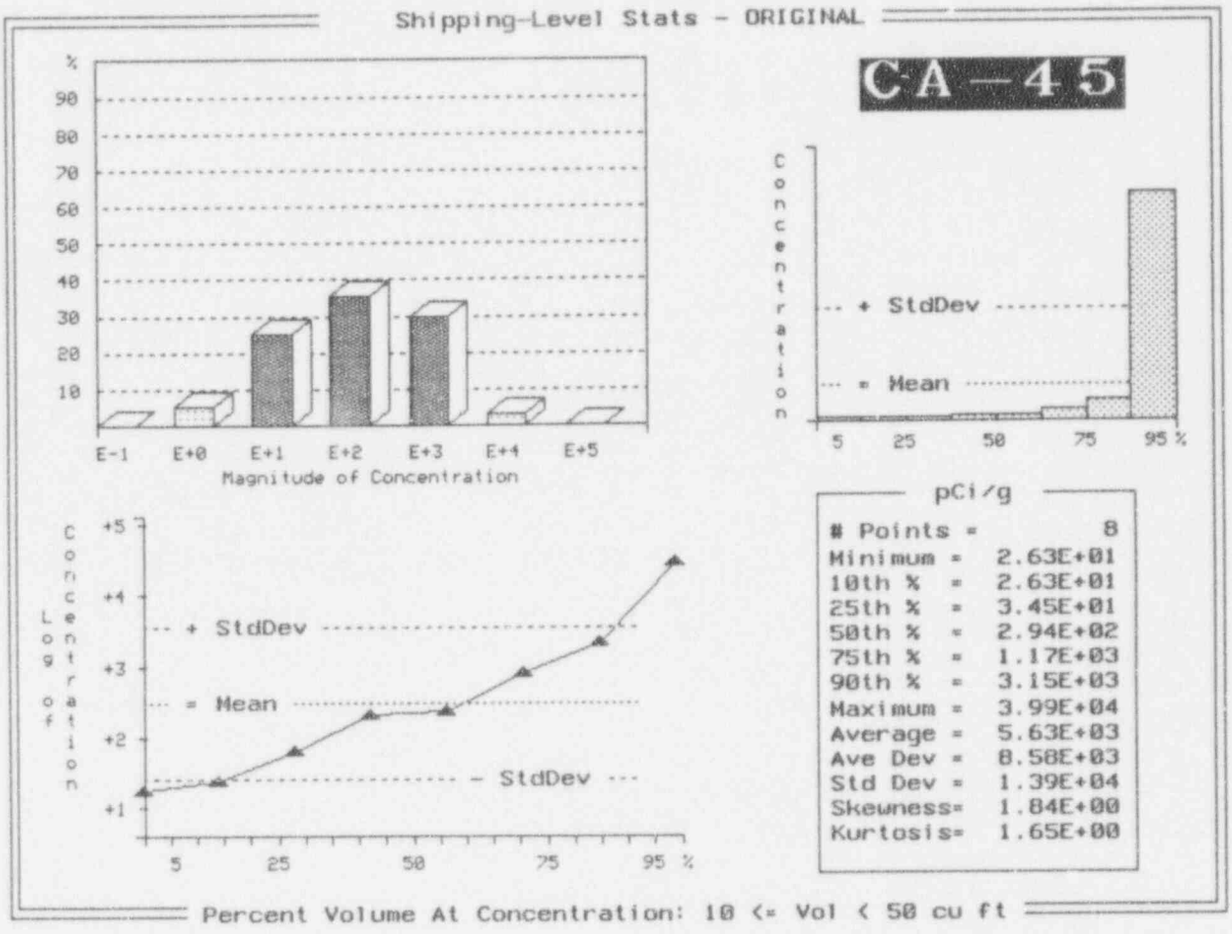


Exhibit F-26 (Continued)

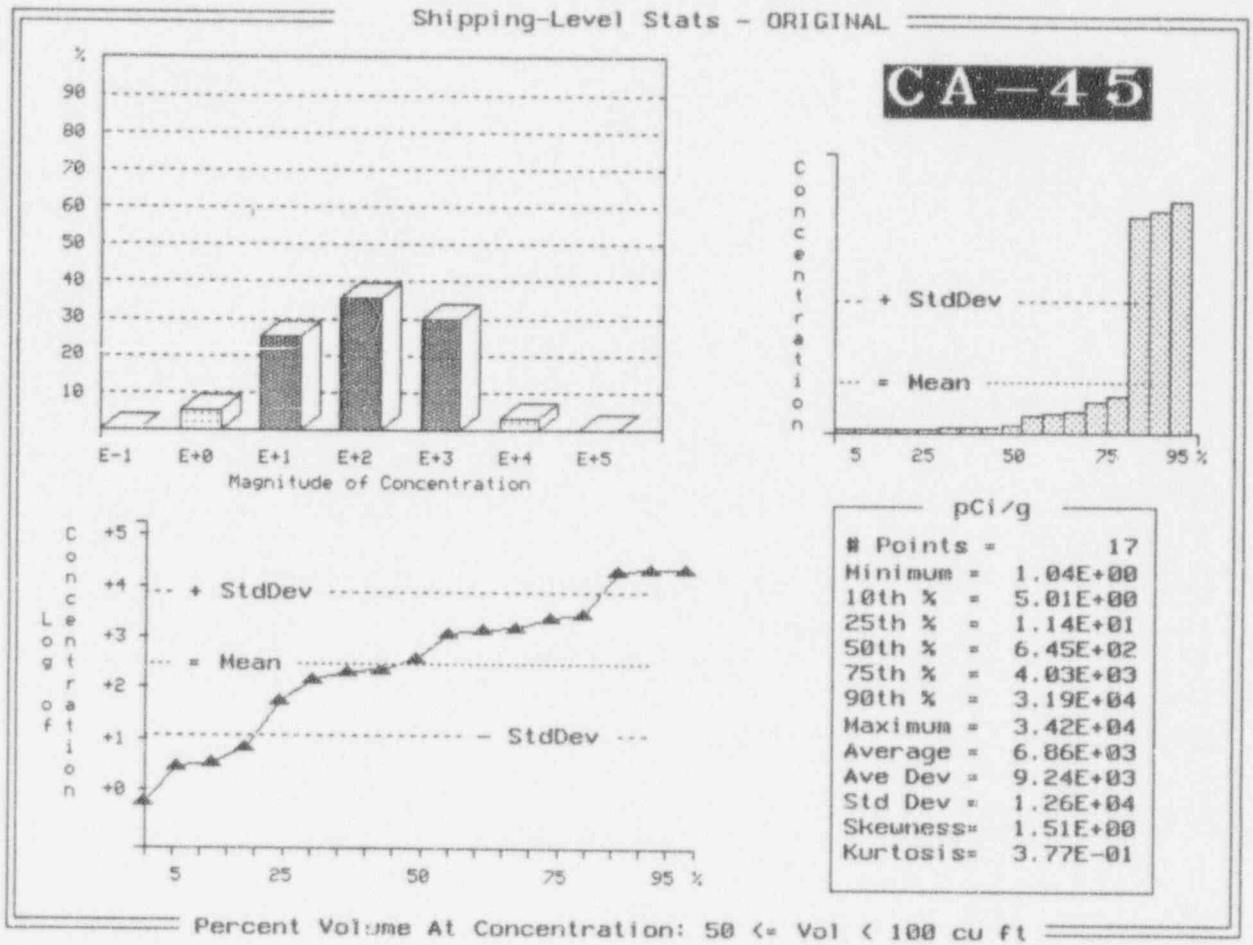


Exhibit F-26 (Continued)

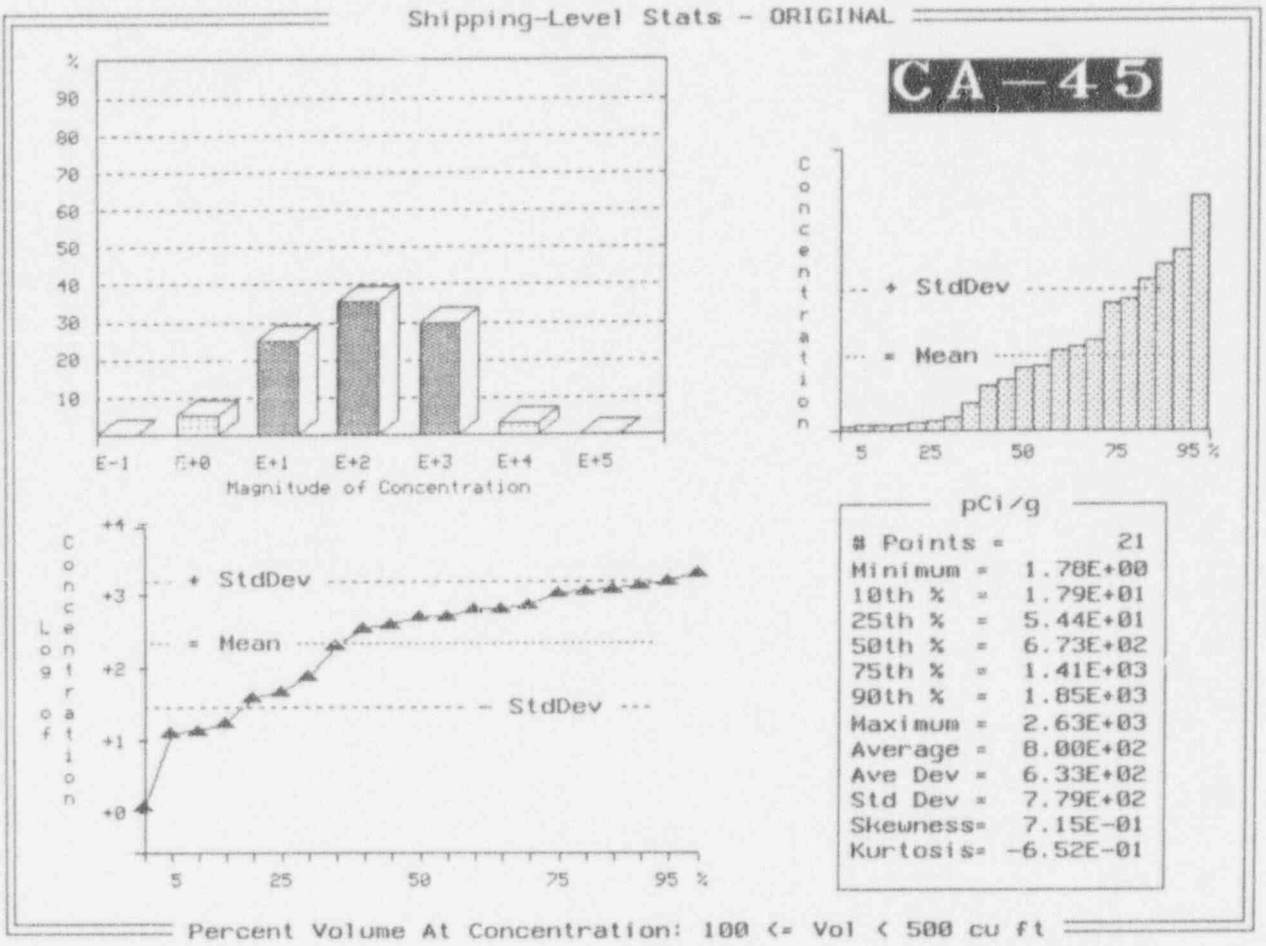


Exhibit F-26 (Continued)

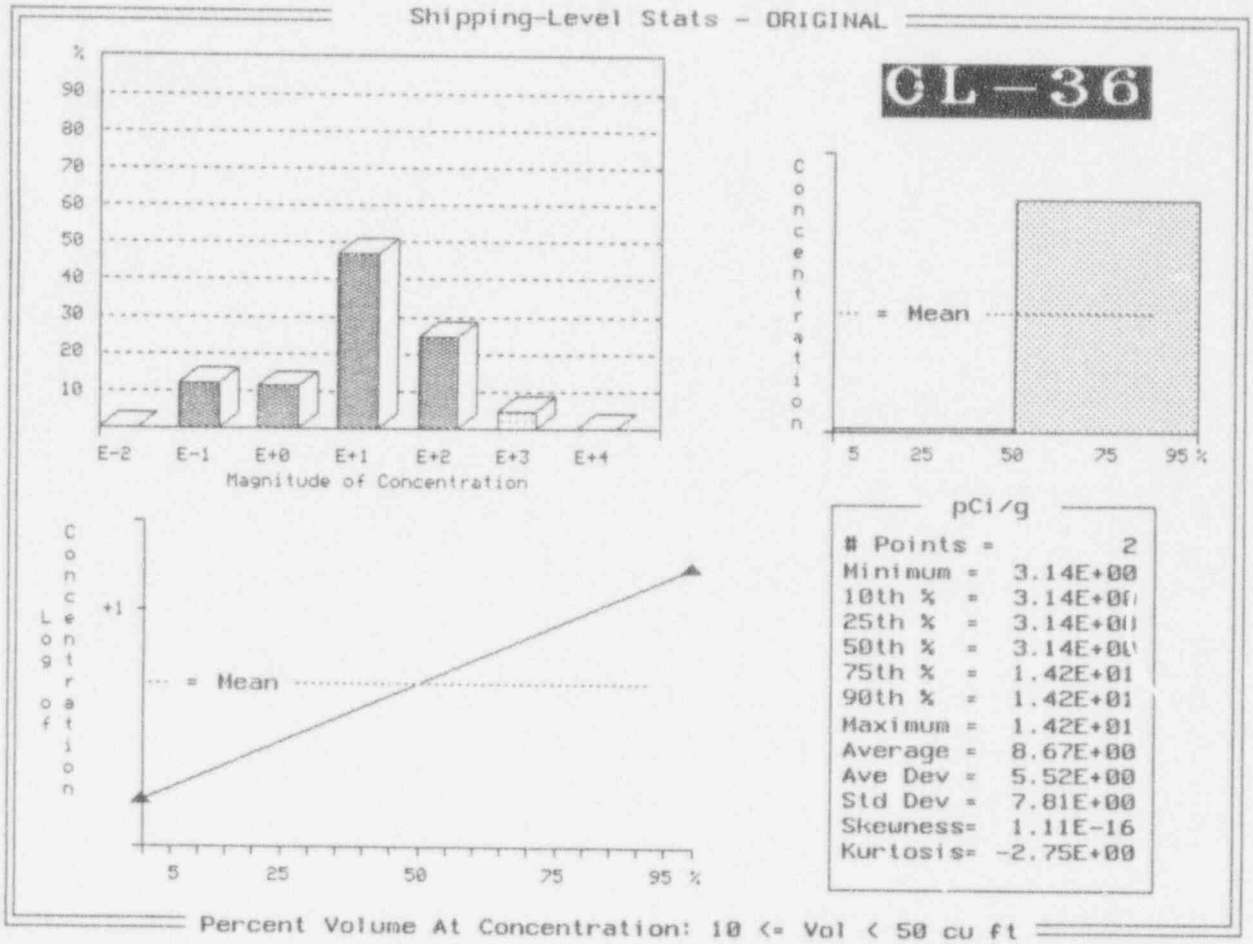


Exhibit F-26 (Continued)

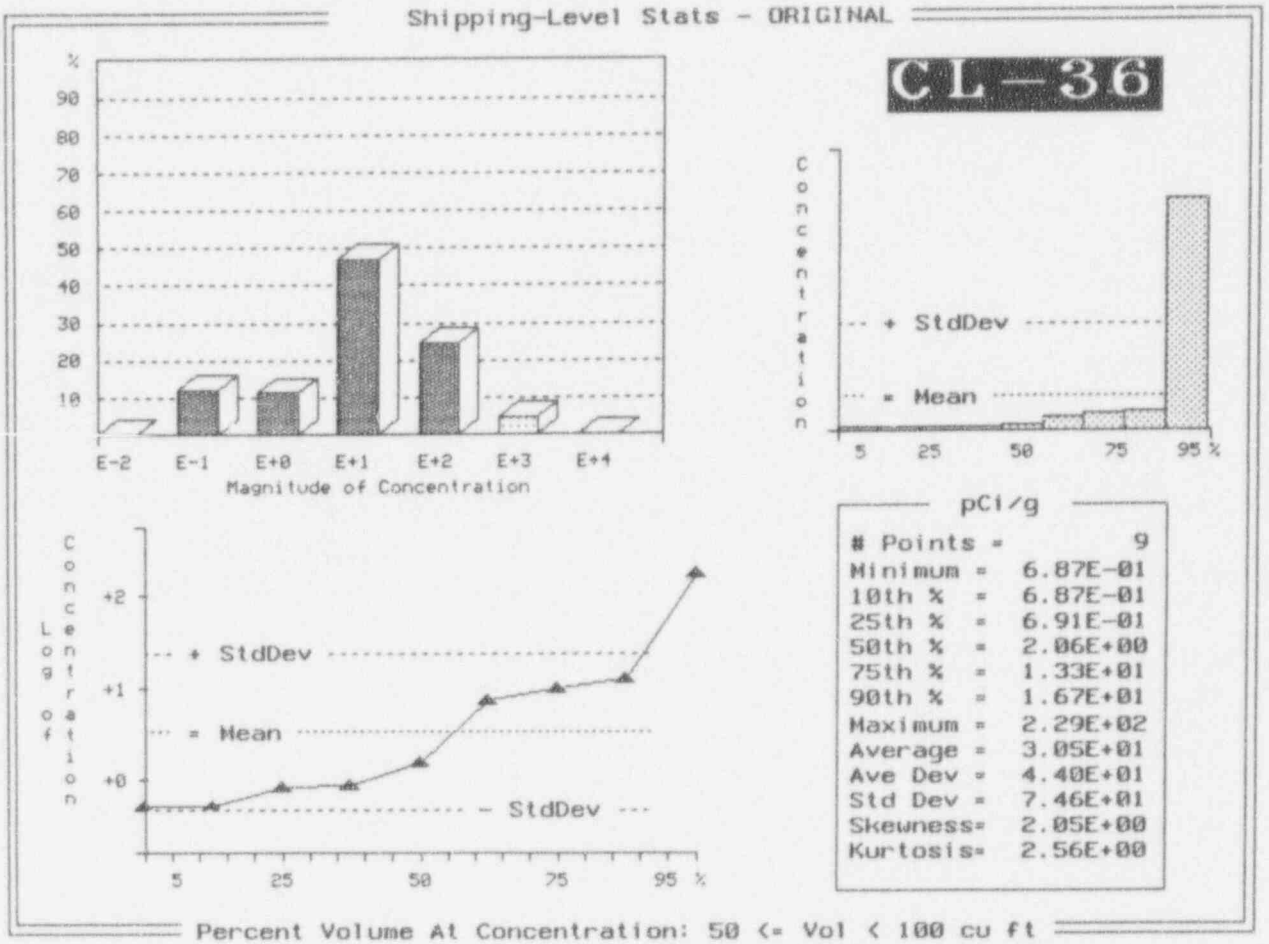


Exhibit F-26 (Continued)

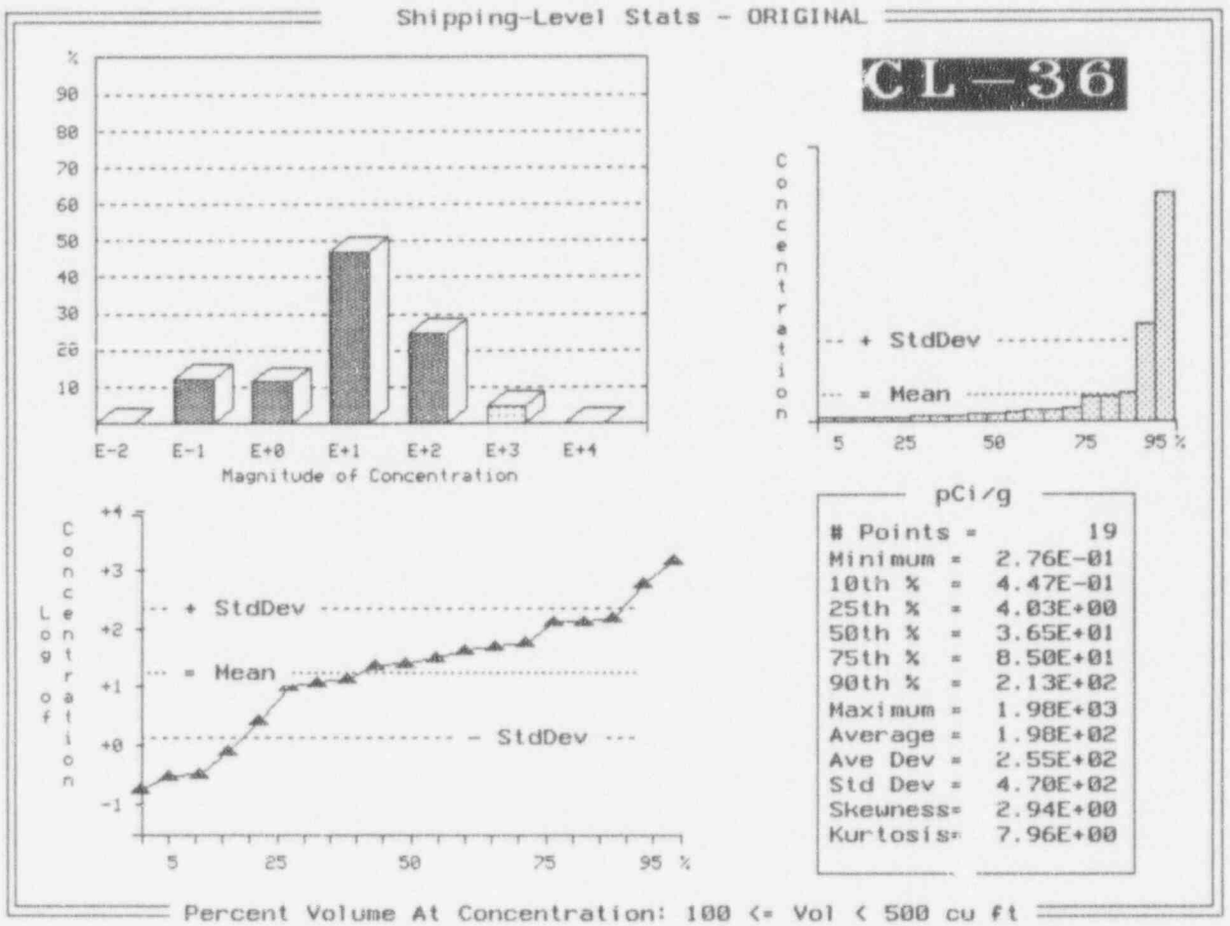


Exhibit F-26 (Continued)

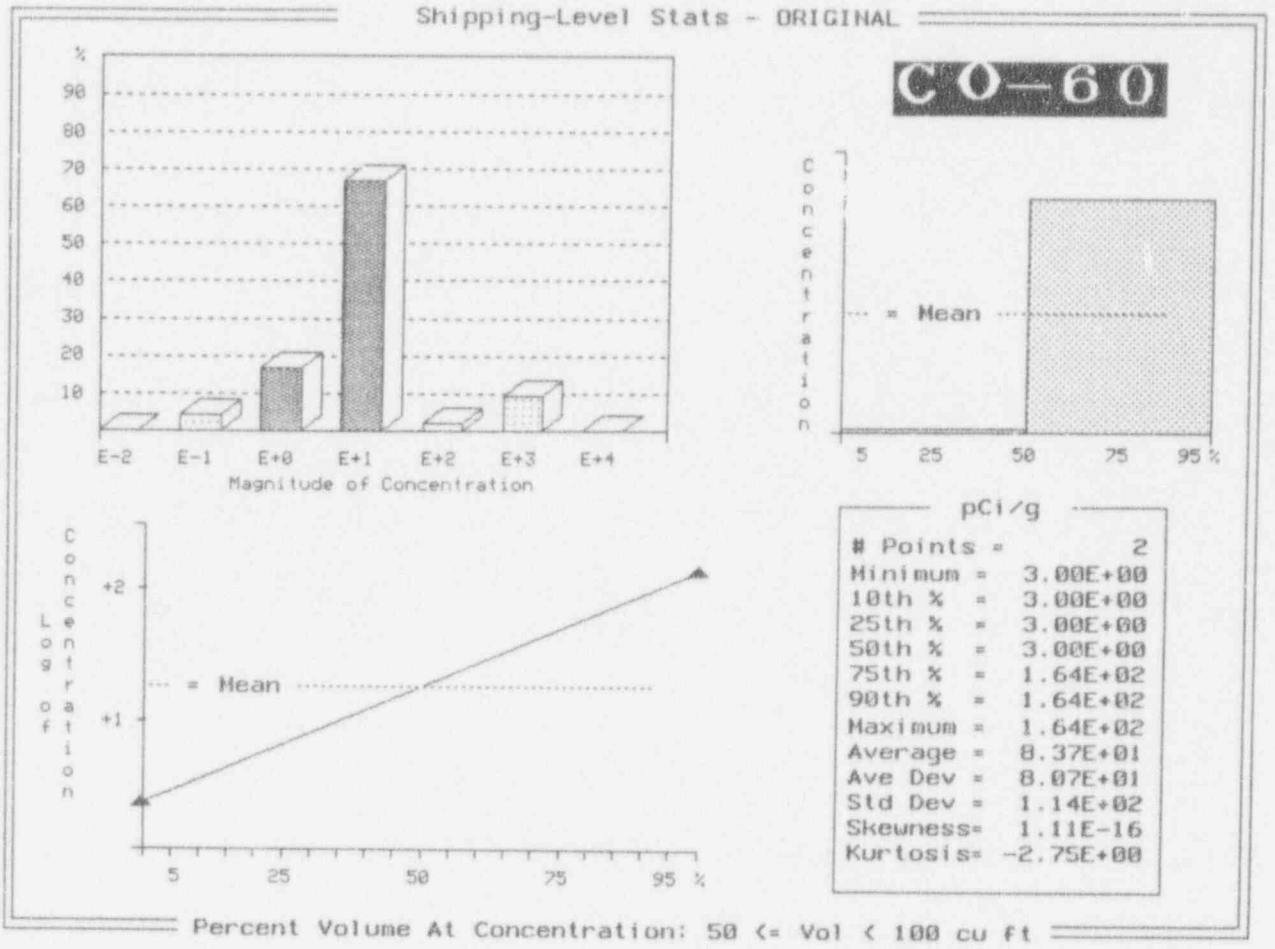


Exhibit F-26 (Continued)

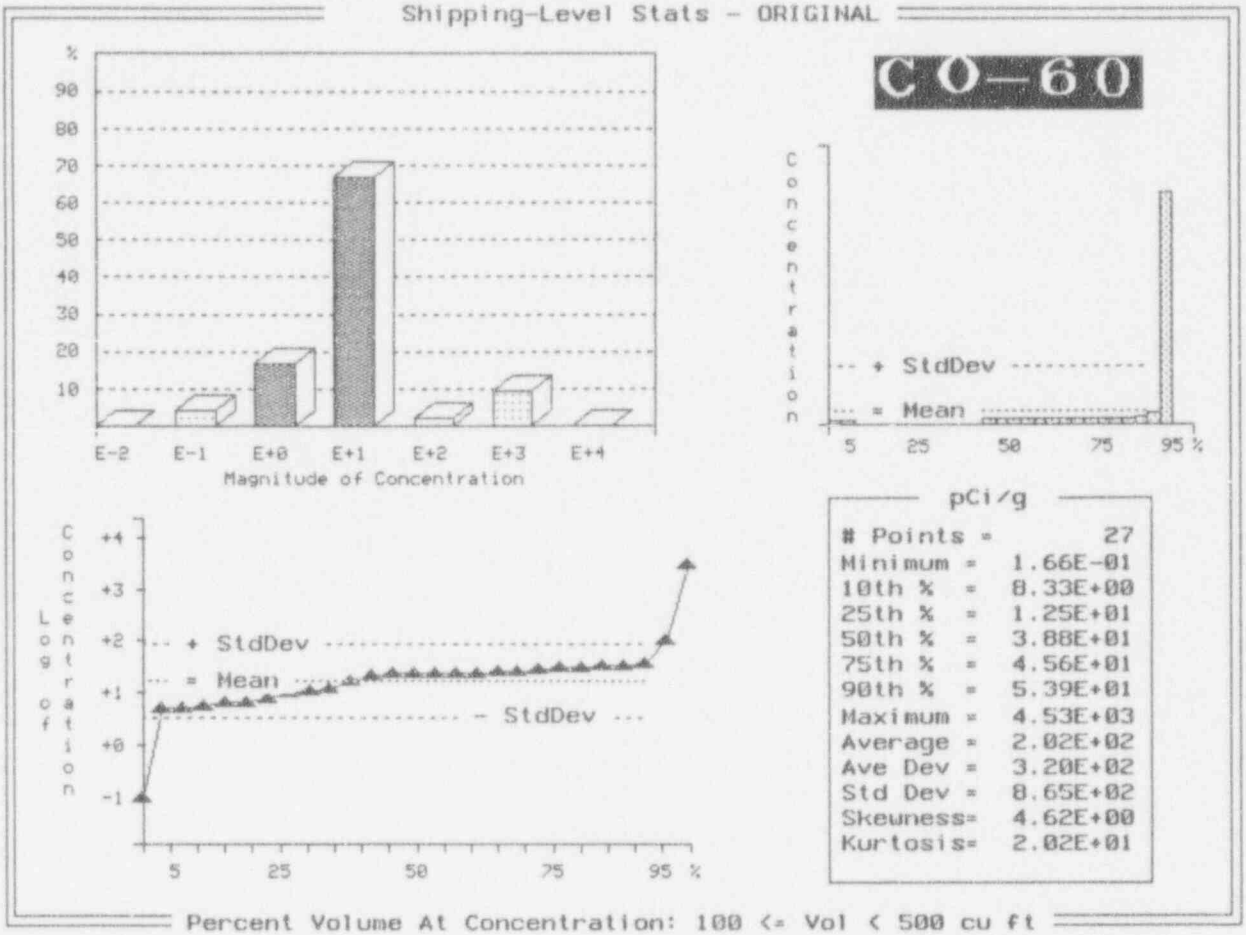
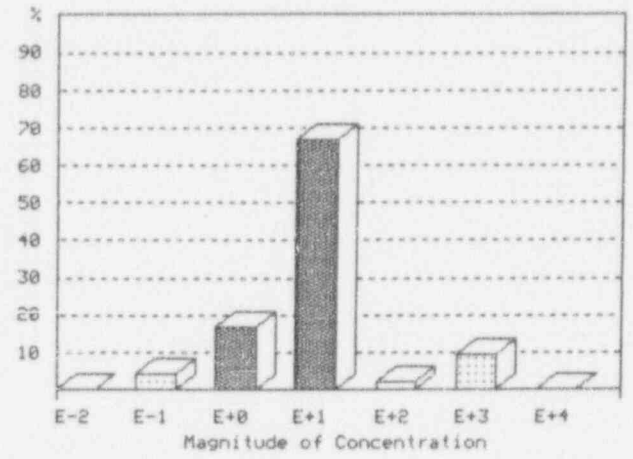
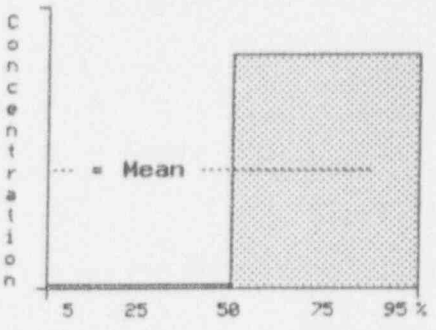


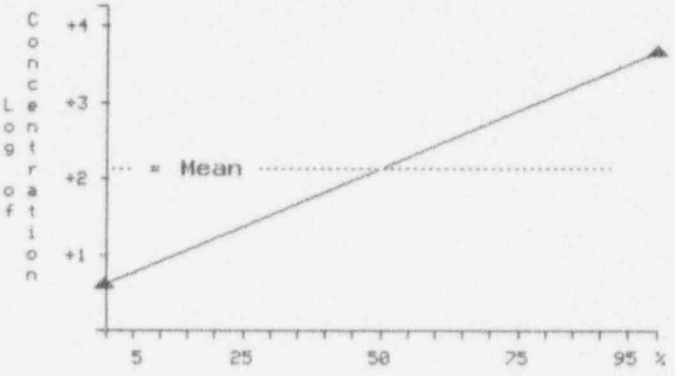
Exhibit F-26 (Continued)

Shipping-Level Stats - ORIGINAL



CO-60





pCi/g

# Points =	2
Minimum =	6.02E+00
10th % =	6.02E+00
25th % =	6.02E+00
50th % =	6.02E+00
75th % =	5.94E+03
90th % =	5.94E+03
Maximum =	5.94E+03
Average =	2.98E+03
Ave Dev =	2.97E+03
Std Dev =	4.20E+03
Skewness=	1.11E-16
Kurtosis=	-2.75E+00

Percent Volume At Concentration: 500 <= Vol < 1000 cu ft

Exhibit F-26 (Continued)

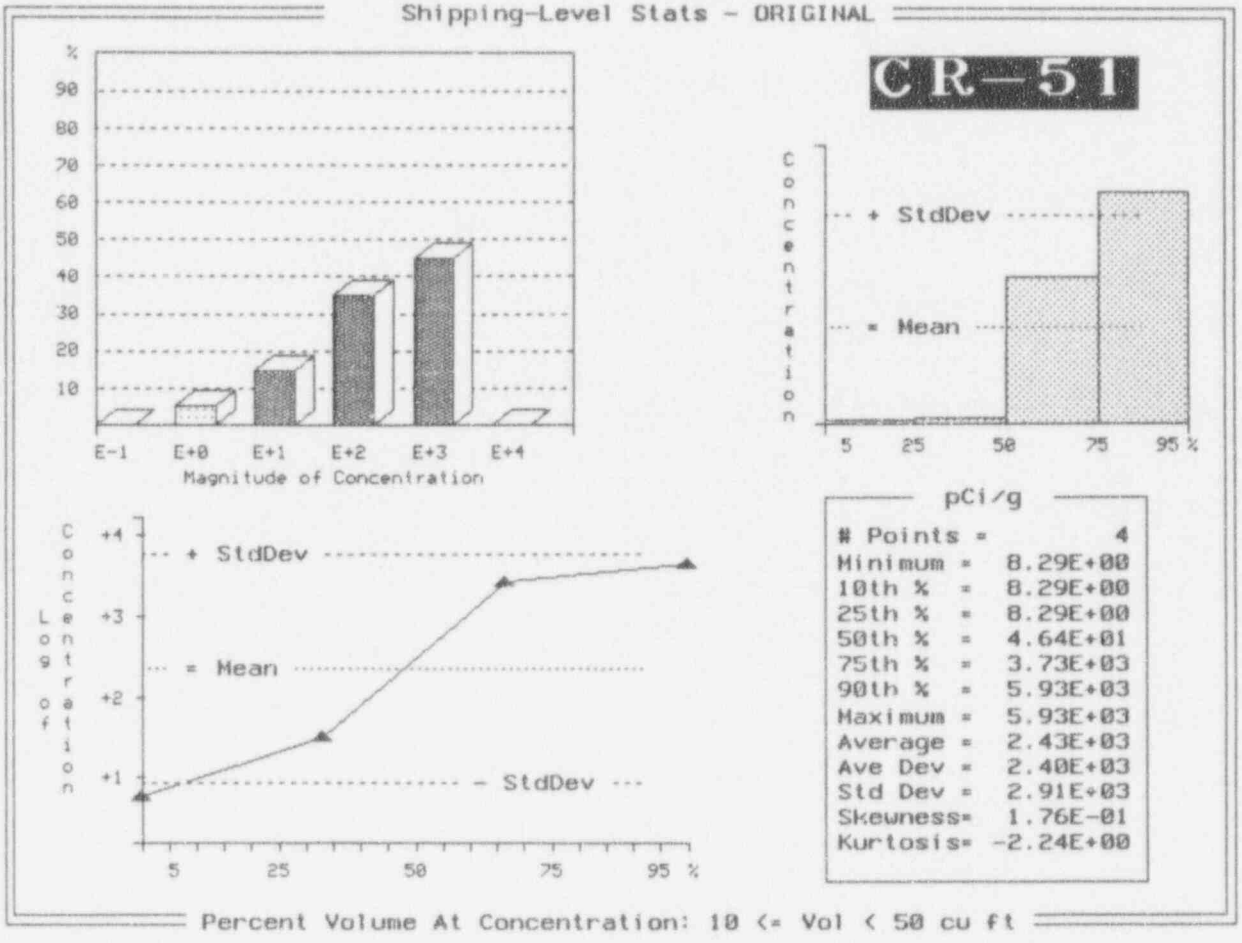
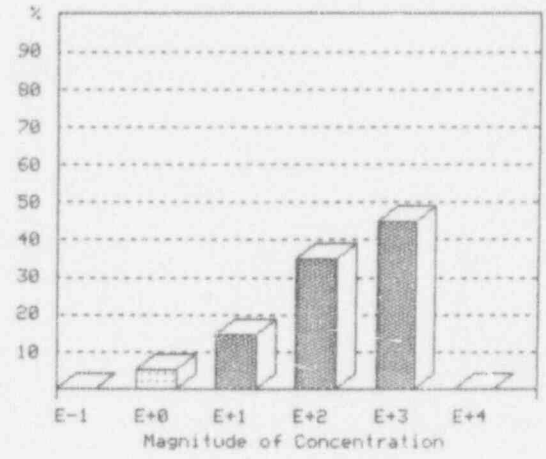
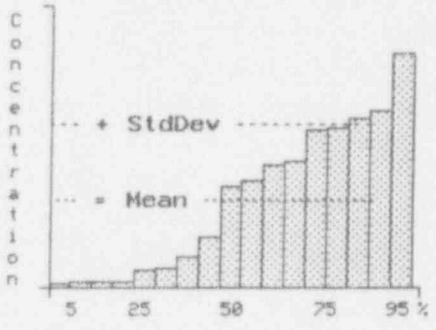


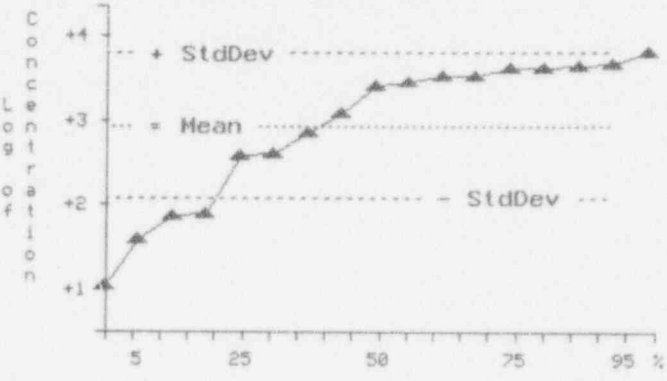
Exhibit F-26 (Continued)

Shipping-Level Stats - ORIGINAL



CR-51





pCi/g

# Points =	17
Minimum =	1.50E+01
10th % =	5.28E+01
25th % =	1.03E+02
50th % =	3.34E+03
75th % =	5.31E+03
90th % =	5.70E+03
Maximum =	7.91E+03
Average =	2.91E+03
Ave Dev =	2.28E+03
Std Dev =	2.59E+03
Skewness=	2.76E-01
Kurtosis=	-1.43E+00

Percent Volume At Concentration: 50 <= Vol < 100 cu ft

Exhibit F-26 (Continued)

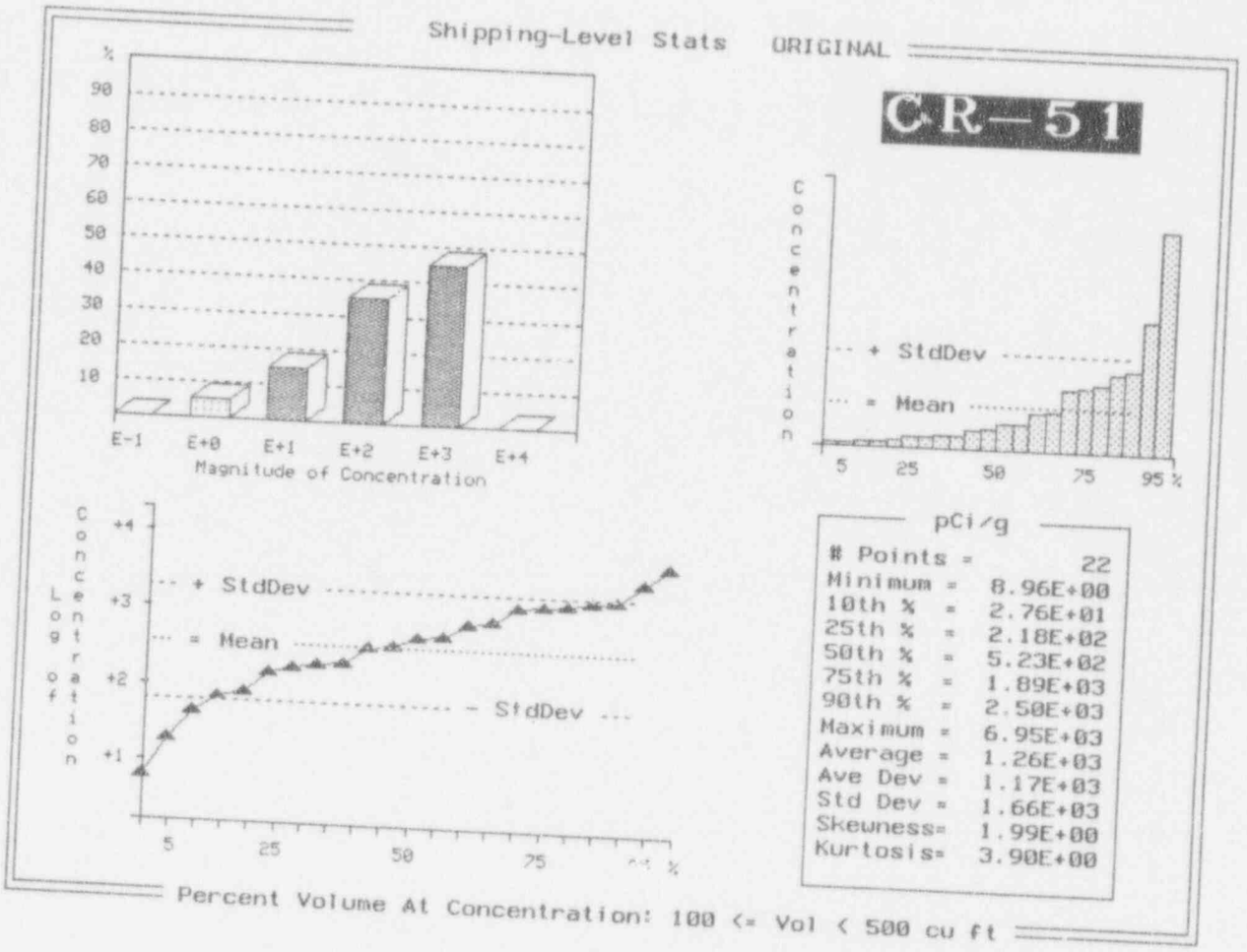


Exhibit F-26 (Continued)

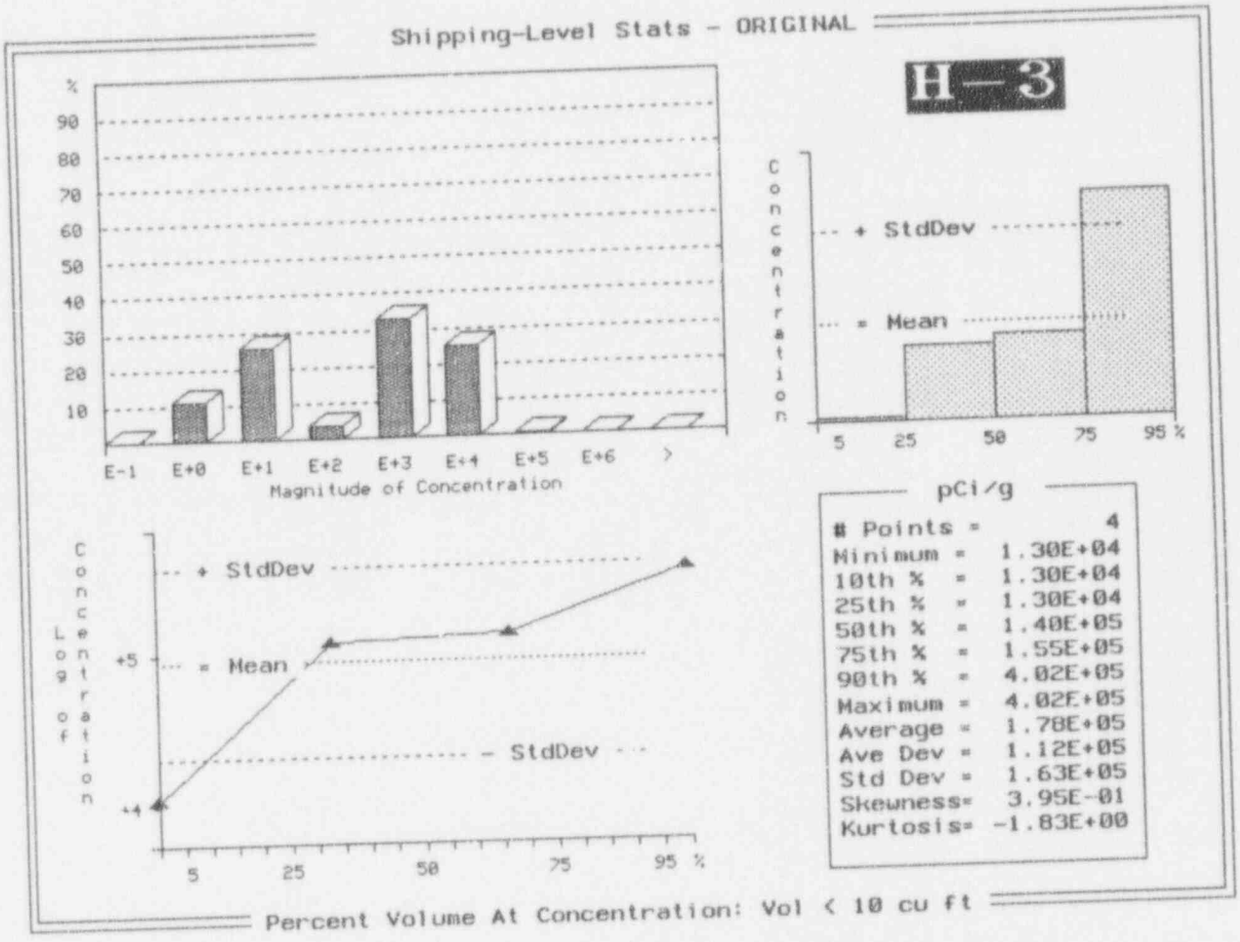


Exhibit F-26 (Continued)

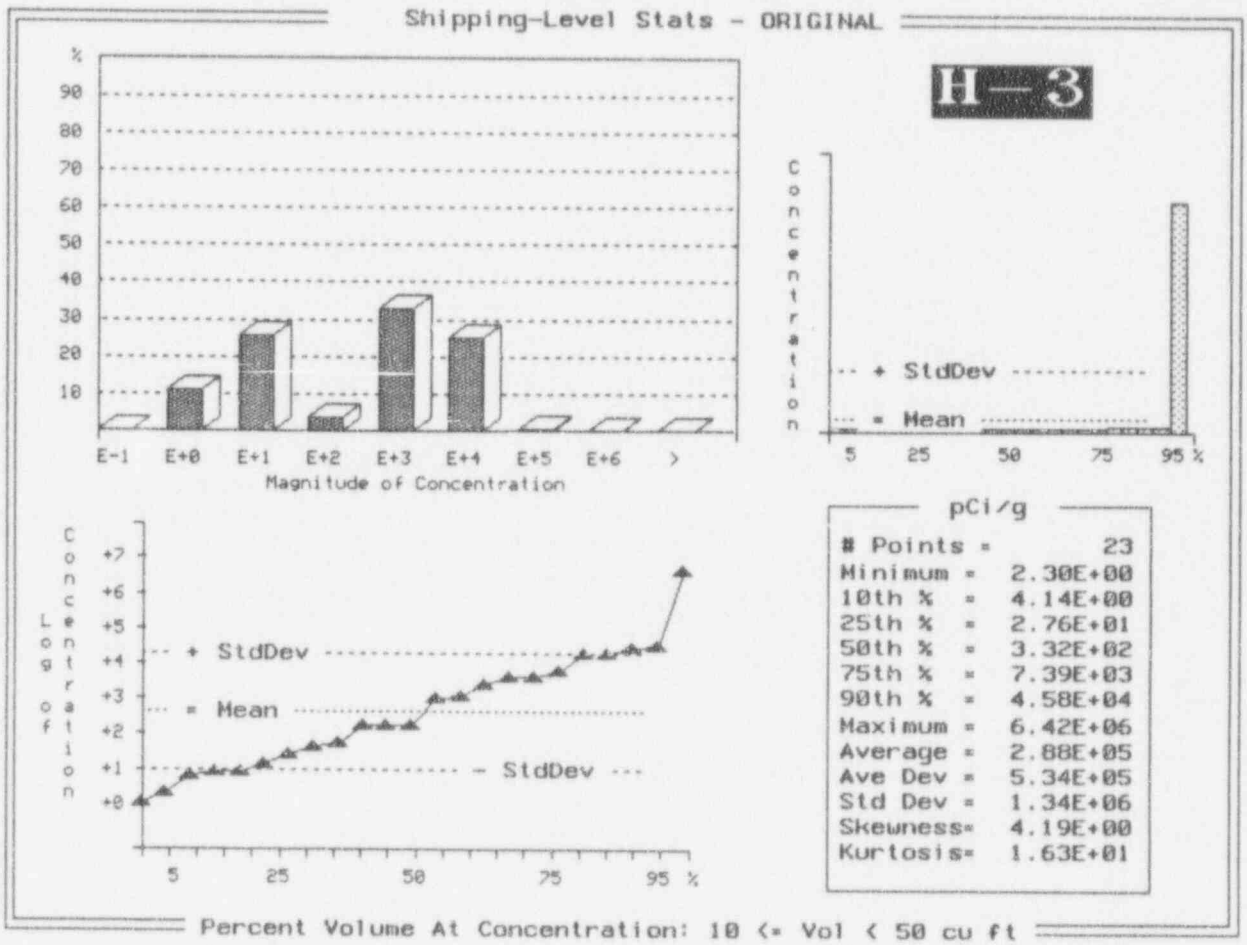


Exhibit F-26 (Continued)

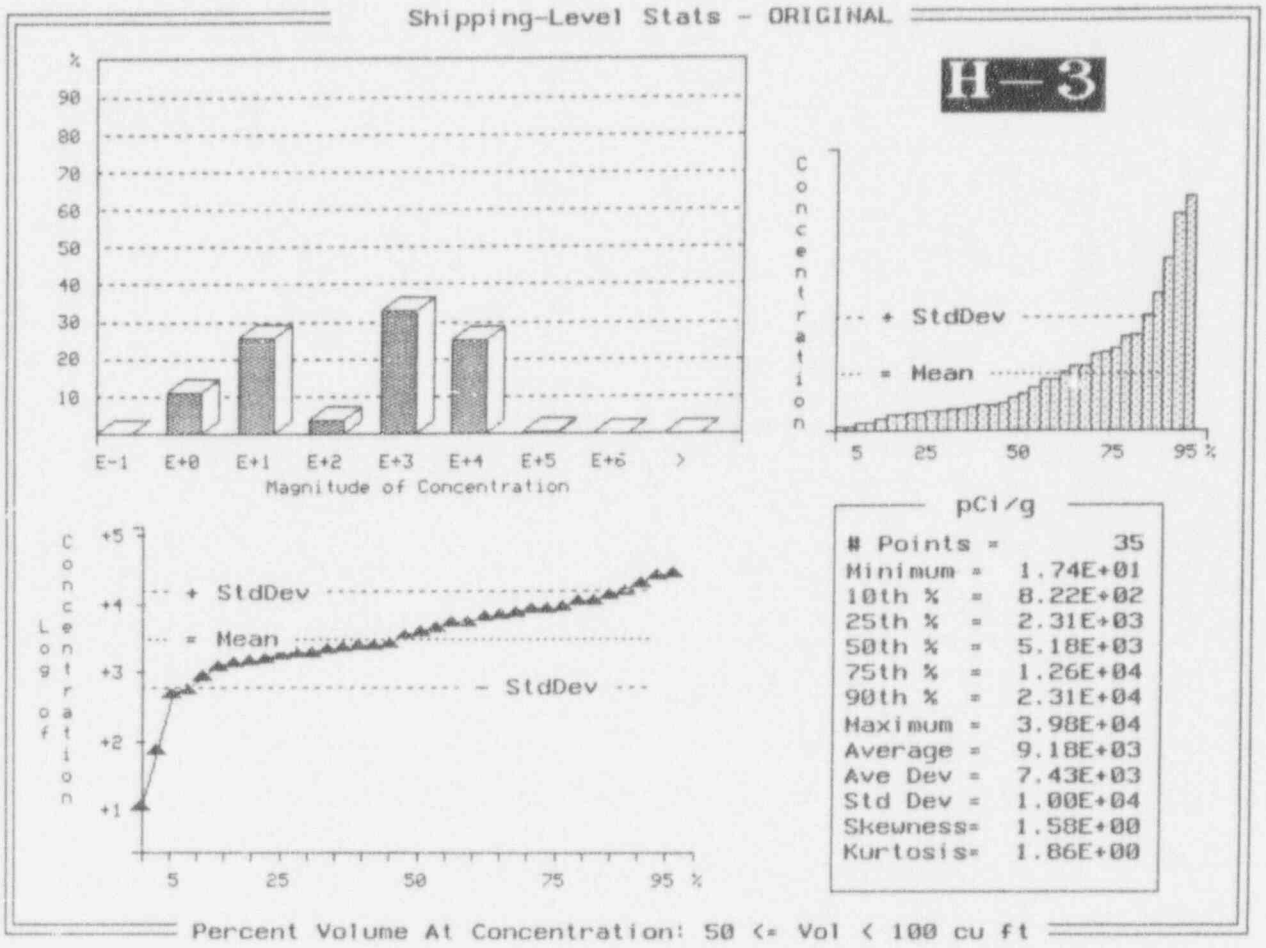


Exhibit F-26 (Continued)

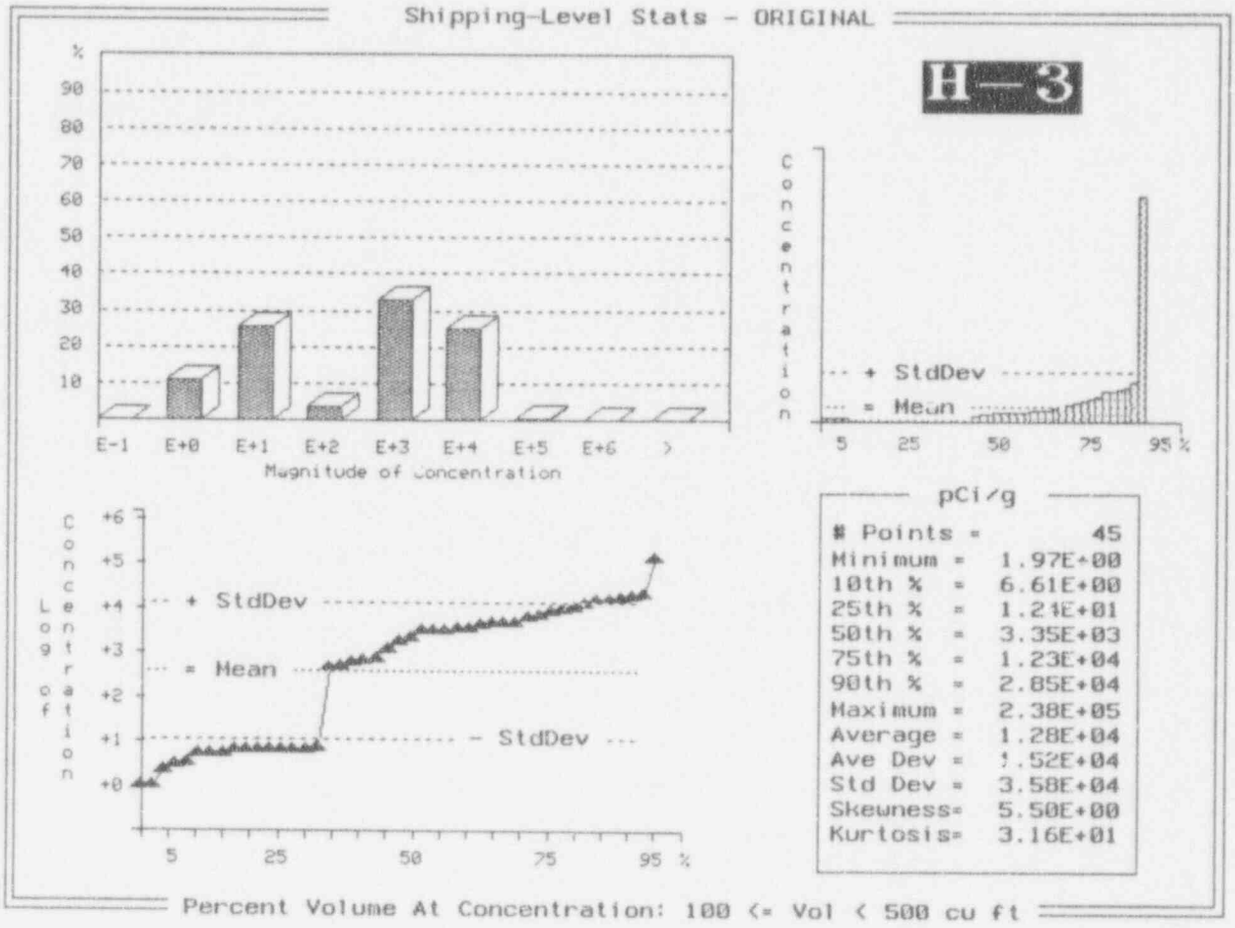


Exhibit F-26 (Continued)

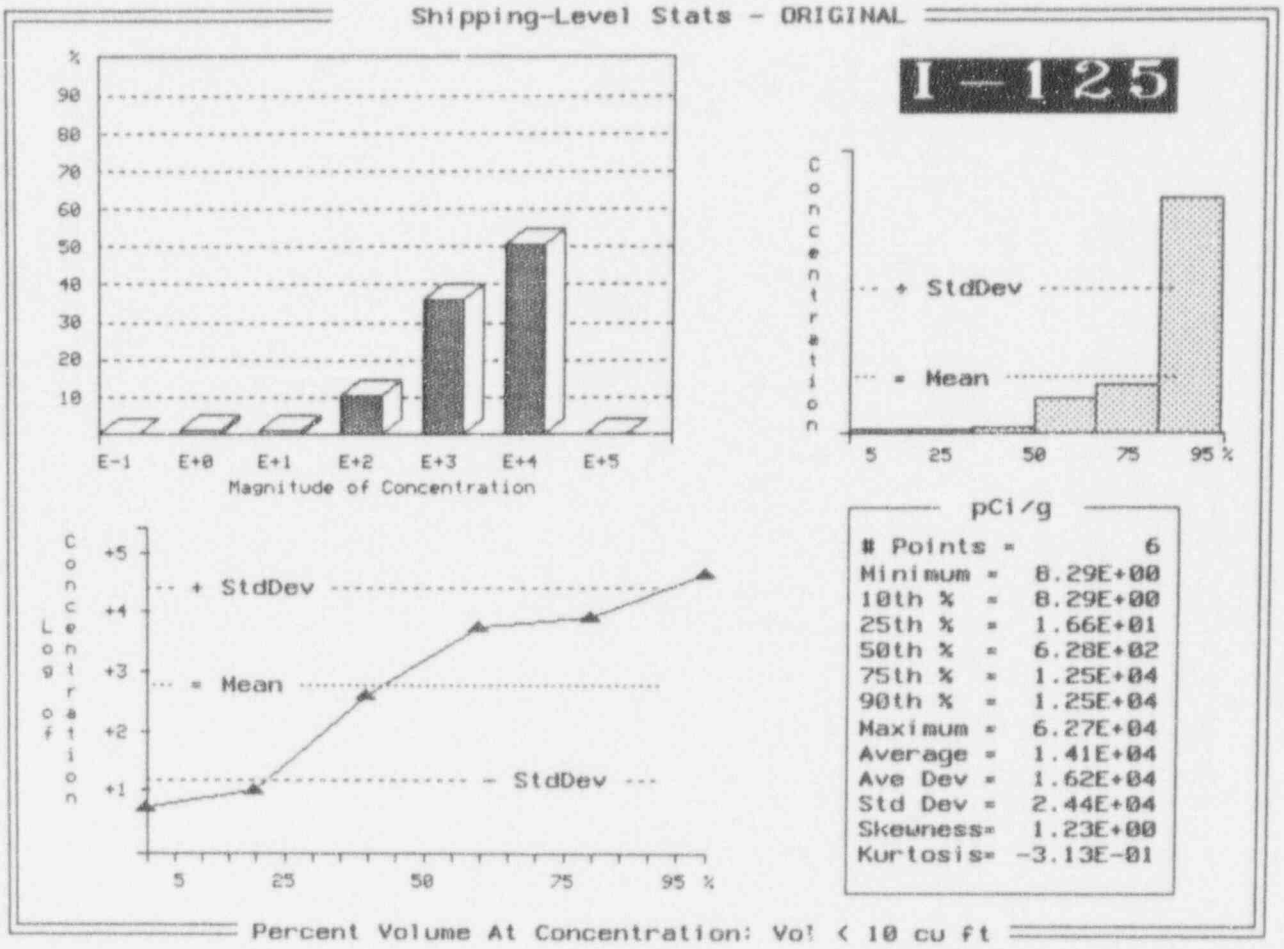


Exhibit F-26 (Continued)

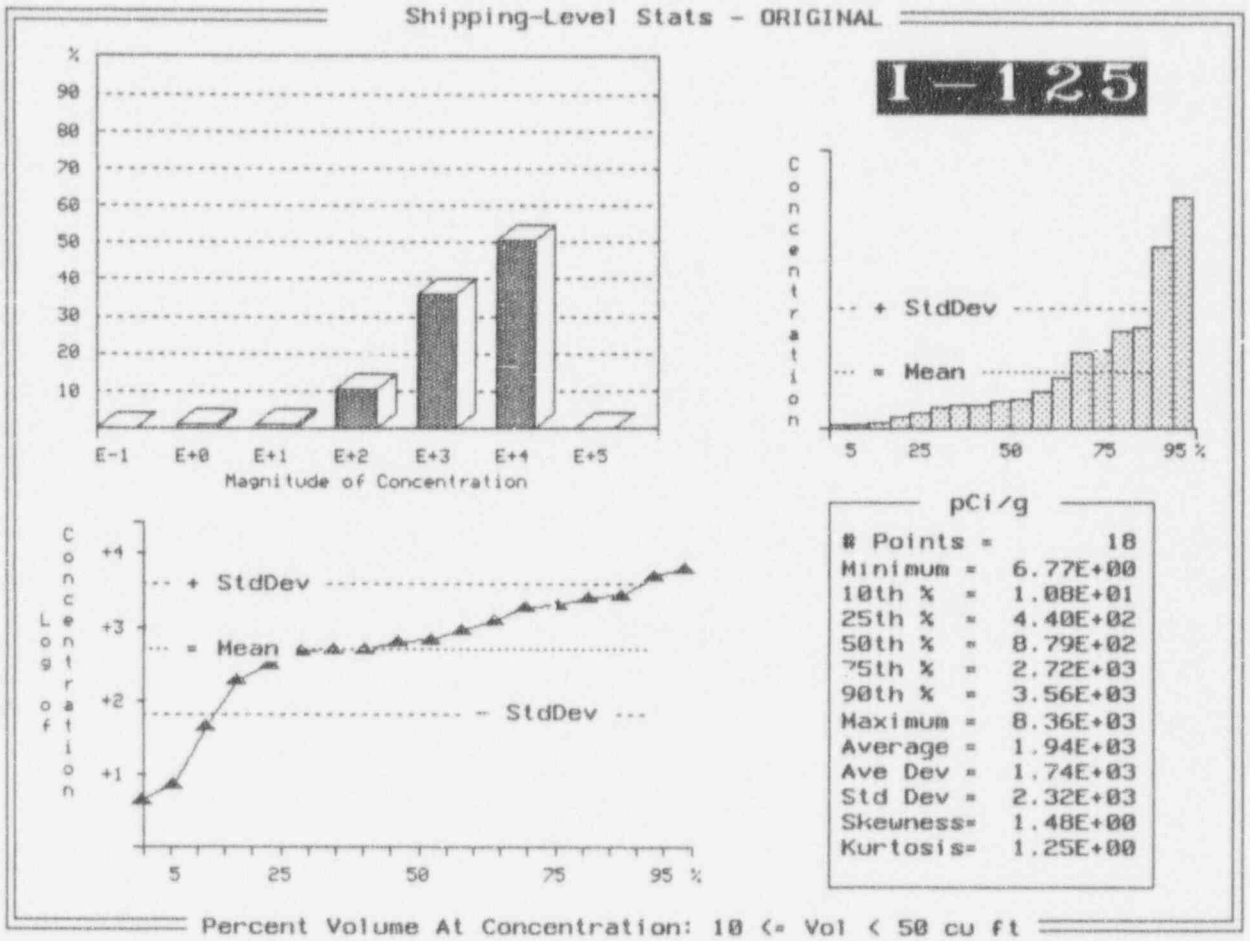


Exhibit F-26 (Continued)

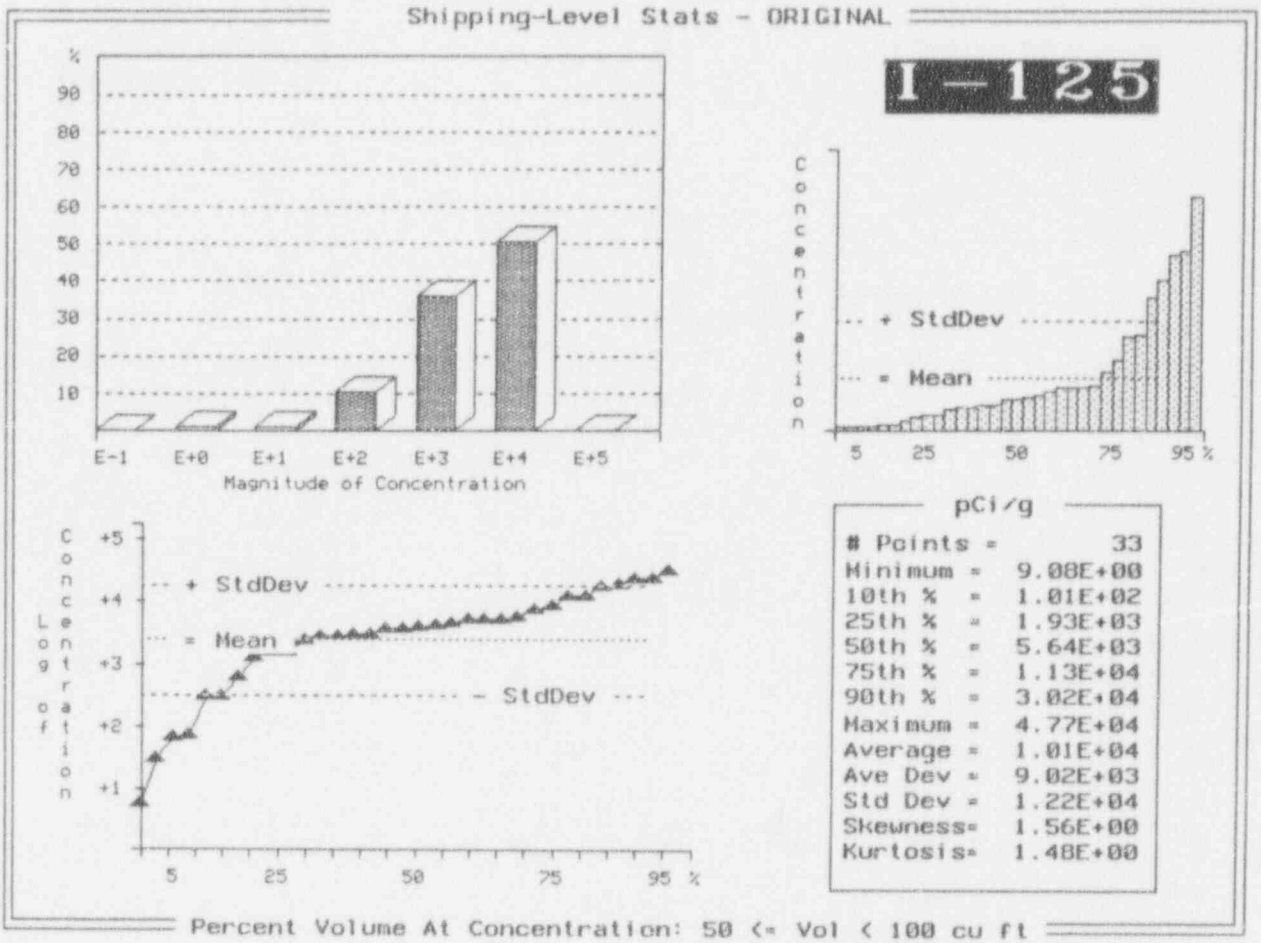


Exhibit F-26 (Continued)

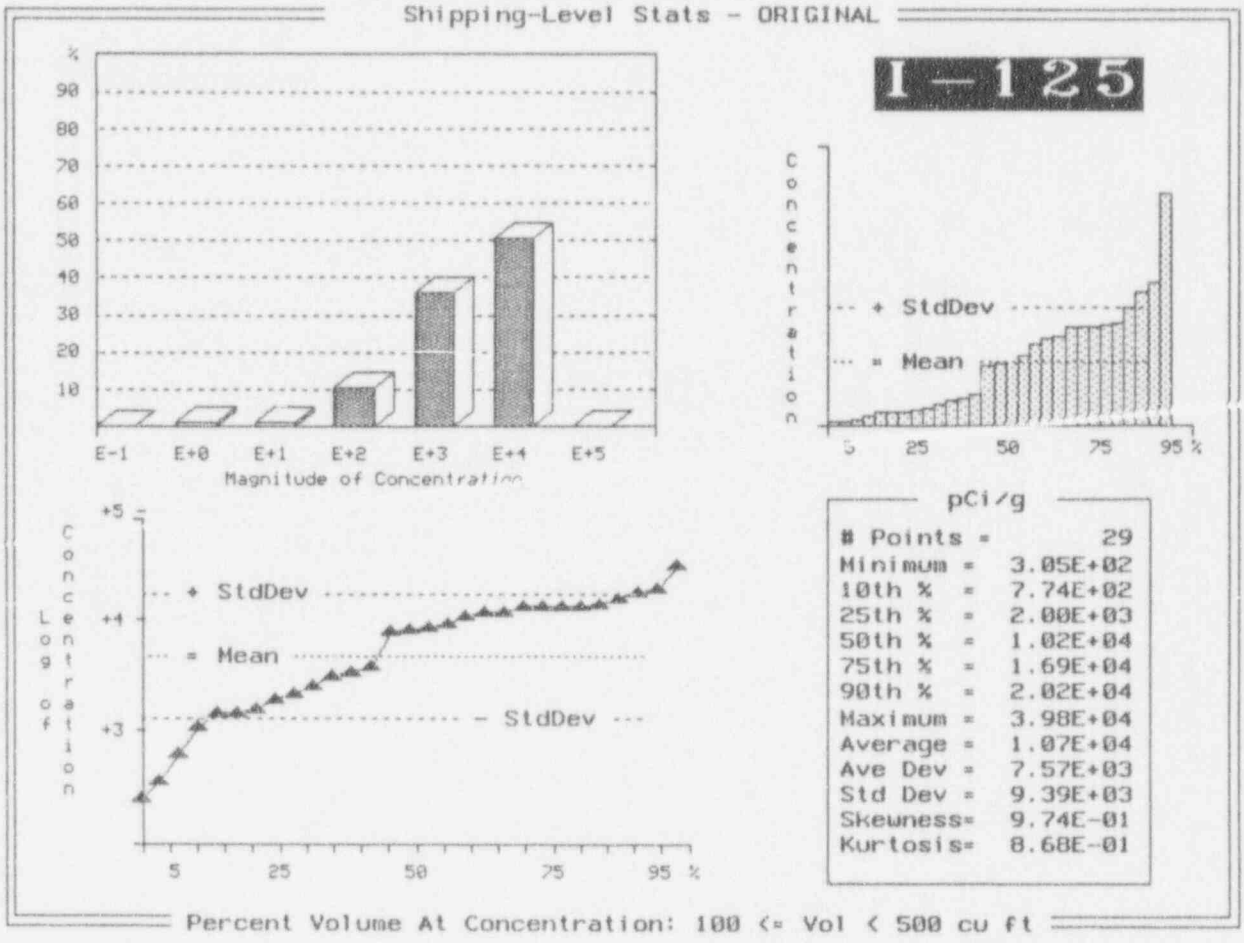


Exhibit F-26 (Continued)

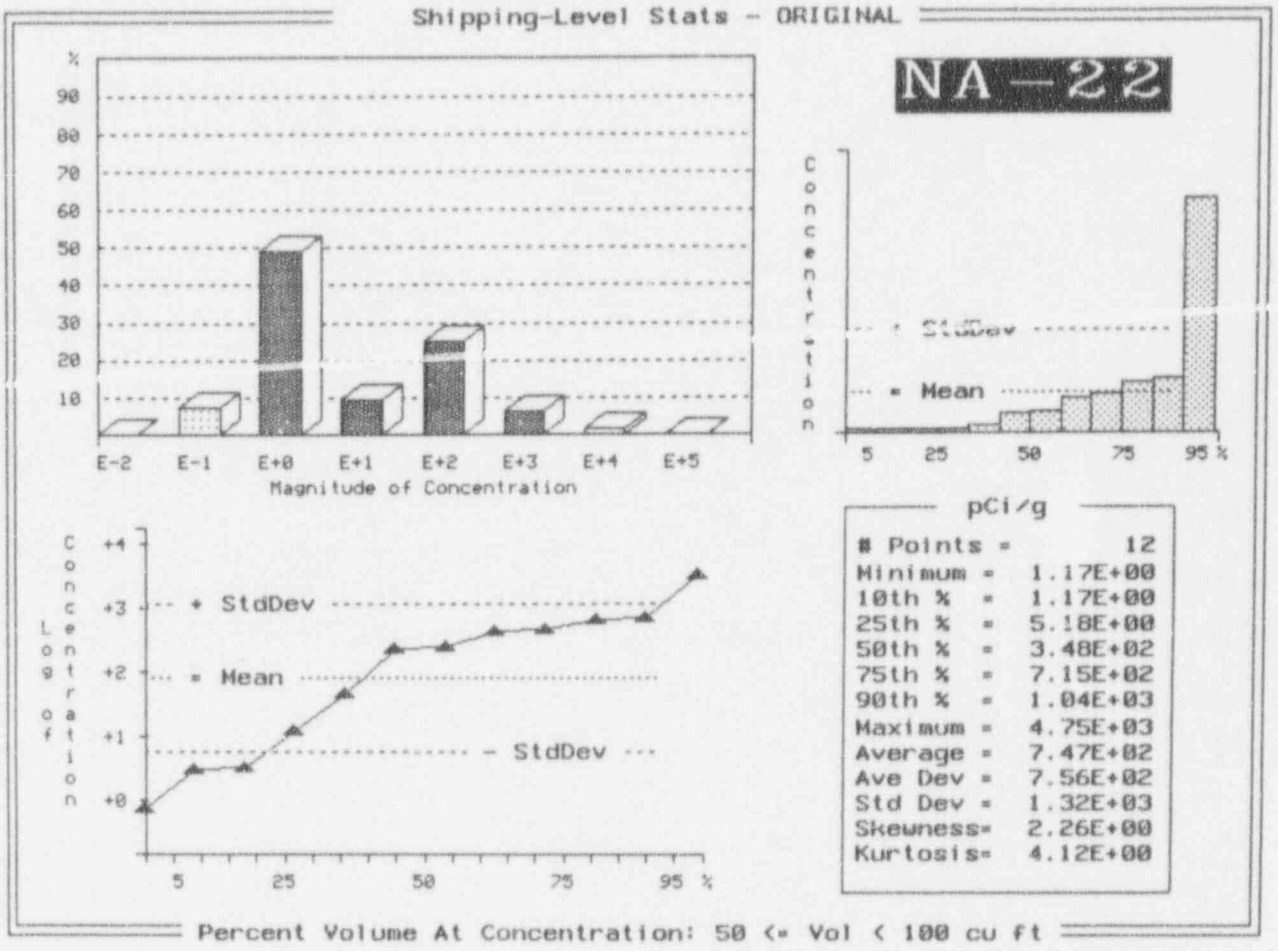


Exhibit F-26 (Continued)

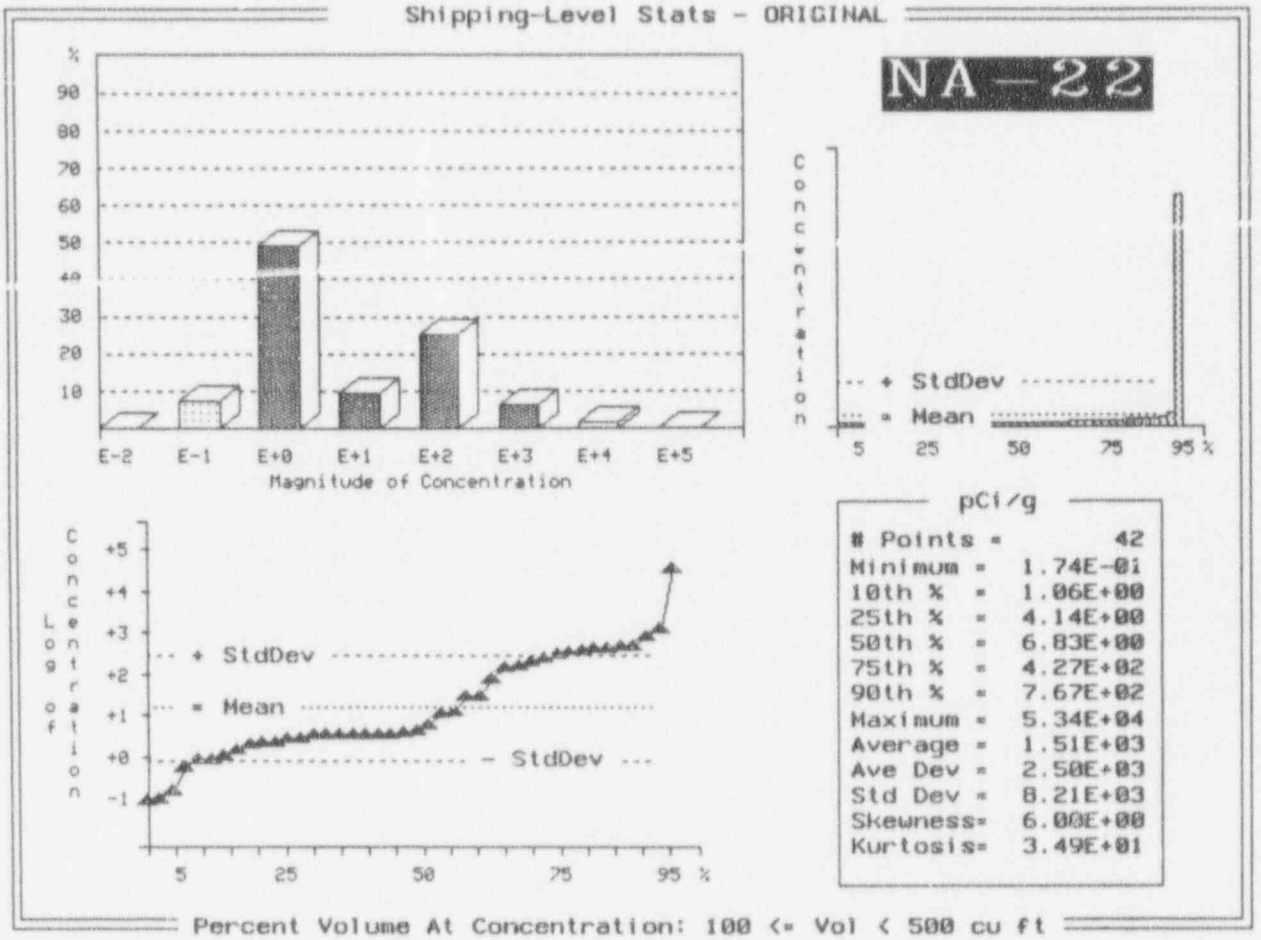


Exhibit F-26 (Continued)

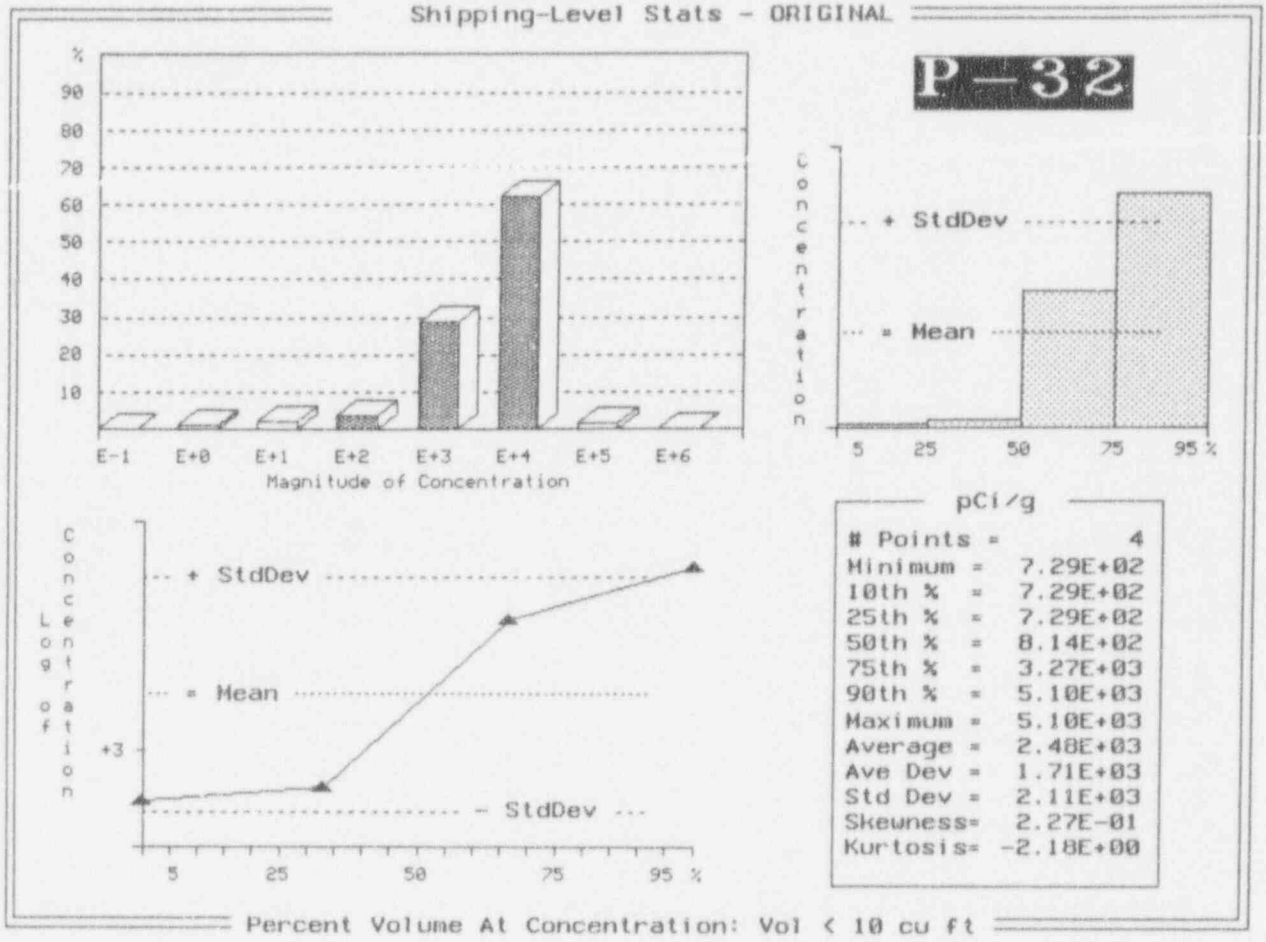


Exhibit F-26 (Continued)

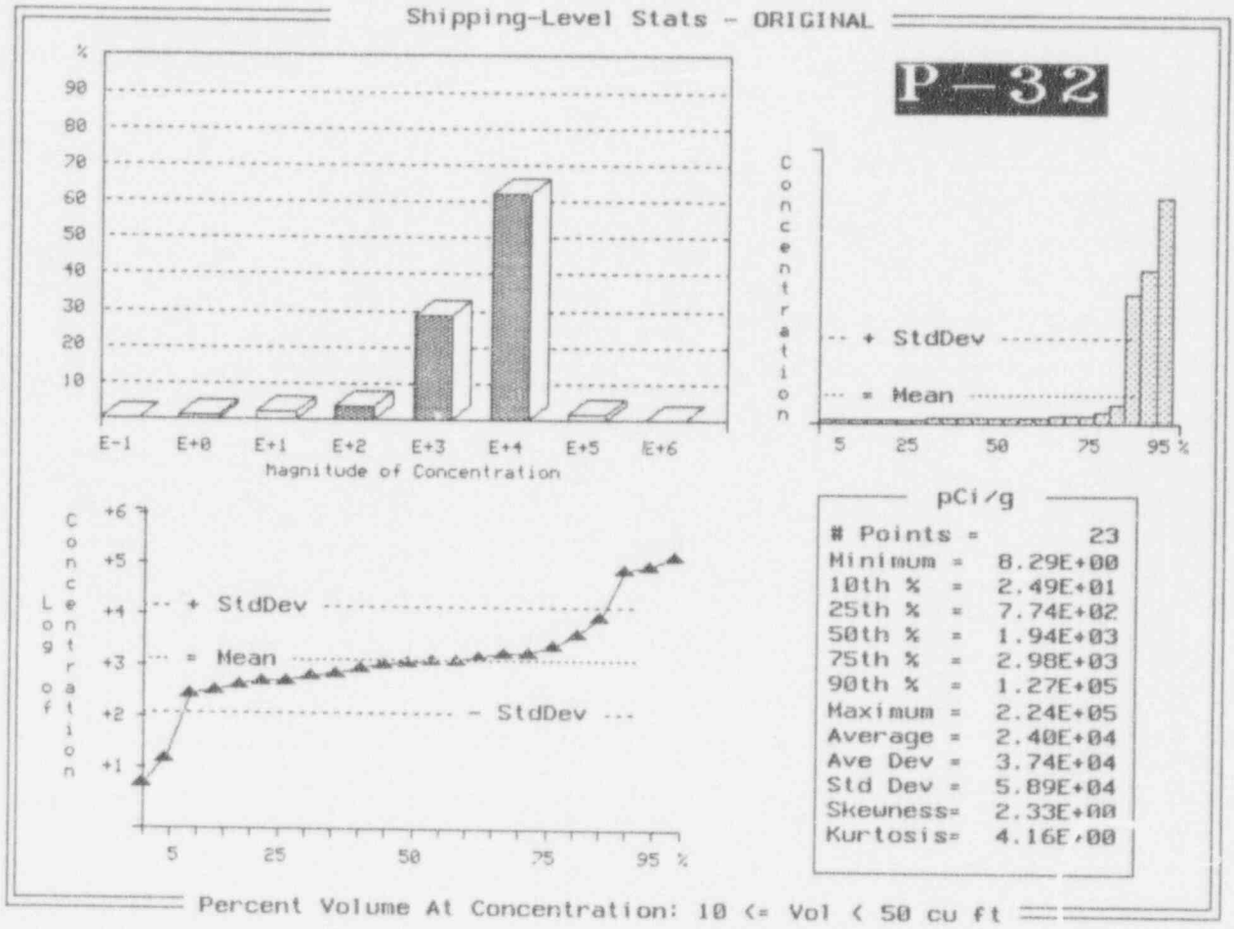


Exhibit F-26 (Continued)

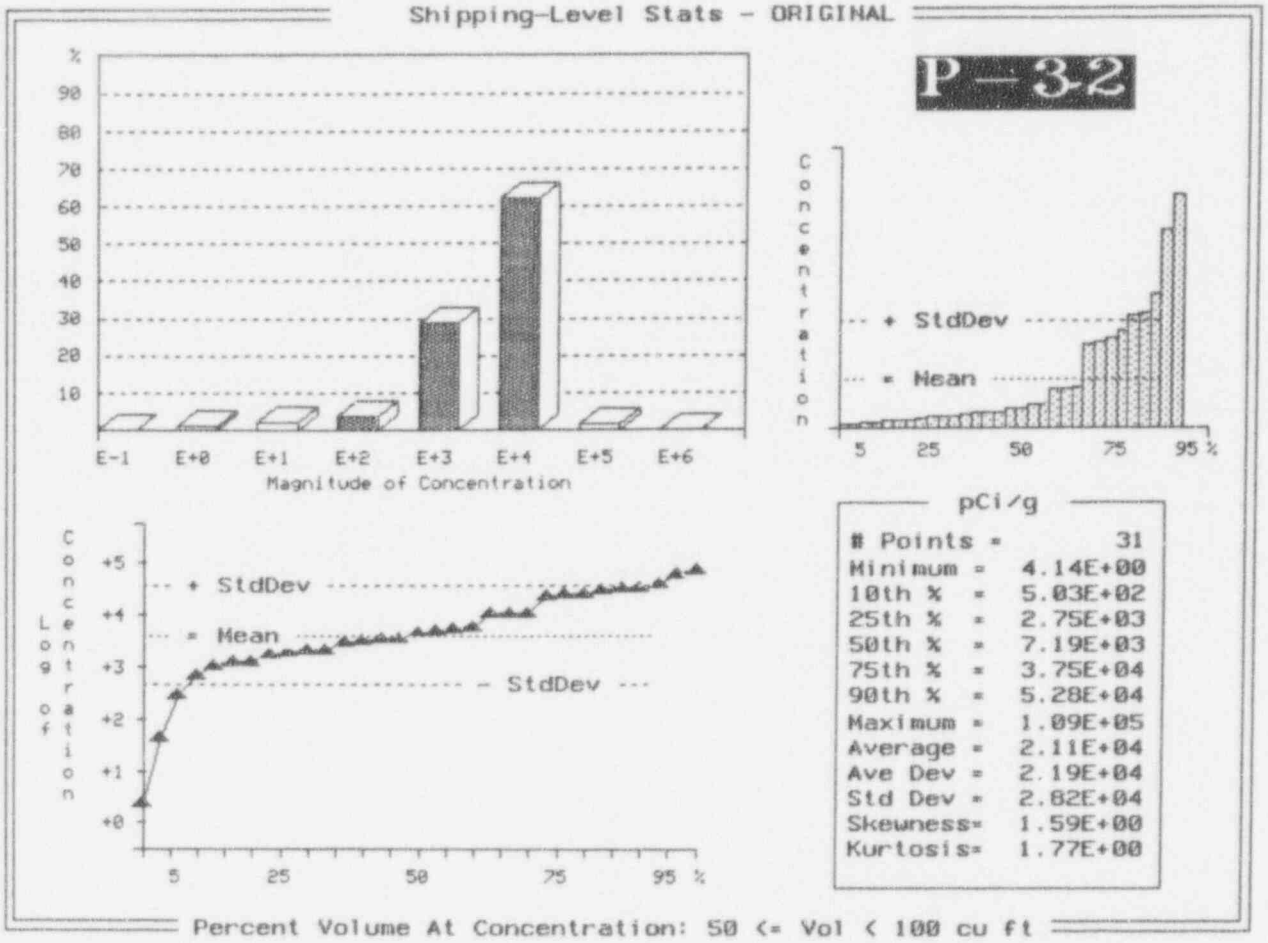
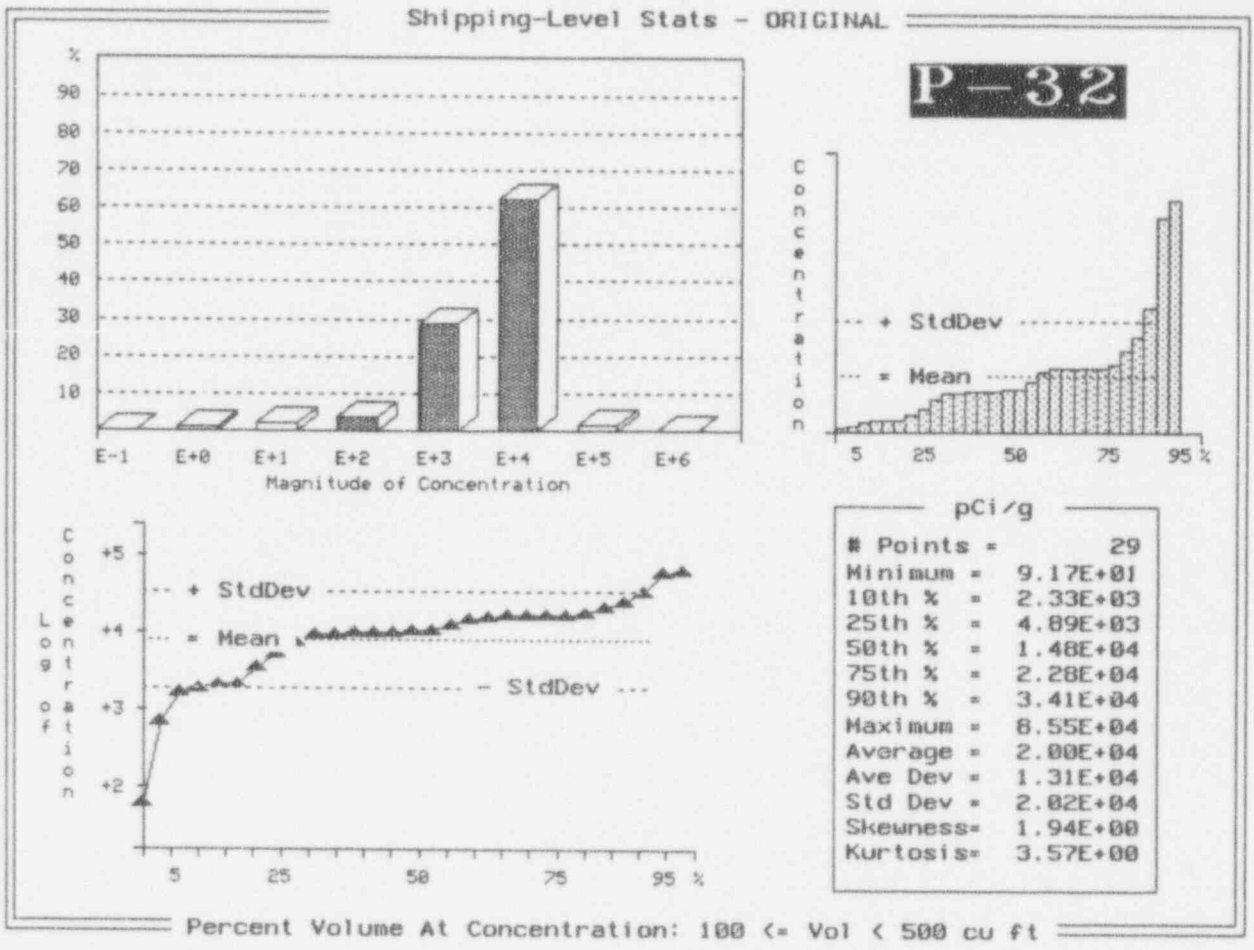


Exhibit F-26 (Continued)



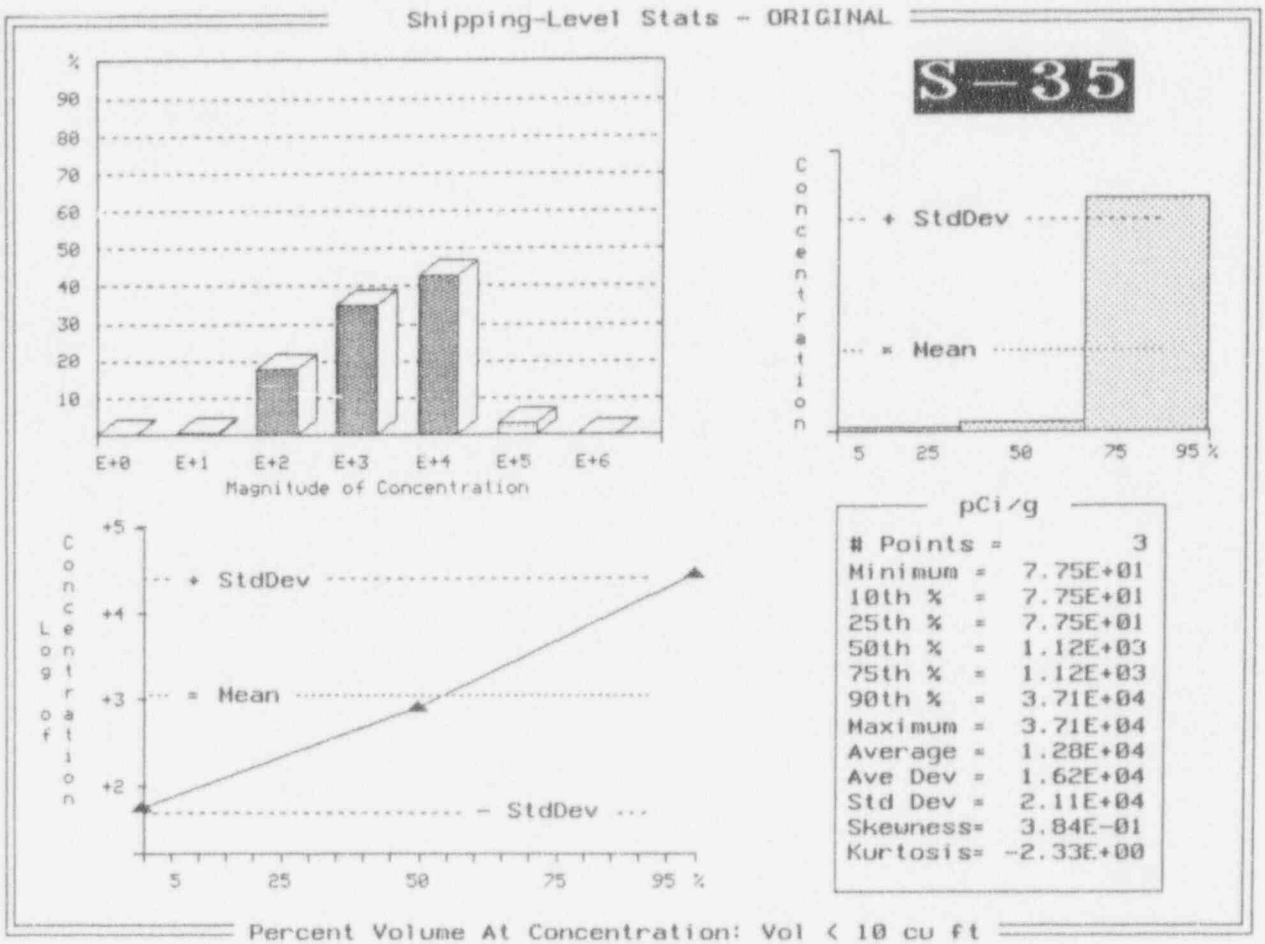

Shipping-Level Stats - ORIGINAL
S-35
%
90
80
70
60
50
40
30
20
10
E+0
E+1
E+2
E+3
E+4
E+5
E+6
Magnitude of Concentration
Concentration
+ StdDev
= Mean
5
25
50
75
95 %
pCi/g
# Points = 3
Minimum = 7.75E+01
10th % = 7.75E+01
25th % = 7.75E+01
50th % = 1.12E+03
75th % = 1.12E+03
90th % = 3.71E+04
Maximum = 3.71E+04
Average = 1.28E+04
Ave Dev = 1.62E+04
Std Dev = 2.11E+04
Skewness= 3.84E-01
Kurtosis= -2.33E+00
Log of Concentration
+5
+4
+3
+2
+ StdDev
= Mean
- StdDev
5
25
50
75
95 %
Percent Volume At Concentration: Vol < 10 cu ft

Exhibit F-26 (Continued)

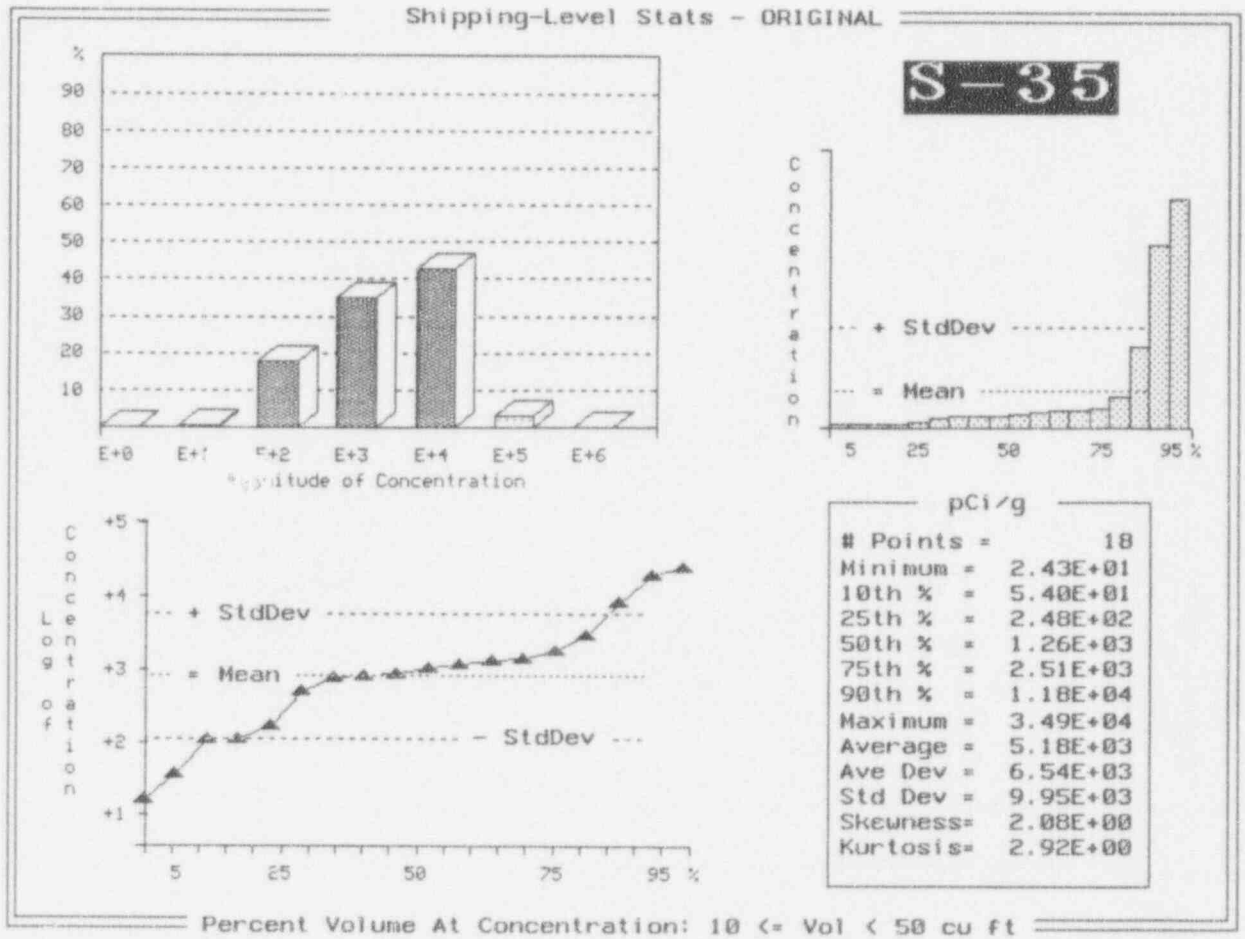


Exhibit F-26 (Continued)

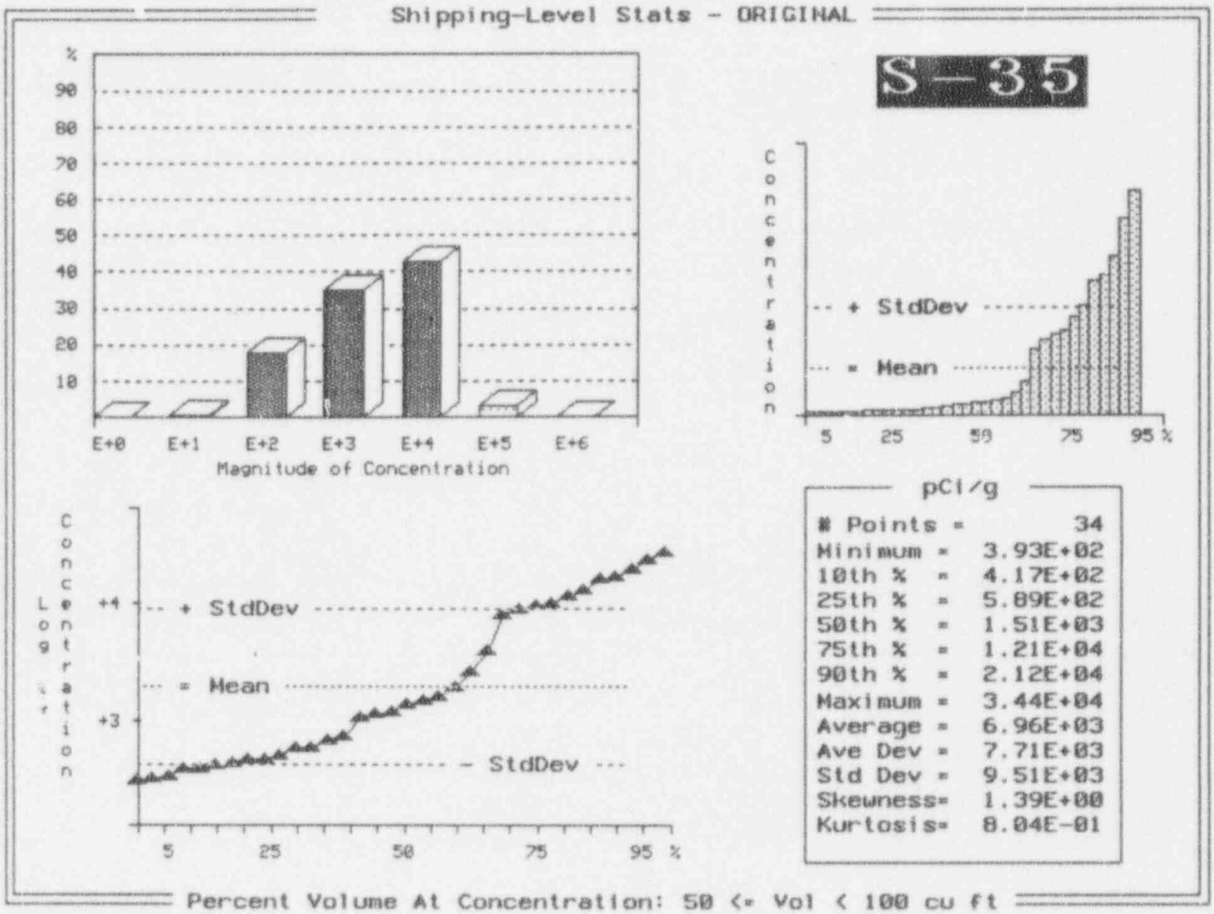


Exhibit F-26 (Continued)

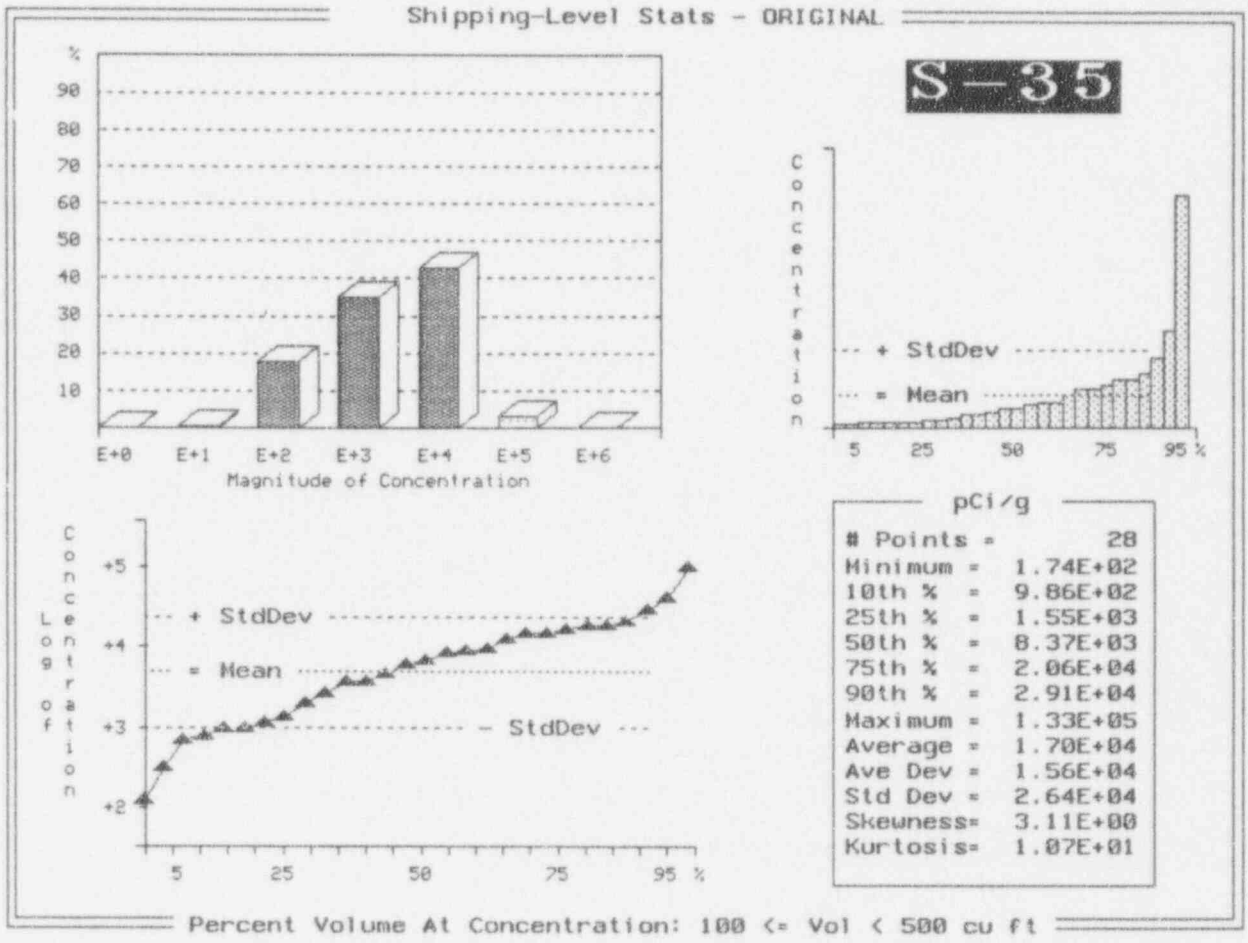


Exhibit F-27
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Northeast
Waste generator class:	Medical
Total number of waste generators:	56
Total associated waste volume (m^3):	461
Total associated waste activity (Ci):	22.8
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	27
Percent of total(%):	48
Total number of shipping records:	121
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	101,600
Total waste volume (m^3):	131
Fractional waste volume (%): (this analysis/total)	28
Total waste activity (Ci):	9.8
Fractional waste activity (%): (this analysis/total)	43

Exhibit F-27 (Continued)

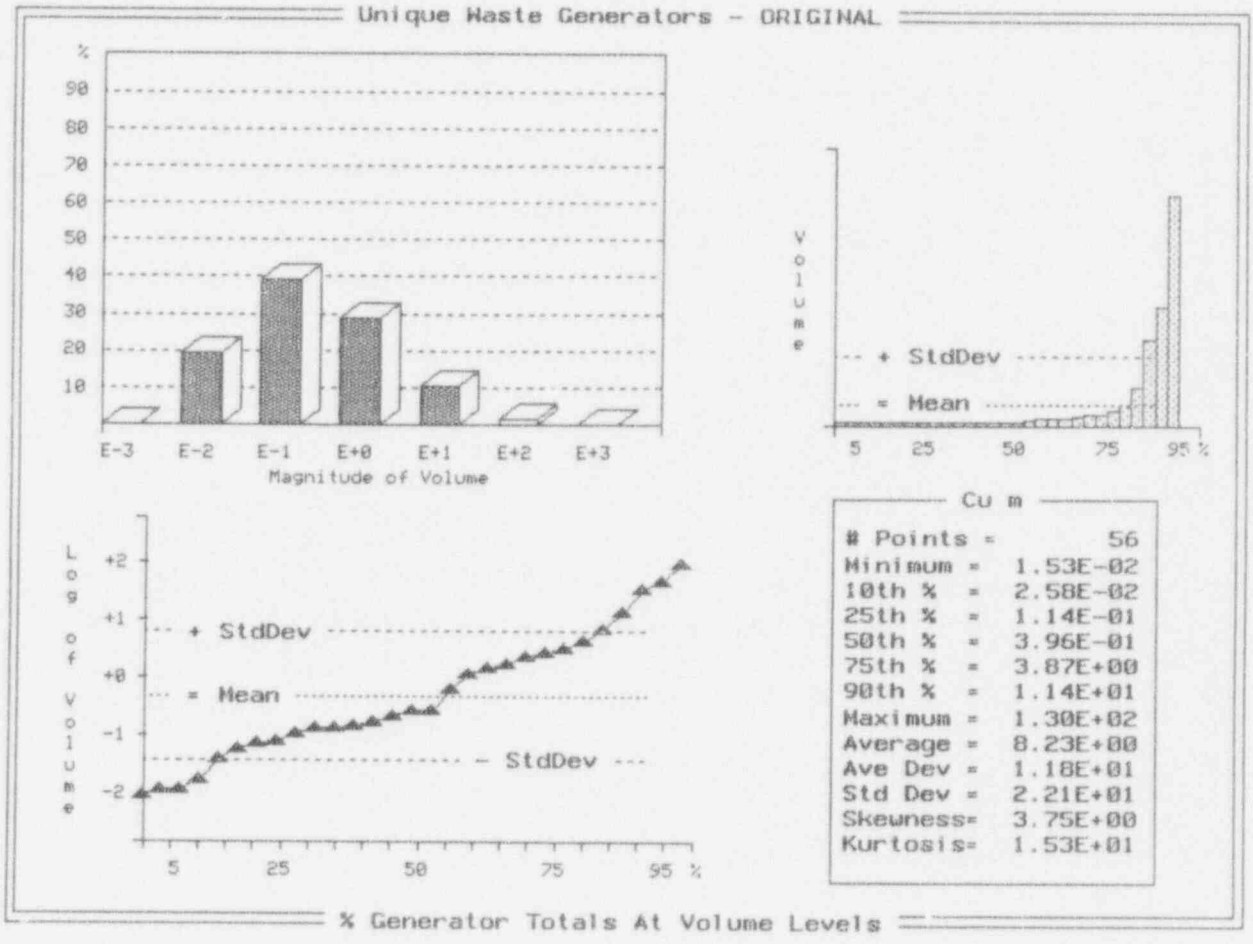


Exhibit F-27 (Continued)

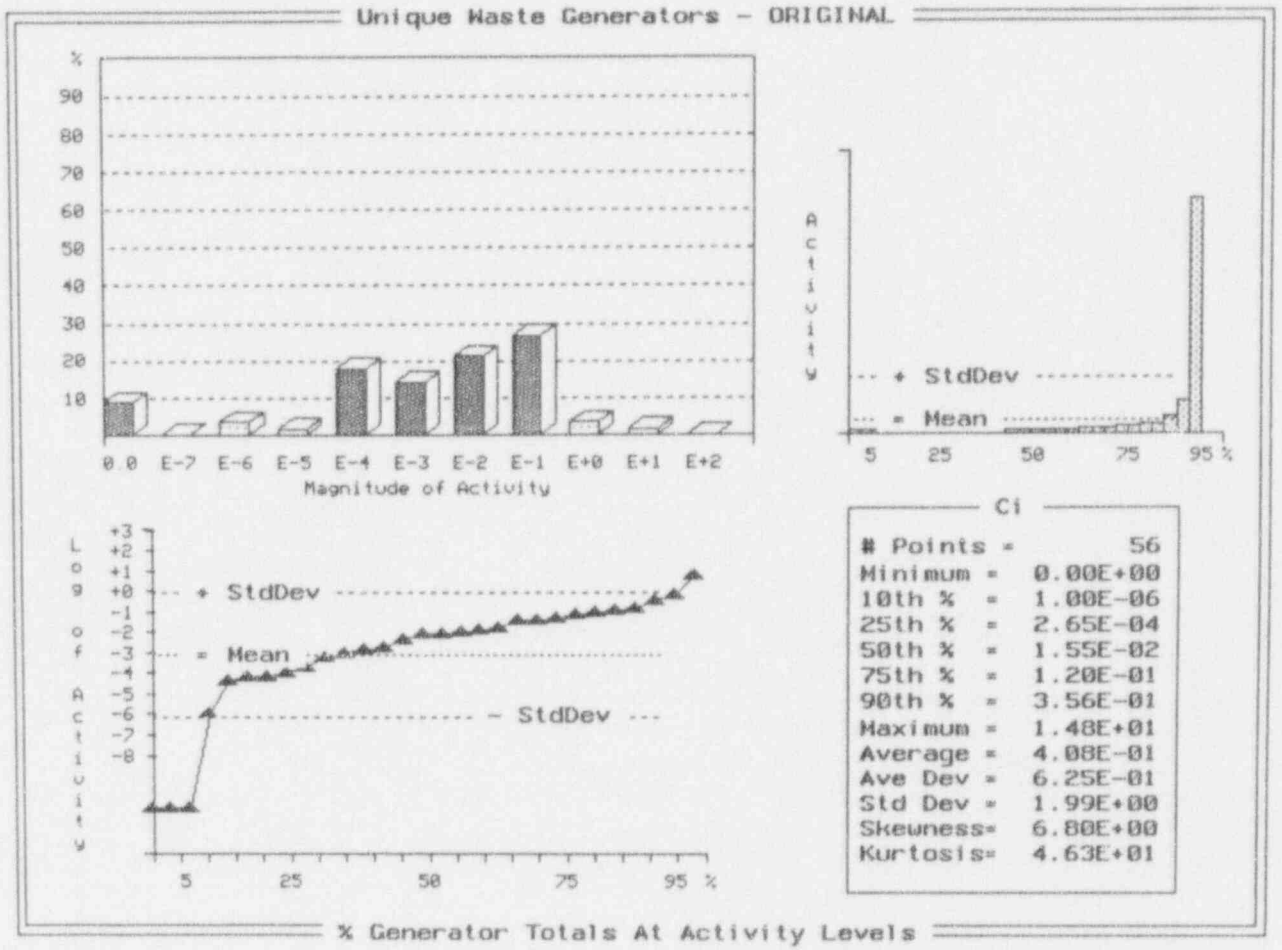


Exhibit F-28
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Northeast
Waste generator class:	Industrial
Total number of waste generators:	202
Total associated waste volume (m^3):	3,774
Total associated waste activity (Ci):	27,700
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	90
Percent of total(%):	44
Total number of shipping records:	376
Number of shipping records with container data:	7
Number of waste containers:	252
Weight of shipments (kg):	1,428,000
Total waste volume (m^3):	1,396
Fractional waste volume (%): (this analysis/total)	37
Total waste activity (Ci):	271
Fractional waste activity (%): (this analysis/total)	0.9

Exhibit F-28 (Continued)

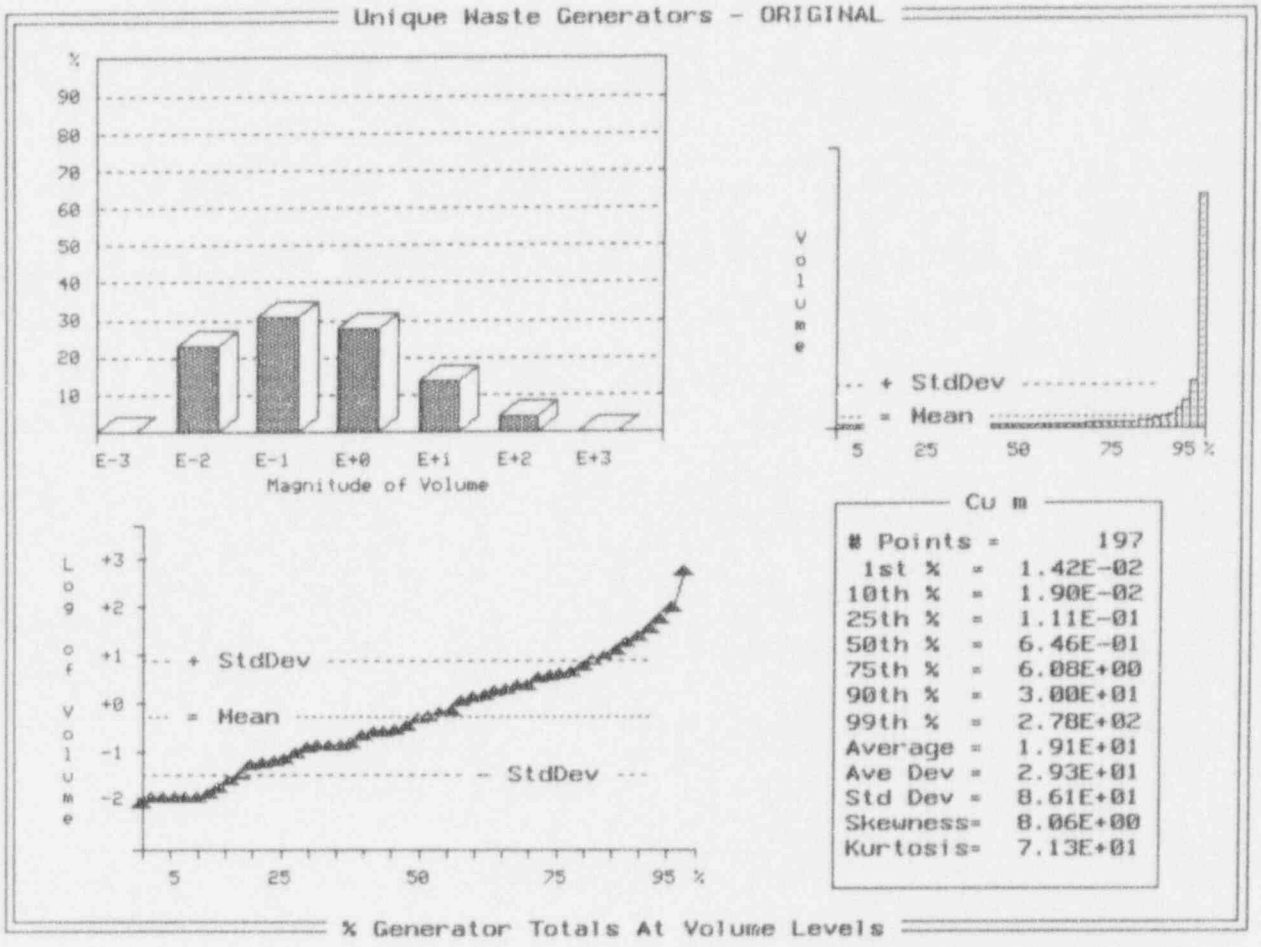


Exhibit F-28 (Continued)

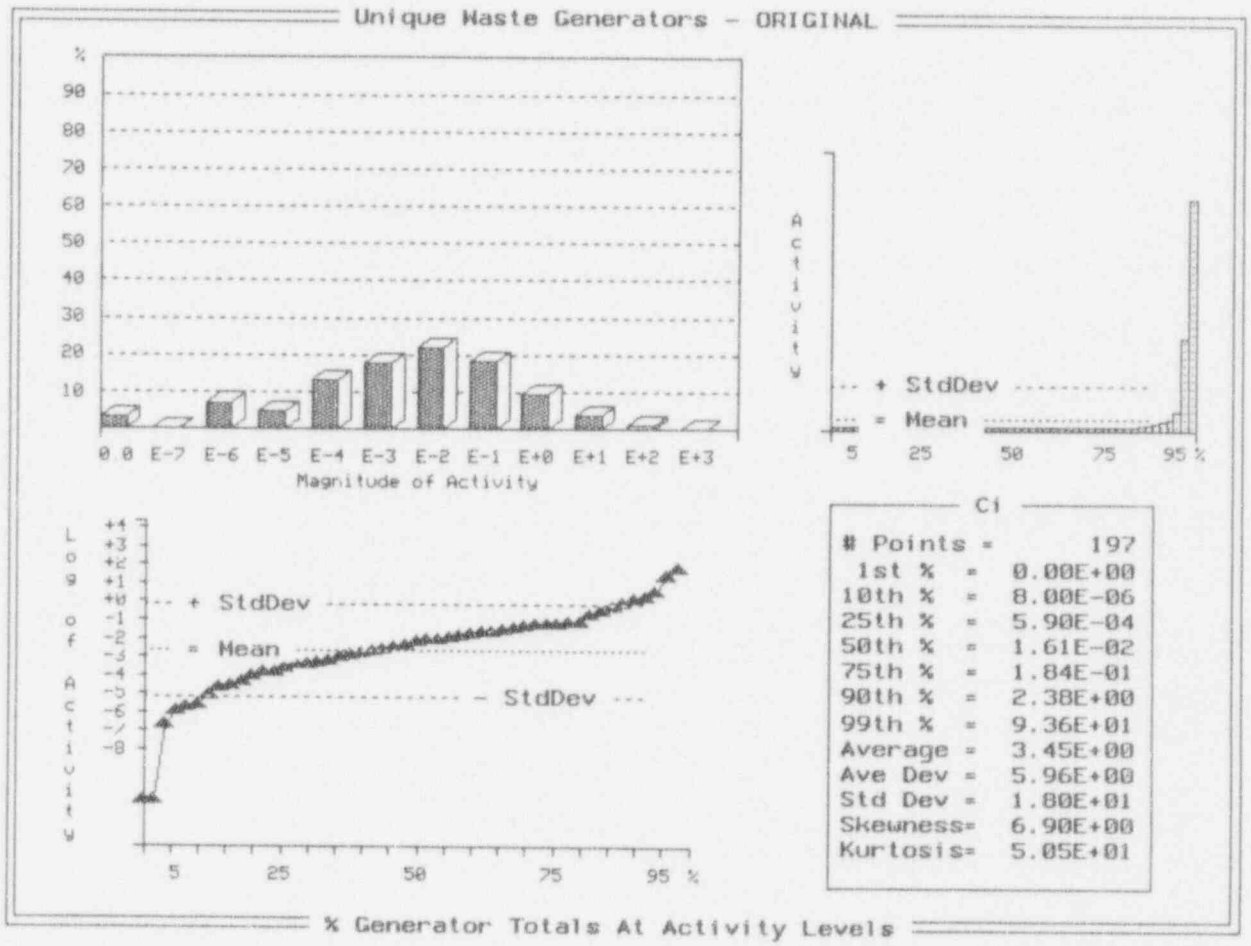


Exhibit F-29
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Appalachian
Waste generator class:	Government
Total number of waste generators:	31
Total associated waste volume (m^3):	1,941
Total associated waste activity (Ci):	17,430
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	5
Percent of total(%):	16
Total number of shipping records:	41
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	287,900
Total waste volume (m^3):	411
Fractional waste volume (%): (this analysis/total)	21
Total waste activity (Ci):	22.3
Fractional waste activity (%): (this analysis/total)	0.1

Exhibit F-29 (Continued)

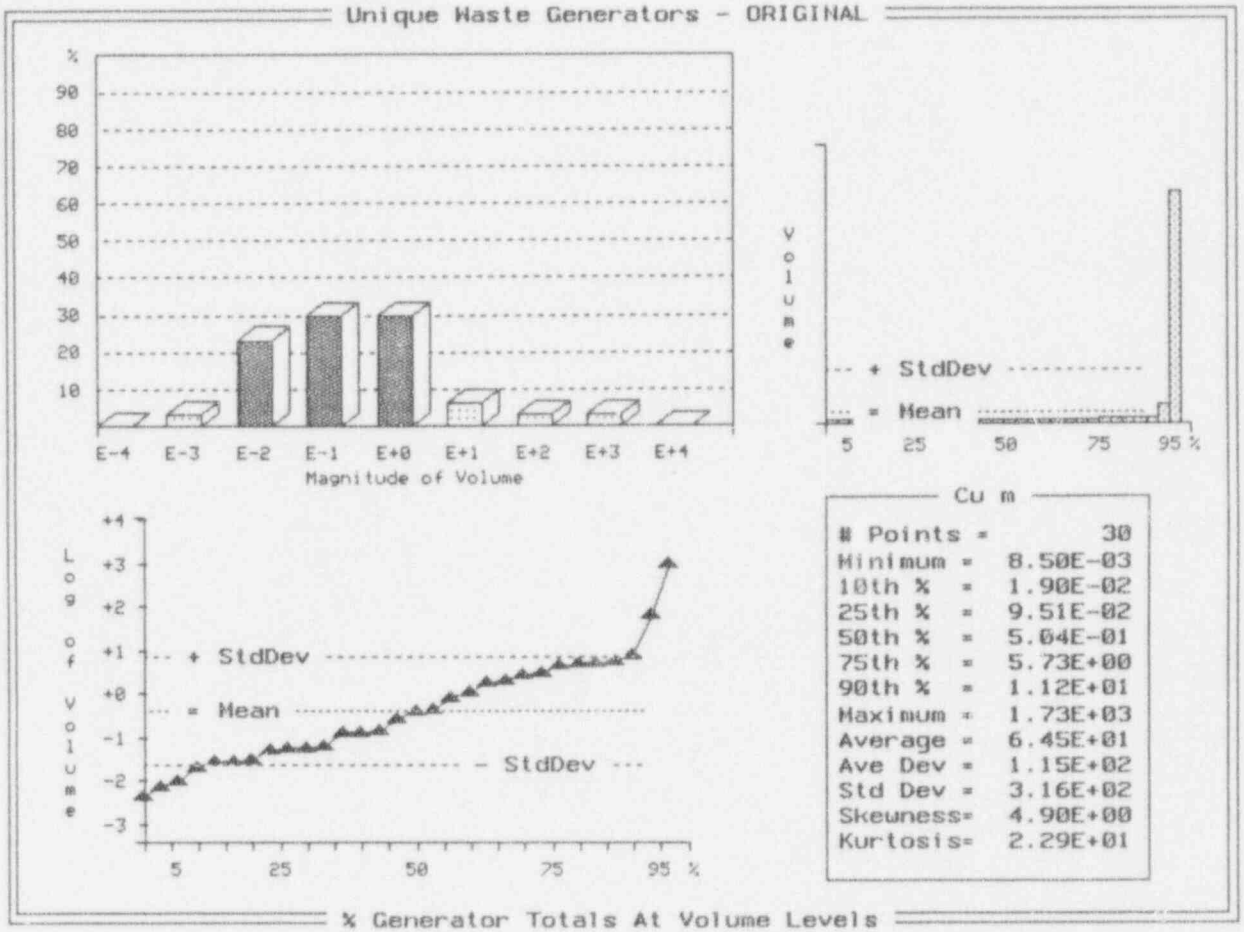
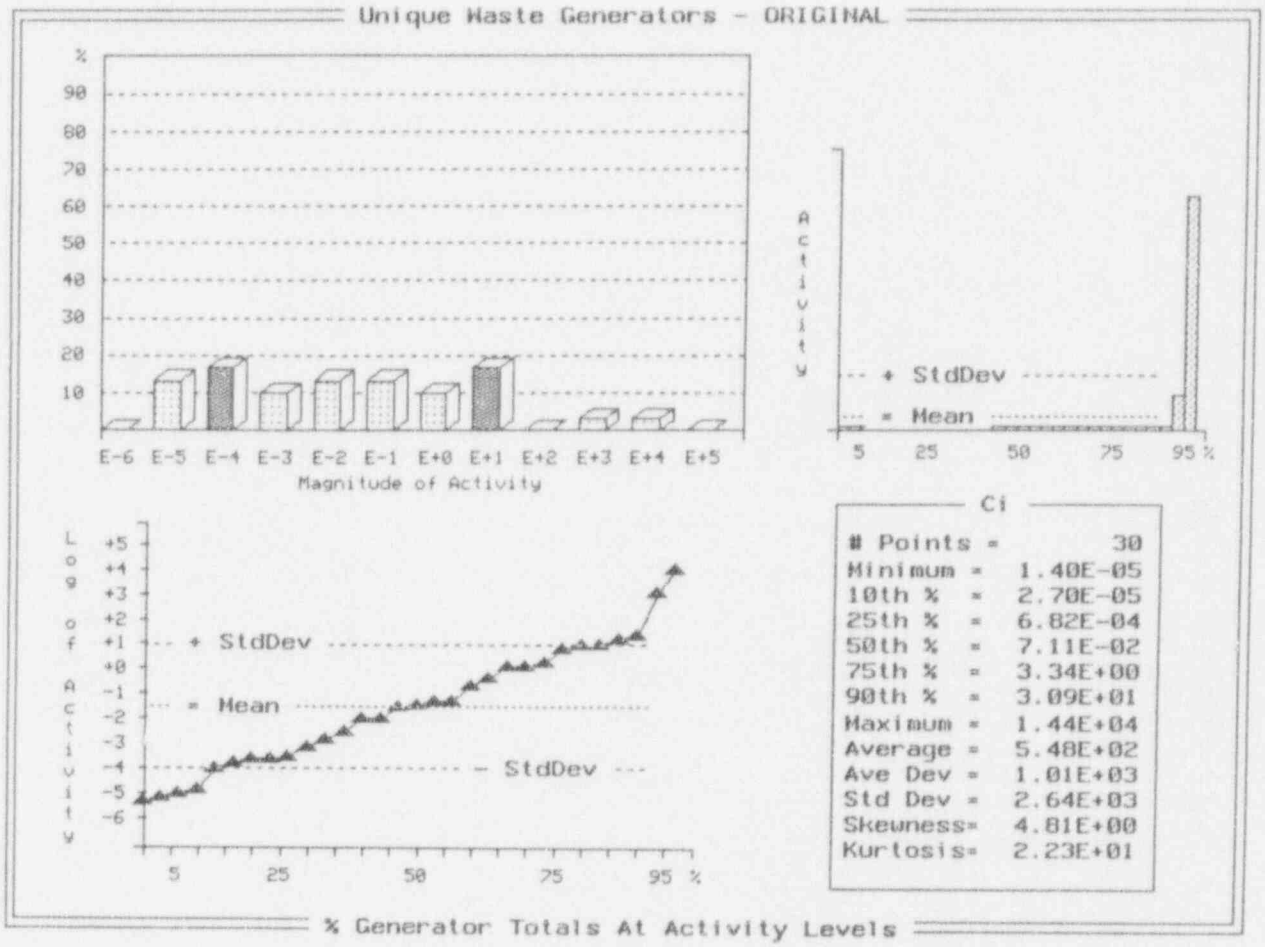


Exhibit F-29 (Continued)



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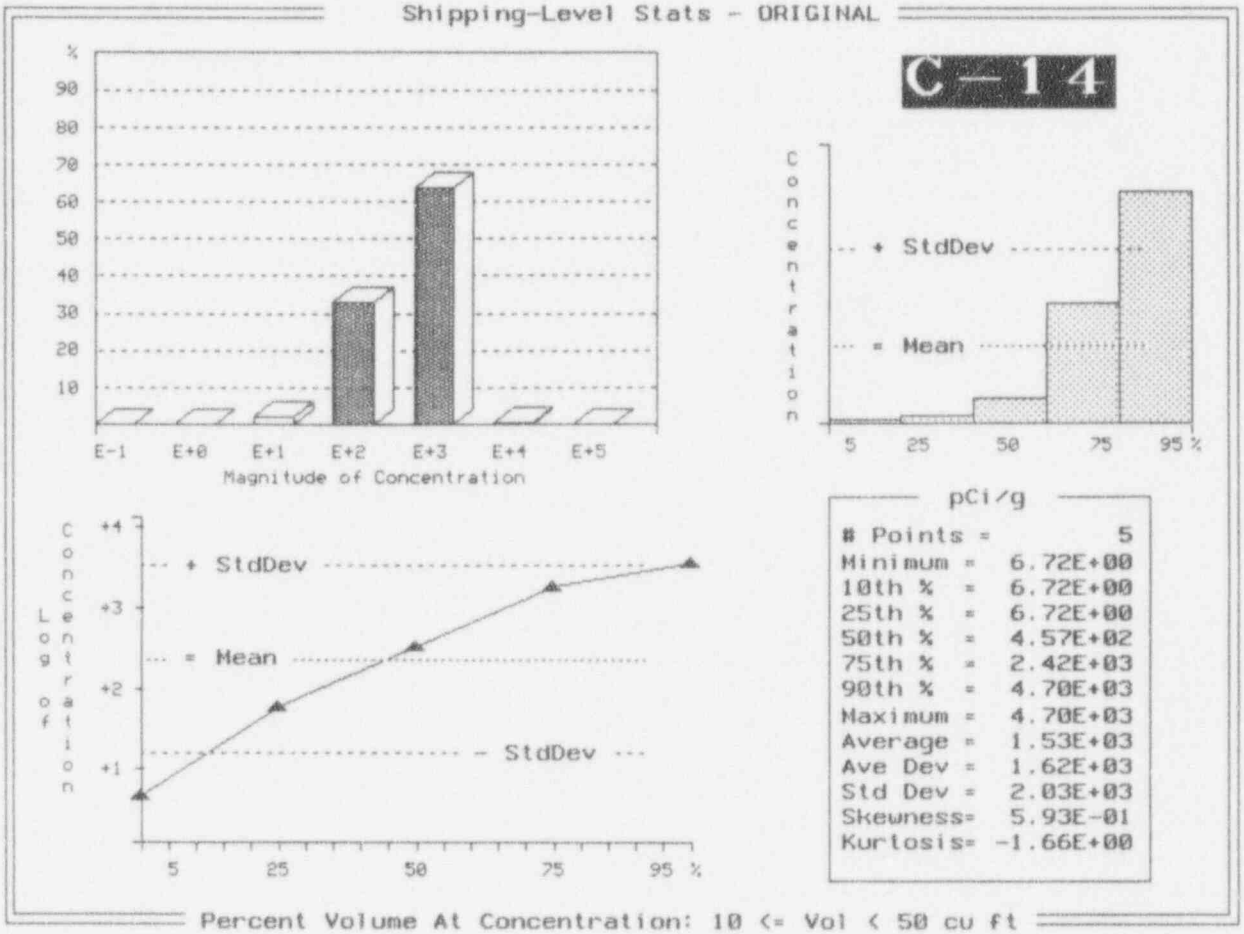
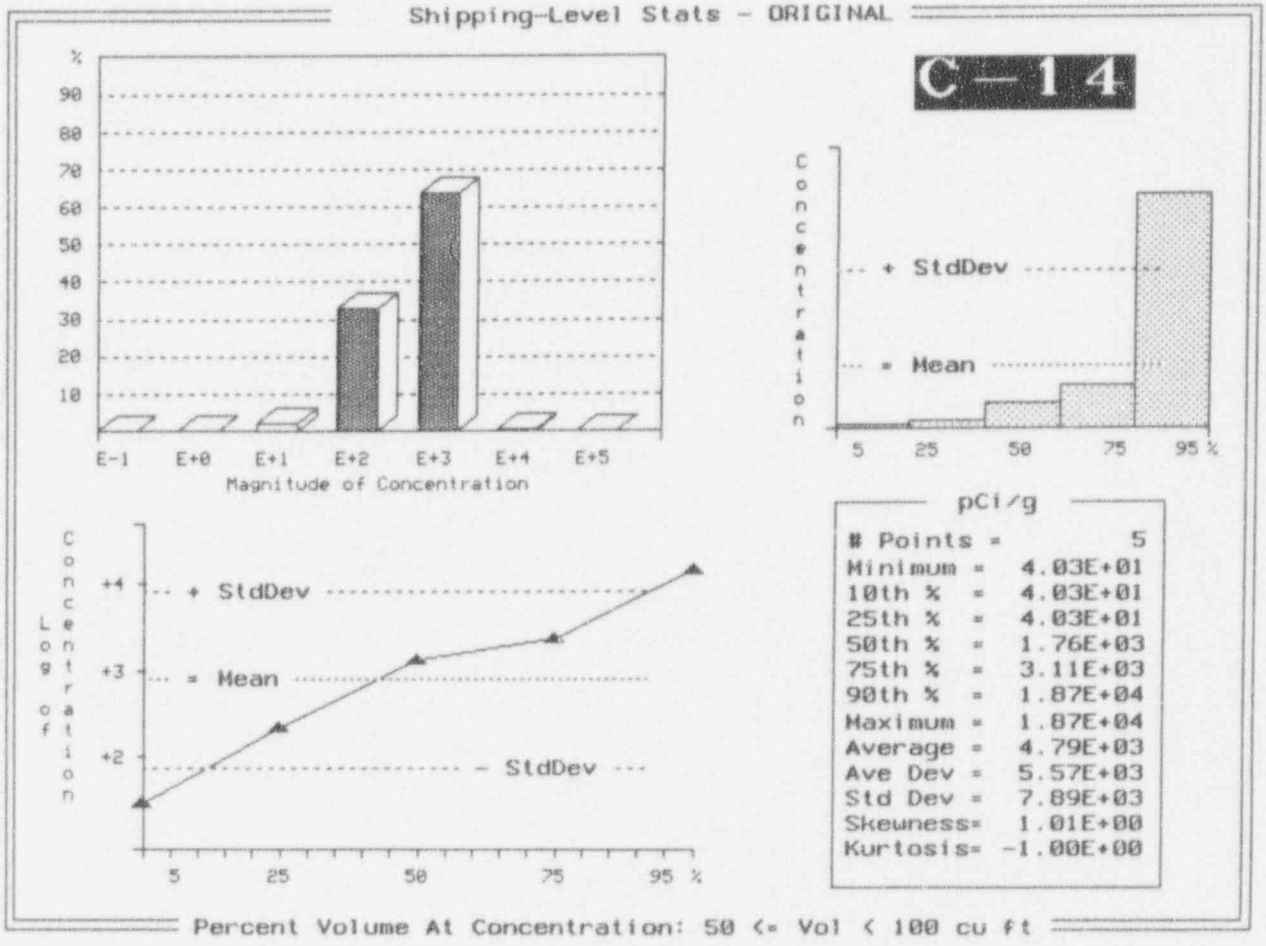


Exhibit F-29 (Continued)



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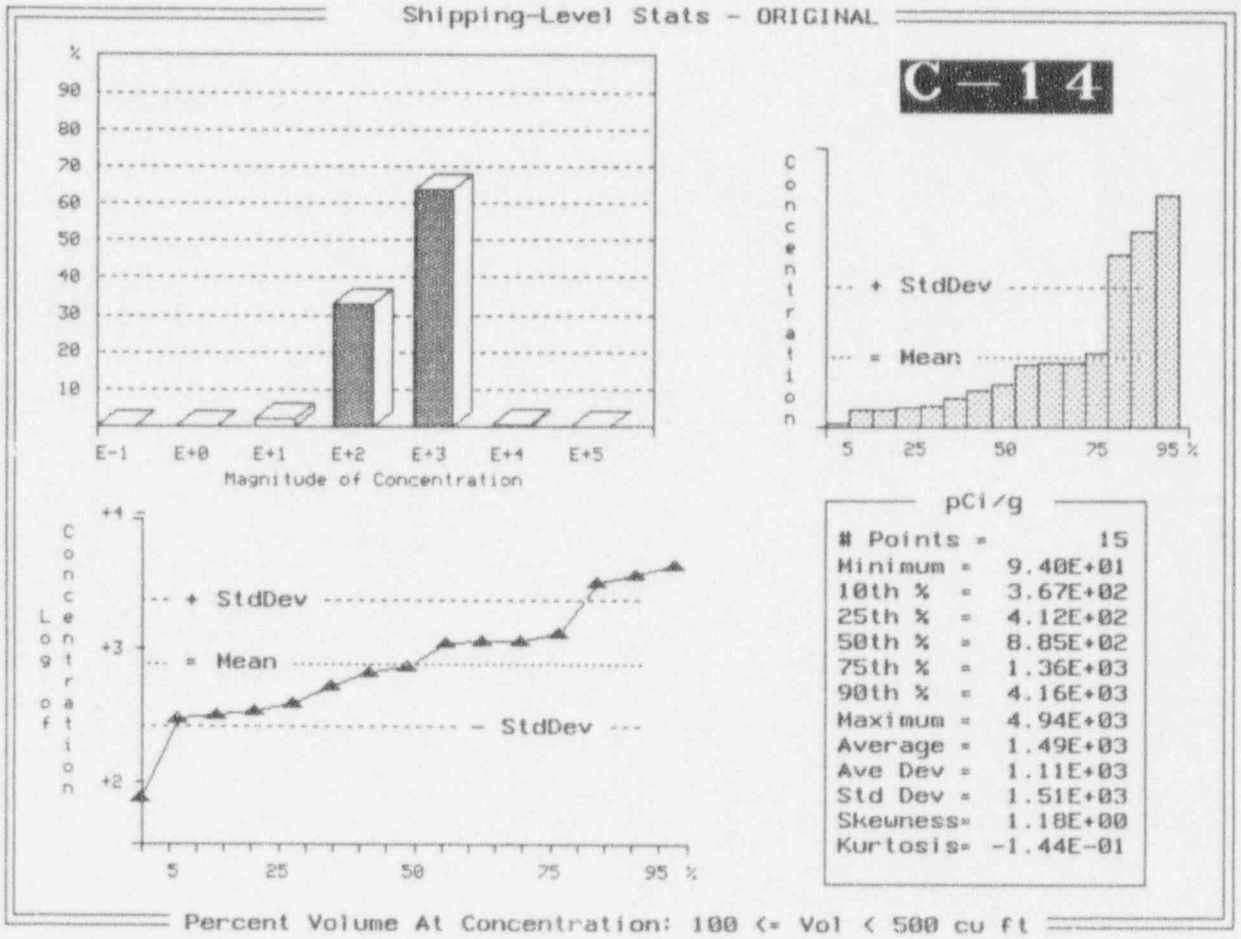

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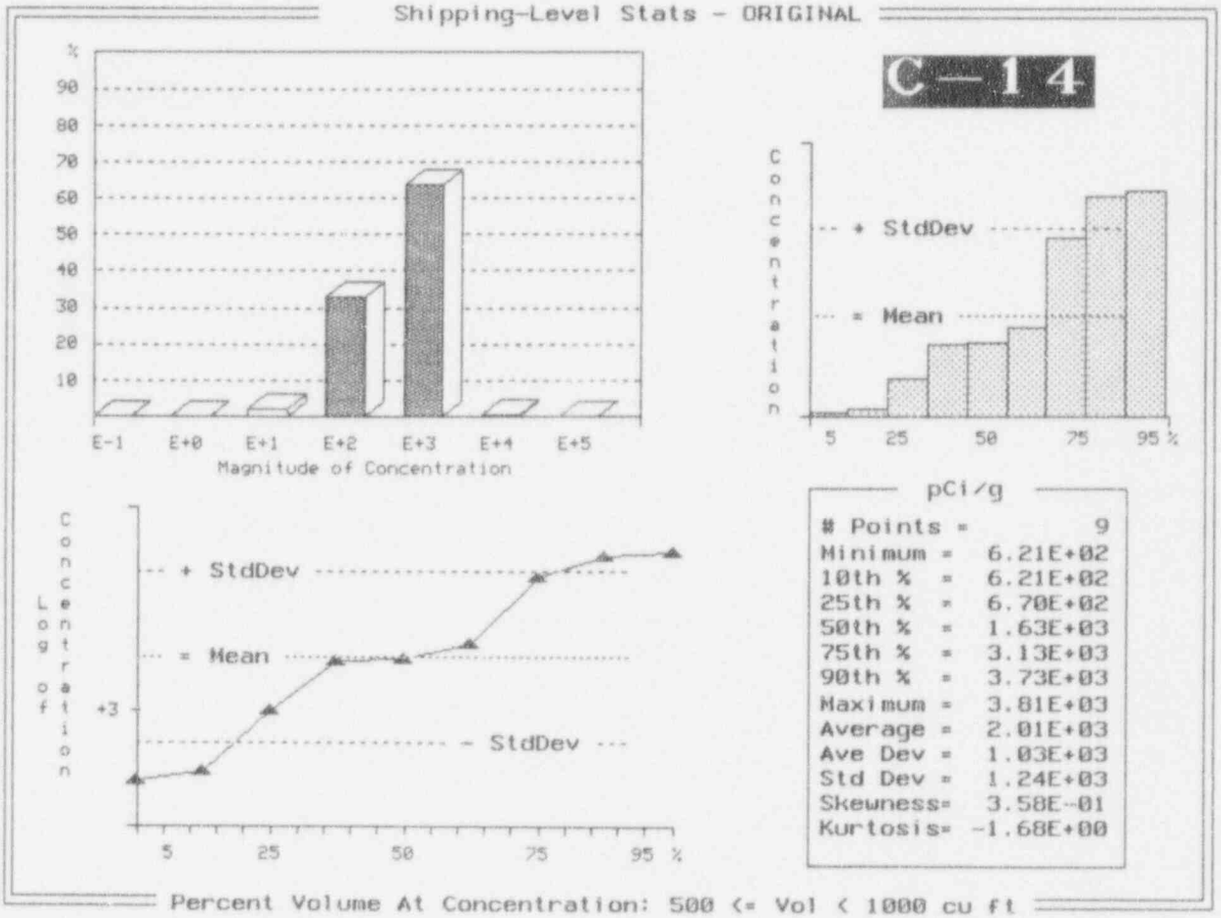
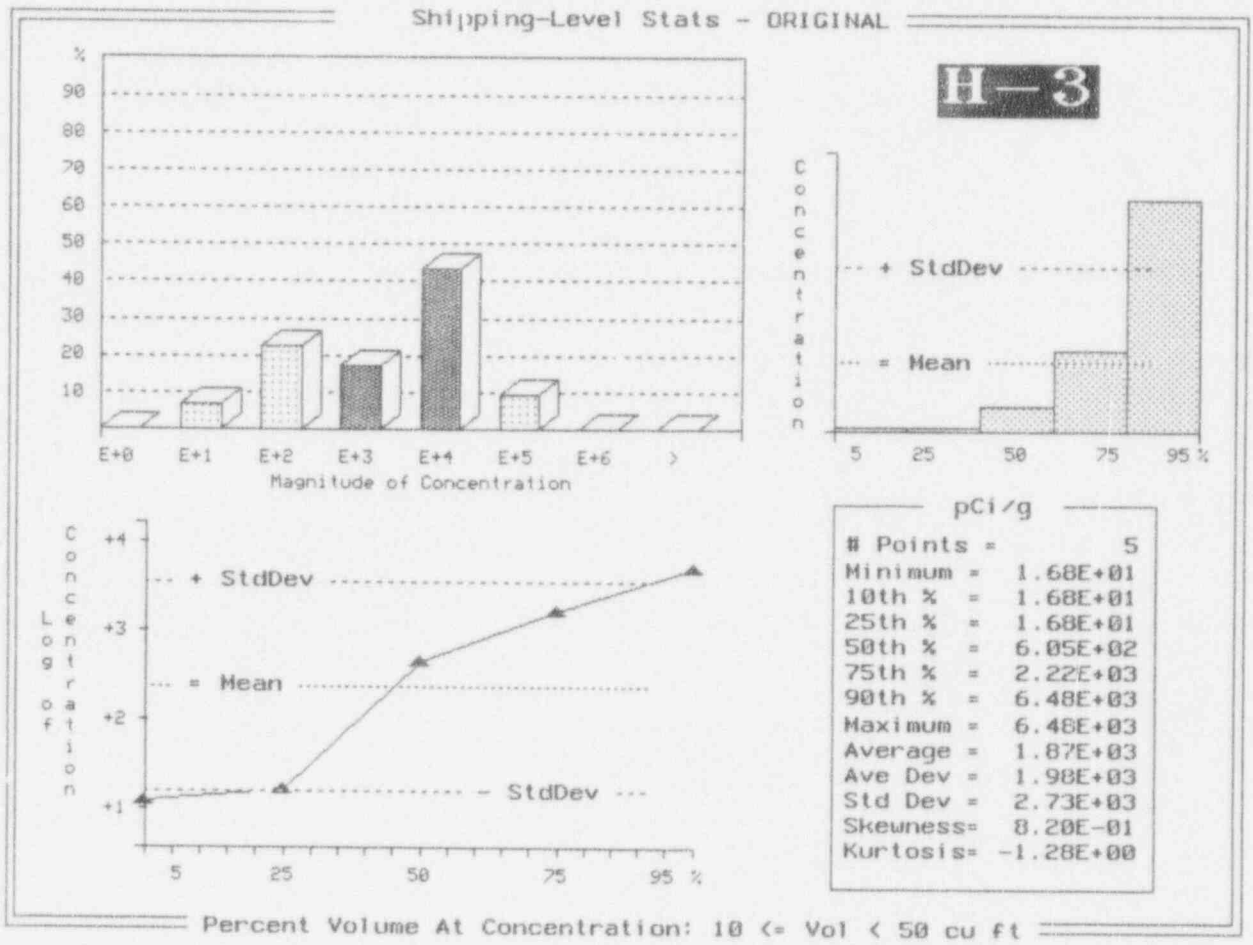


Exhibit F-29 (Continued)



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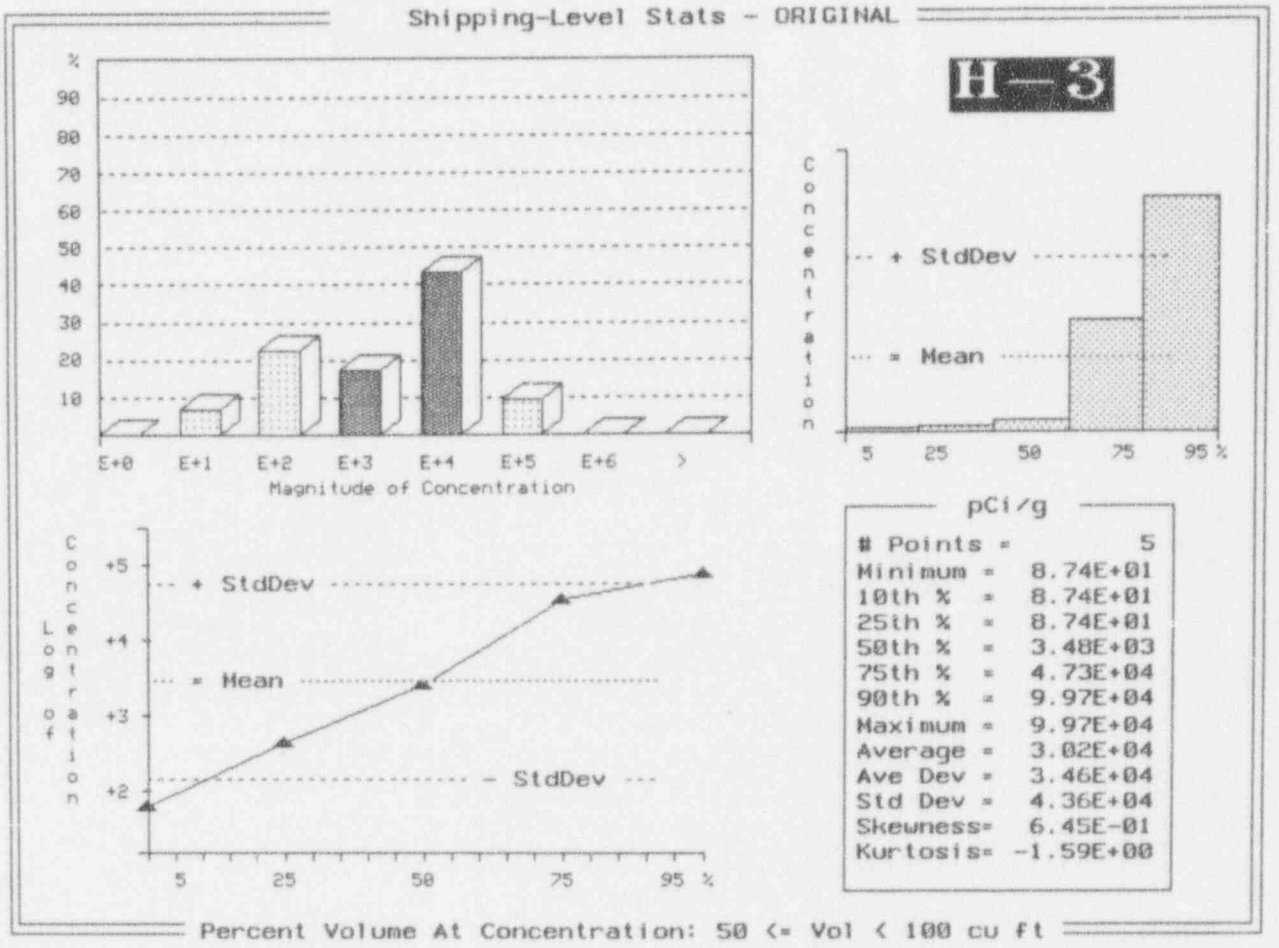

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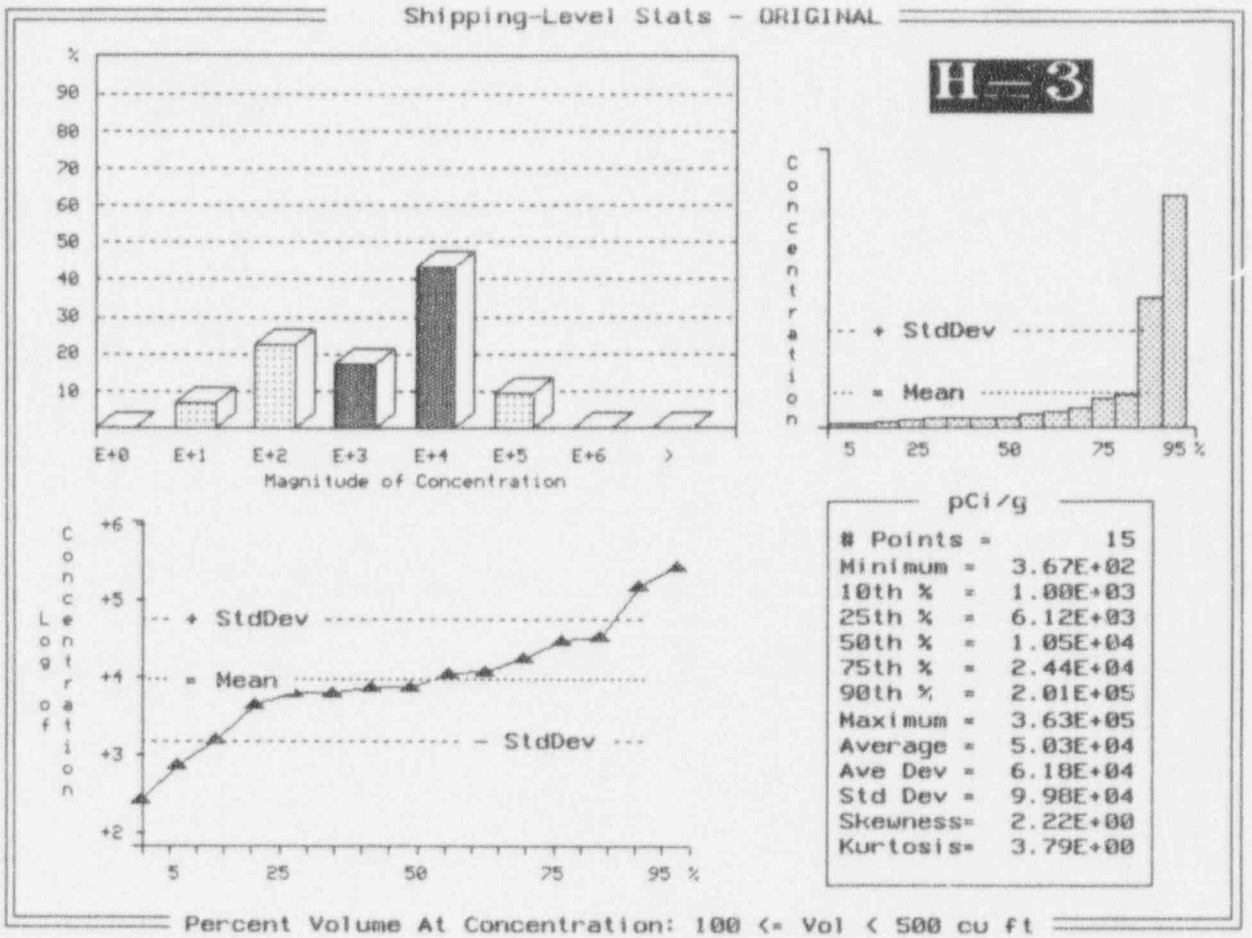

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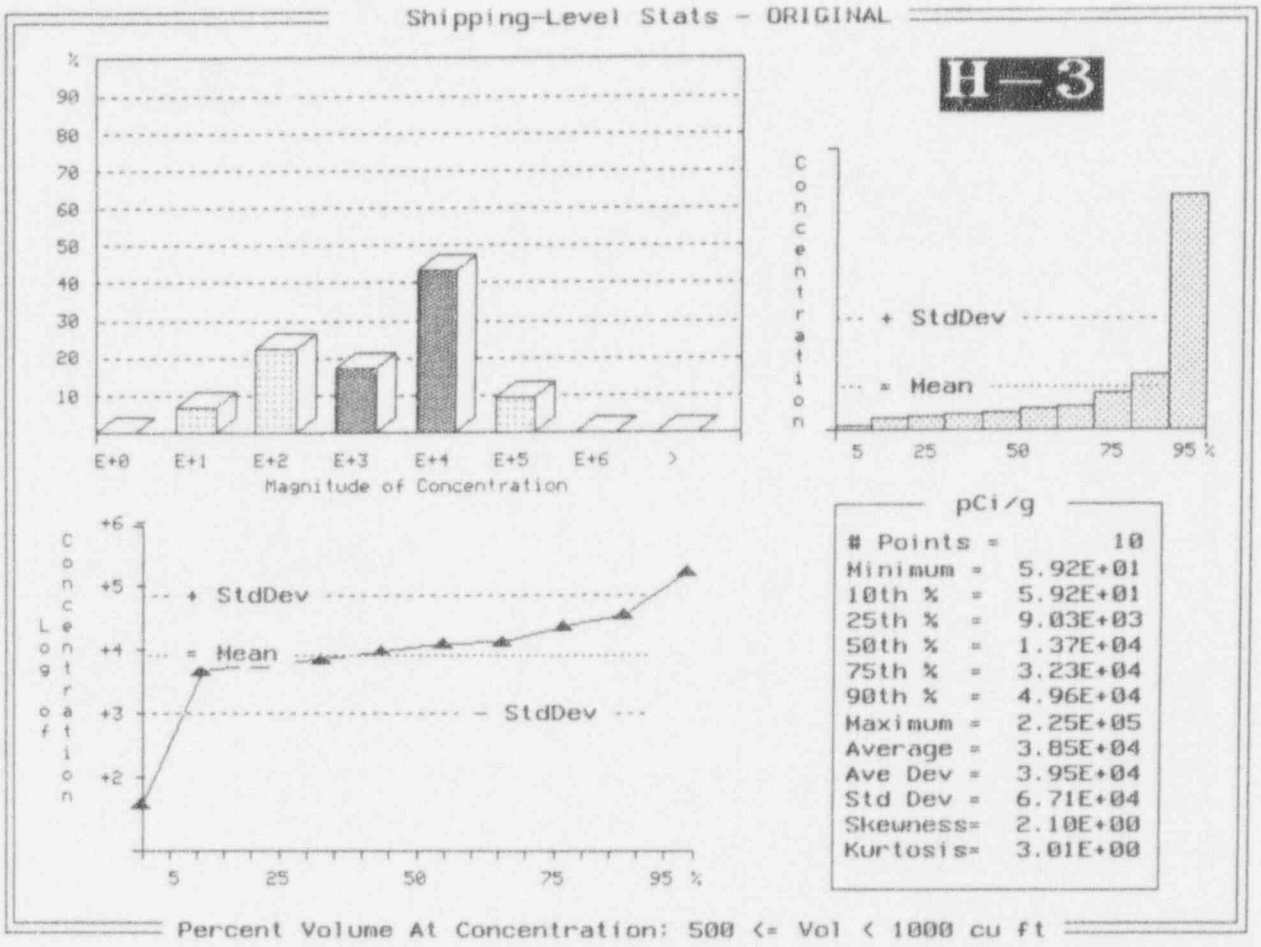

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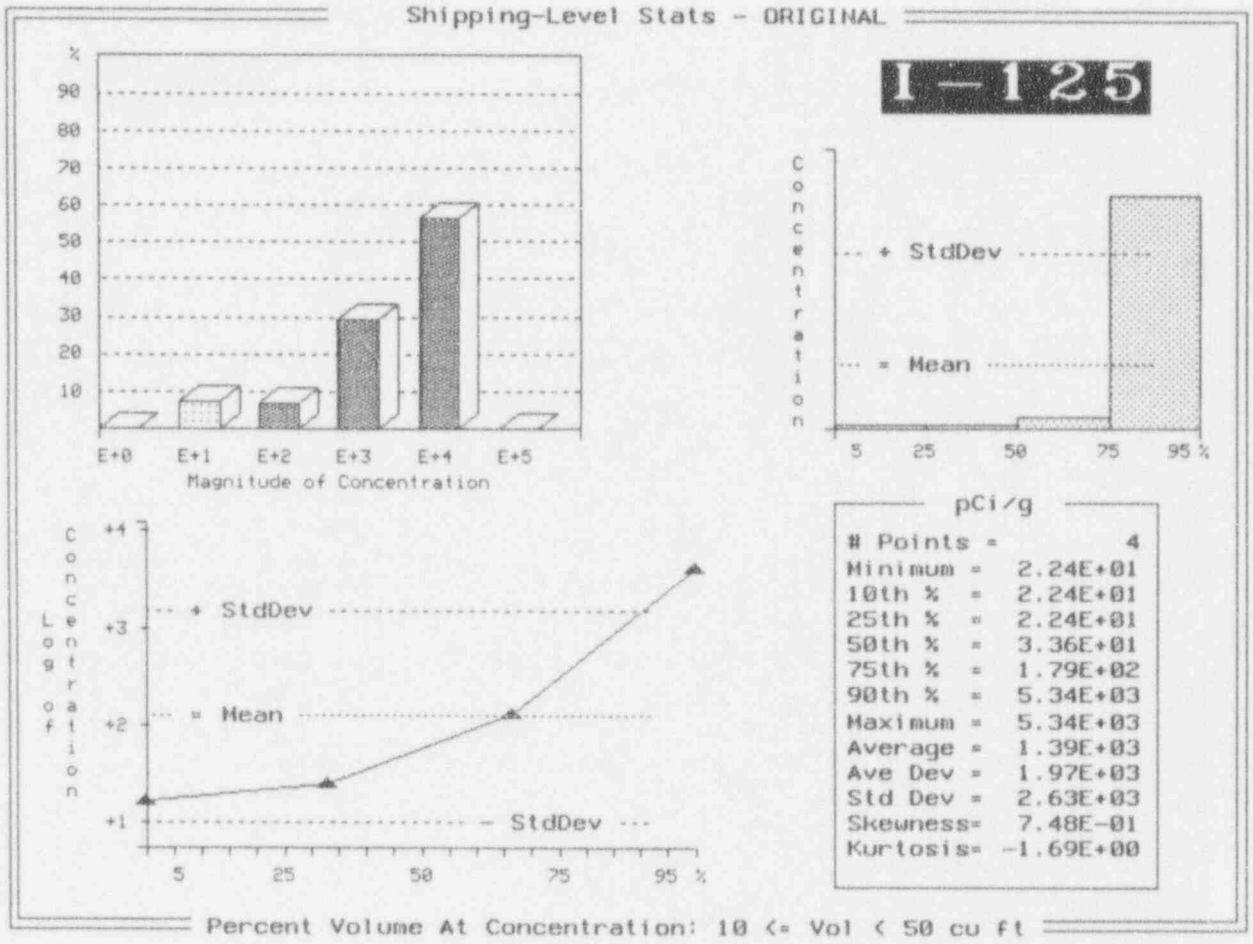

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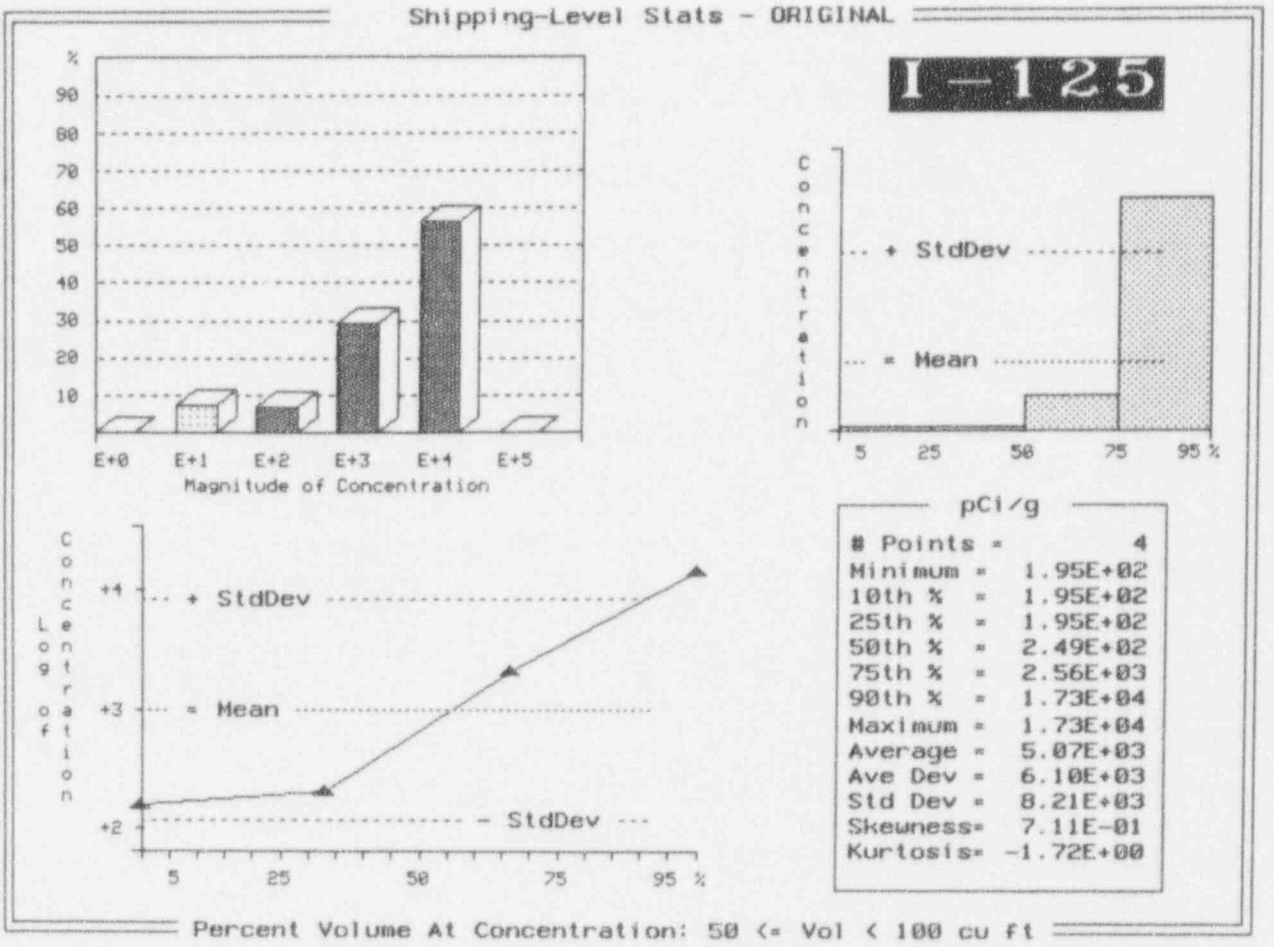

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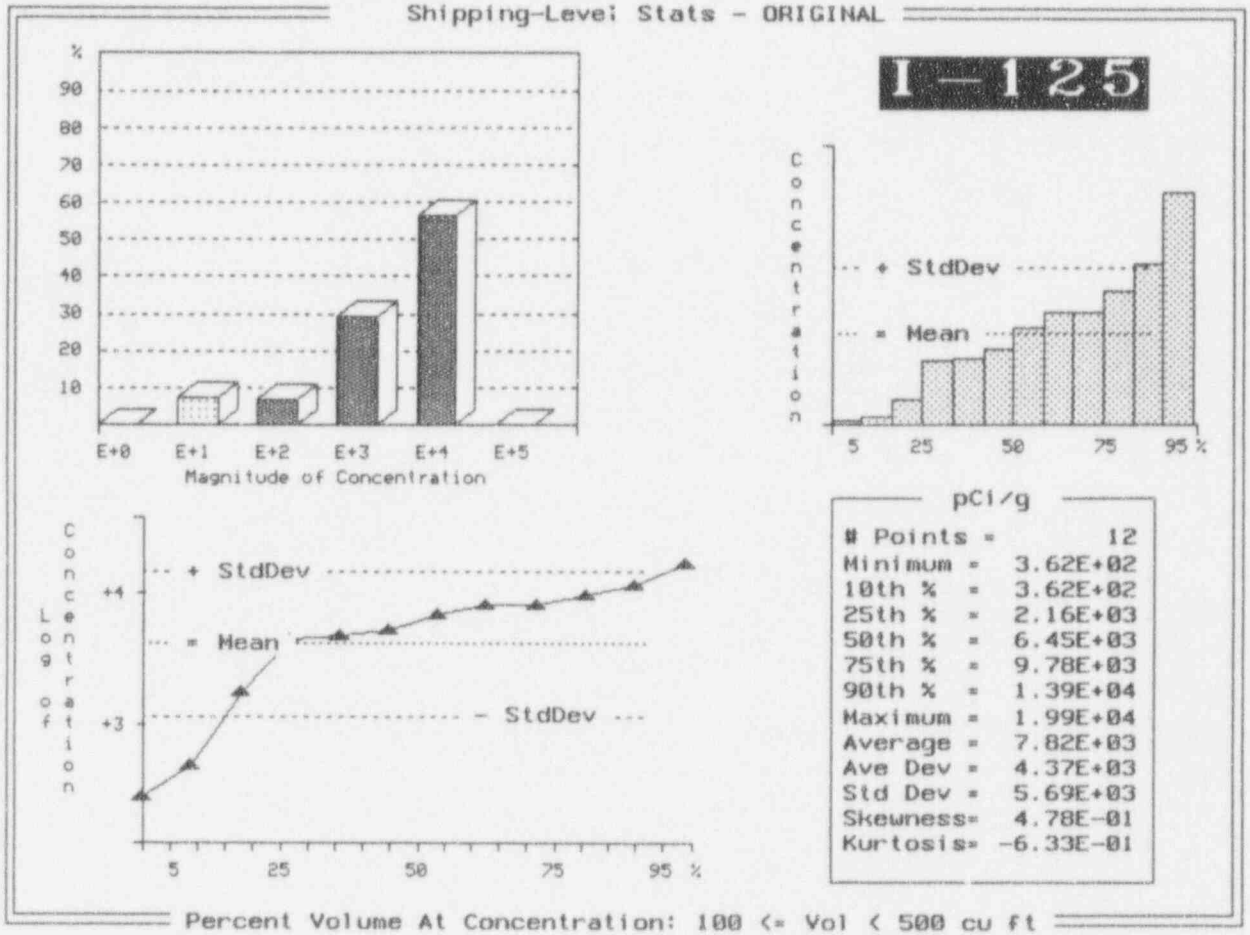

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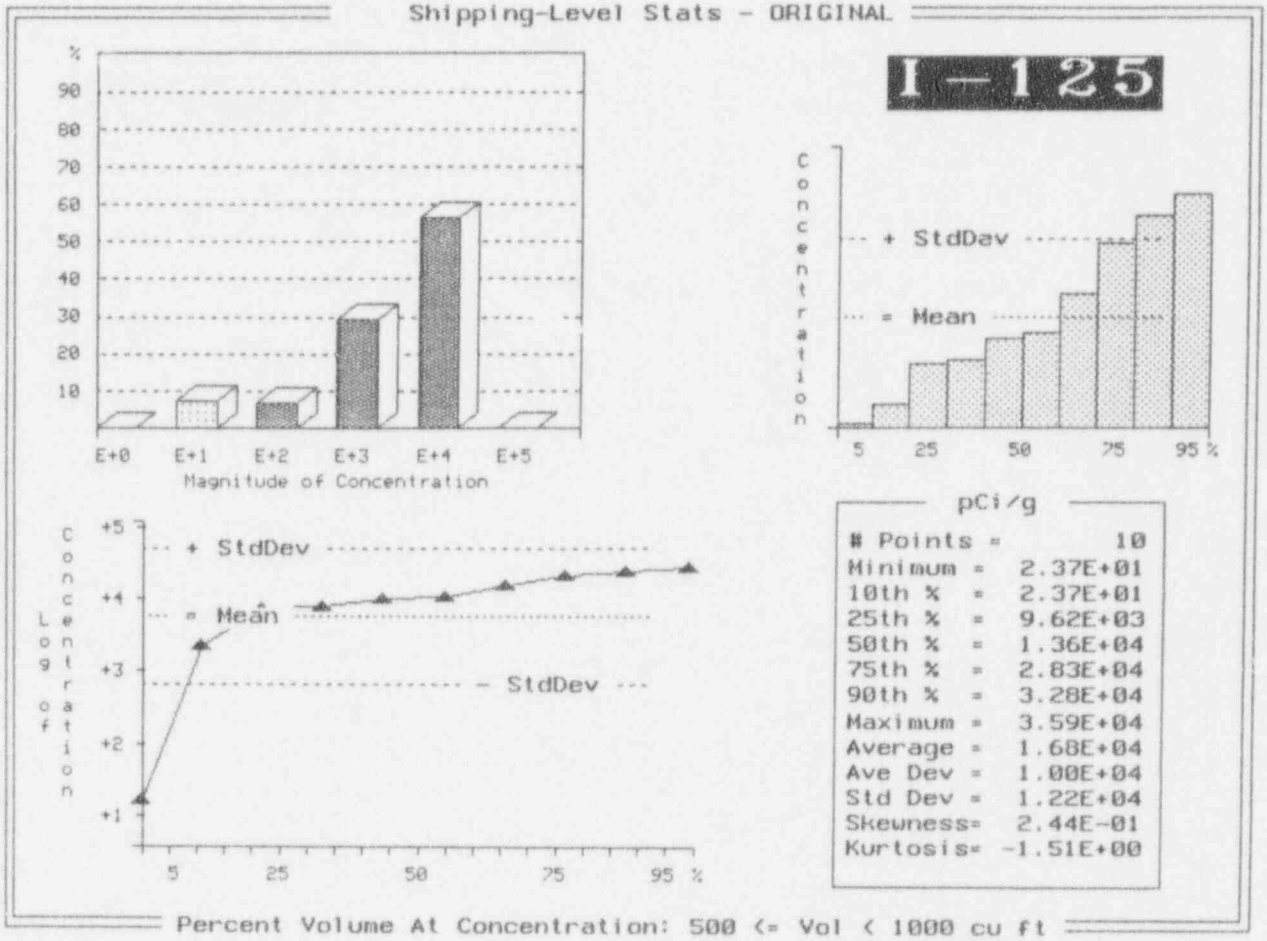


Exhibit F-30
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Appalachian
Waste generator class:	Academic
Total number of waste generators:	46
Total associated waste volume (m^3):	382
Total associated waste activity (Ci):	34.5
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	10
Percent of total(%):	22
Total number of shipping records:	31
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	31,760
Total waste volume (m^3):	56
Fractional waste volume (%): (this analysis/total)	15
Total waste activity (Ci):	4.0
Fractional waste activity (%): (this analysis/total)	12

Exhibit F-30 (Continued)

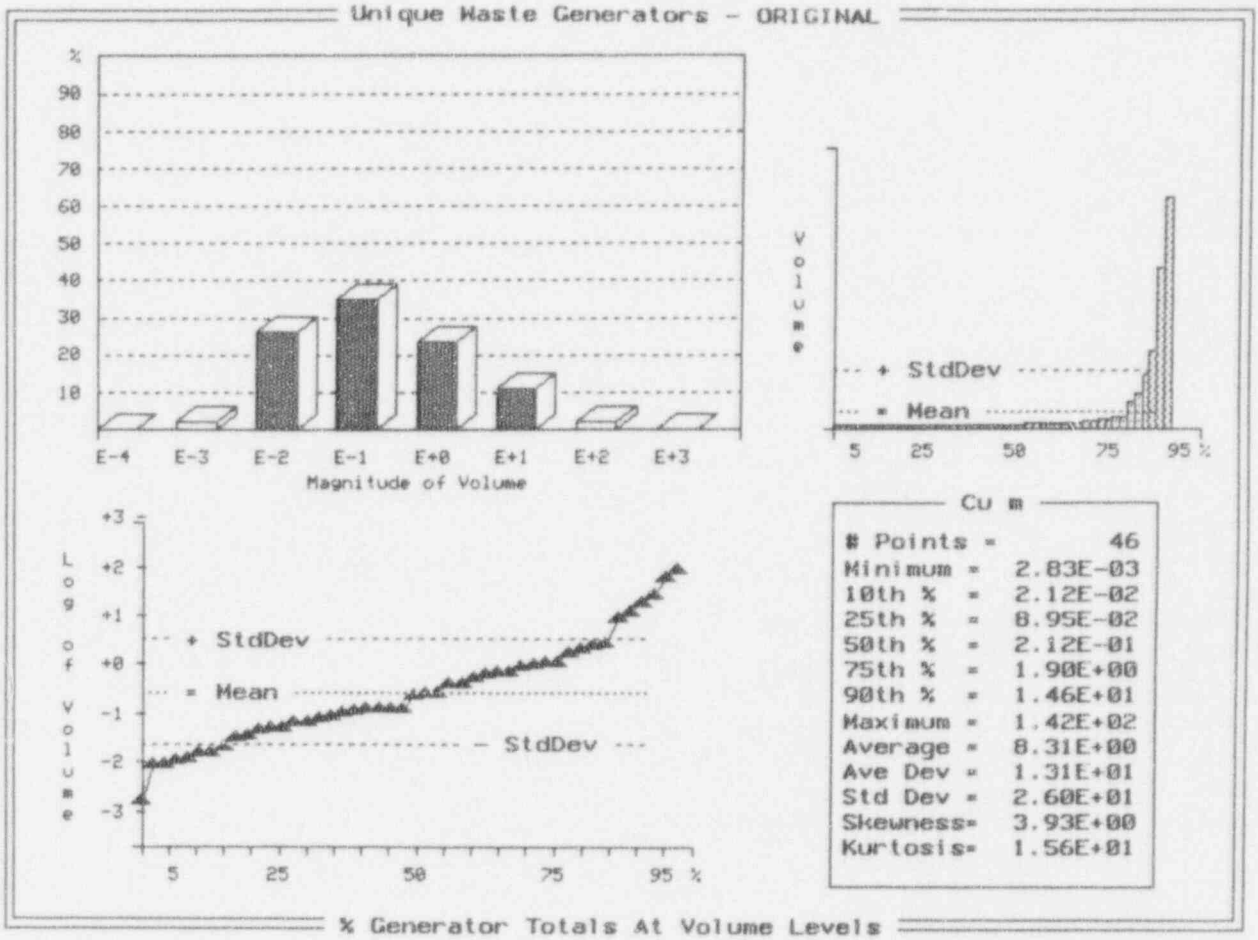


Exhibit F-30 (Continued)

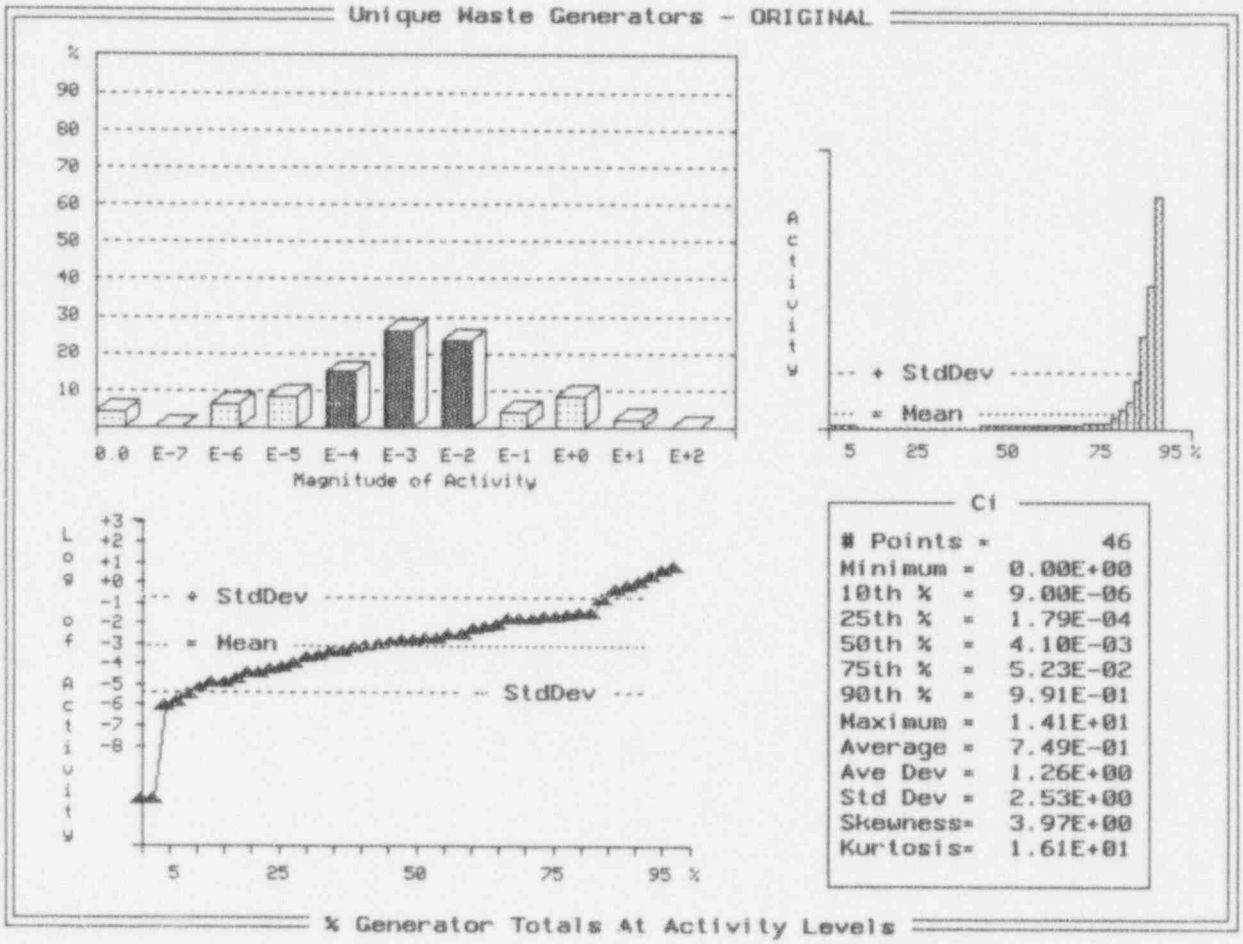


Exhibit F-31
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Appalachian
Waste generator class:	Medical
Total number of waste generators:	72
Total associated waste volume (m^3):	360
Total associated waste activity (Ci):	15.6
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	22
Percent of total(%):	31
Total number of shipping records:	193
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	95,210
Total waste volume (m^3):	123
Fractional waste volume (%): (this analysis/total)	34
Total waste activity (Ci):	3.0
Fractional waste activity (%): (this analysis/total)	19

Exhibit F-31 (Continued)

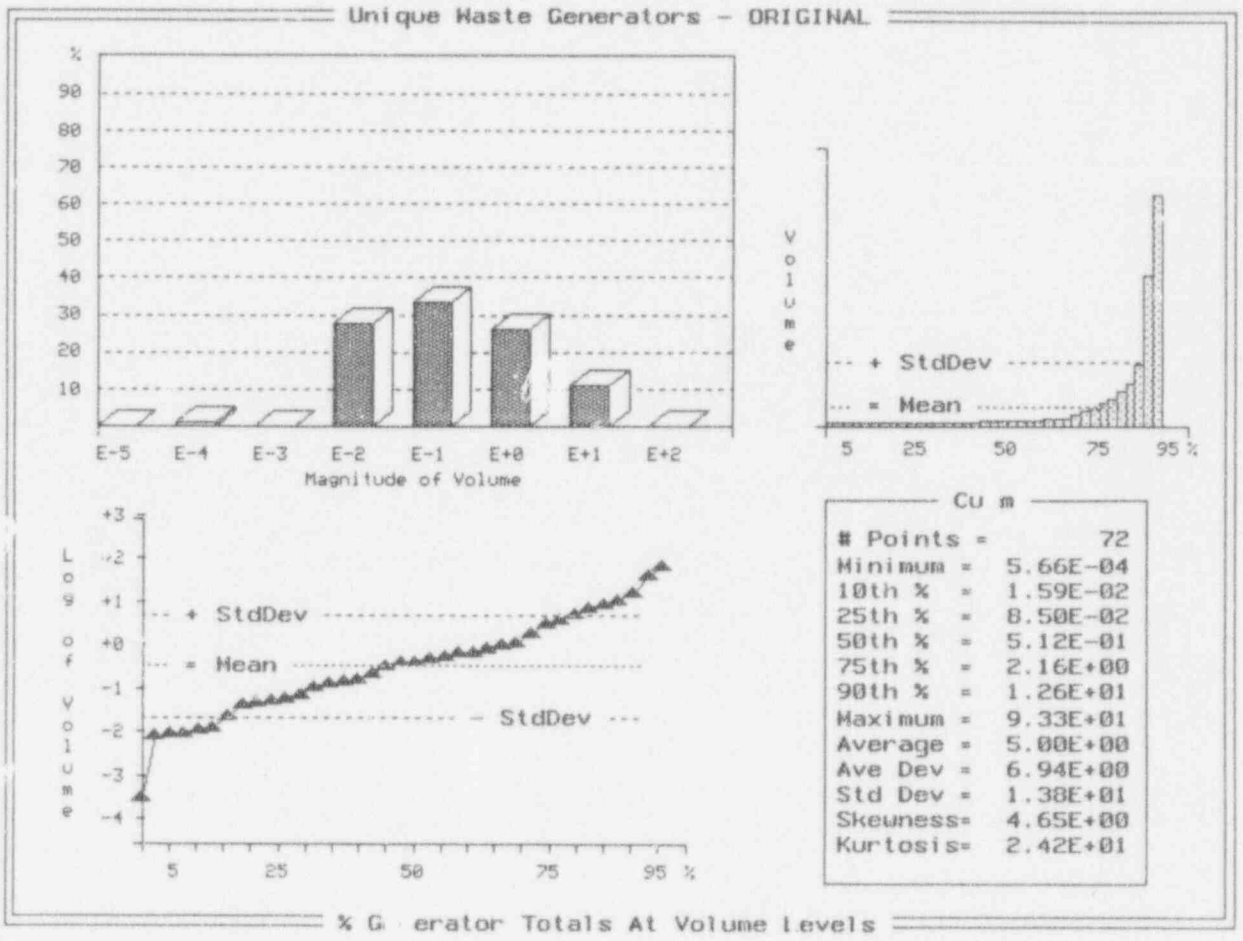


Exhibit F-31 (Continued)

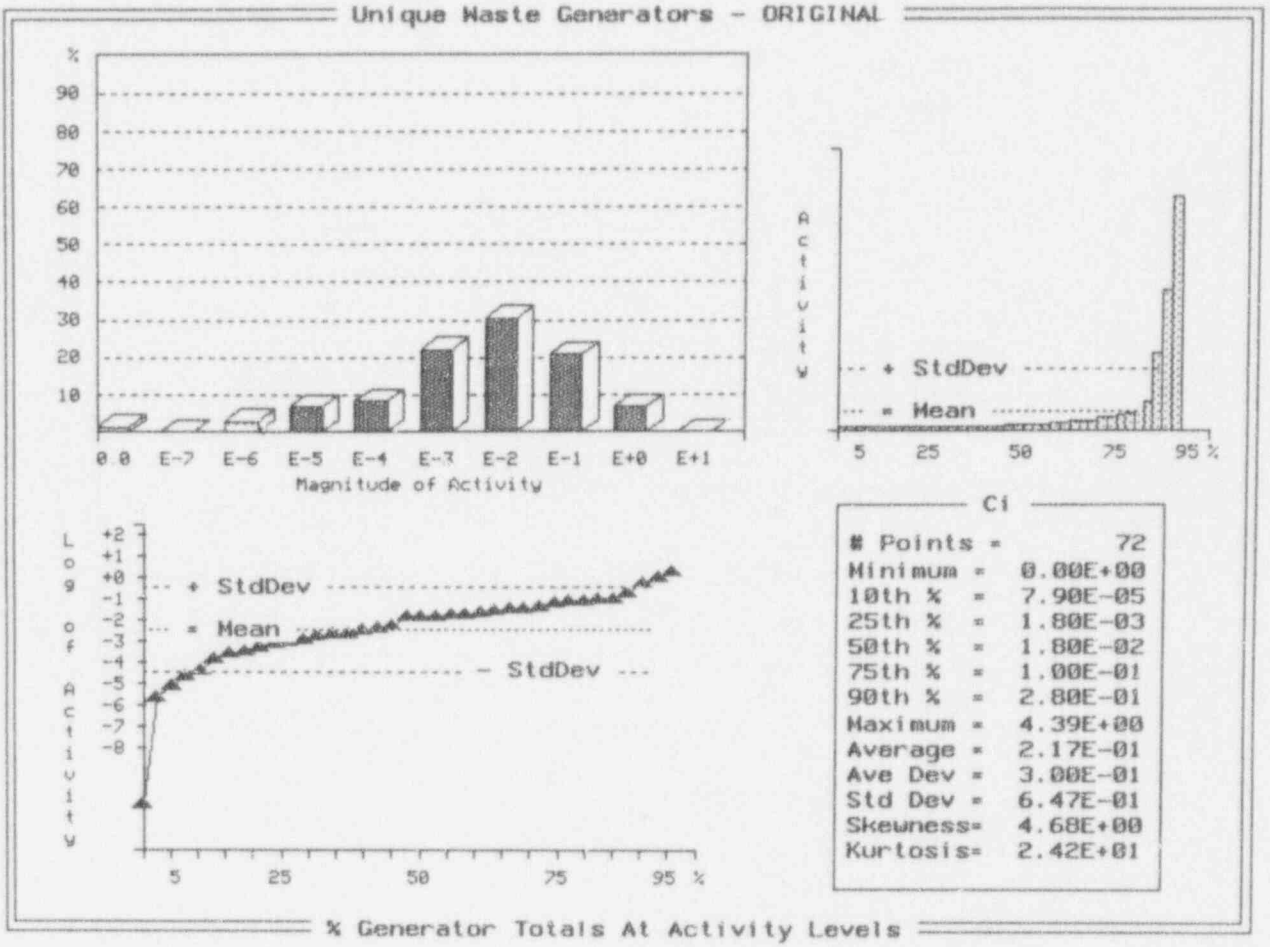
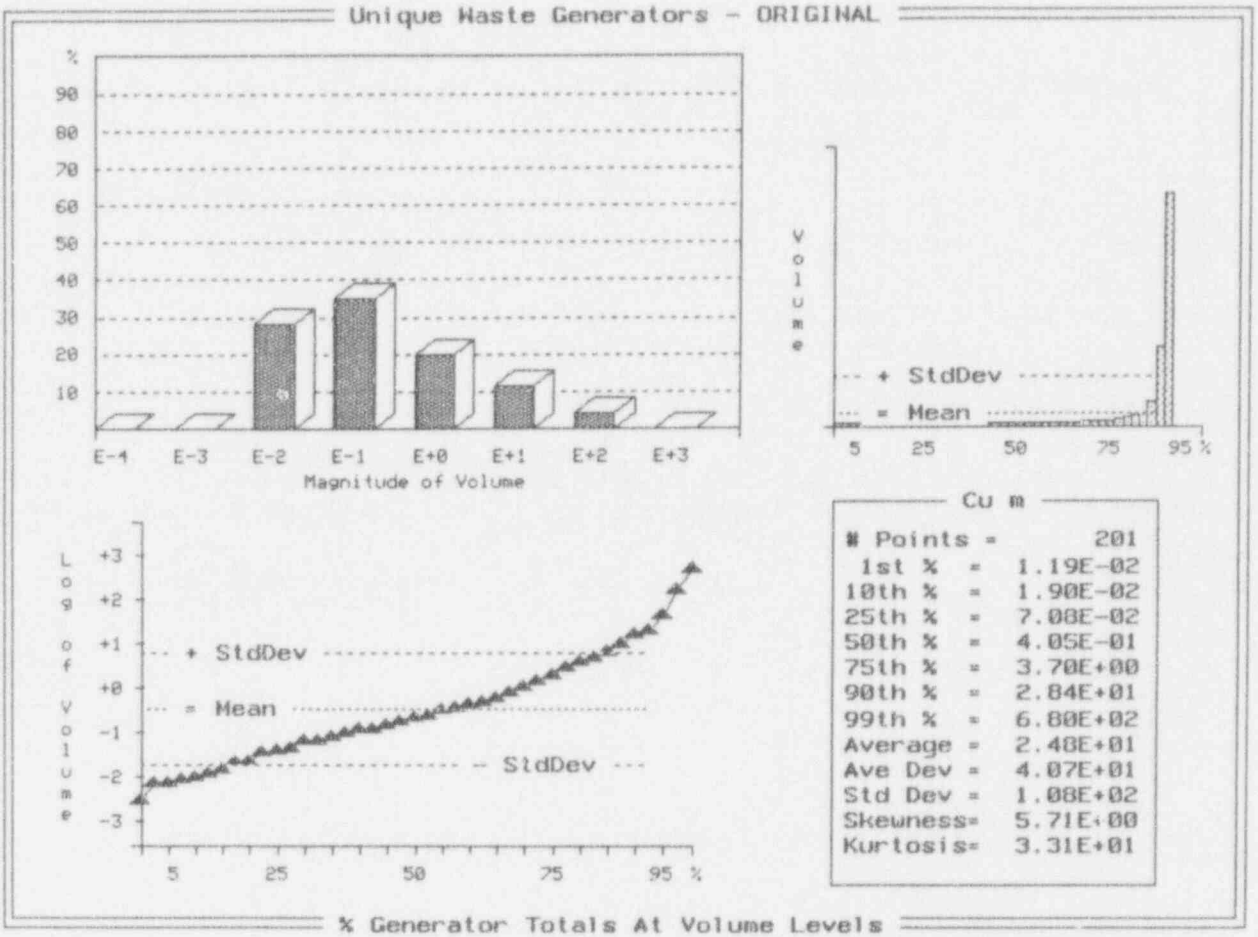


Exhibit F-32
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Appalachian
Waste generator class:	Industrial
Total number of waste generators:	205
Total associated waste volume (m^3):	4,992
Total associated waste activity (Ci):	23,580
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	55
Percent of total(%):	27
Total number of shipping records:	420
Number of shipping records with container data:	13
Number of waste containers:	208
Weight of shipments (kg):	3,101,000
Total waste volume (m^3):	3,032
Fractional waste volume (%): (this analysis/total)	61
Total waste activity (Ci):	460
Fractional waste activity (%): (this analysis/total)	2

Exhibit F-32 (Continued)



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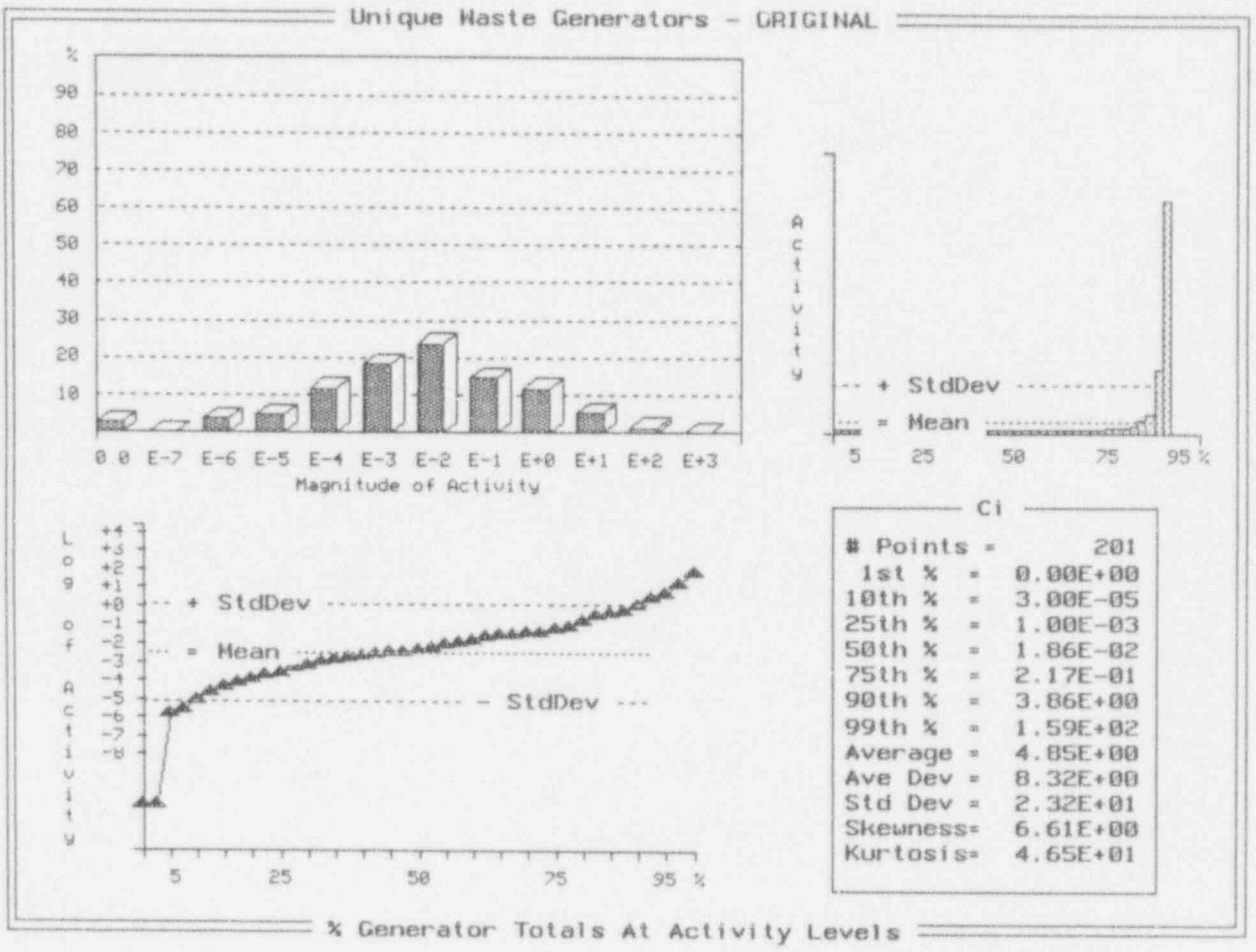


Exhibit F-32 (Continued)

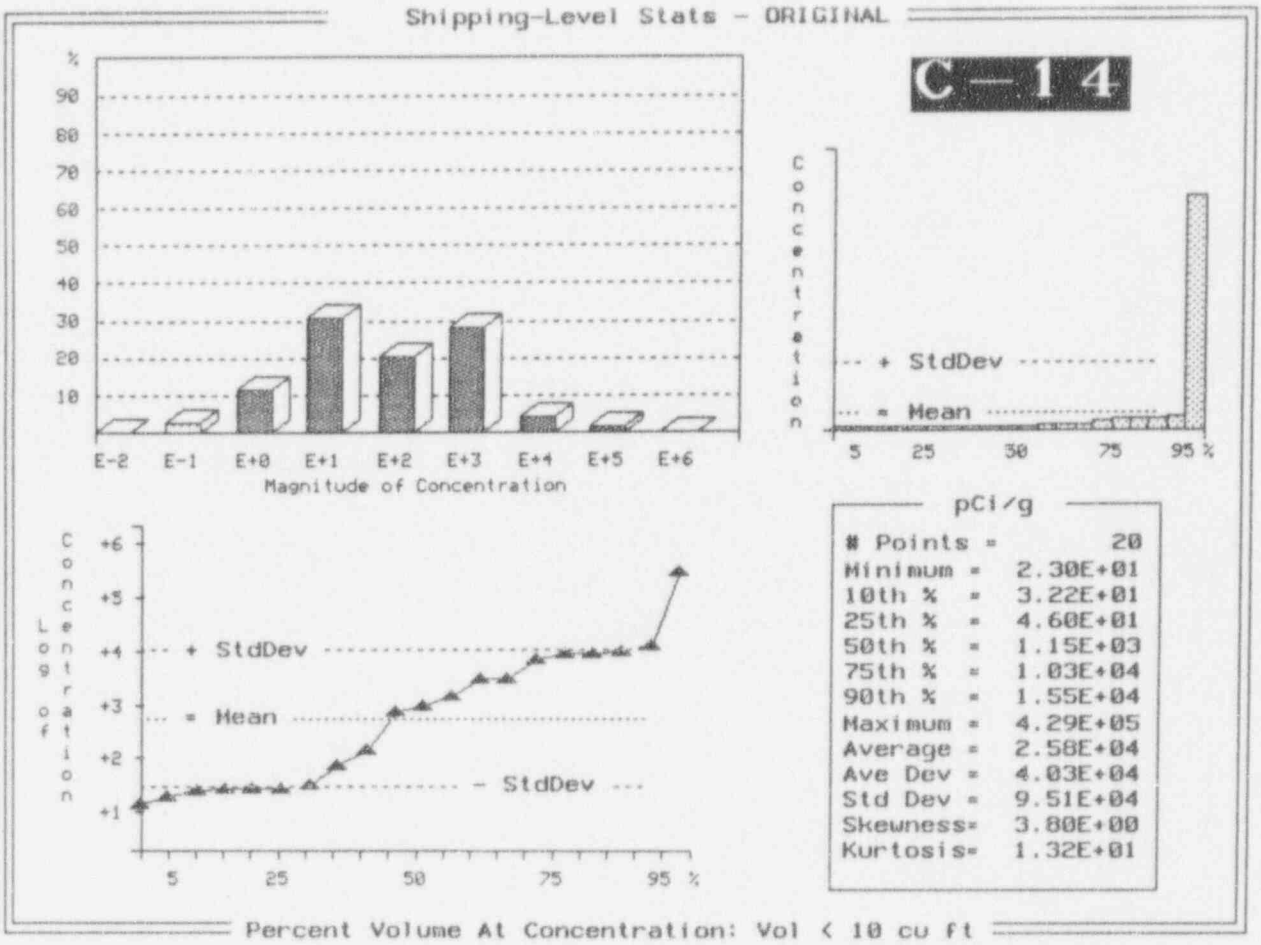


Exhibit F-32 (Continued)

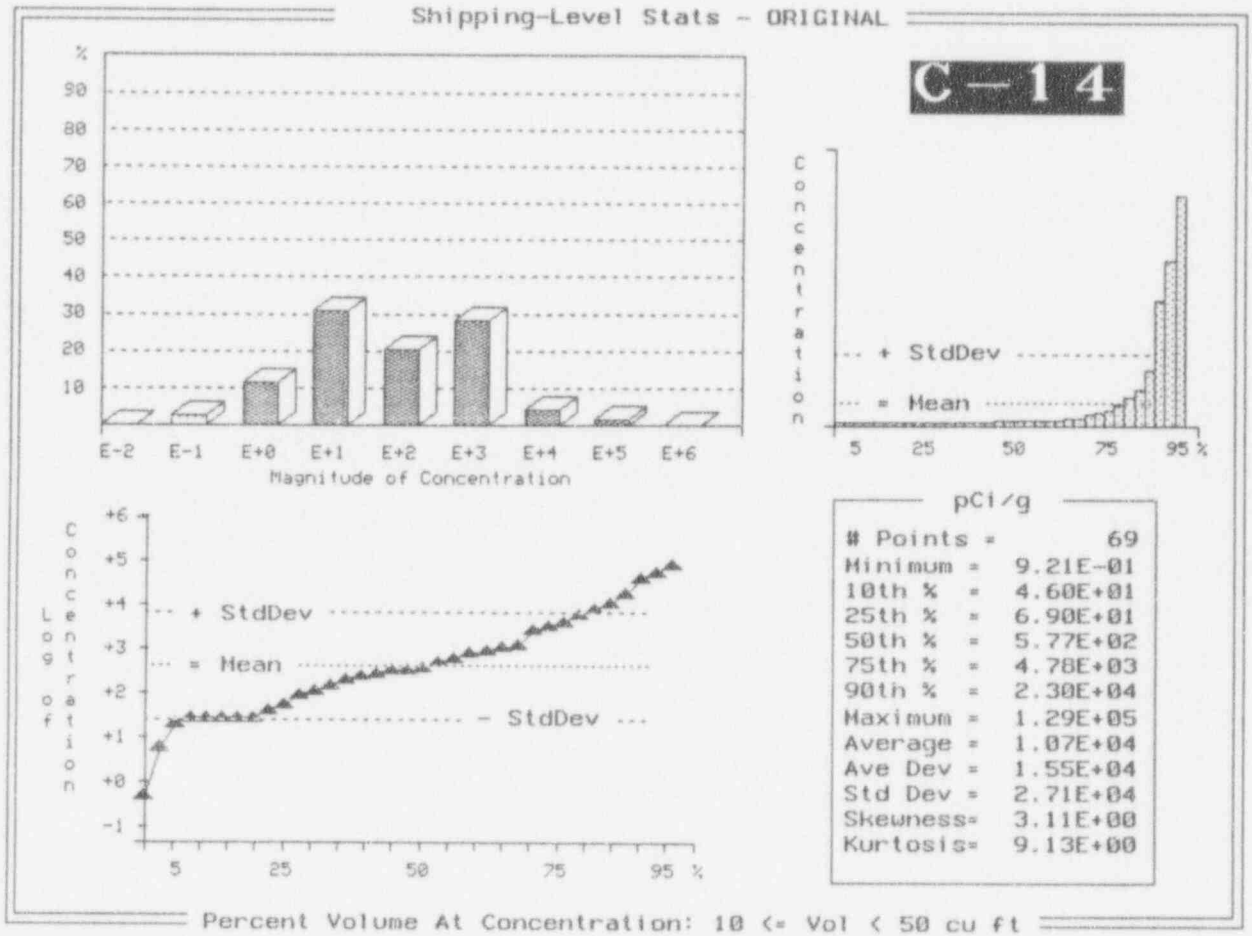


Exhibit F-32 (Continued)

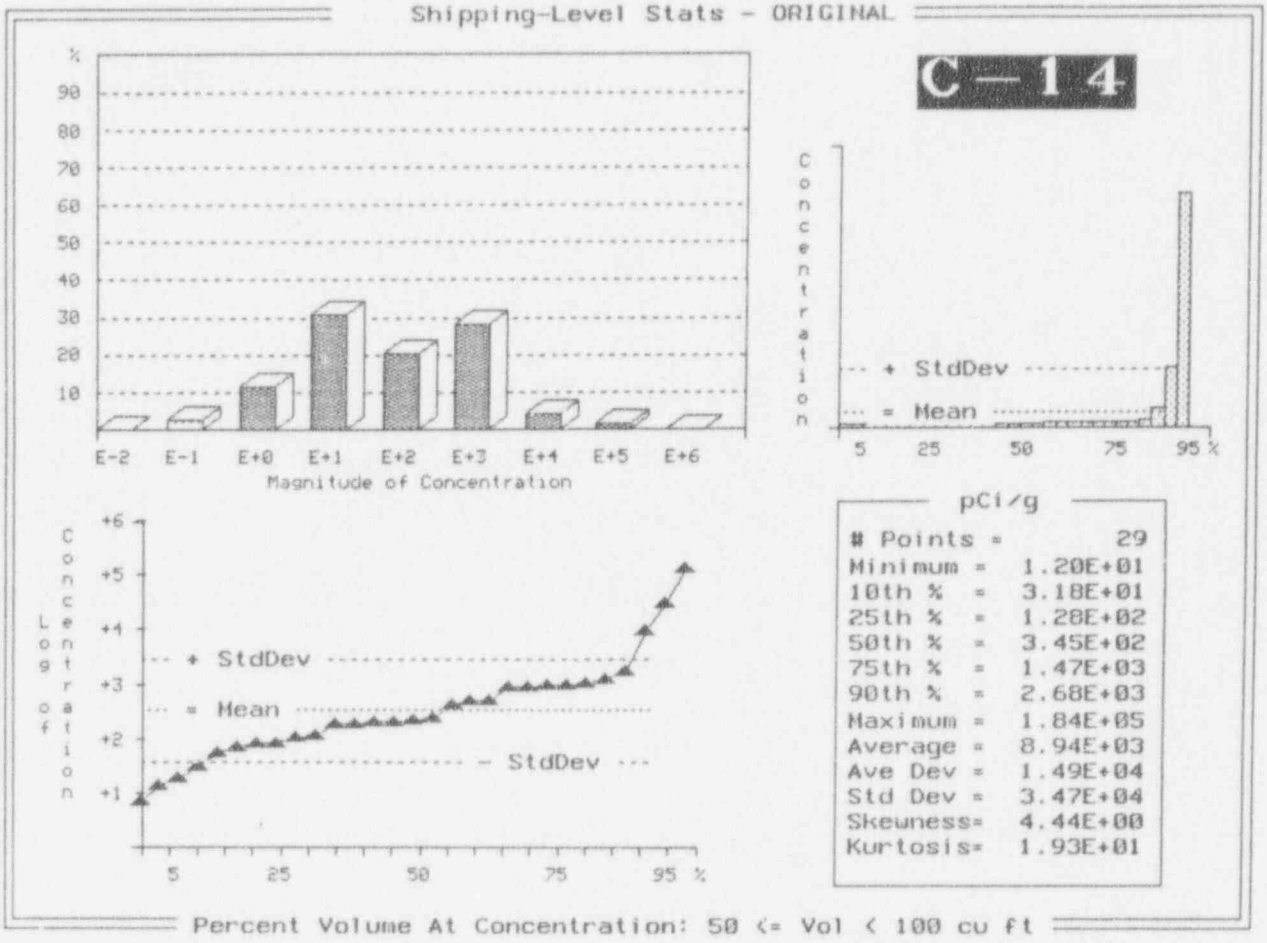


Exhibit F-32 (Continued)

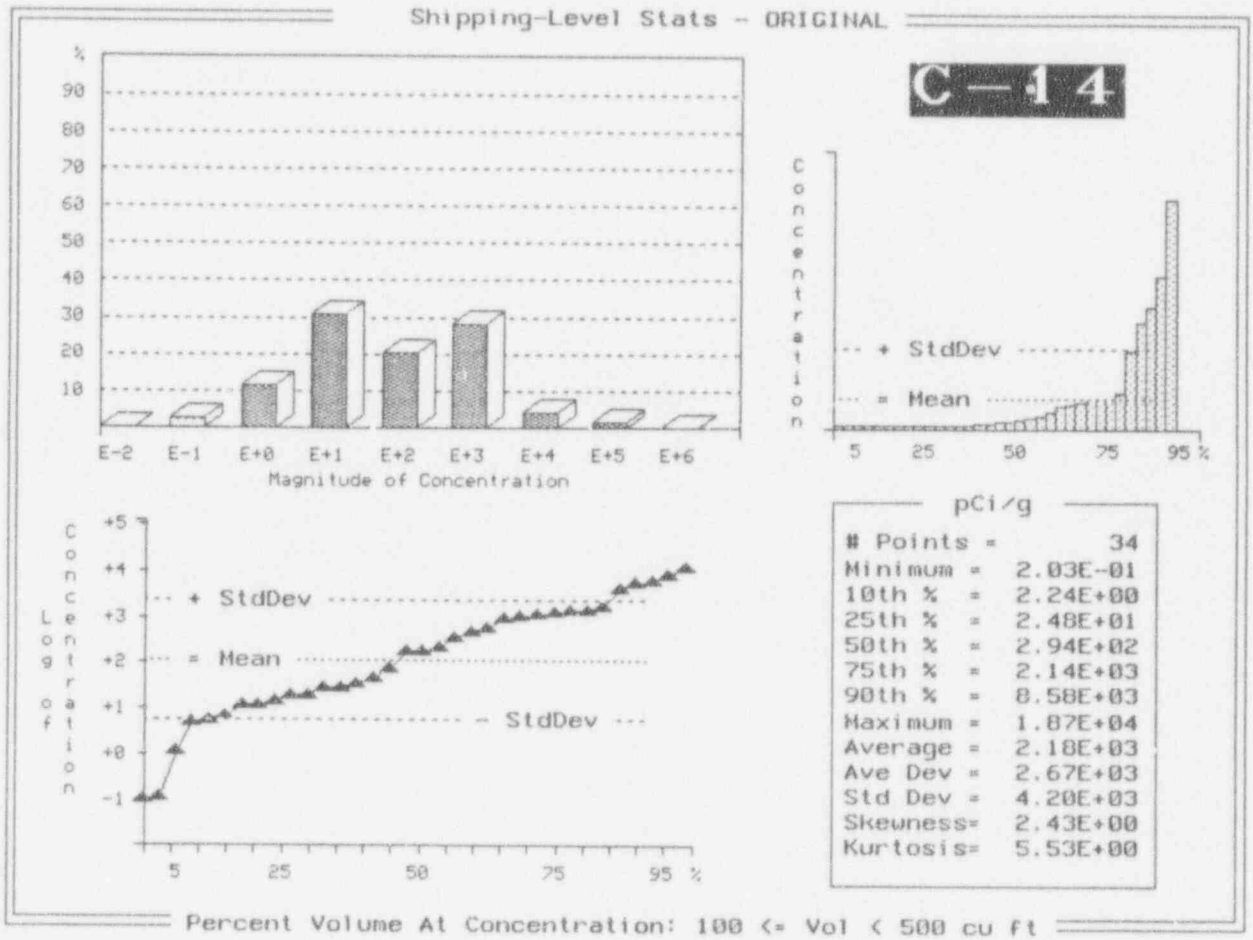
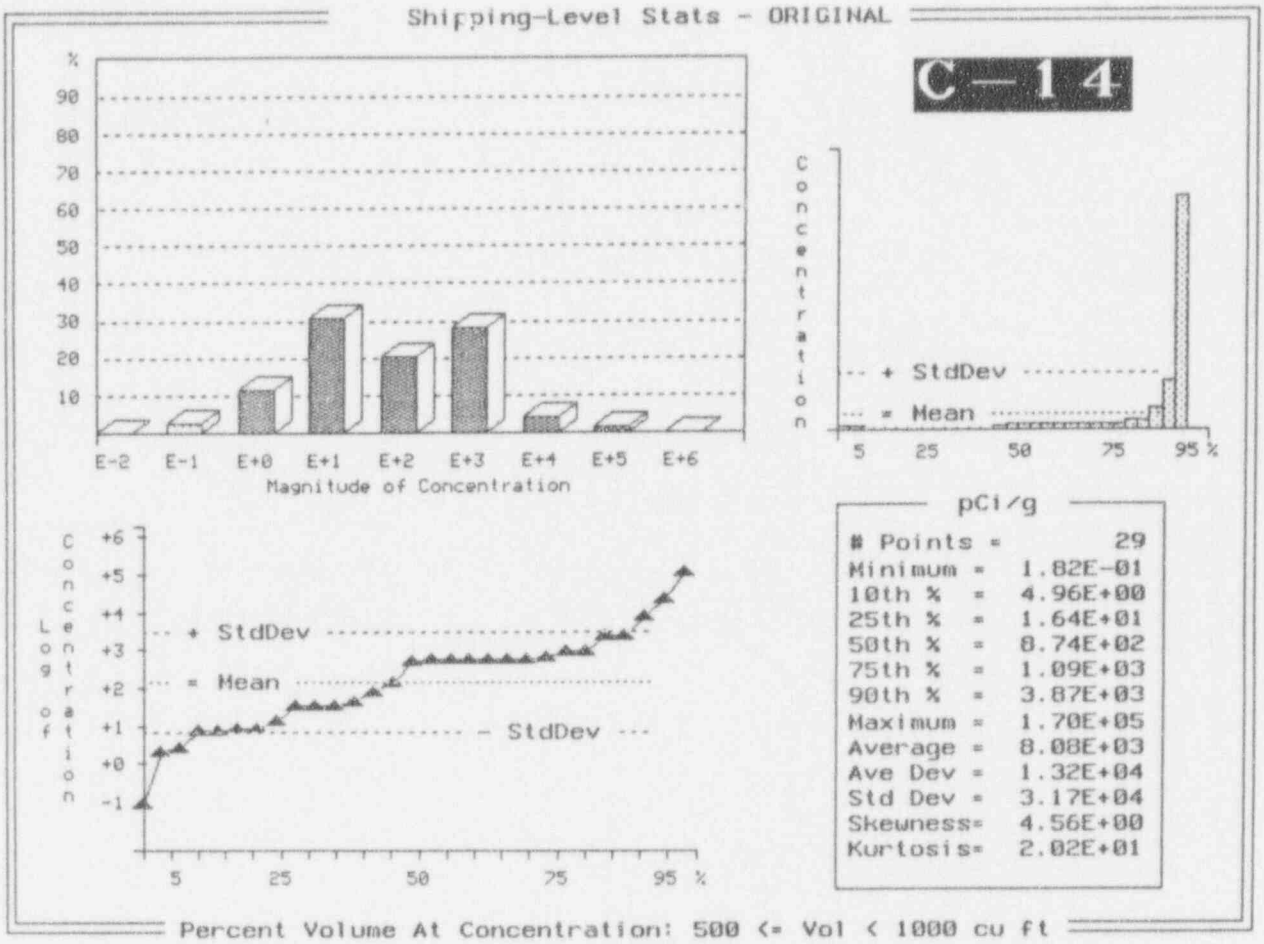


Exhibit F-32 (Continued)



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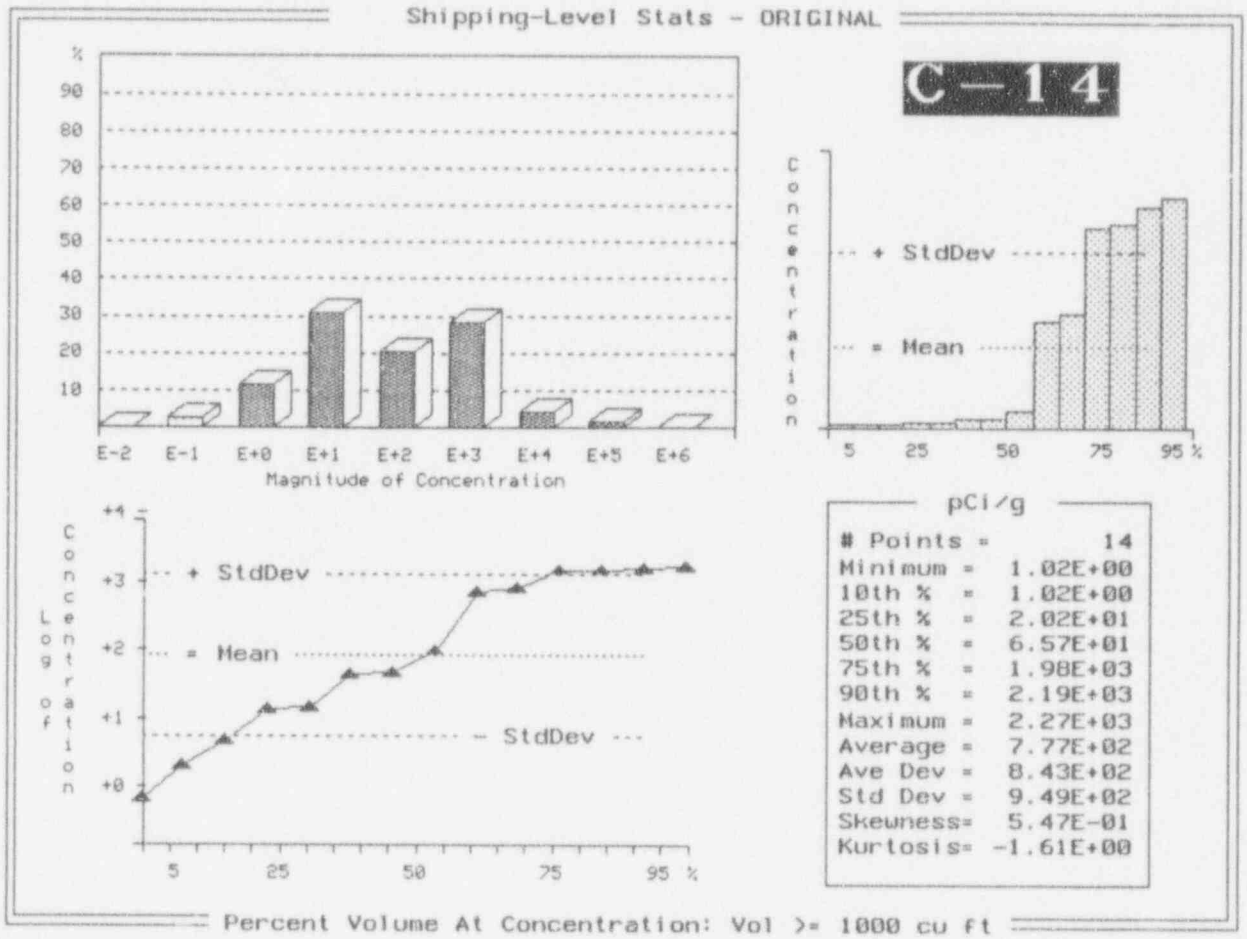

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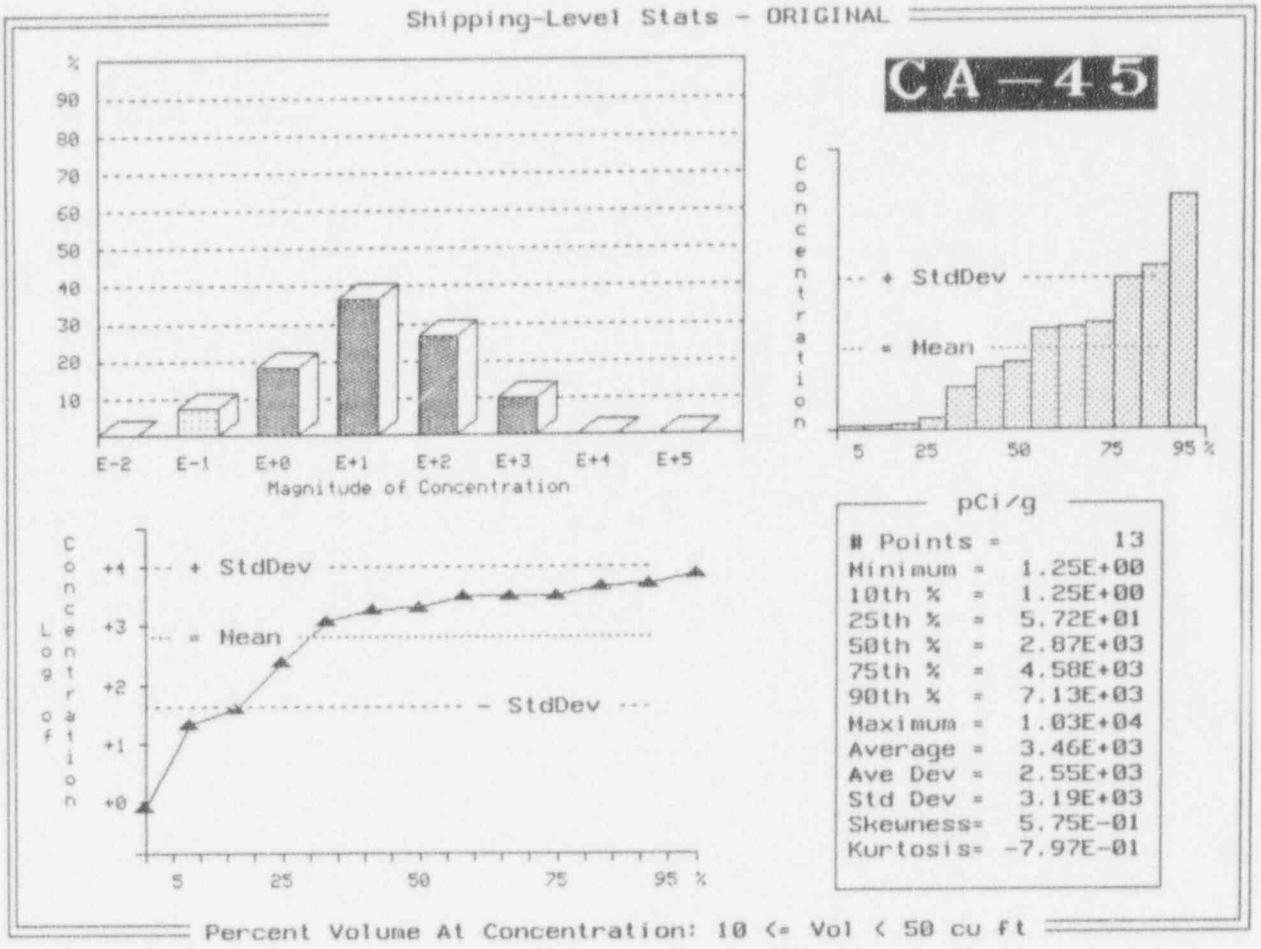

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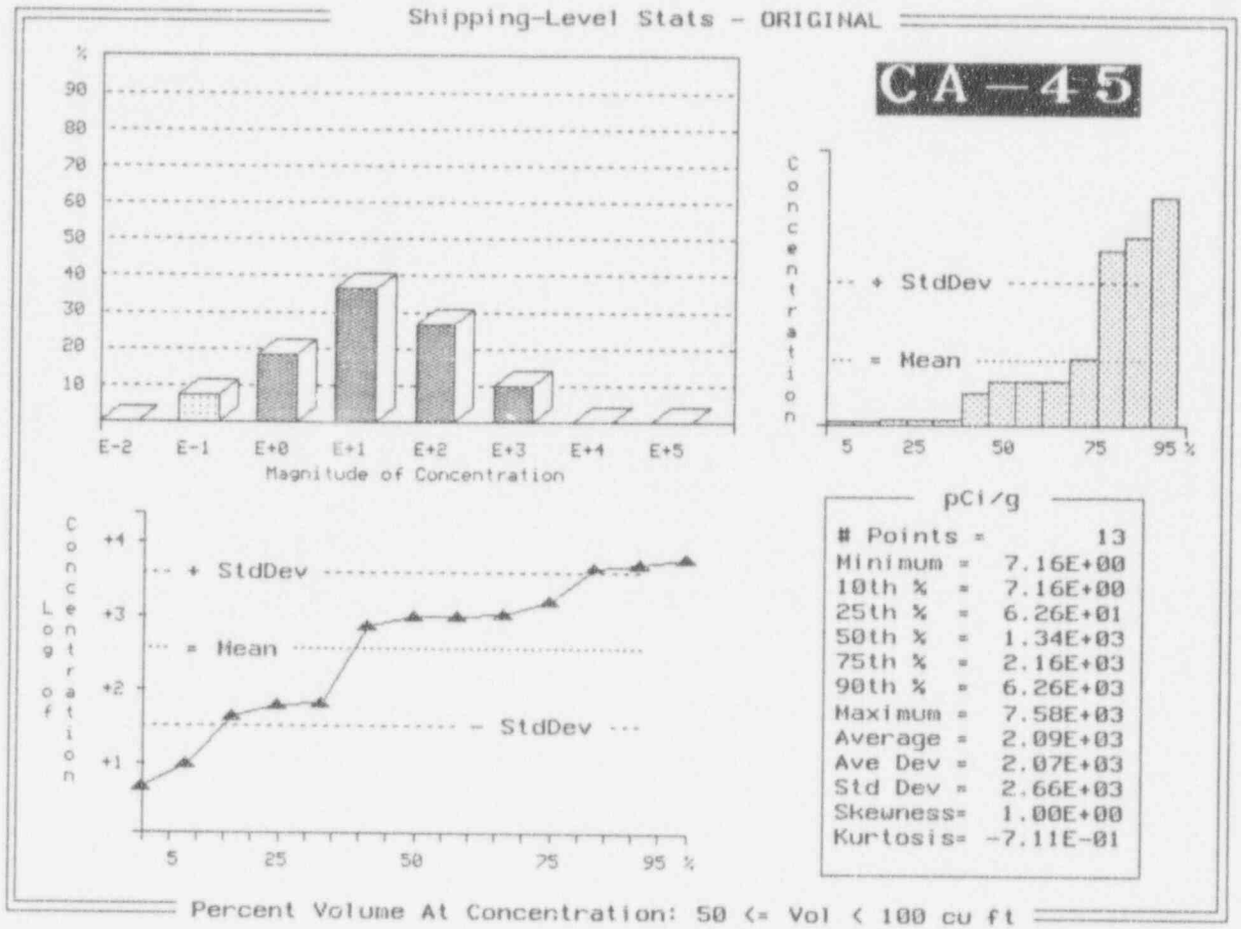
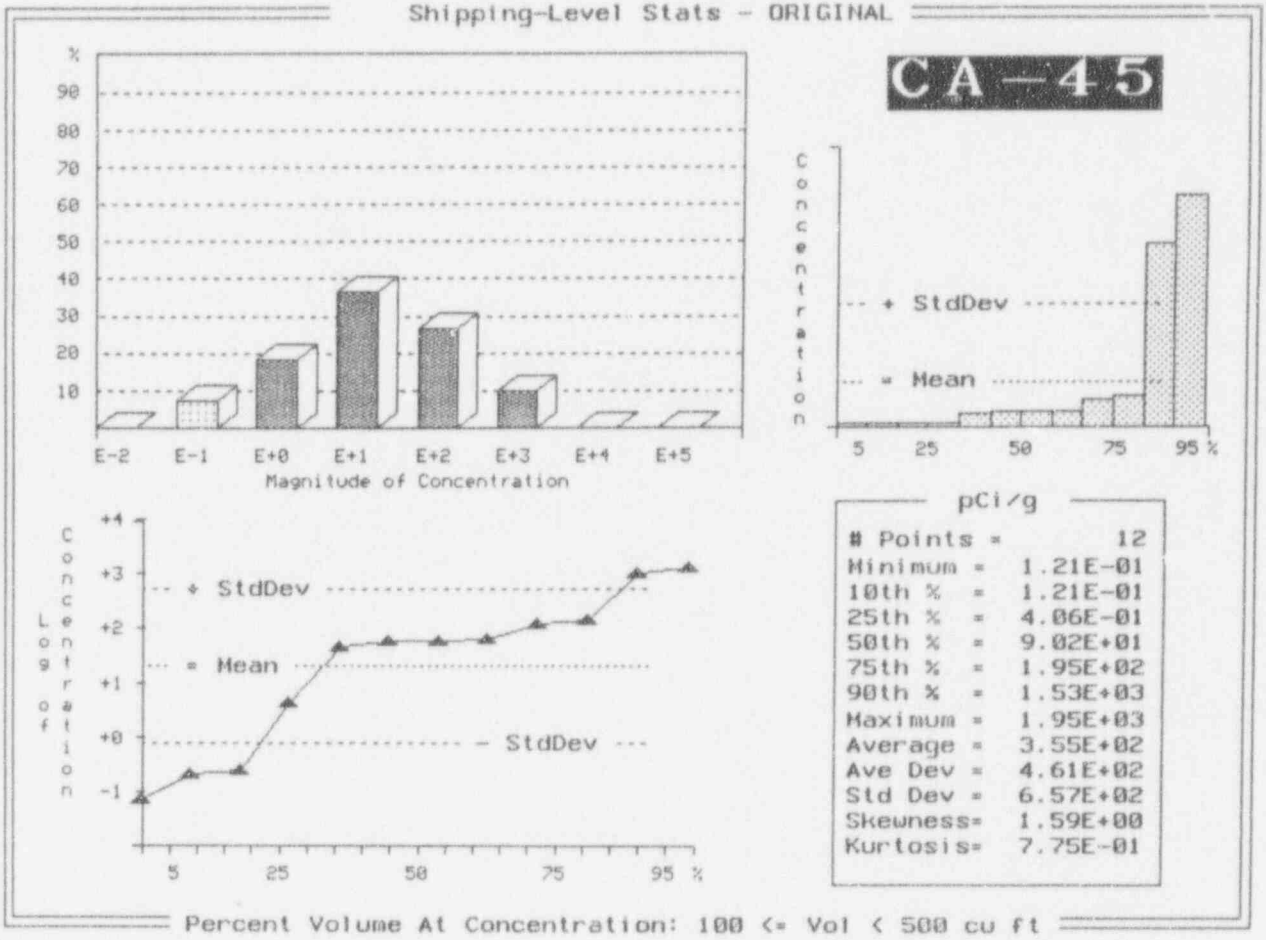


Exhibit F-32 (Continued)



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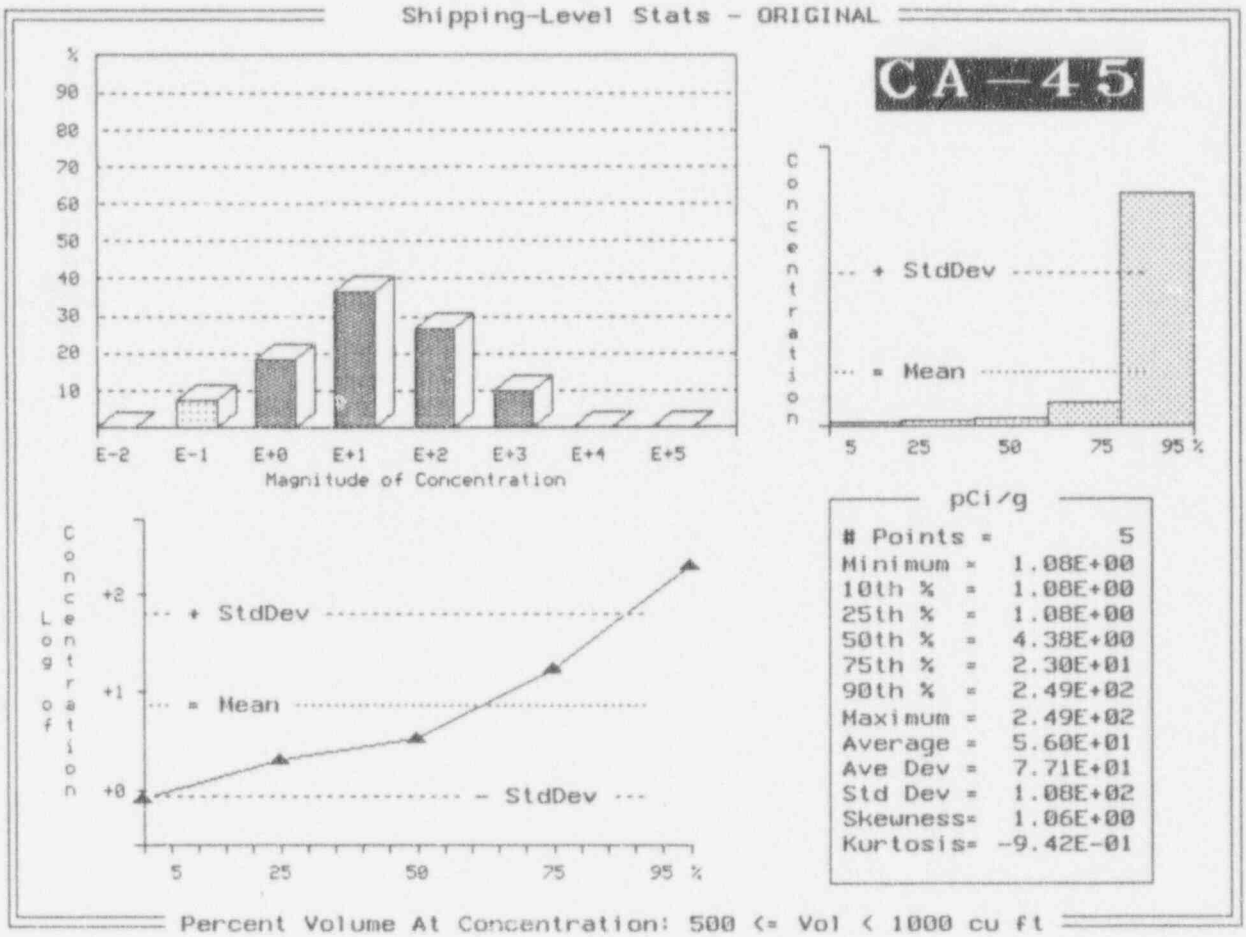

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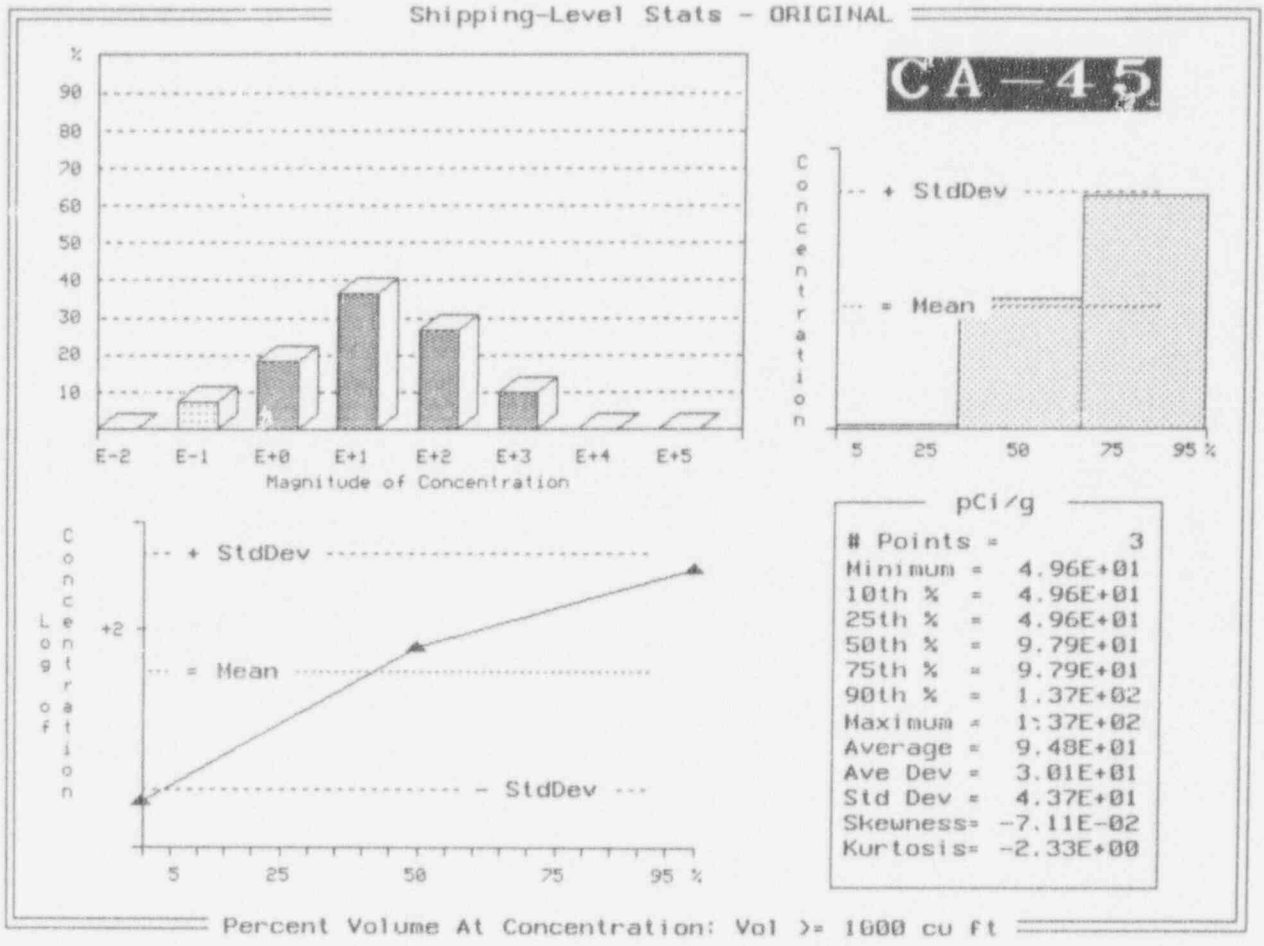

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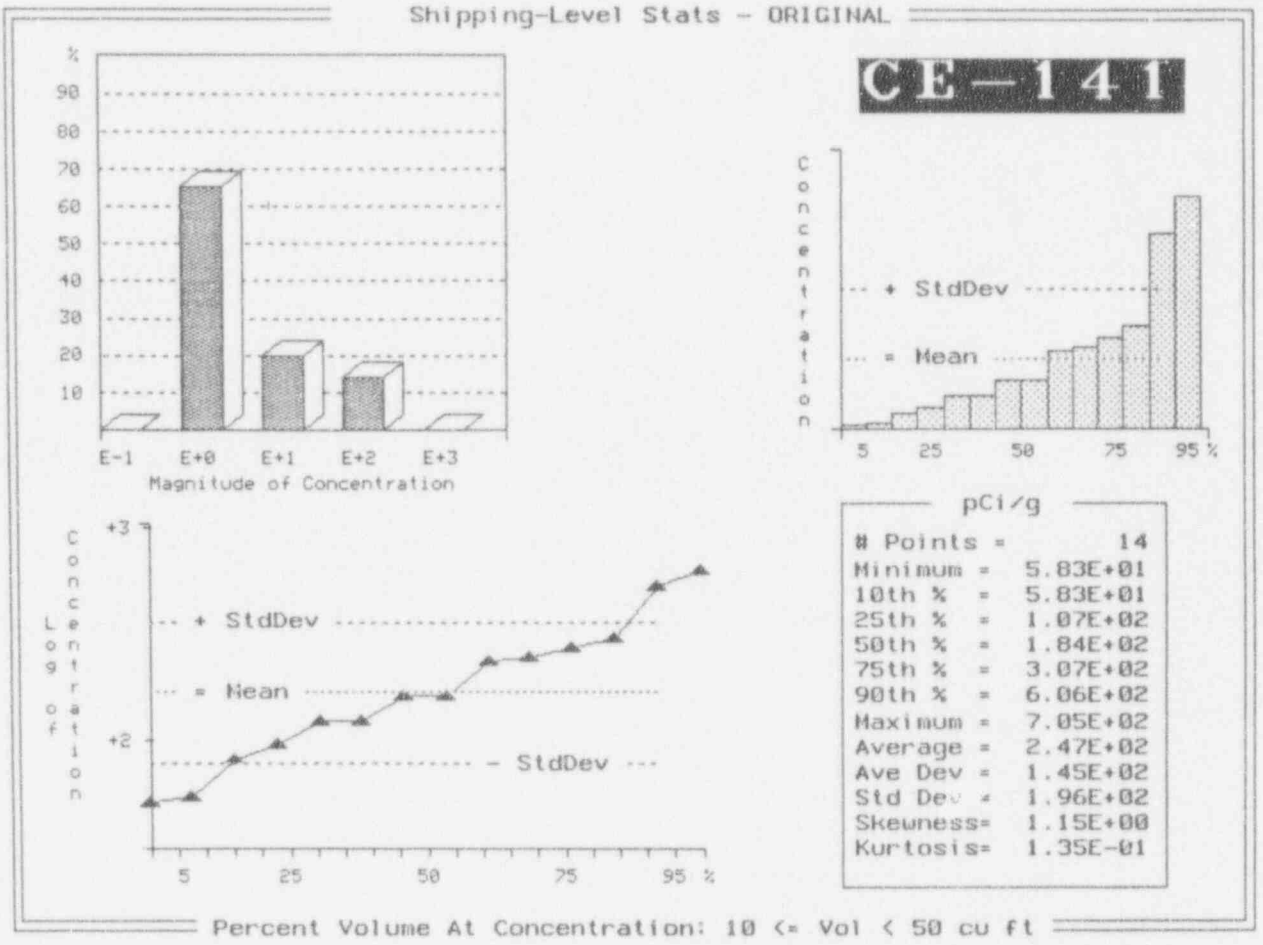

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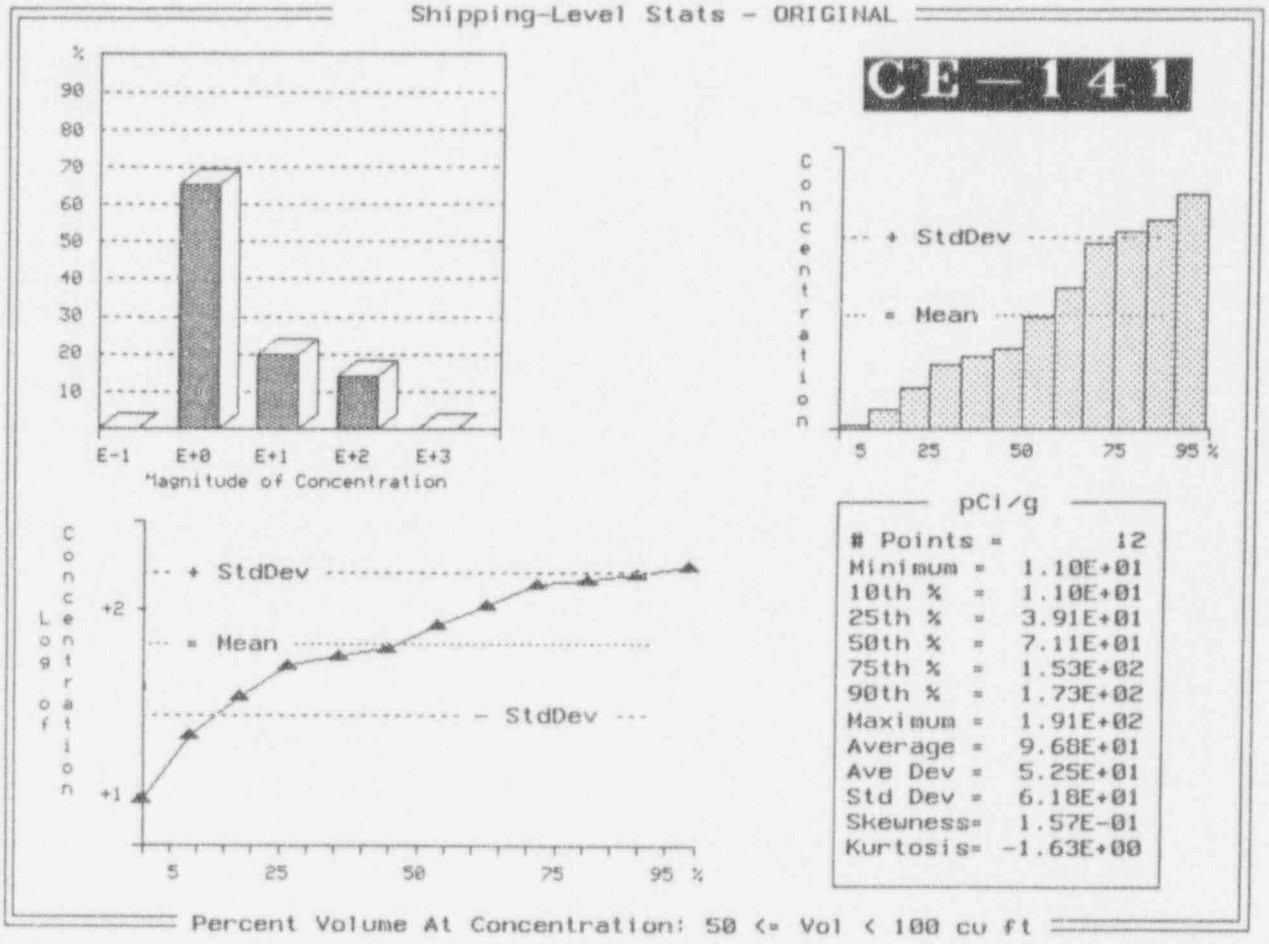

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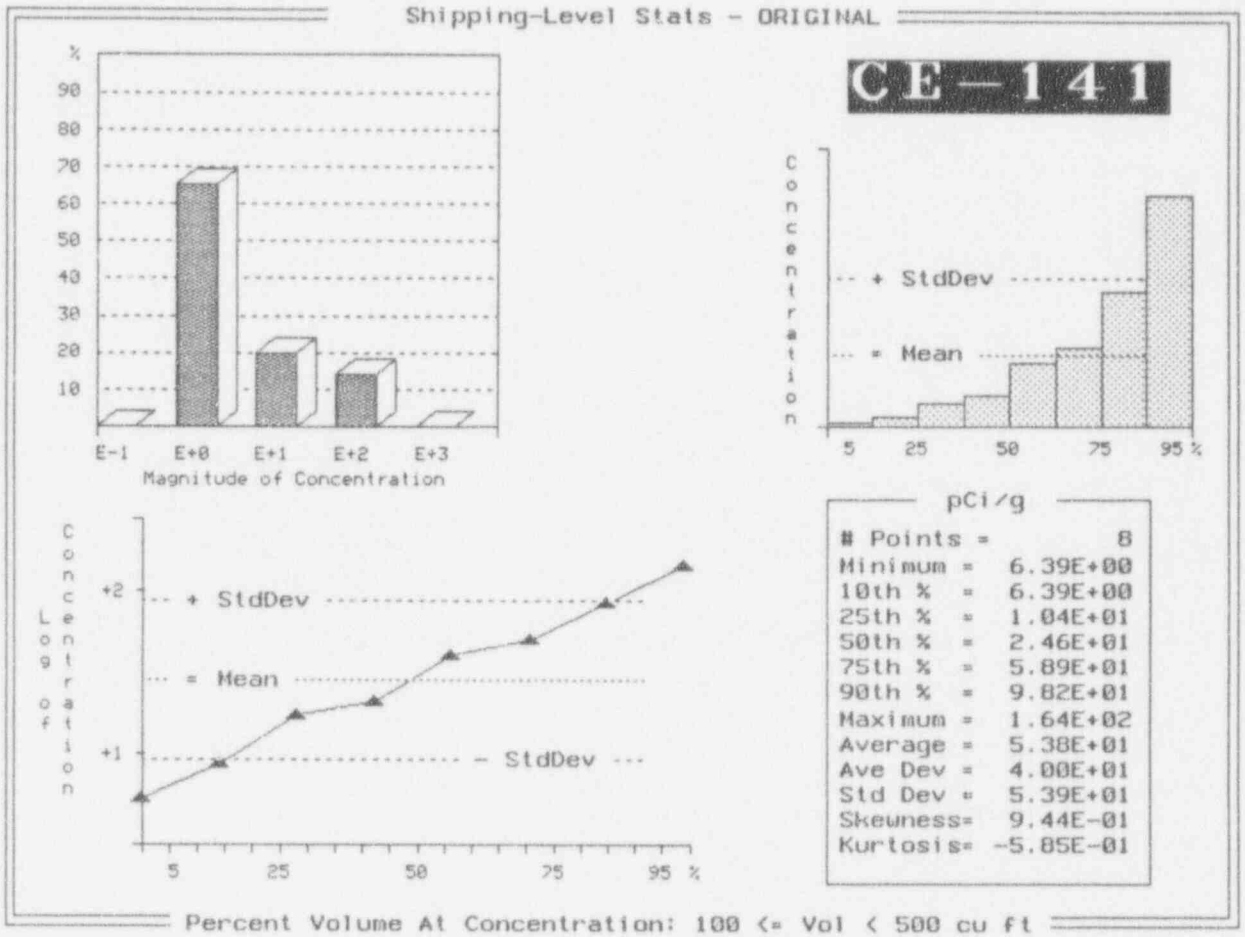

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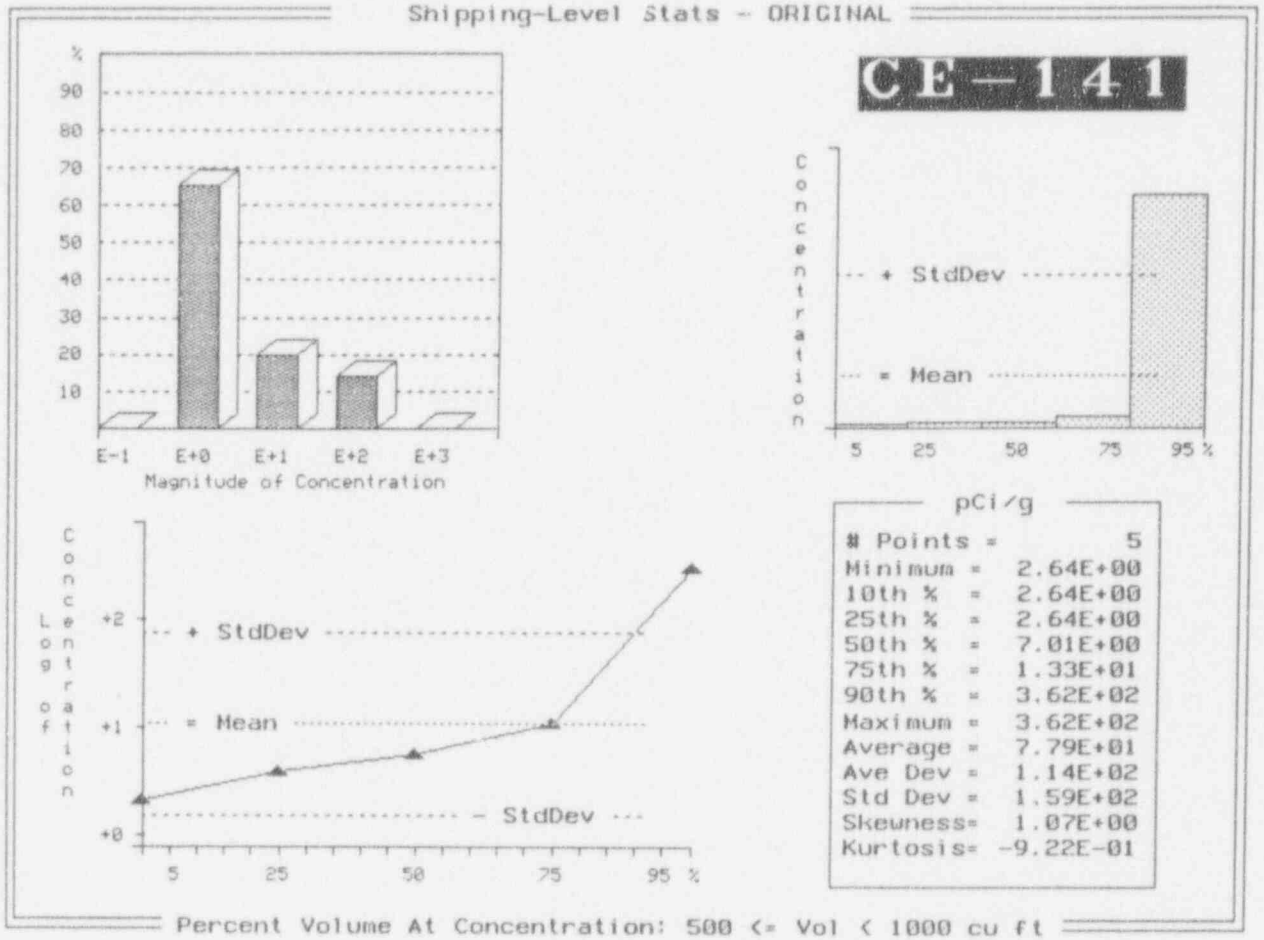

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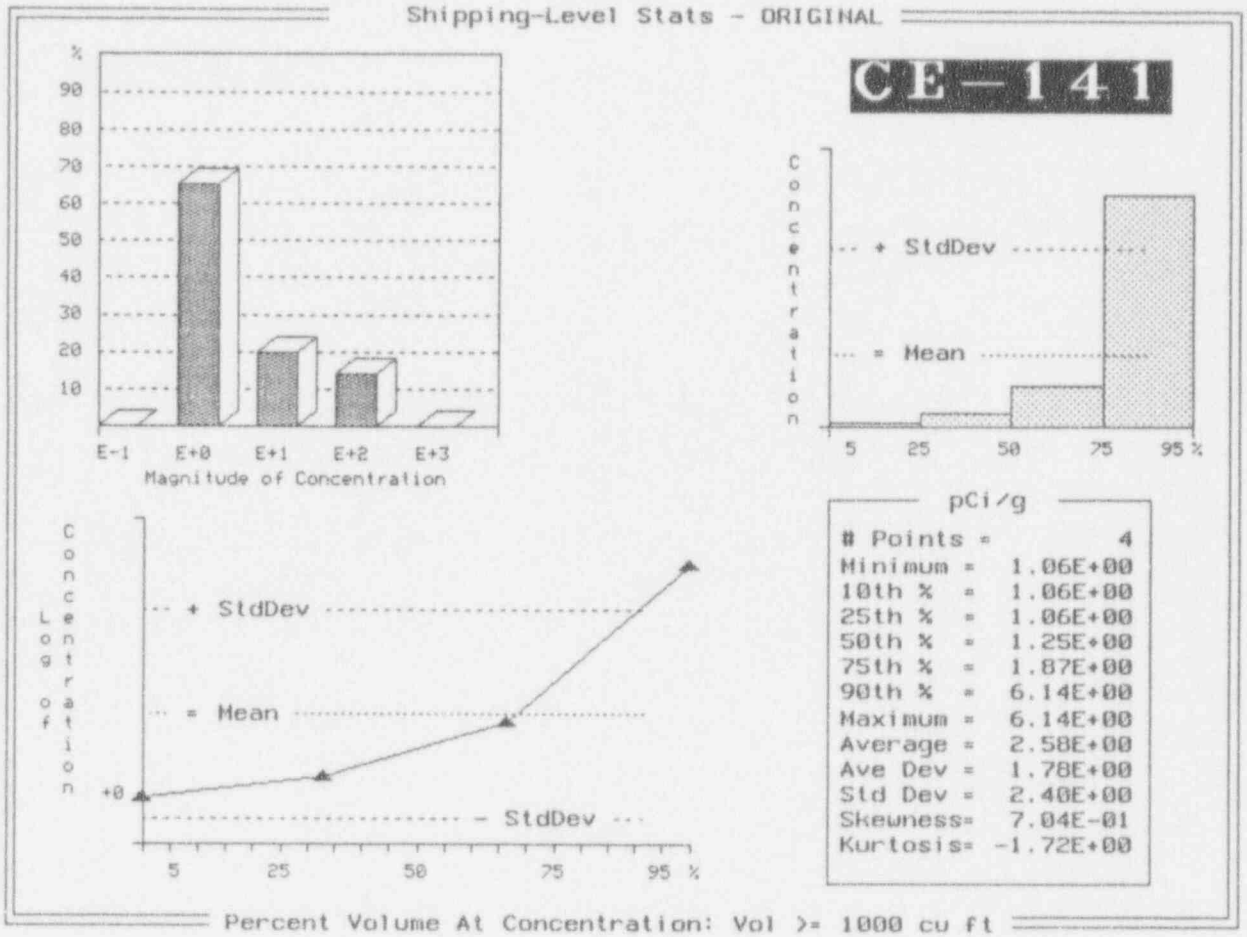

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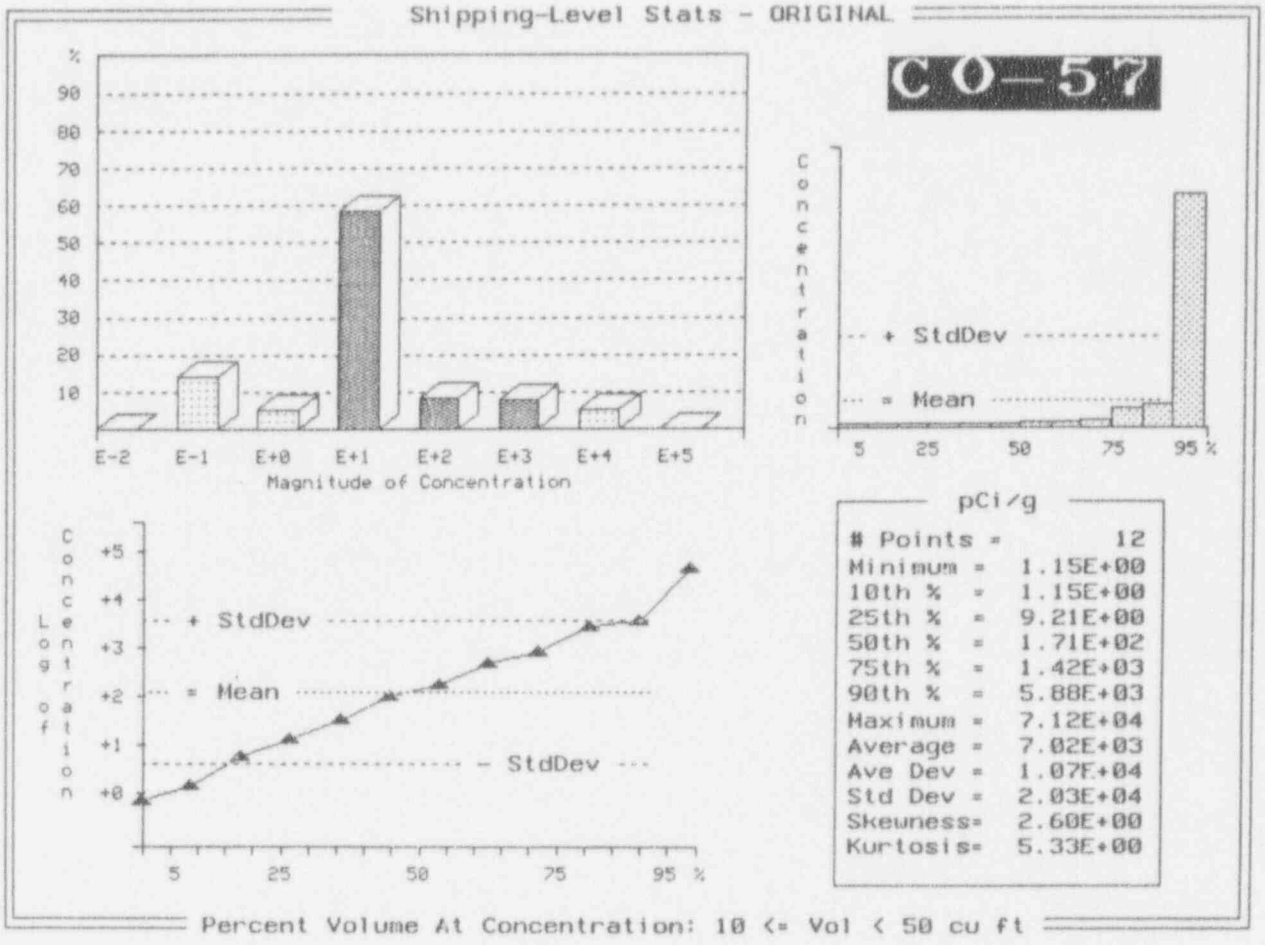

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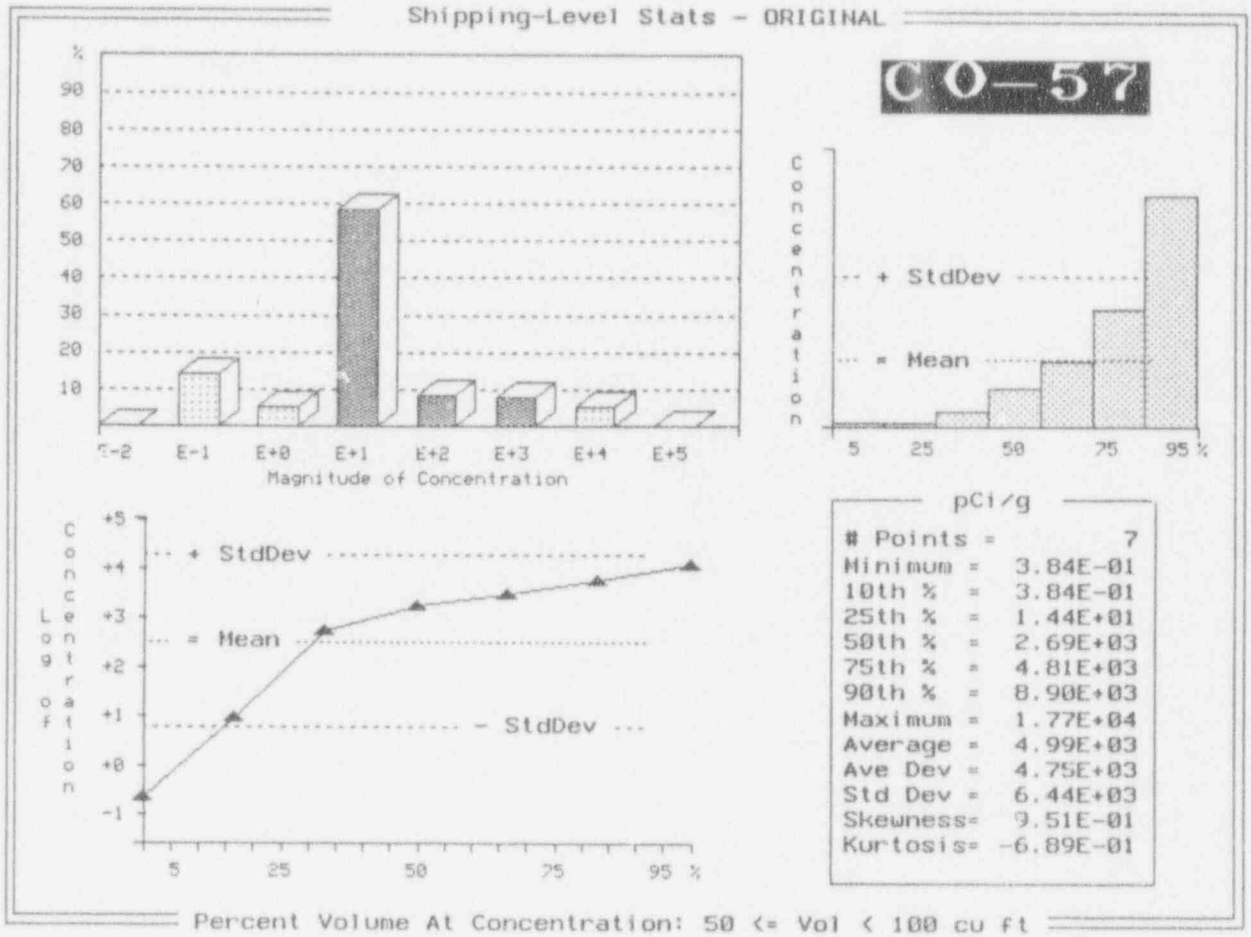

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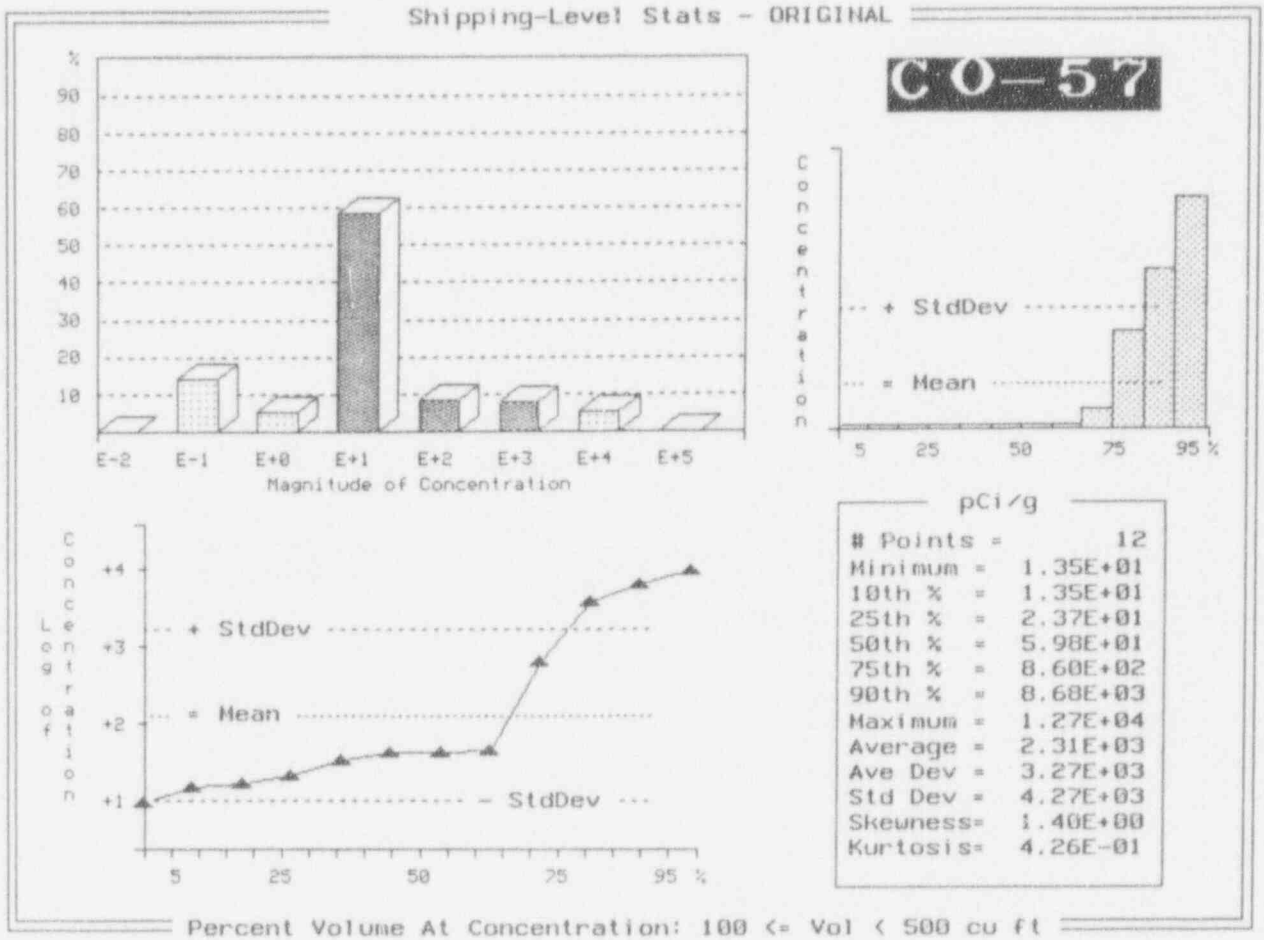

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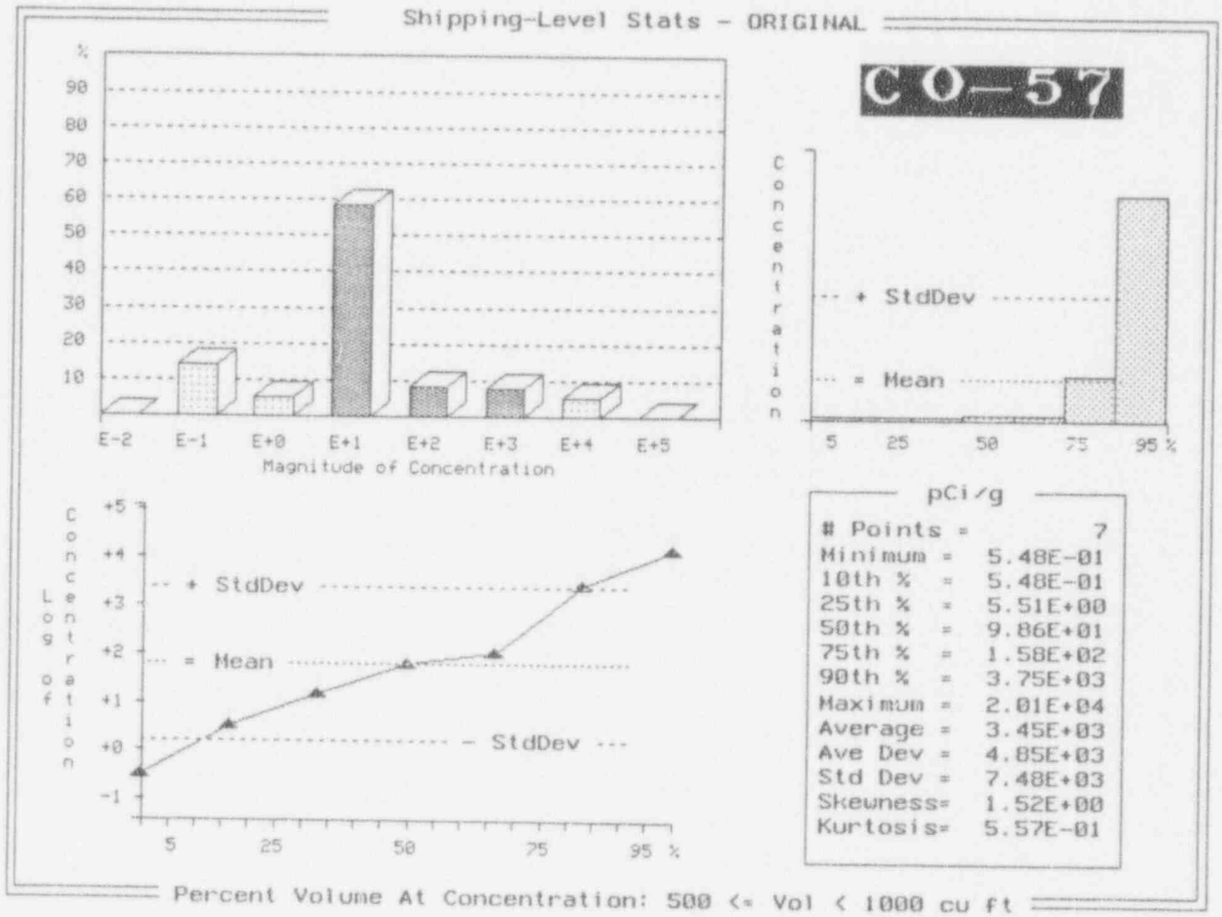

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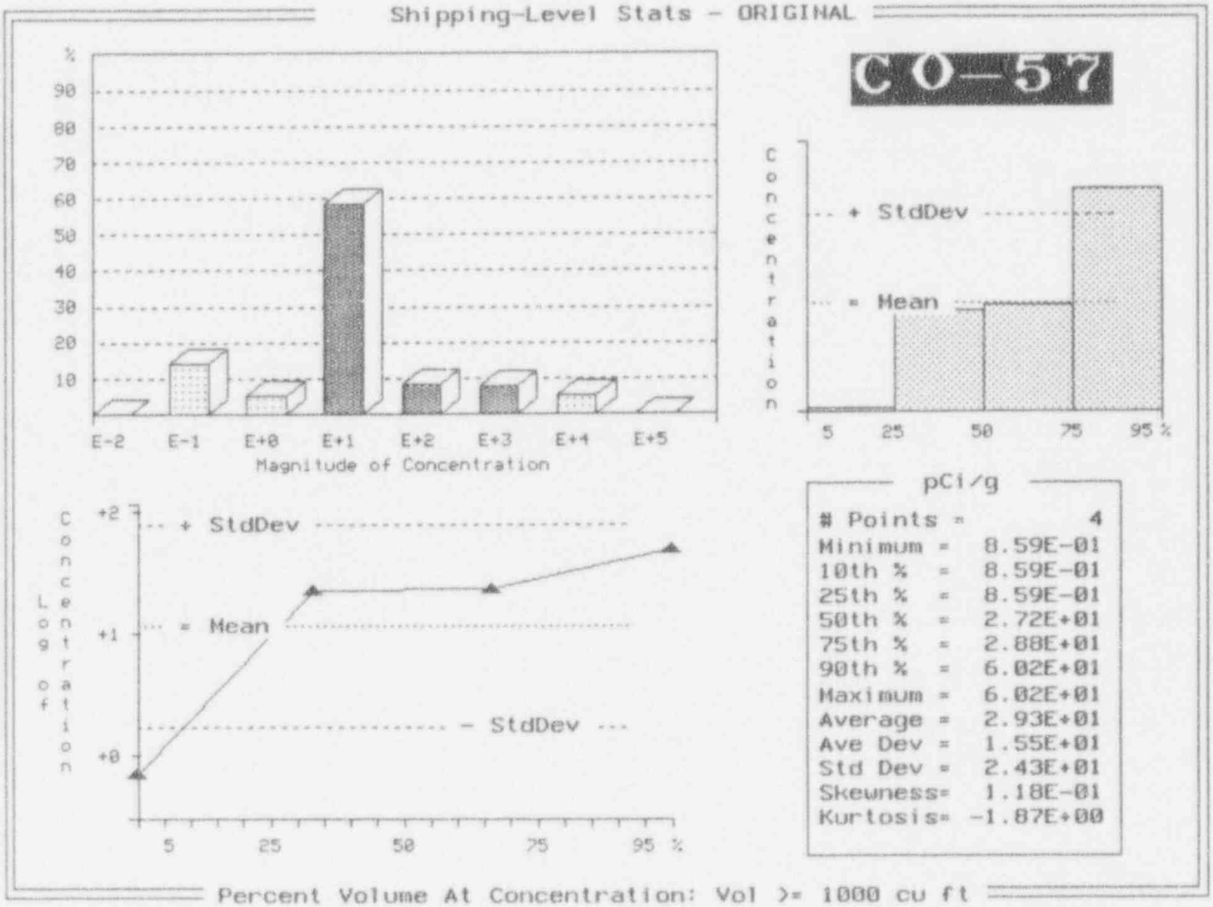

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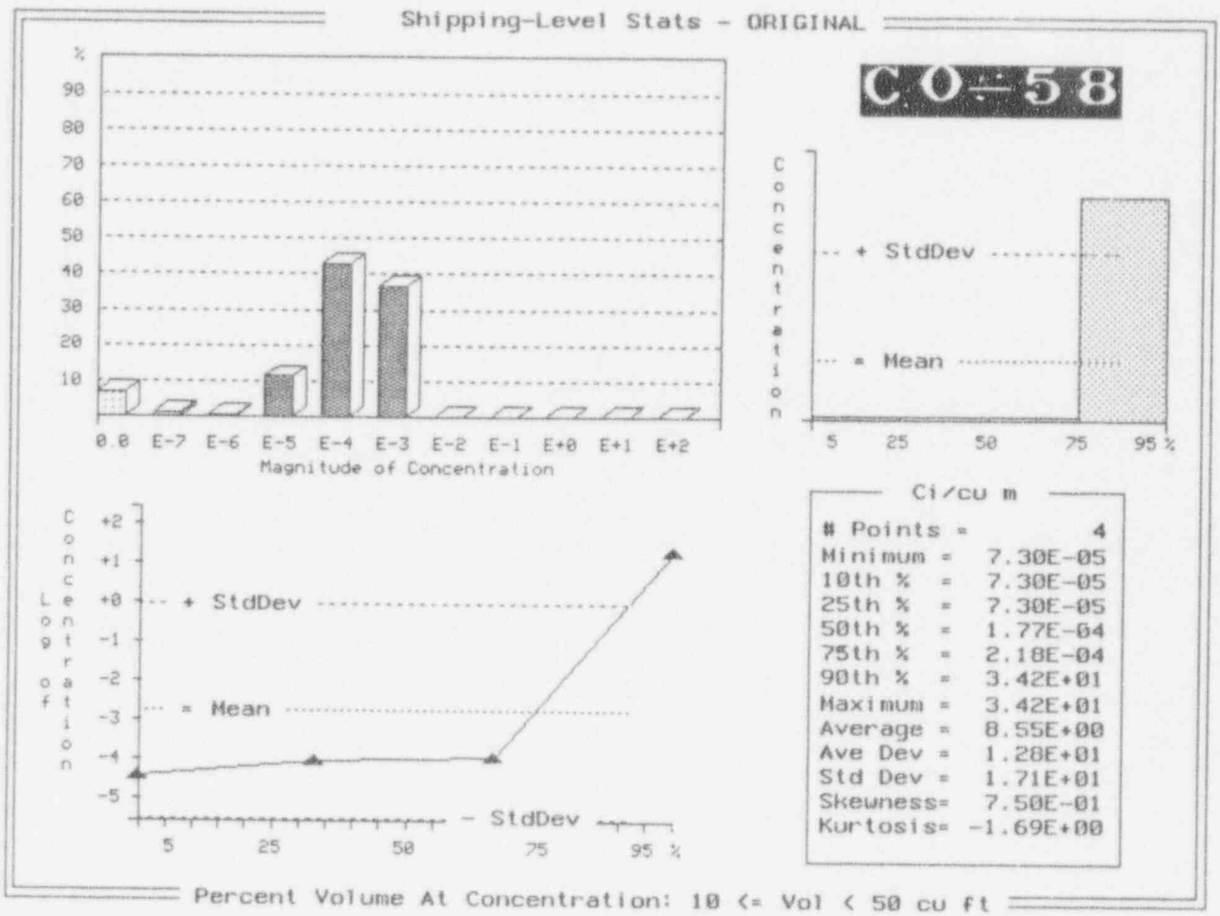

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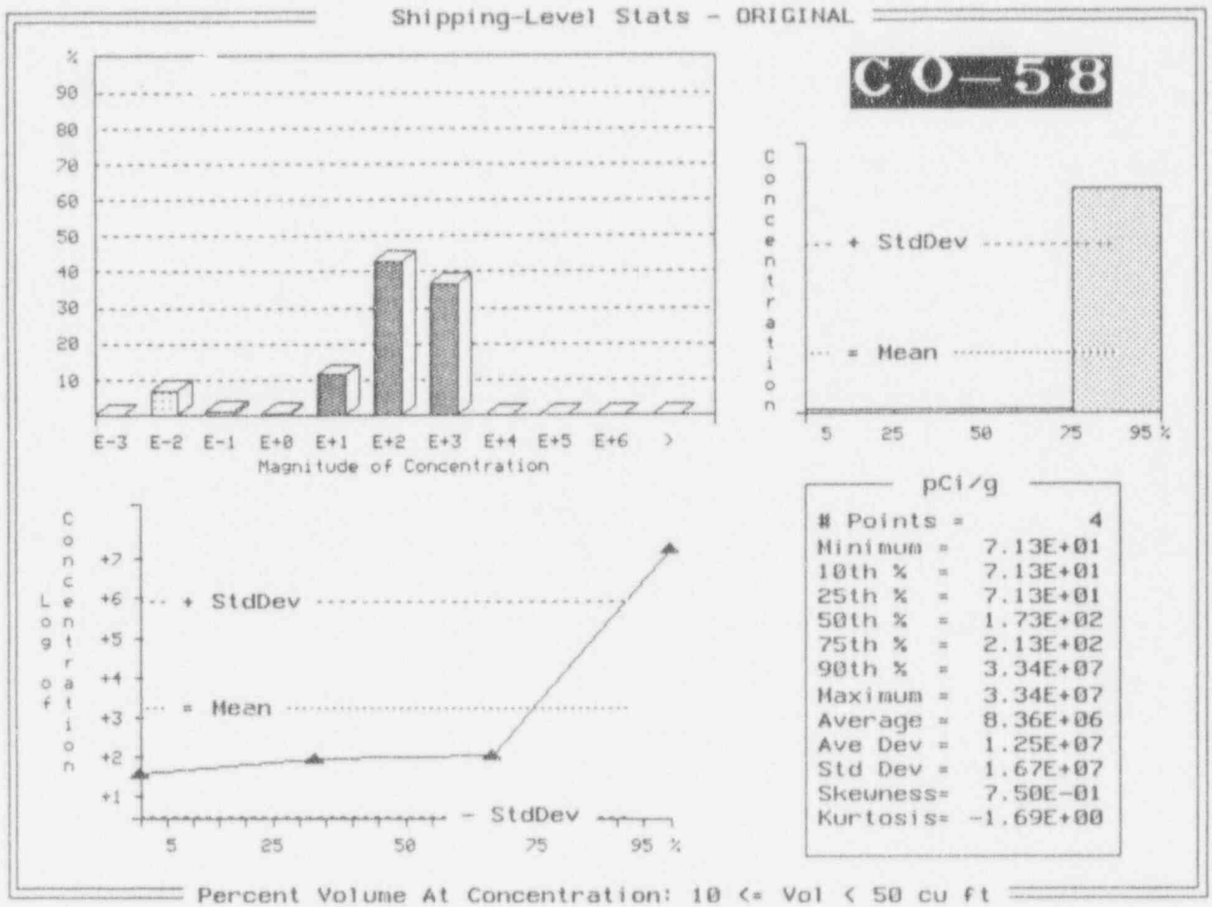

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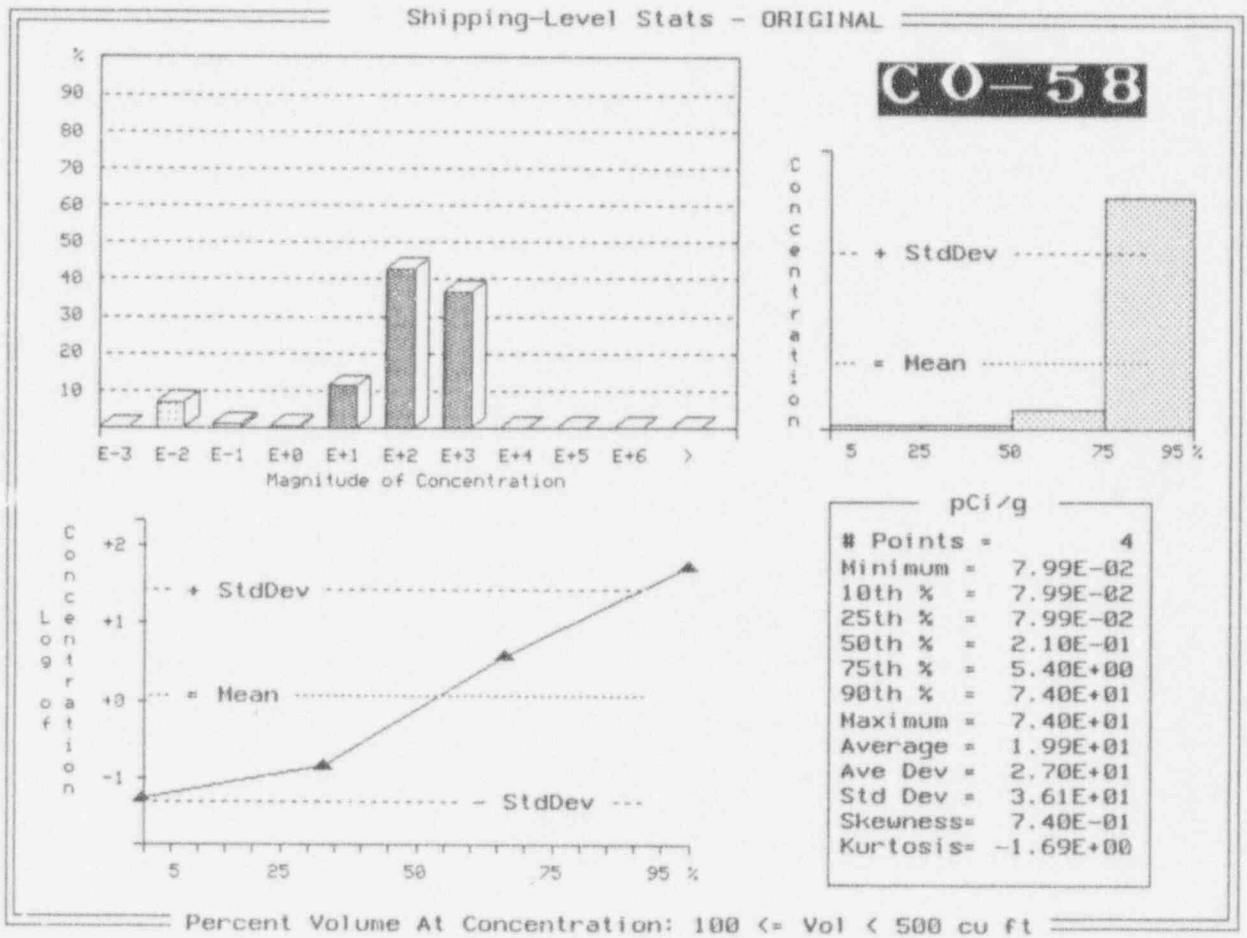

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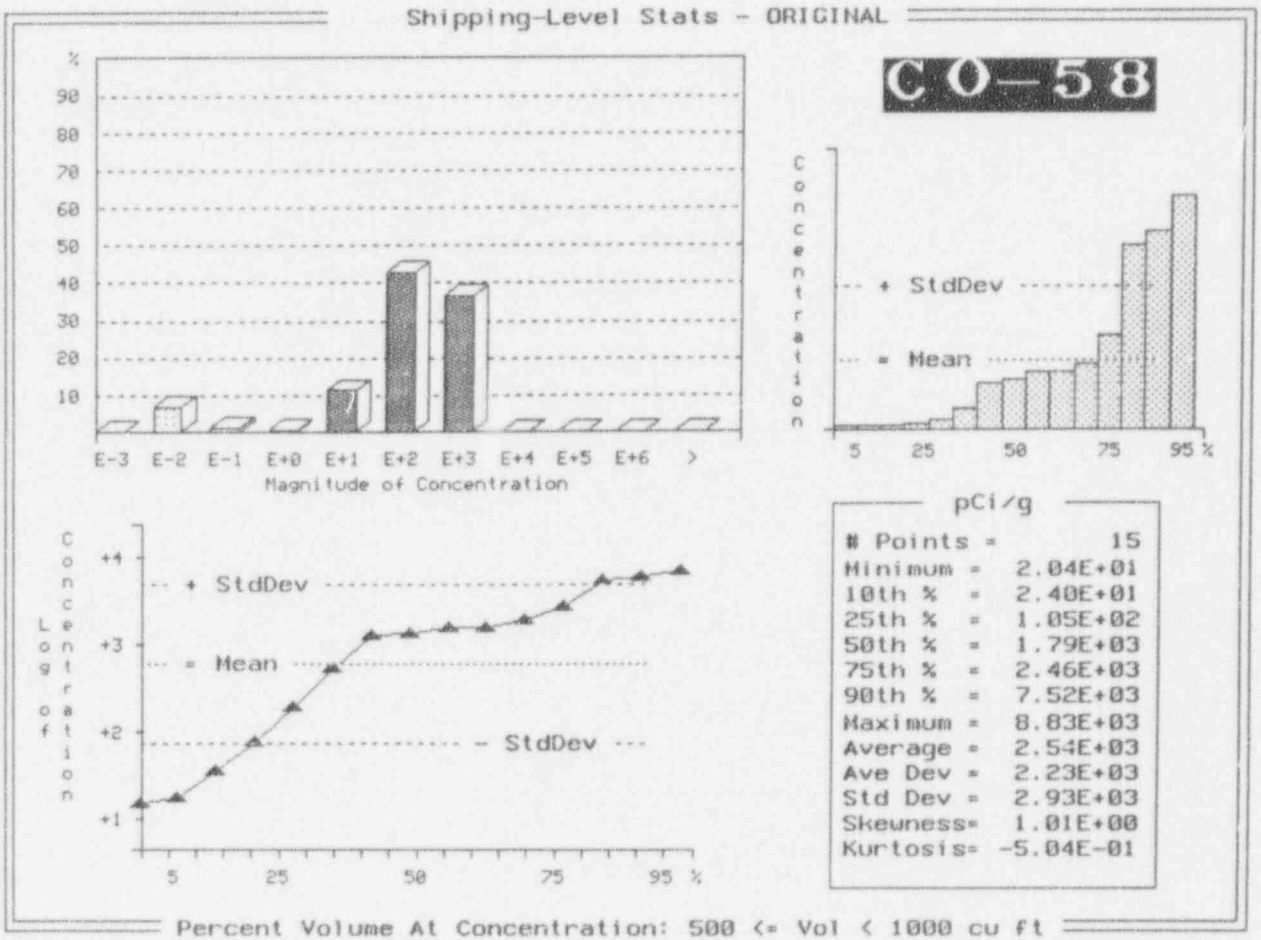

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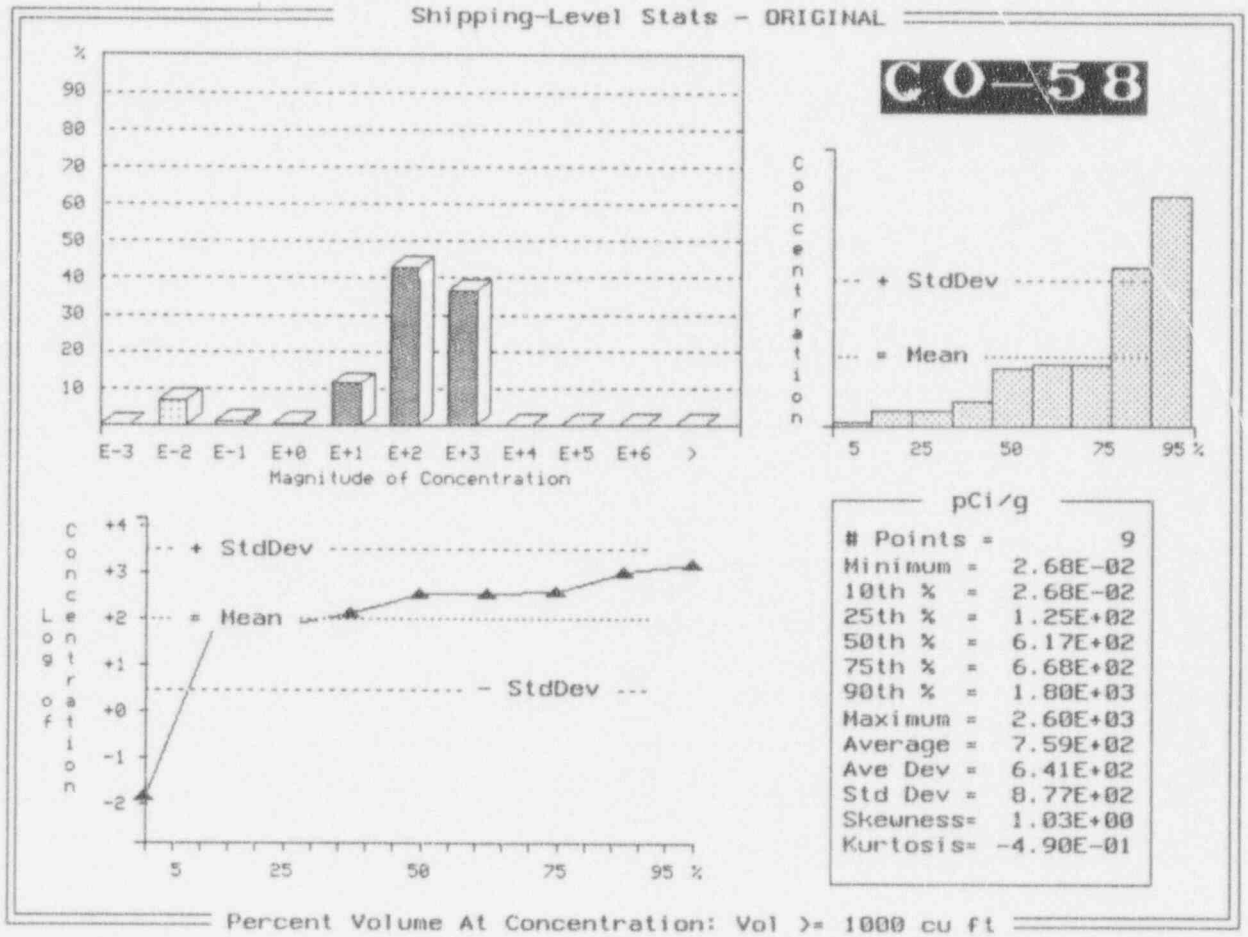

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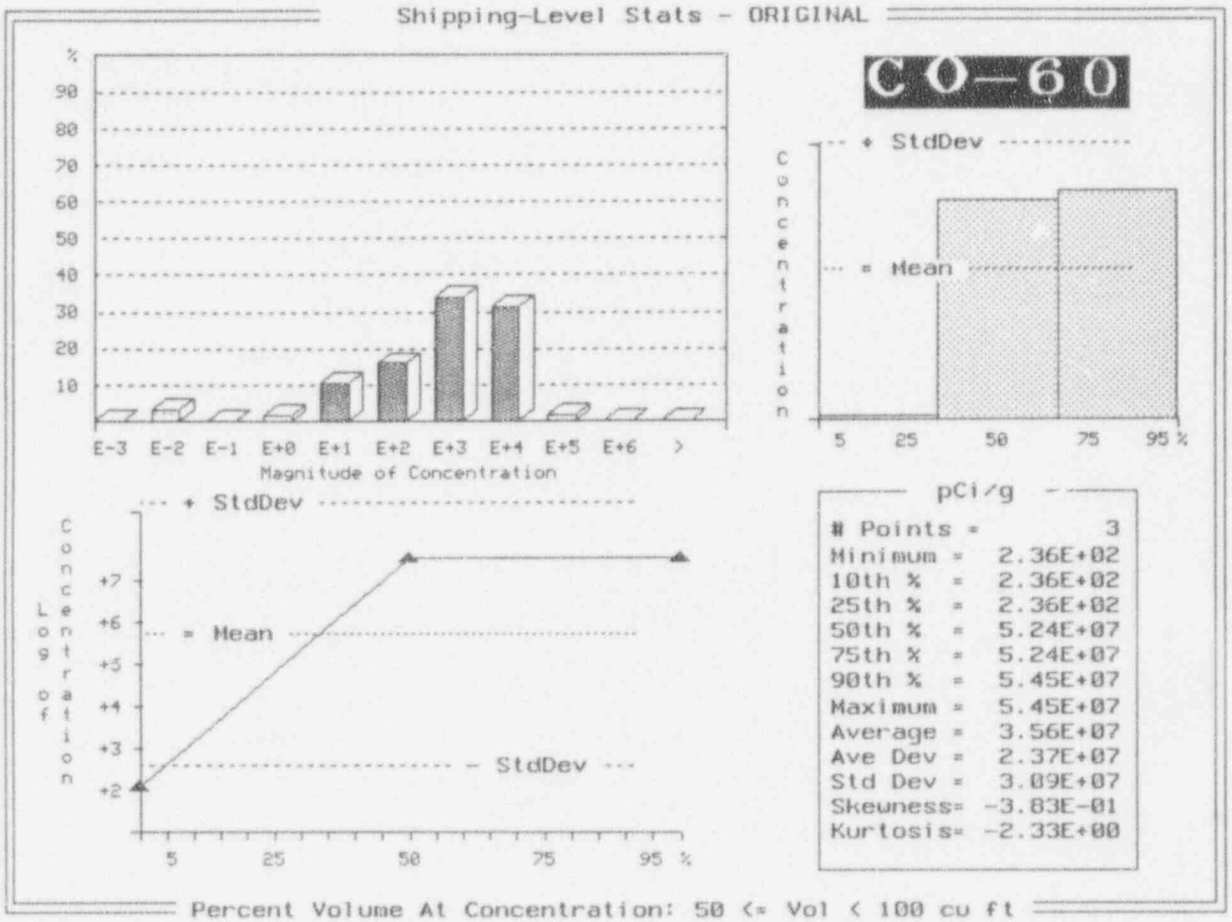

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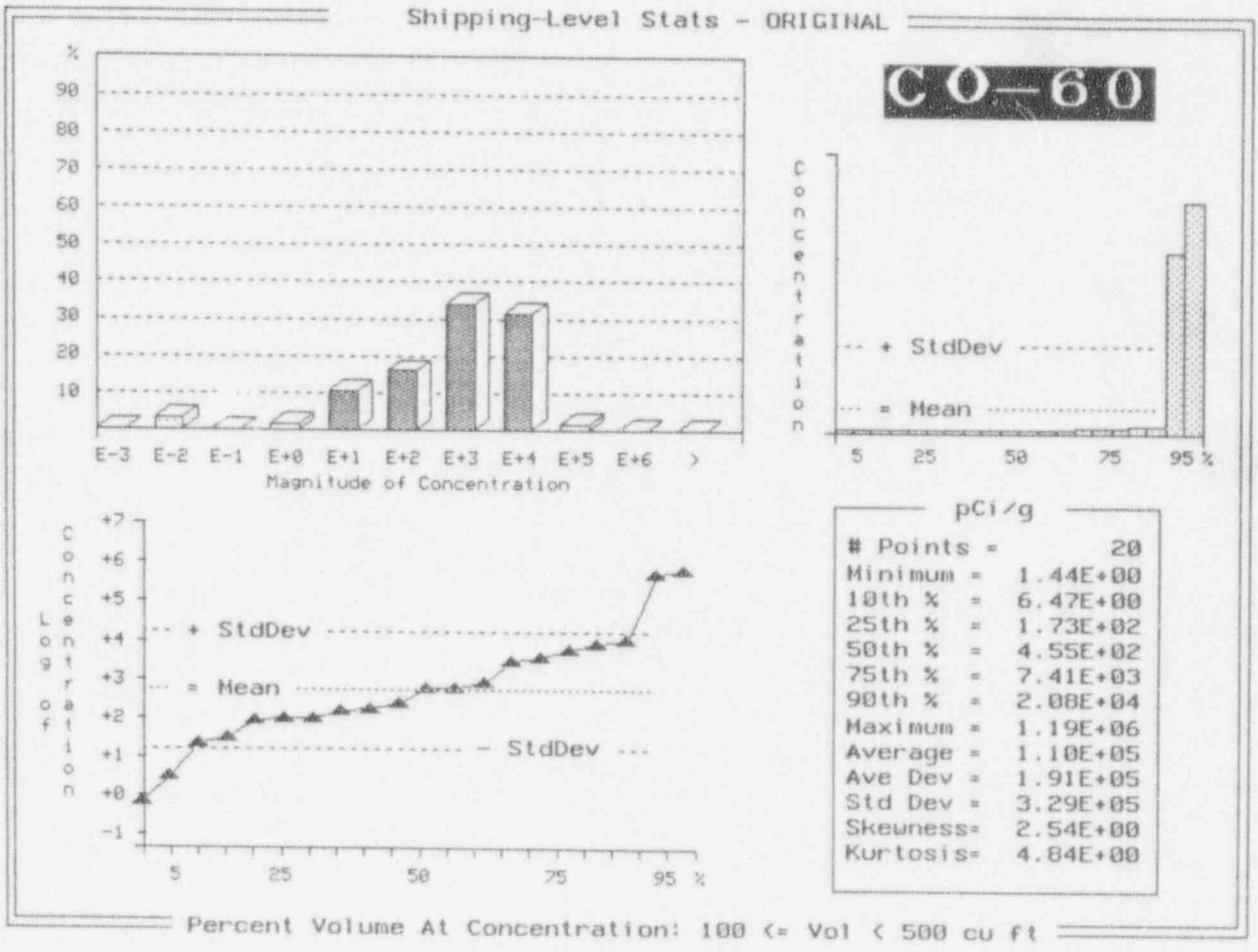

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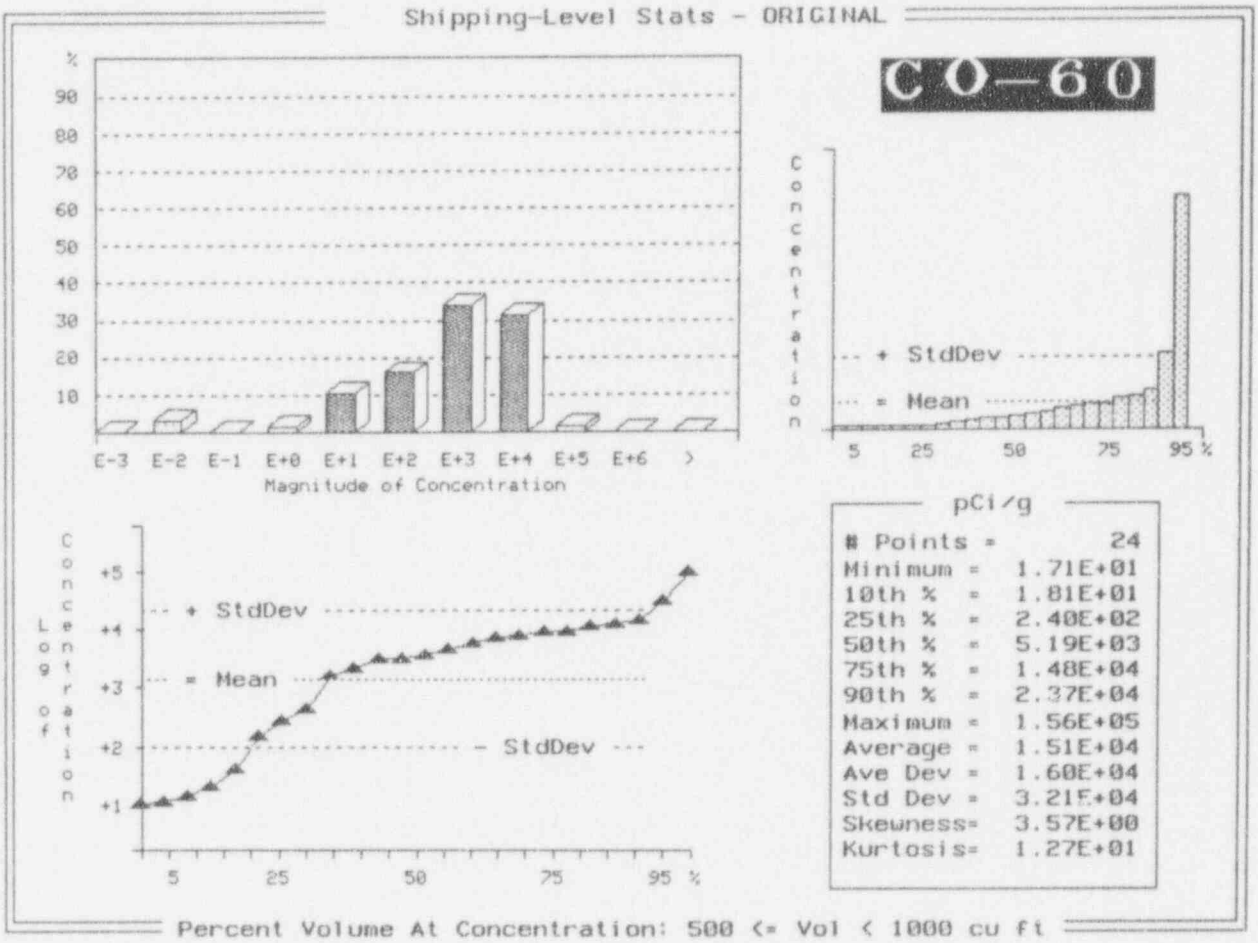

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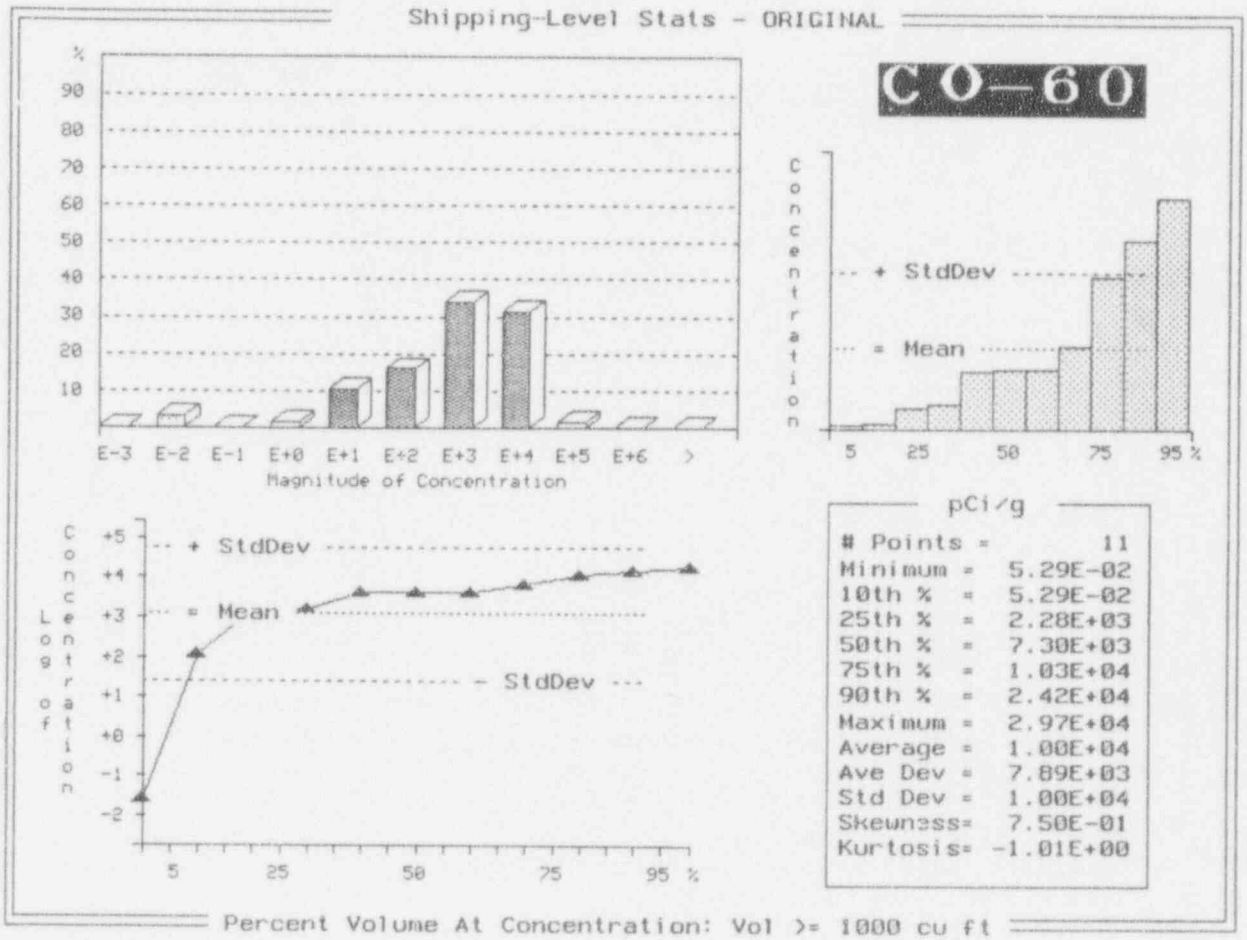

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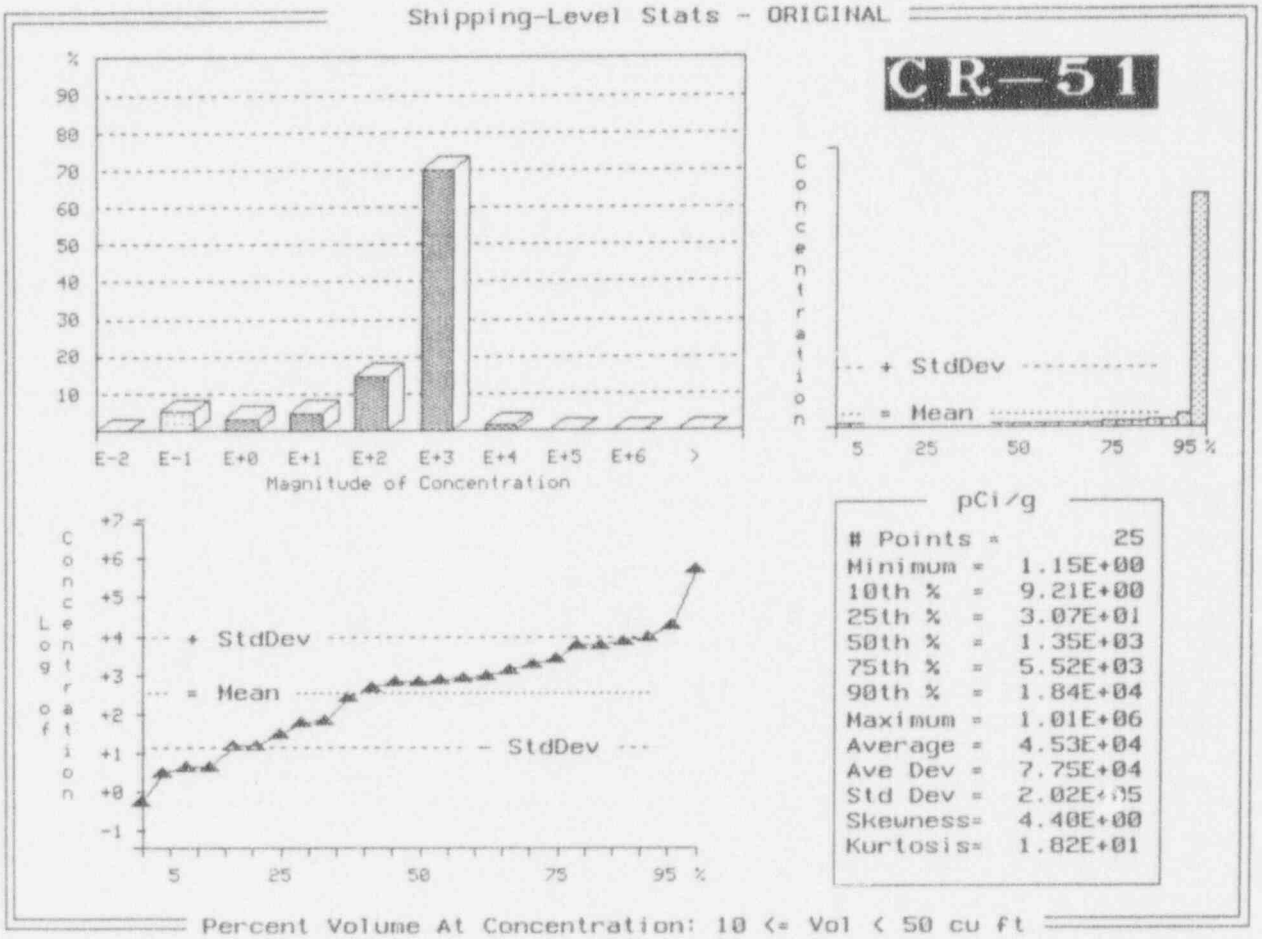

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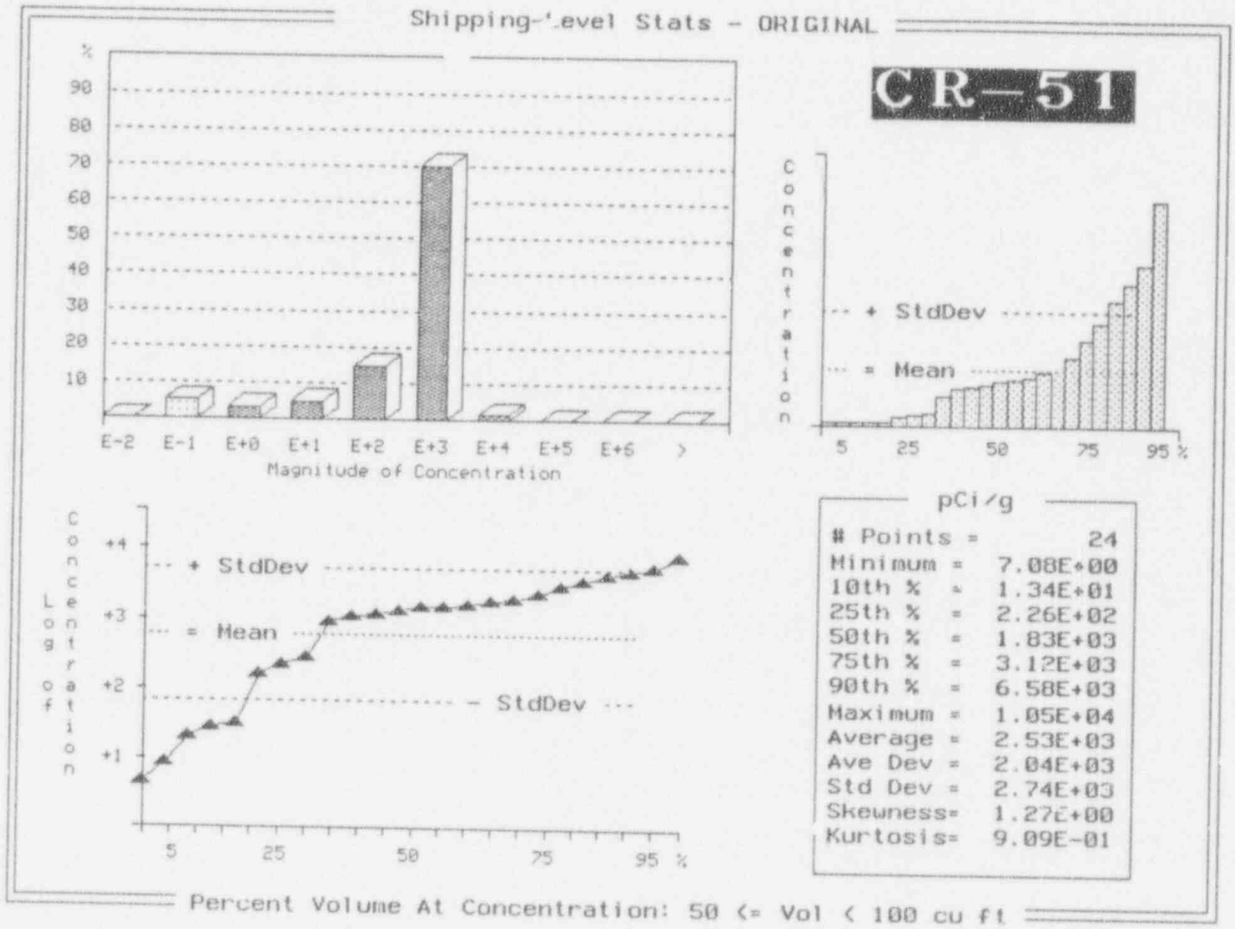

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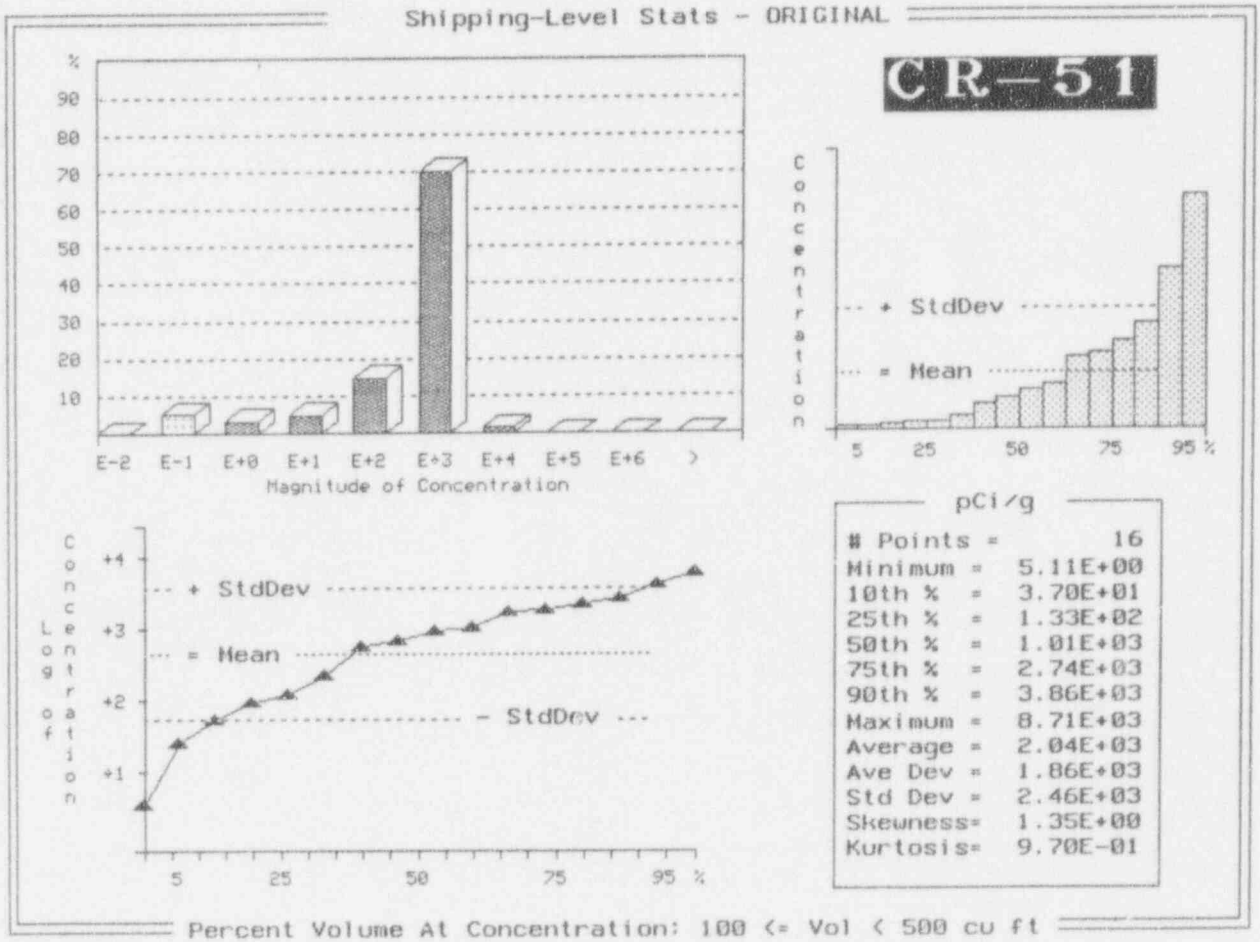

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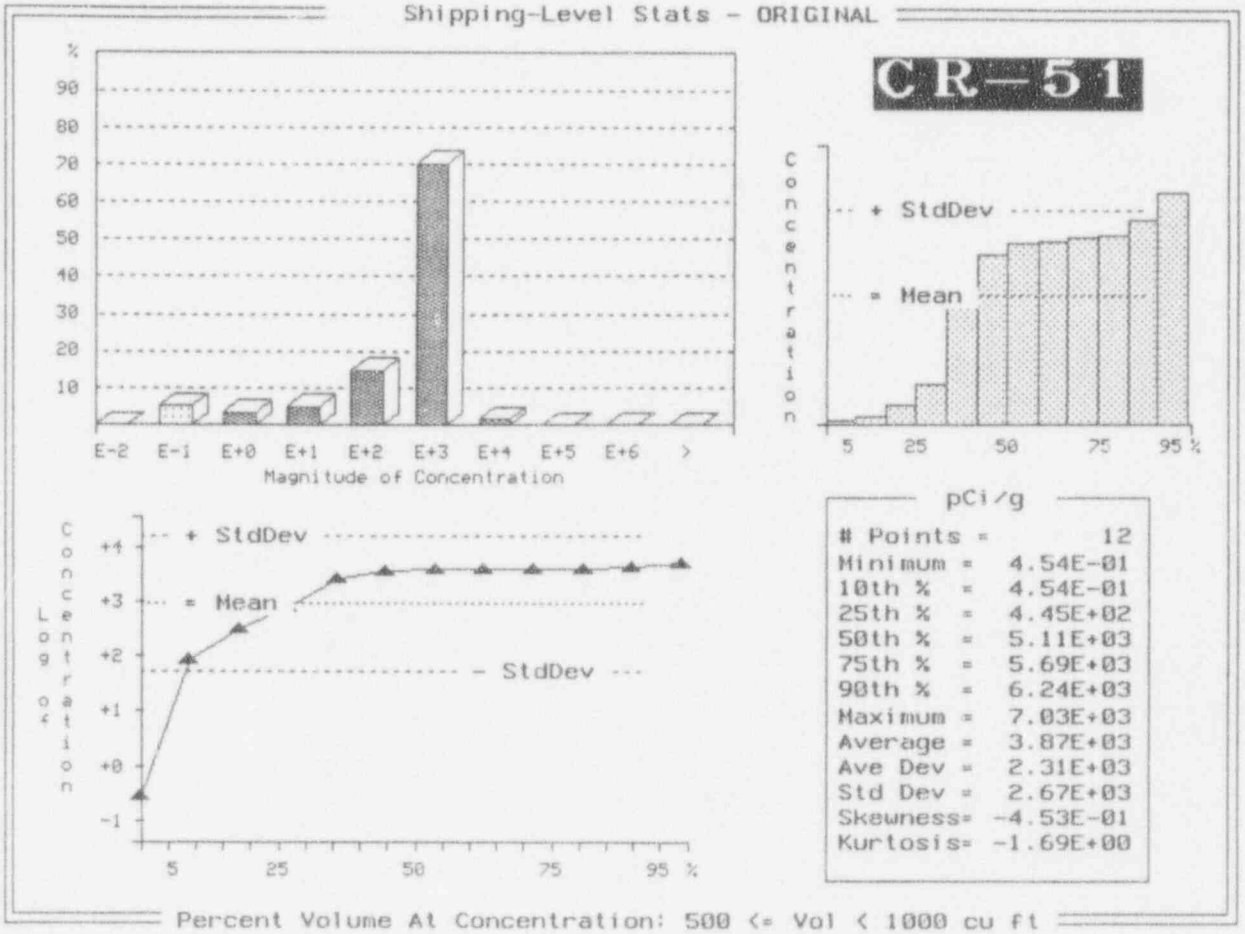

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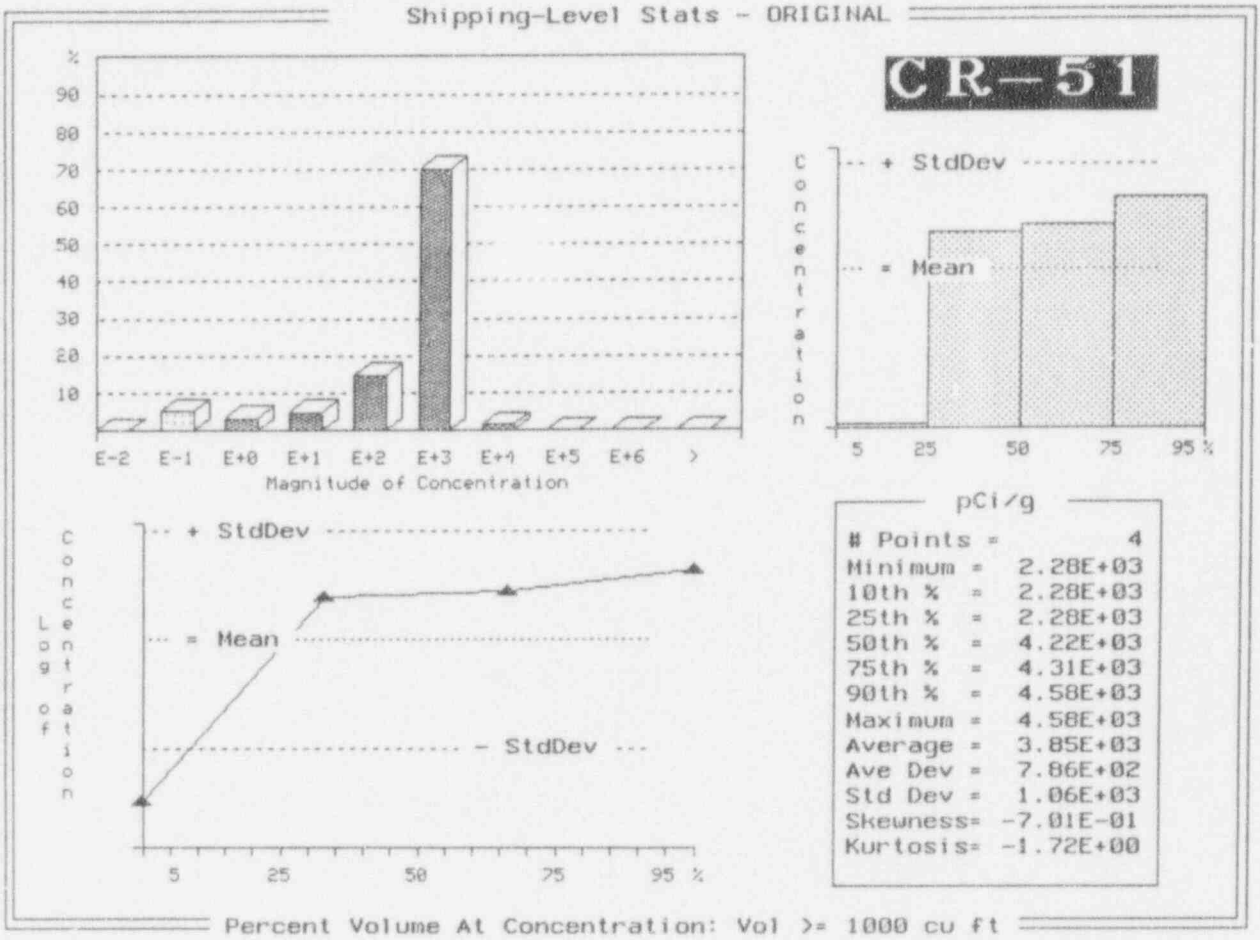

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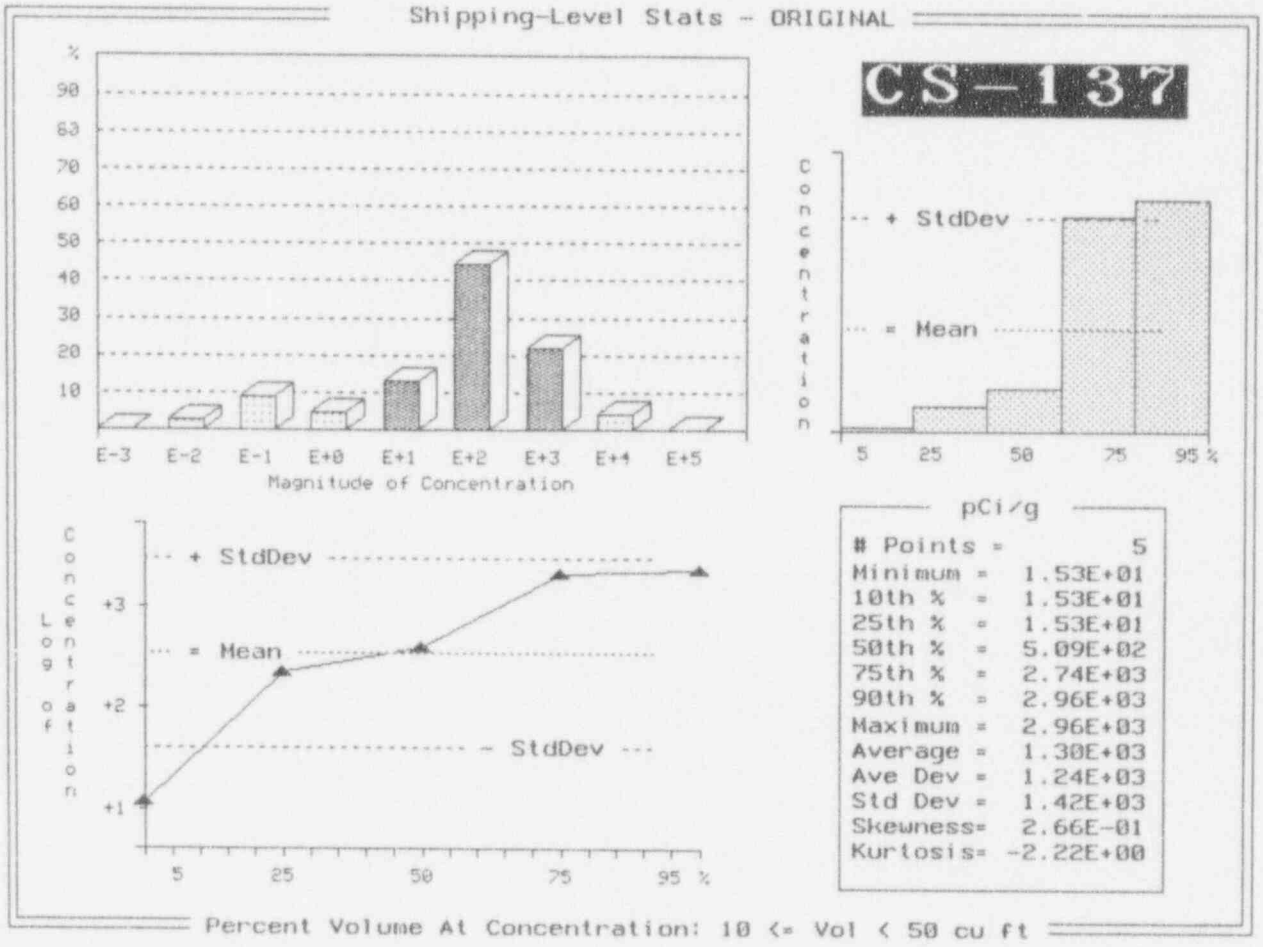

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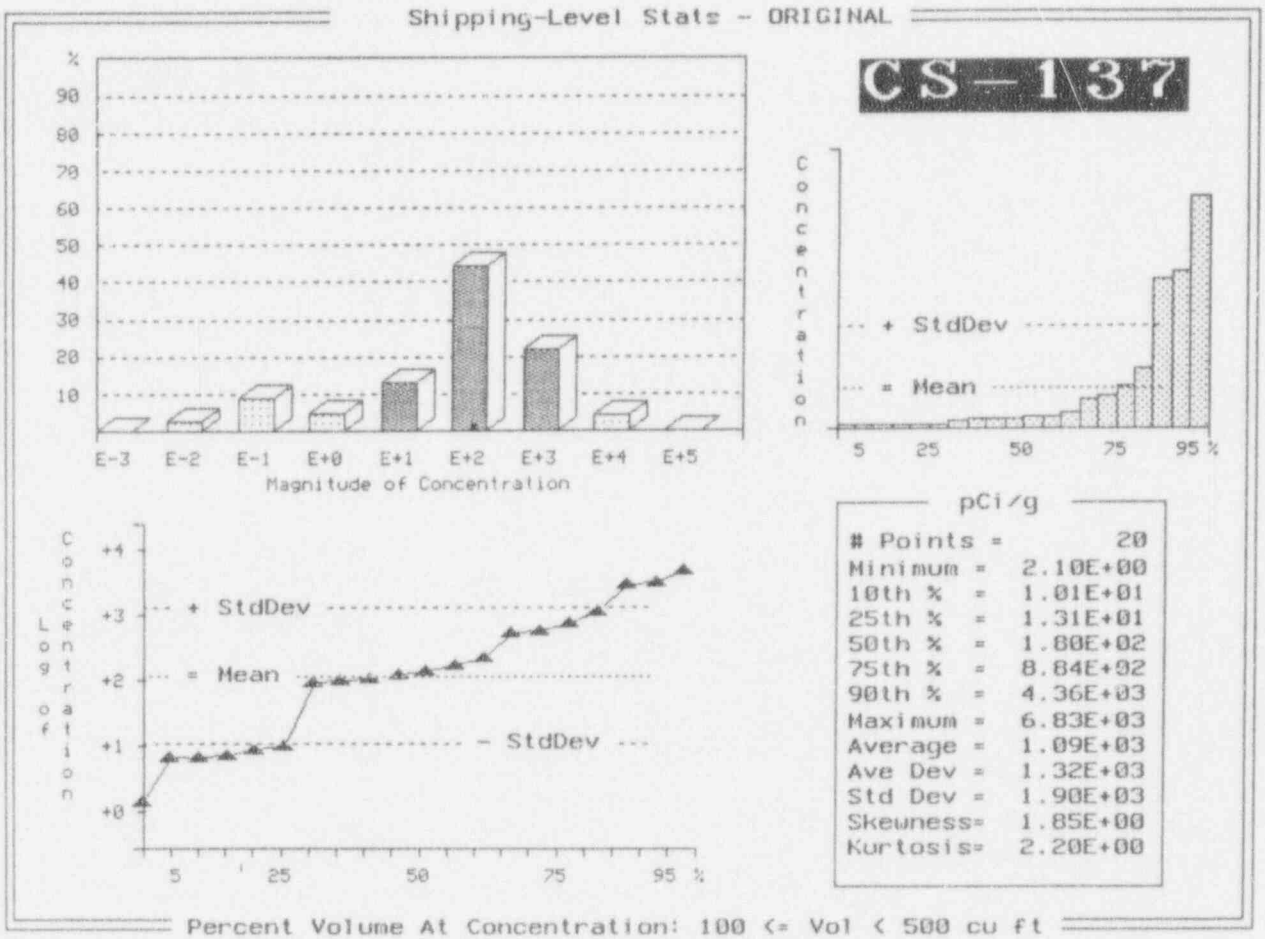

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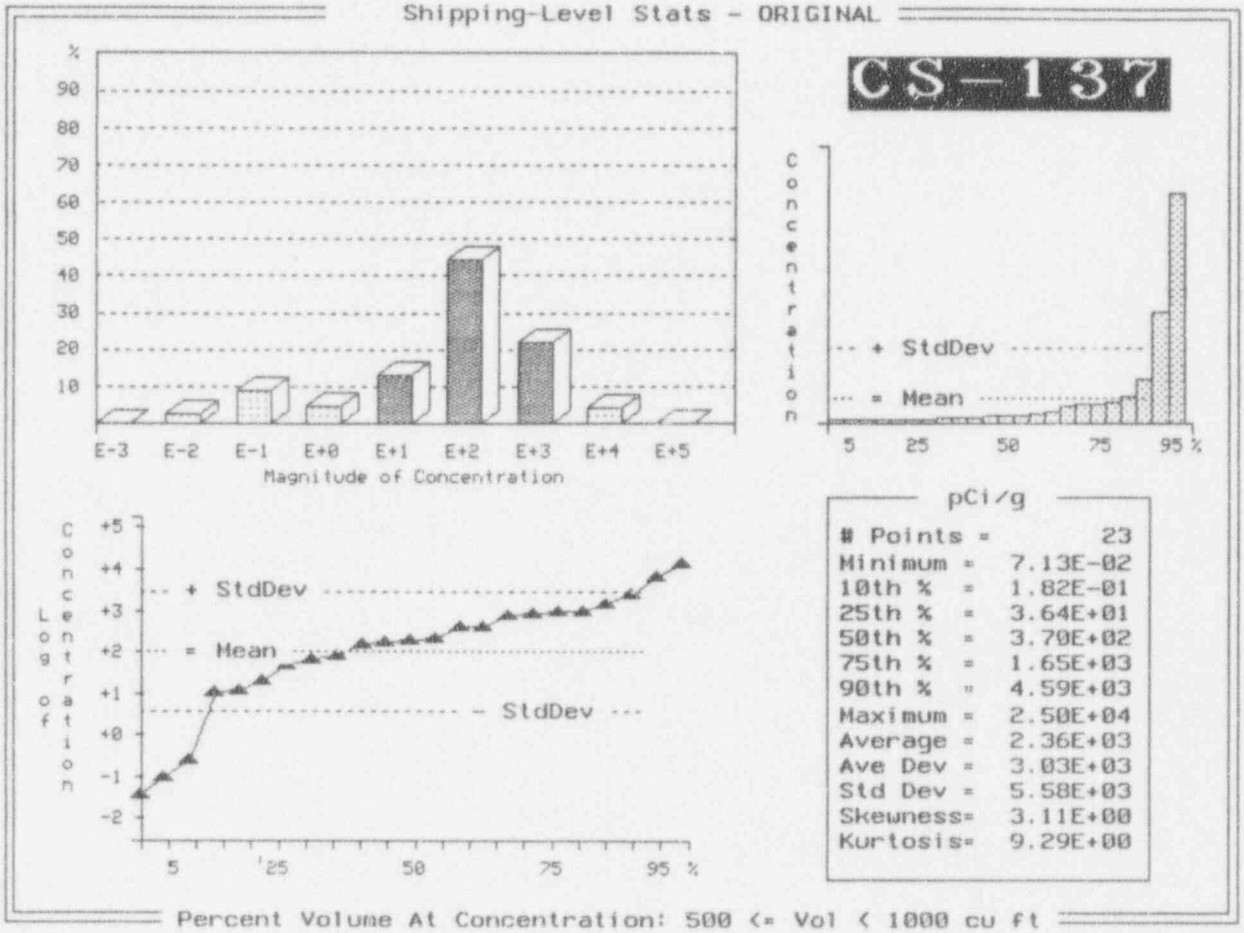

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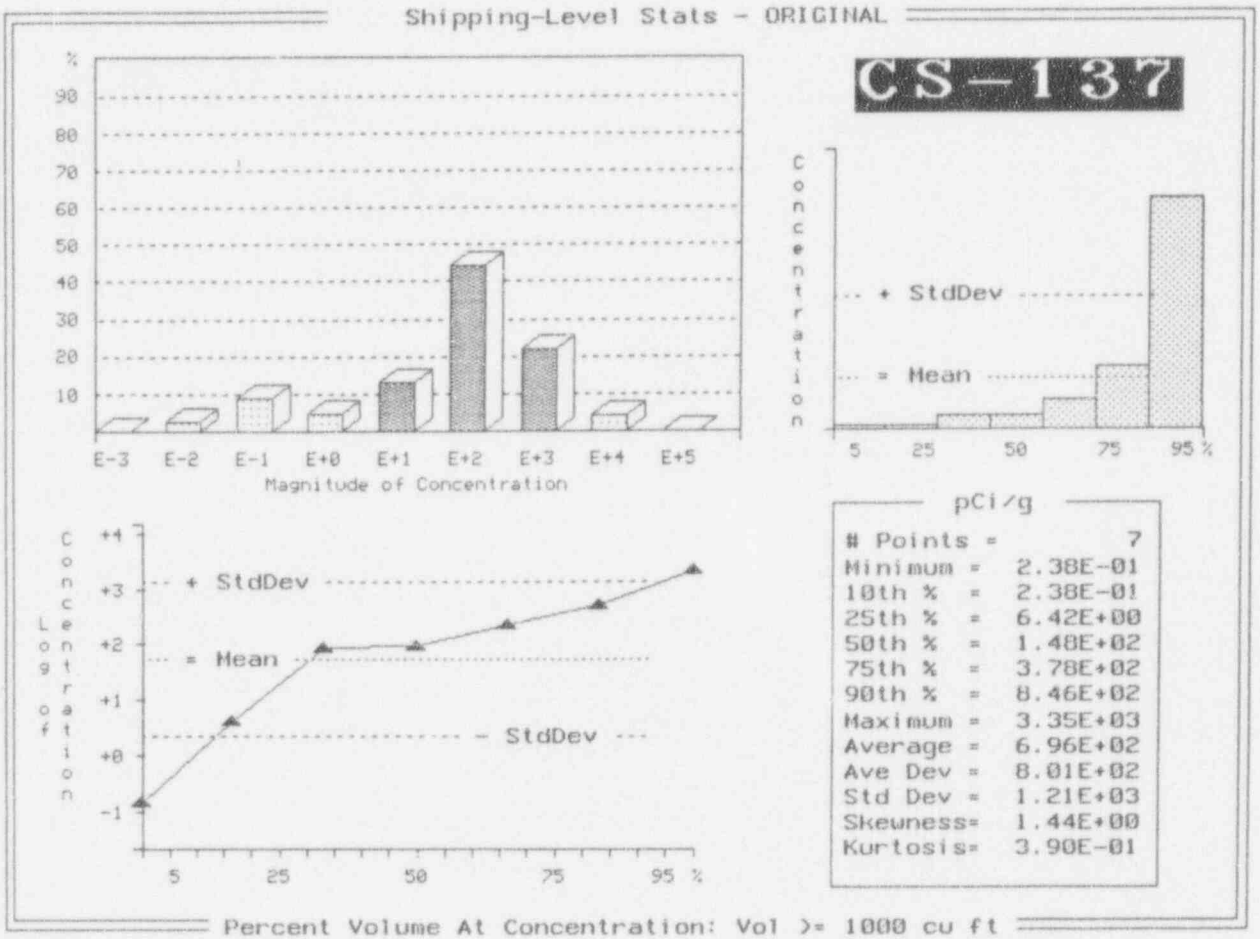

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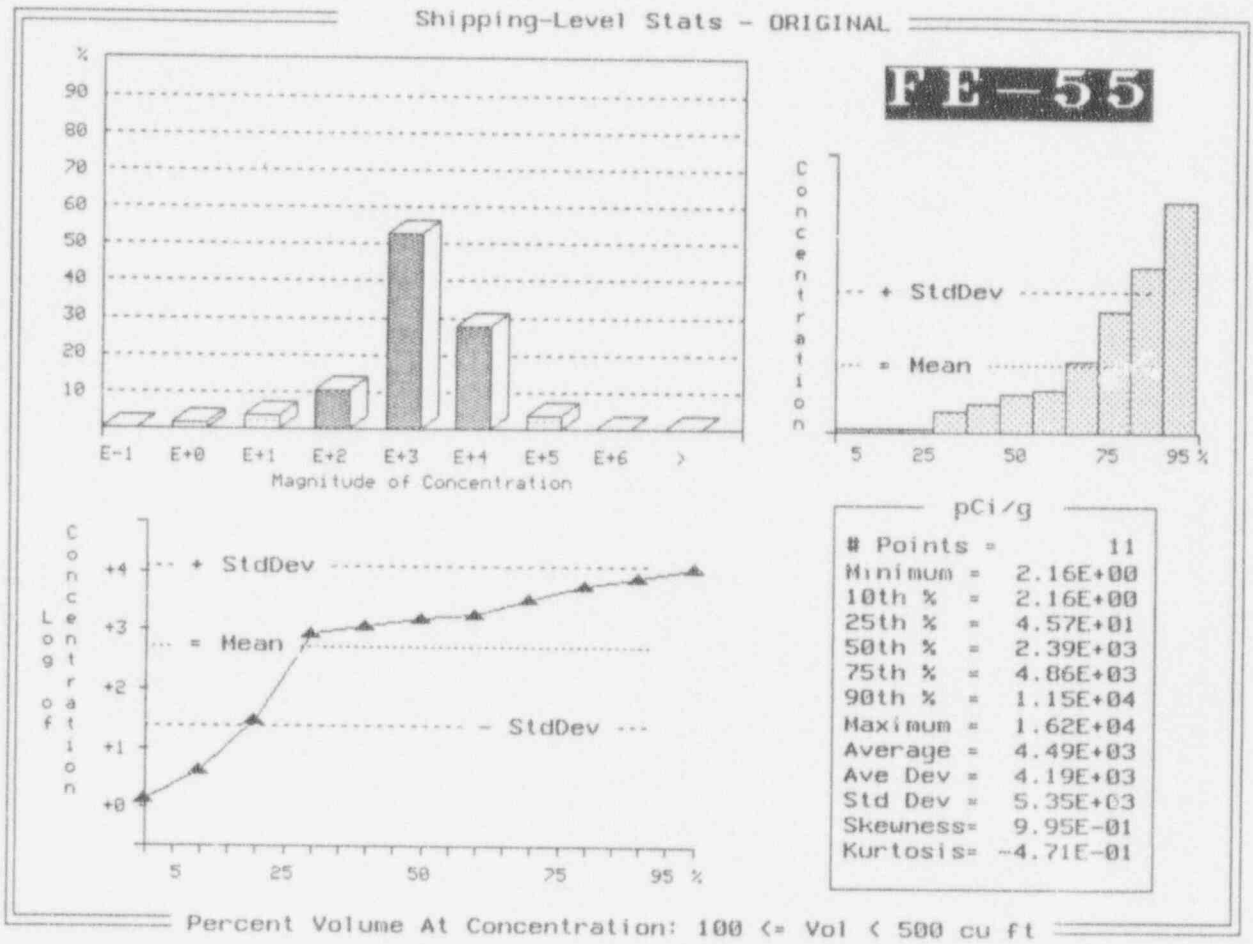

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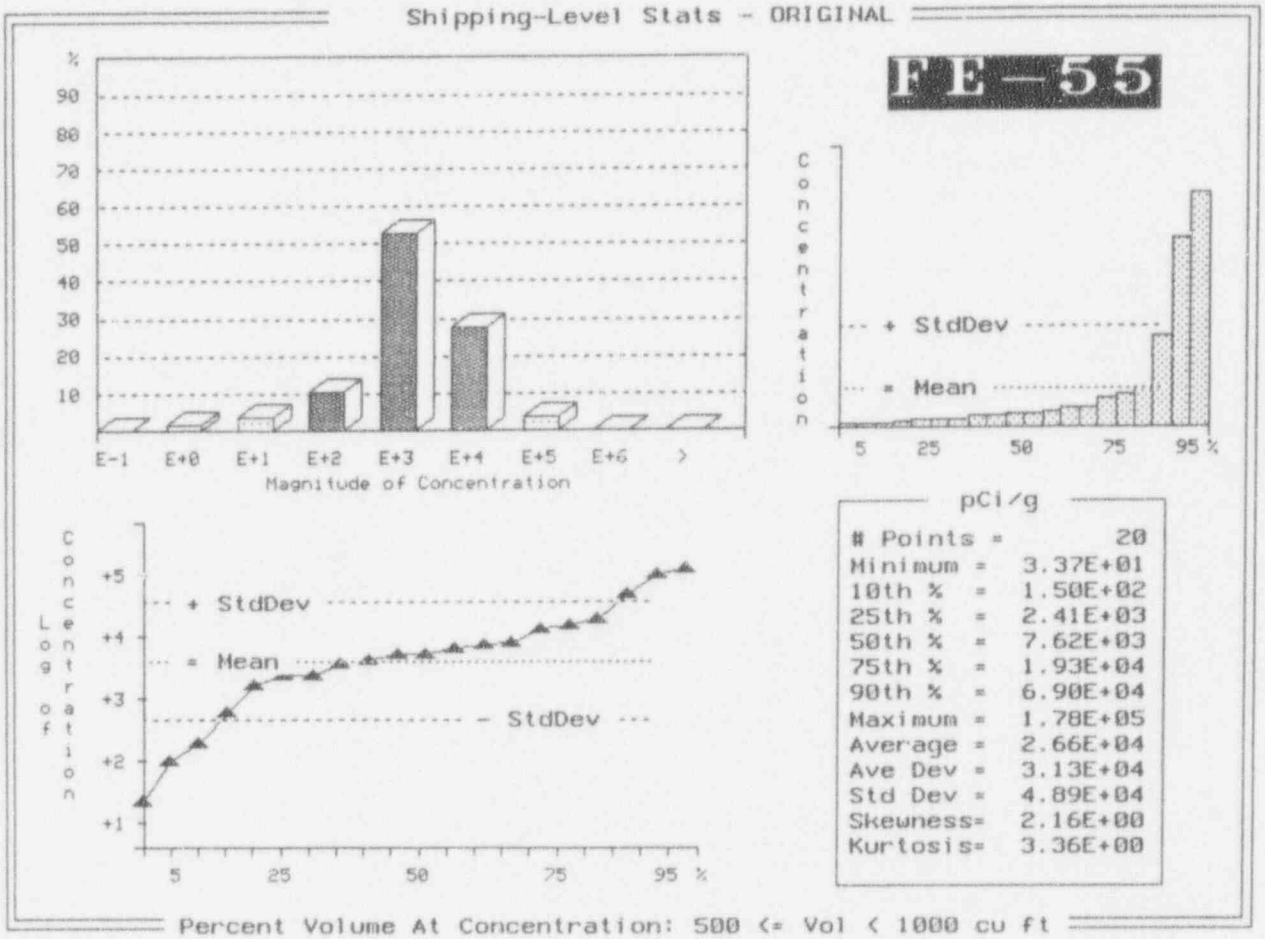

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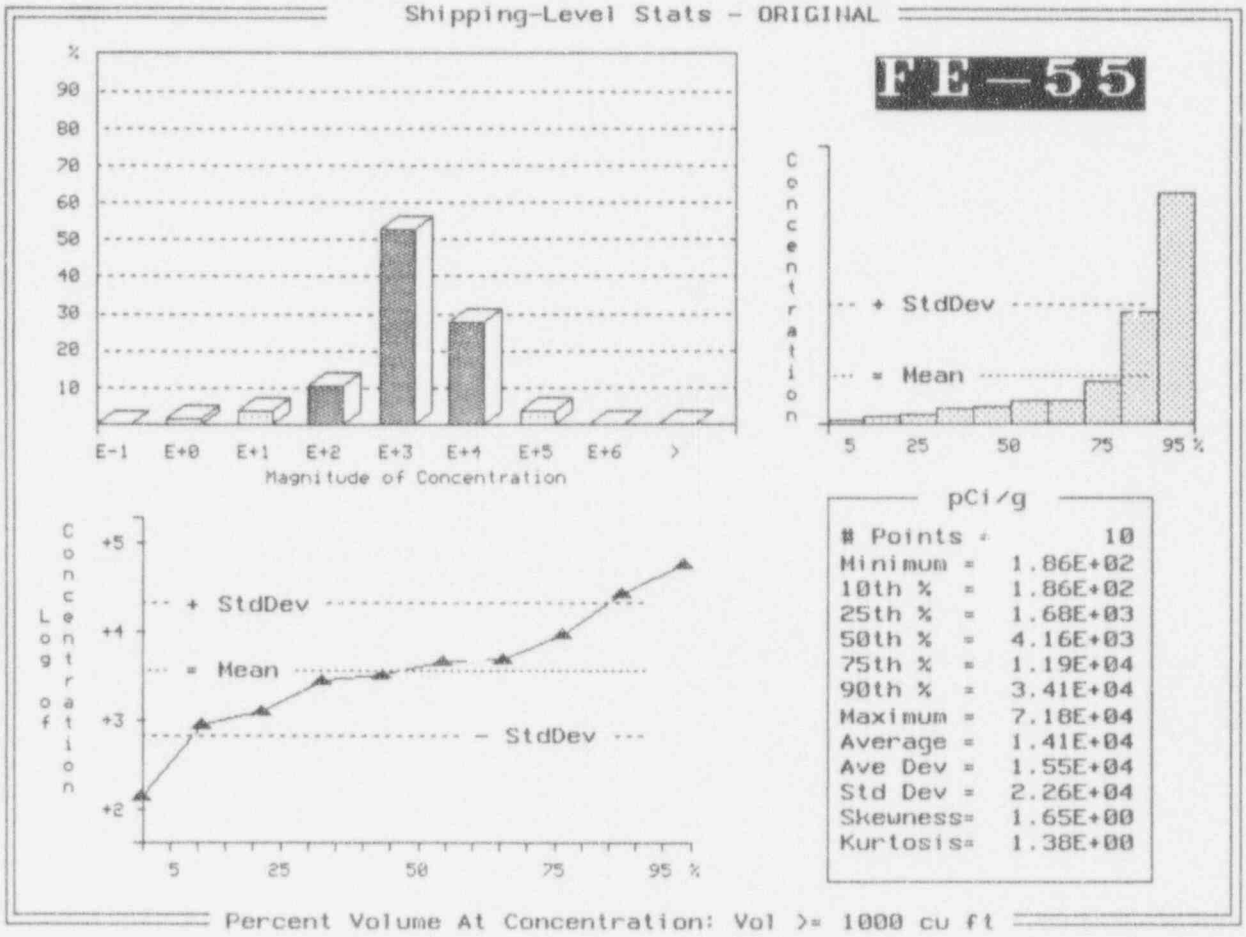

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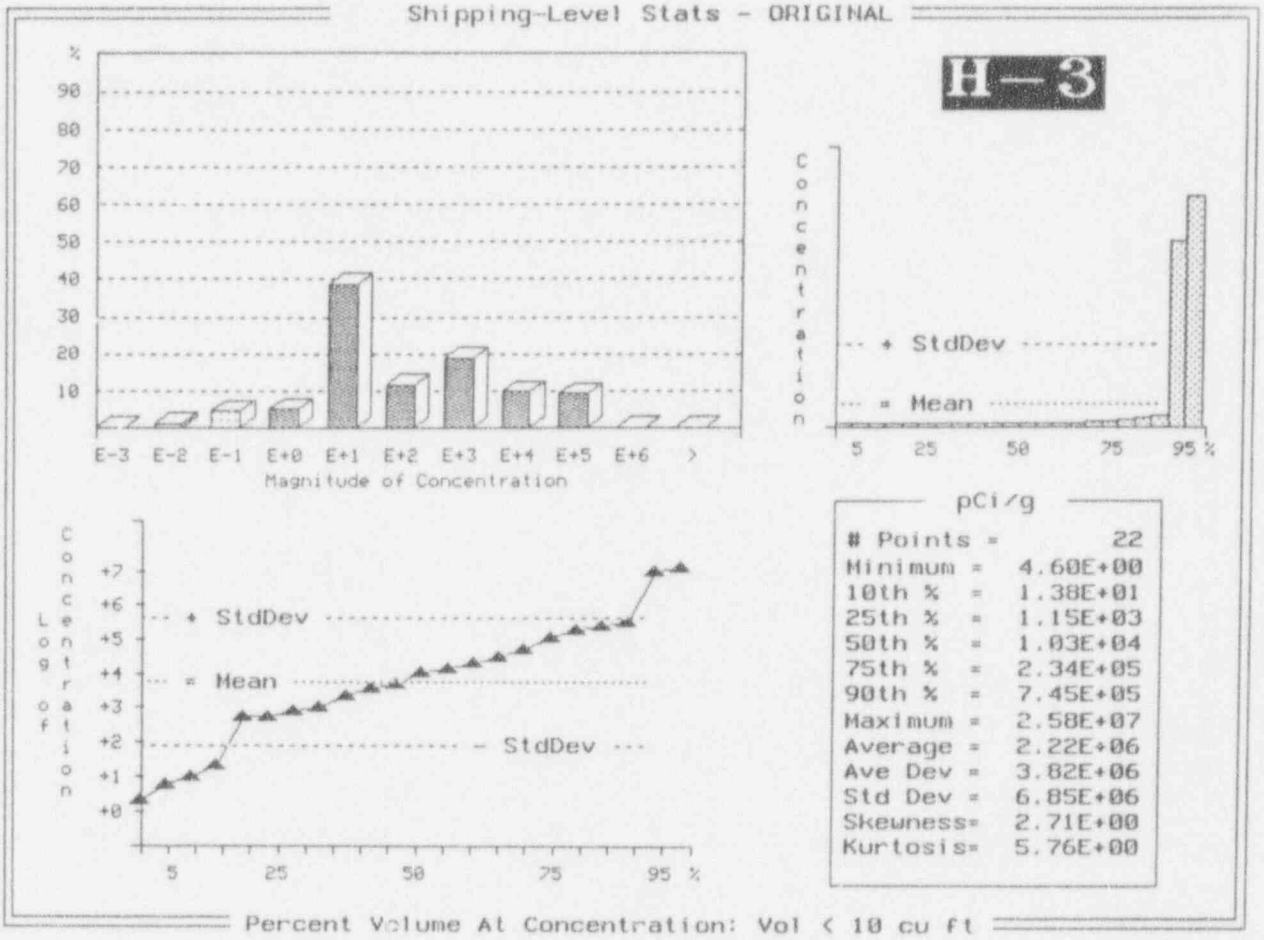

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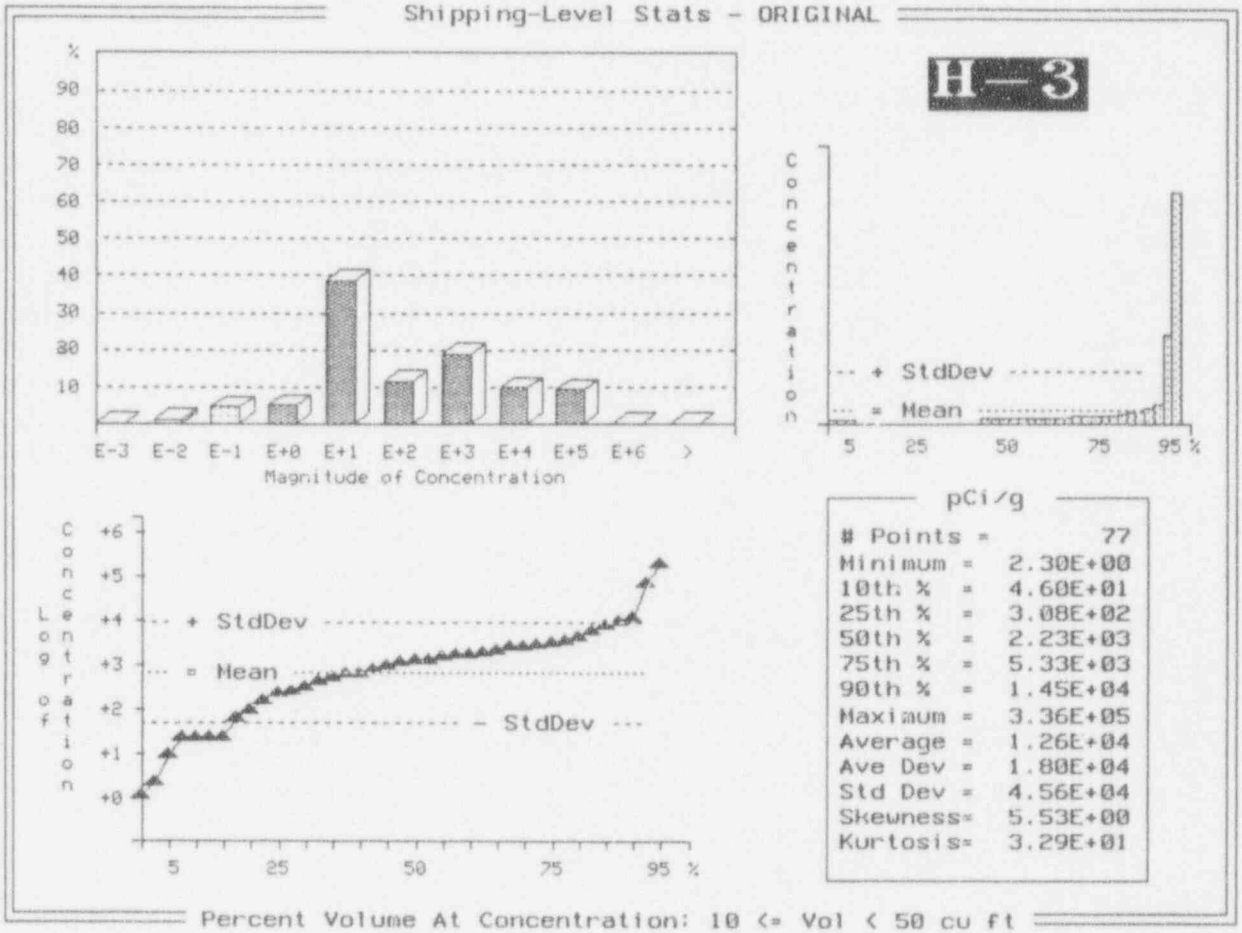

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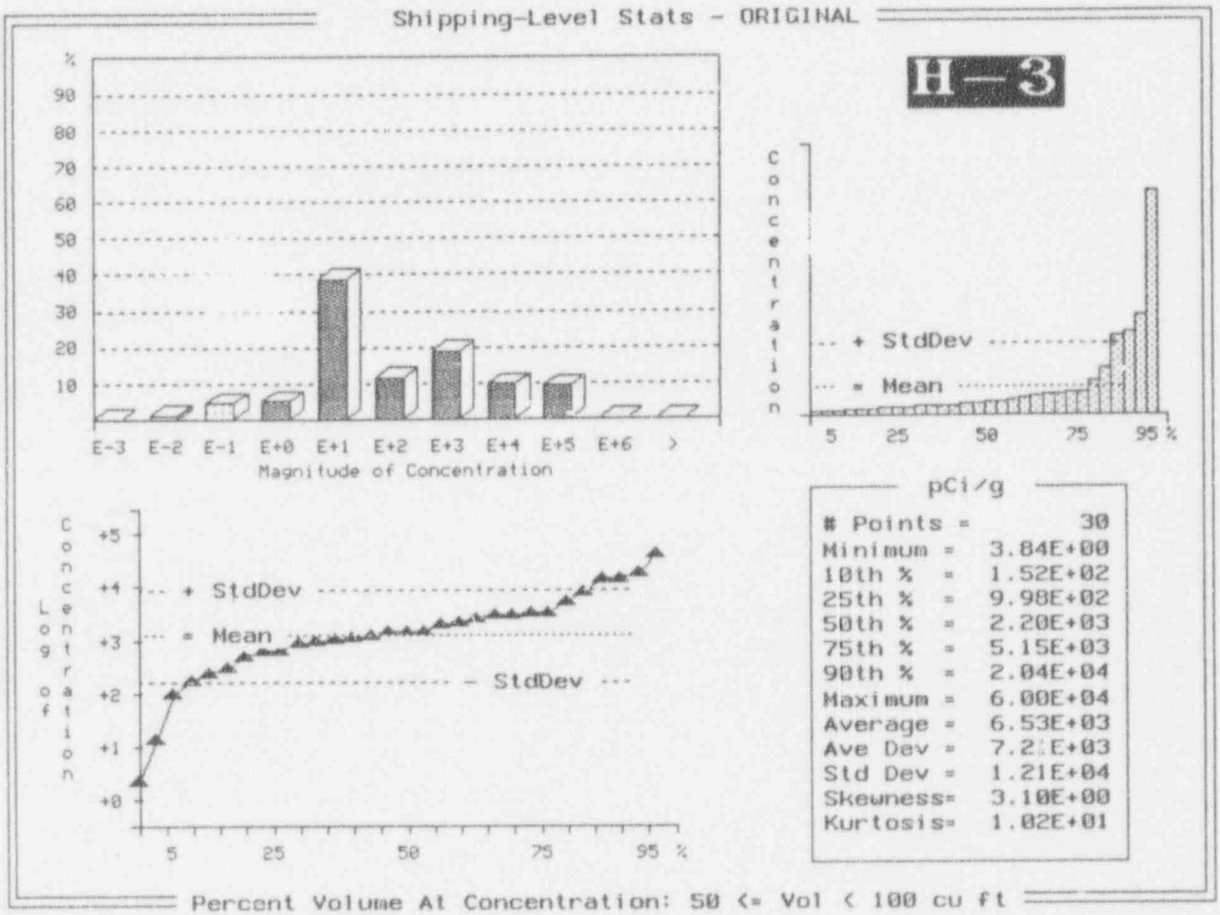

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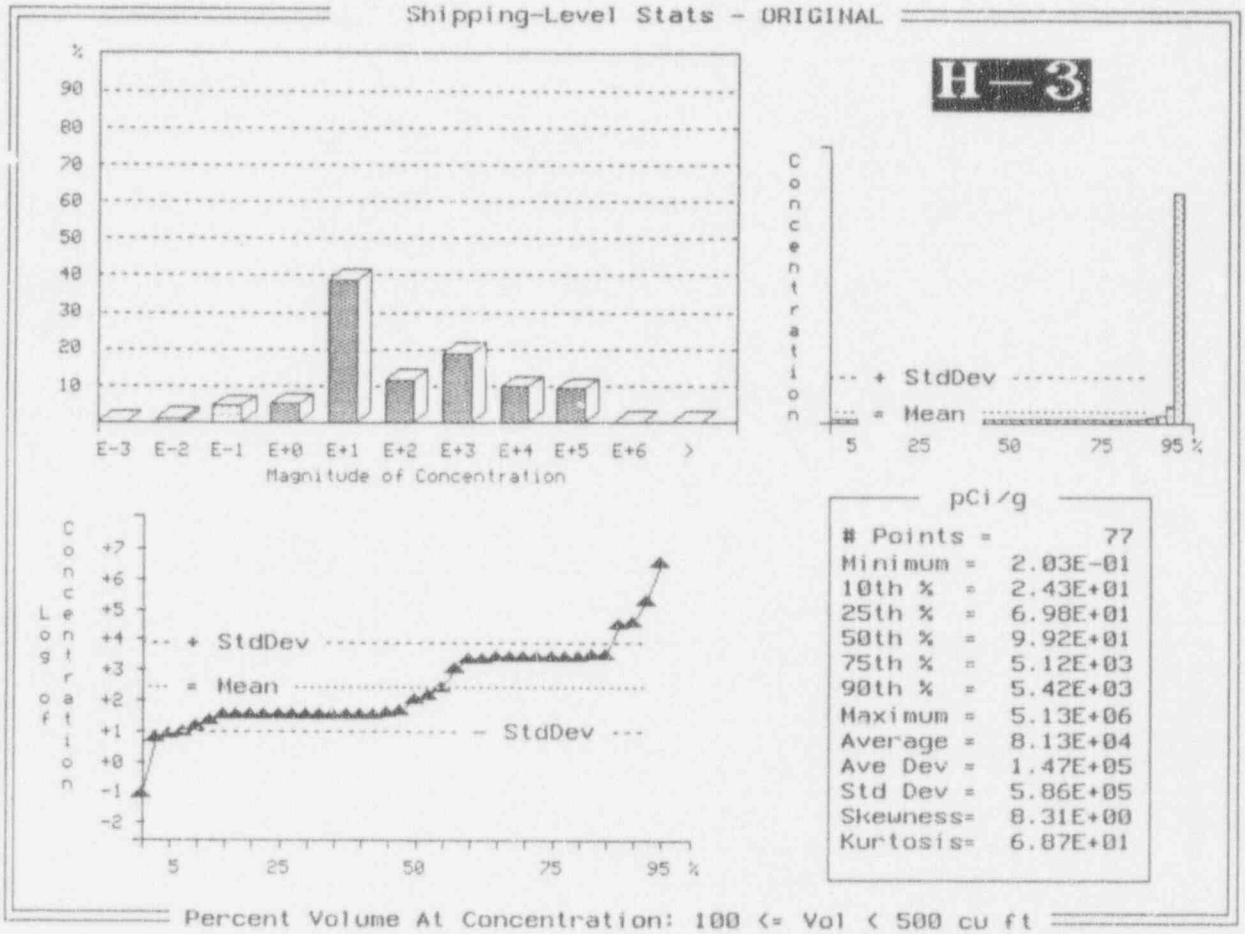

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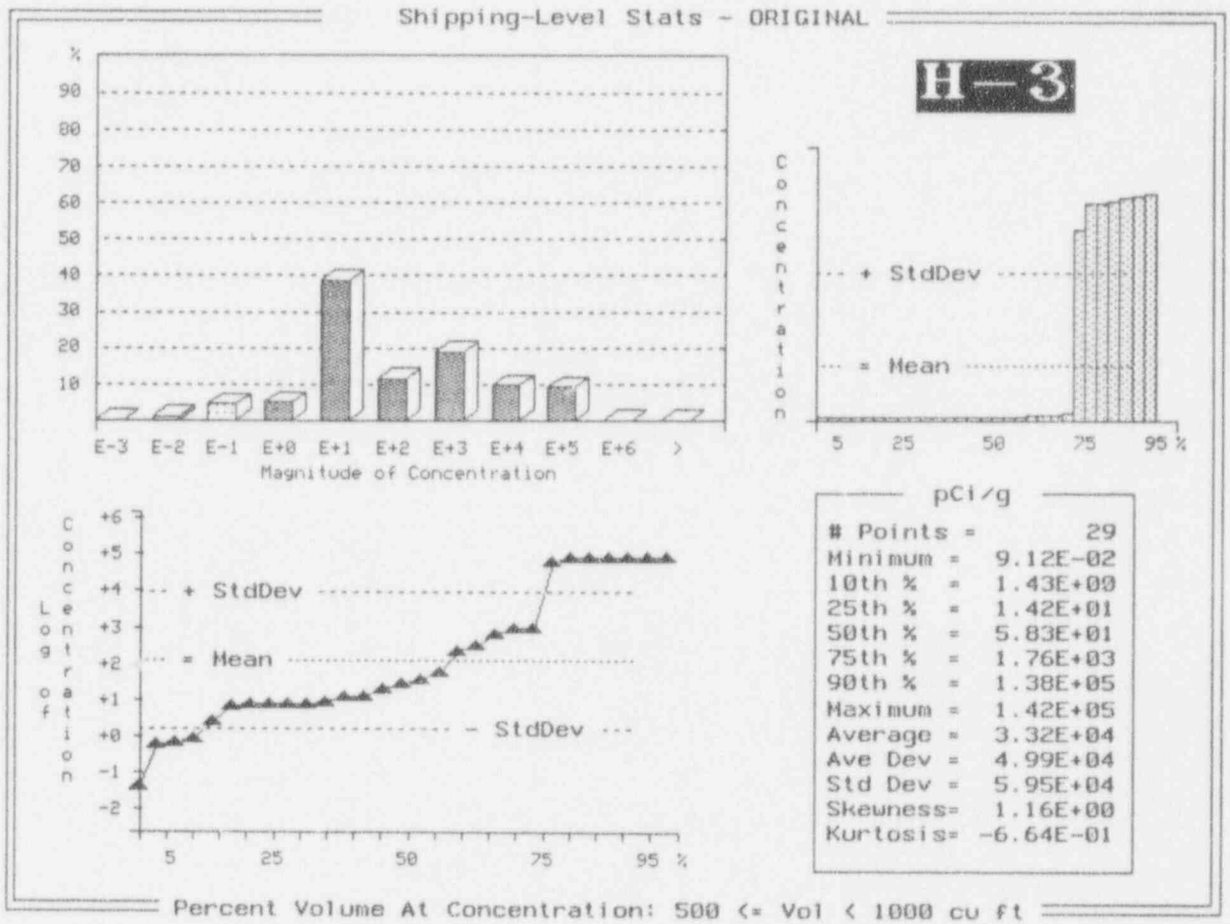
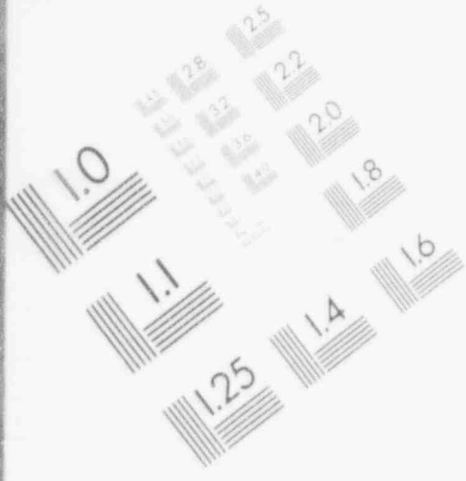
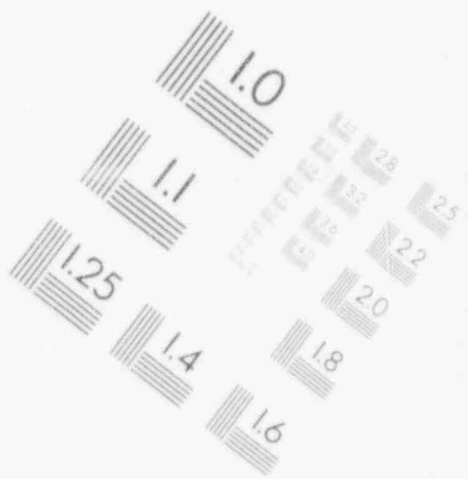
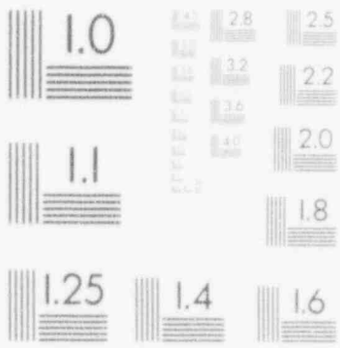


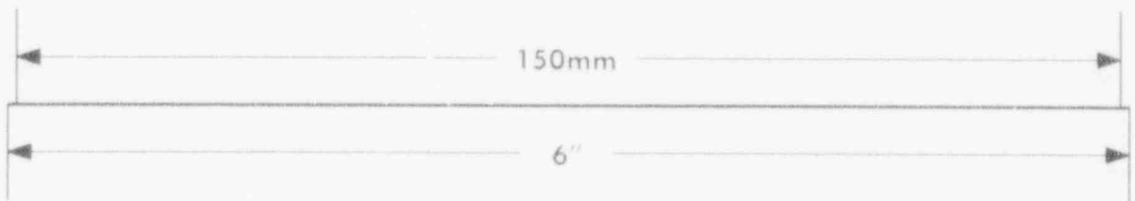
2

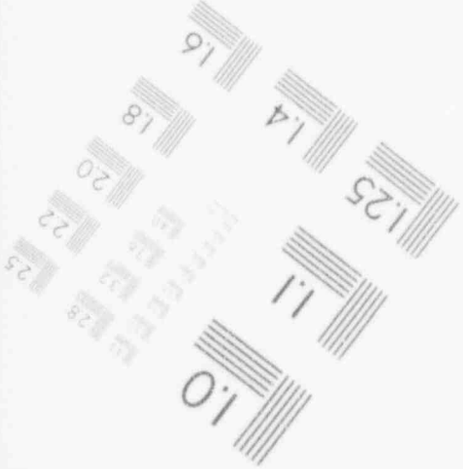
IMAGE EVALUATION TEST TARGET (MT-3)











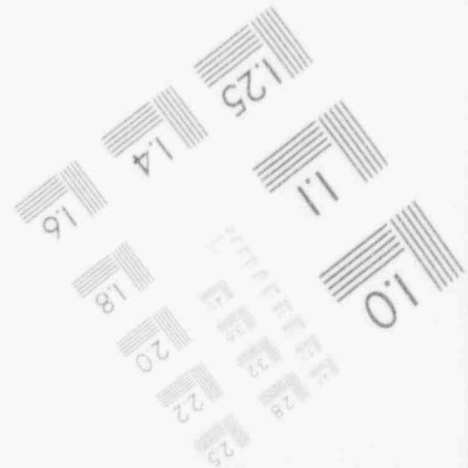


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IMAGE EVALUATION TEST TARGET (MT-3)

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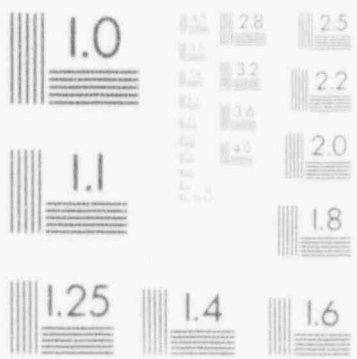
2

IMAGE EVALUATION TEST TARGET (MT-3)



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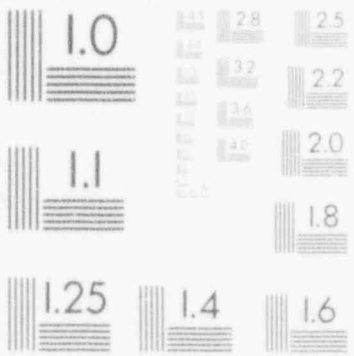
2

IMAGE EVALUATION TEST TARGET (MT-3)



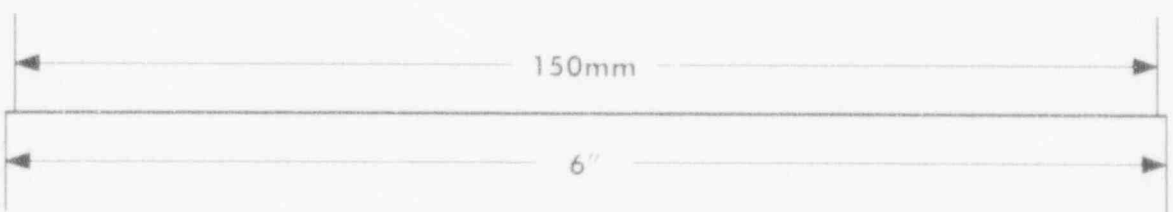


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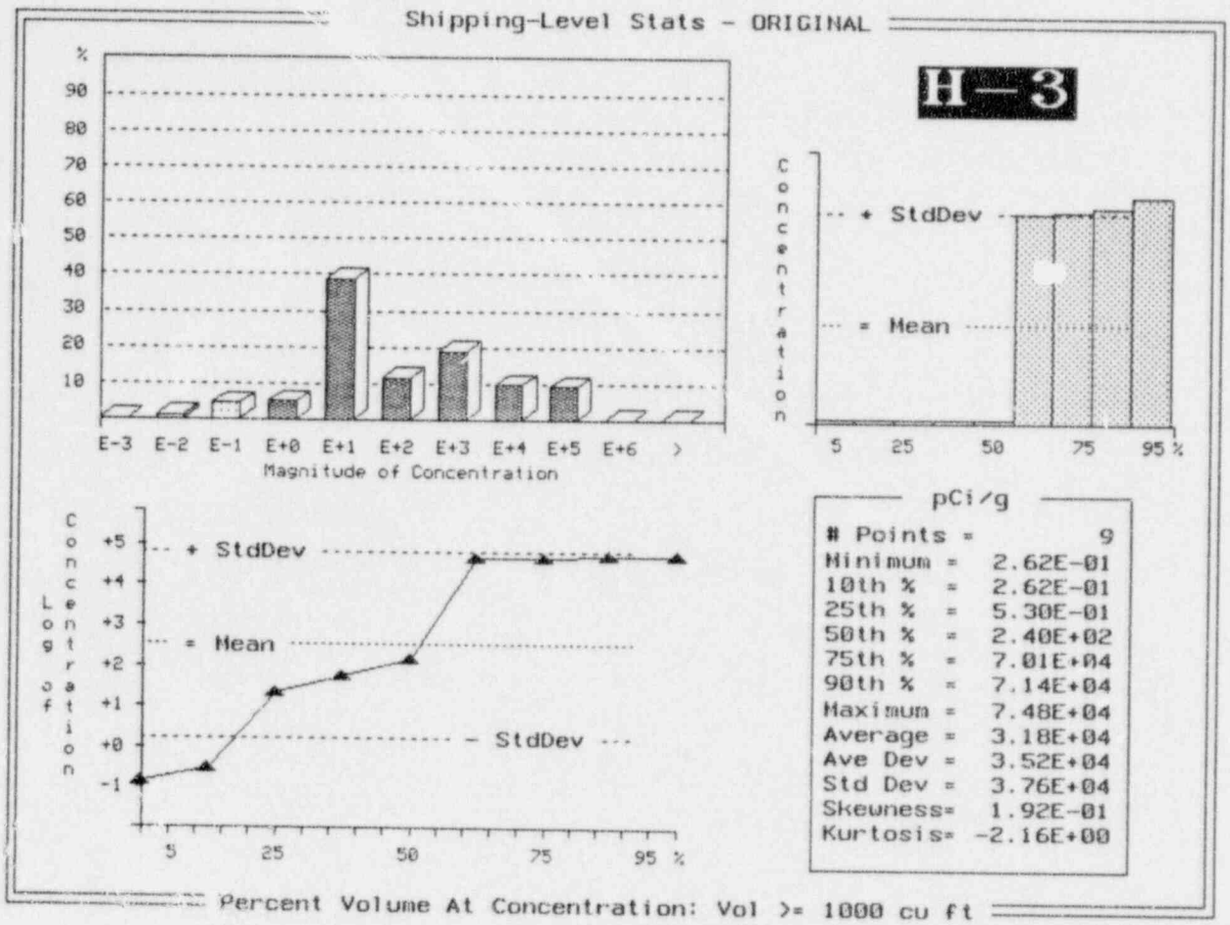
Exhibit F-32 (Continued)



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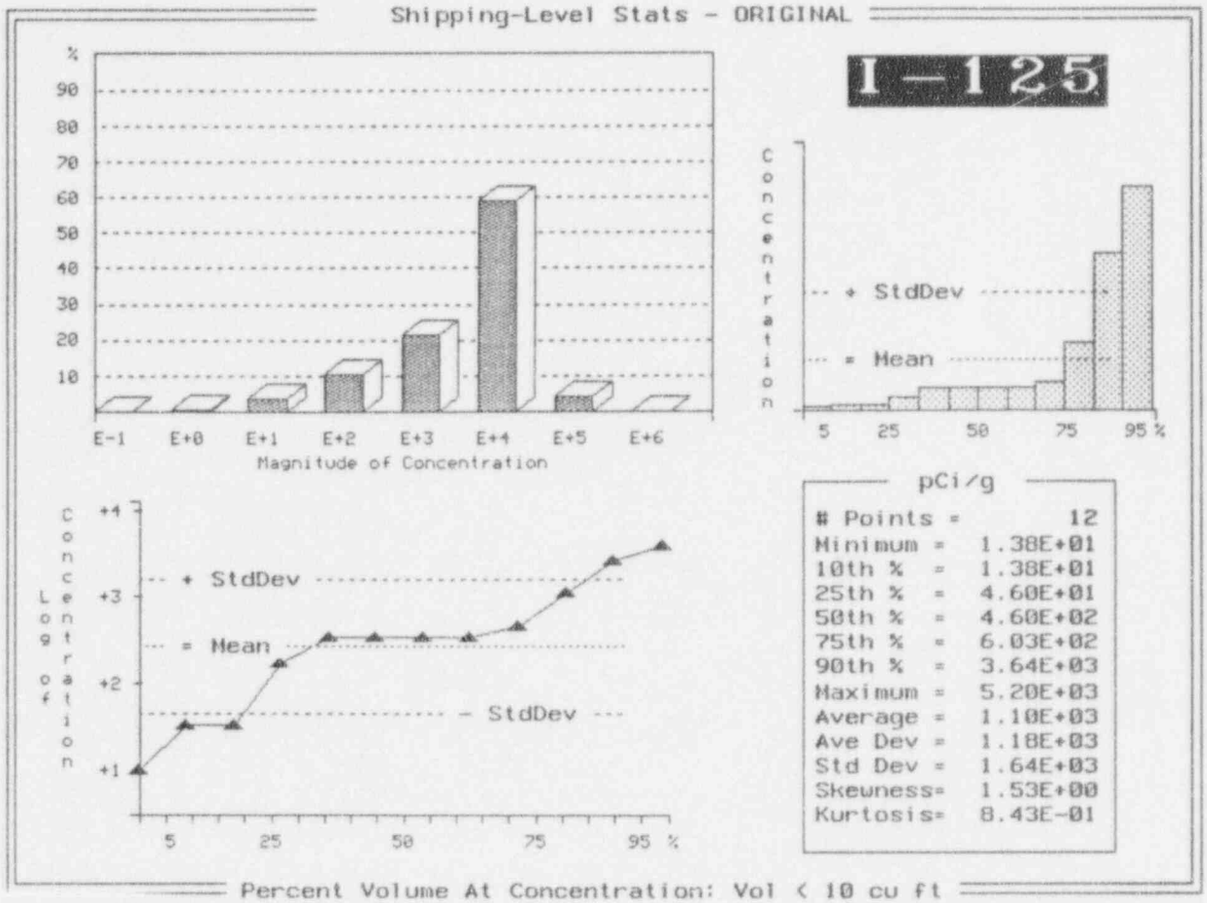

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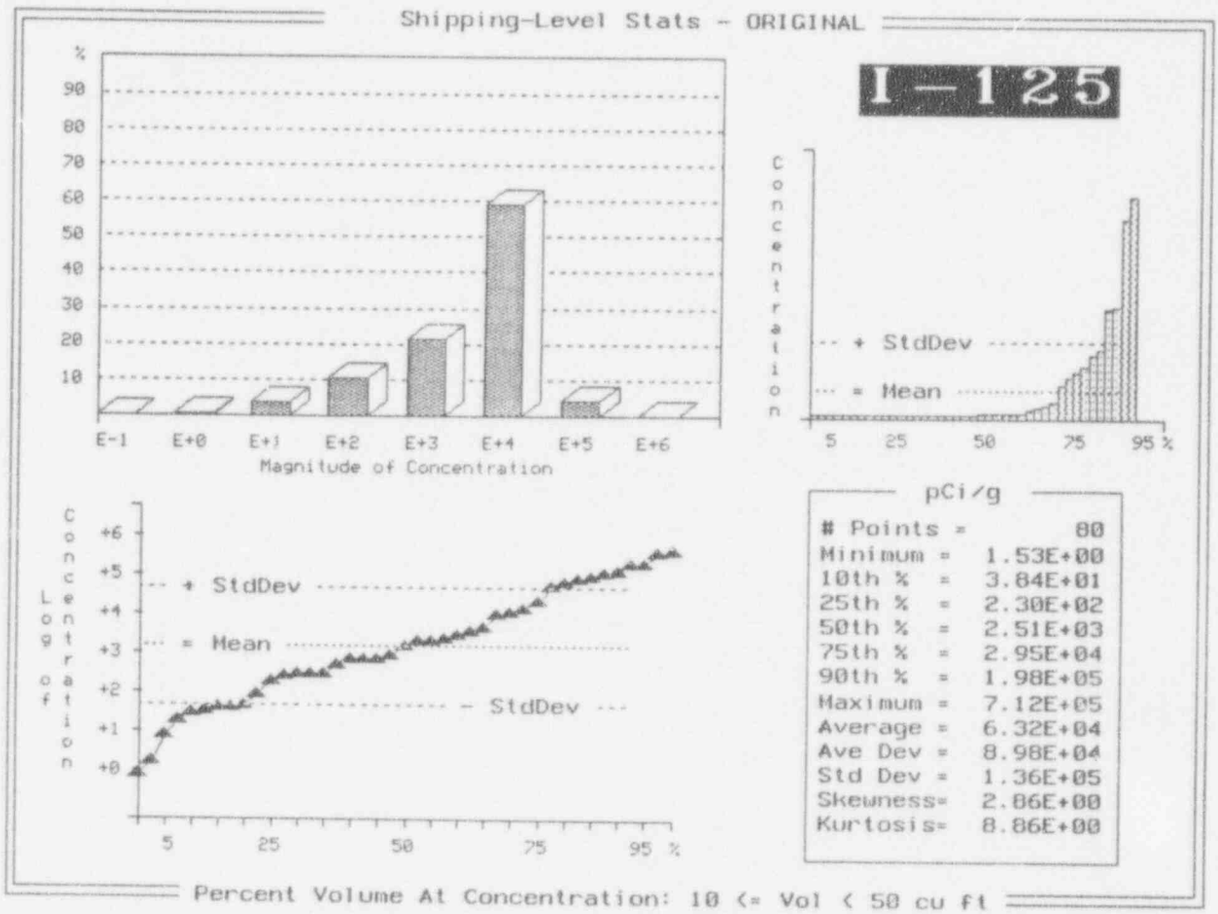


Exhibit F-32 (Continued)

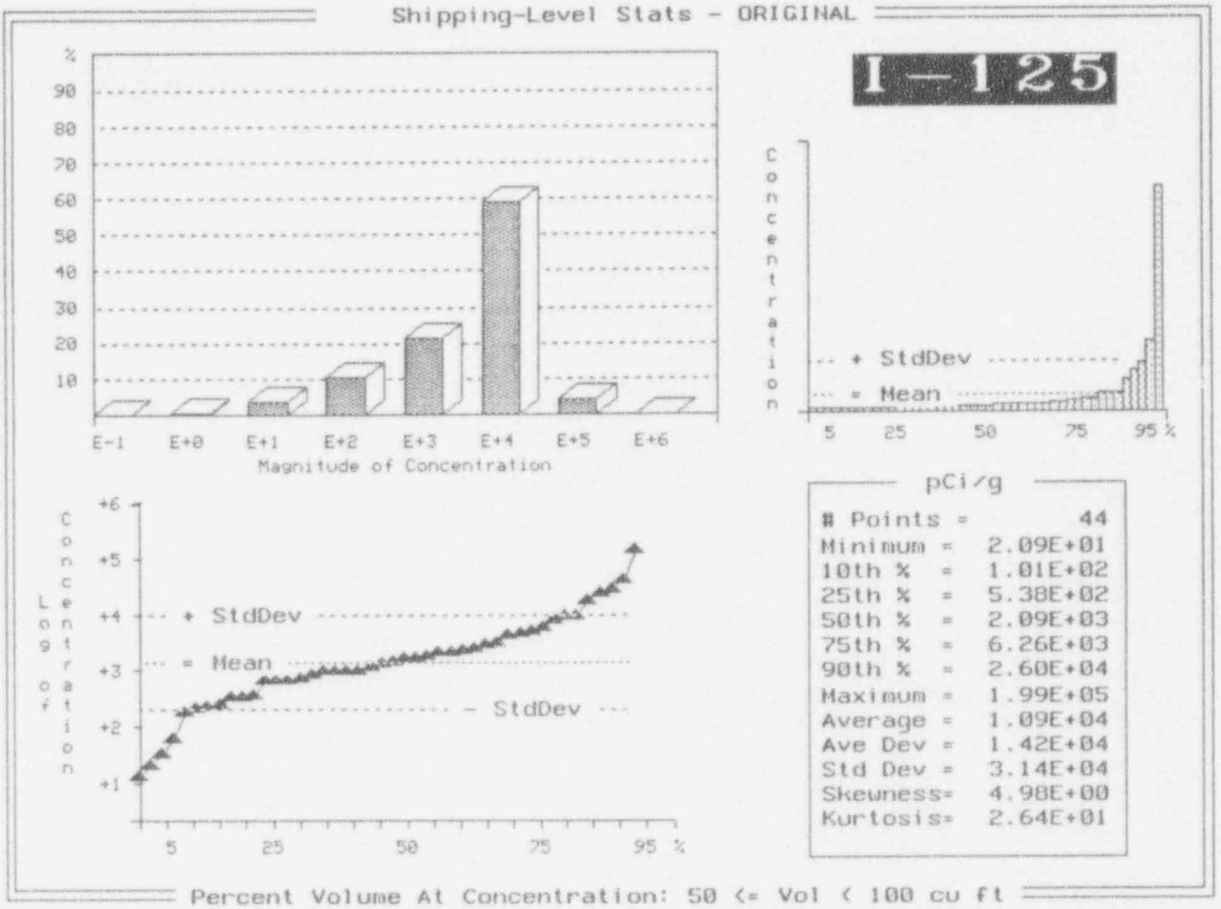


Exhibit F-32 (Continued)

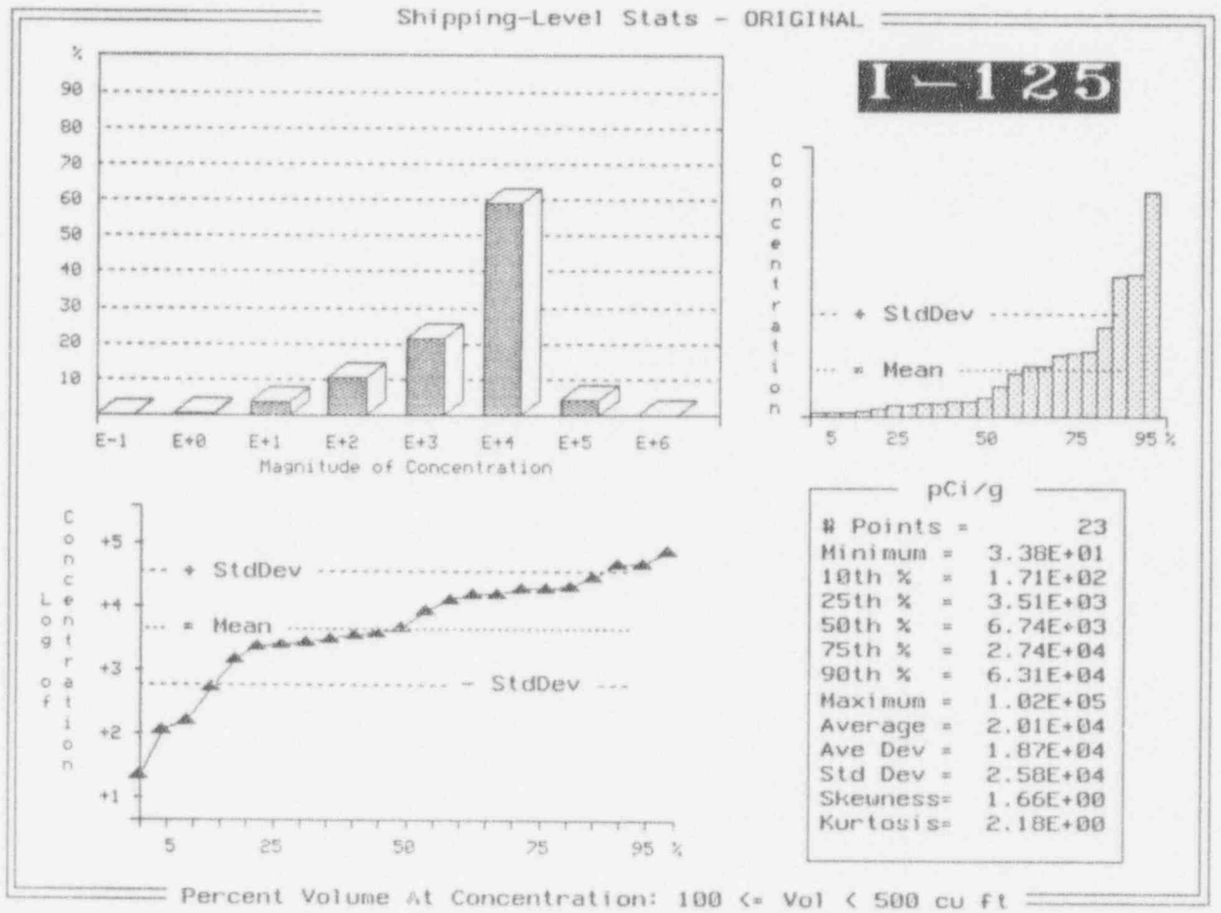


Exhibit F-32 (Continued)

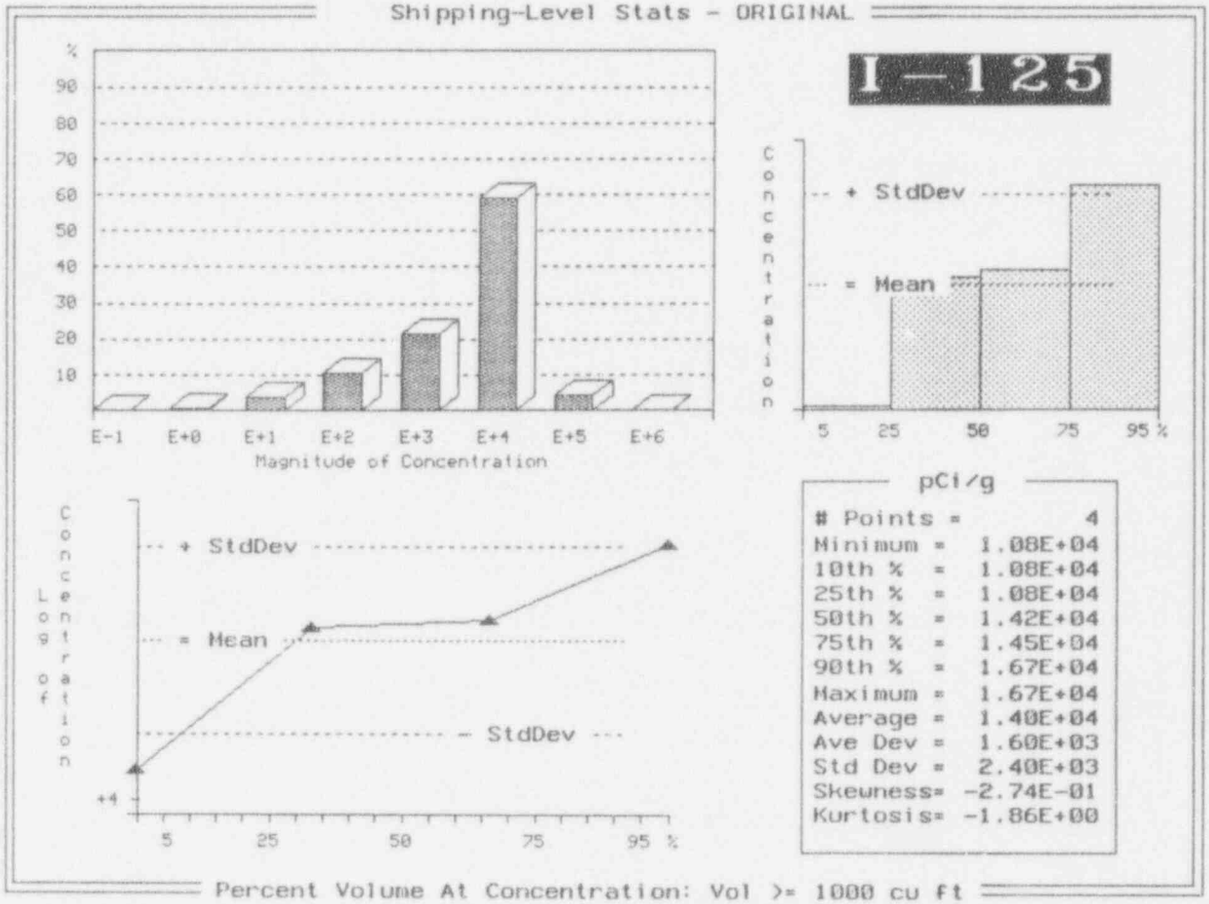


Exhibit F-32 (Continued)

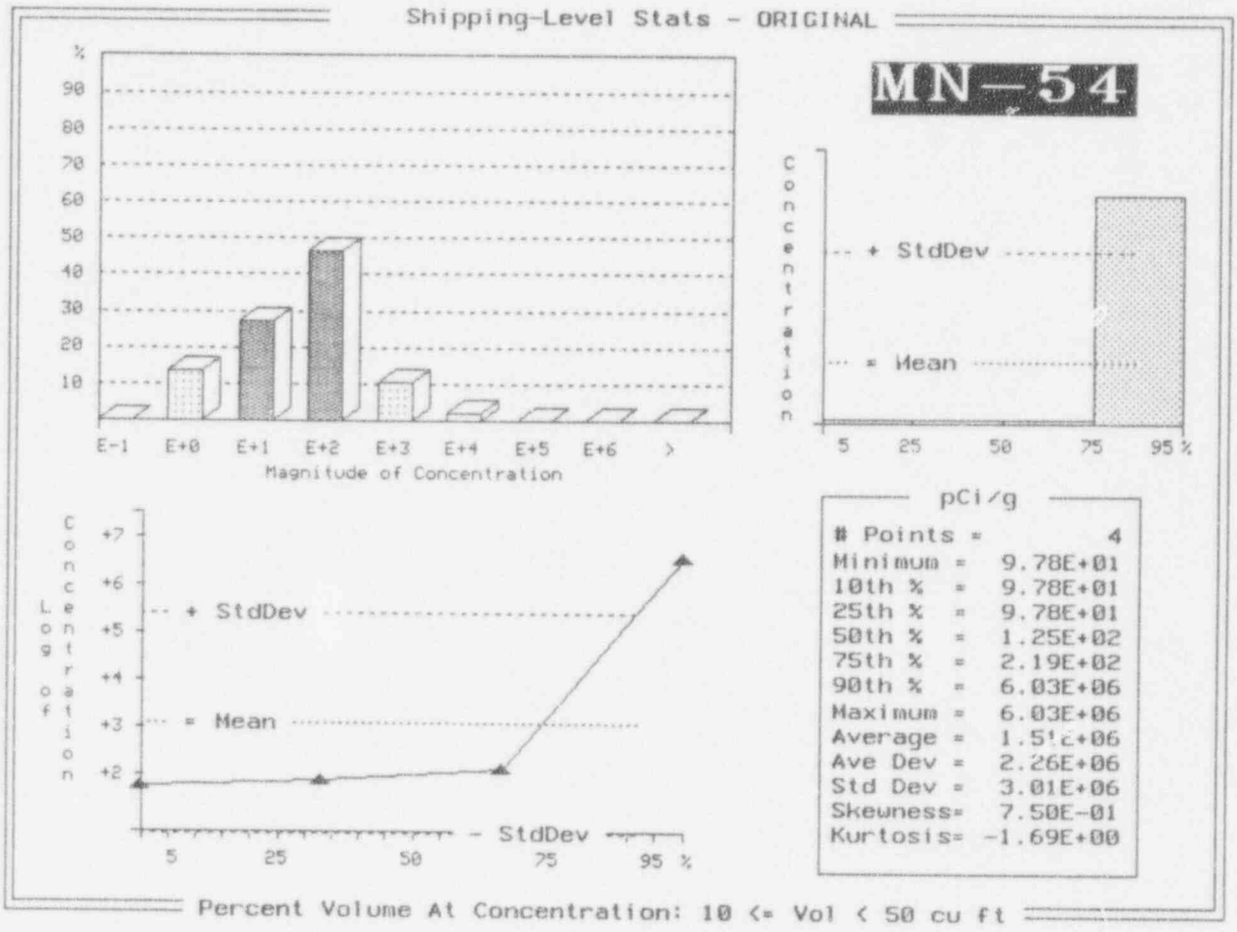


Exhibit F-32 (Continued)

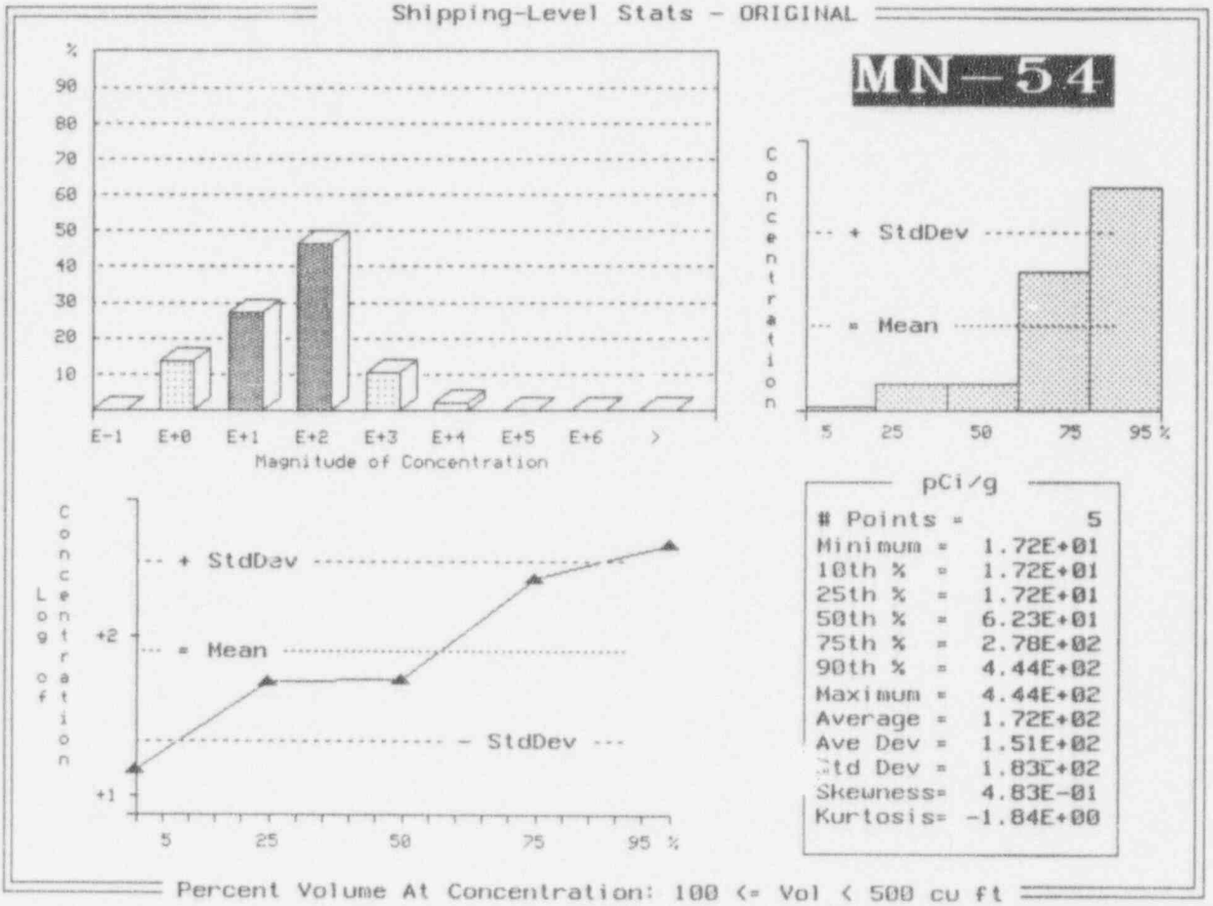


Exhibit F-32 (Continued)

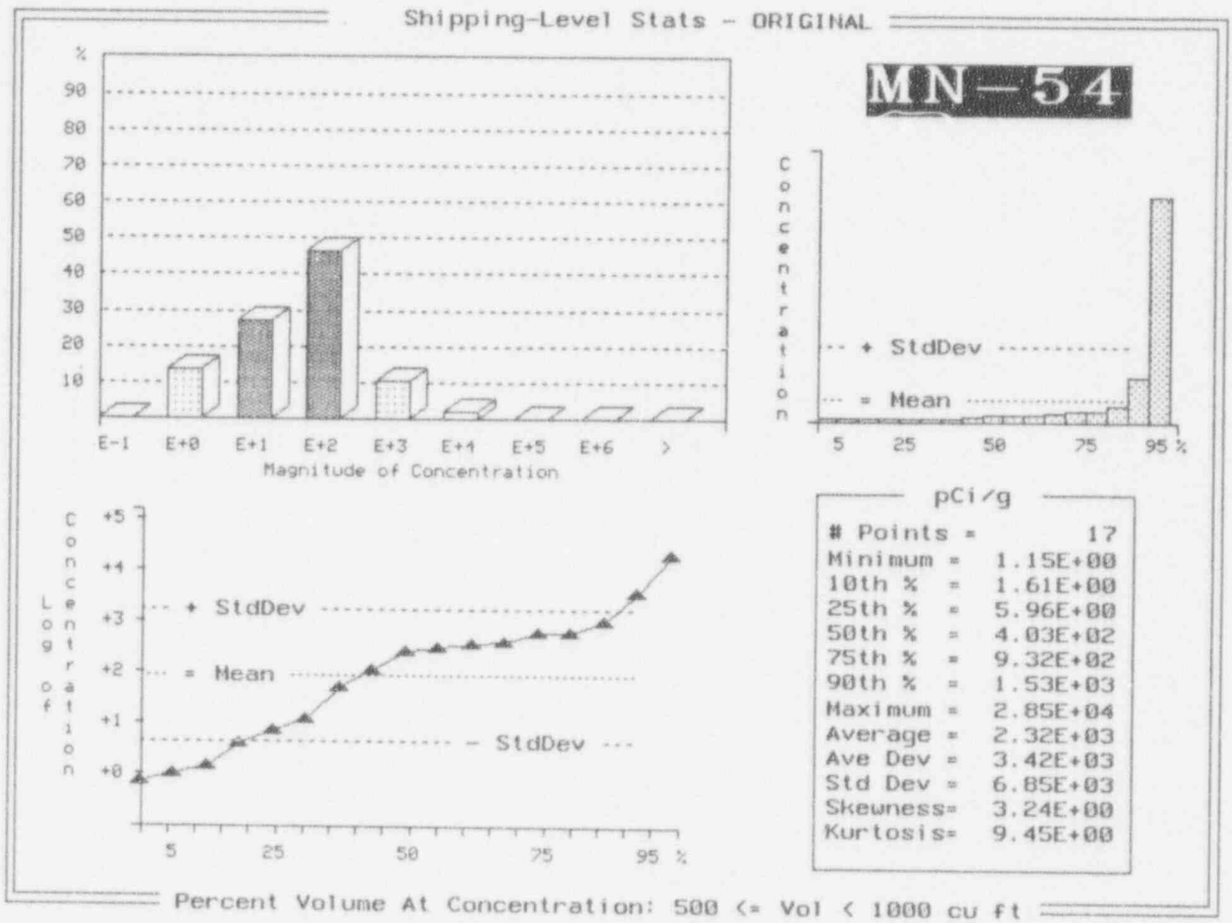


Exhibit F-32 (Continued)

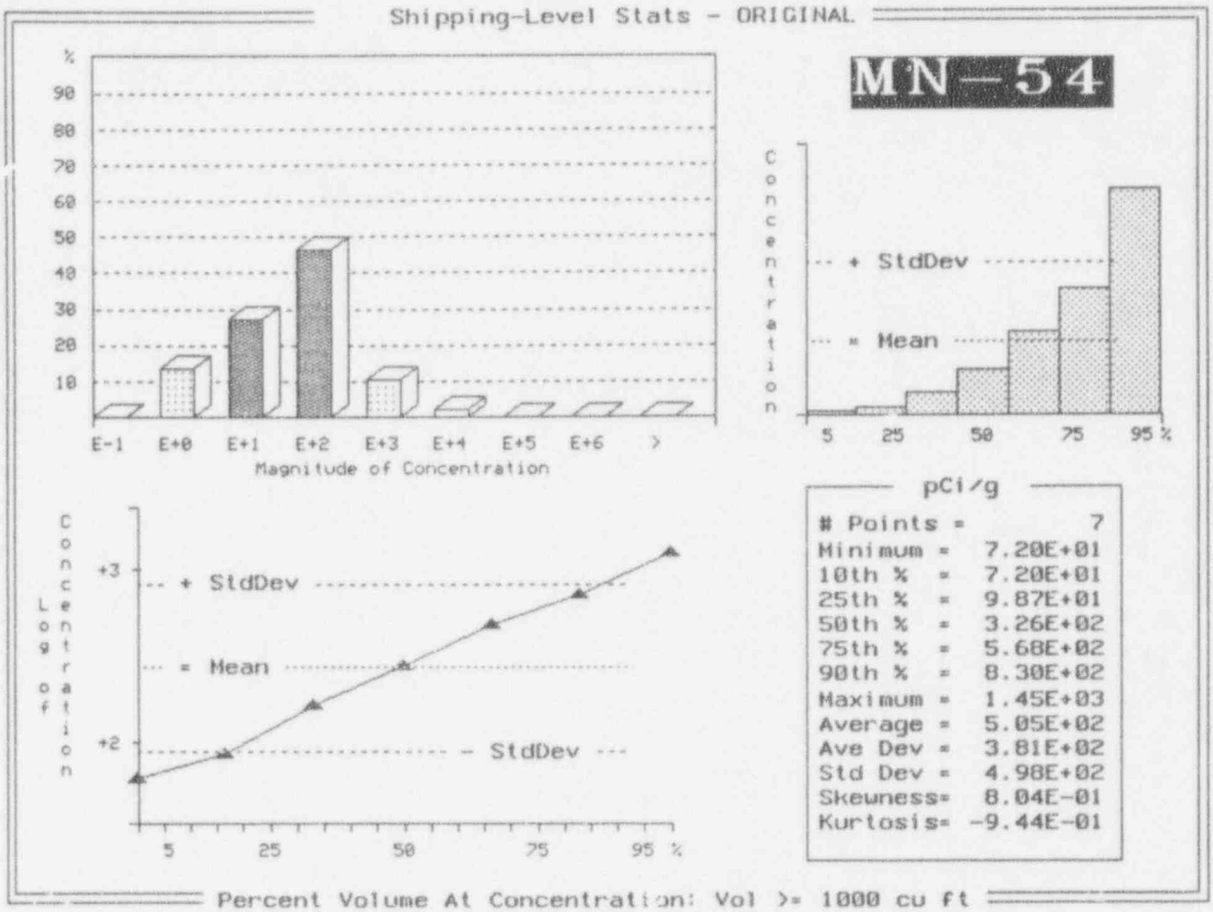


Exhibit F-32 (Continued)

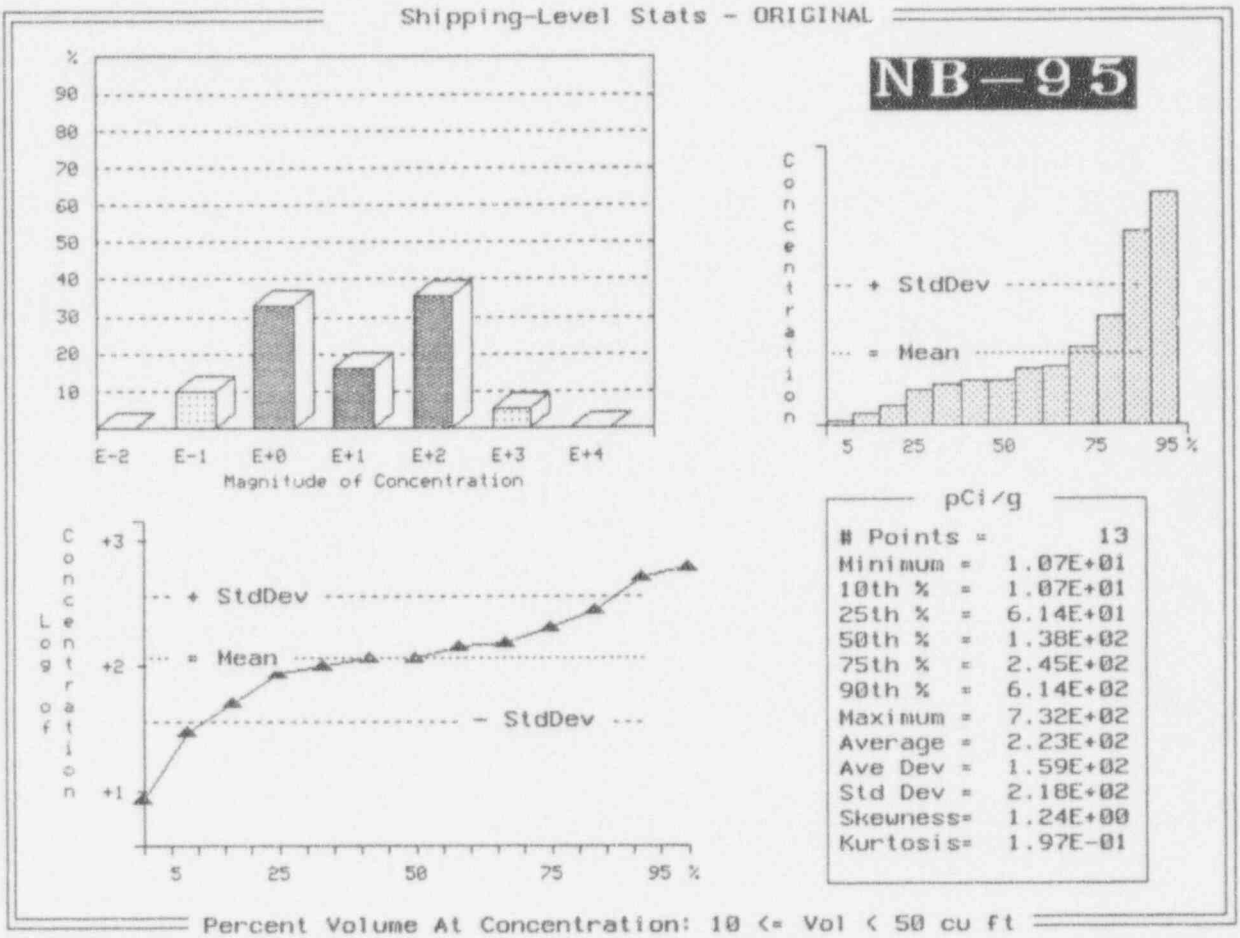


Exhibit F-32 (Continued)

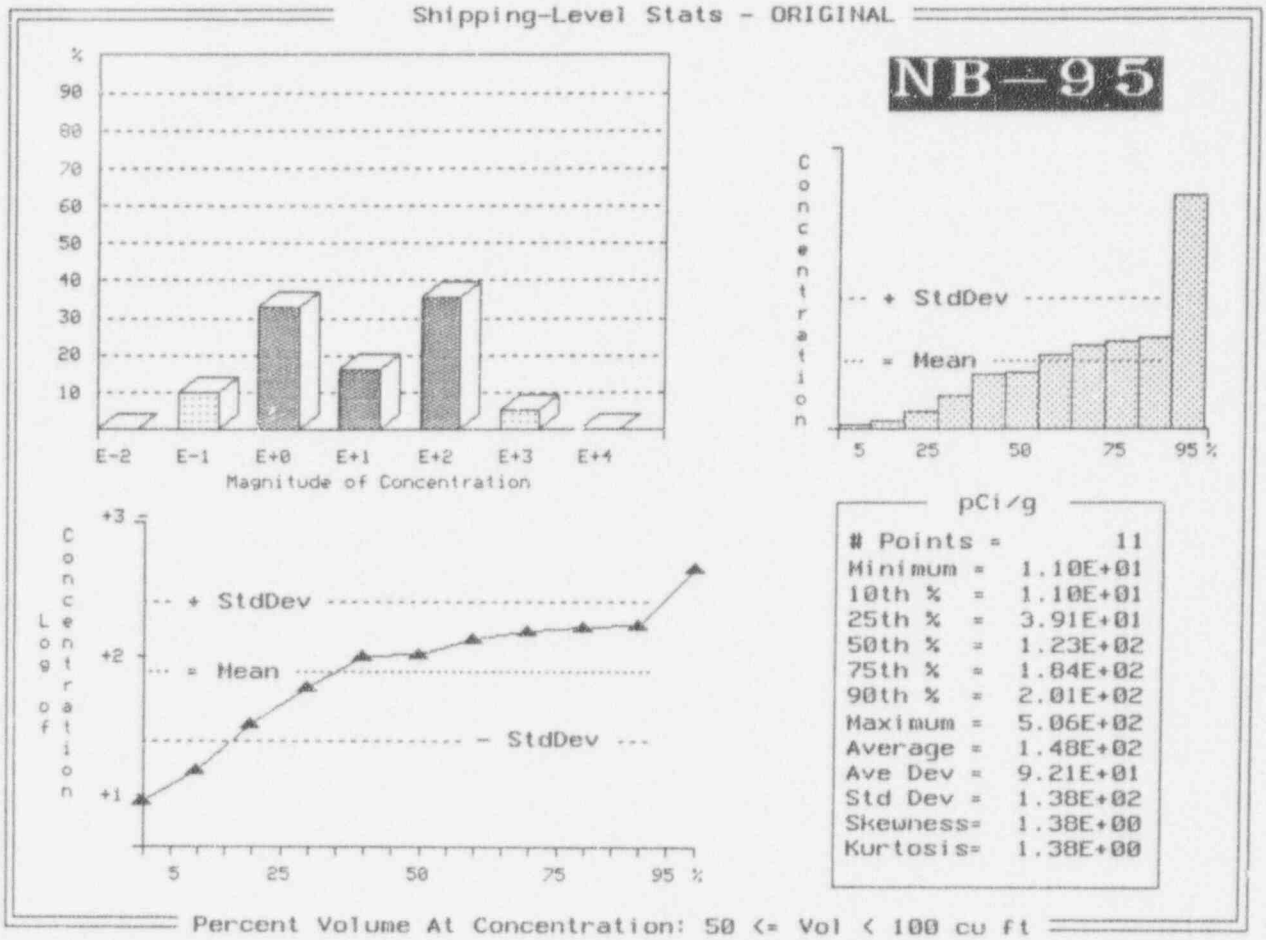
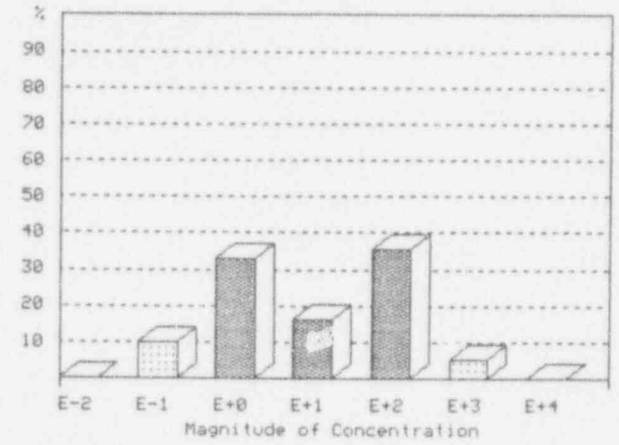
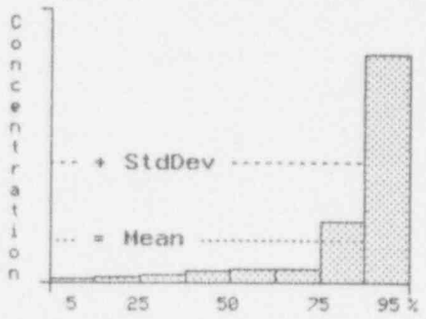


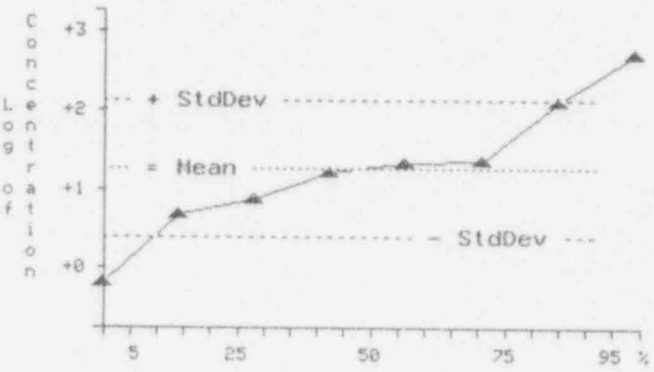
Exhibit F-32 (Continued)

Shipping-Level Stats - ORIGINAL



NB-95





pCi/g

# Points =	8
Minimum =	9.21E-01
10th % =	9.21E-01
25th % =	6.52E+00
50th % =	2.17E+01
75th % =	2.95E+01
90th % =	1.64E+02
Maximum =	6.51E+02
Average =	1.14E+02
Ave Dev =	1.47E+02
Std Dev =	2.23E+02
Skewness=	1.67E+00
Kurtosis=	1.21E+00

Percent Volume At Concentration: 100 <= Vol < 500 cu ft

Exhibit F-32 (Continued)

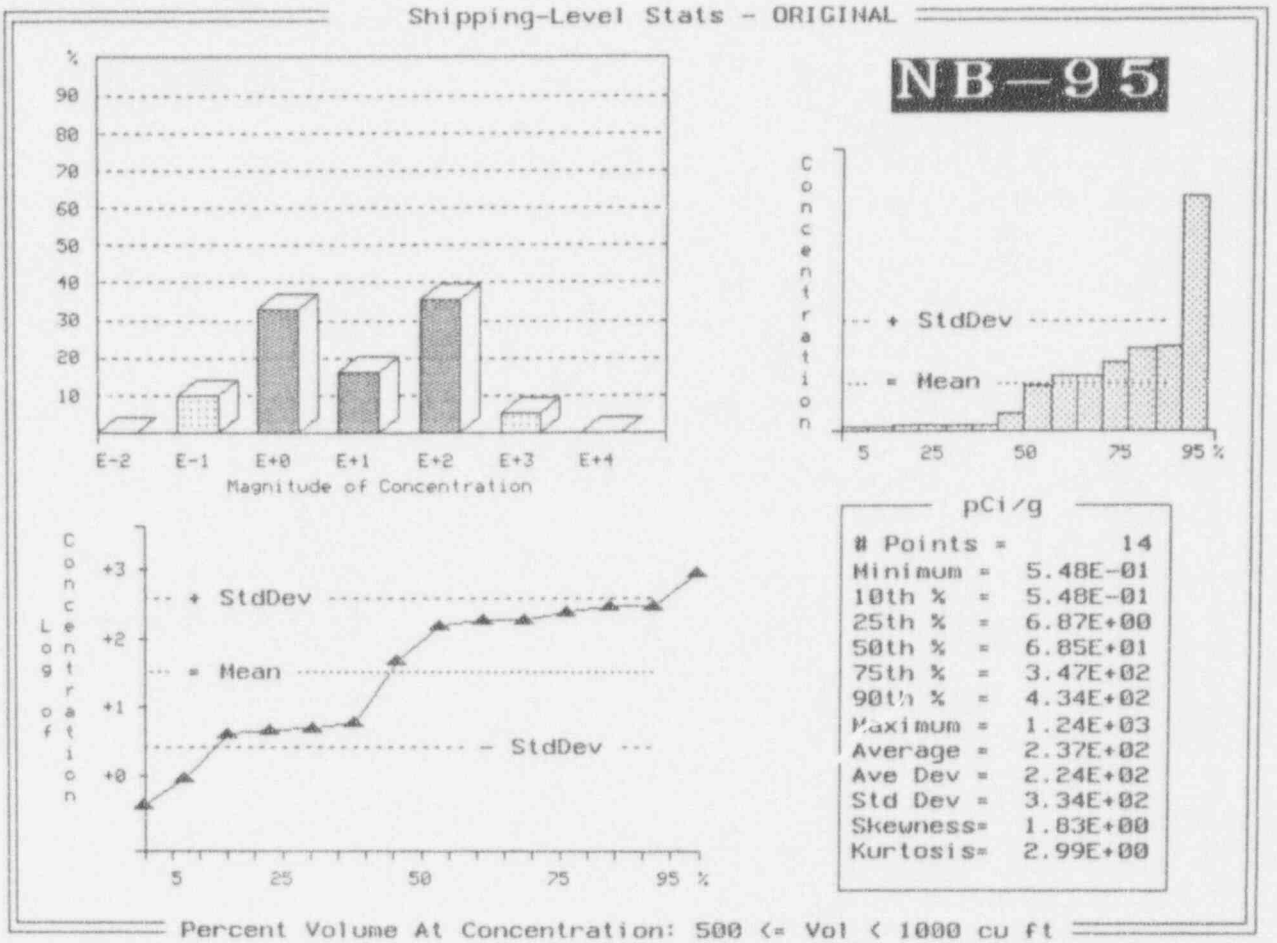


Exhibit F-32 (Continued)

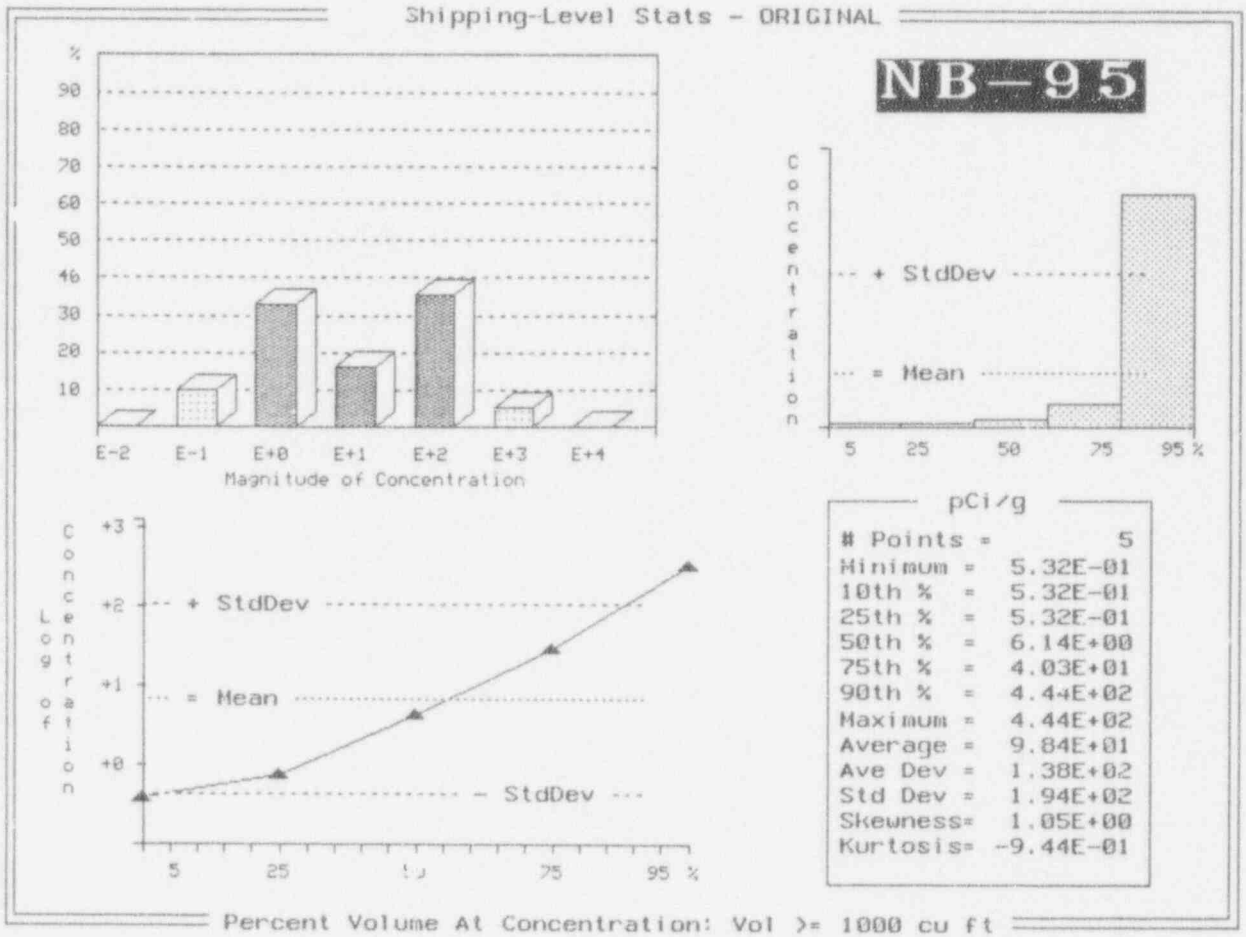


Exhibit F-32 (Continued)

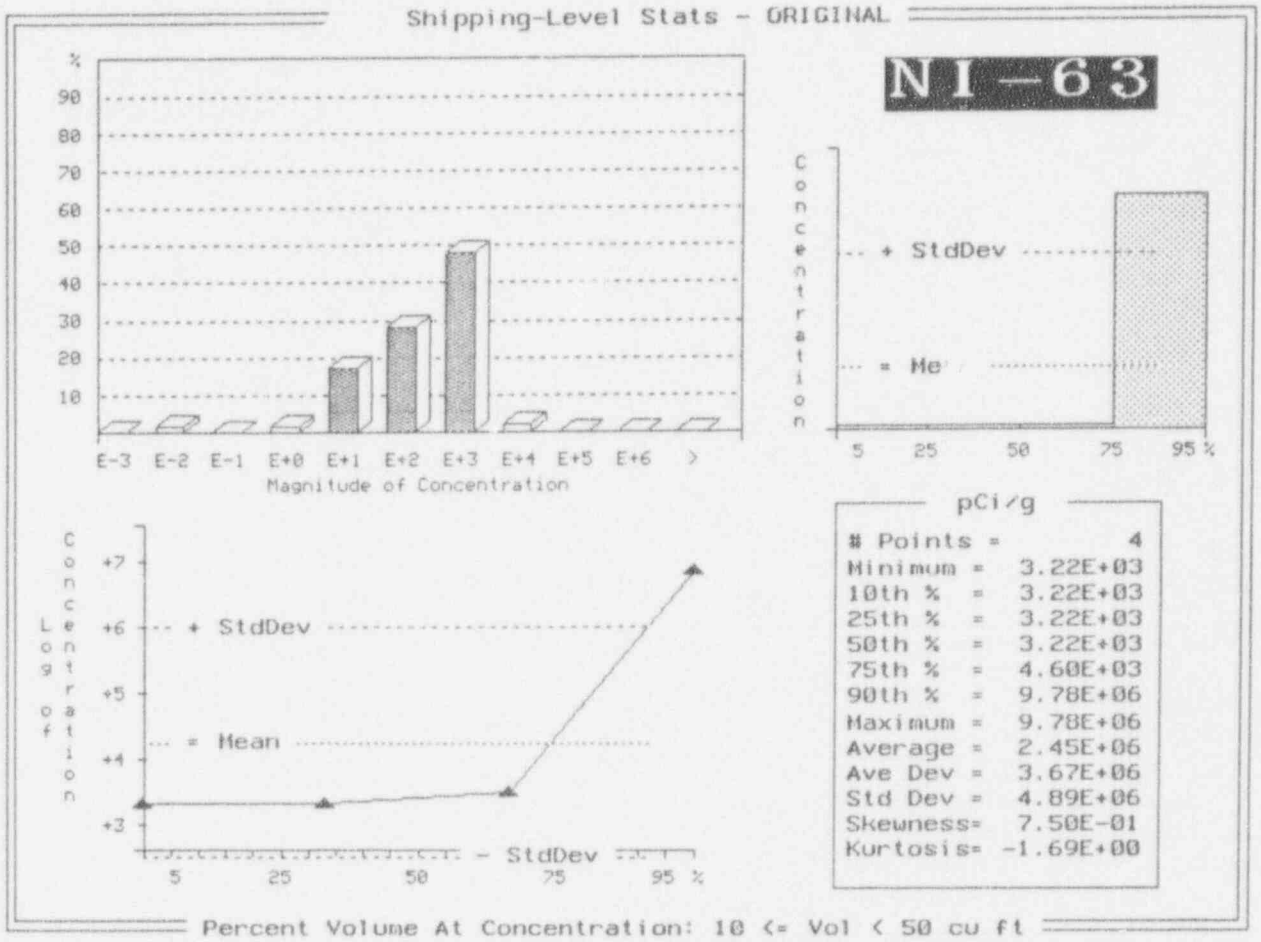


Exhibit F-32 (Continued)

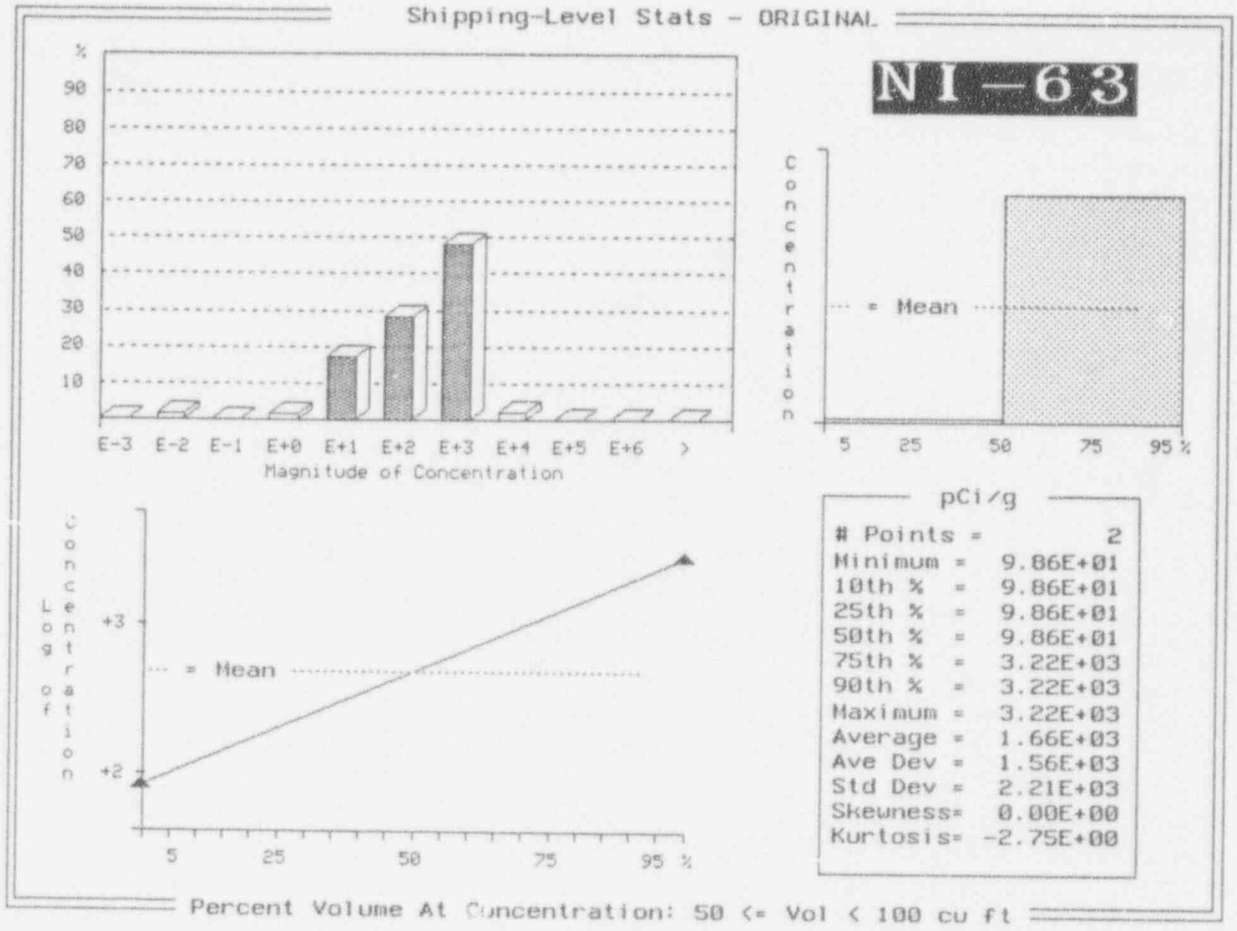


Exhibit F-32 (Continued)

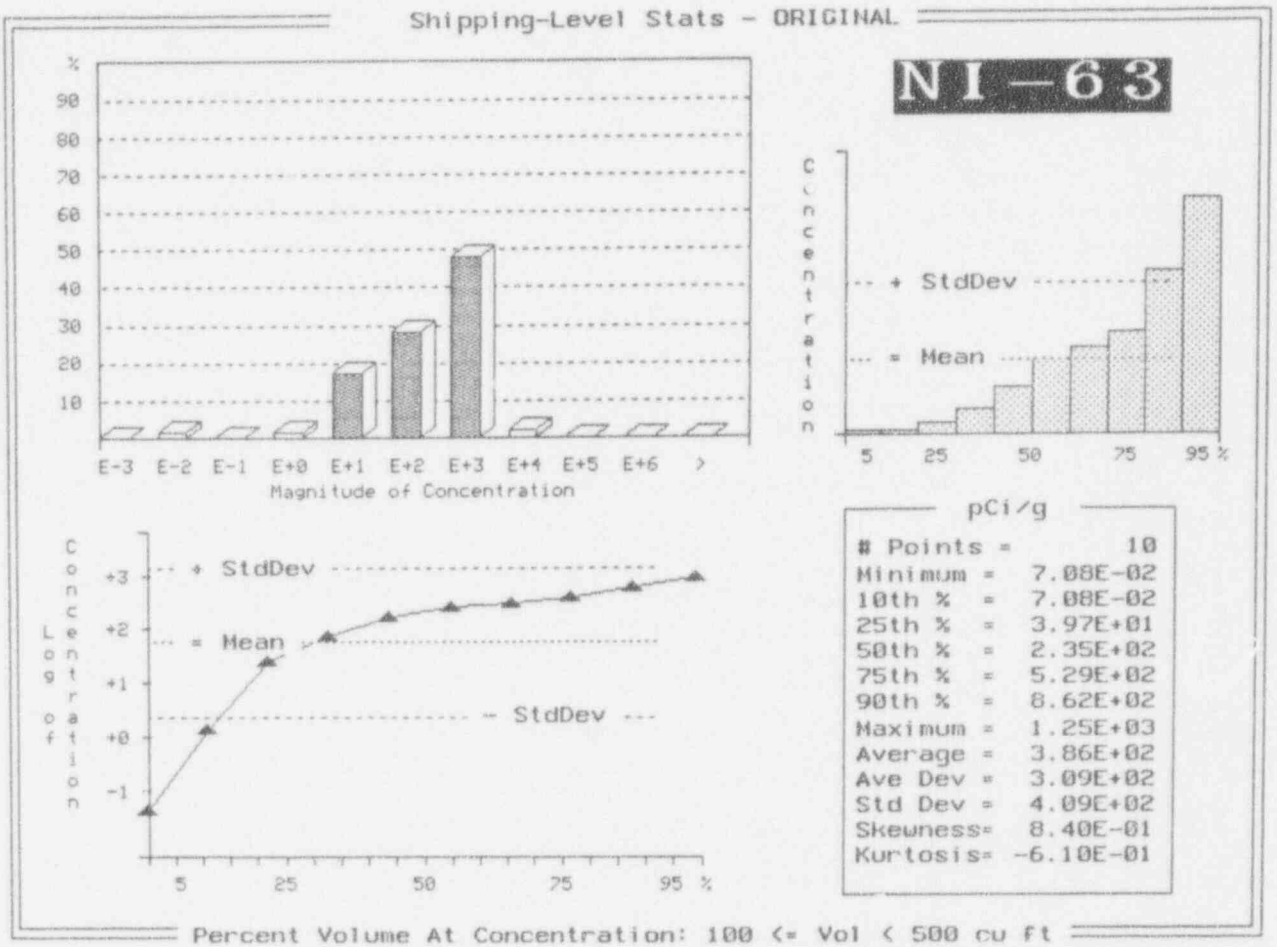


Exhibit F-32 (Continued)

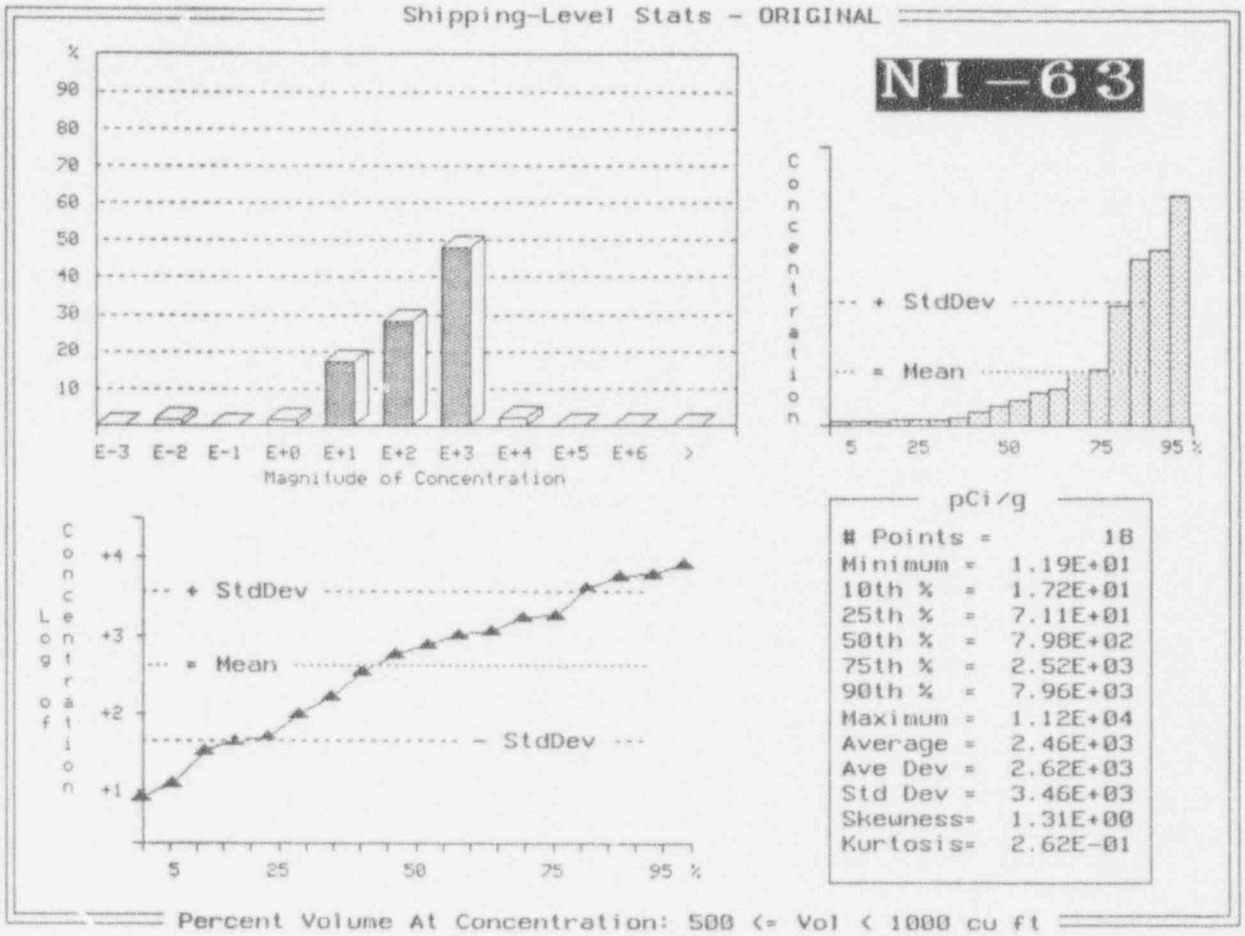


Exhibit F-32 (Continued)

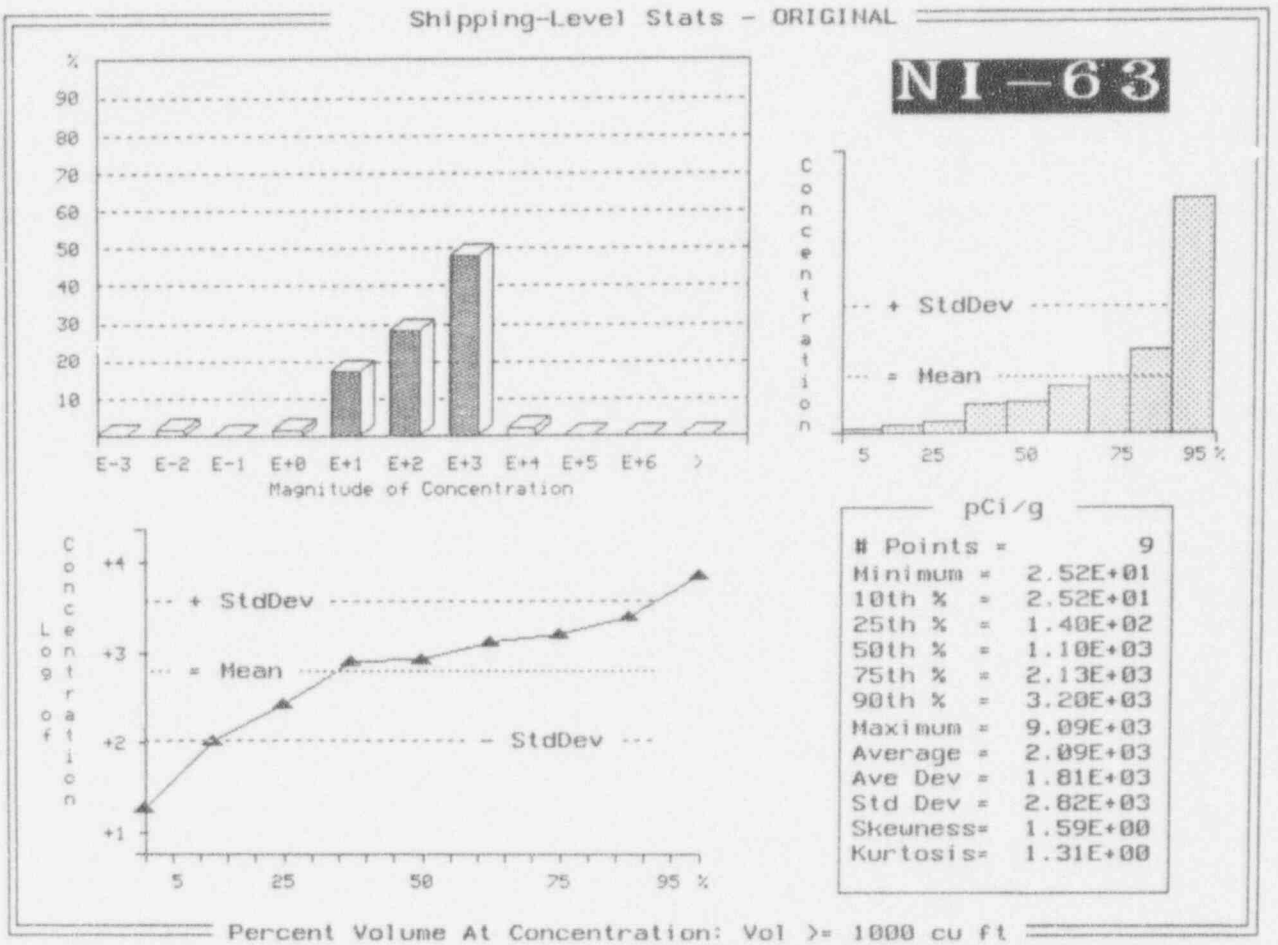


Exhibit F-32 (Continued)

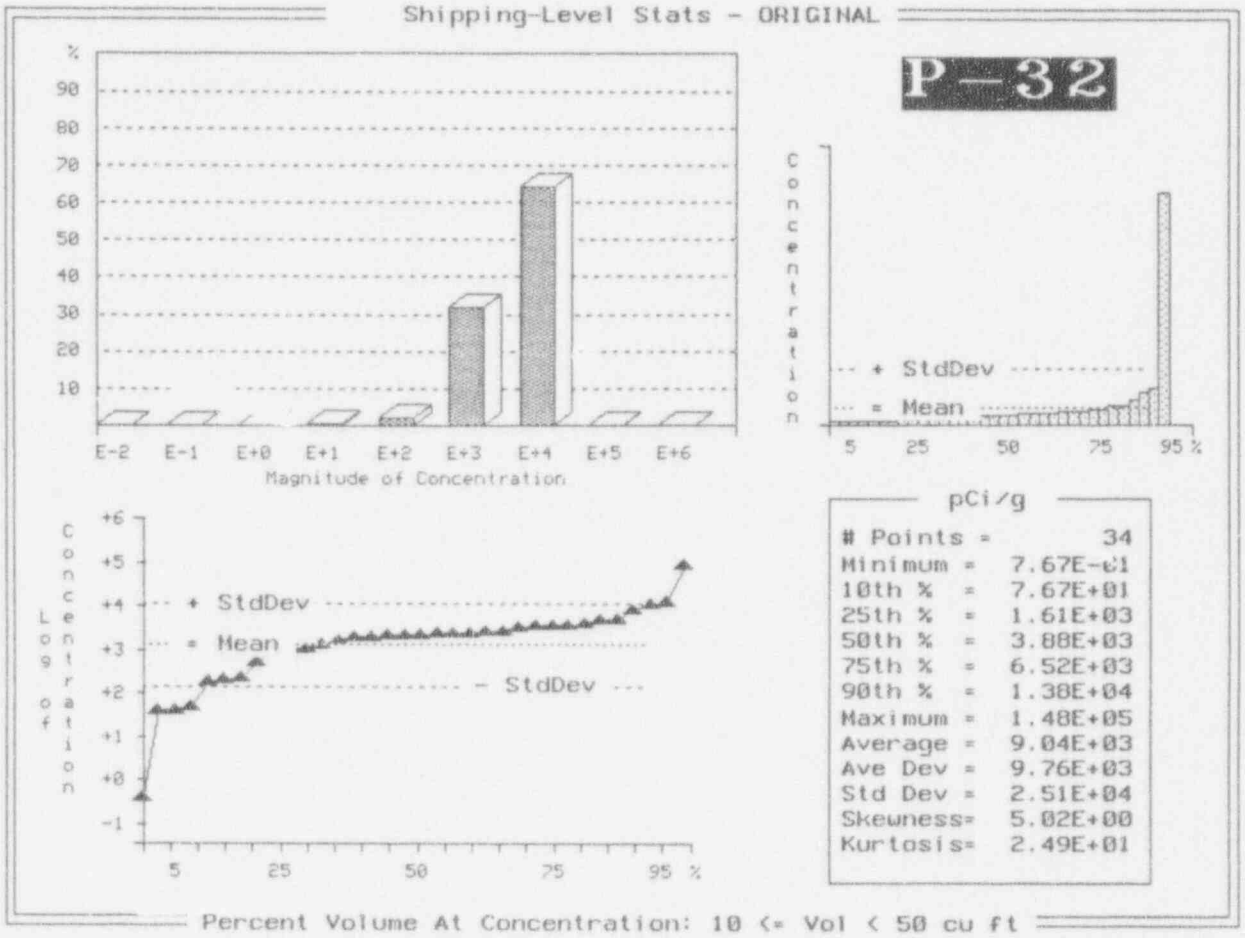


Exhibit F-32 (Continued)

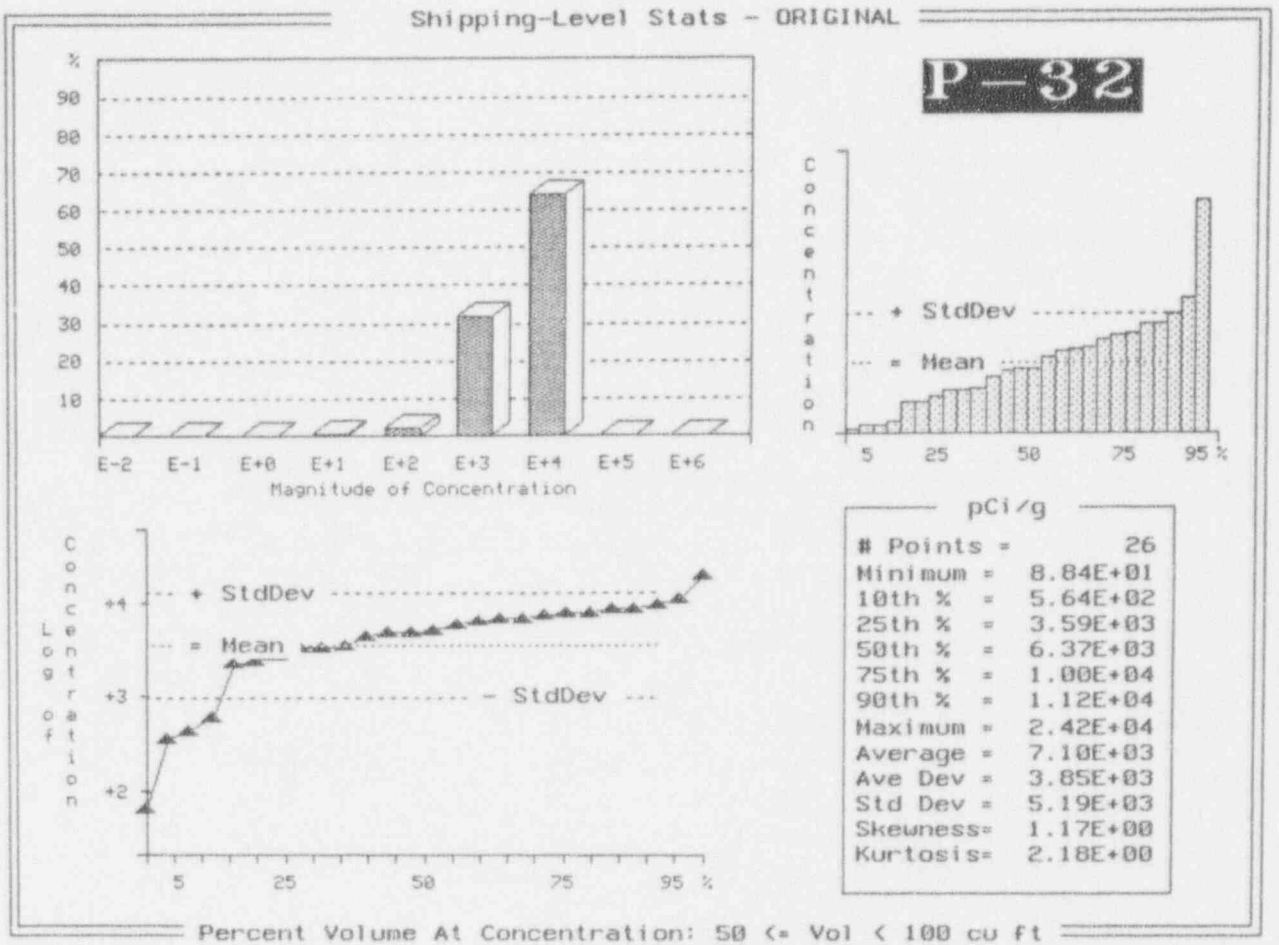


Exhibit F-32 (Continued)

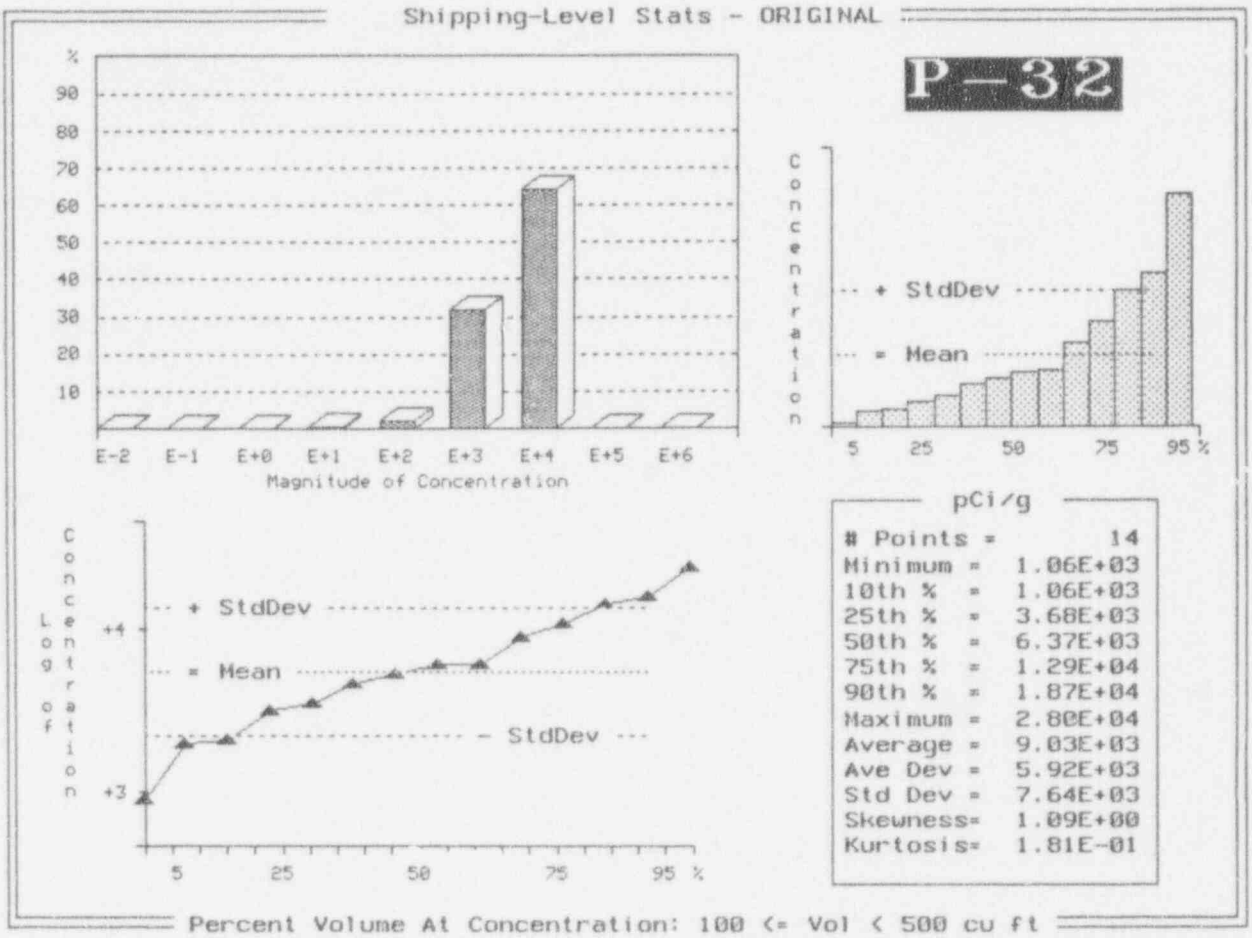


Exhibit F-32 (Continued)

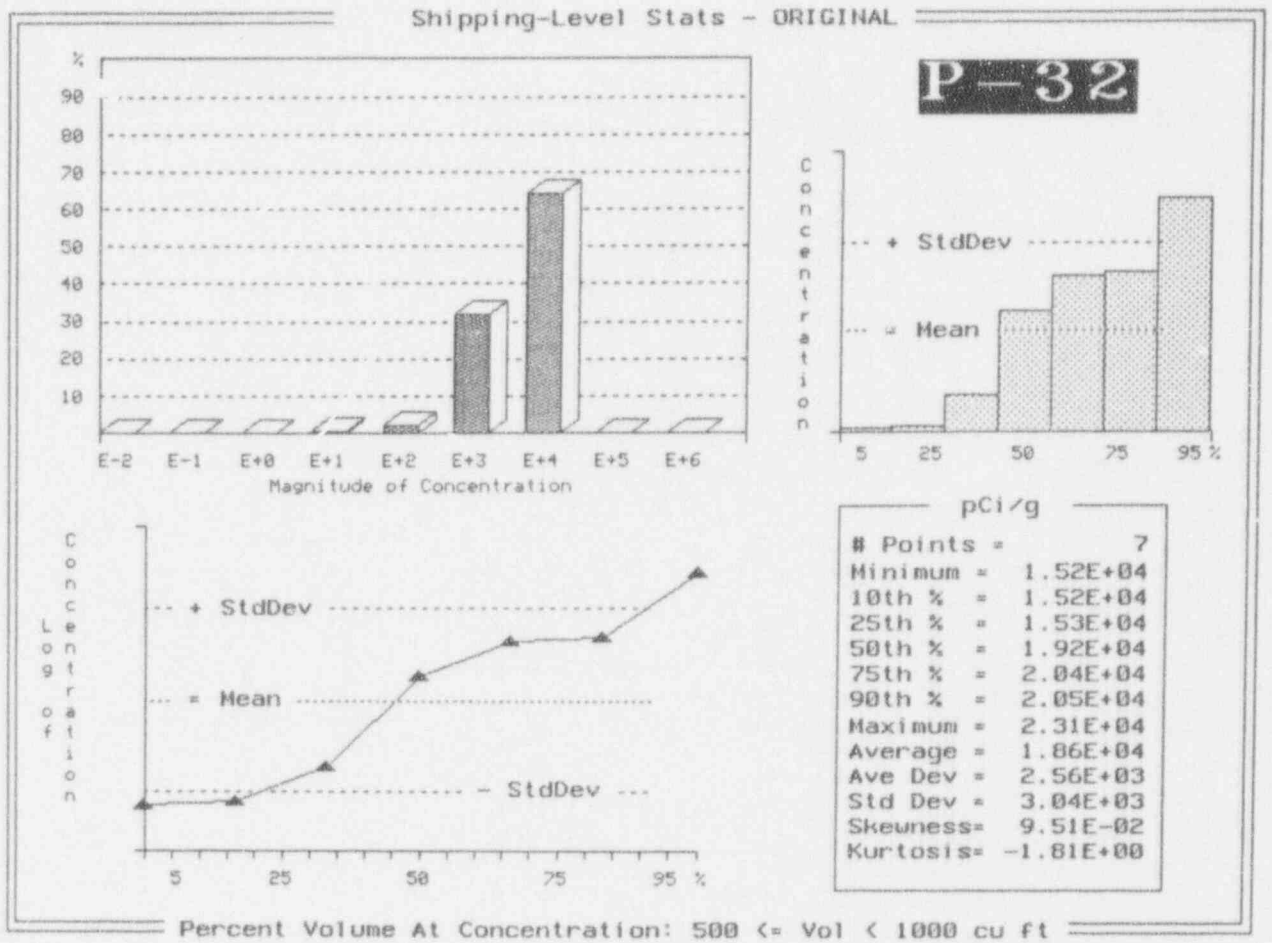
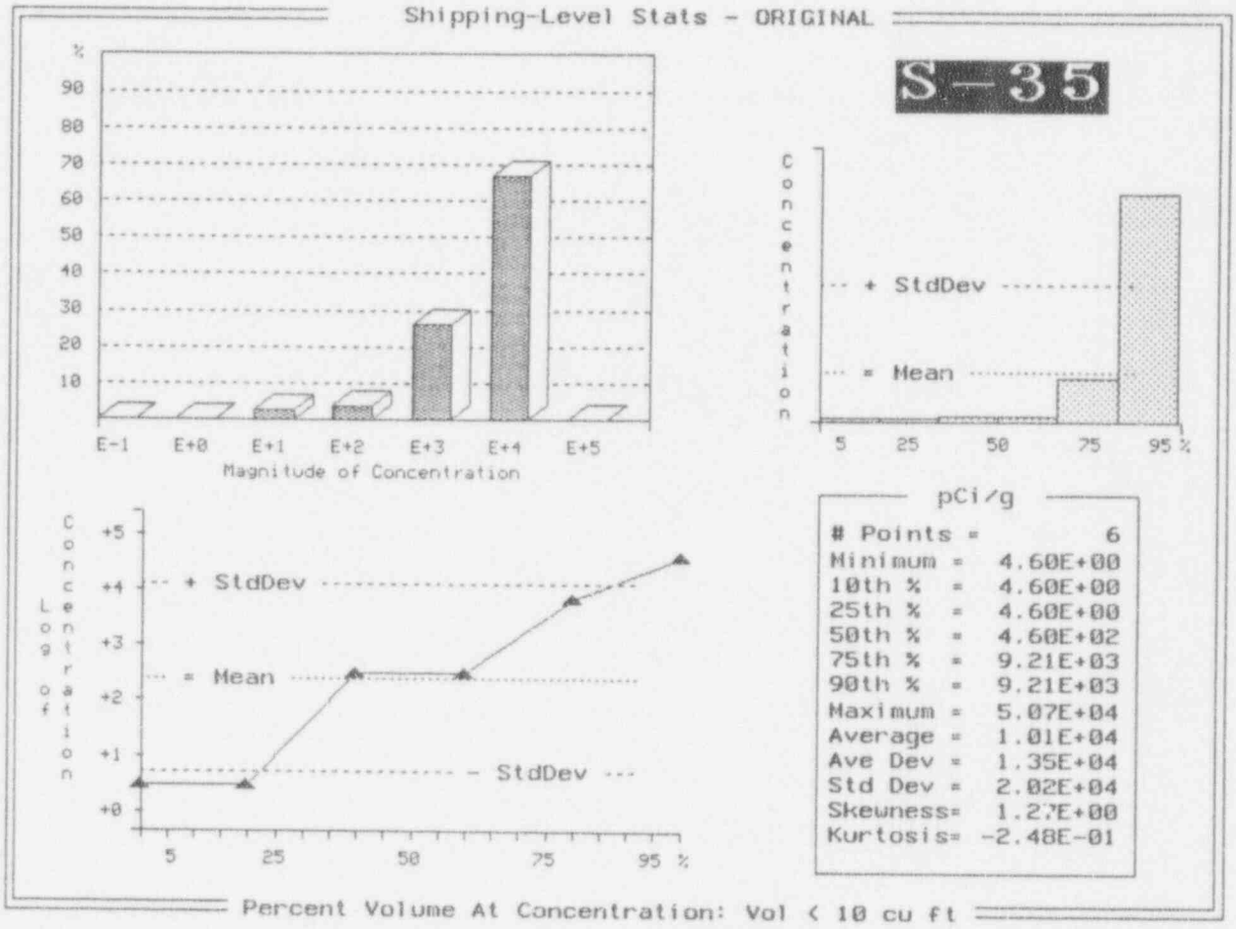


Exhibit F-32 (Continued)



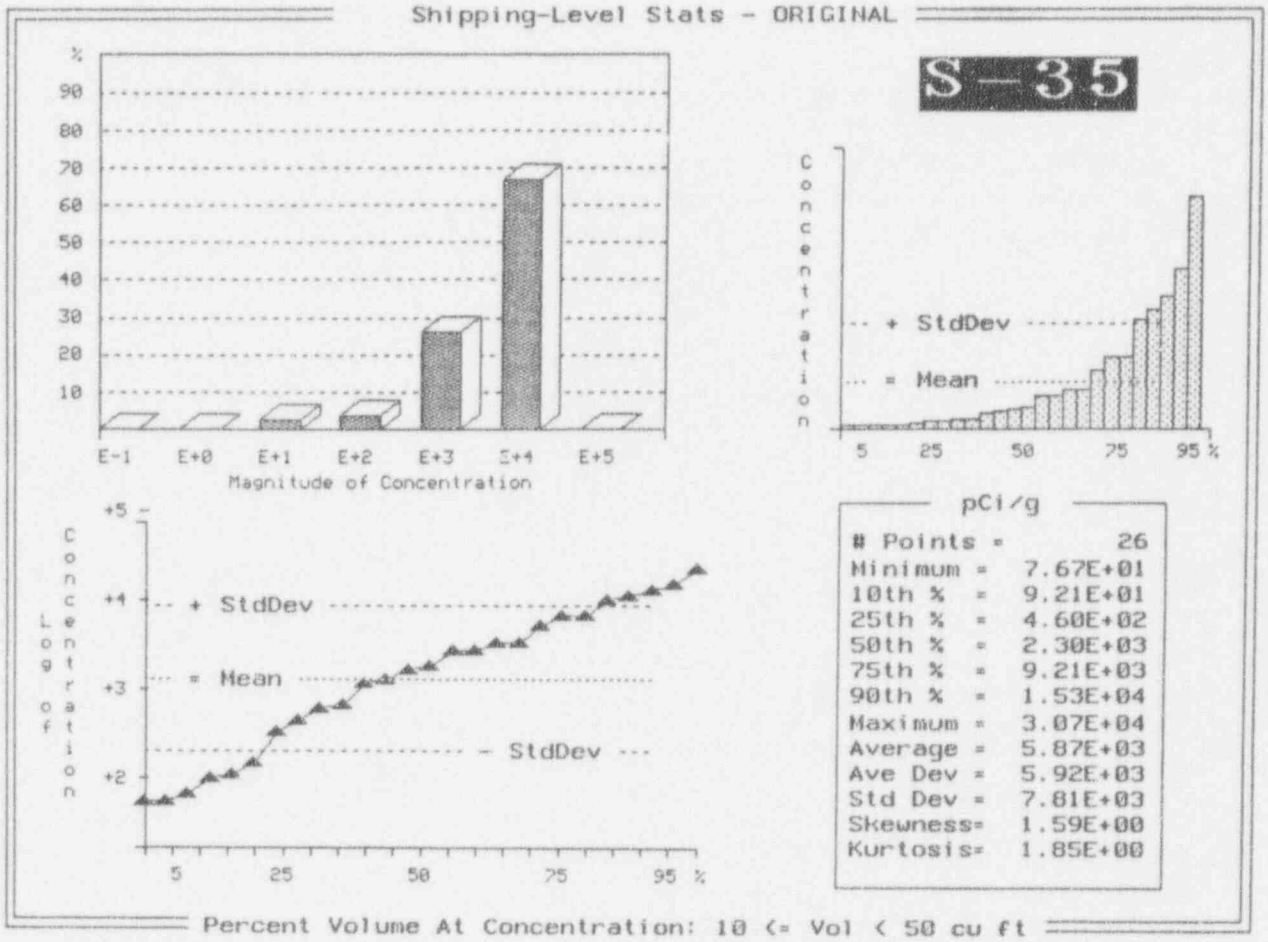

Shipping-Level Stats - ORIGINAL
S-35
%
90
80
70
60
50
40
30
20
10
E-1
E+0
E+1
E+2
E+3
E+4
E+5
Magnitude of Concentration
Concentration
+ StdDev
= Mean
5
25
50
75
95 %
Log of Concentration
+5
+4
+3
+2
+ StdDev
= Mean
- StdDev
5
25
50
75
95 %
pCi/g
# Points = 26
Minimum = 7.67E+01
10th % = 9.21E+01
25th % = 4.60E+02
50th % = 2.30E+03
75th % = 9.21E+03
90th % = 1.53E+04
Maximum = 3.07E+04
Average = 5.87E+03
Ave Dev = 5.92E+03
Std Dev = 7.81E+03
Skewness= 1.59E+00
Kurtosis= 1.85E+00
Percent Volume At Concentration: 10 <= Vol < 50 cu ft

Exhibit F-32 (Continued)

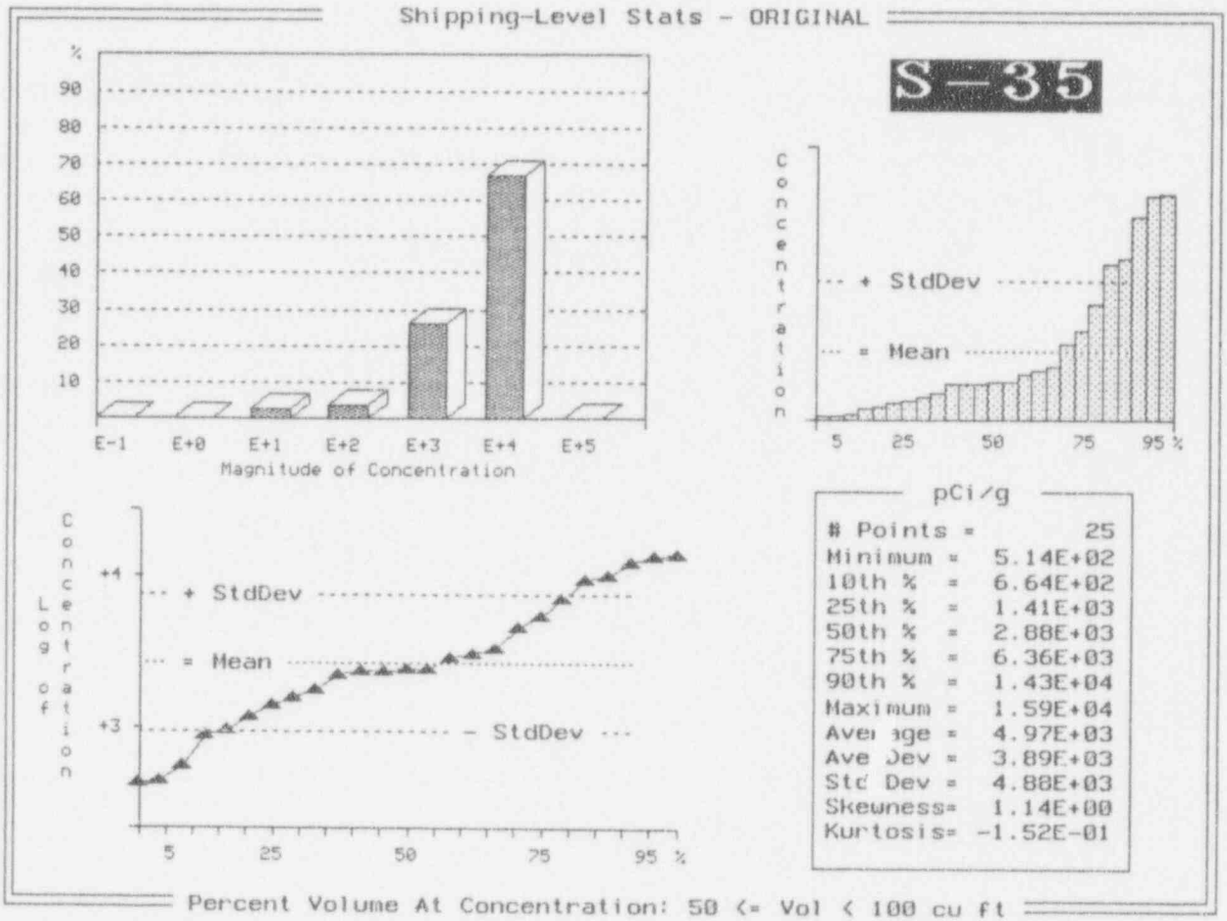


Exhibit F-32 (Continued)

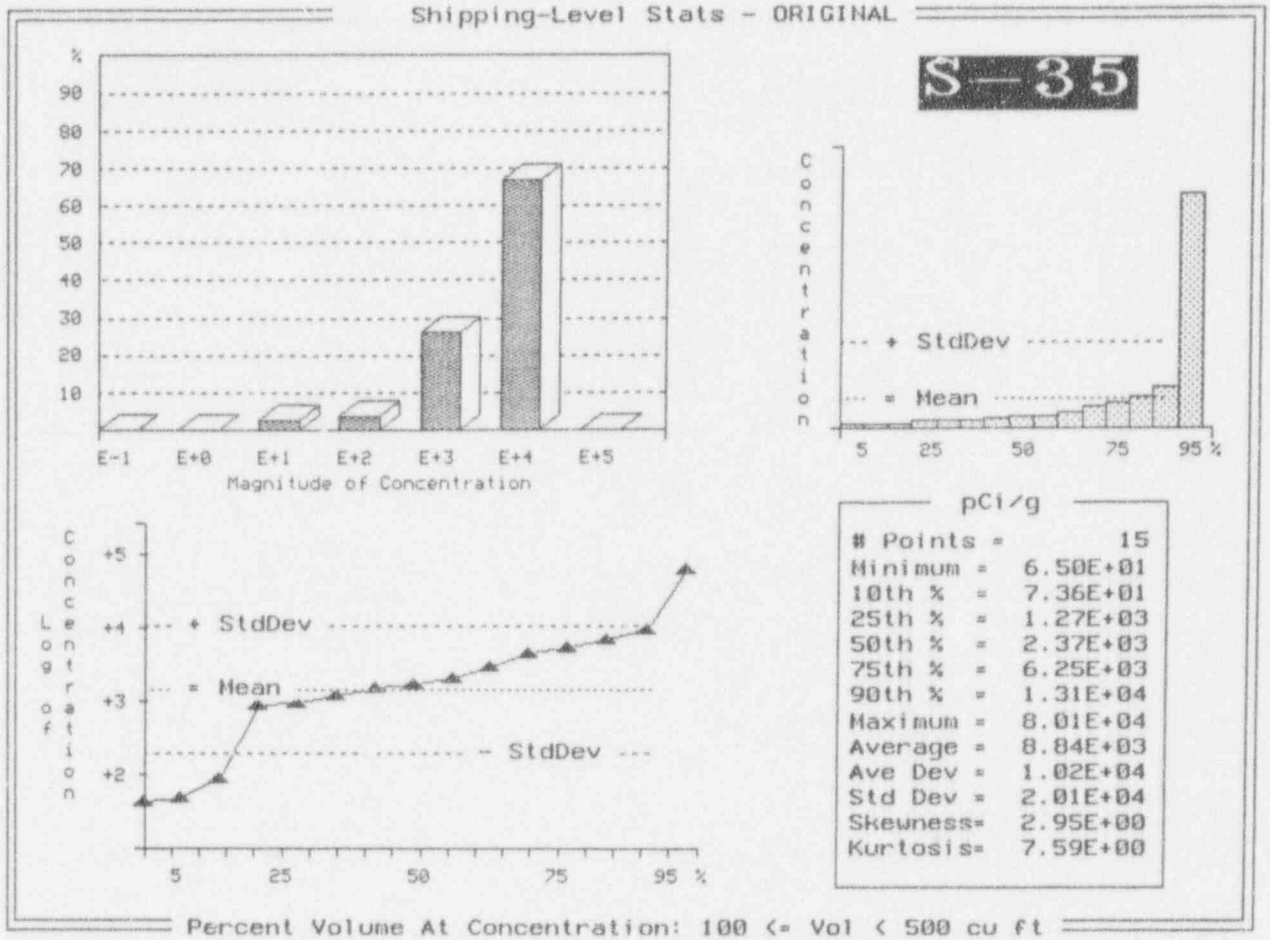


Exhibit F-32 (Continued)

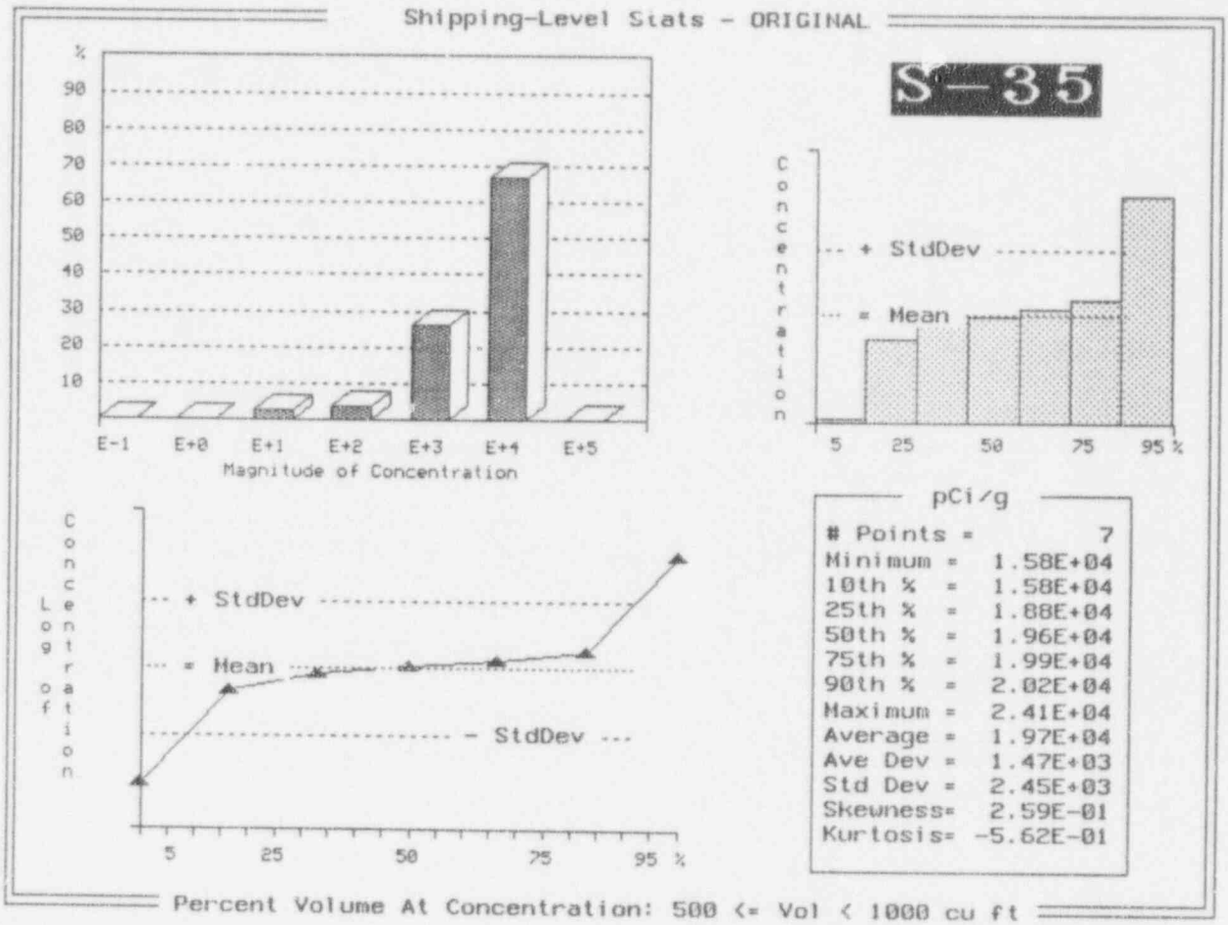


Exhibit F-32 (Continued)

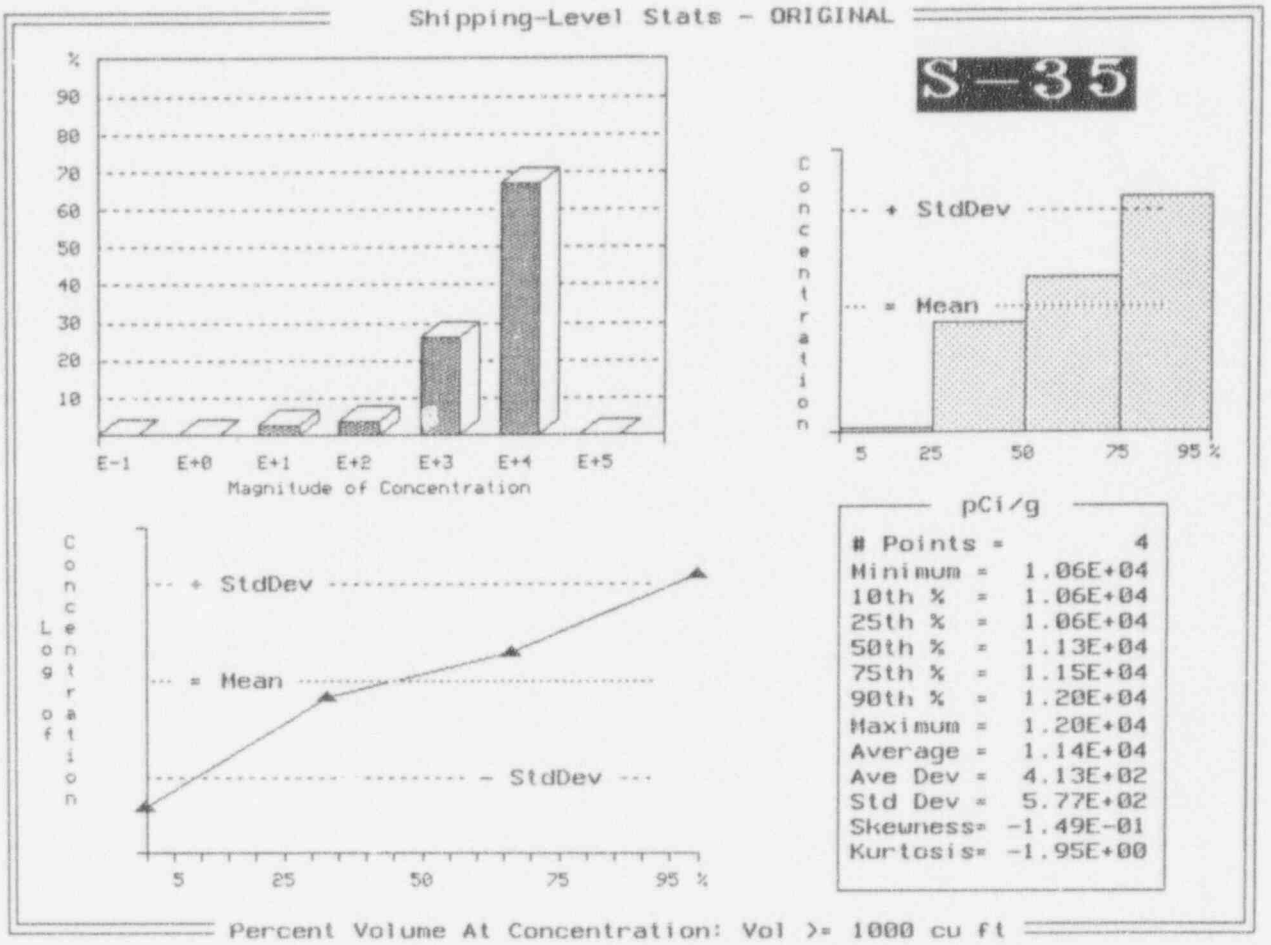


Exhibit F-32 (Continued)

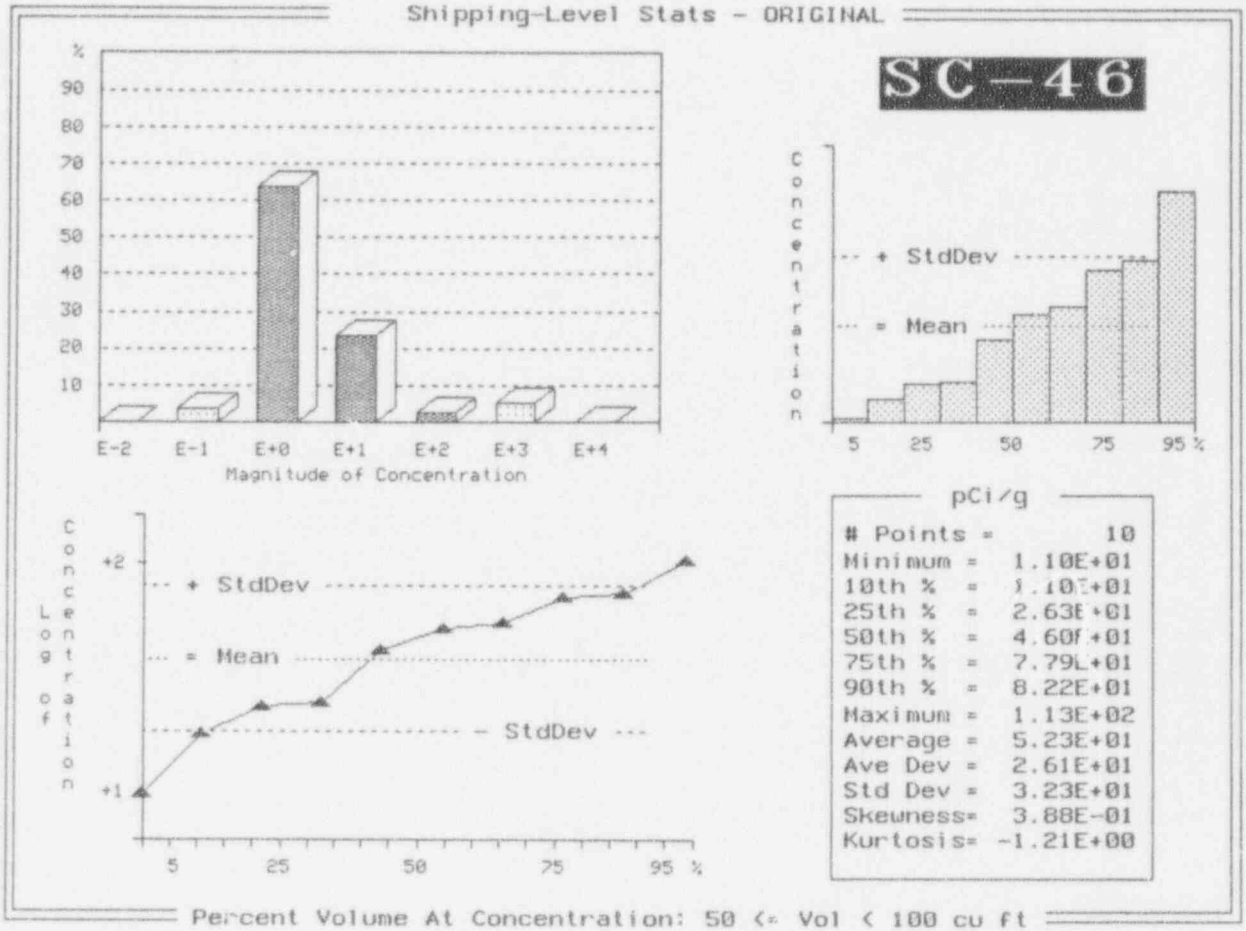


Exhibit F-32 (Continued)

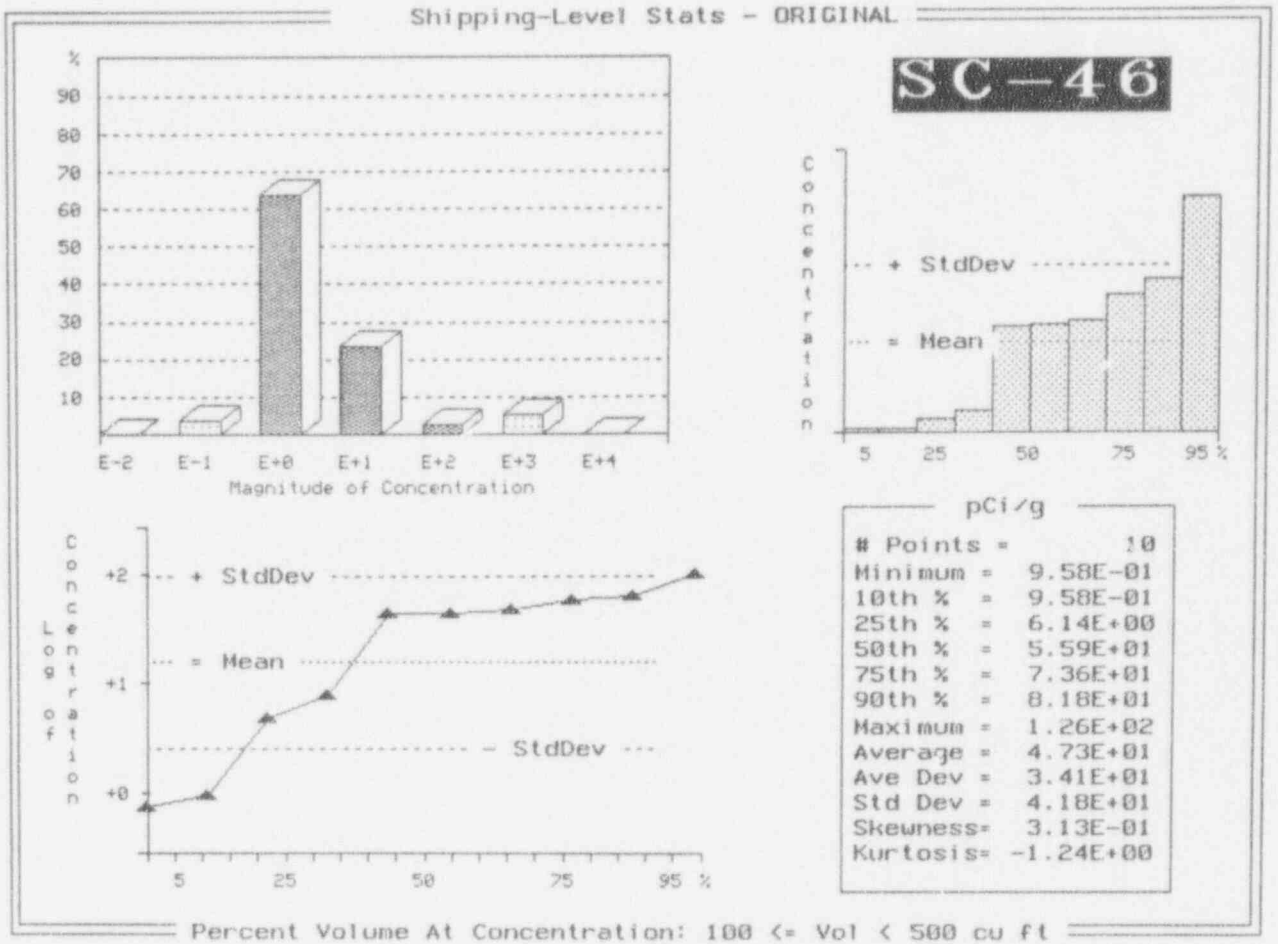


Exhibit F-32 (Continued)

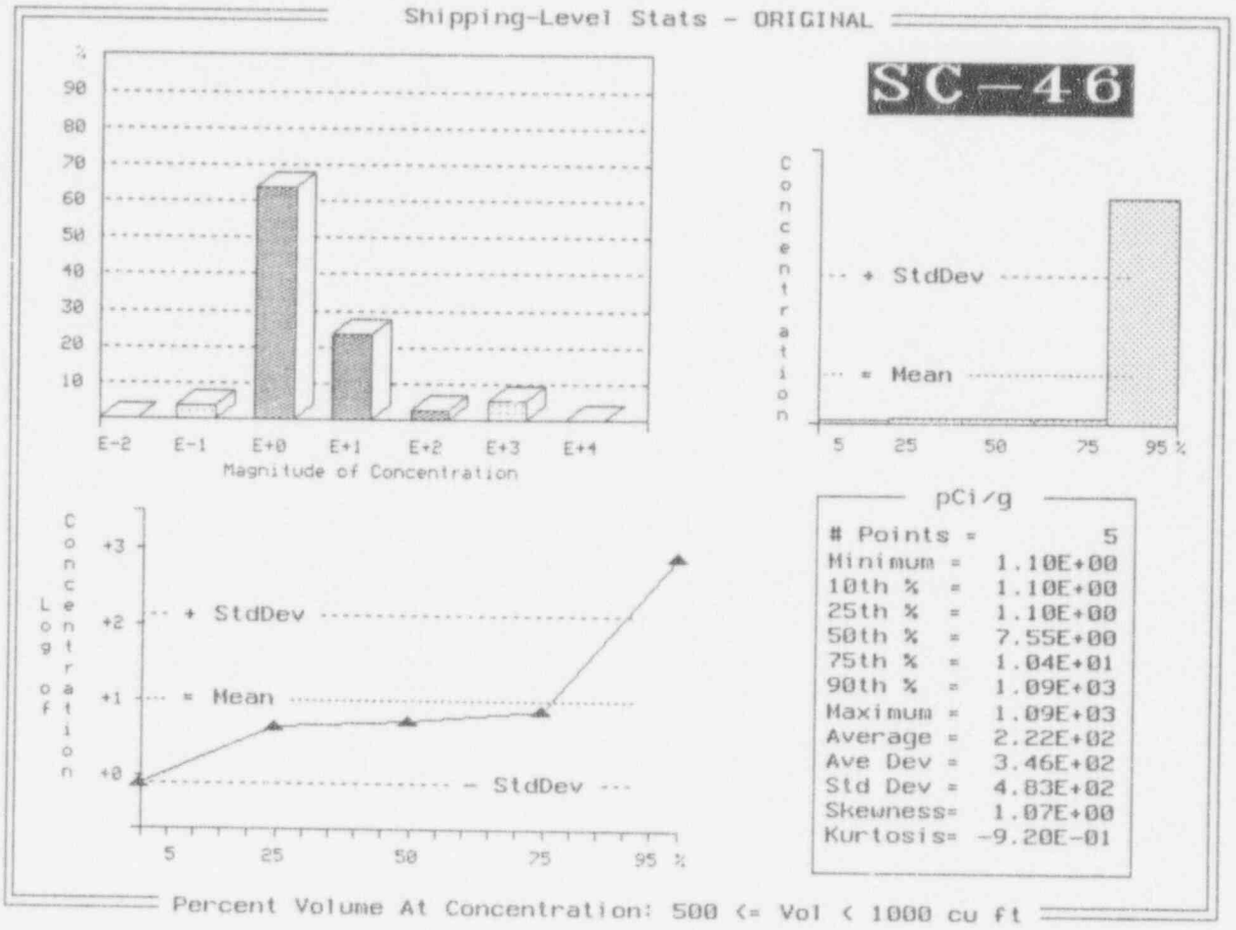


Exhibit F-32 (Continued)

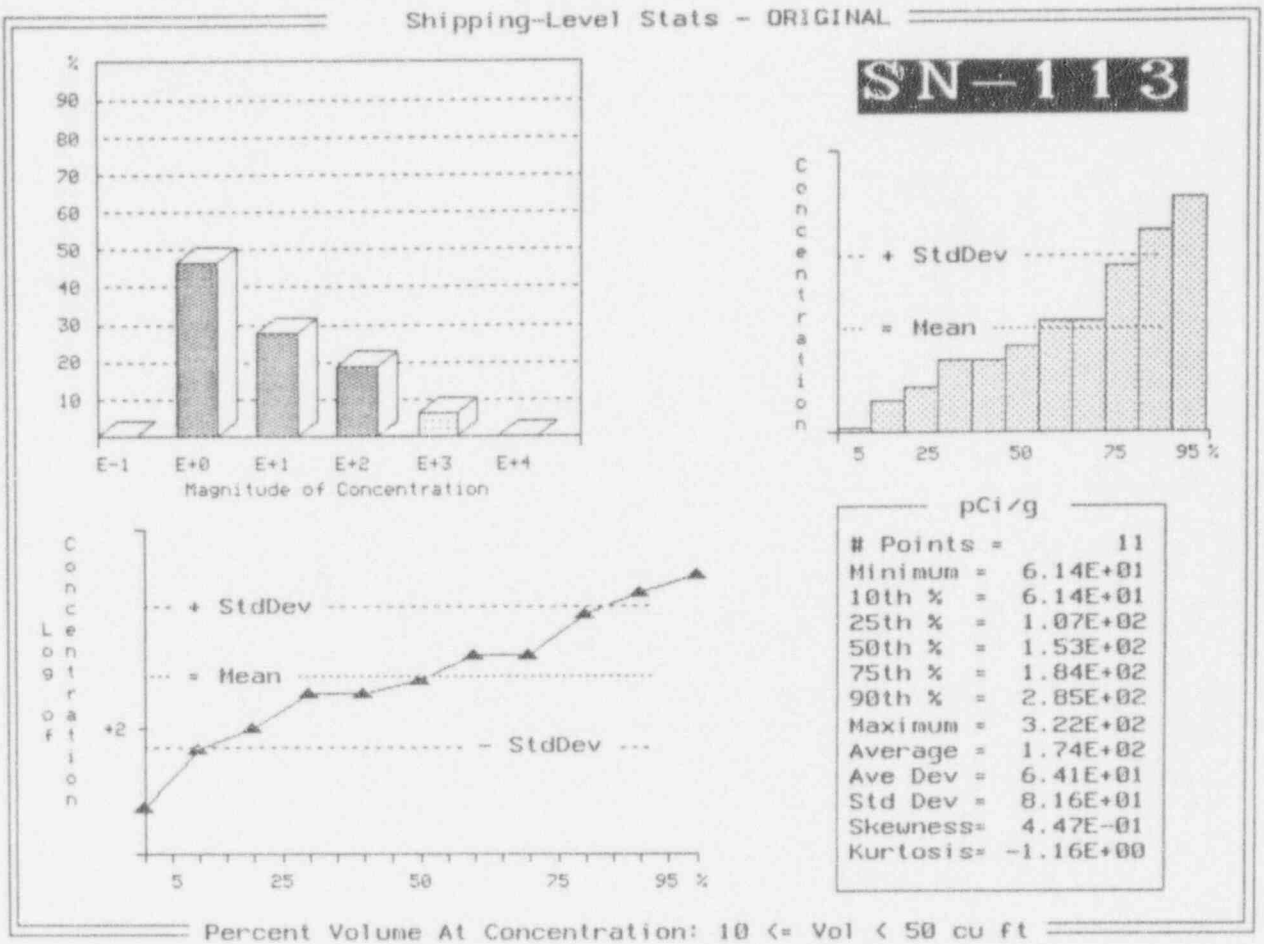


Exhibit F-33 (Continued)

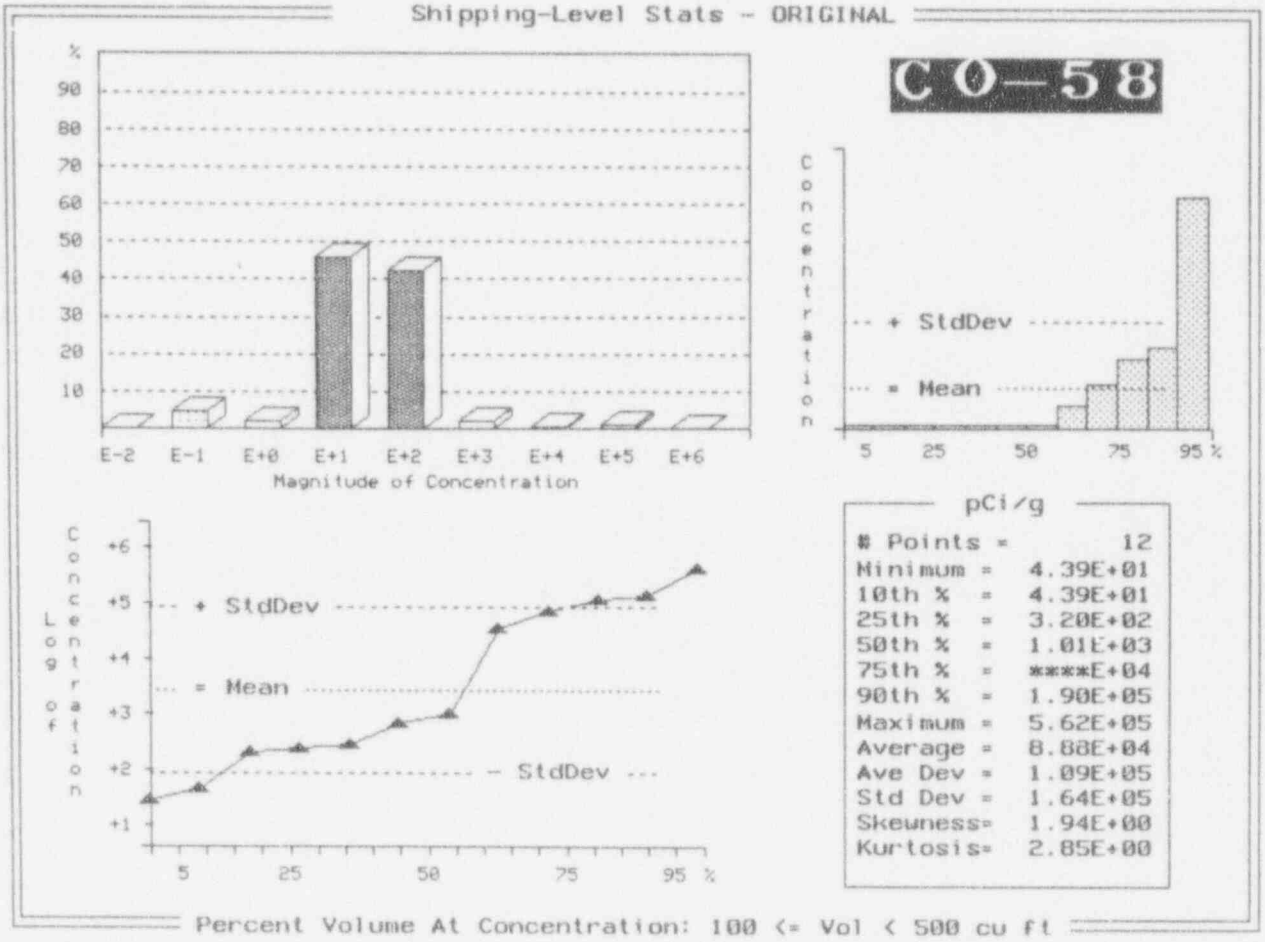


Exhibit F-33 (Continued)

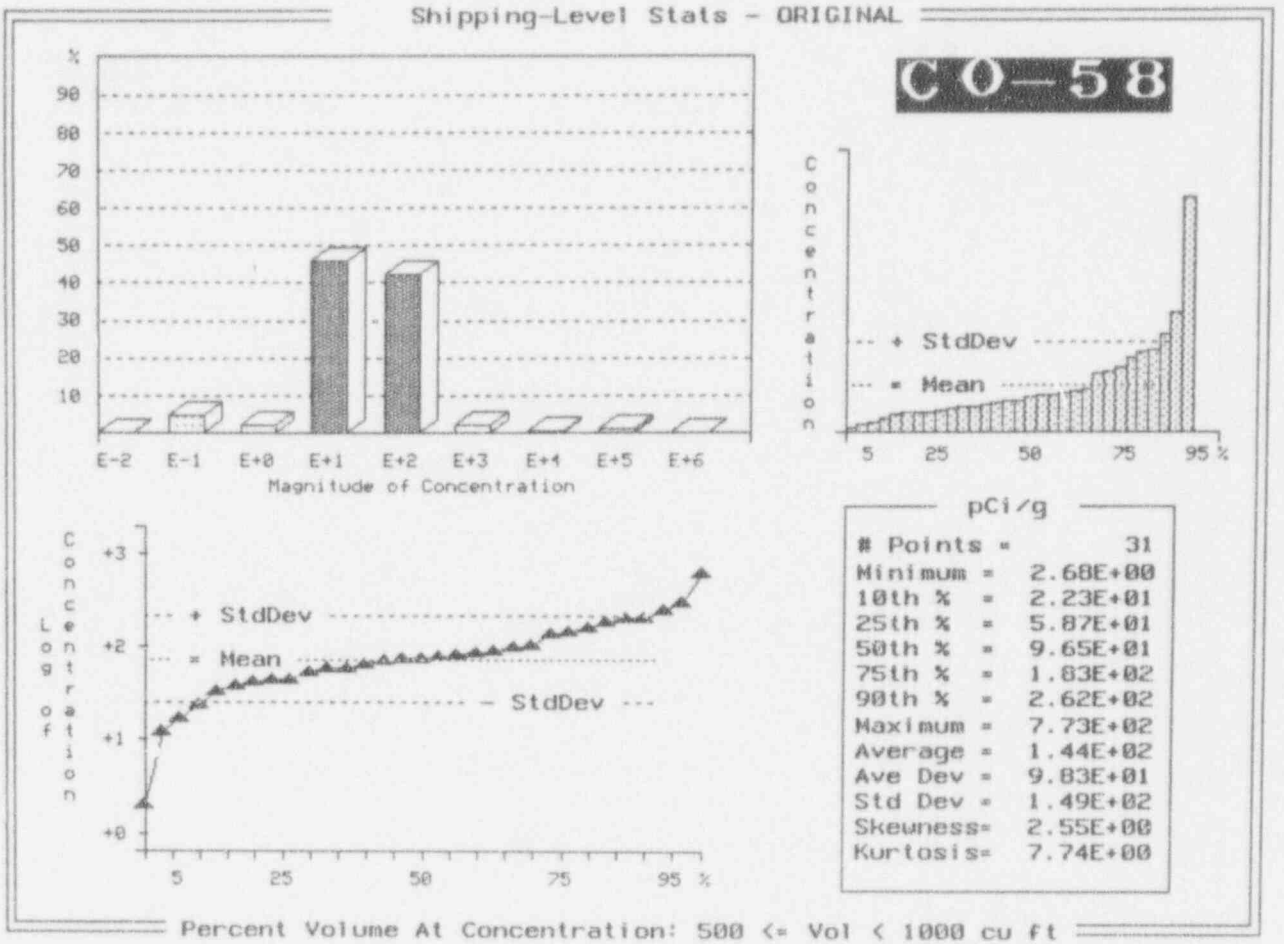


Exhibit F-33 (Continued)

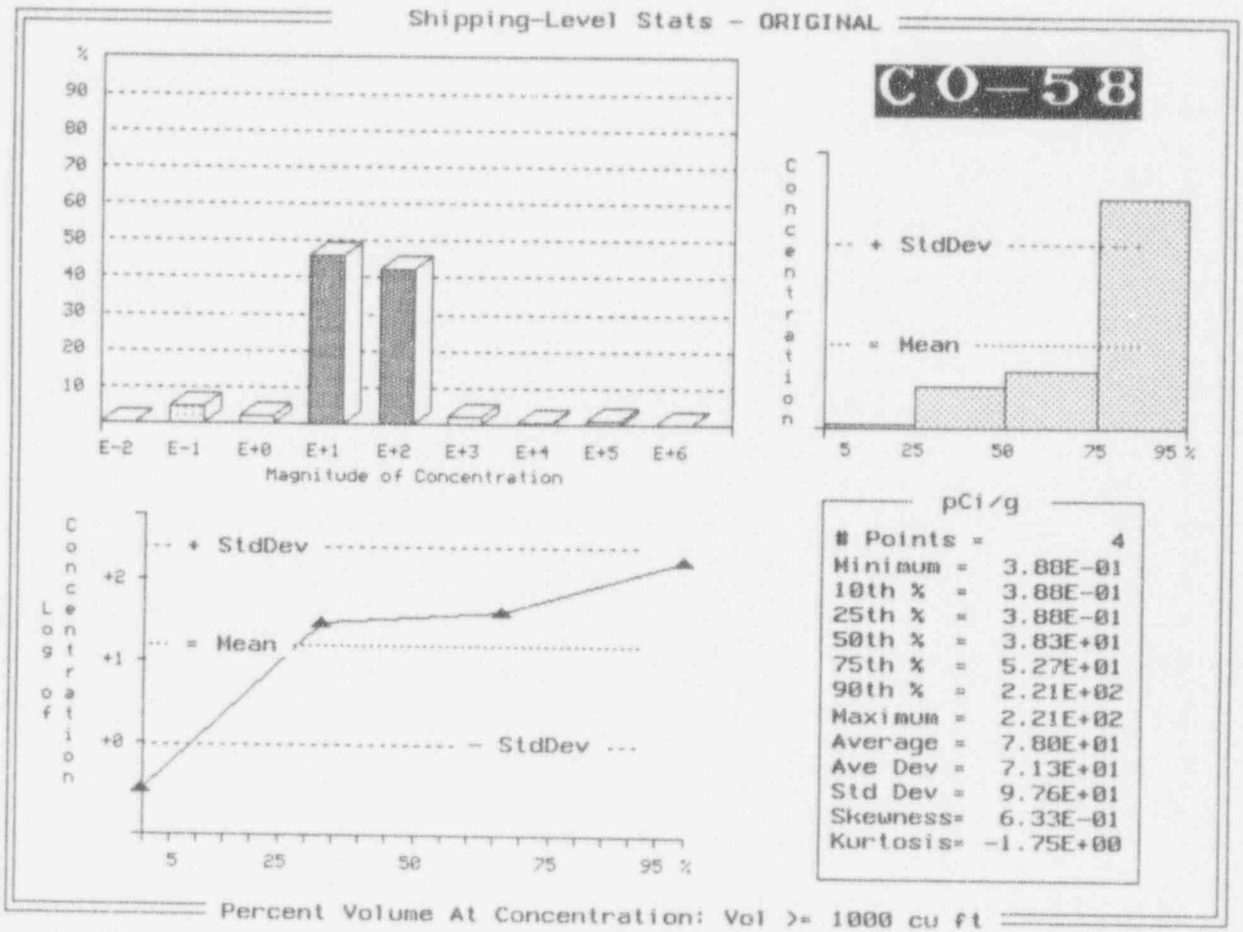


Exhibit F-33 (Continued)

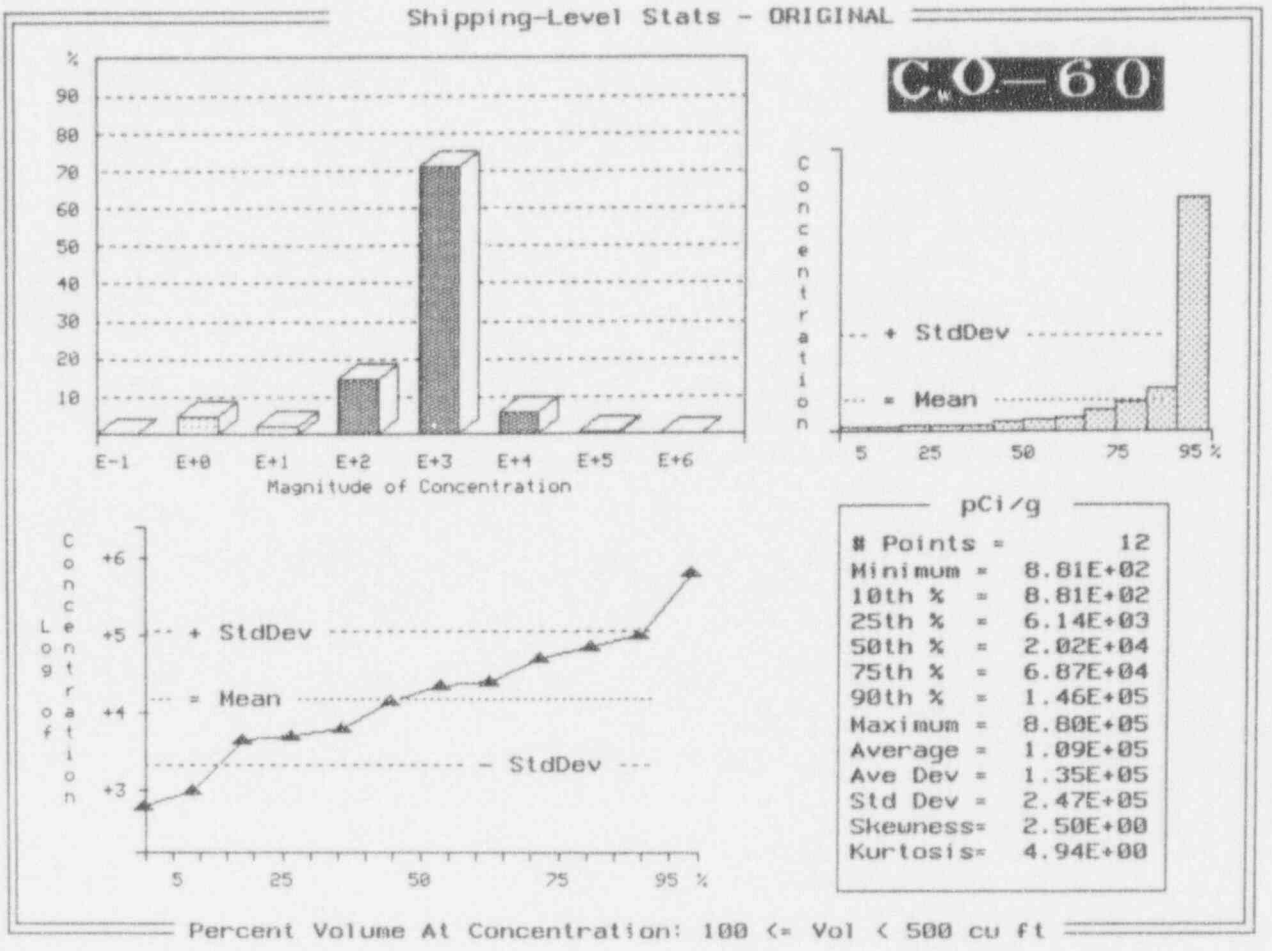


Exhibit F-33 (Continued)

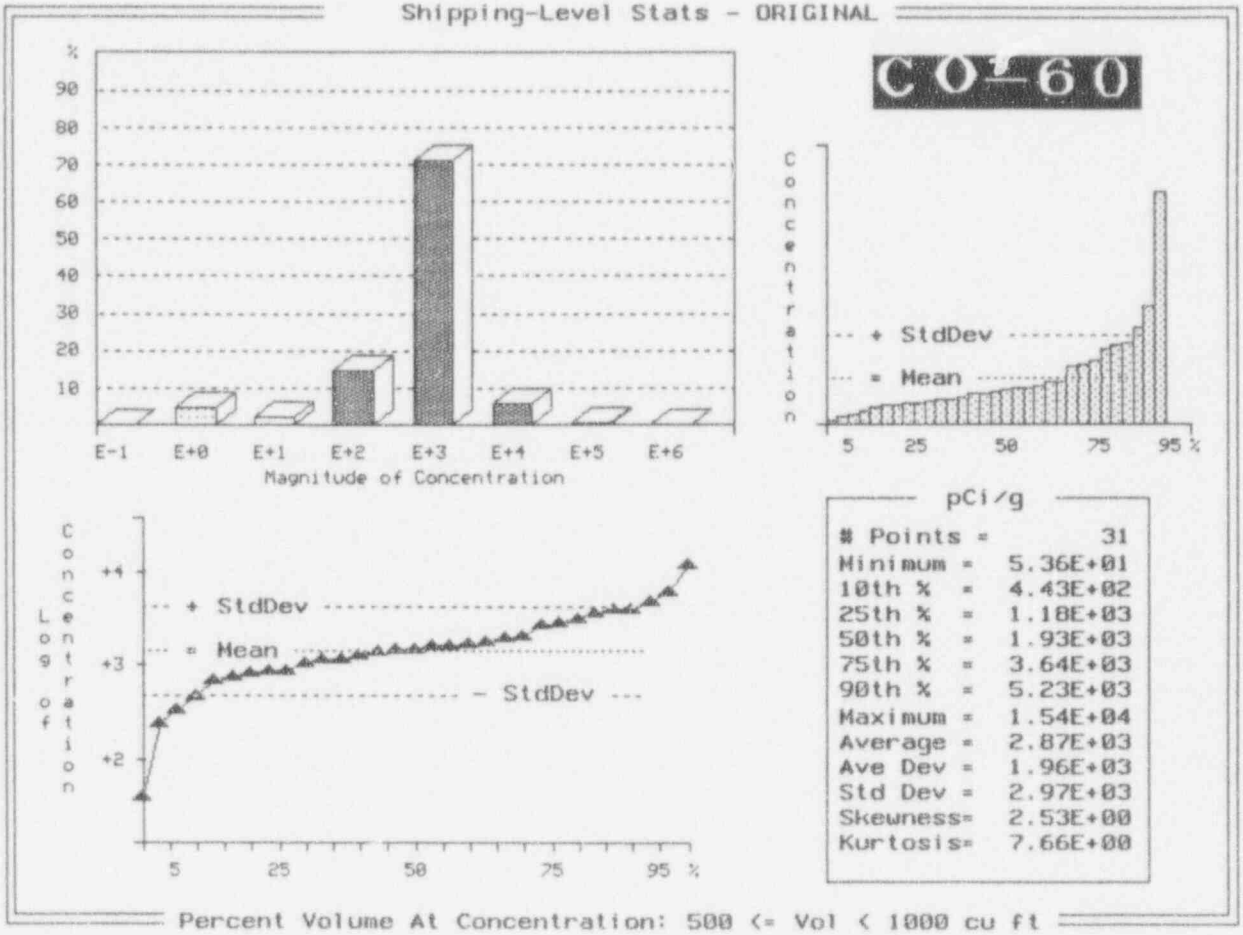


Exhibit F-33 (Continued)

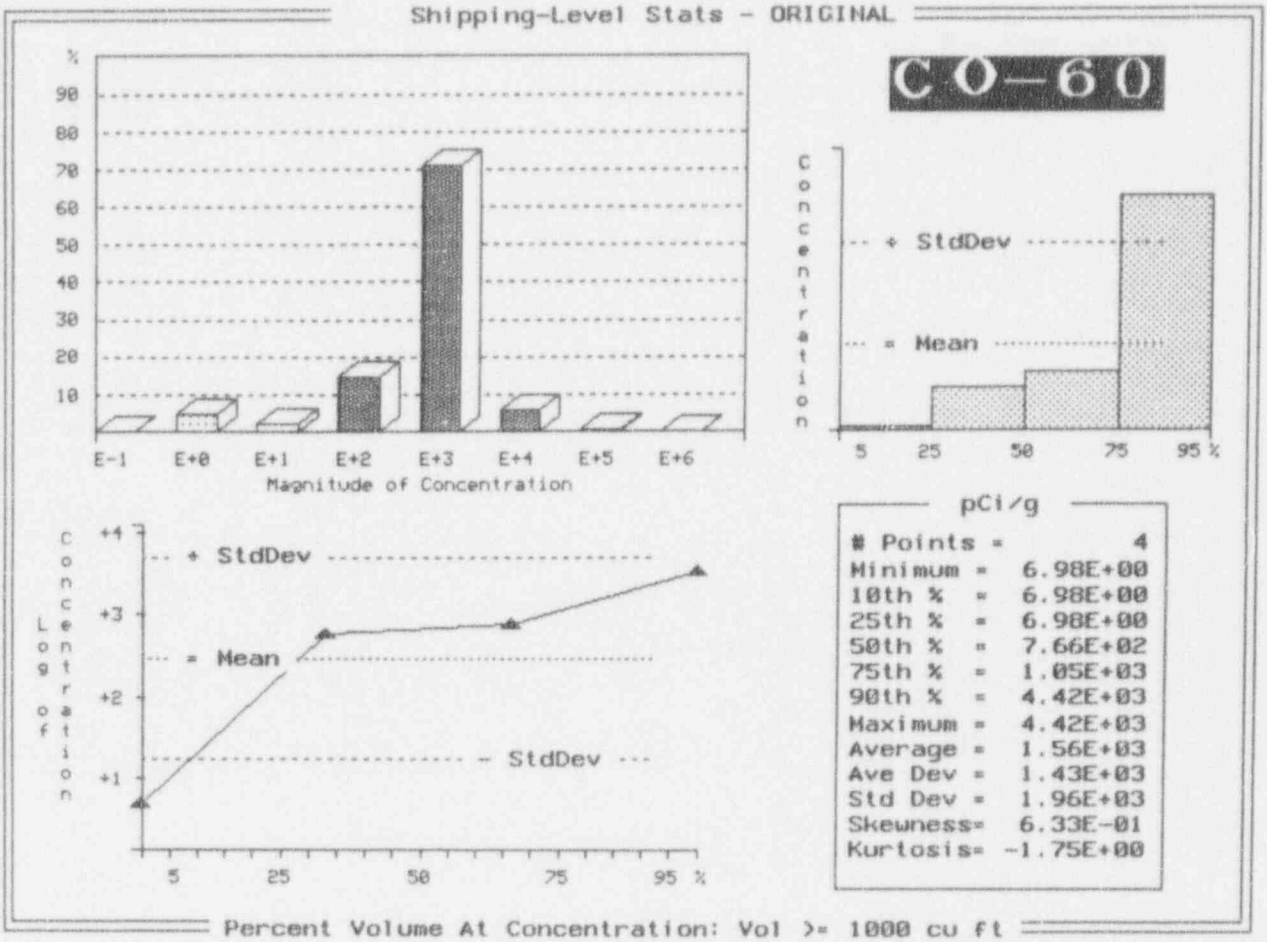


Exhibit F-33 (Continued)

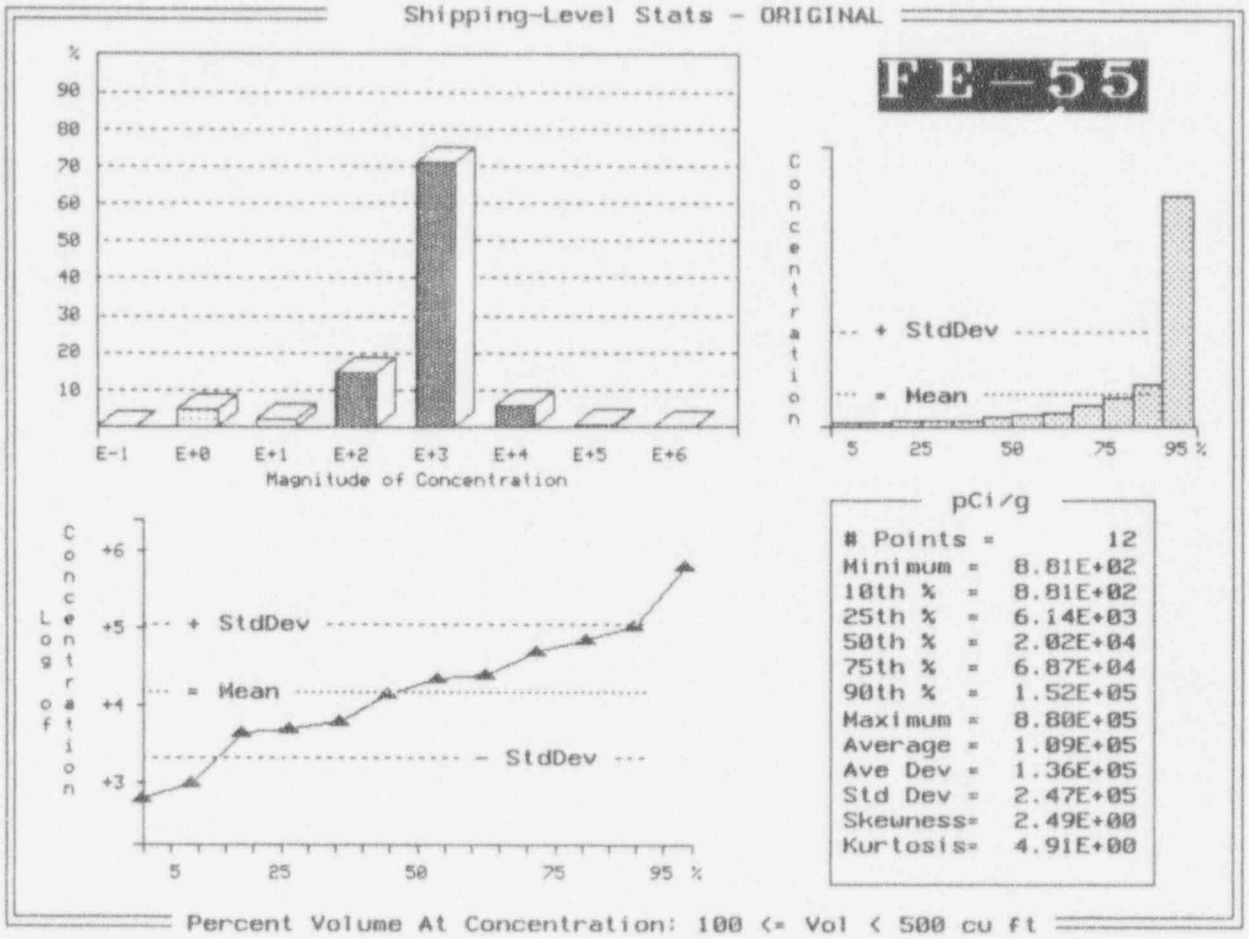


Exhibit F-33 (Continued)

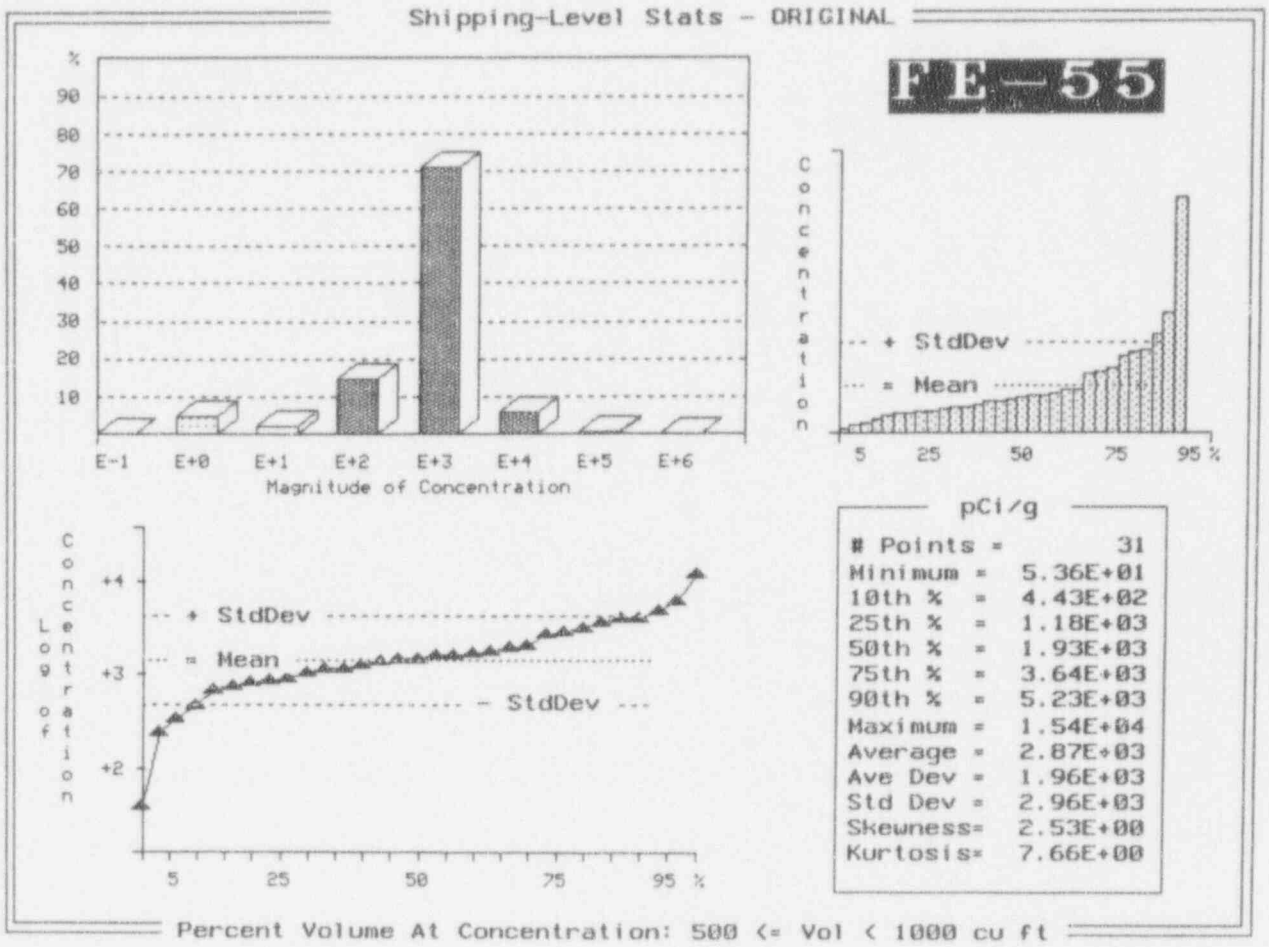


Exhibit F-33 (Continued)

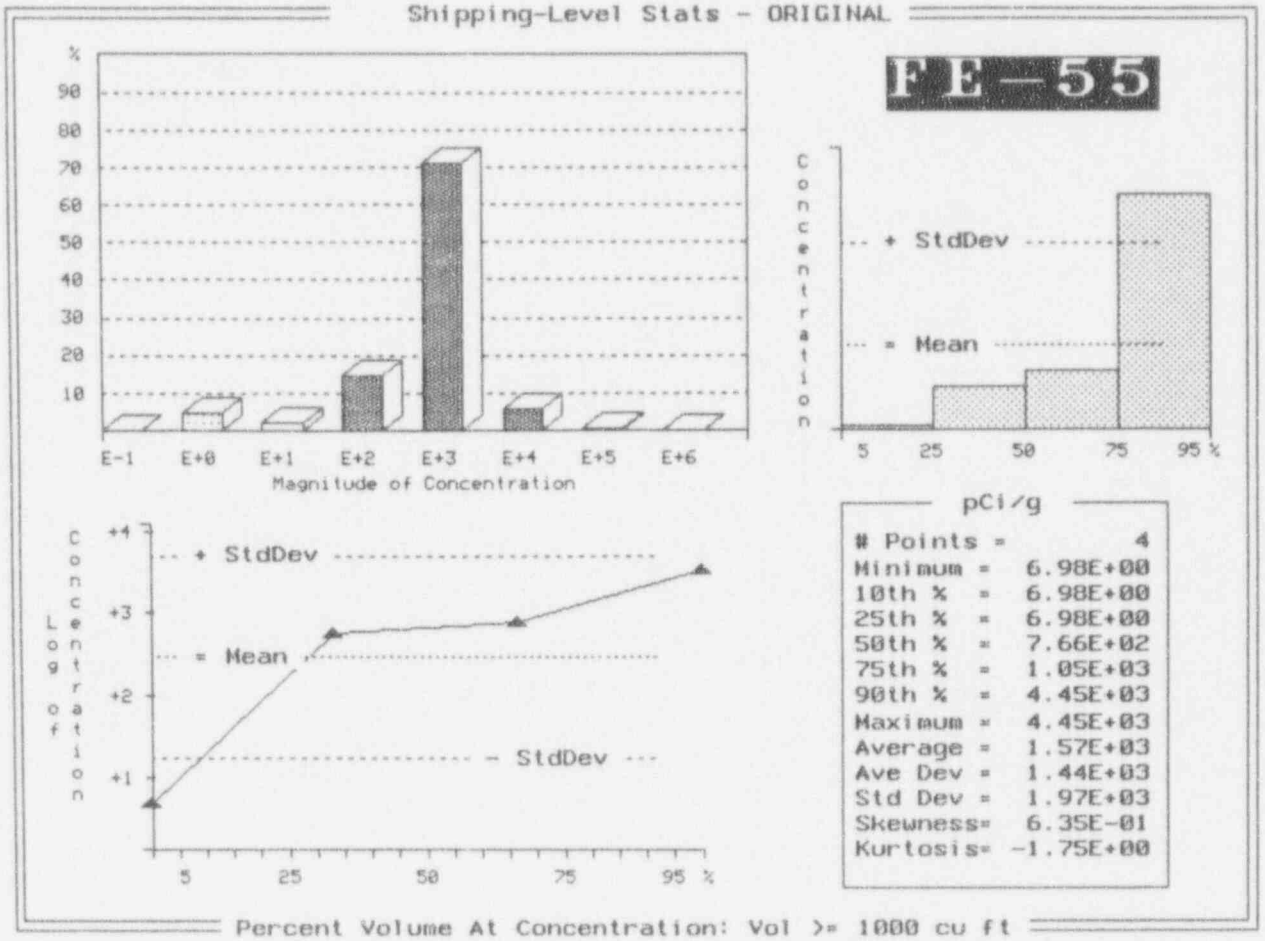


Exhibit F-33 (Continued)

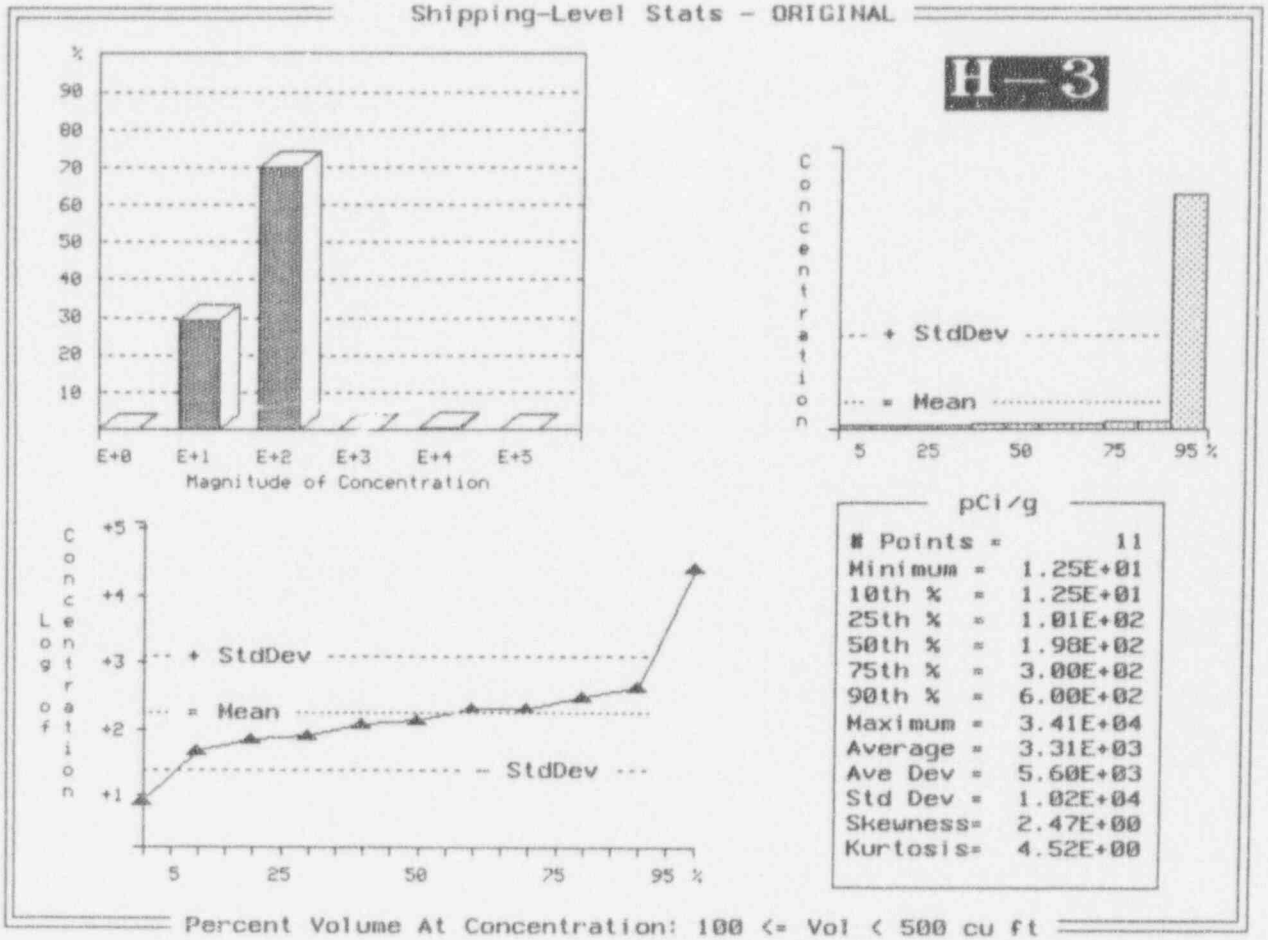


Exhibit F-33 (Continued)

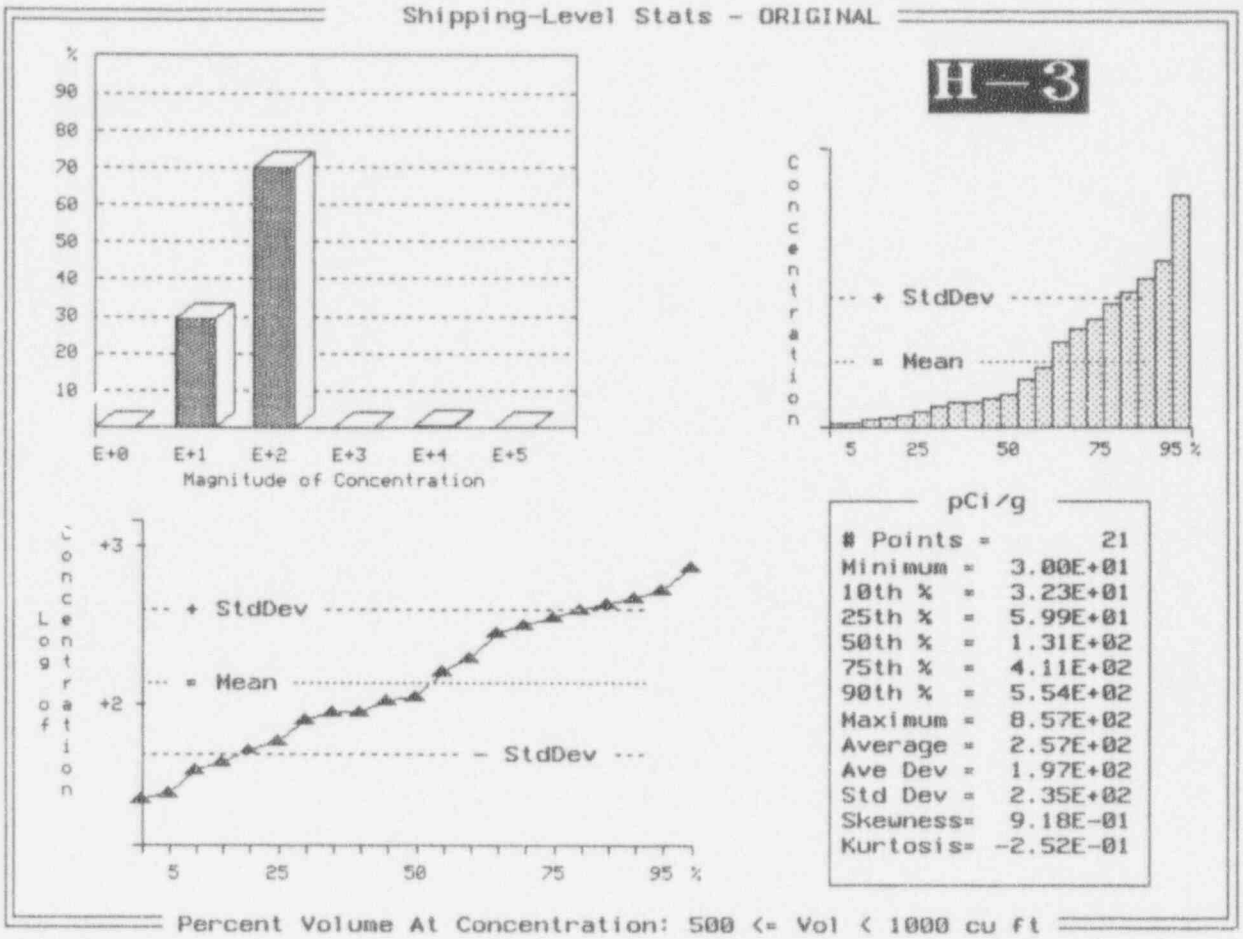


Exhibit F-33 (Continued)

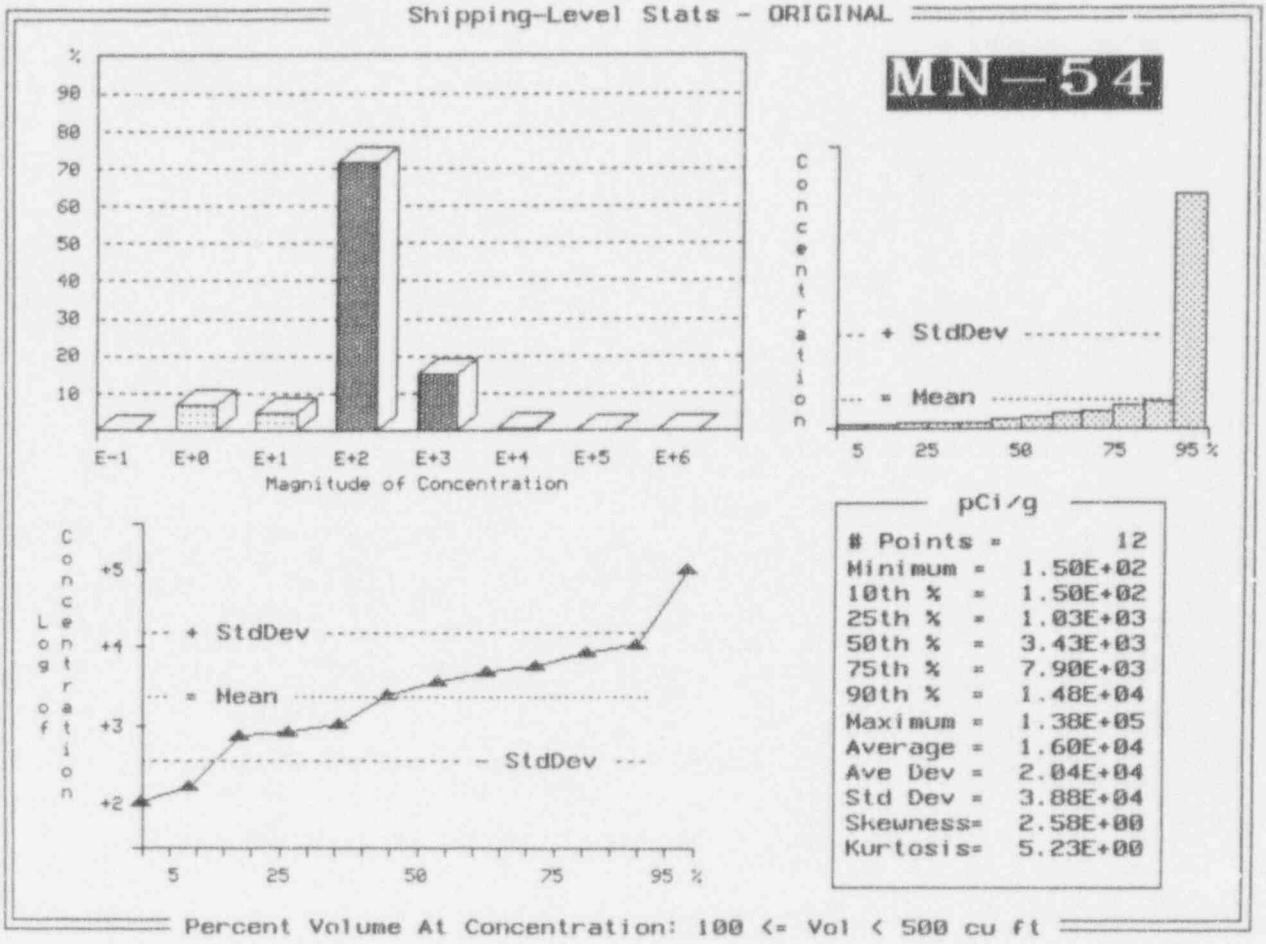


Exhibit F-33 (Continued)

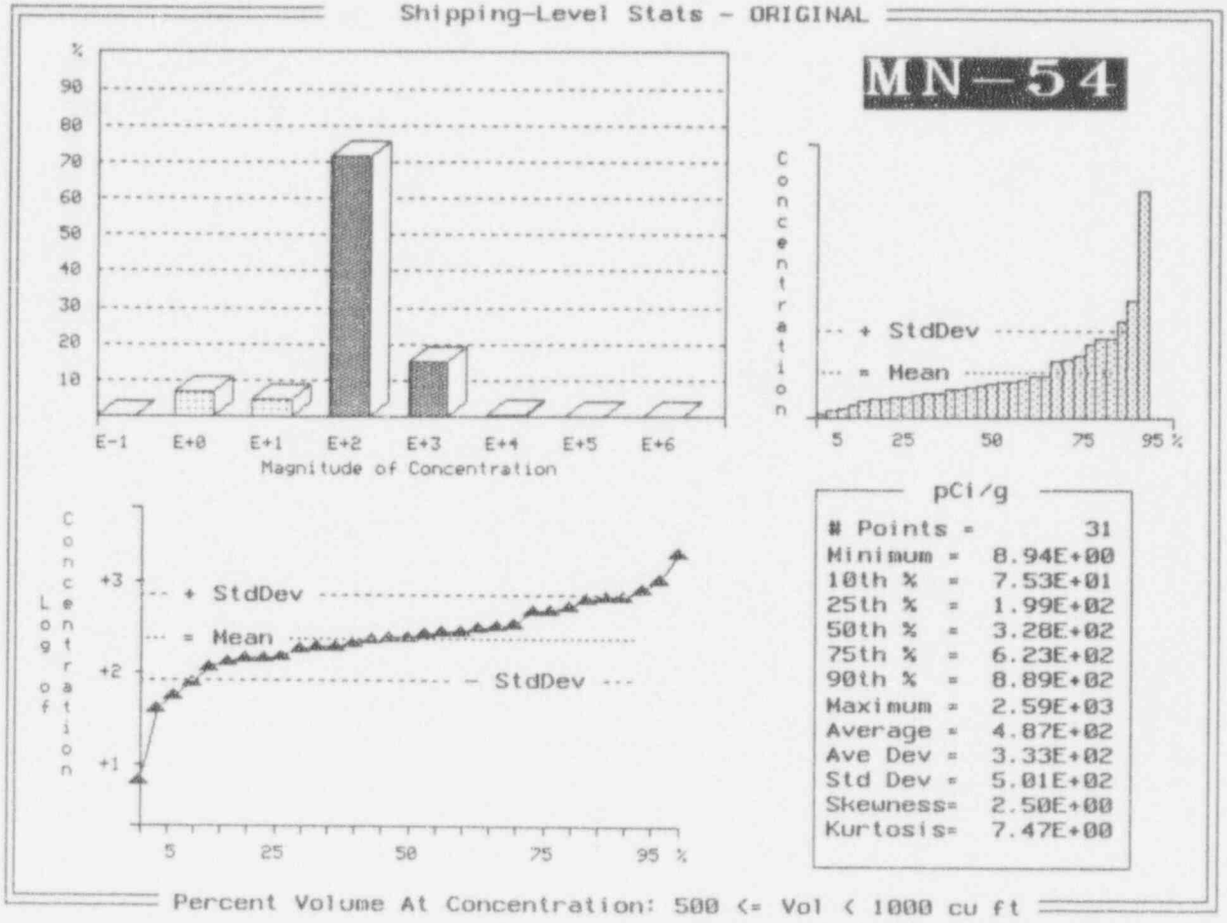


Exhibit F-33 (Continued)

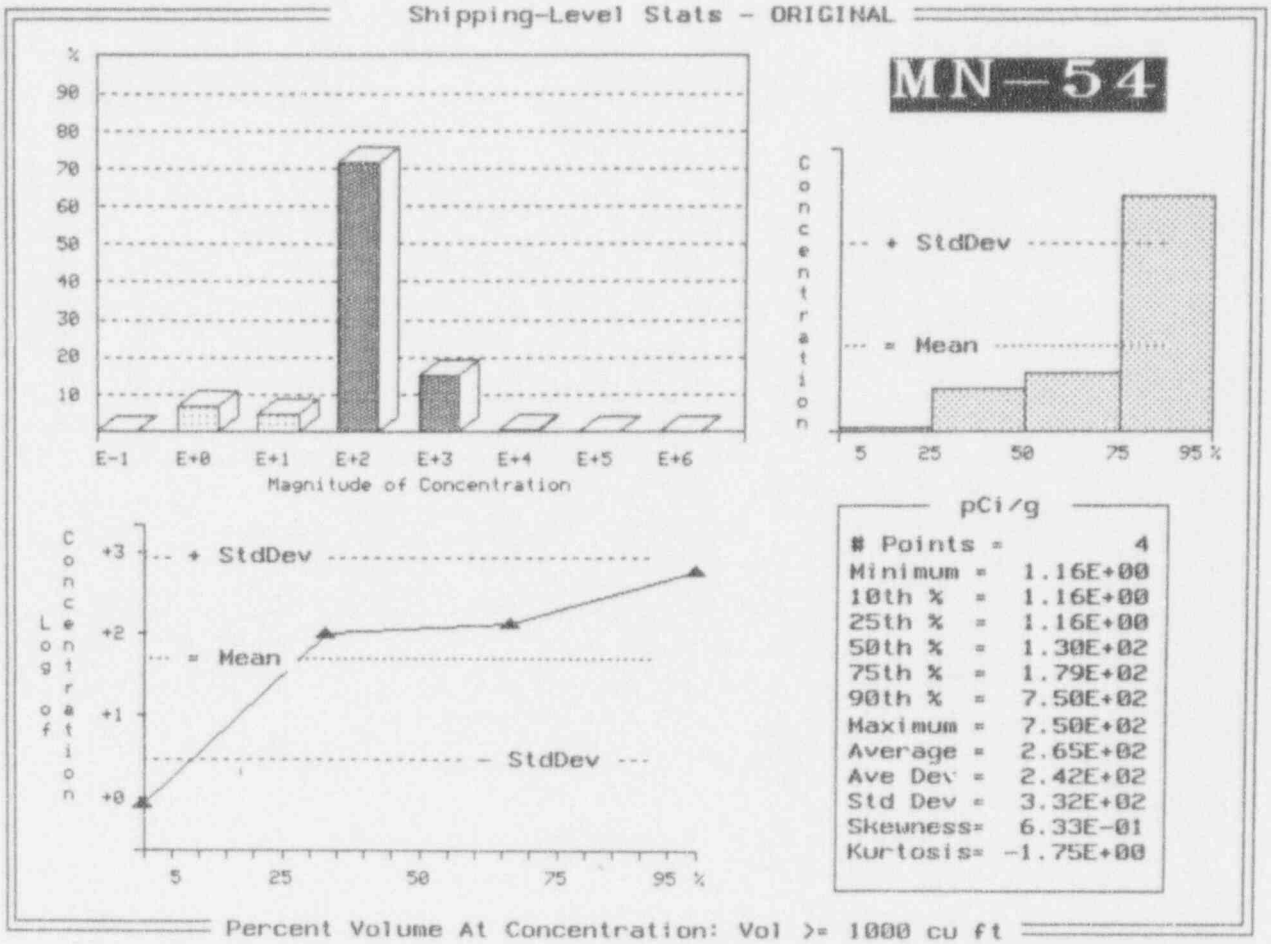


Exhibit F-33 (Continued)

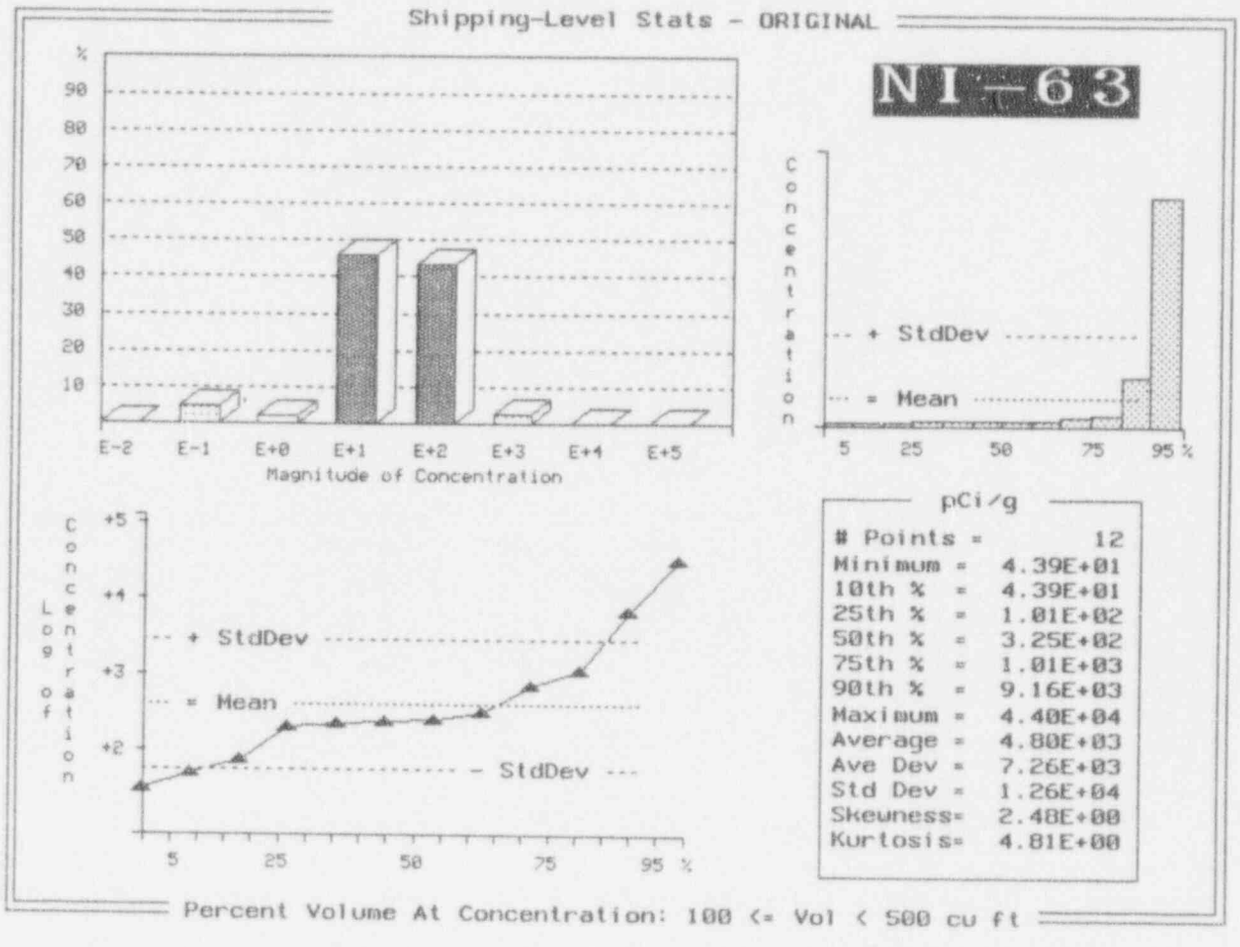


Exhibit F-33 (Continued)

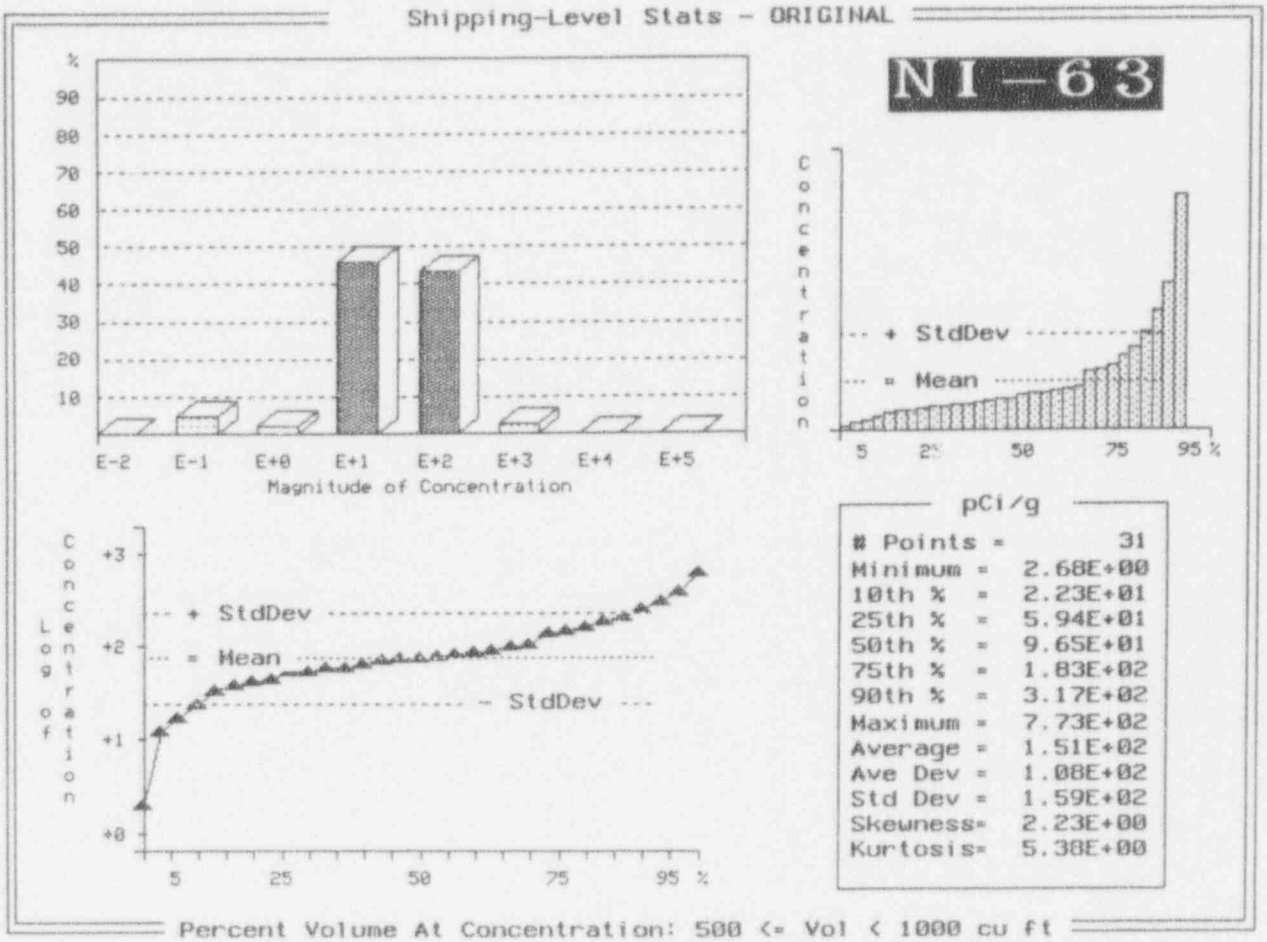


Exhibit F-33 (Continued)

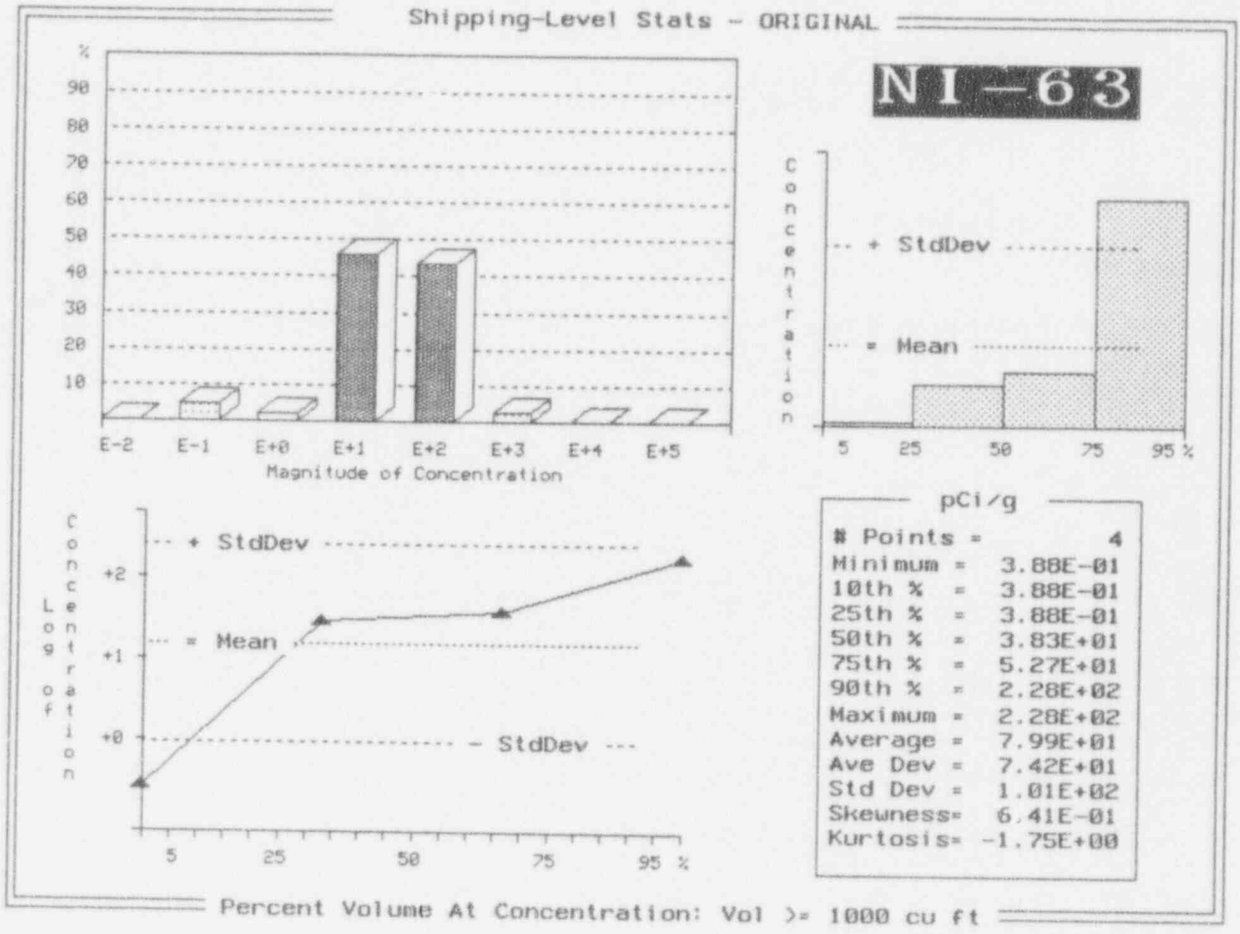
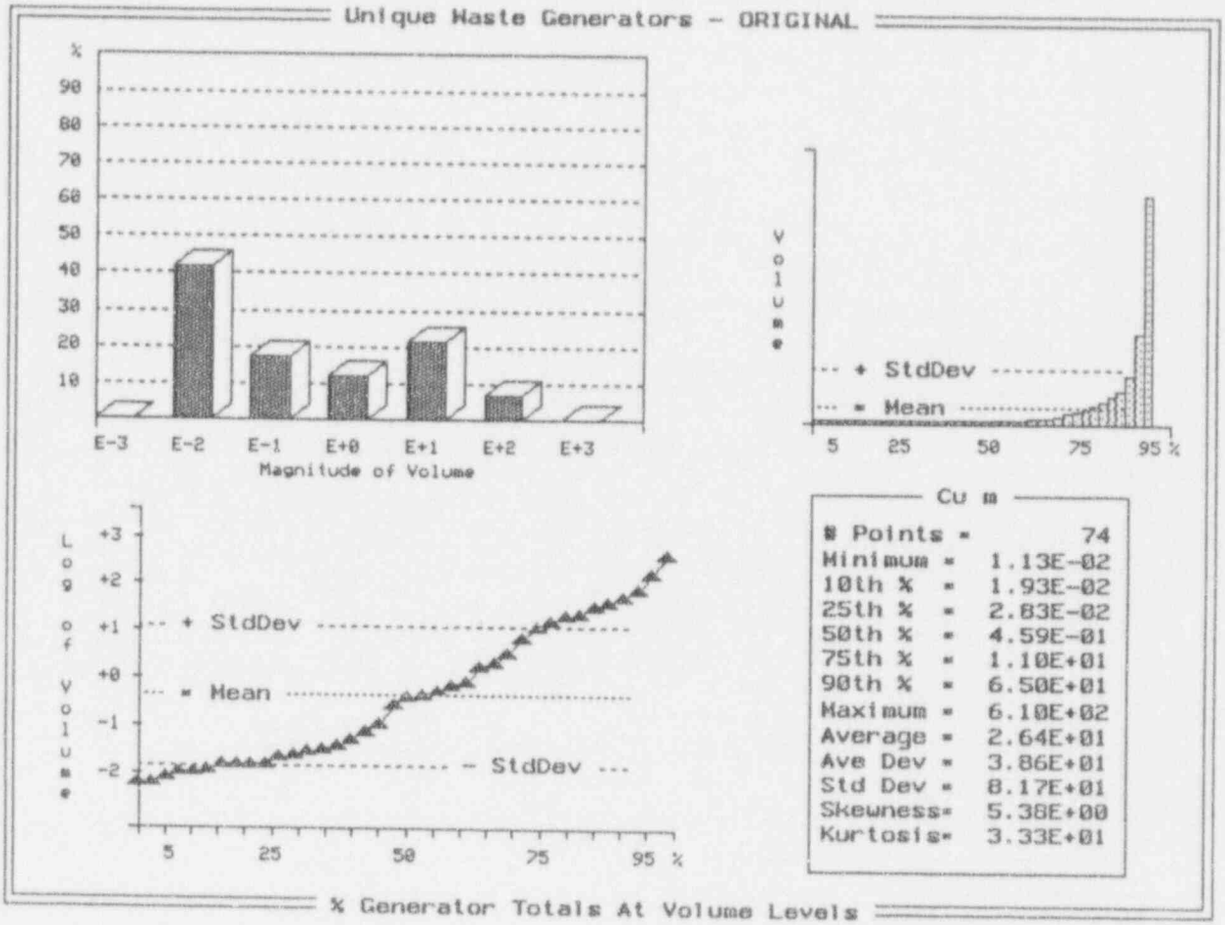


Exhibit F-34
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Southwest
Waste generator class:	Academic
Total number of waste generators:	74
Total associated waste volume (m^3):	1,957
Total associated waste activity (Ci):	200
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	18
Percent of total(%):	24
Total number of shipping records:	88
Number of shipping records with container data:	10
Number of waste containers:	643
Weight of shipments (kg):	282,500
Total waste volume (m^3):	497
Fractional waste volume (%): (this analysis/total)	25
Total waste activity (Ci):	31
Fractional waste activity (%): (this analysis/total)	15

Exhibit F-34 (Continued)



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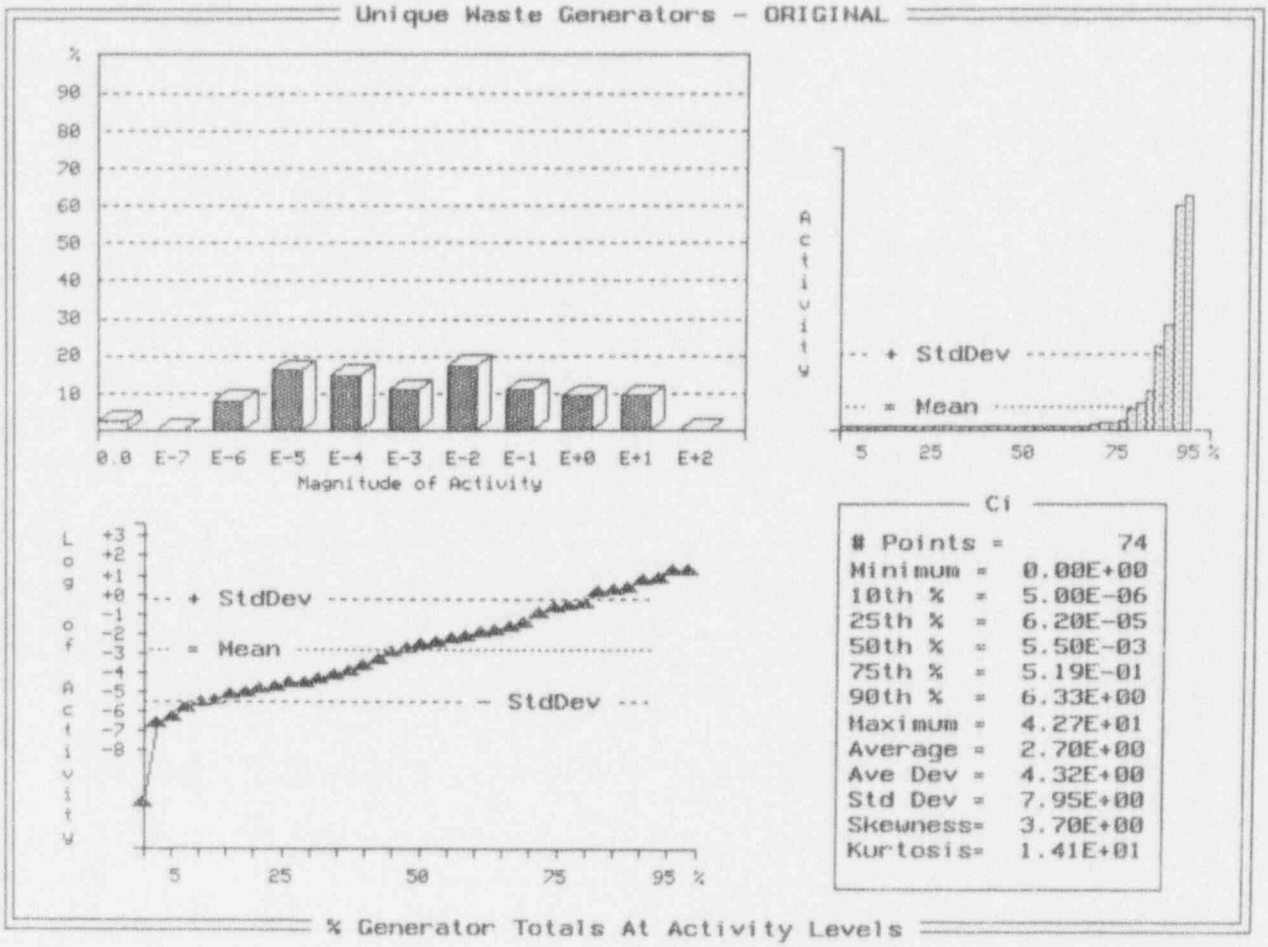
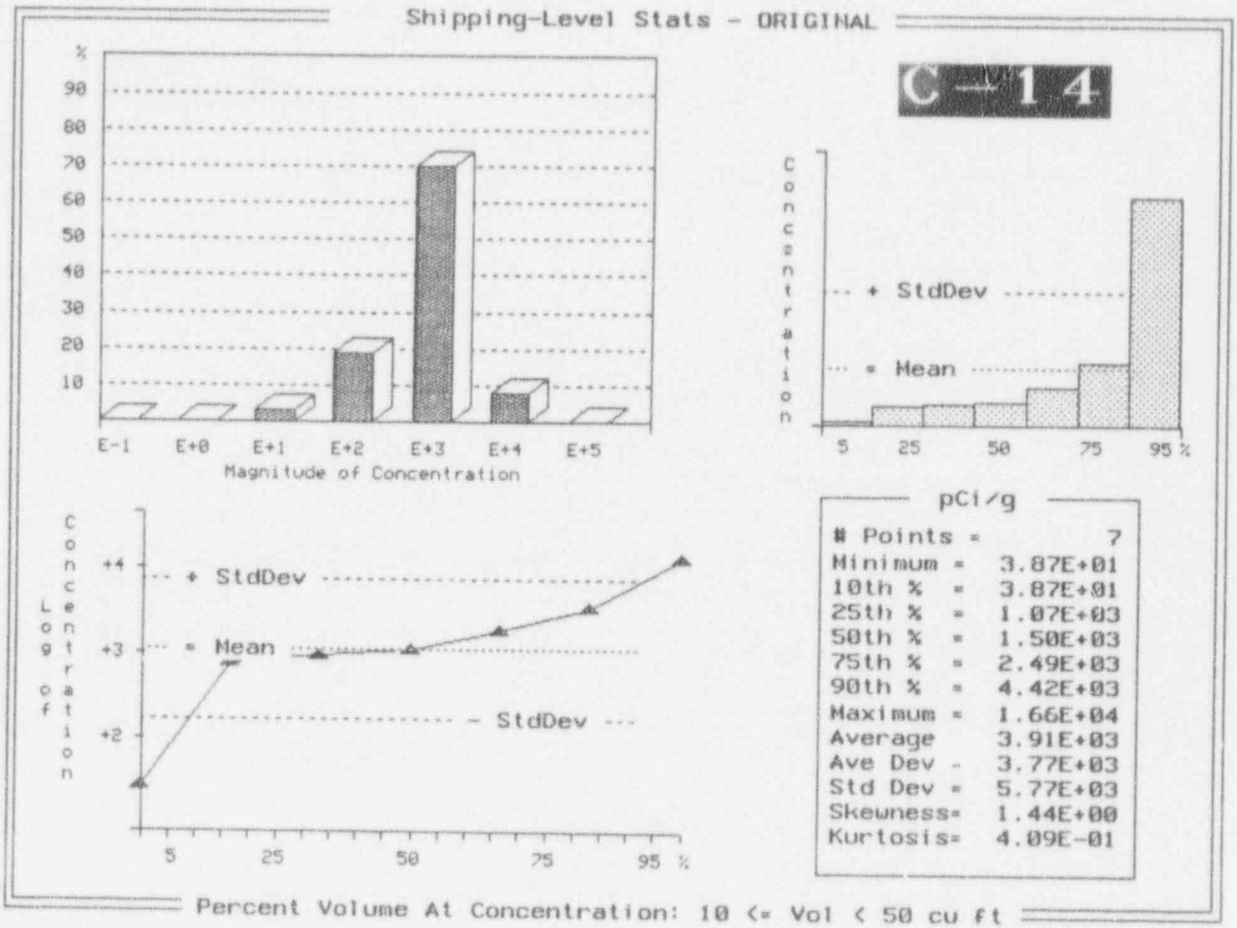


Exhibit F-34 (Continued)



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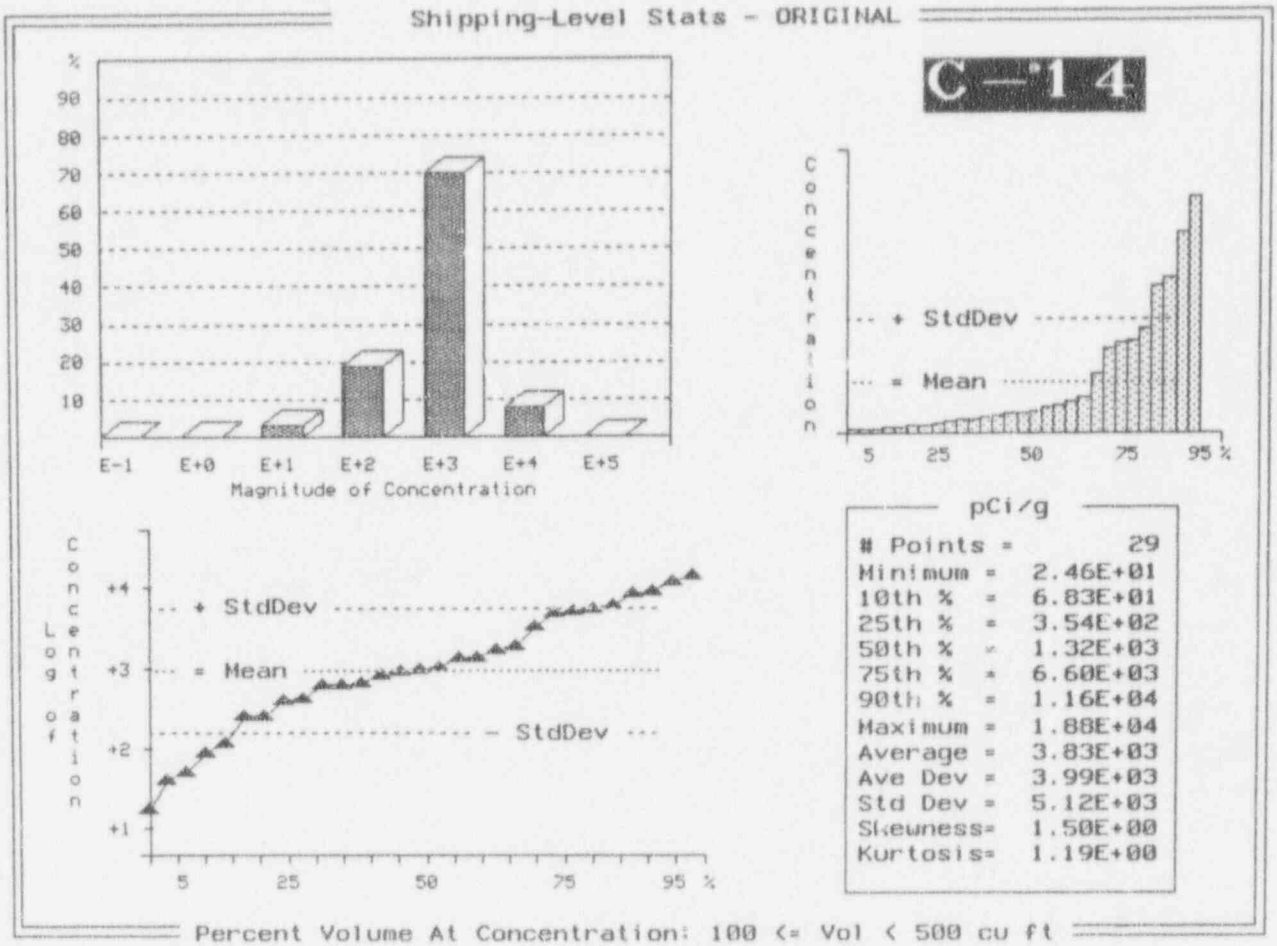

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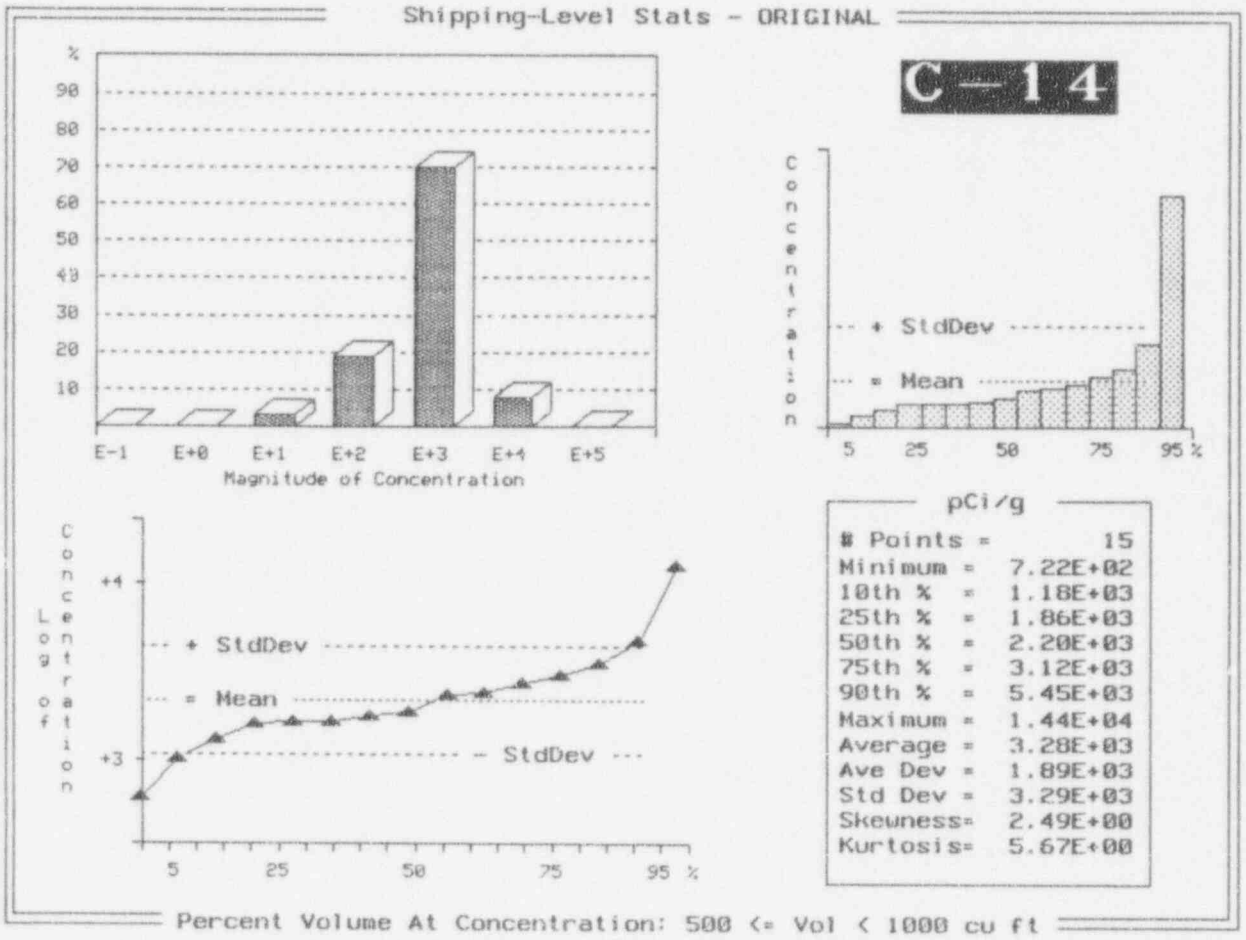

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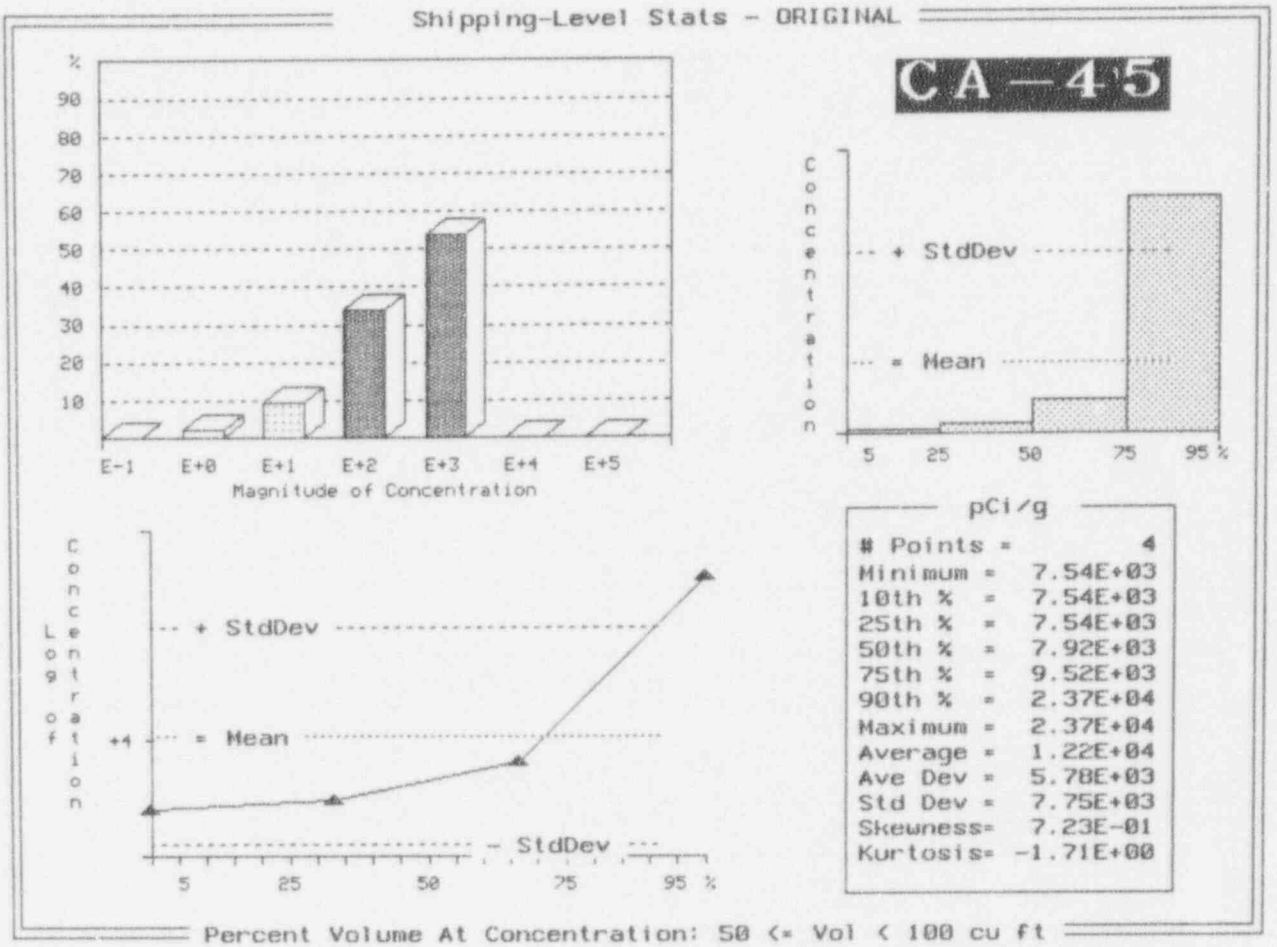

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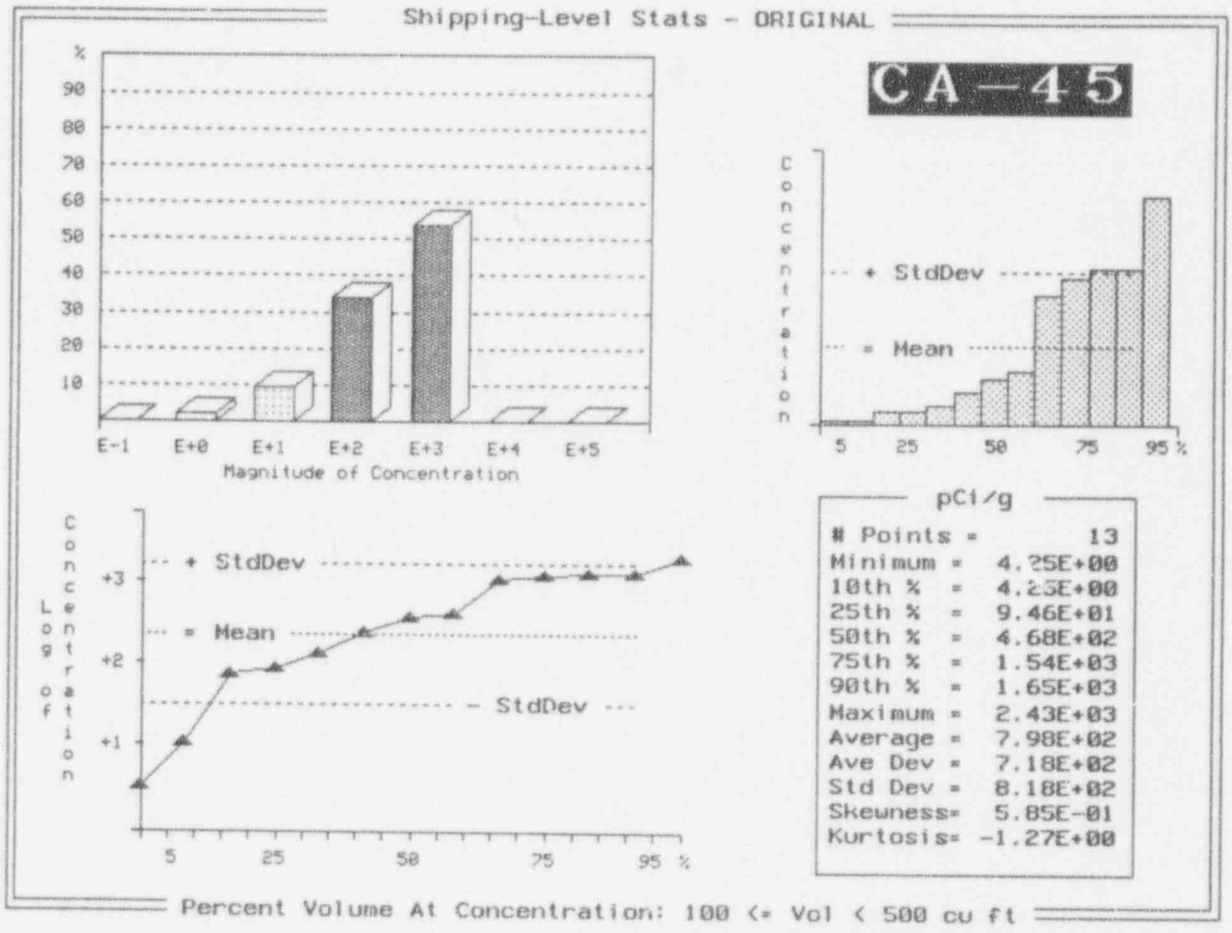

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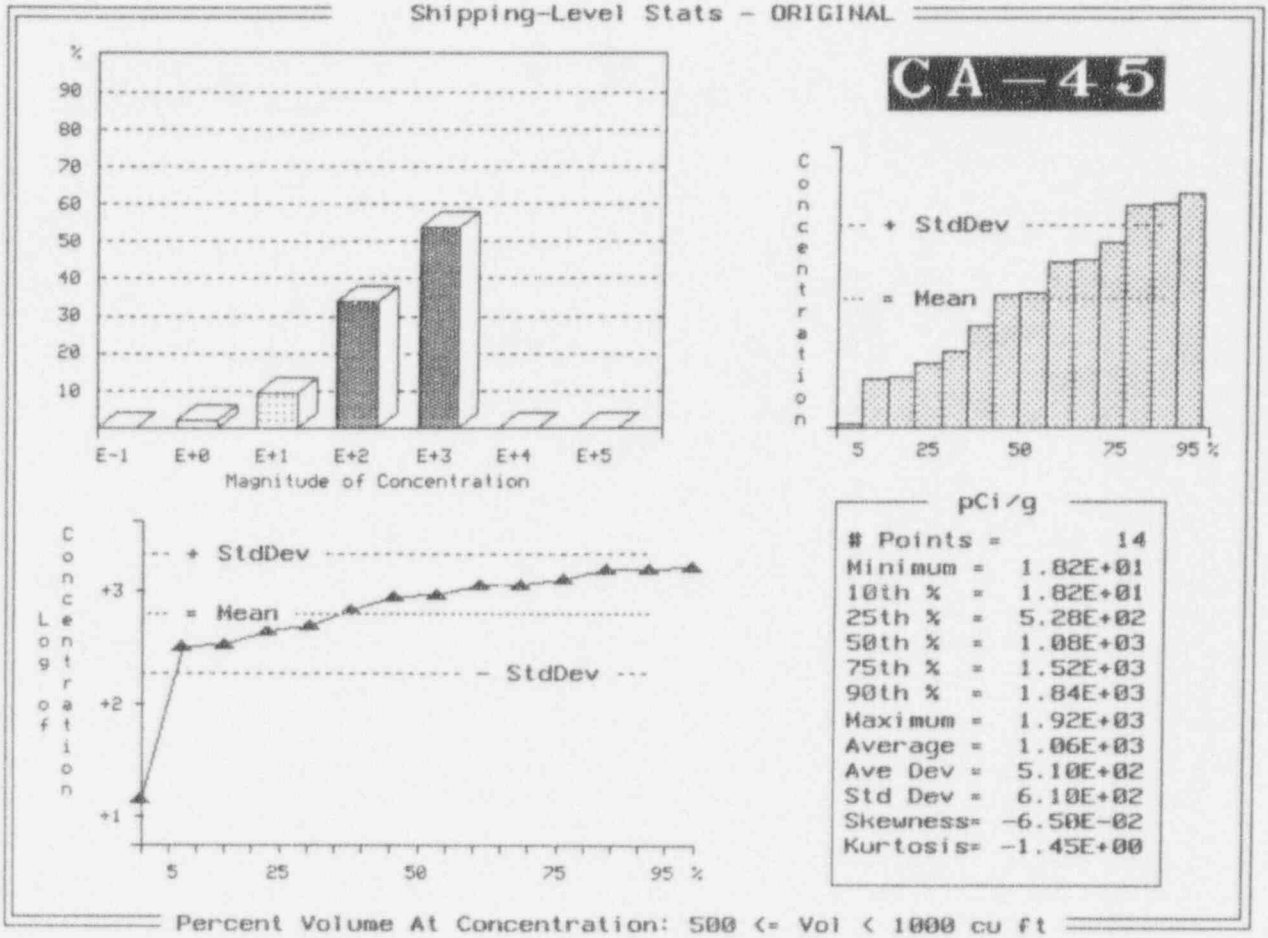
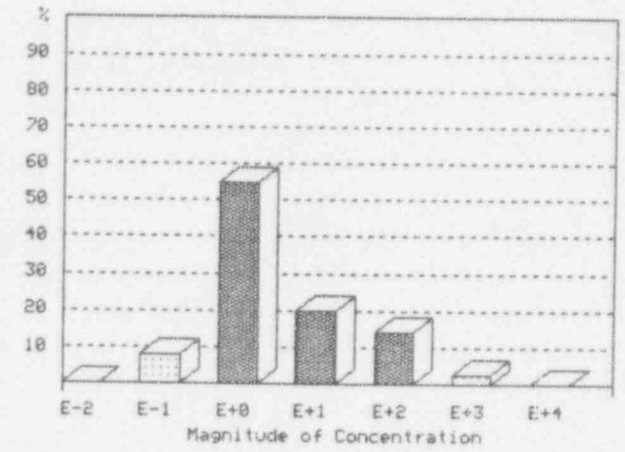
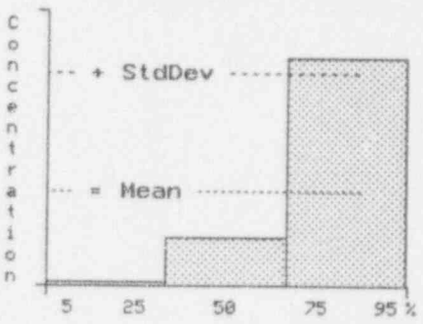


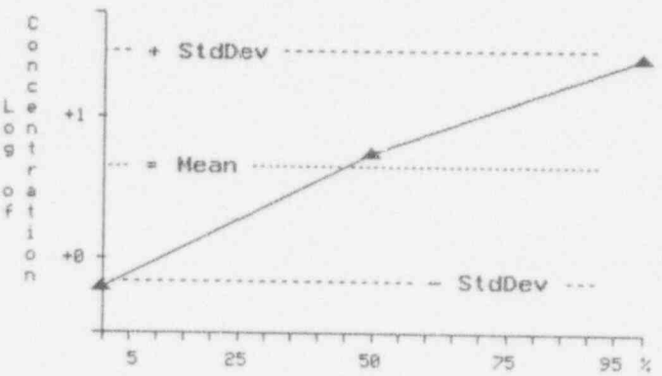
Exhibit F-34 (Continued)

Shipping-Level Stats - ORIGINAL



CL-36





pCi/g

# Points =	3
Minimum =	7.54E-01
10th % =	7.54E-01
25th % =	7.54E-01
50th % =	6.61E+00
75th % =	6.61E+00
90th % =	3.11E+01
Maximum =	3.11E+01
Average =	1.28E+01
Ave Dev =	1.22E+01
Std Dev =	1.61E+01
Skewness=	3.28E-01
Kurtosis=	-2.33E+00

Percent Volume At Concentration: 50 <= Vol < 100 cu ft

Exhibit F-34 (Continued)

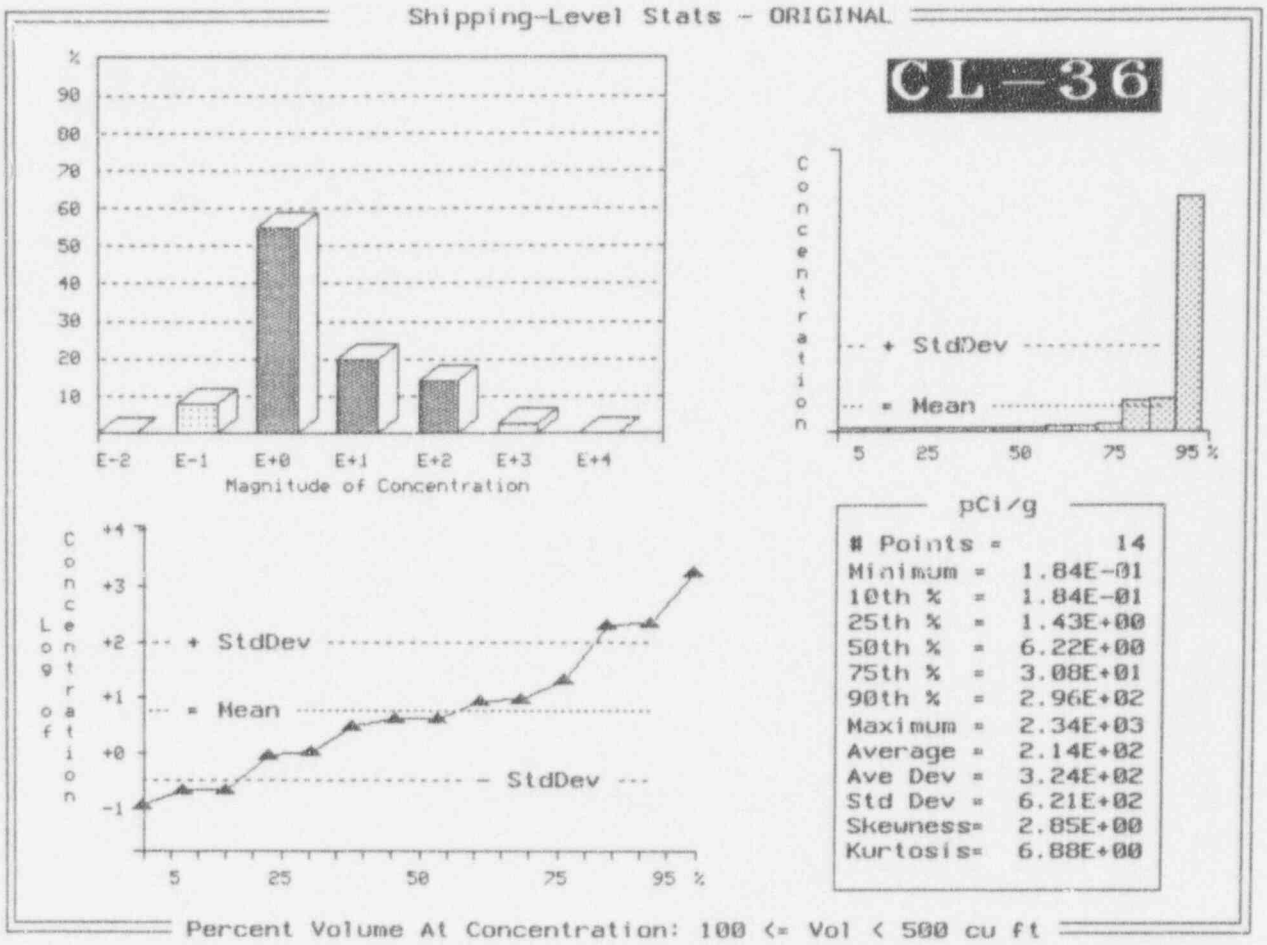
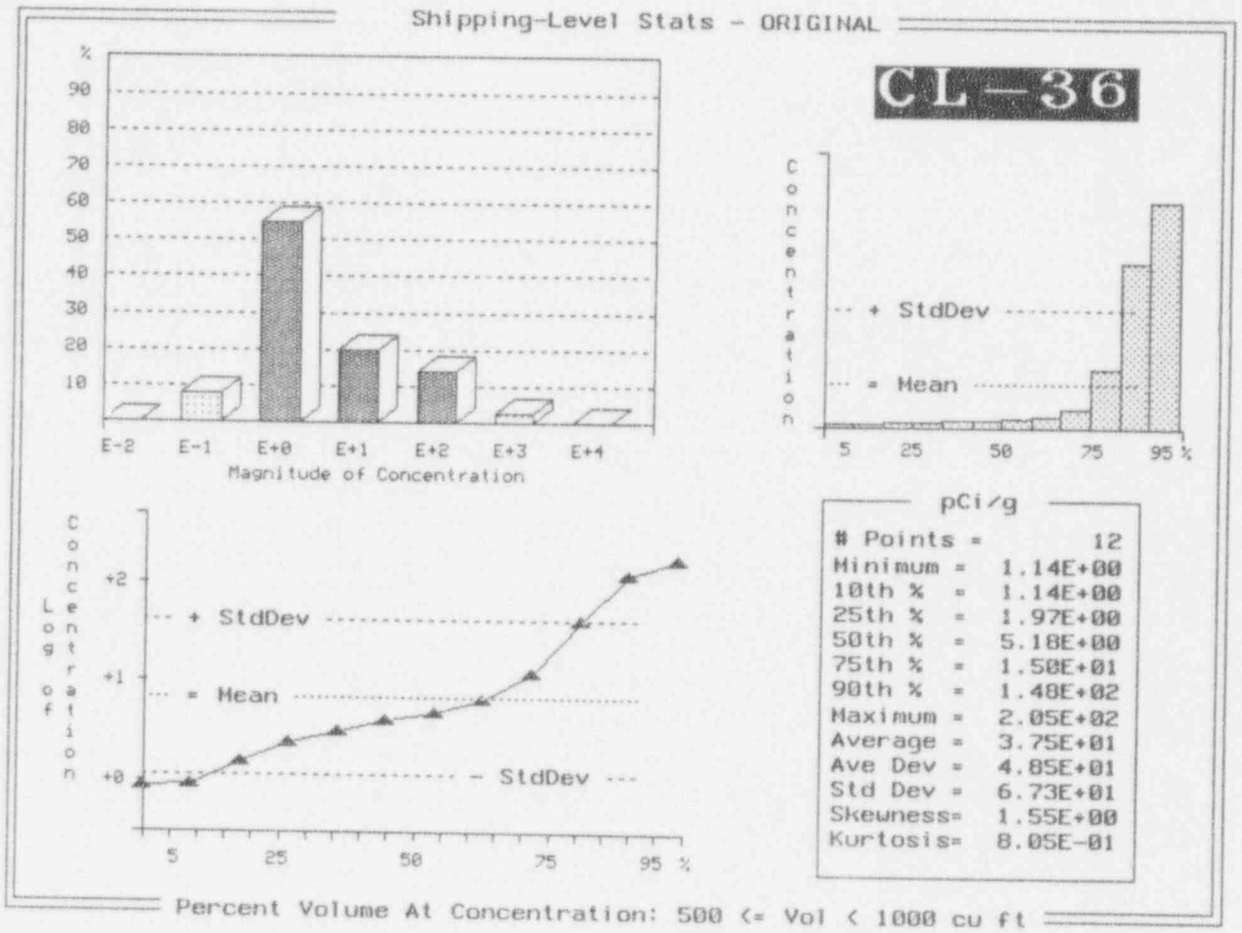


Exhibit F-34 (Continued)



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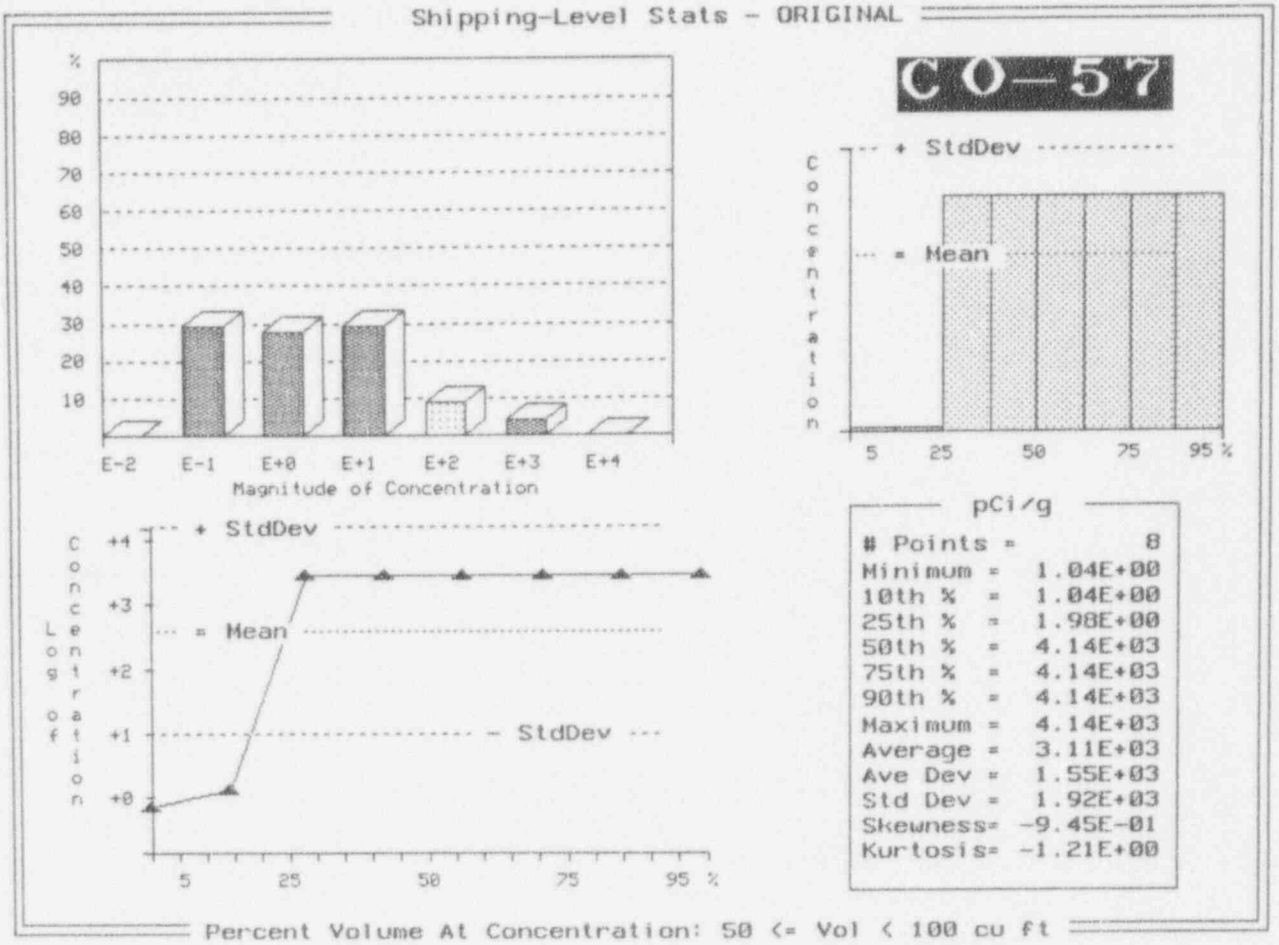

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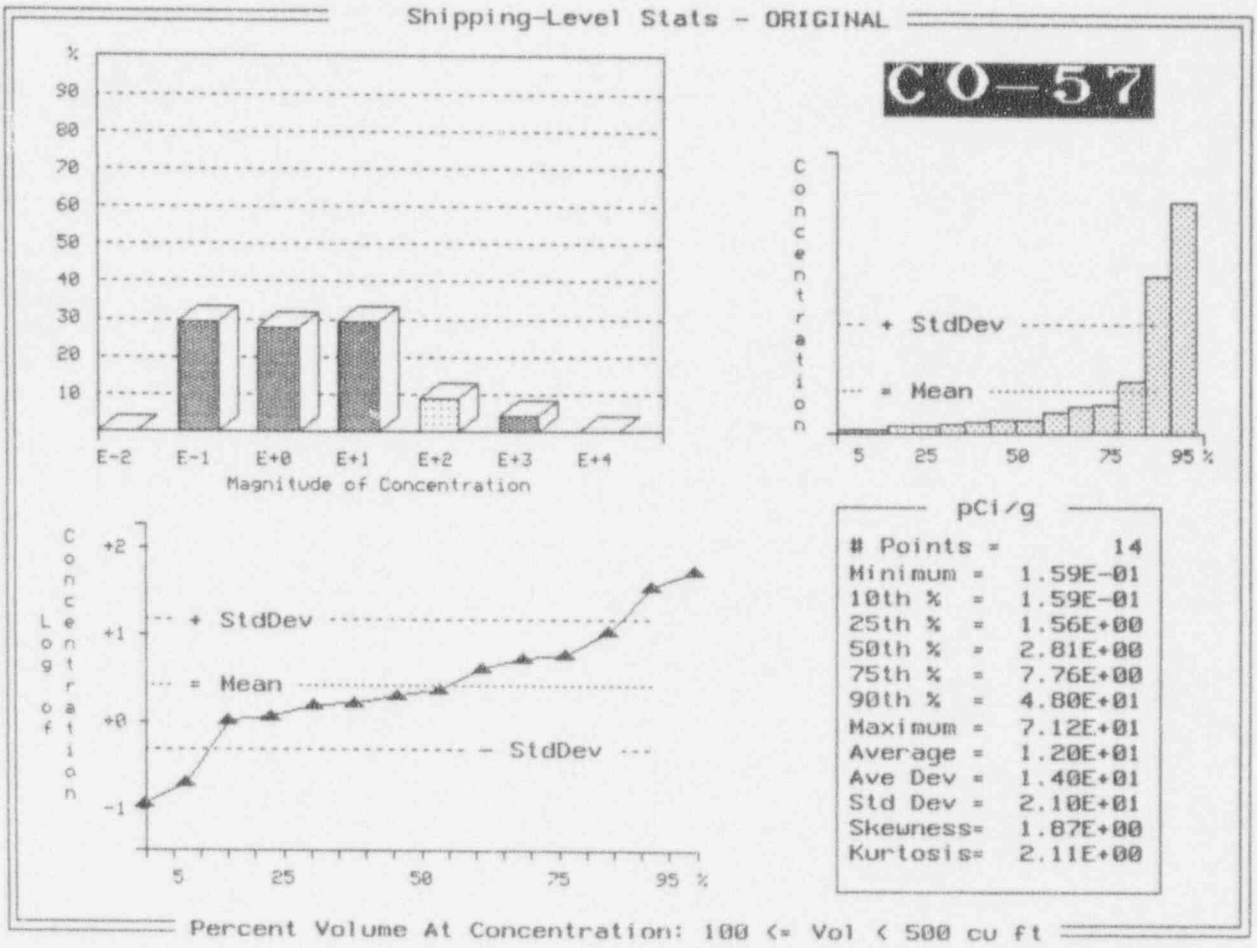

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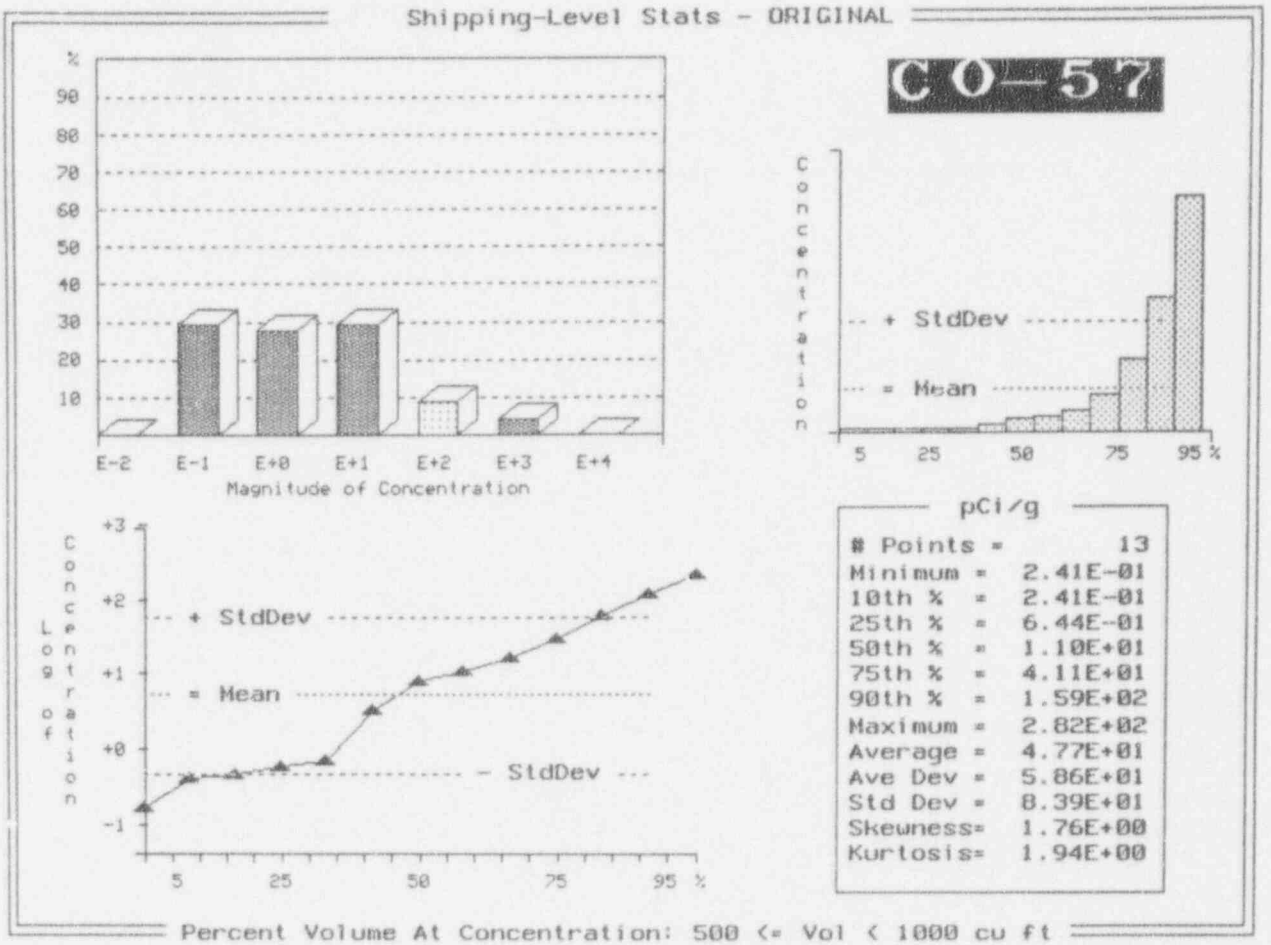

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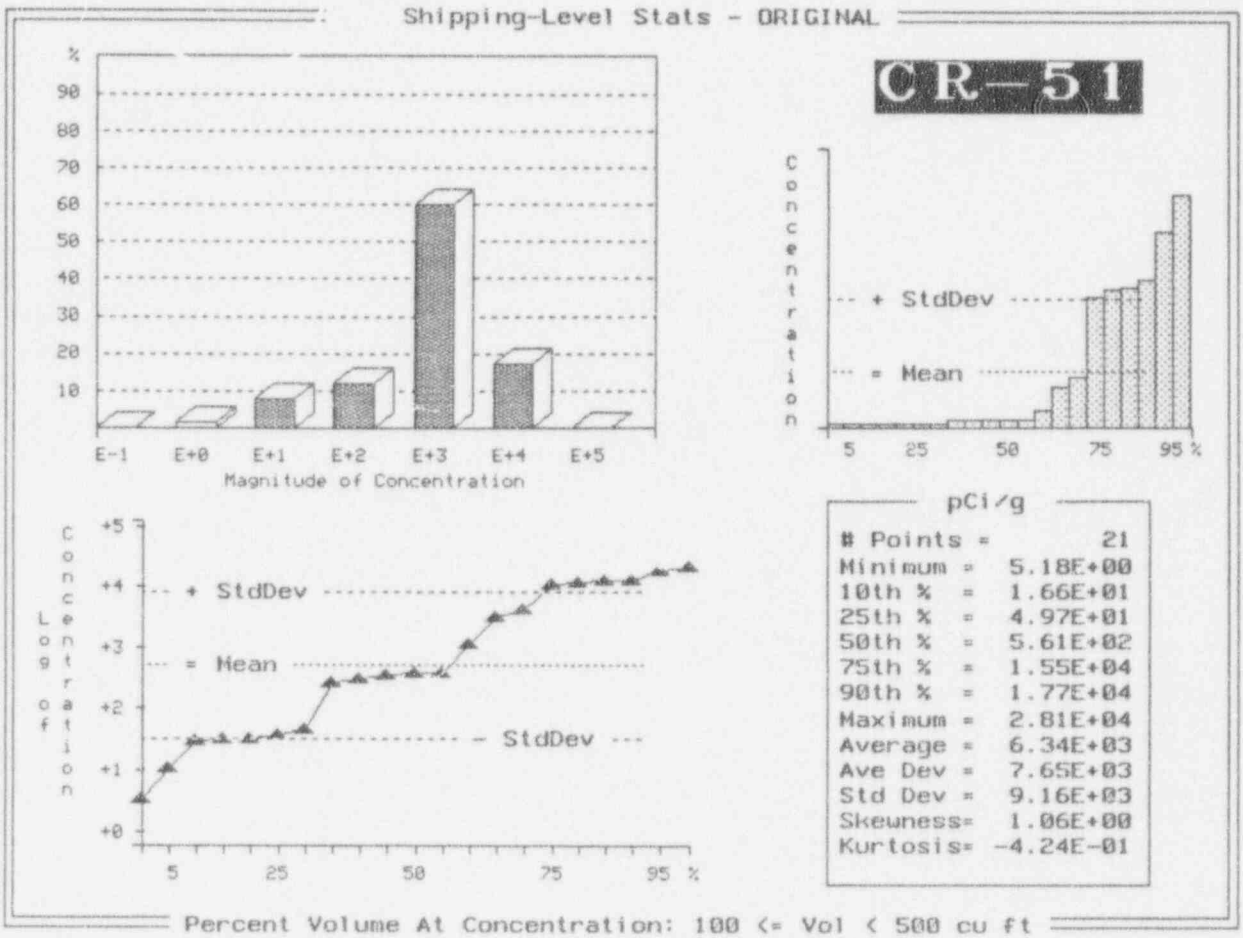

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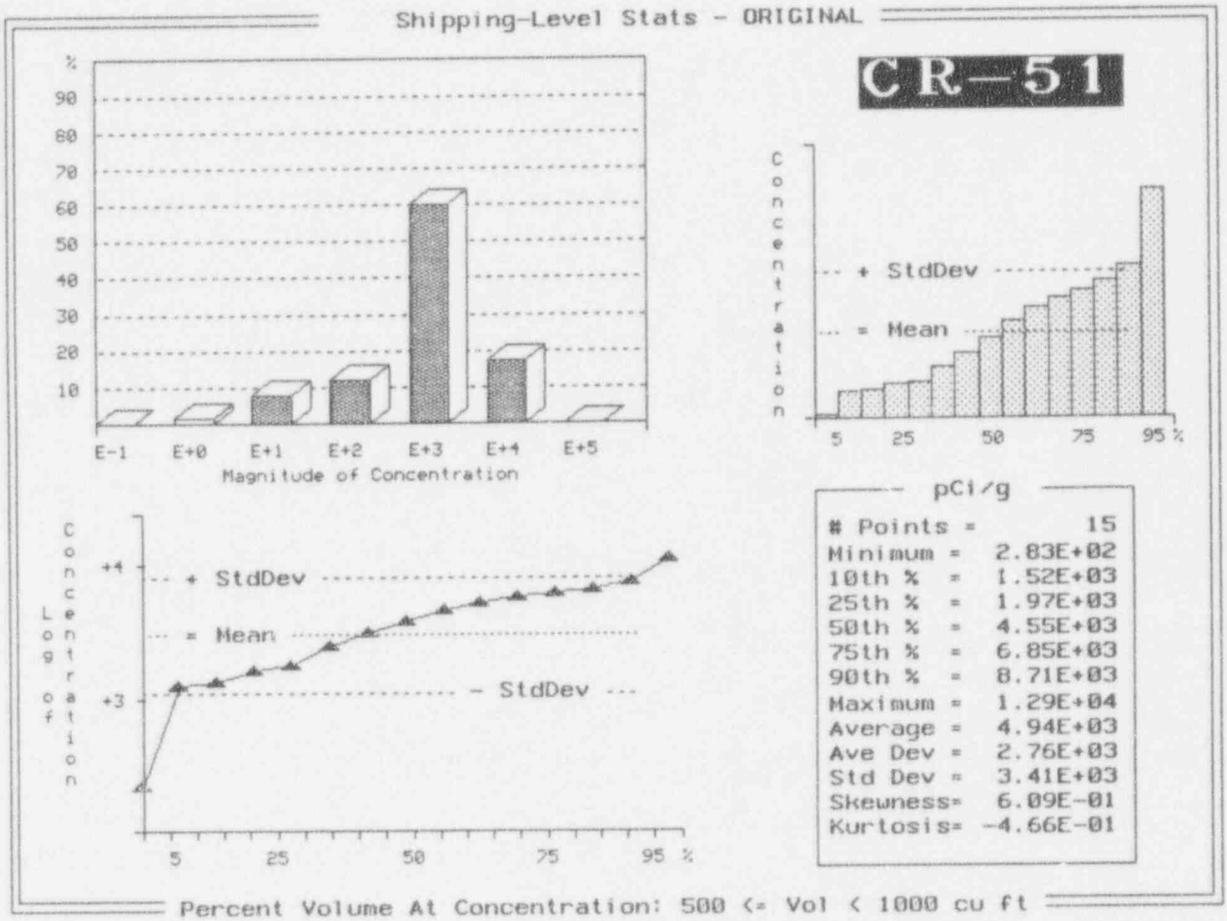

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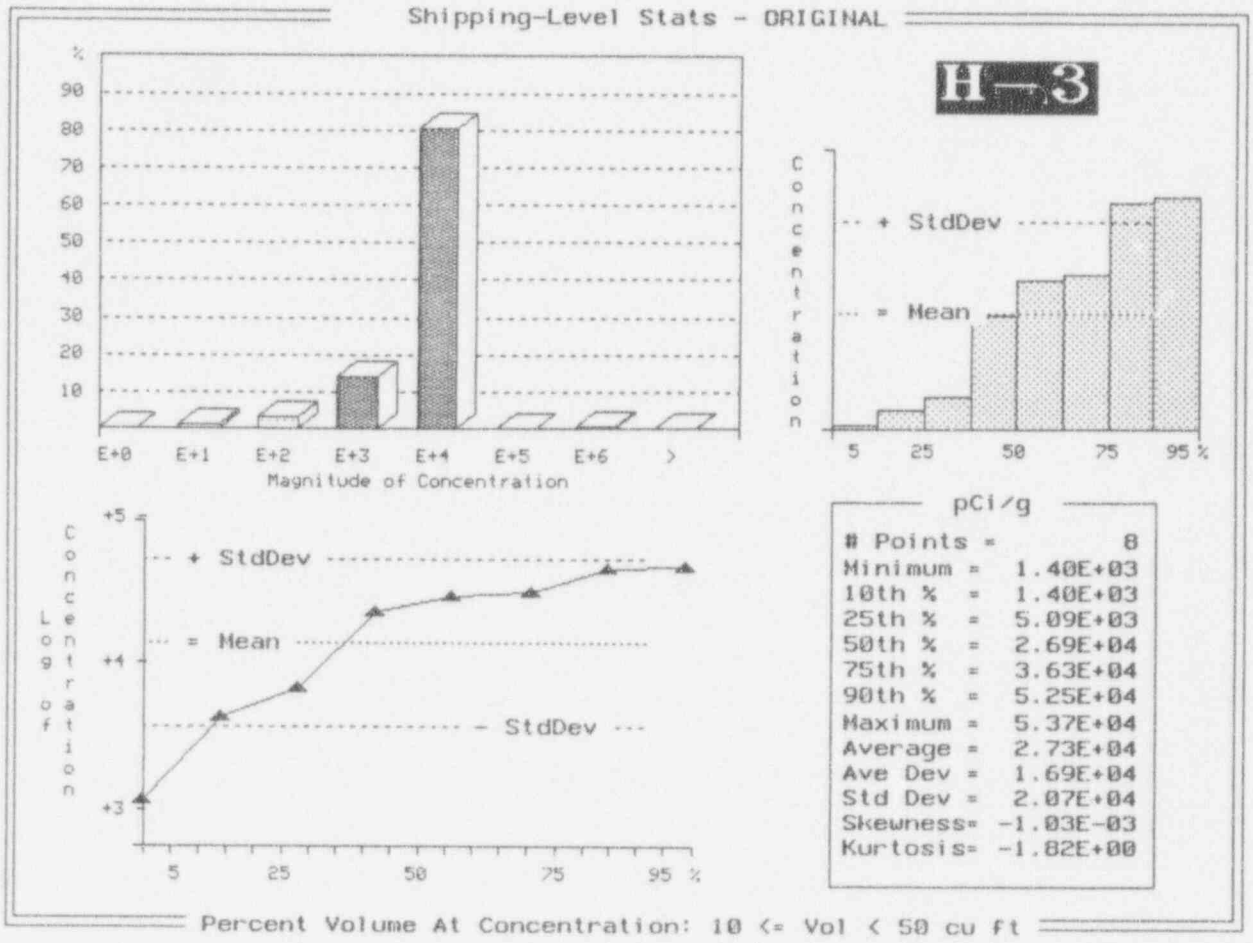

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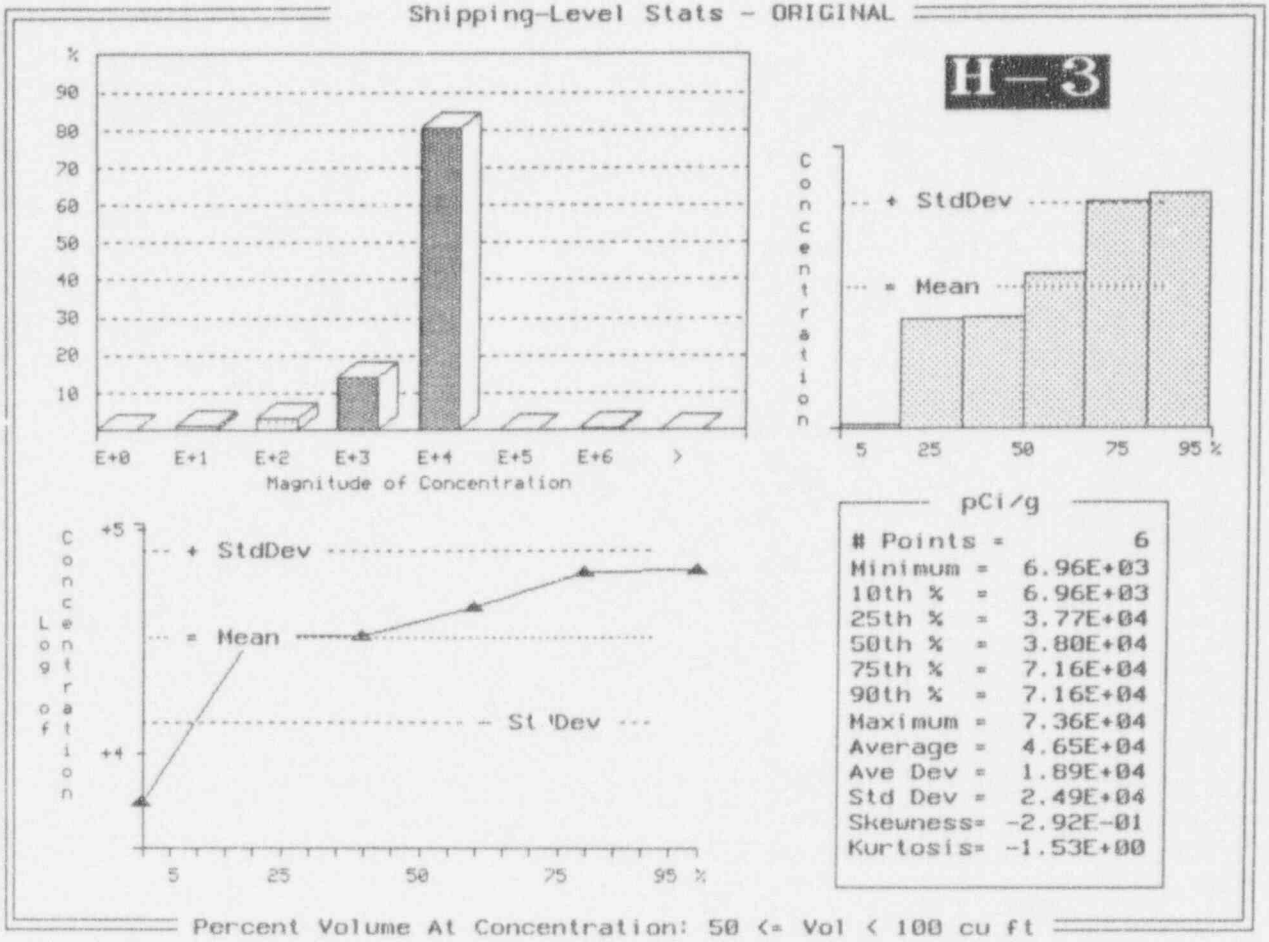

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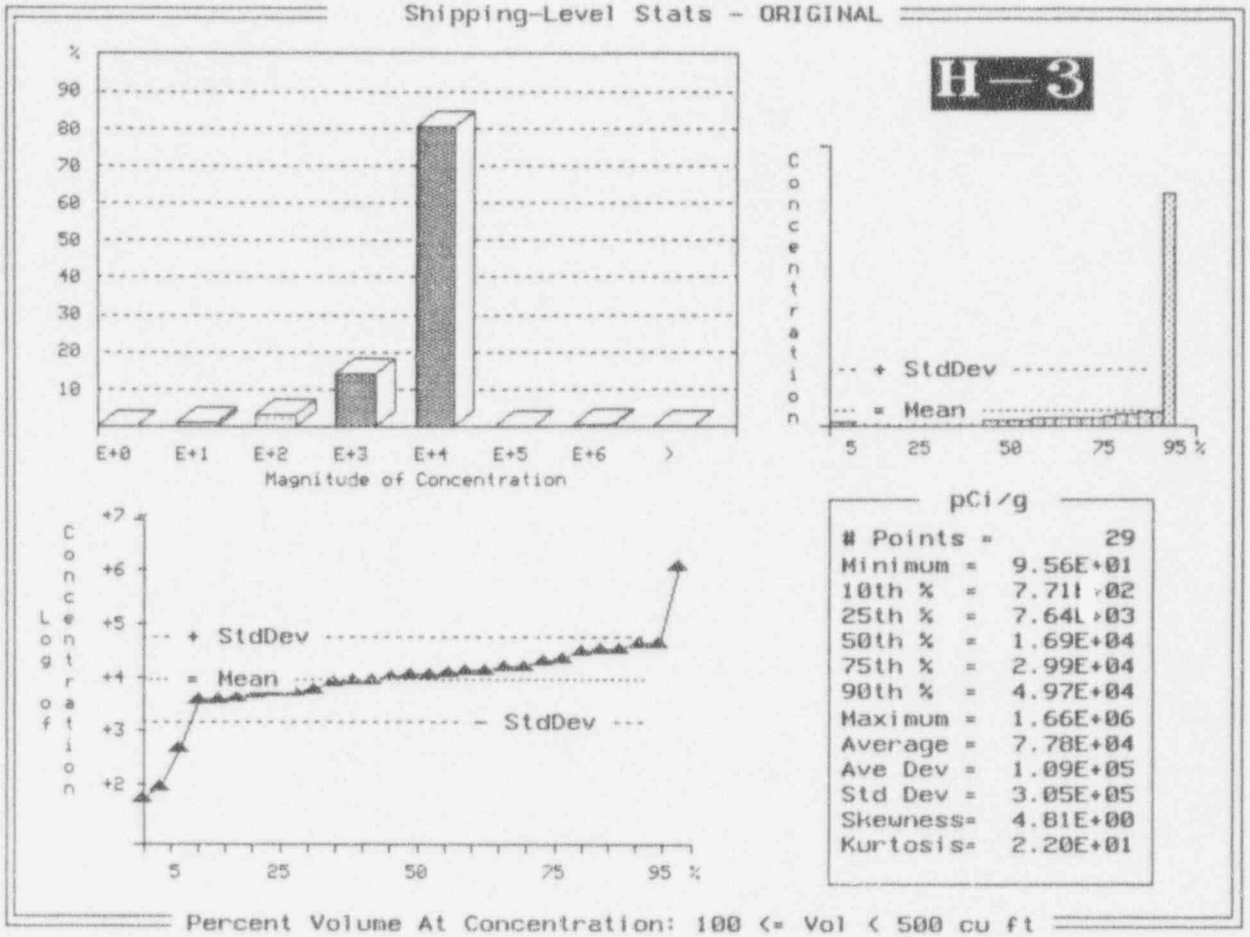

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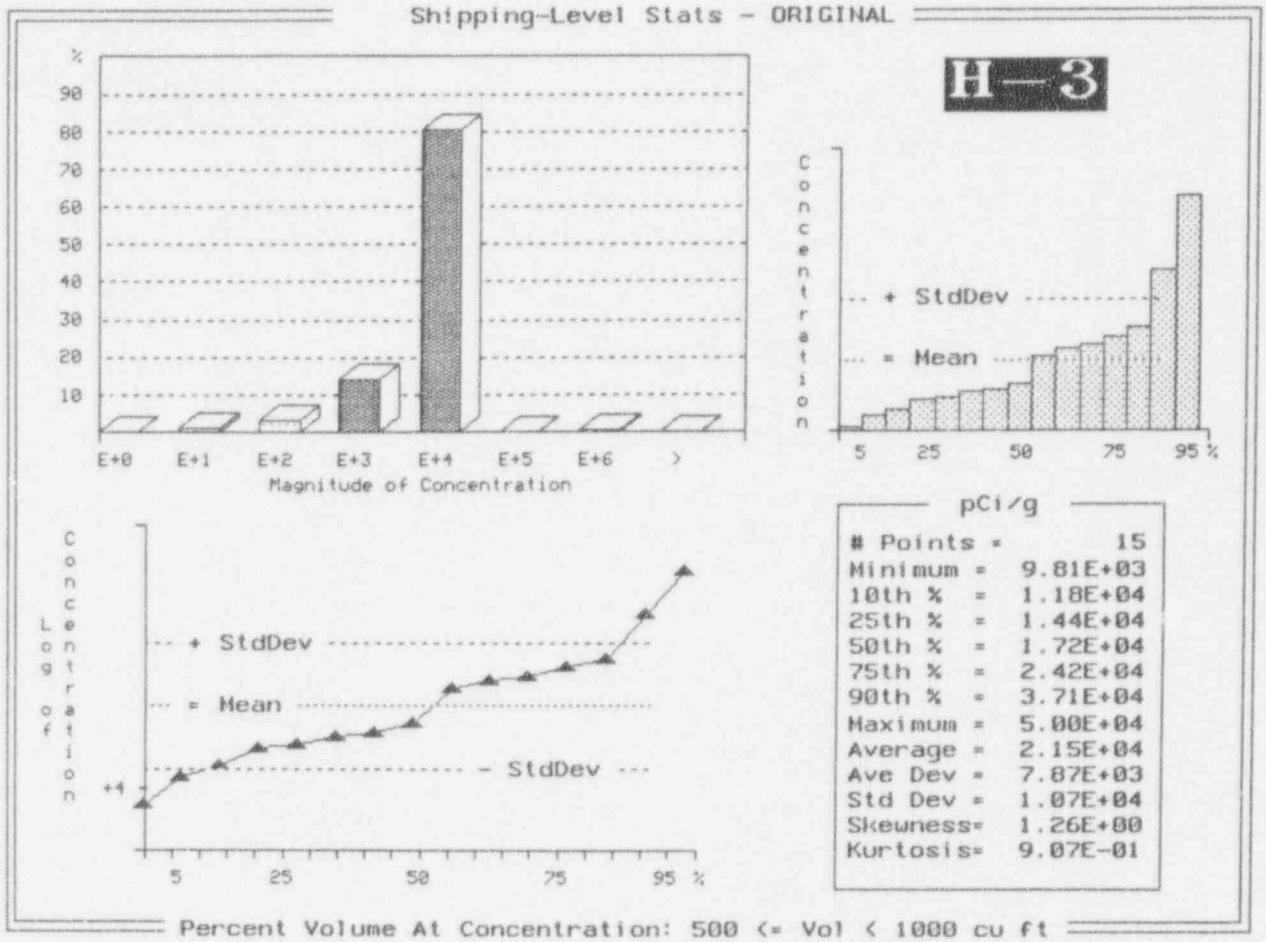

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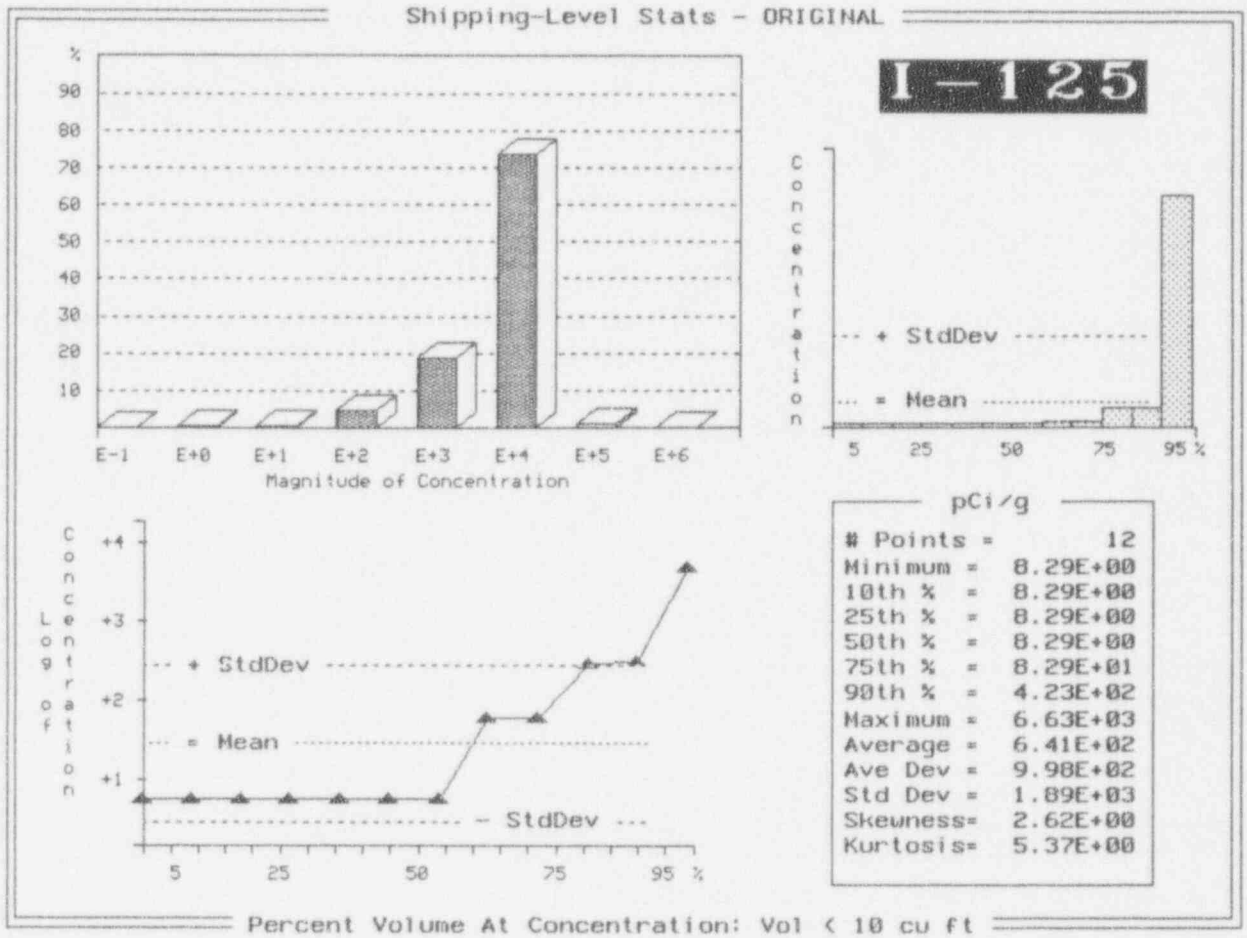

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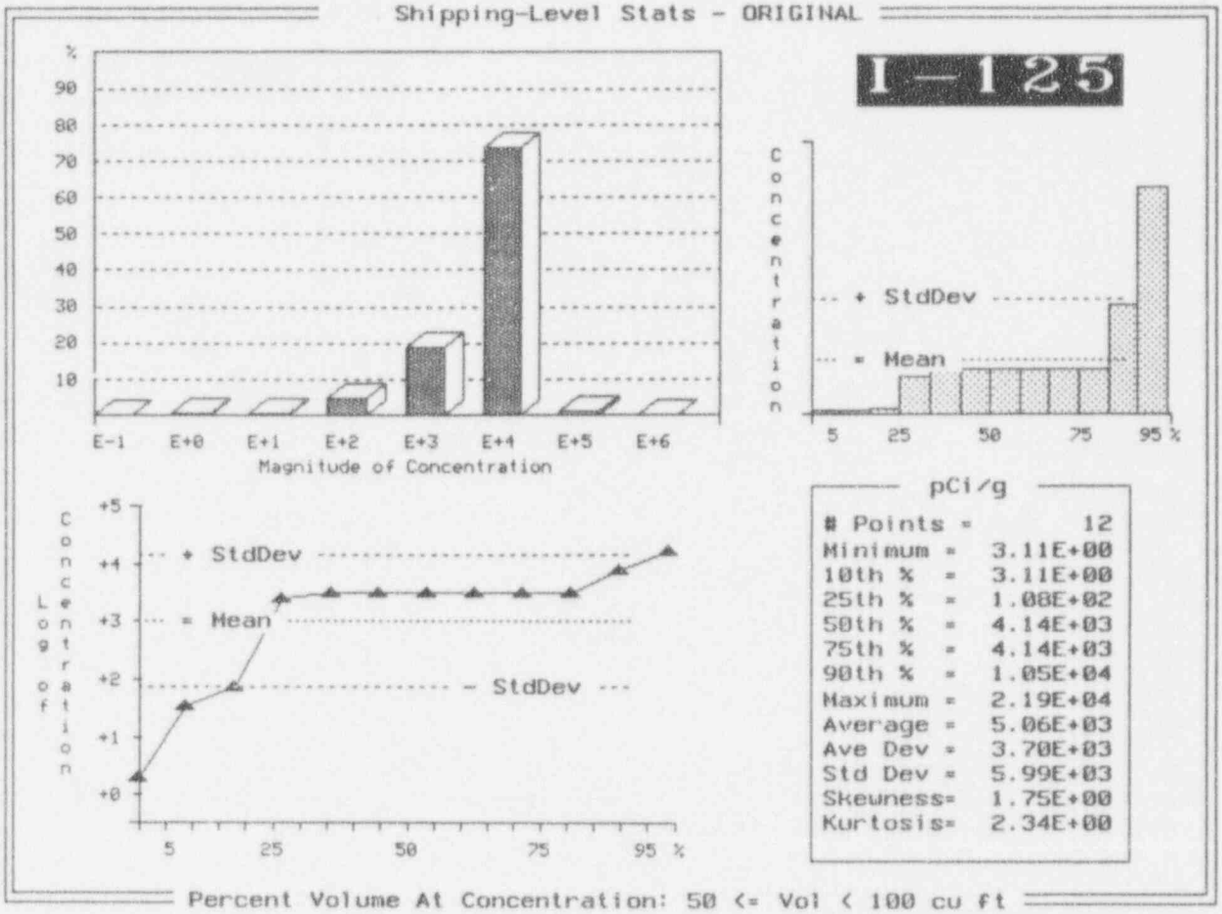

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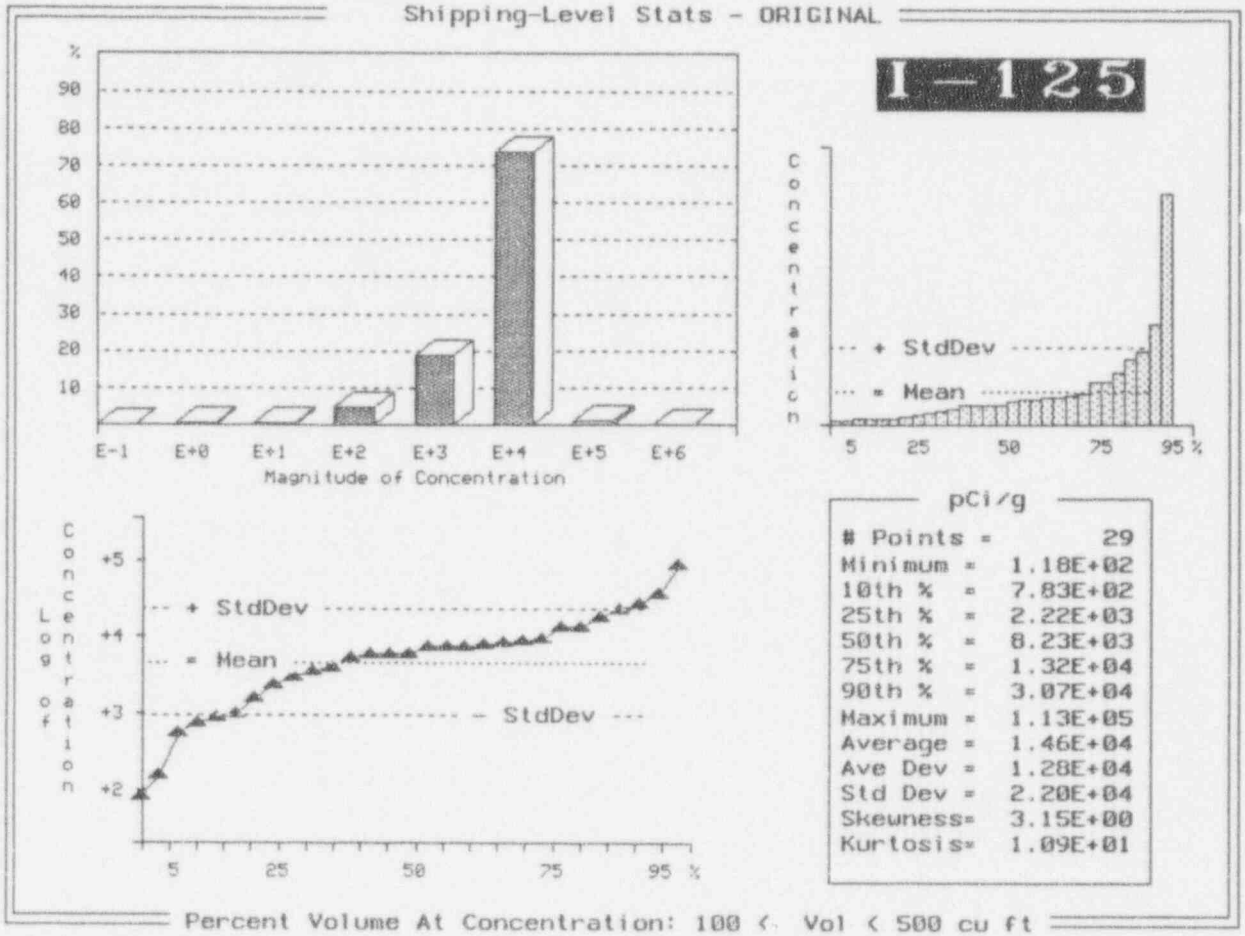

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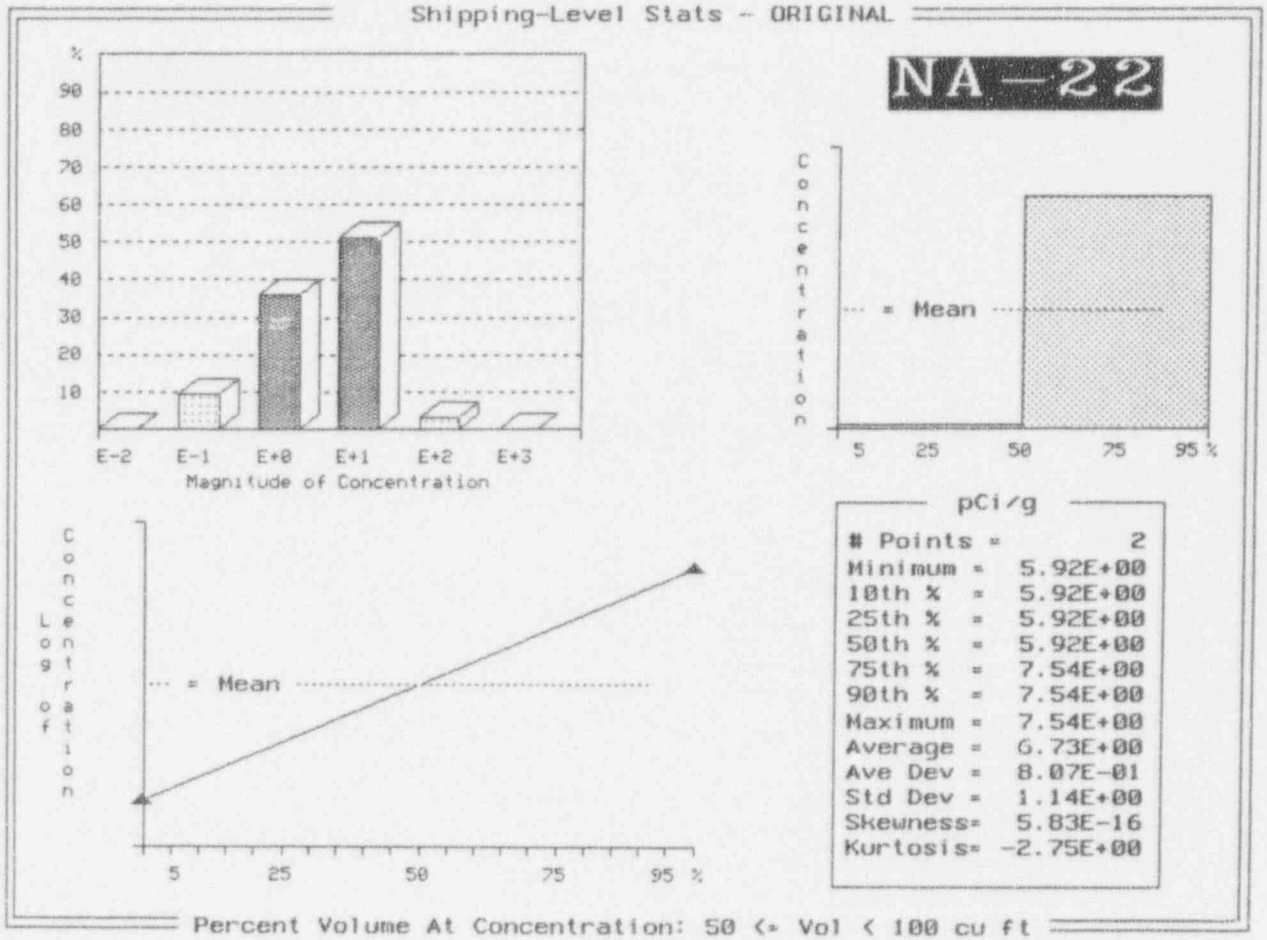

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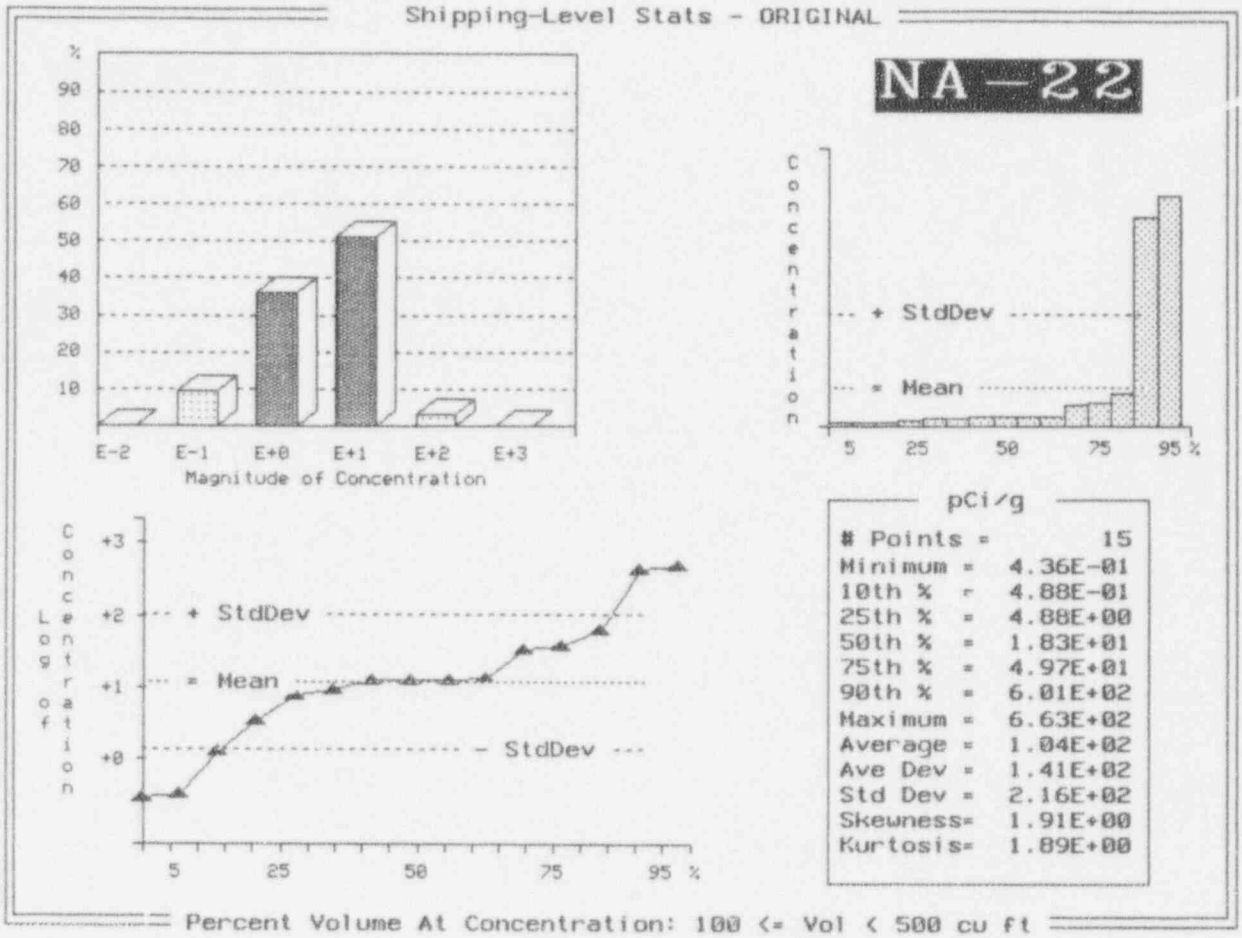

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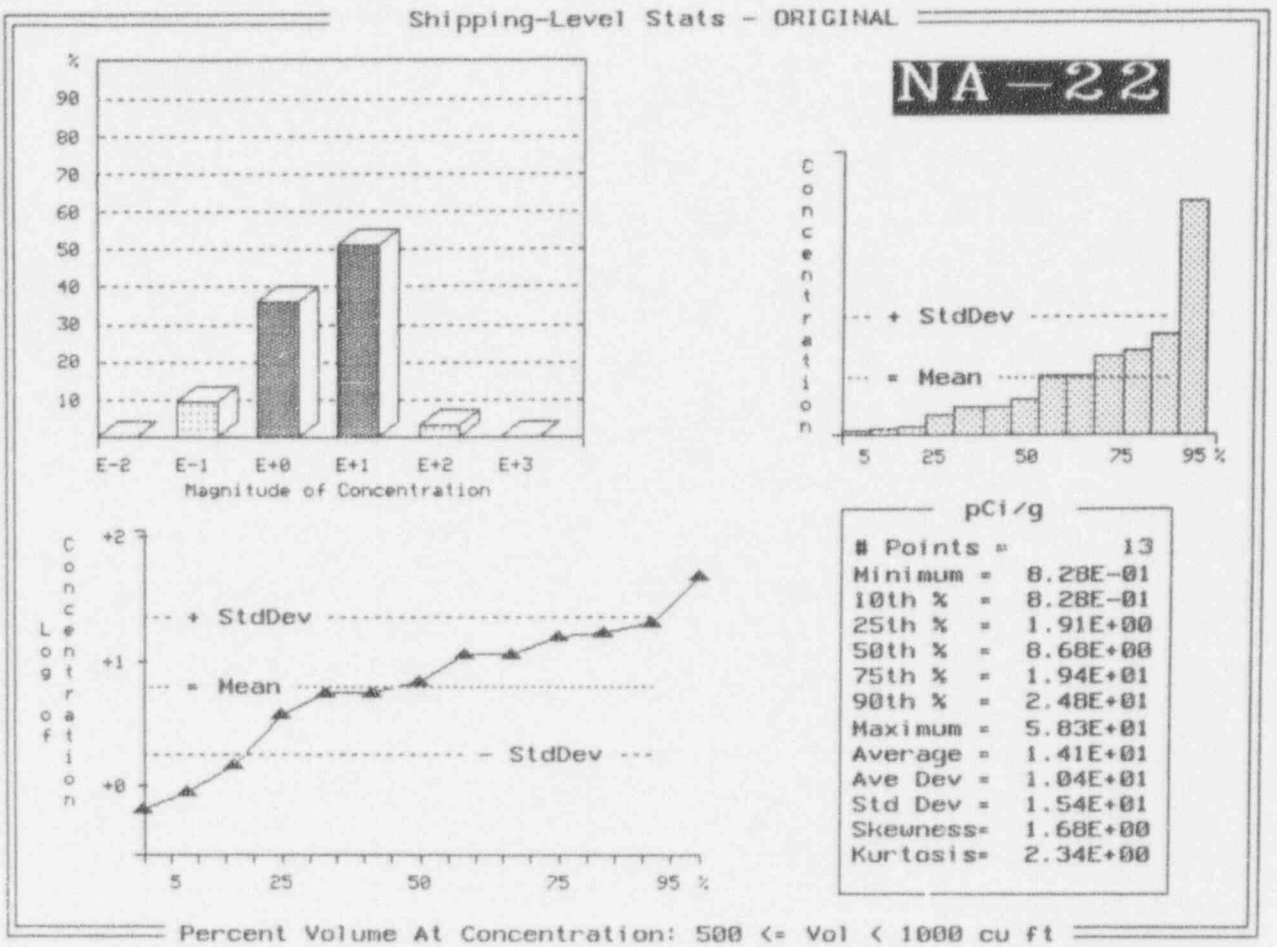

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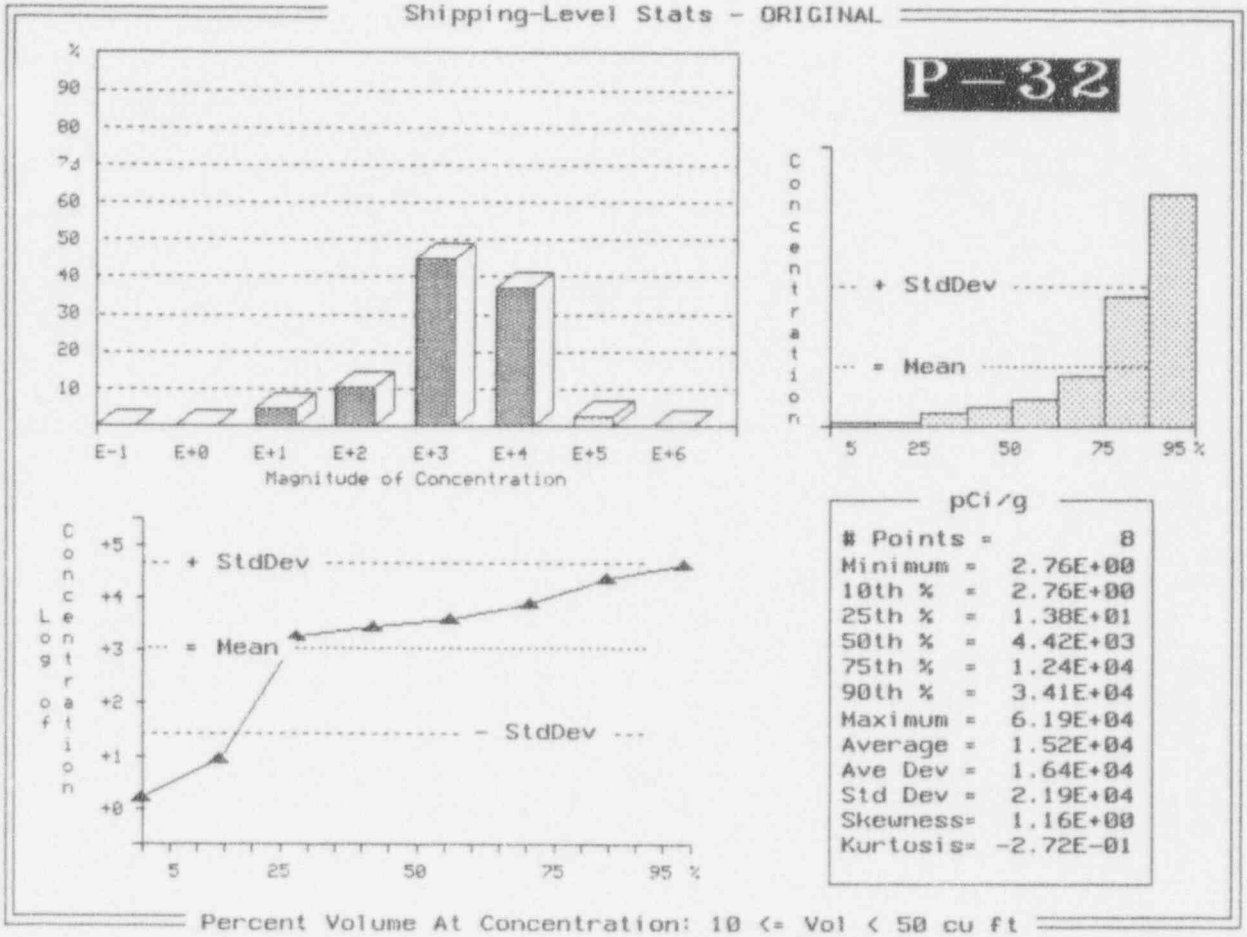

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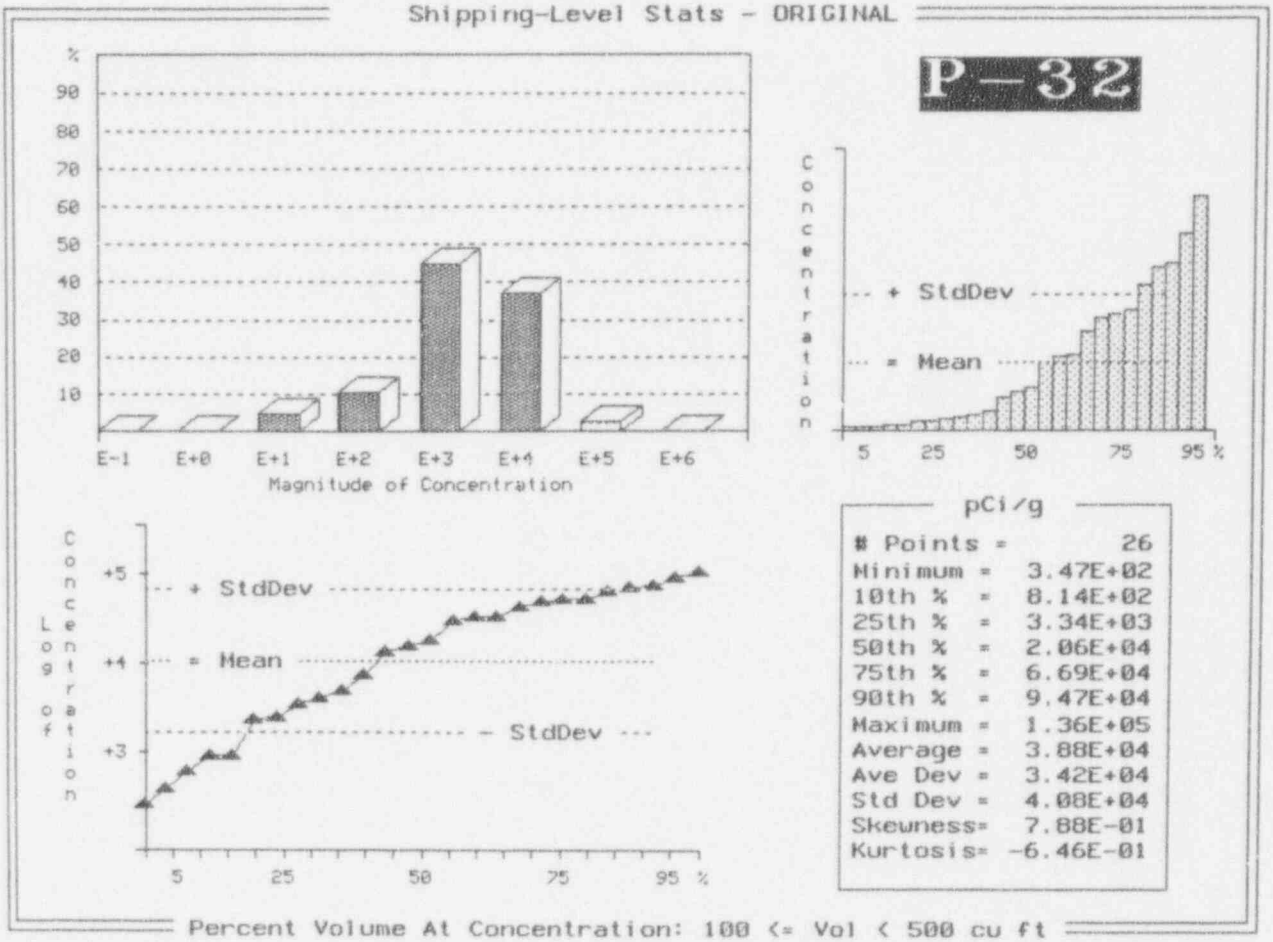

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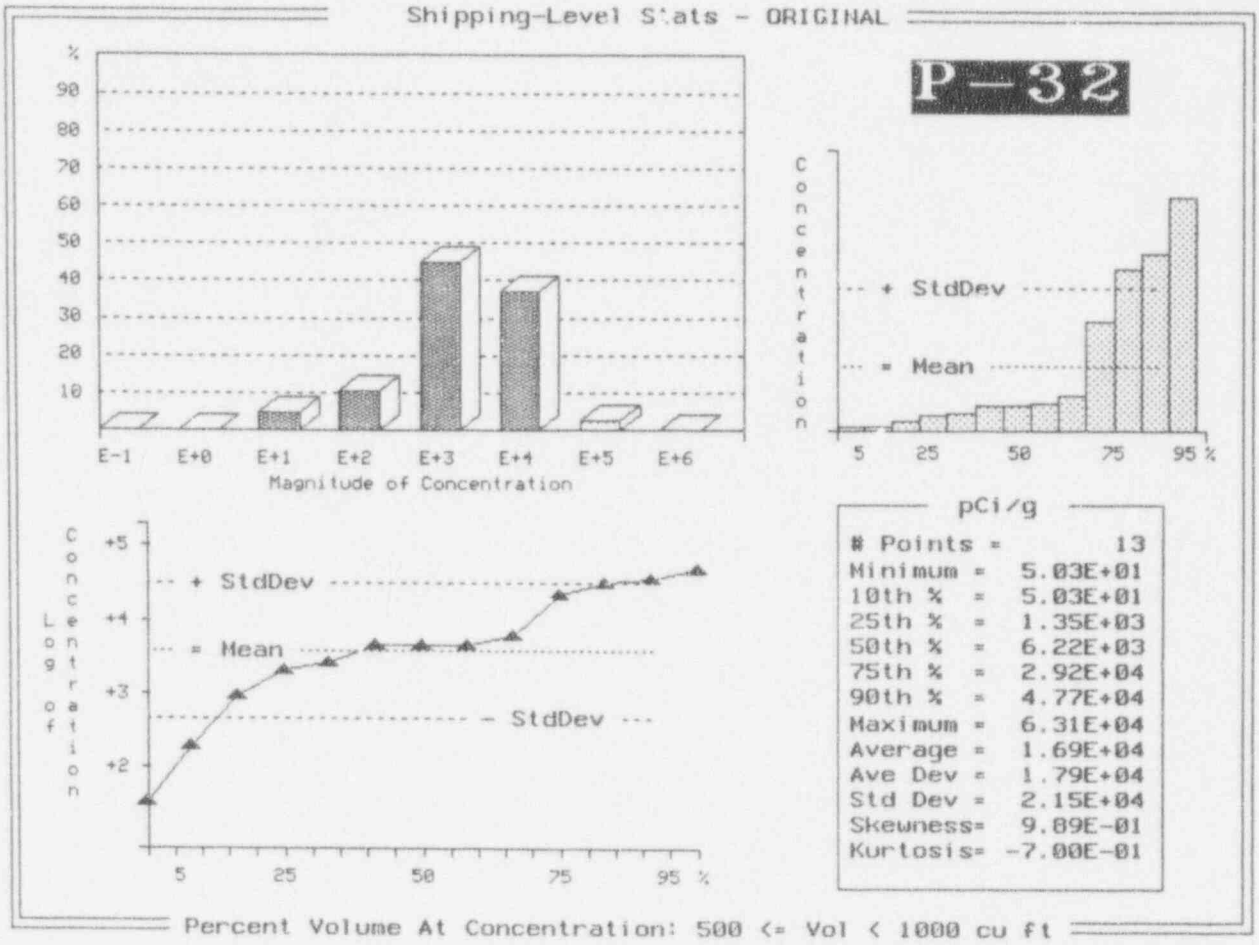

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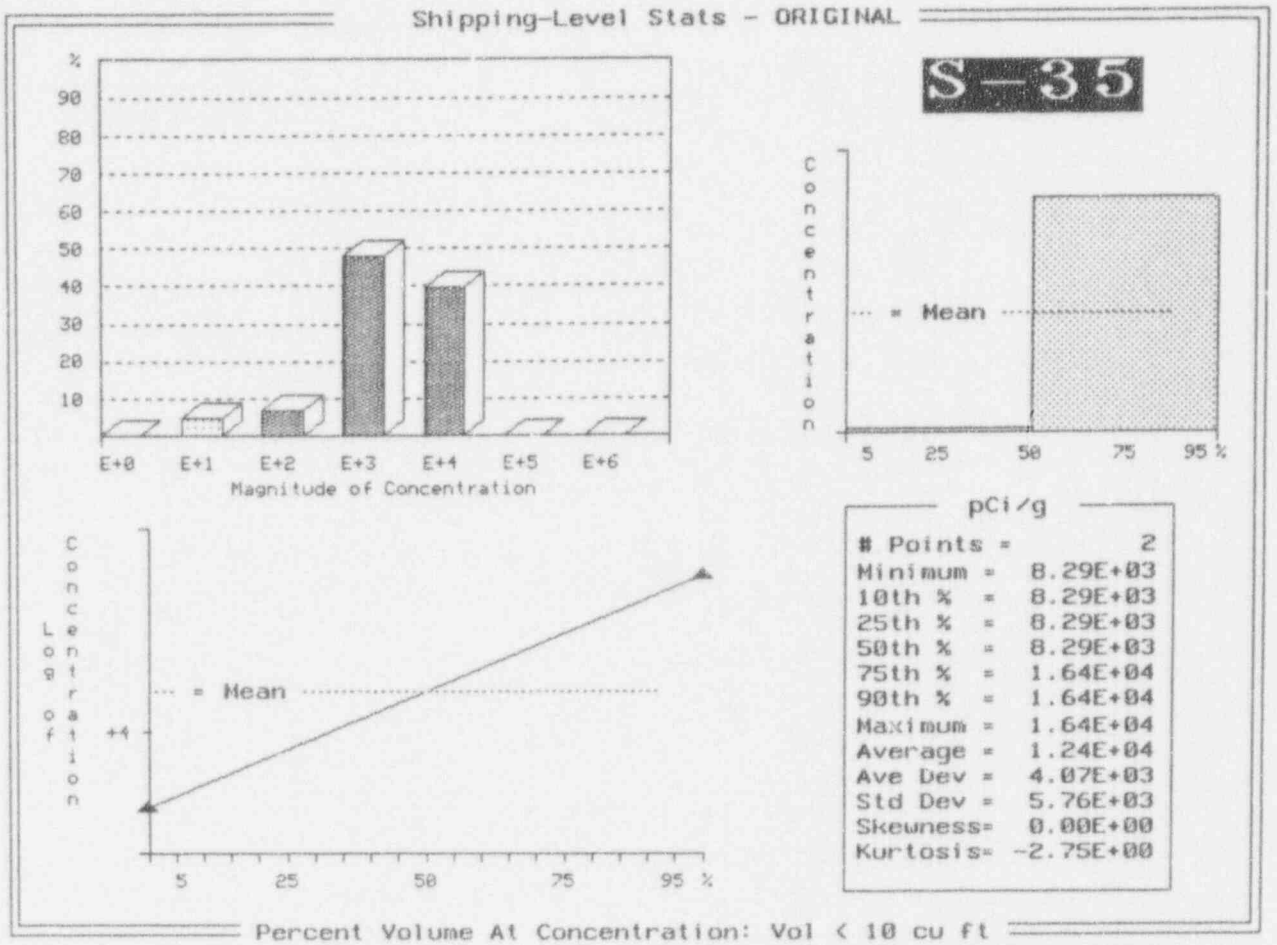

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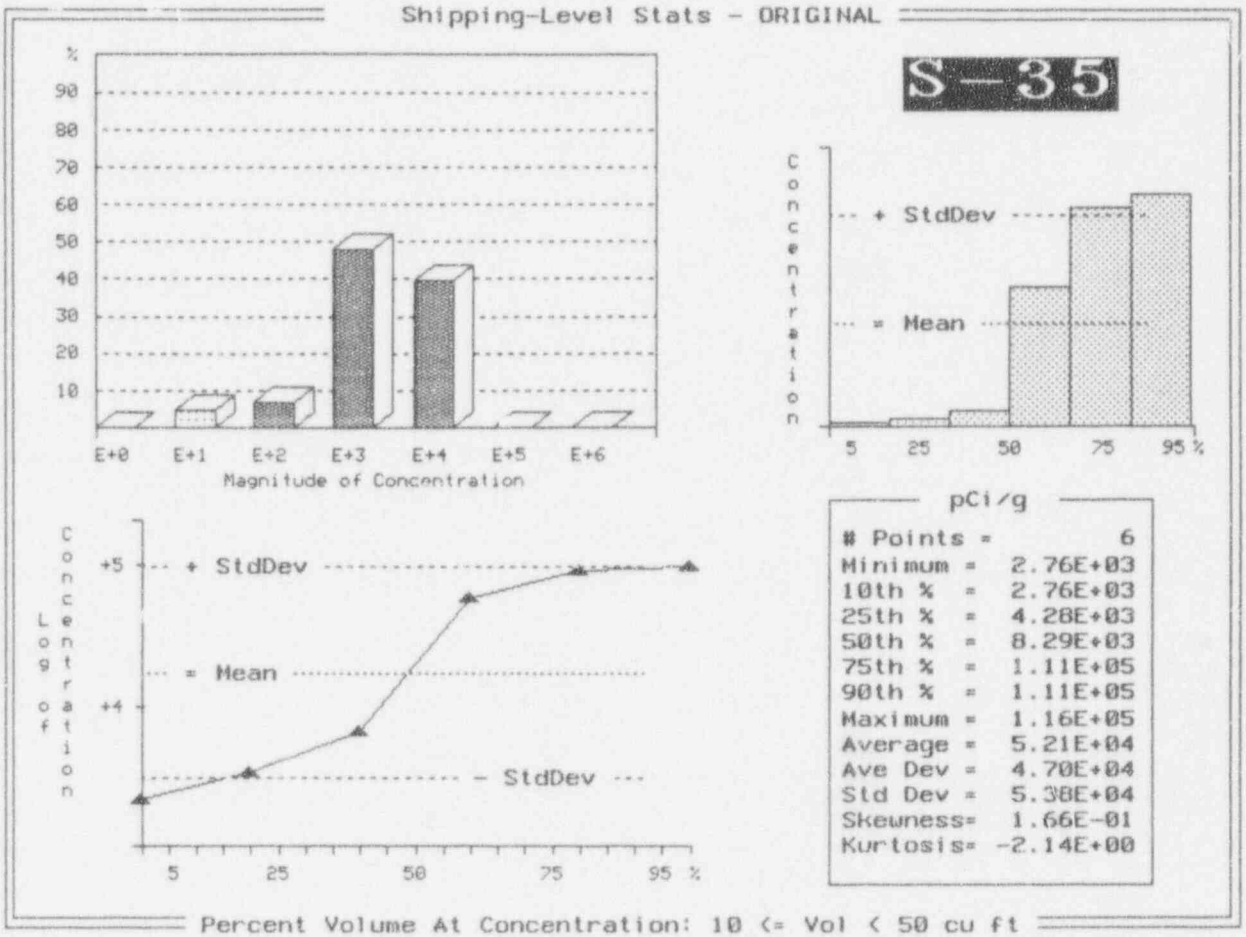

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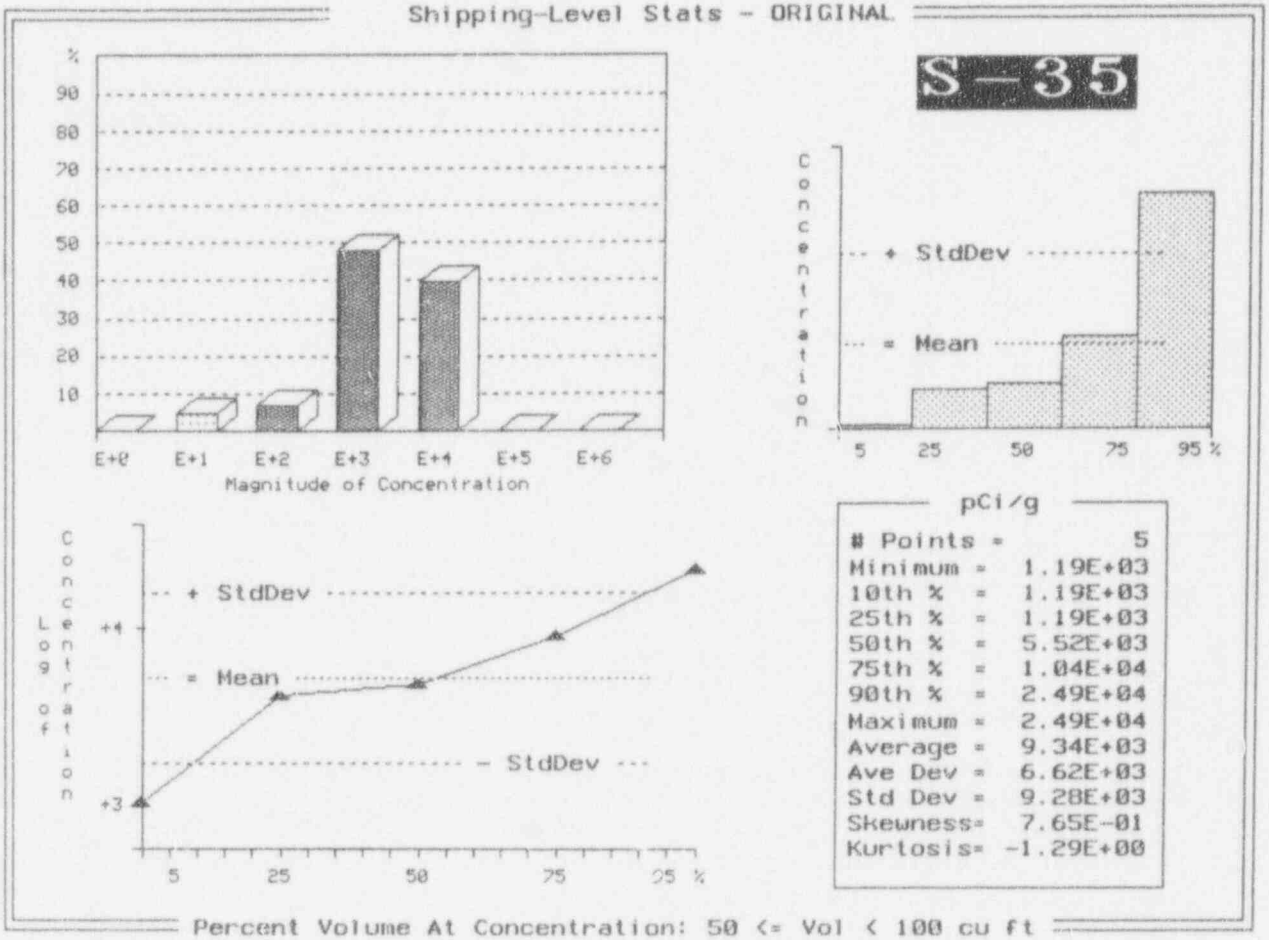

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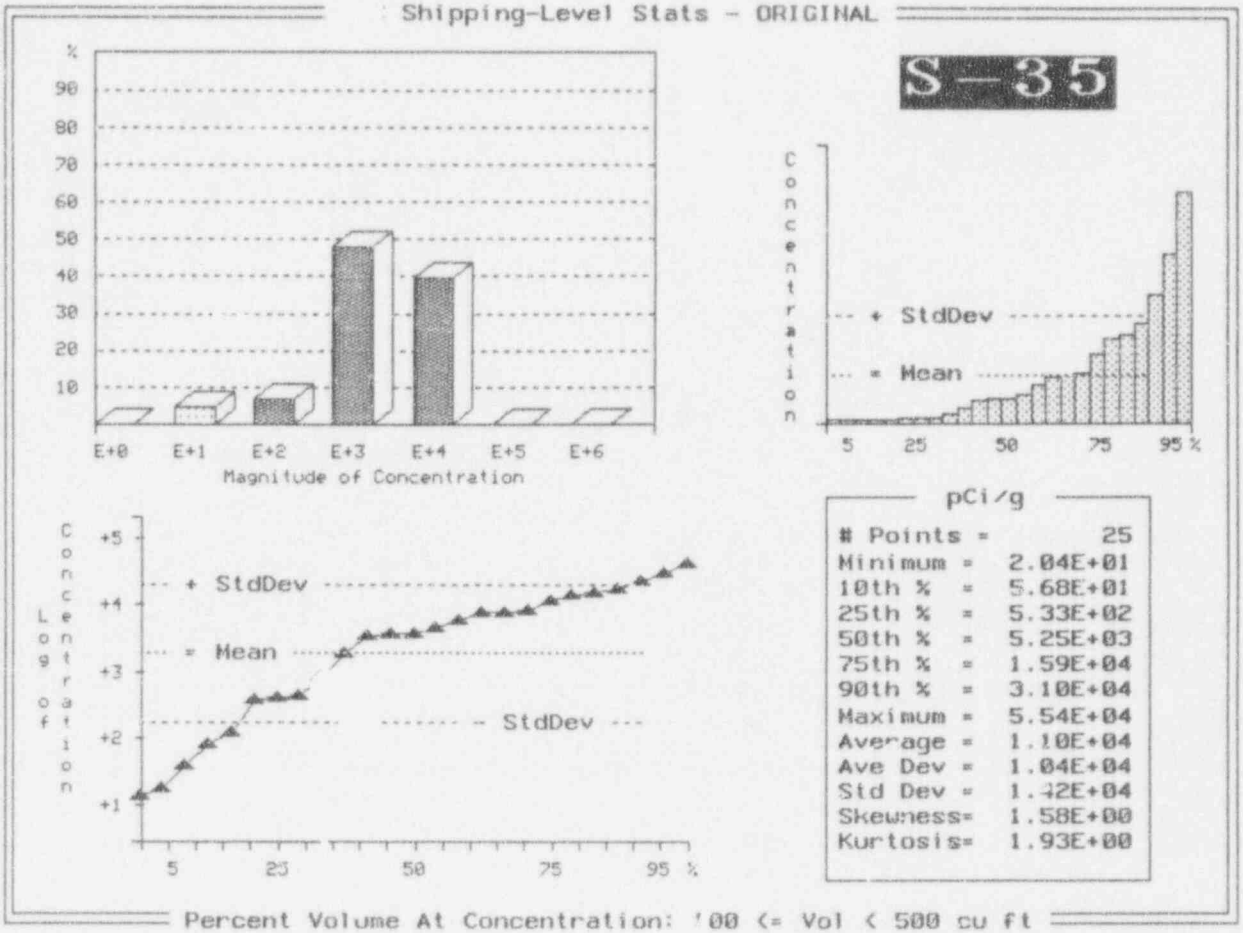


Exhibit F-34 (Continued)

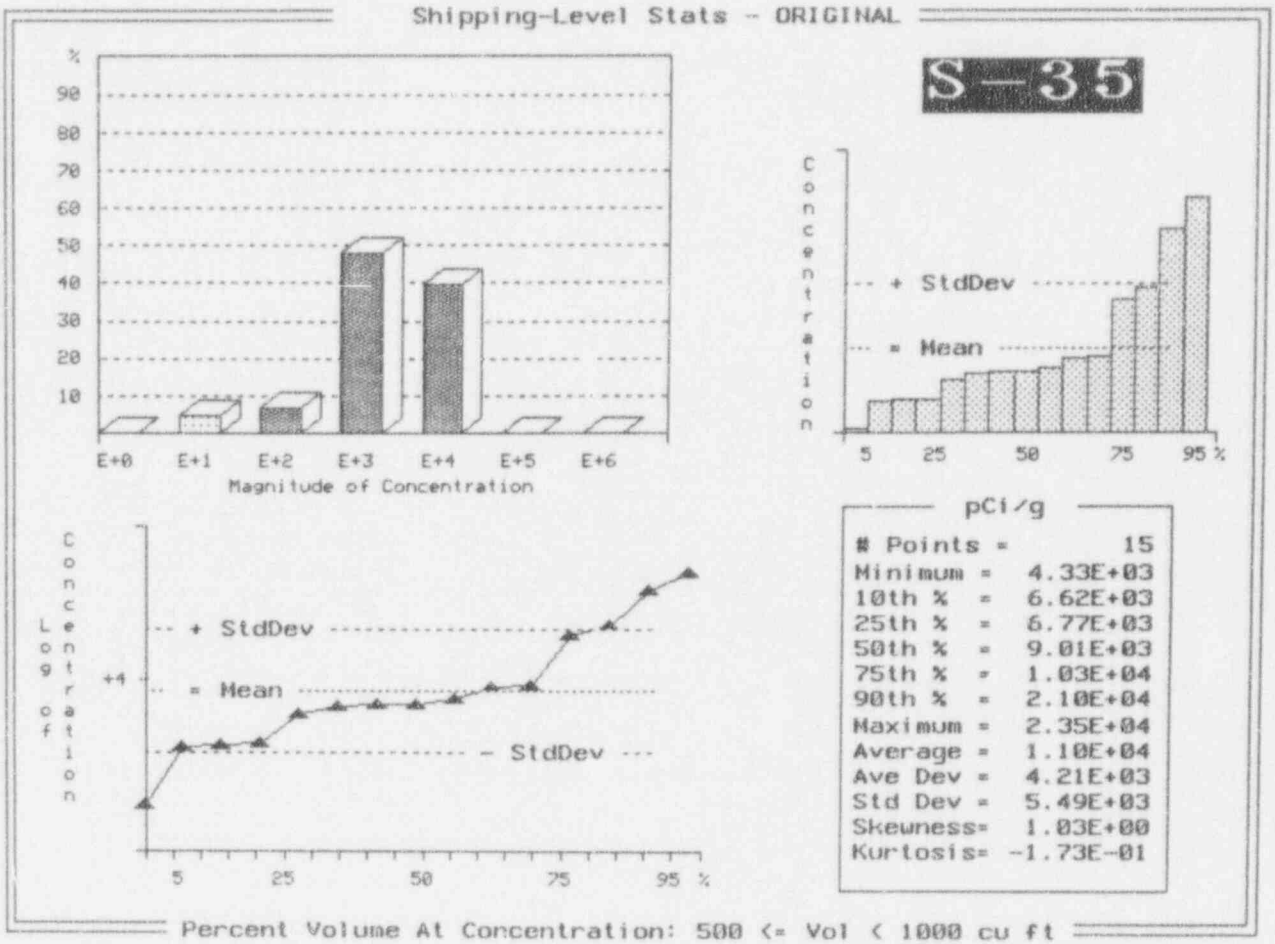
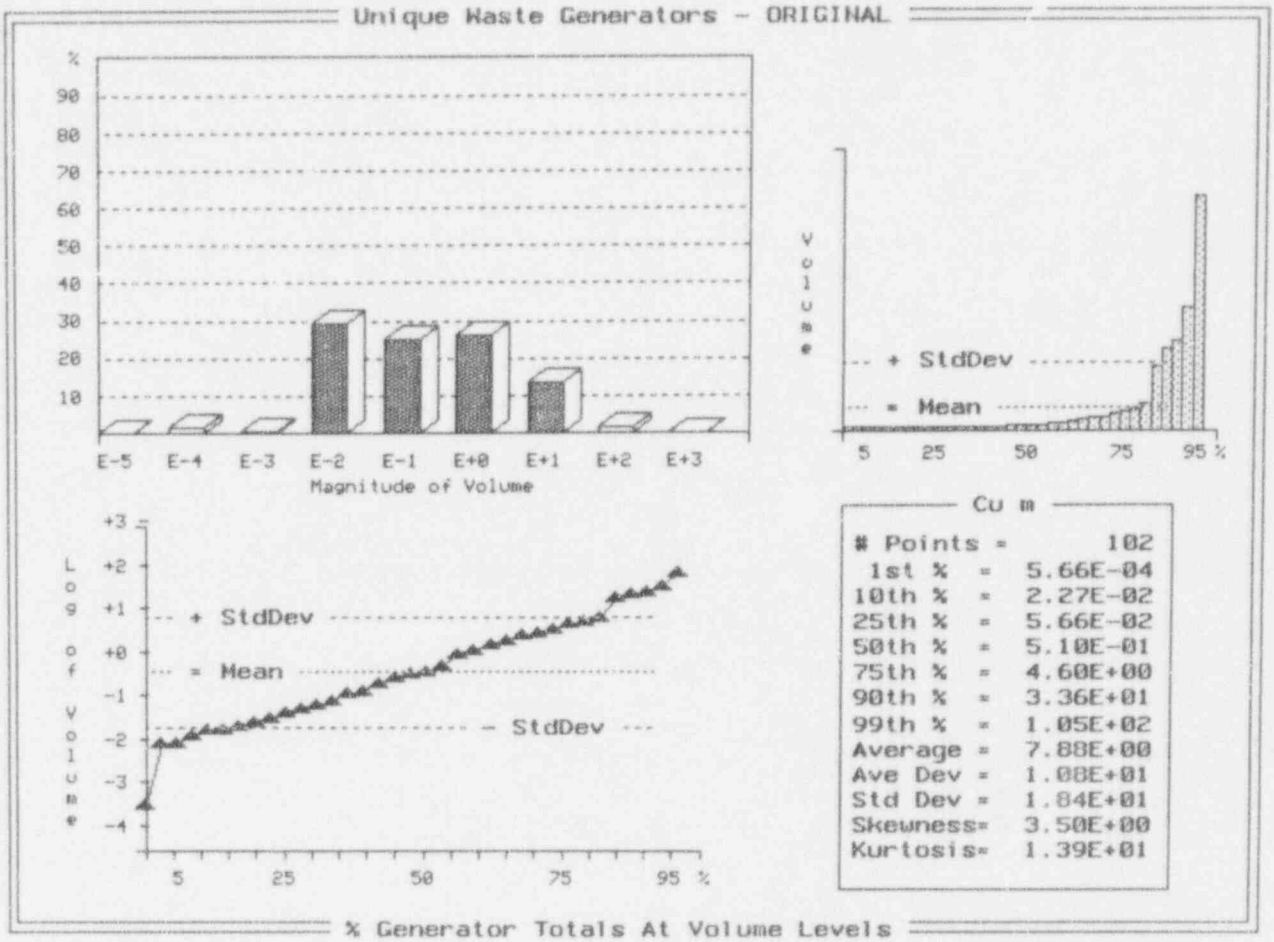


Exhibit F-35
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Southwest
Waste generator class:	Medical
Total number of waste generators:	103
Total associated waste volume (m^3):	805
Total associated waste activity (Ci):	136
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	26
Percent of total(%):	25
Total number of shipping records:	135
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	137,300
Total waste volume (m^3):	242
Fractional waste volume (%): (this analysis/total)	30
Total waste activity (Ci):	9.4
Fractional waste activity (%): (this analysis/total)	7

Exhibit F-35 (Continued)



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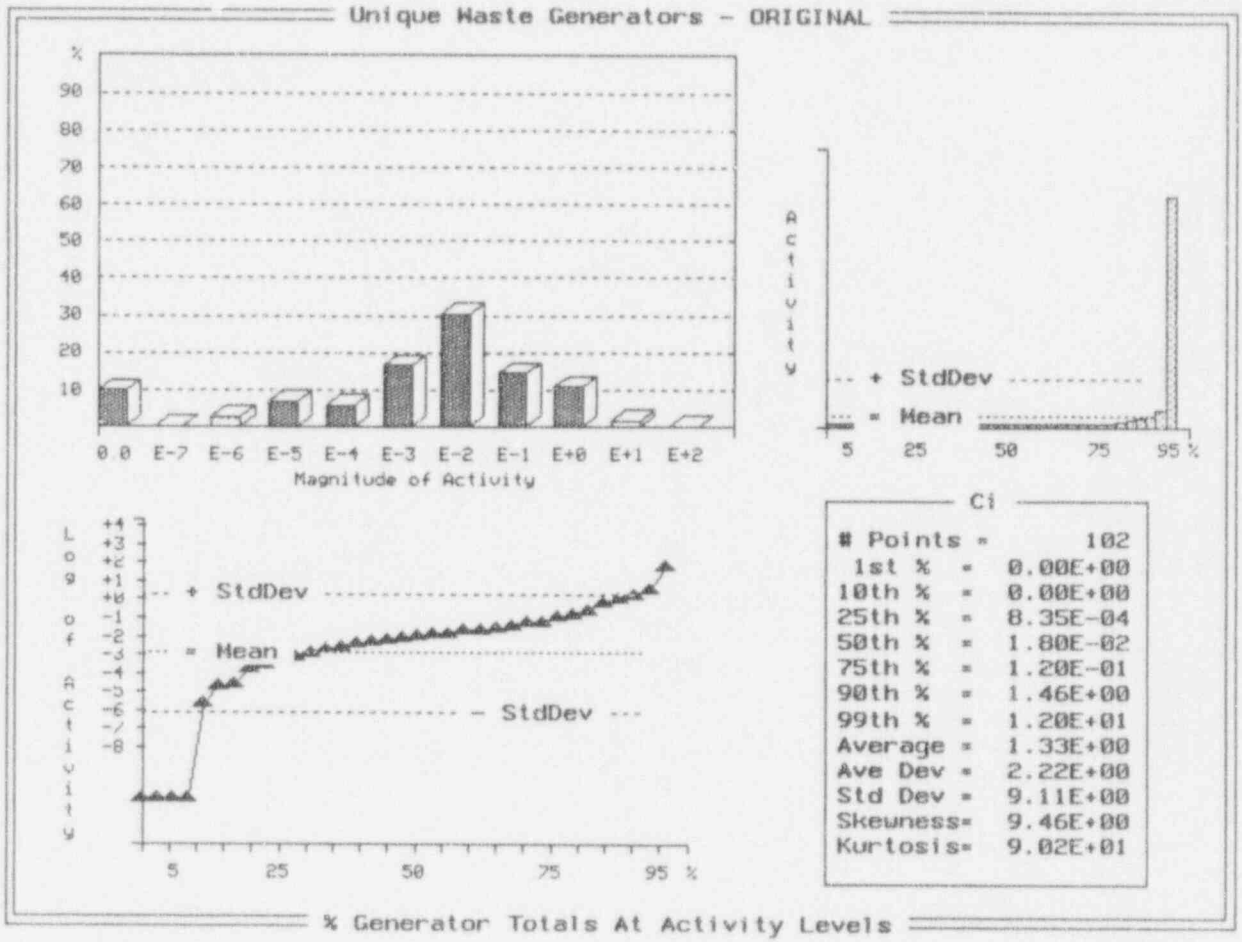

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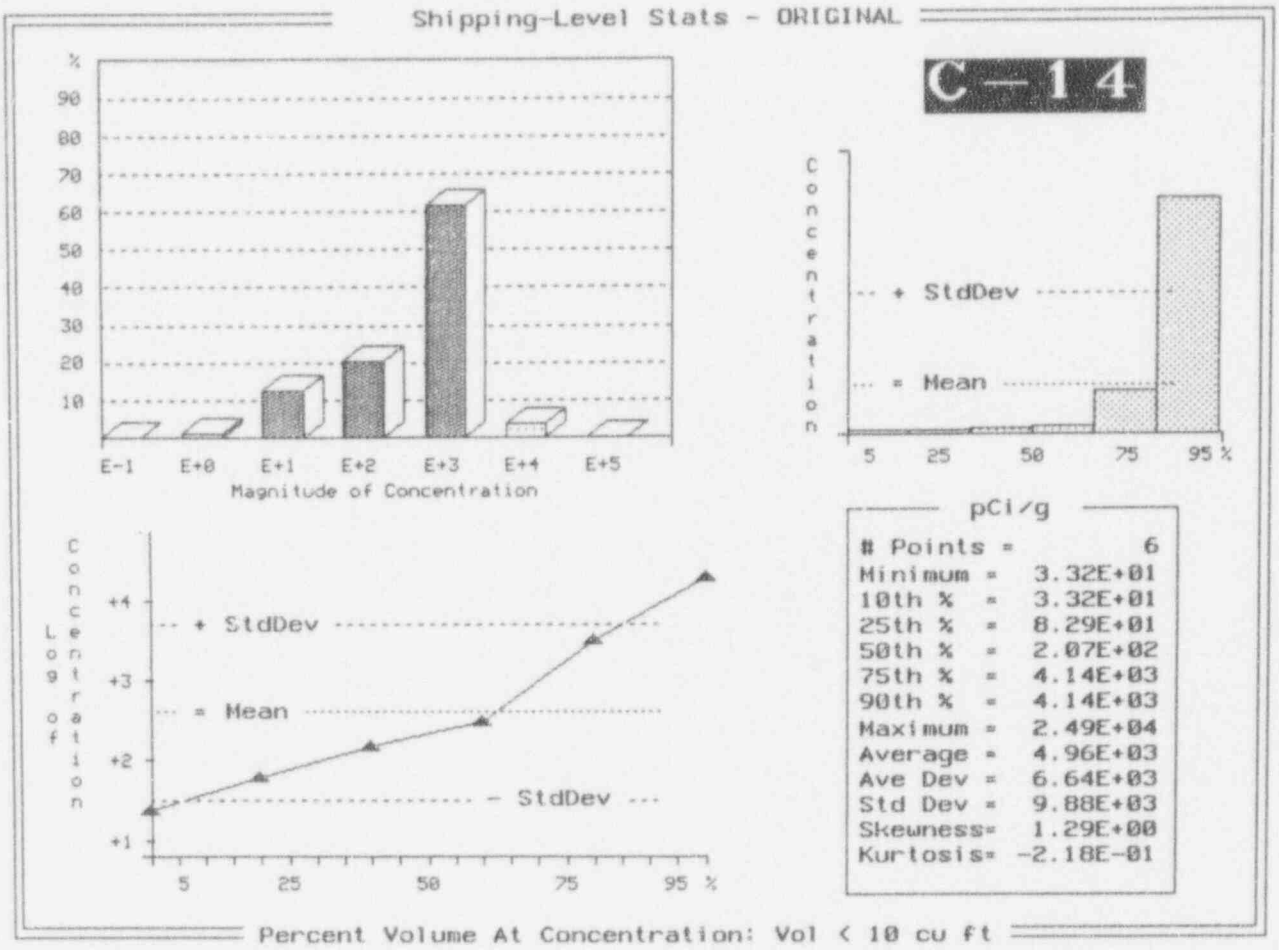

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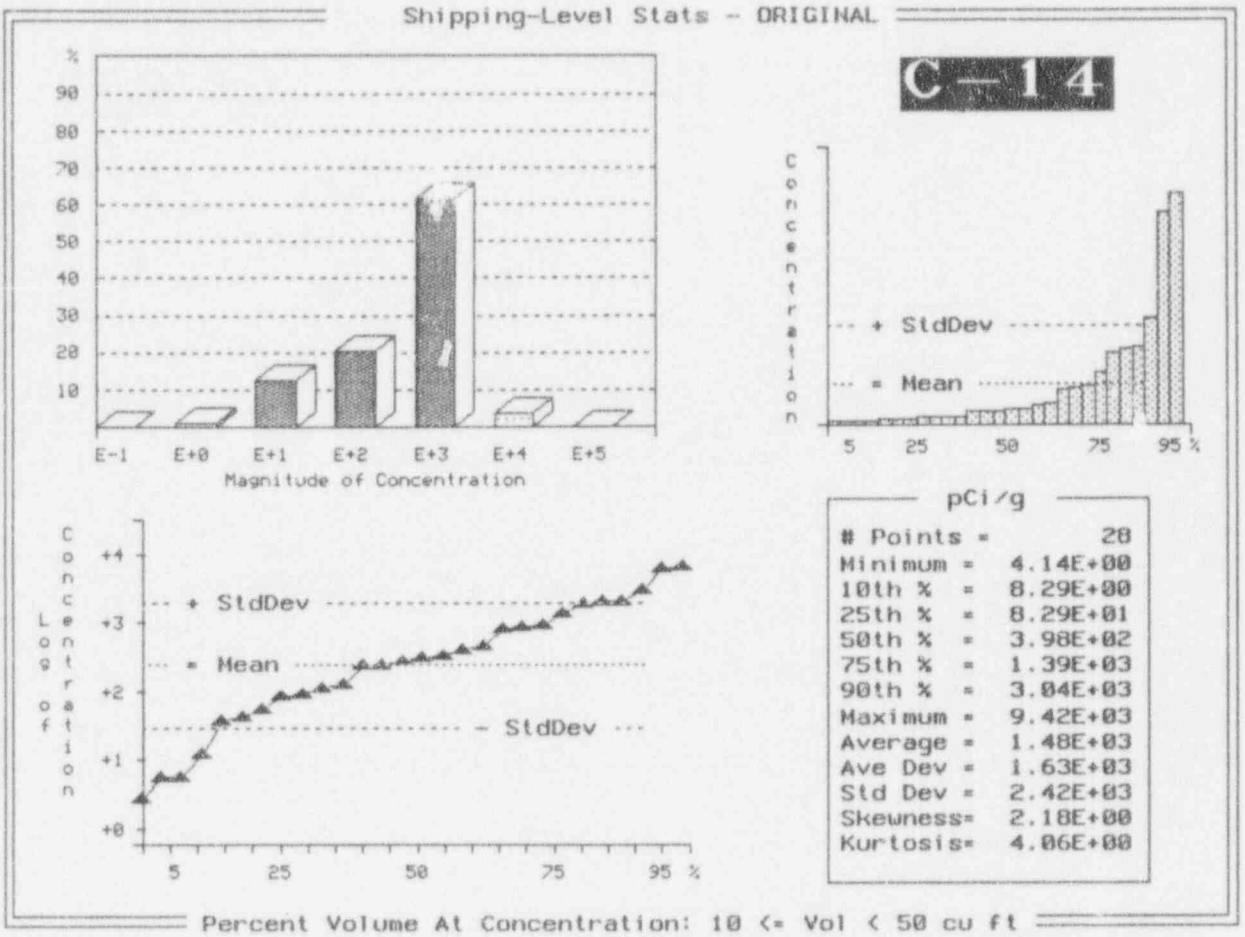

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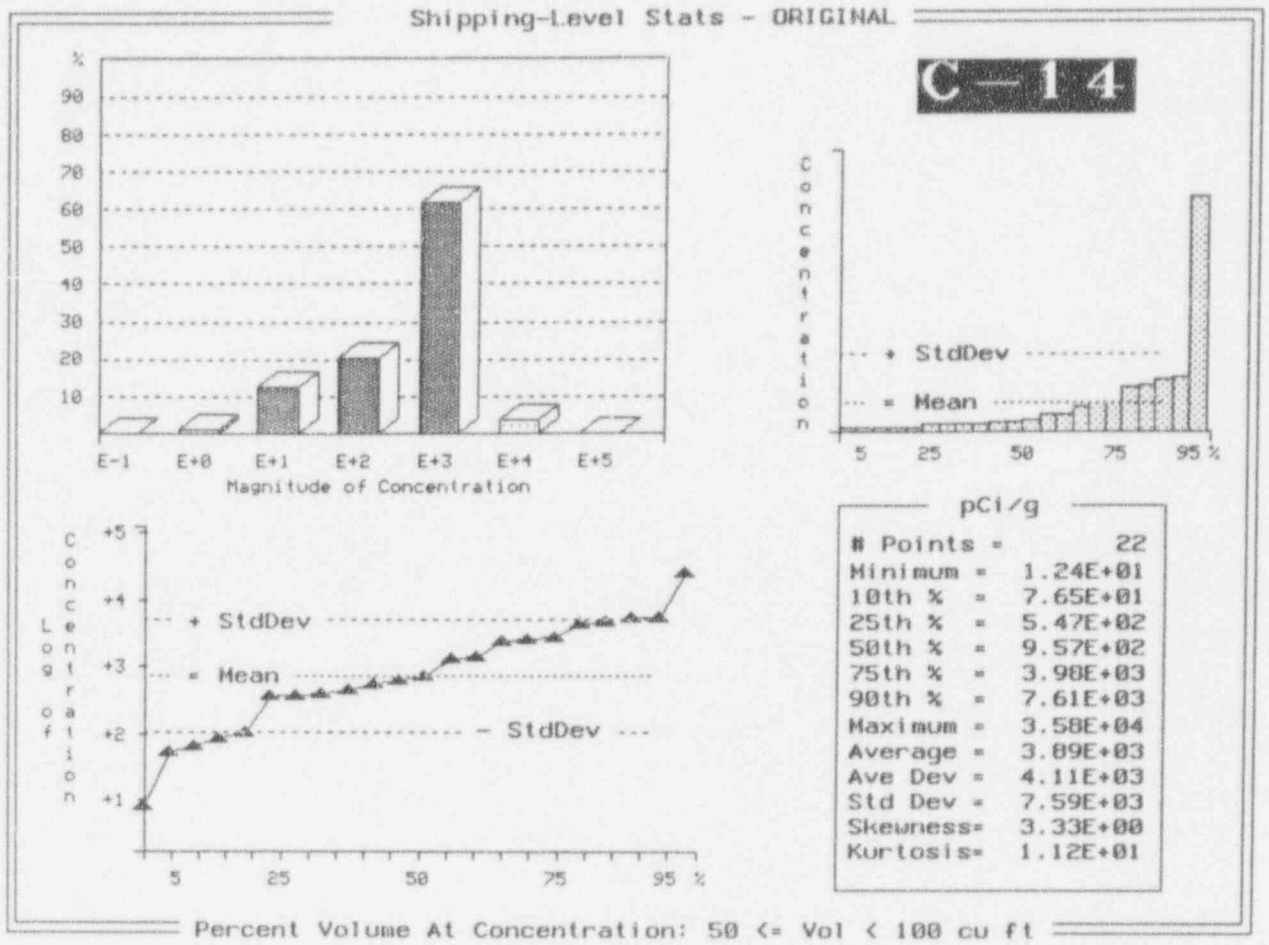

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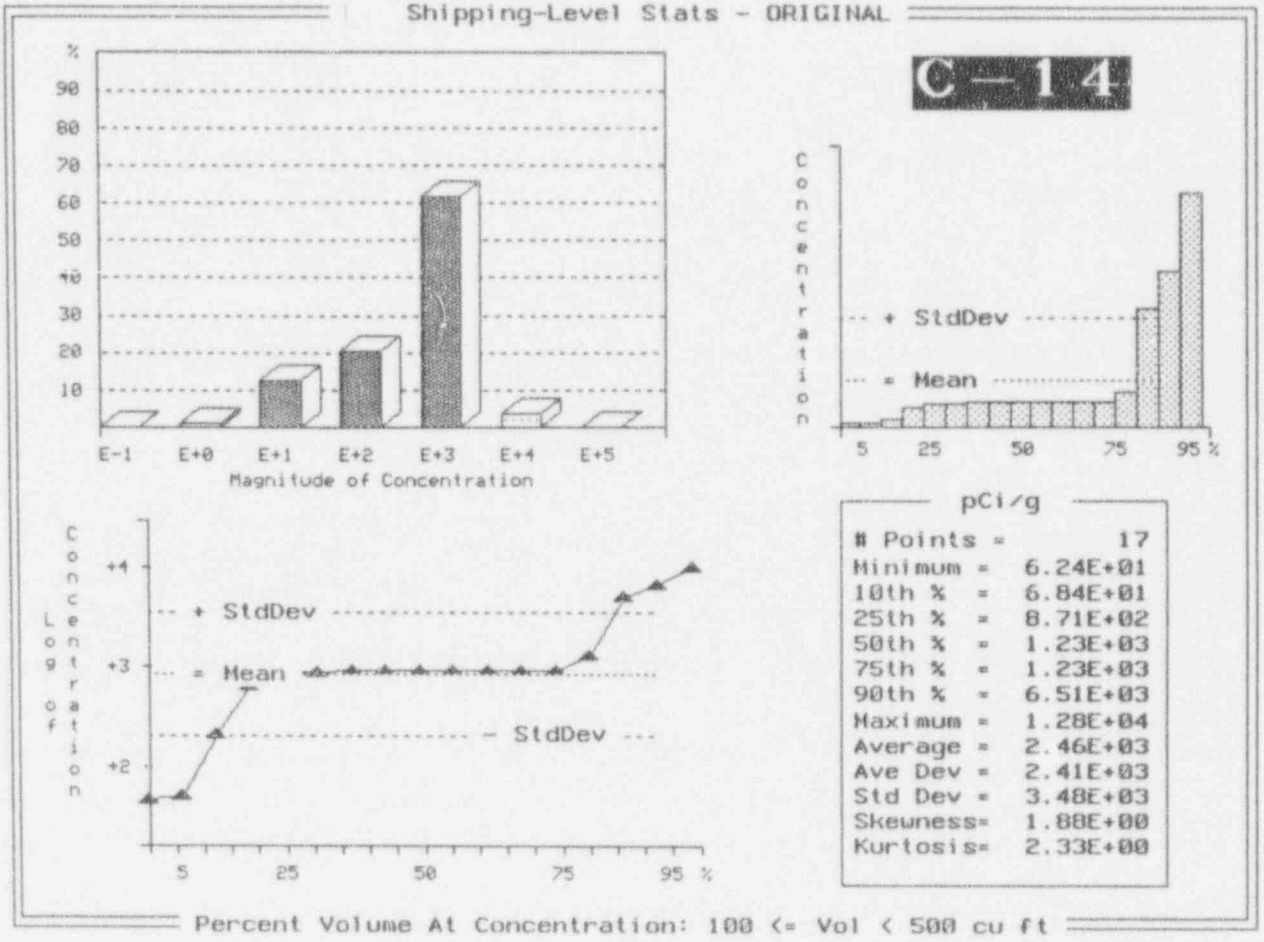

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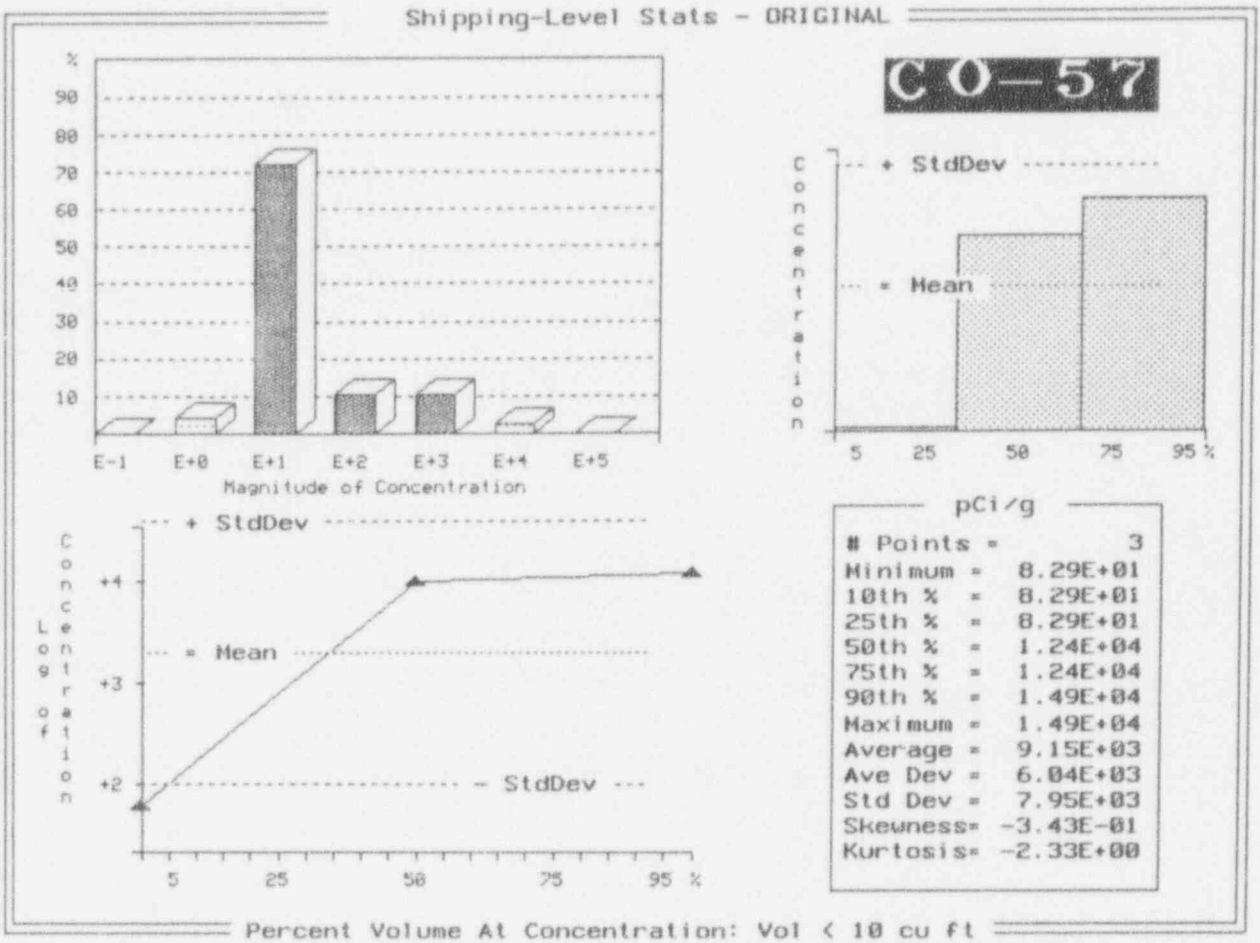

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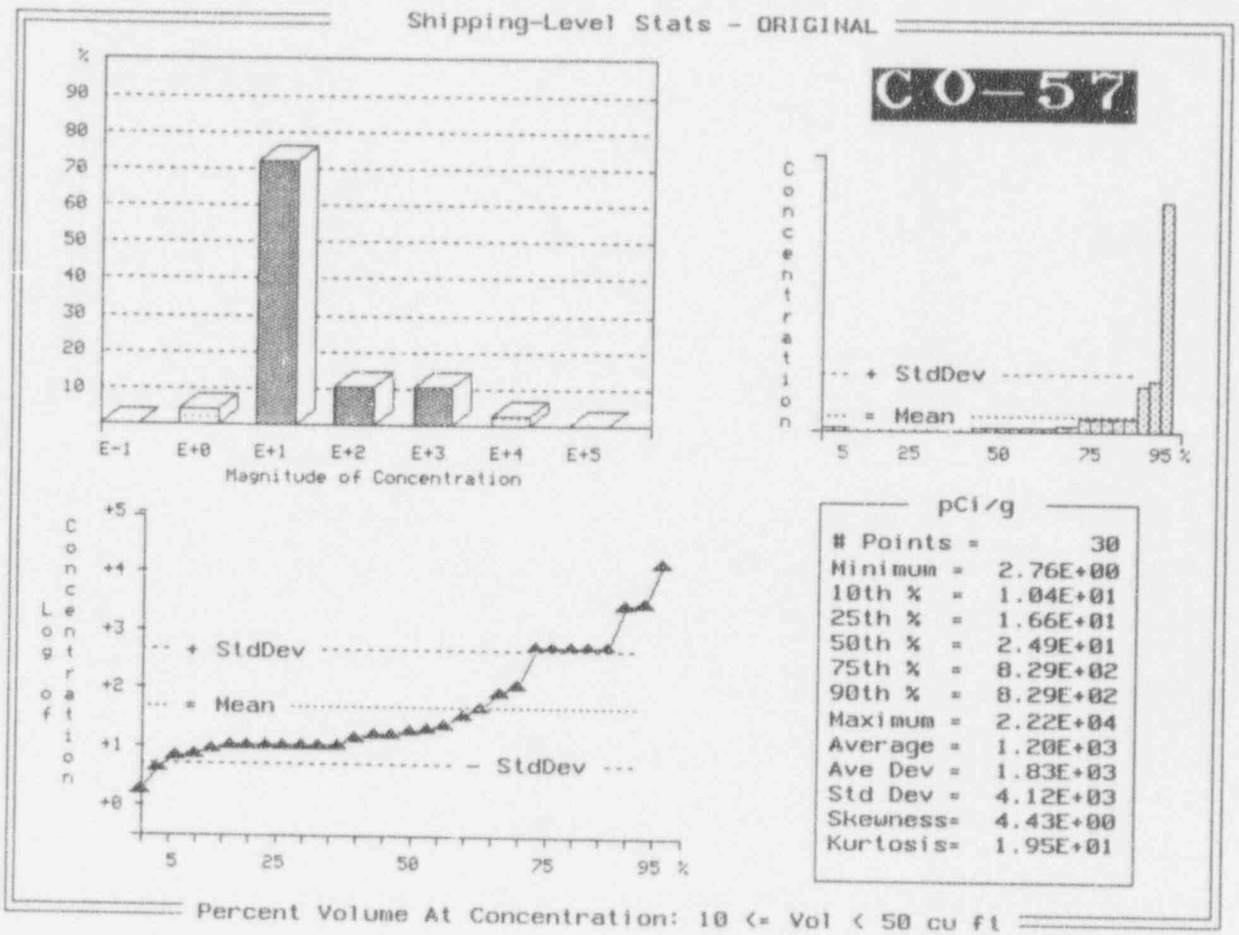

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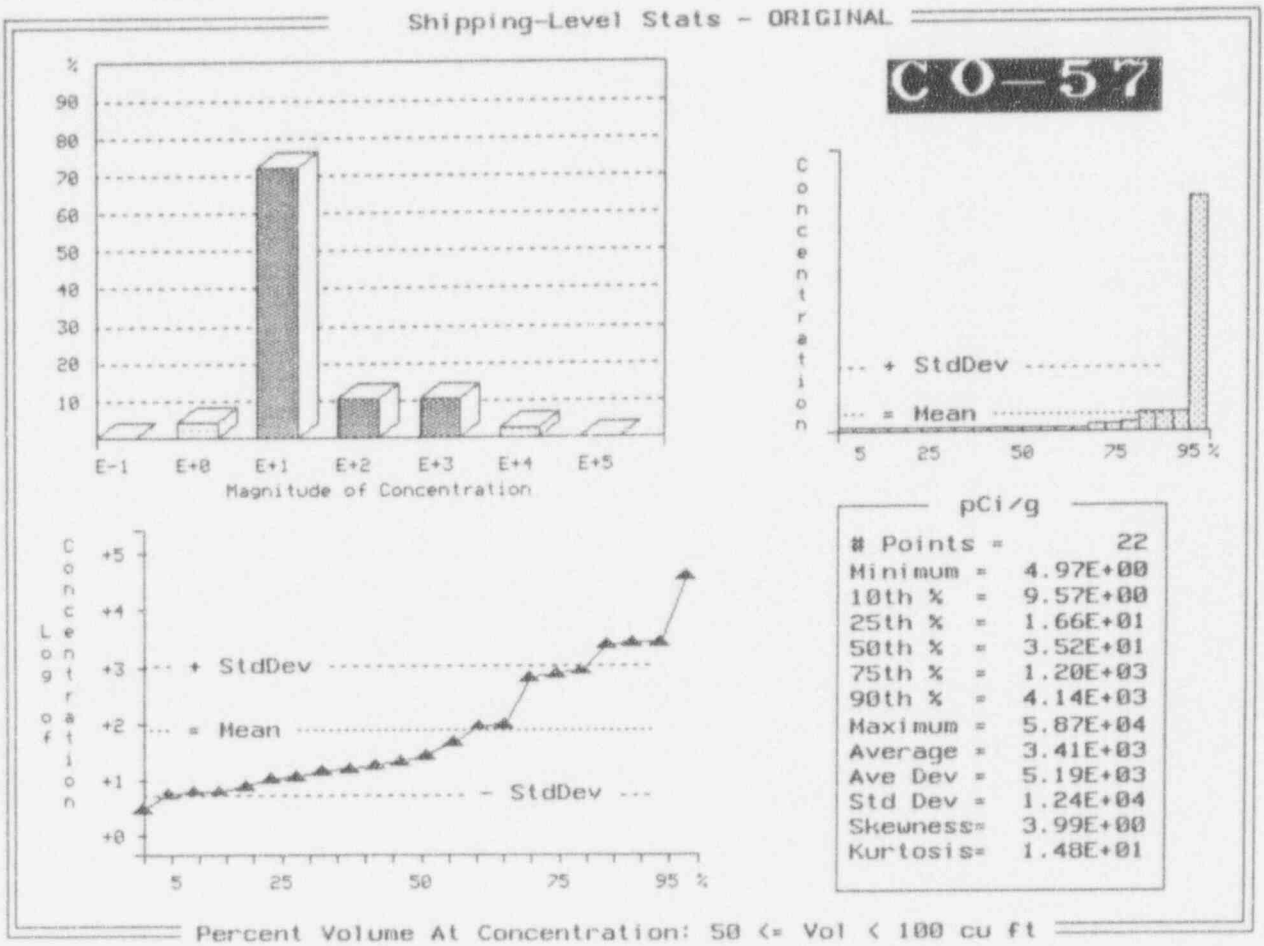
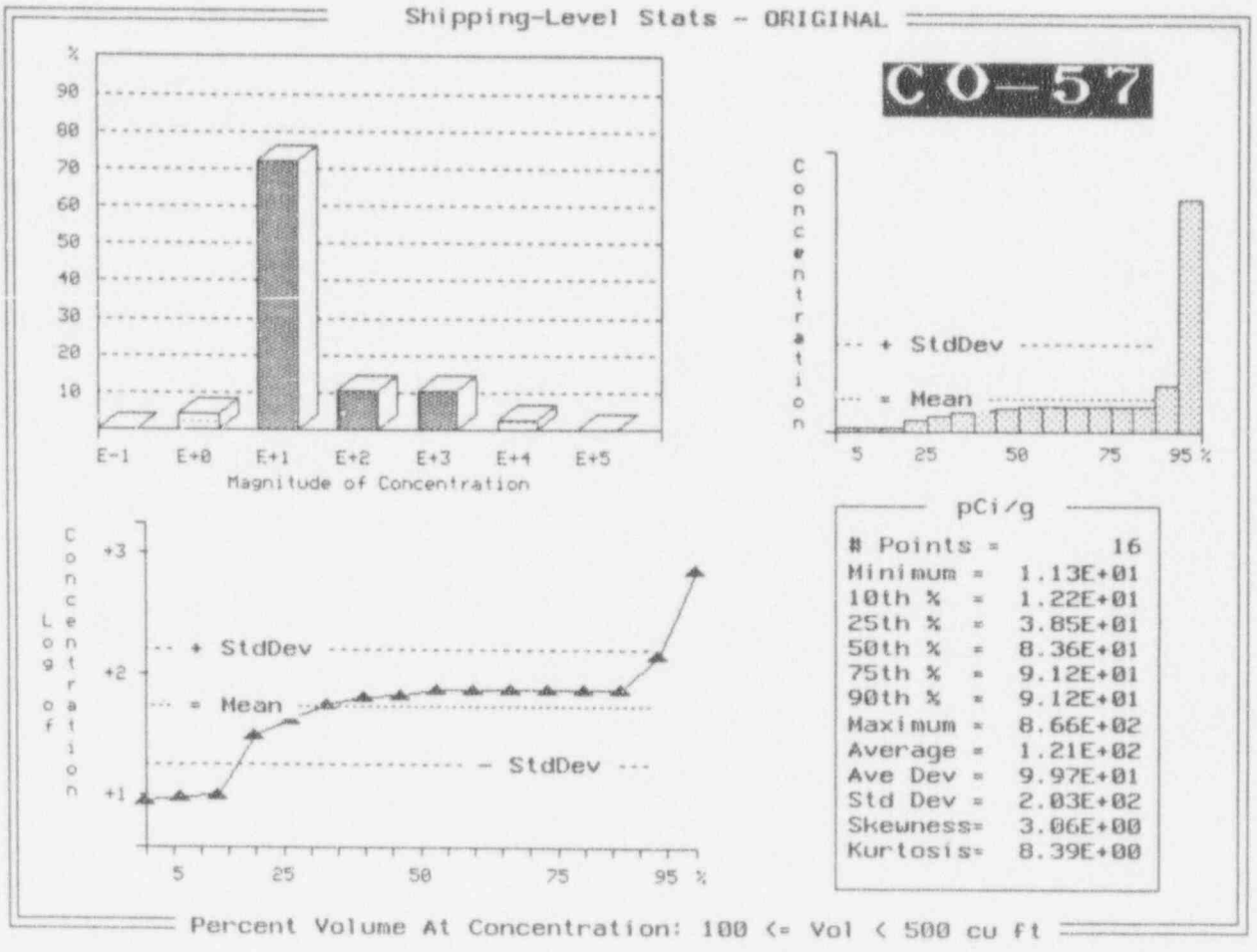


Exhibit F-35 (Continued)



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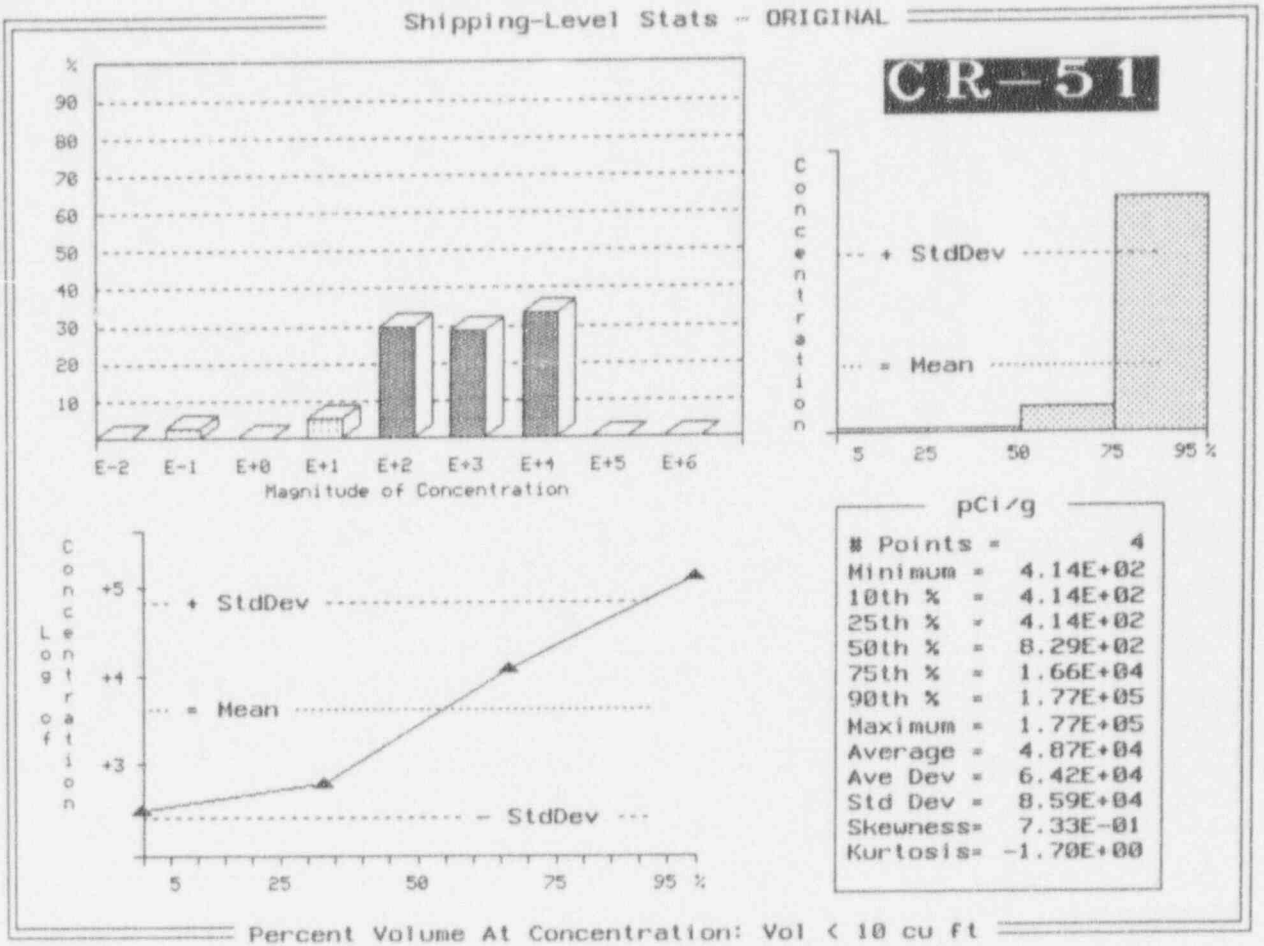
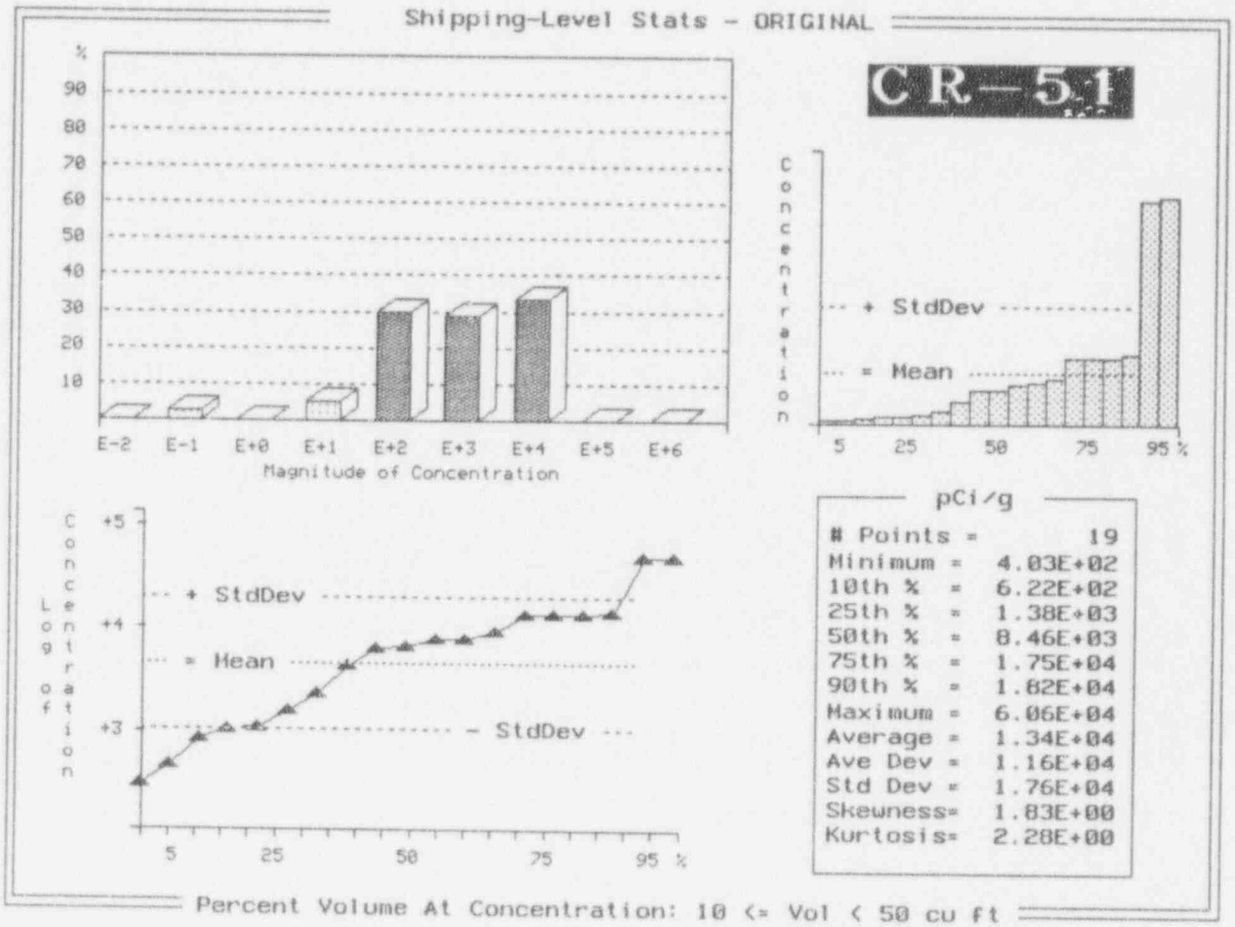


Exhibit F-35 (Continued)



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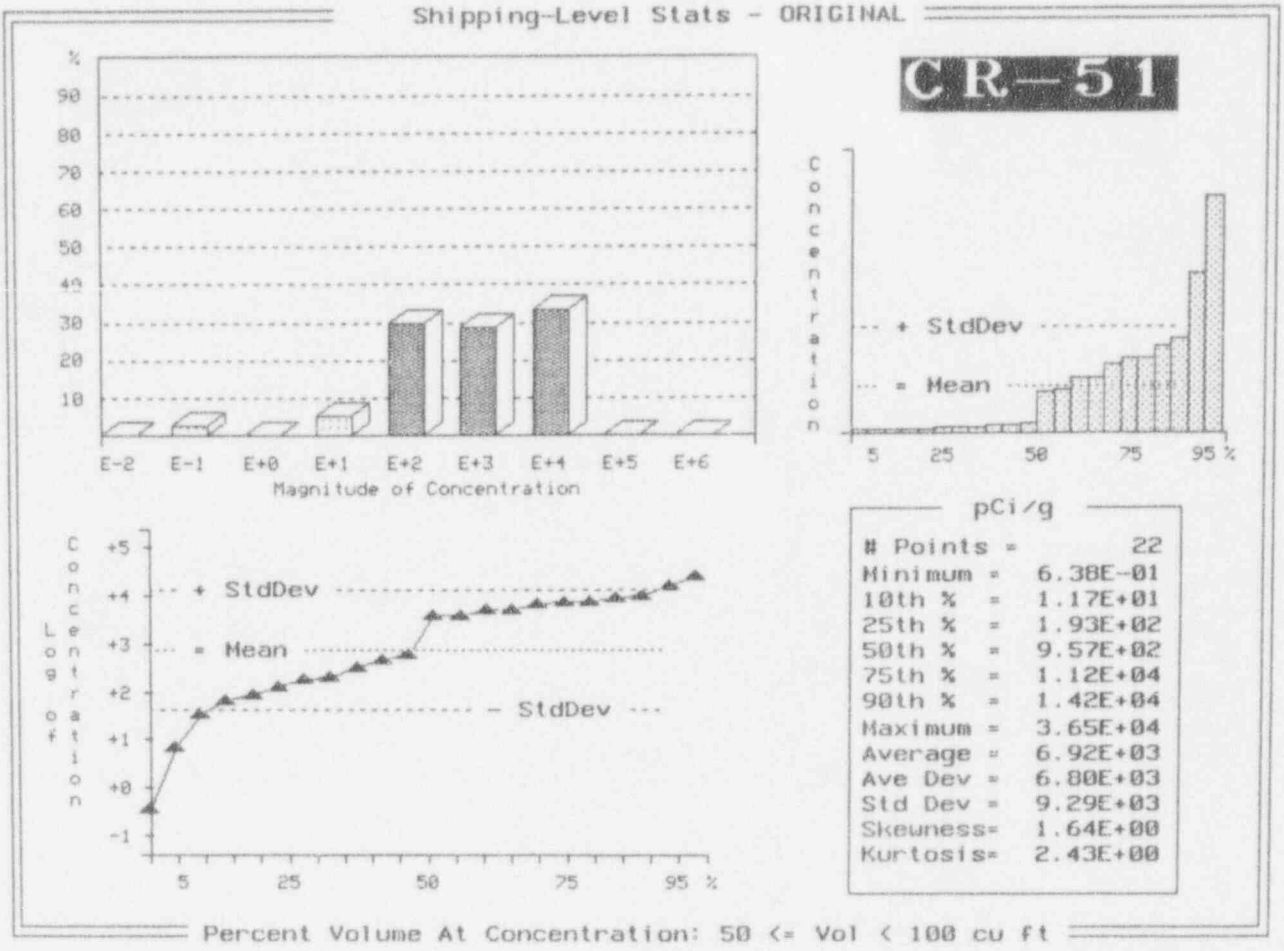

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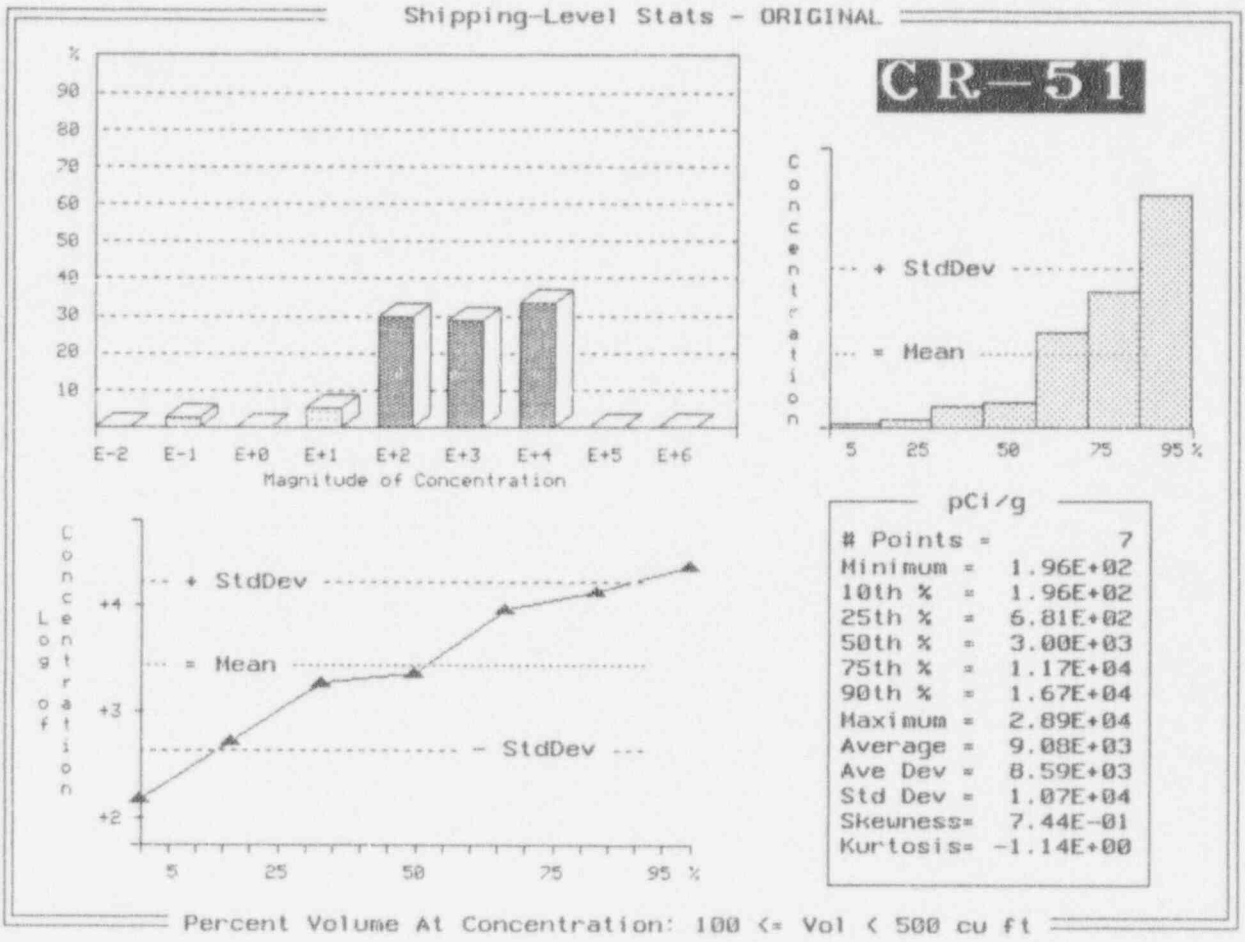

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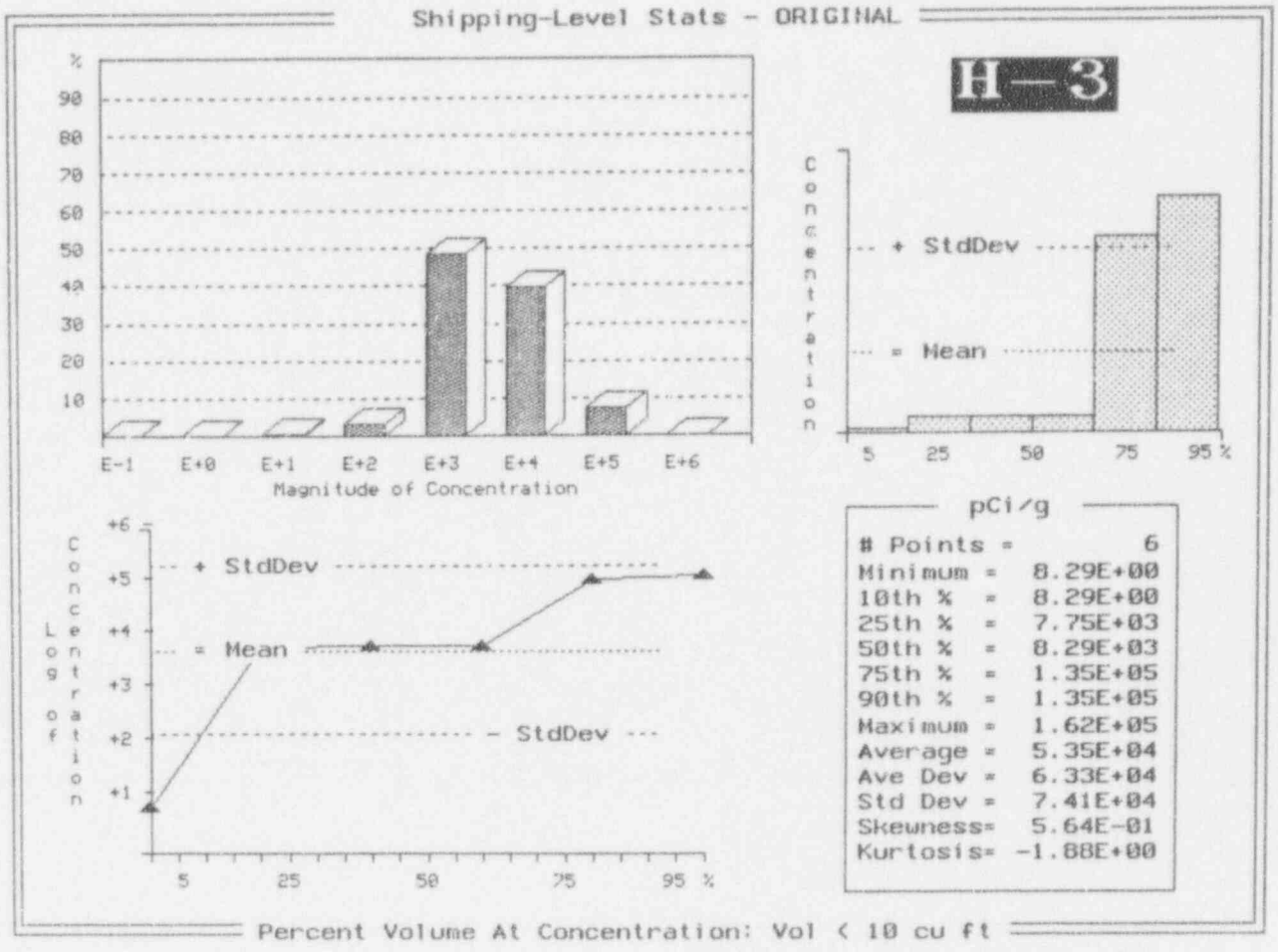

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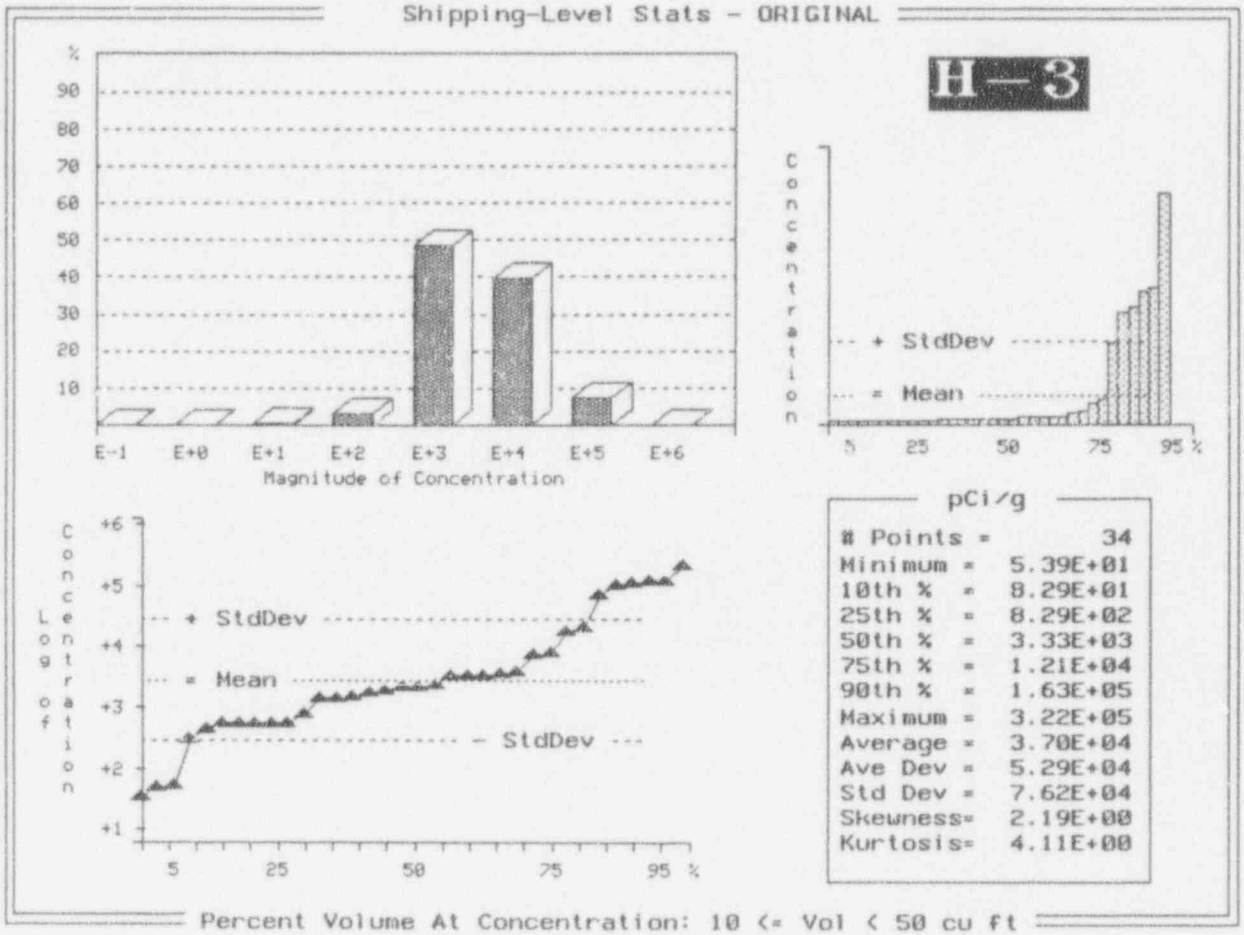

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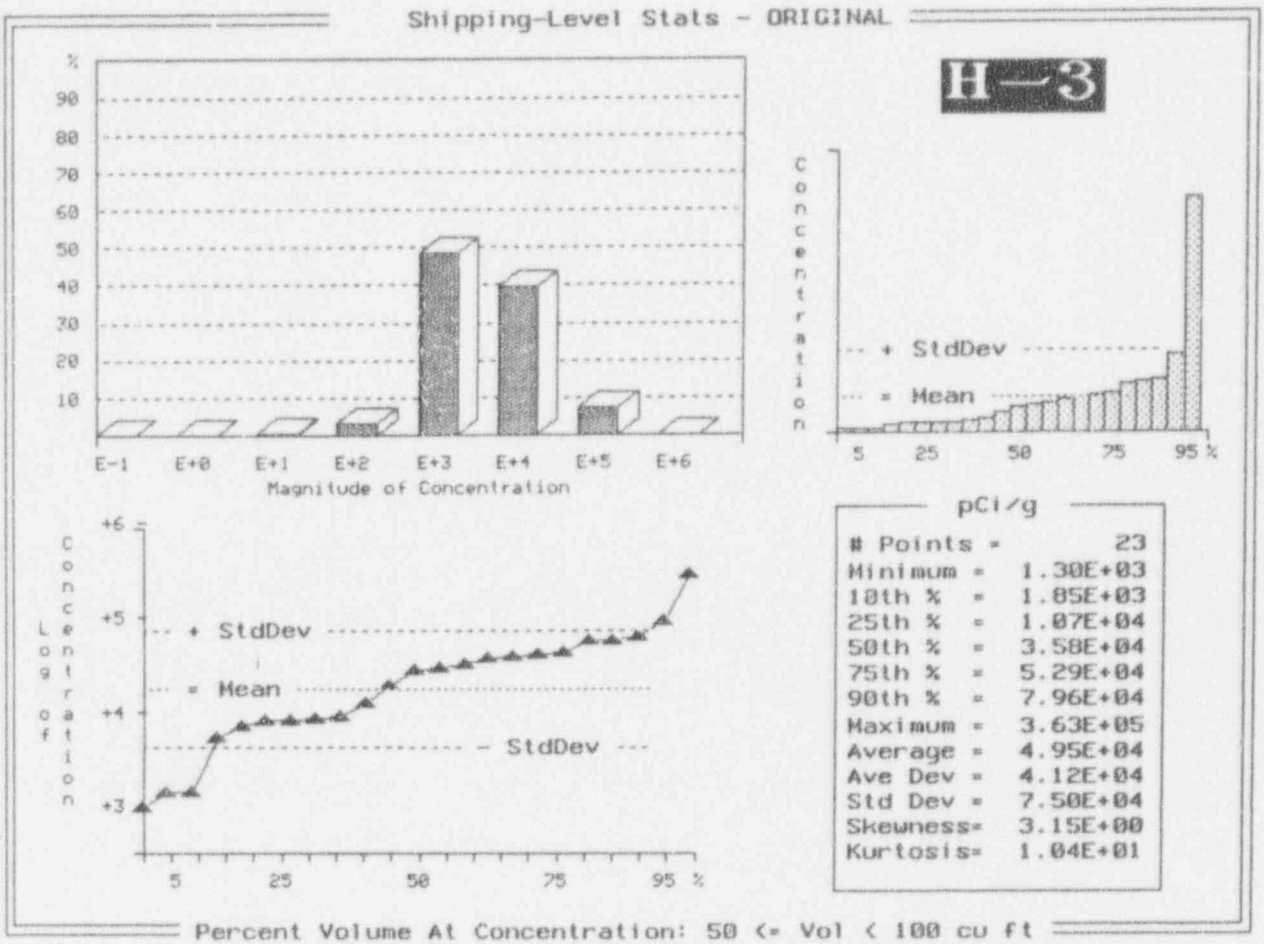

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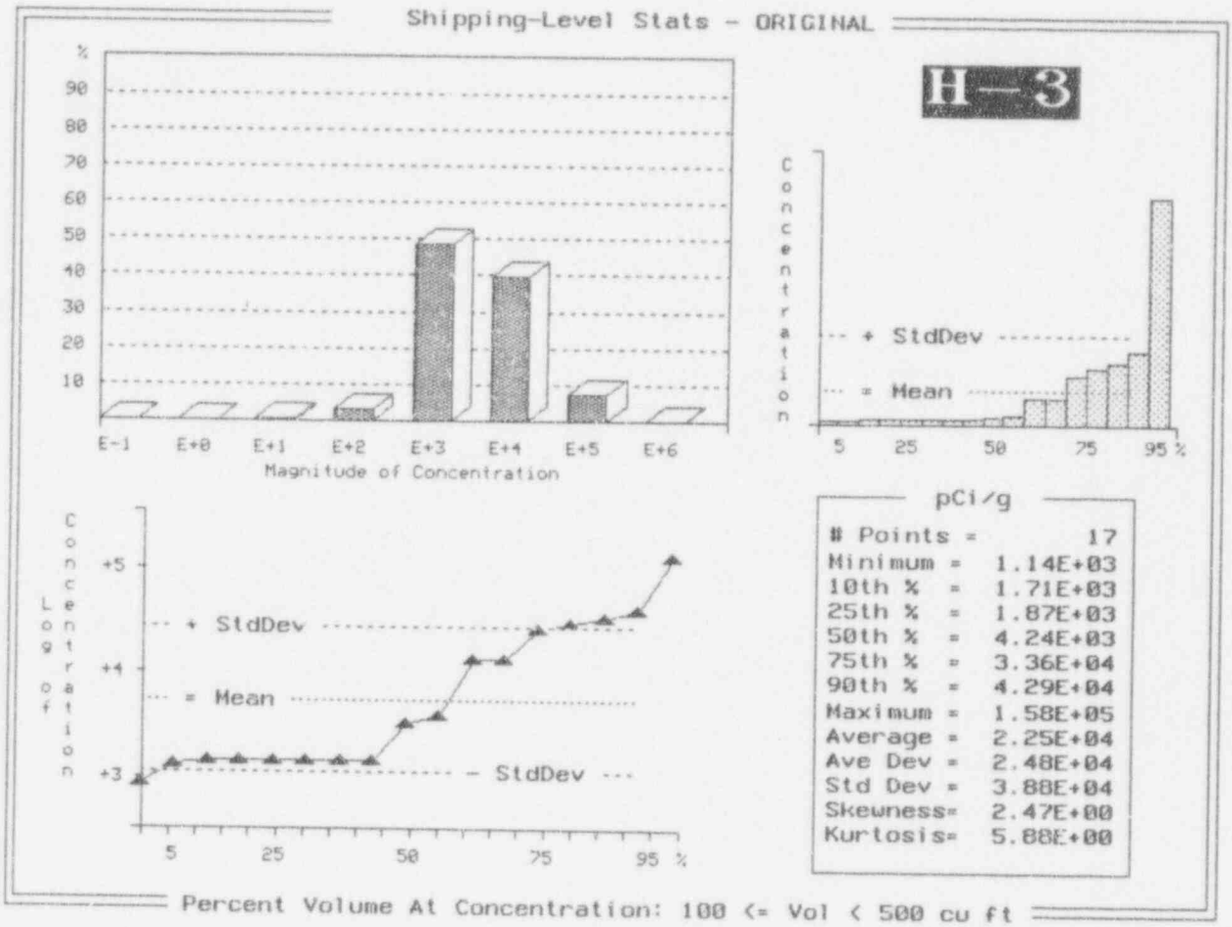

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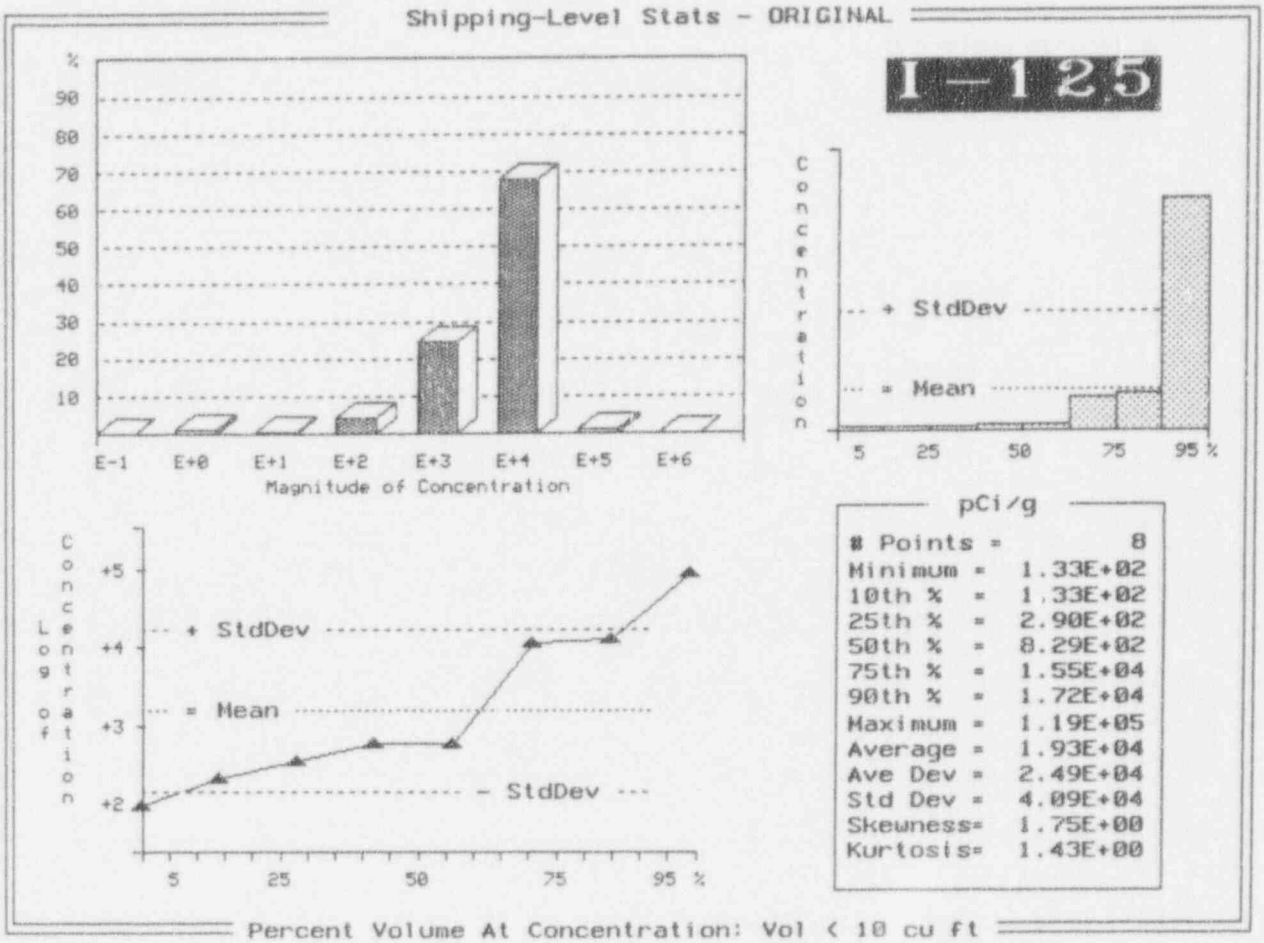

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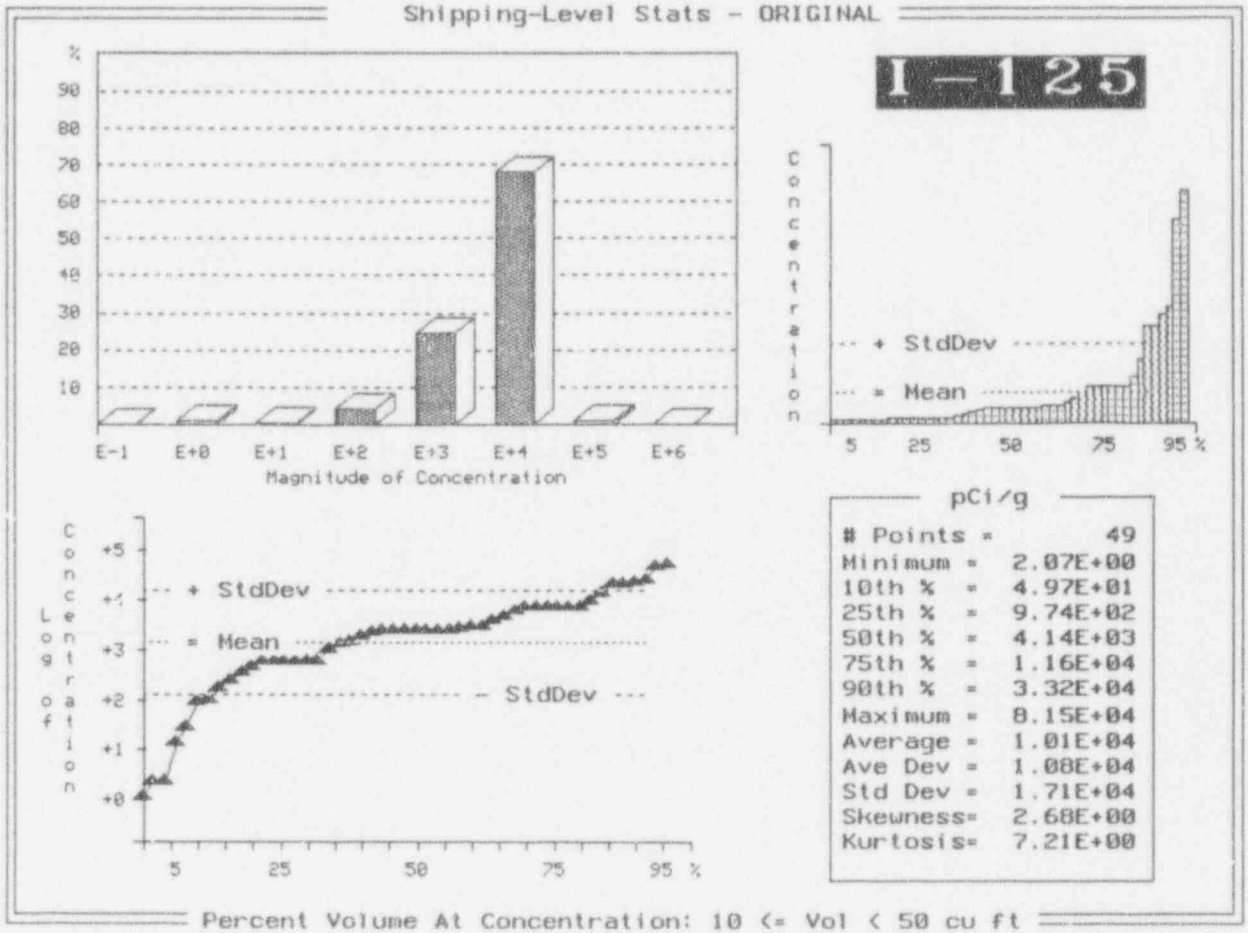

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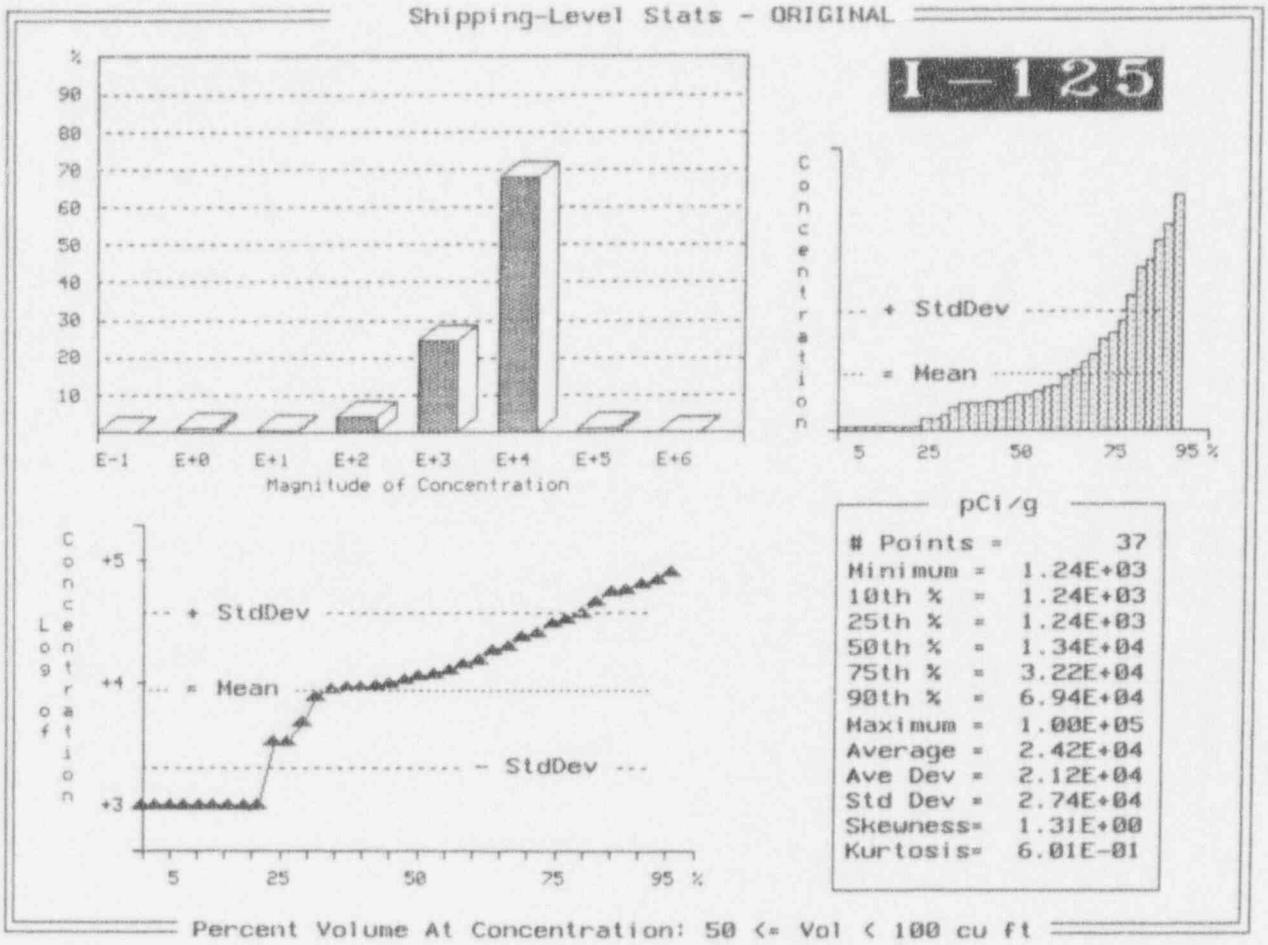

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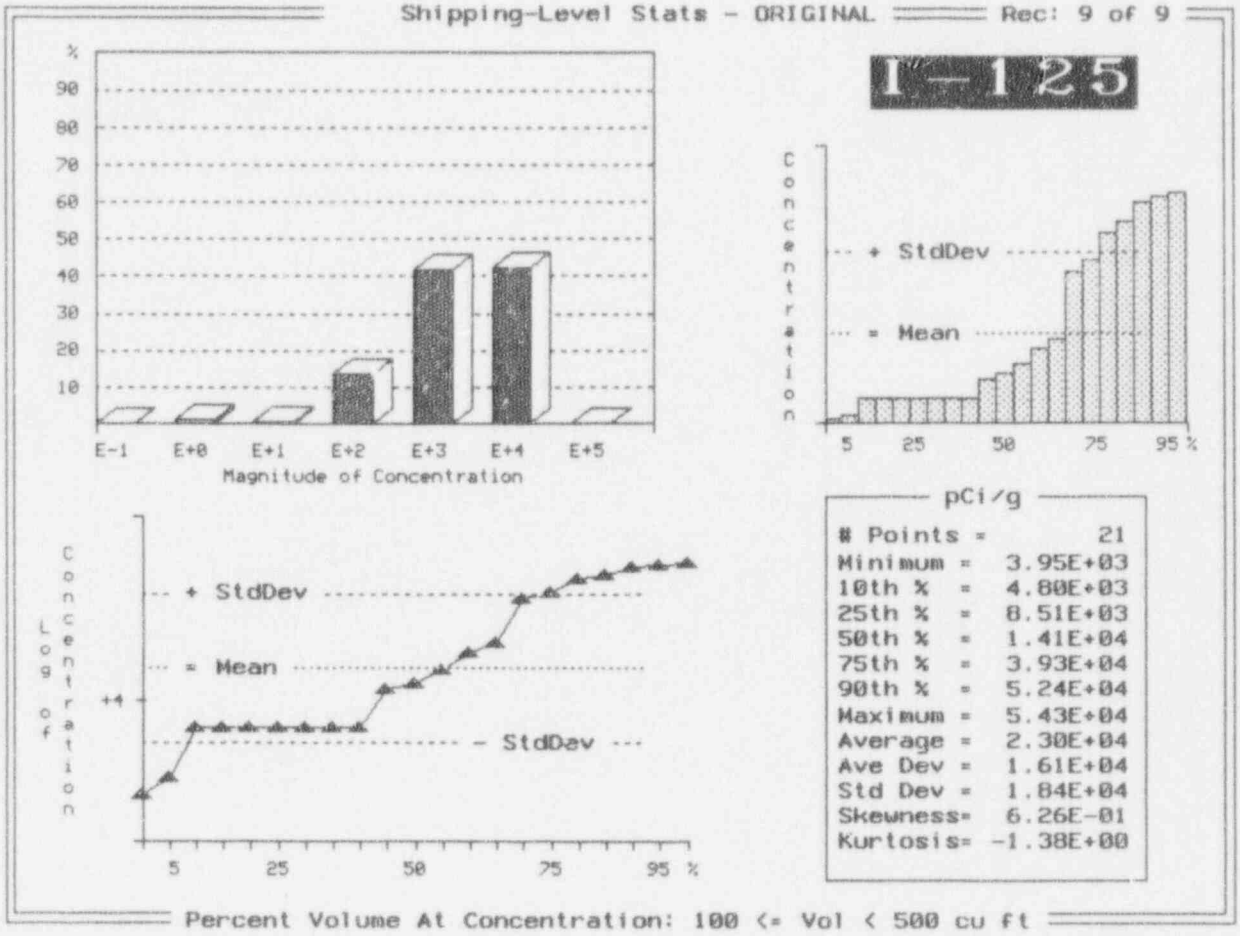

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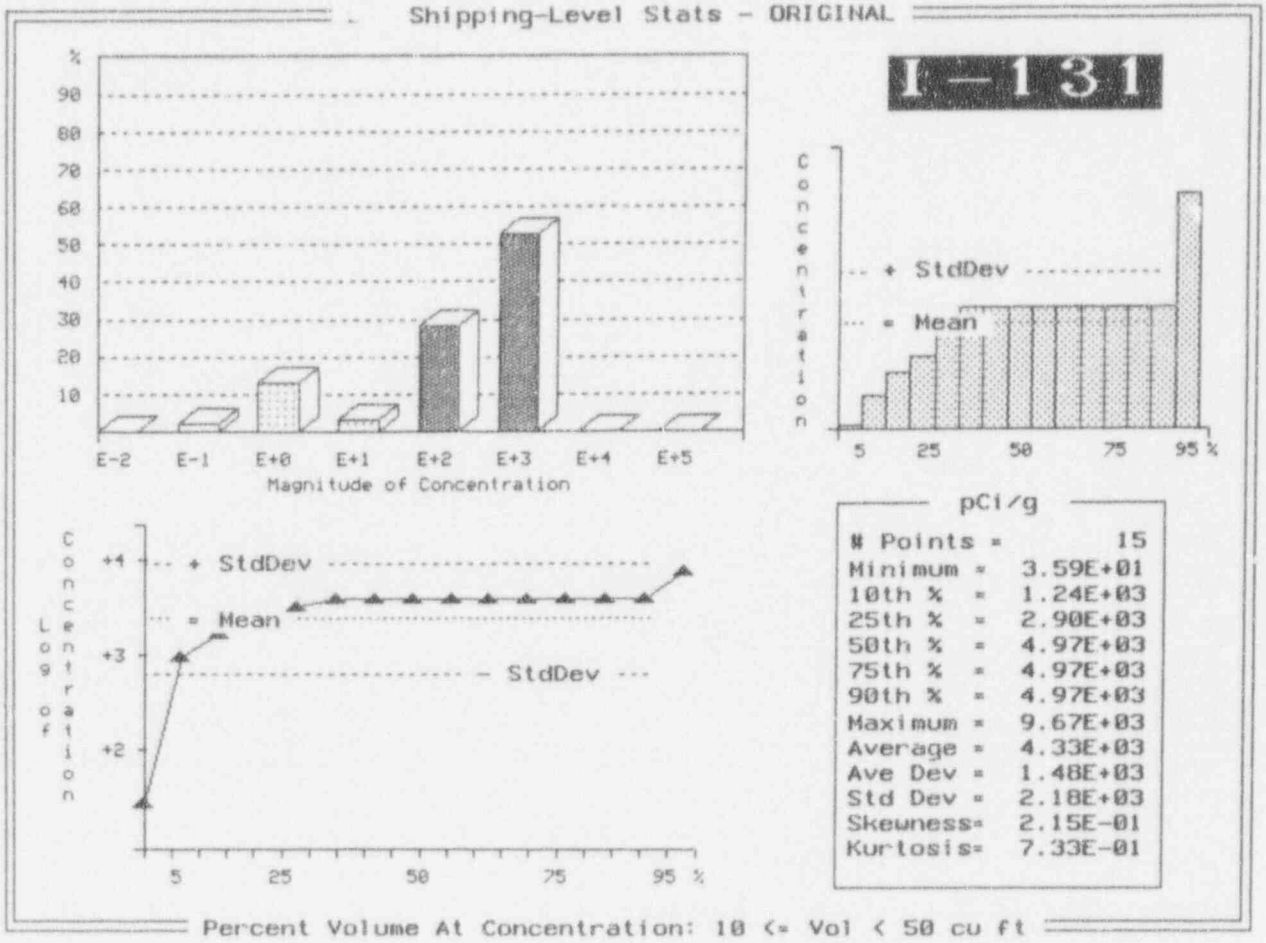

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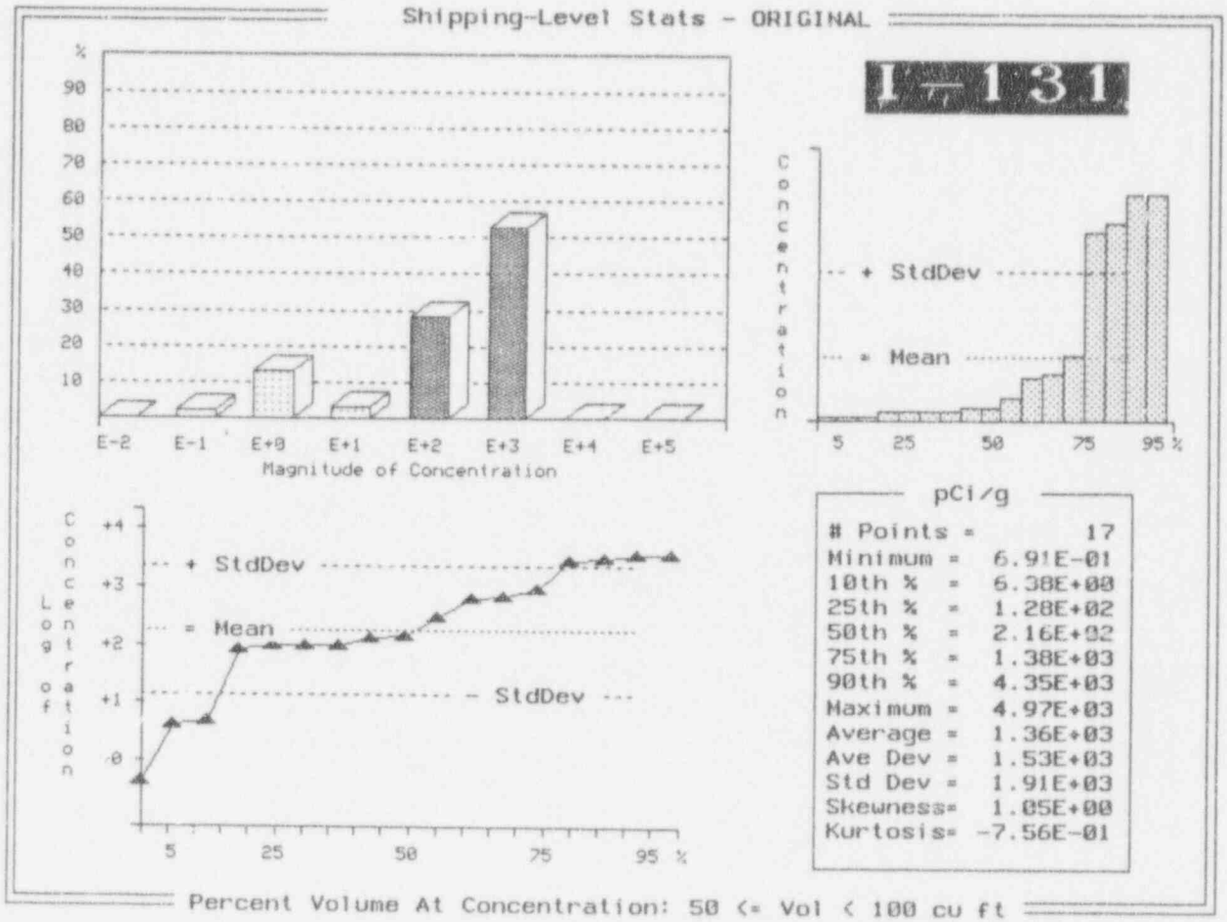

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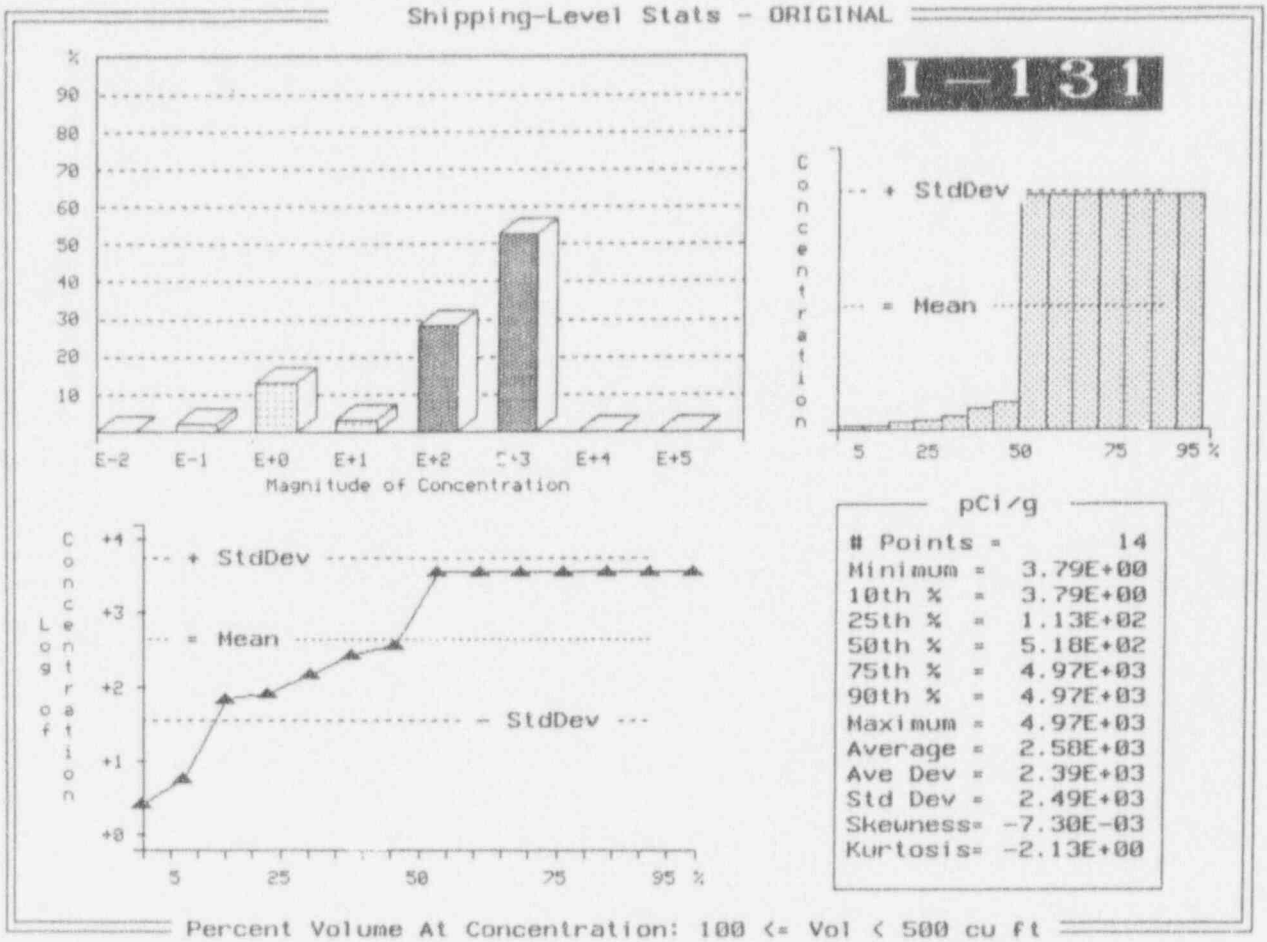

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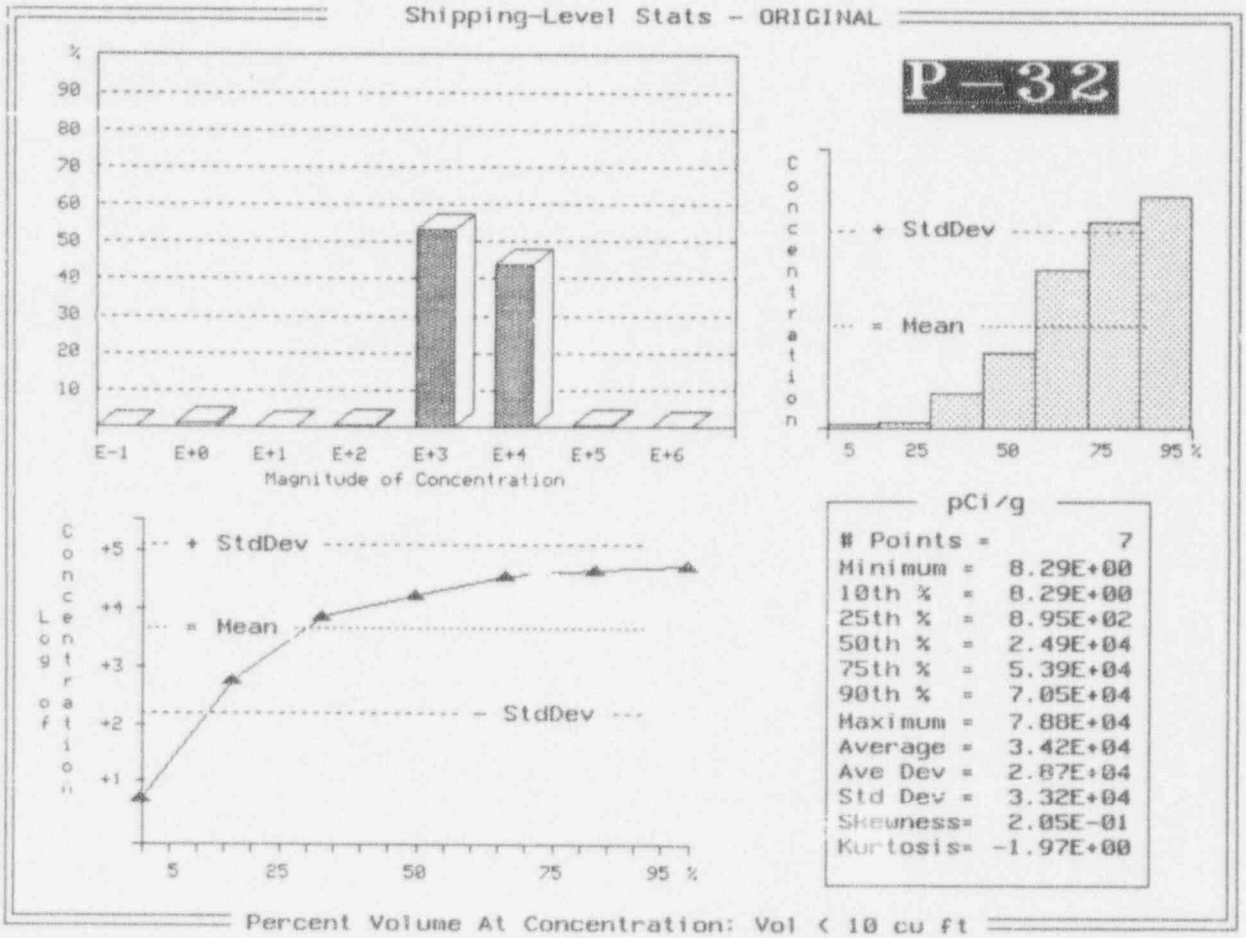

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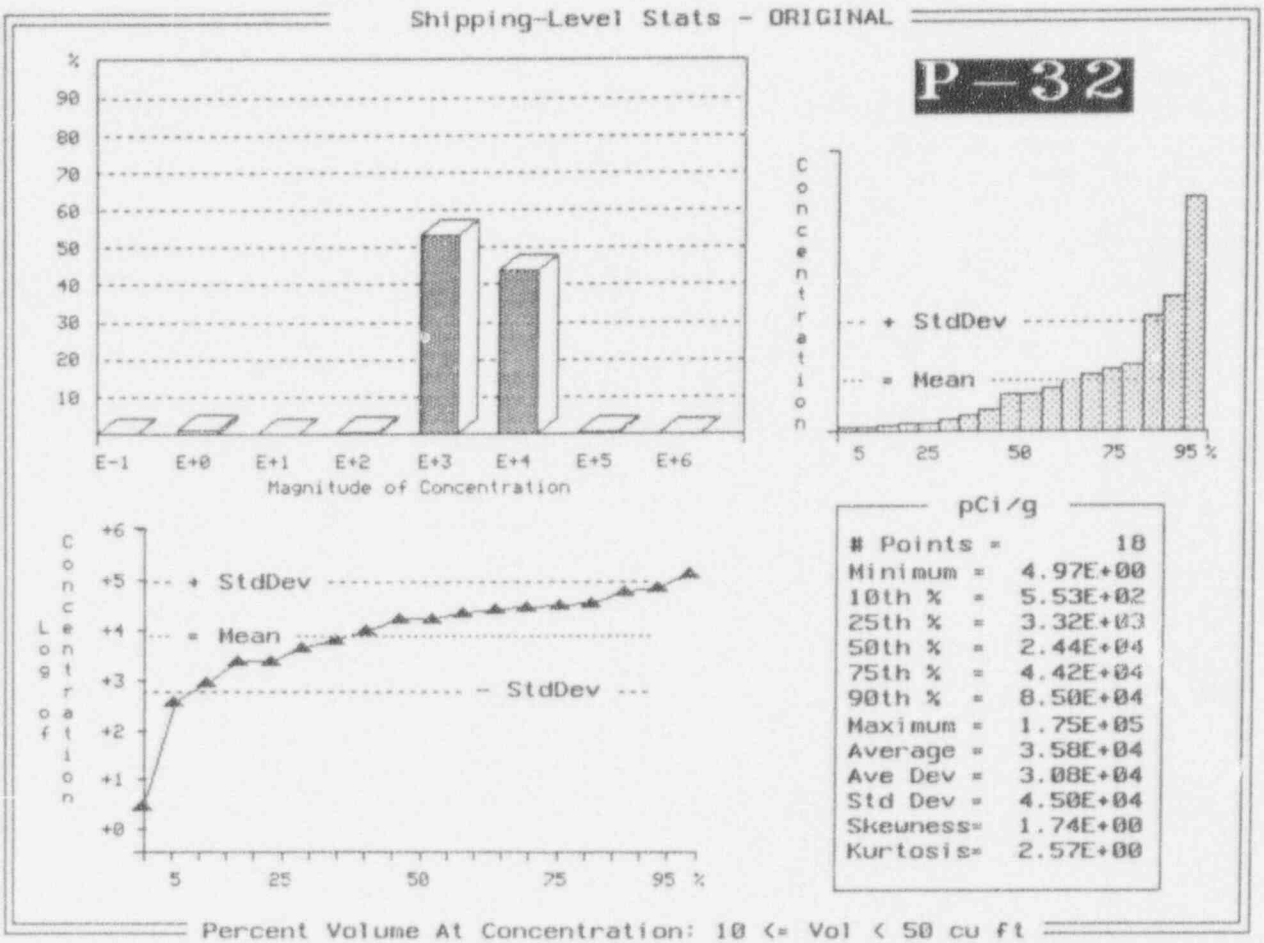

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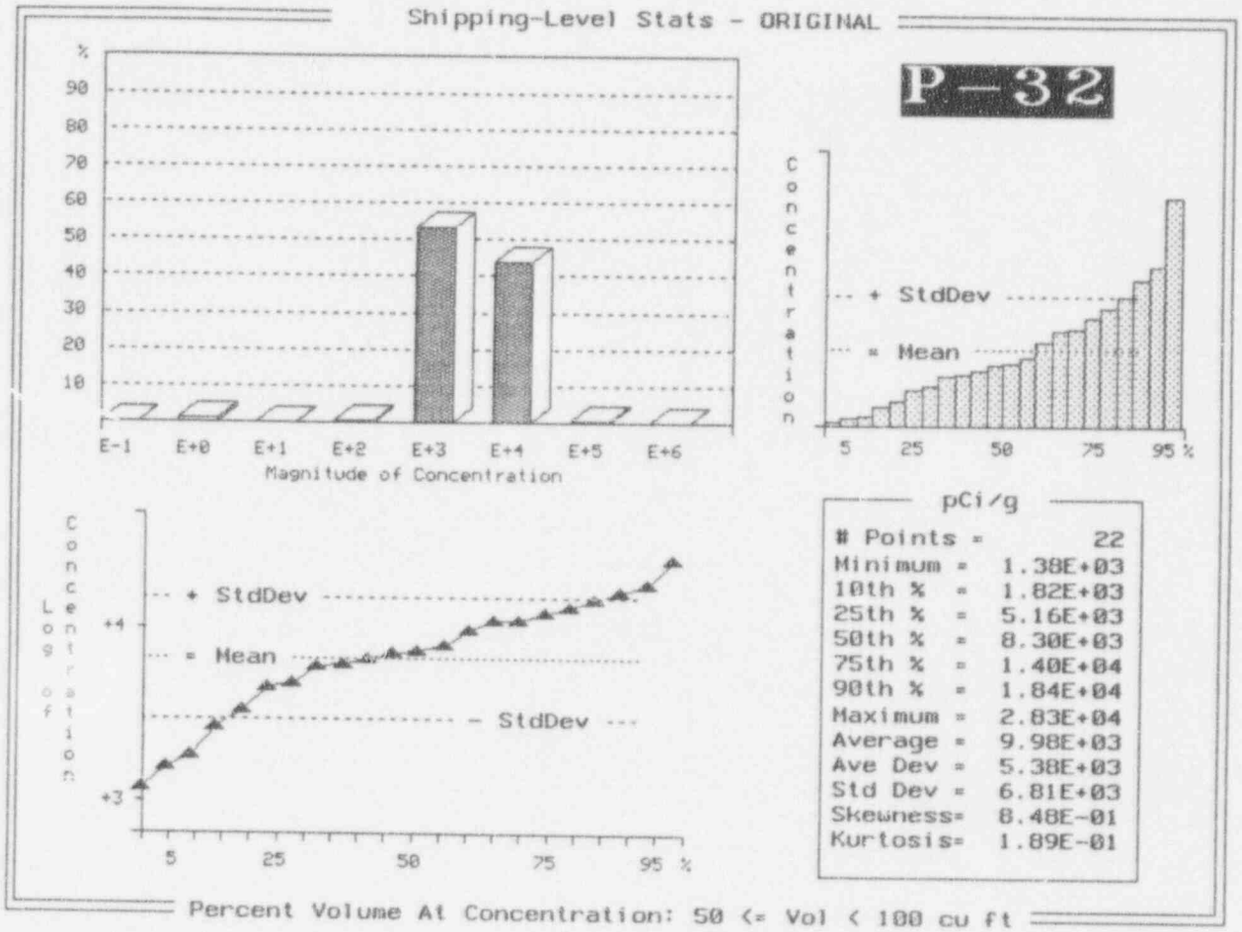

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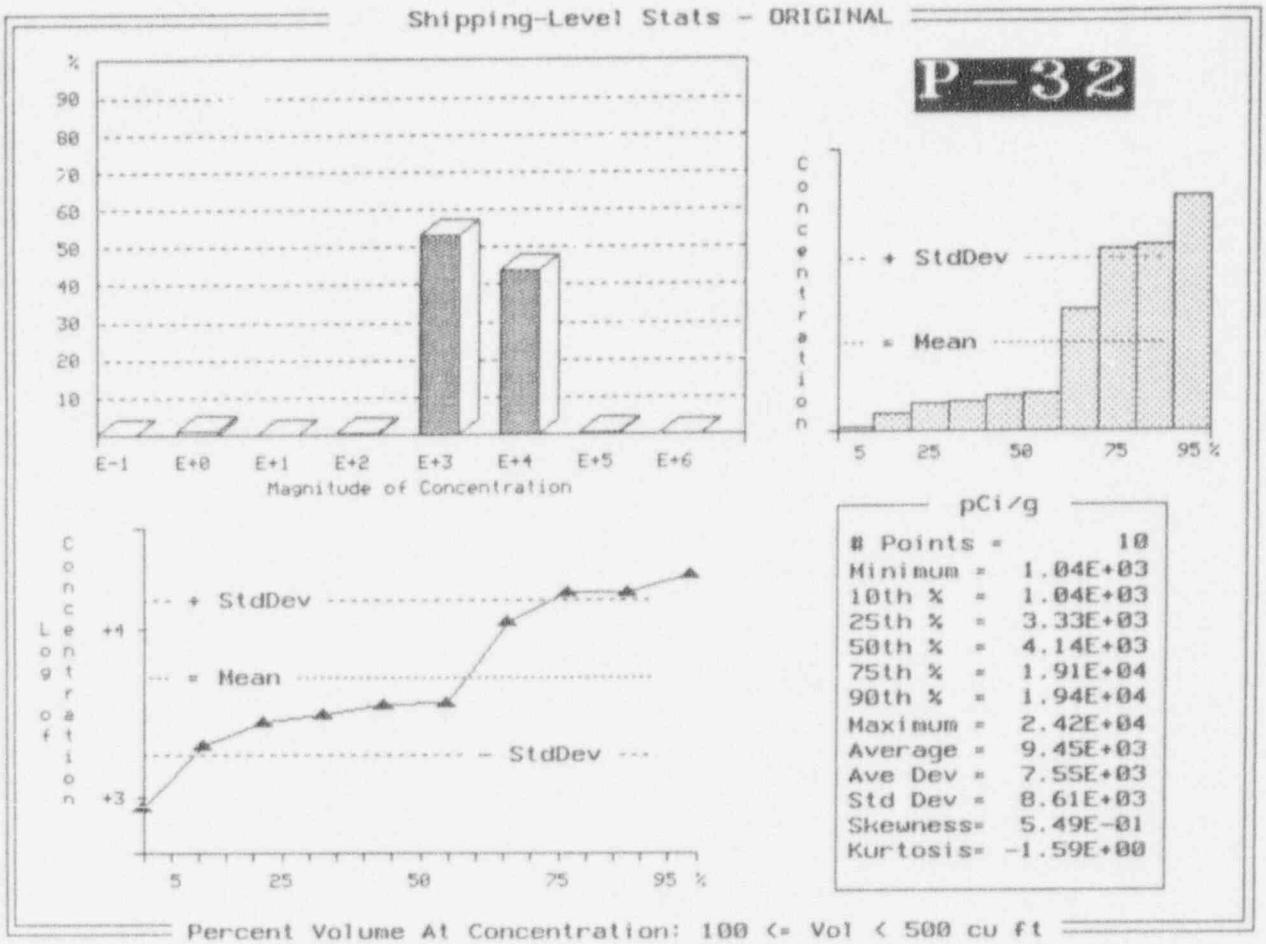

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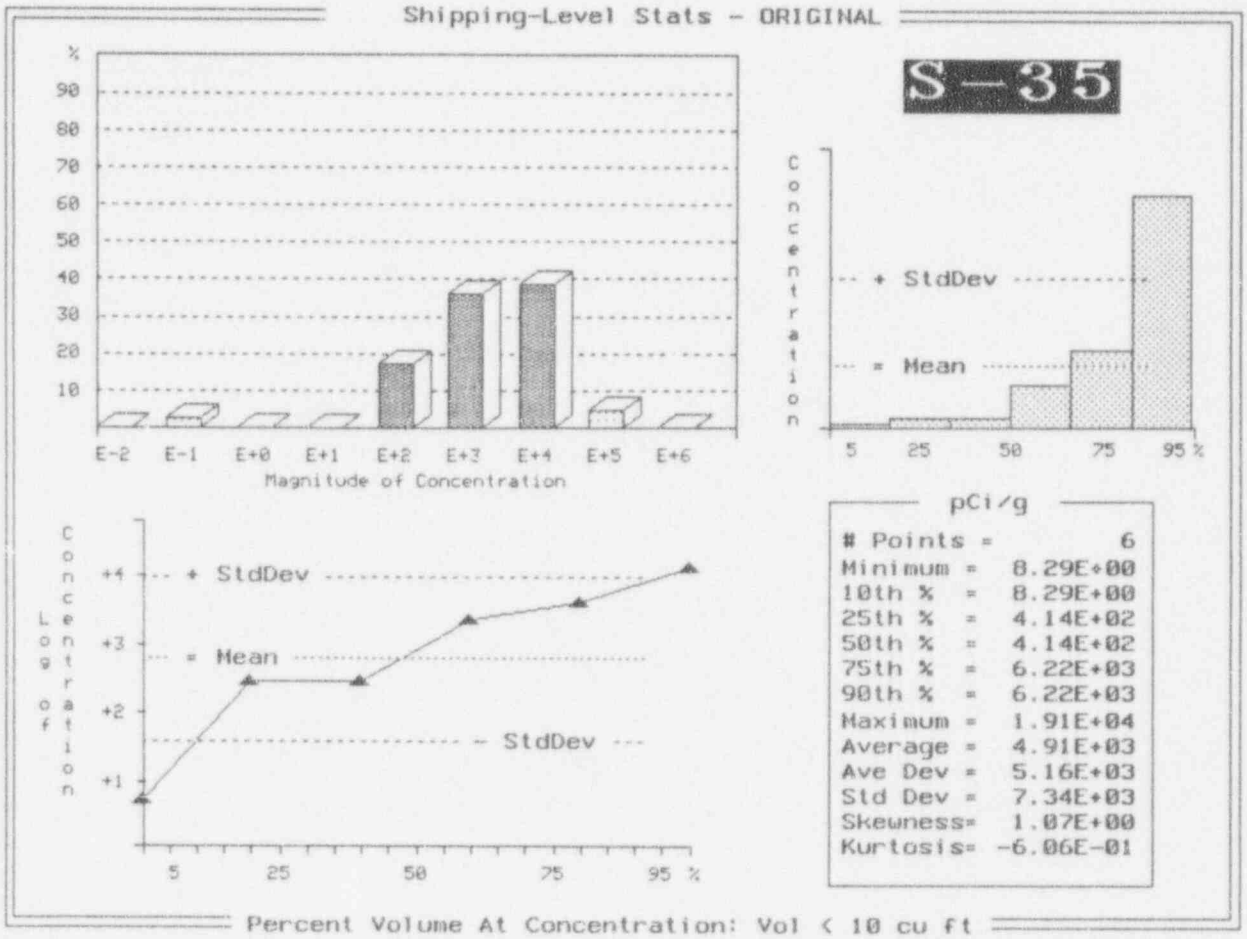

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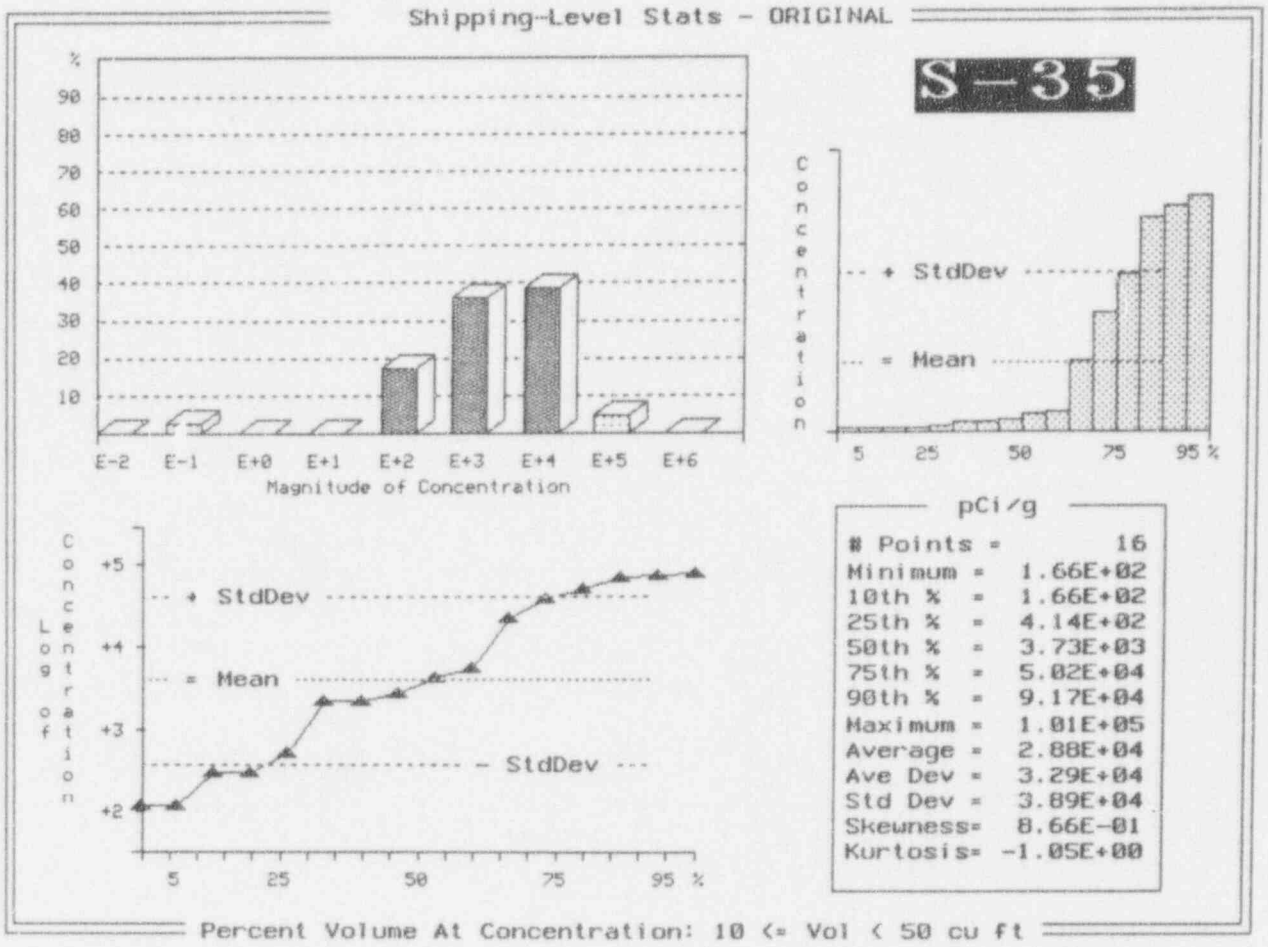

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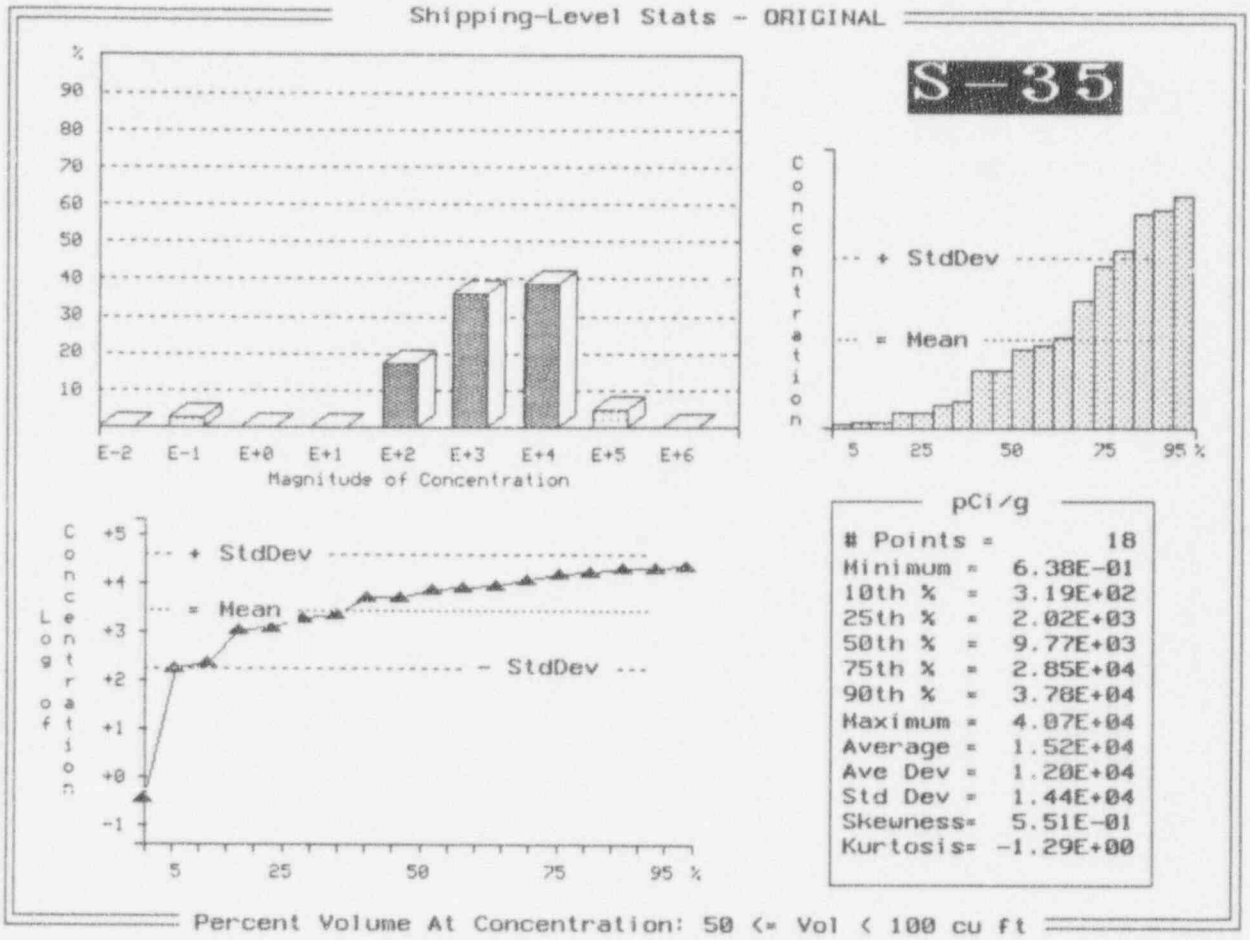

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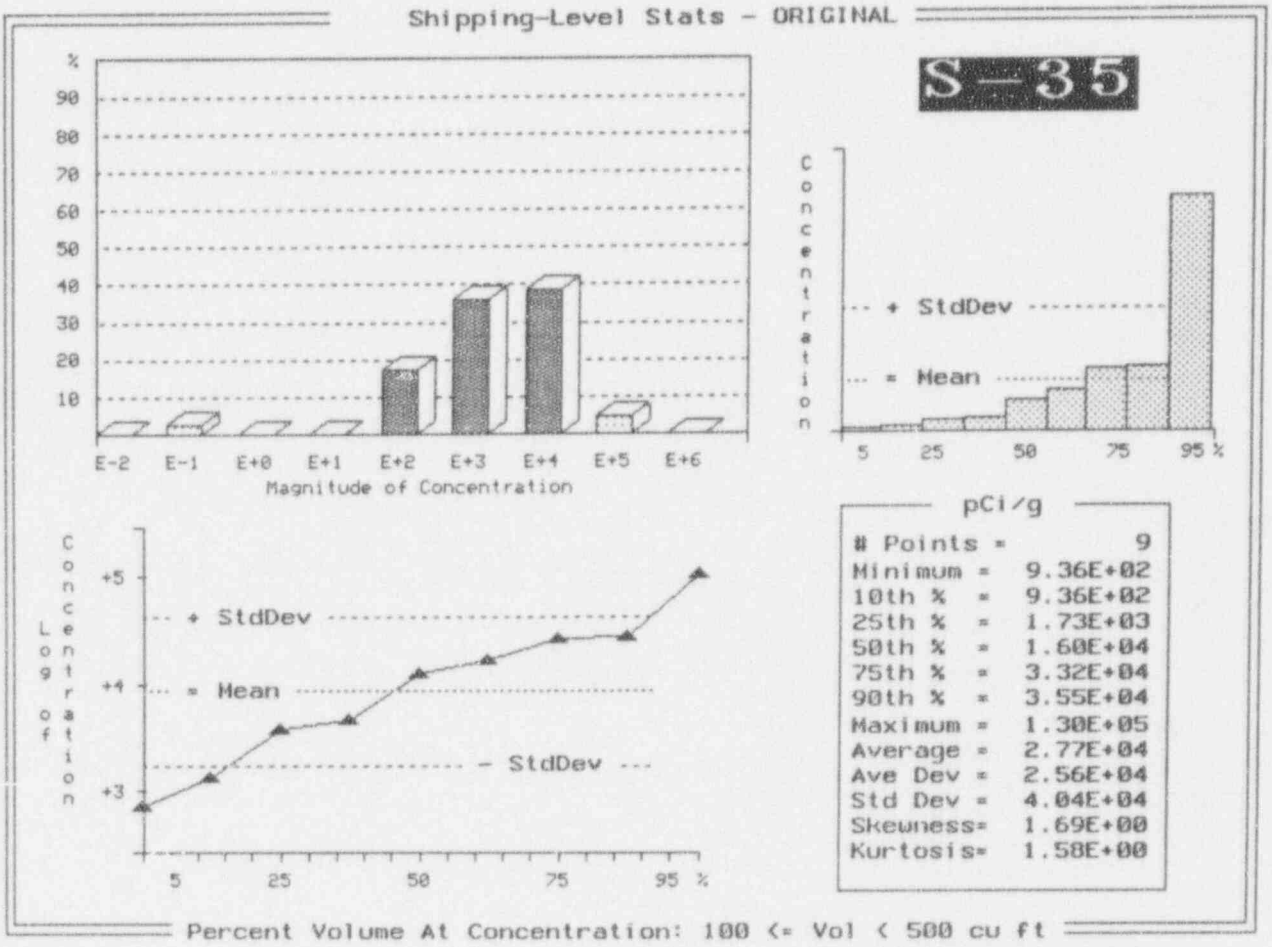
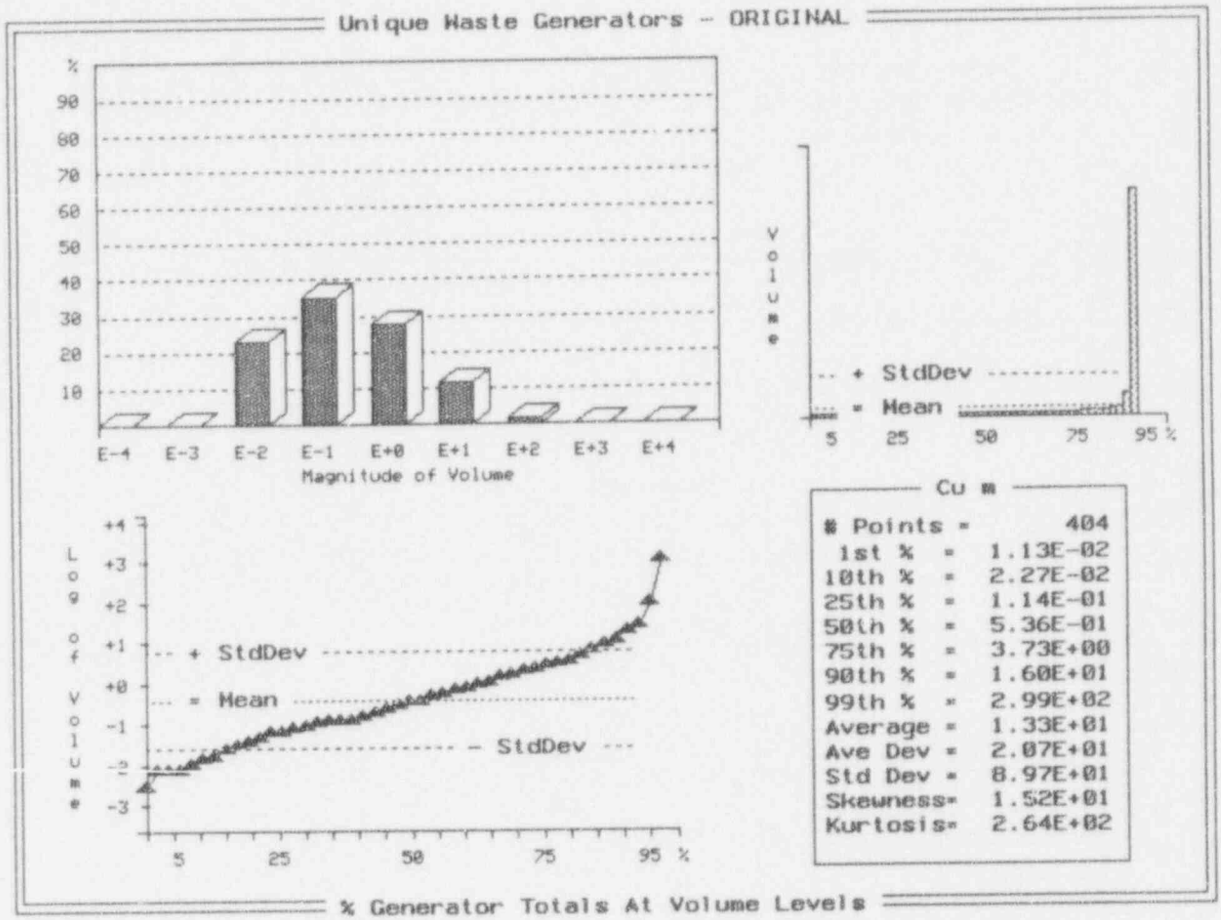


Exhibit F-36
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Southwest
Waste generator class:	Industrial
Total number of waste generators:	405
Total associated waste volume (m^3):	5,360
Total associated waste activity (Ci):	90,300
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	71
Percent of total(%):	18
Total number of shipping records:	381
Number of shipping records with container data:	73
Number of waste containers:	1,777
Weight of shipments (kg):	3,109,000
Total waste volume (m^3):	3,039
Fractional waste volume (%): (this analysis/total)	57
Total waste activity (Ci):	74,520
Fractional waste activity (%): (this analysis/total)	82

Exhibit F-36 (Continued)



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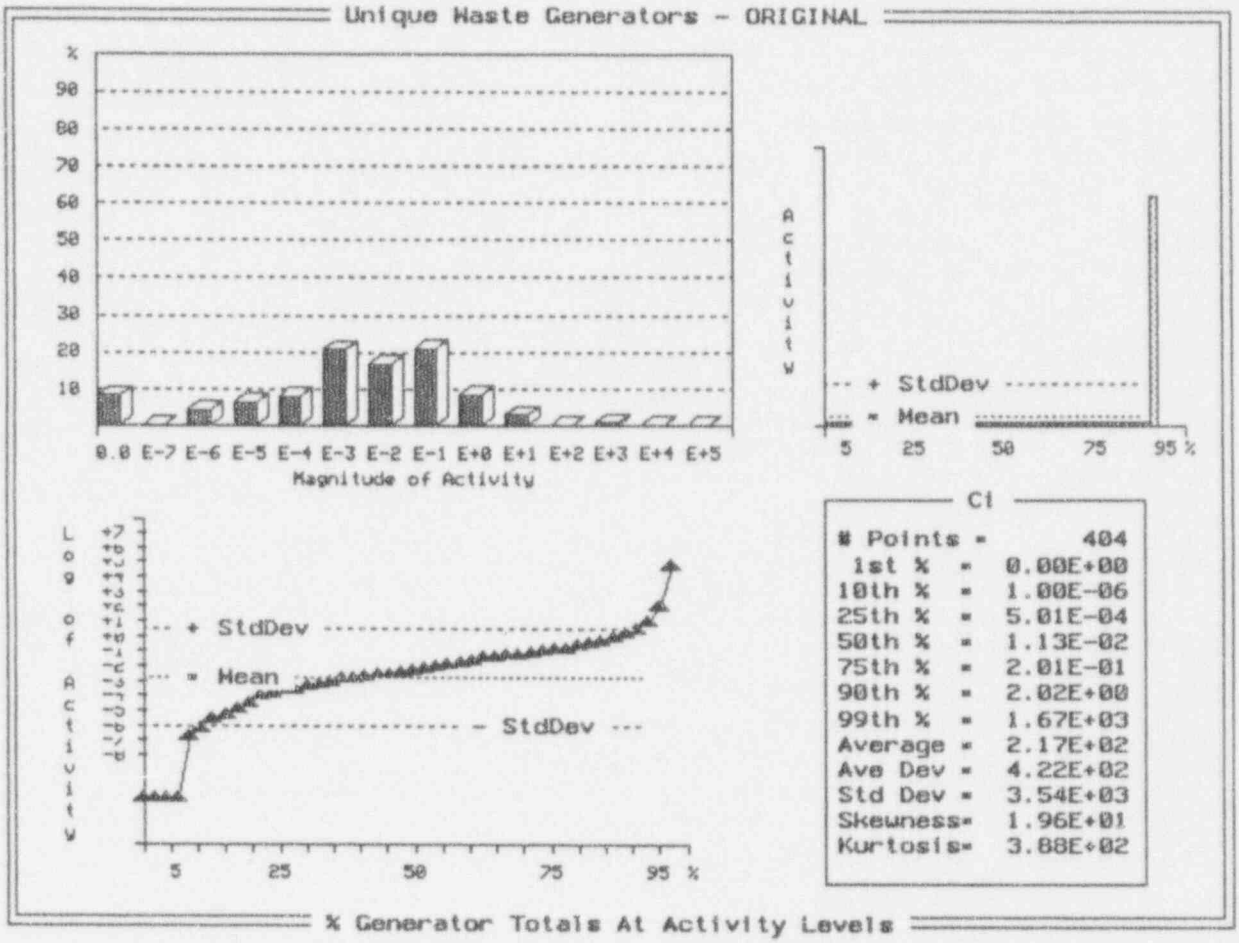

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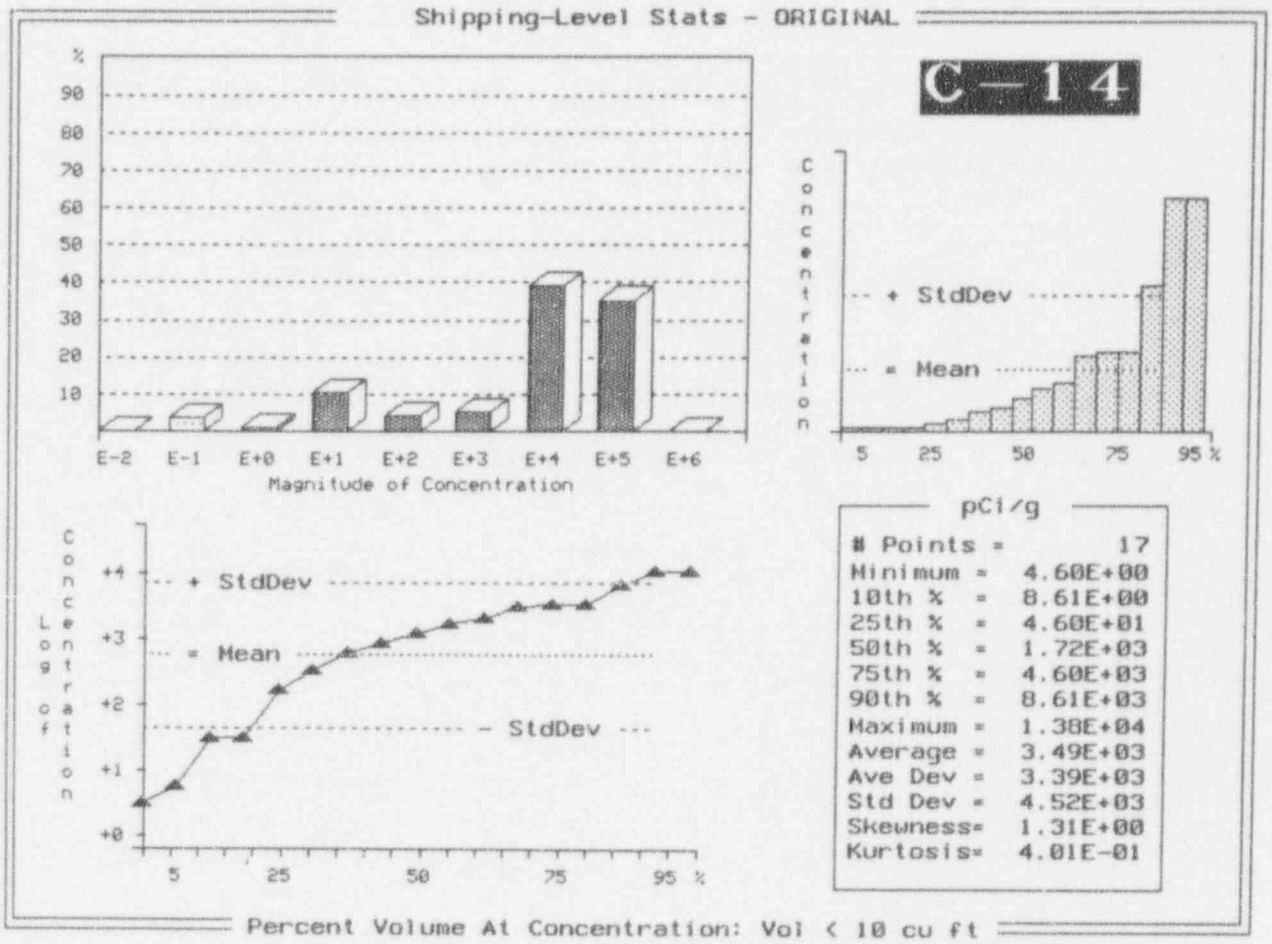

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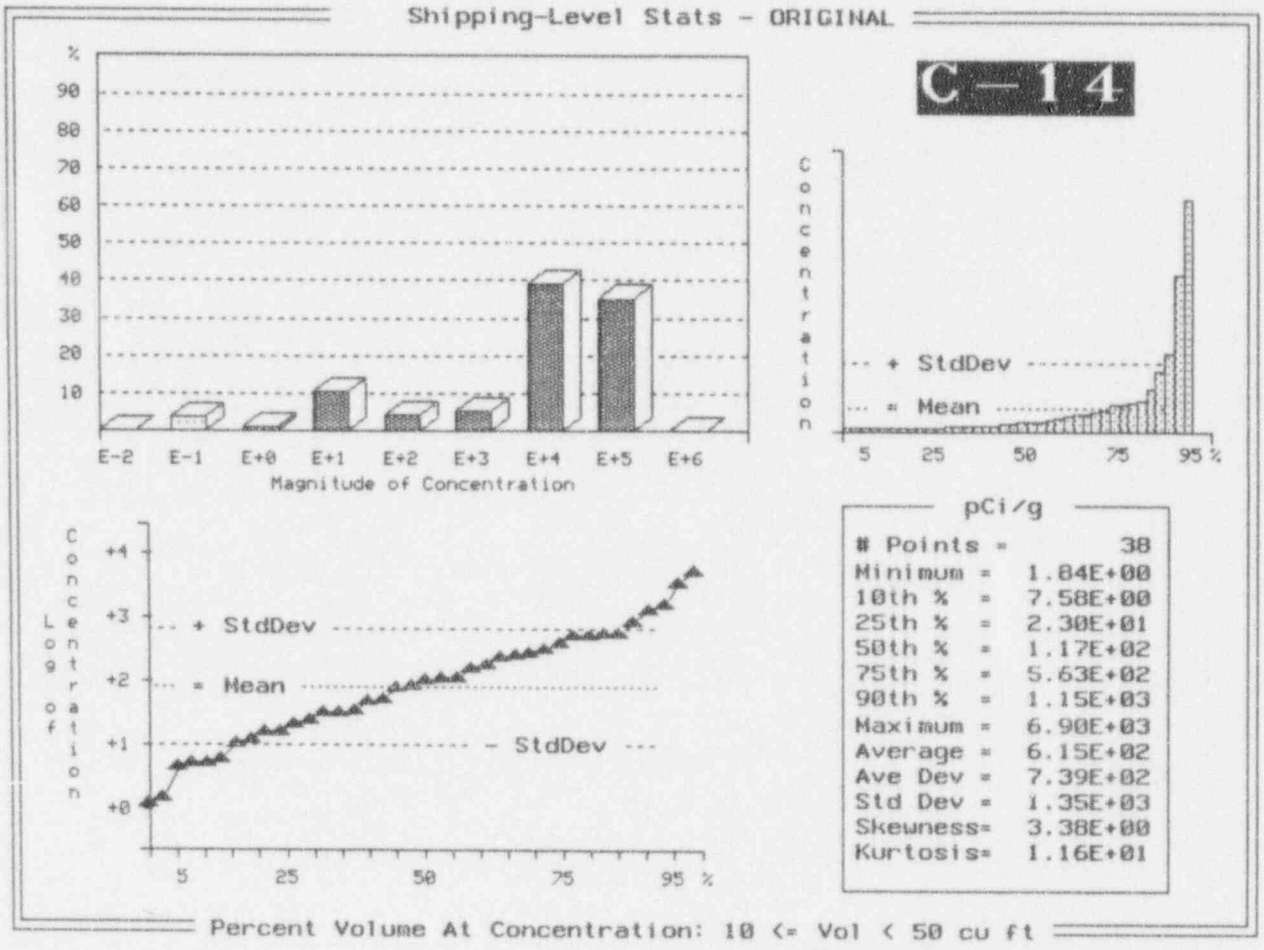

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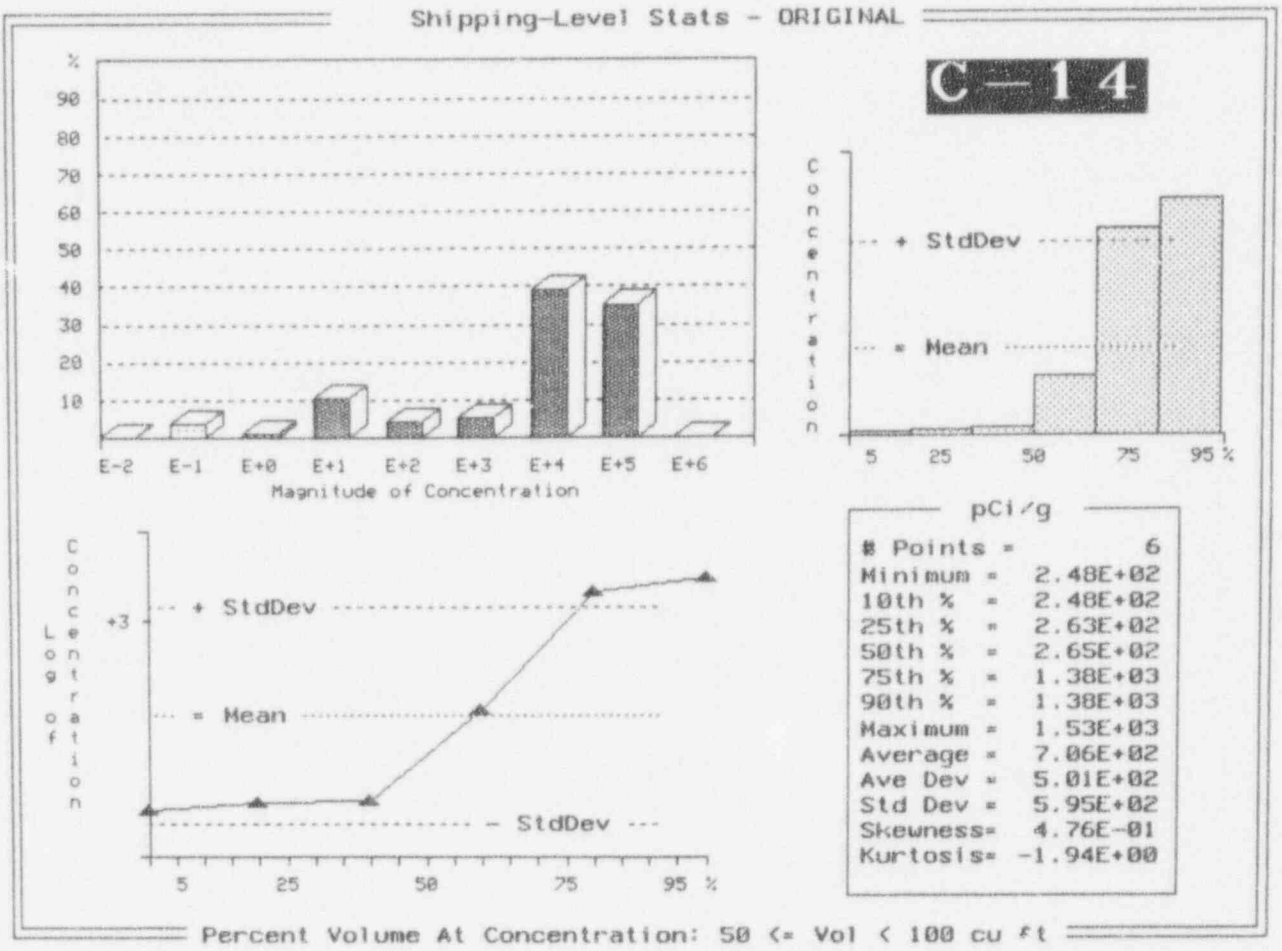

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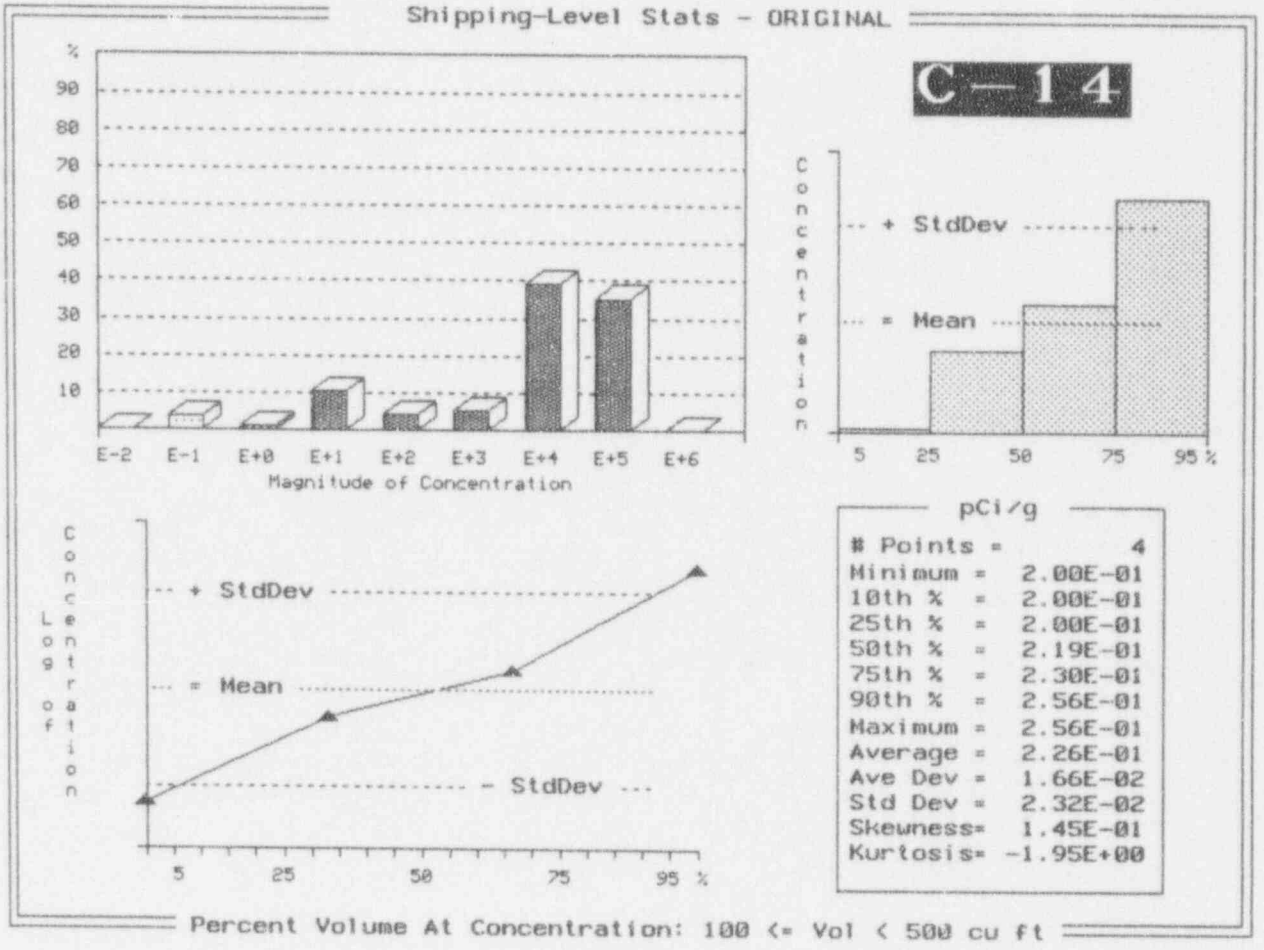

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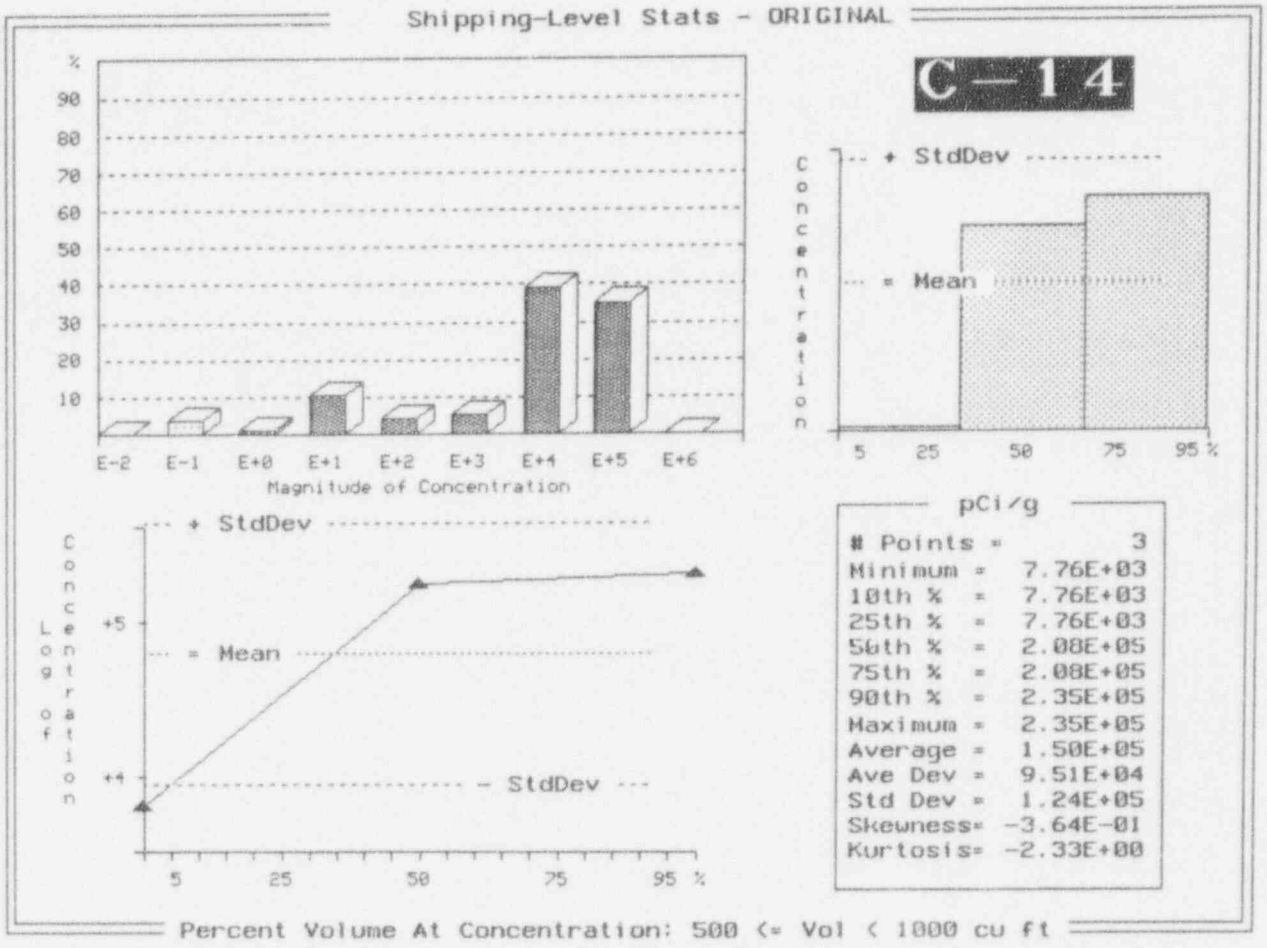

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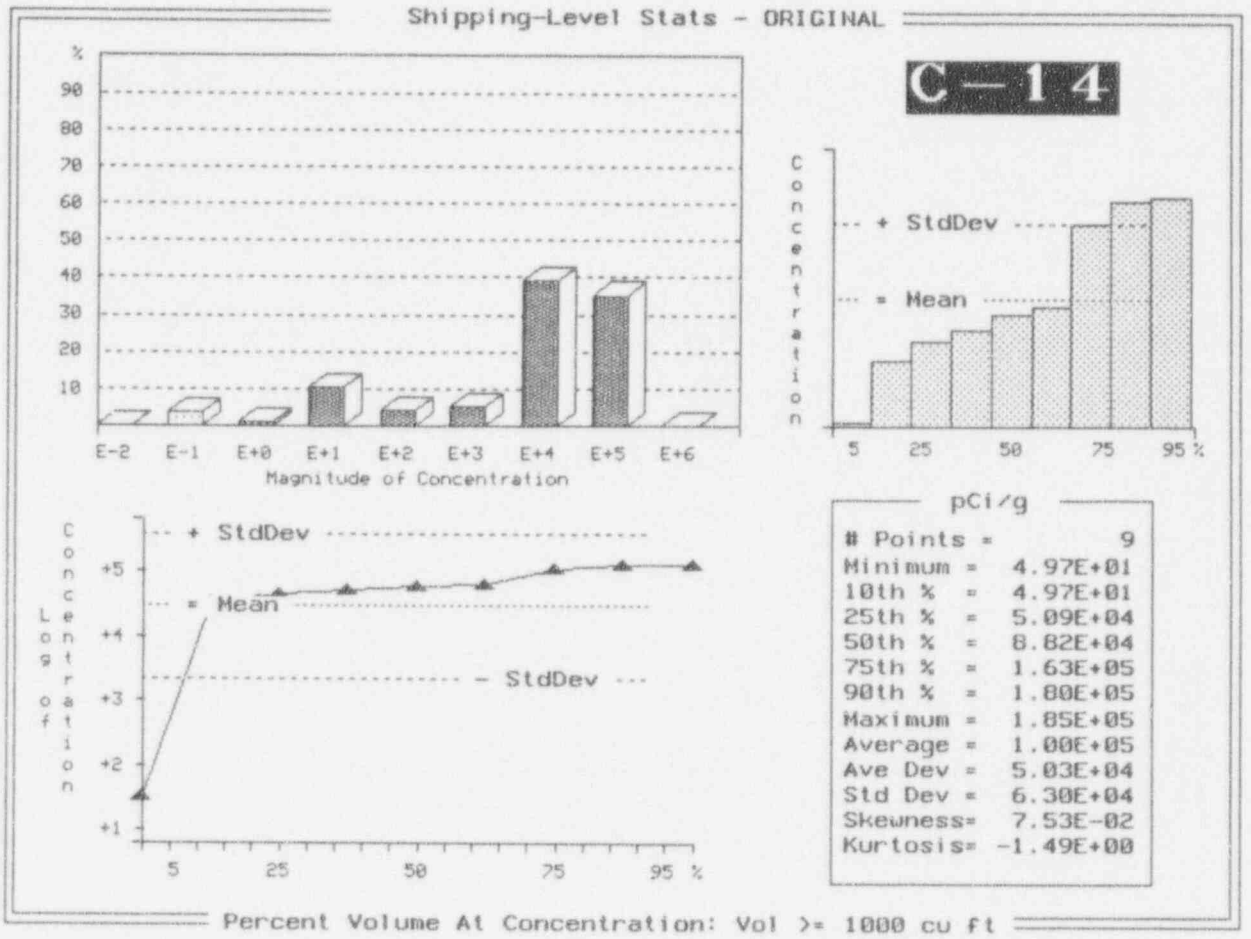

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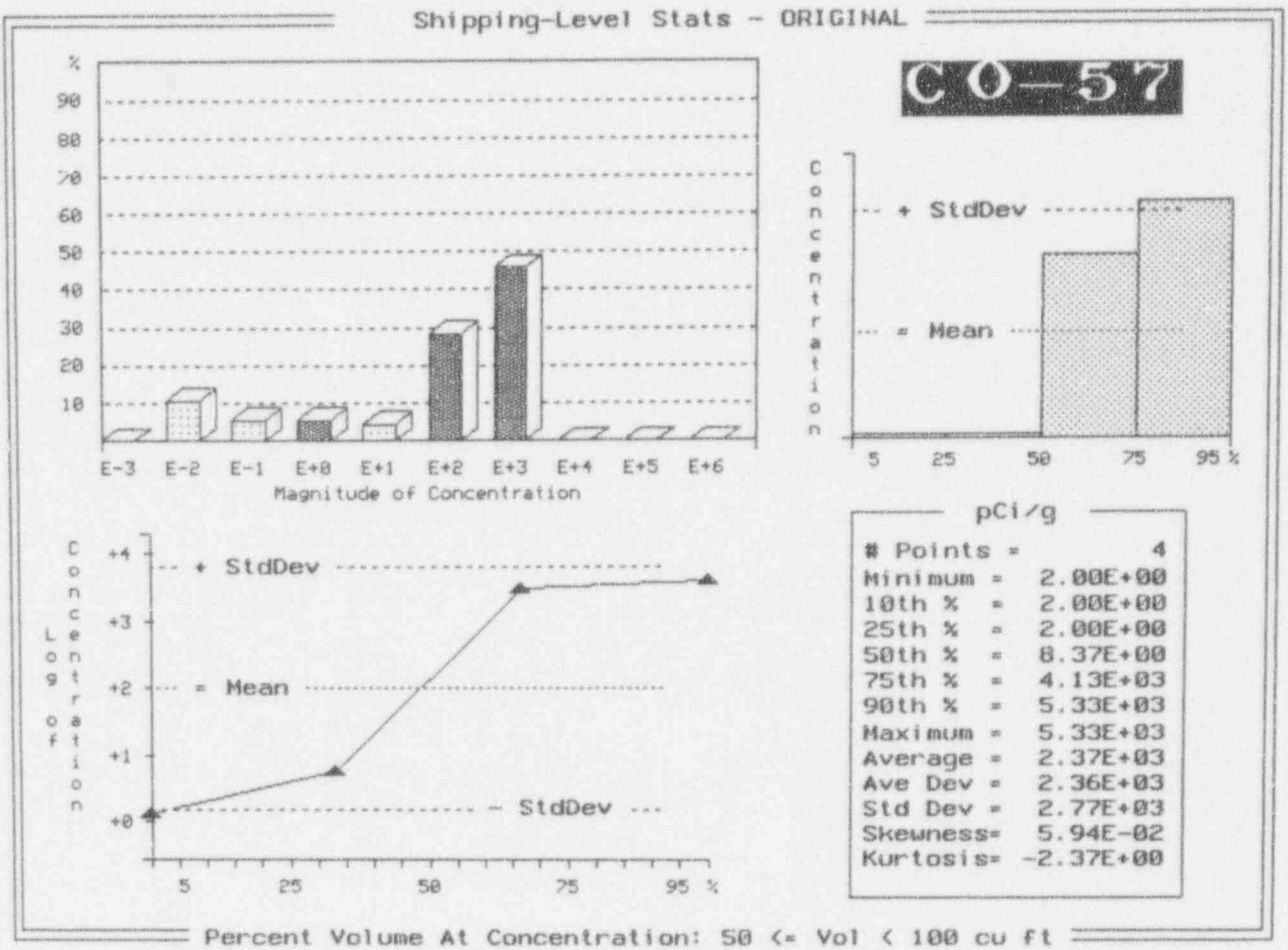

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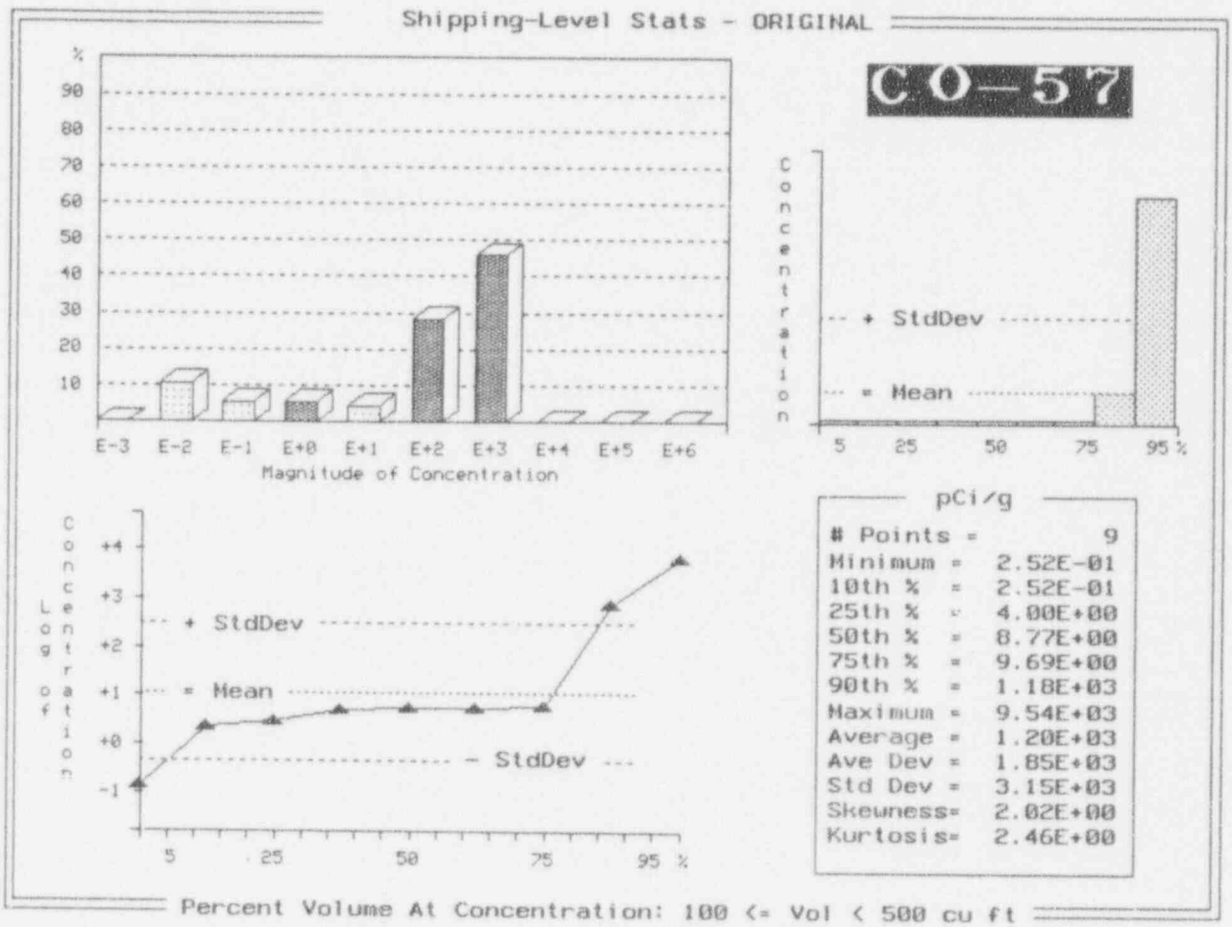

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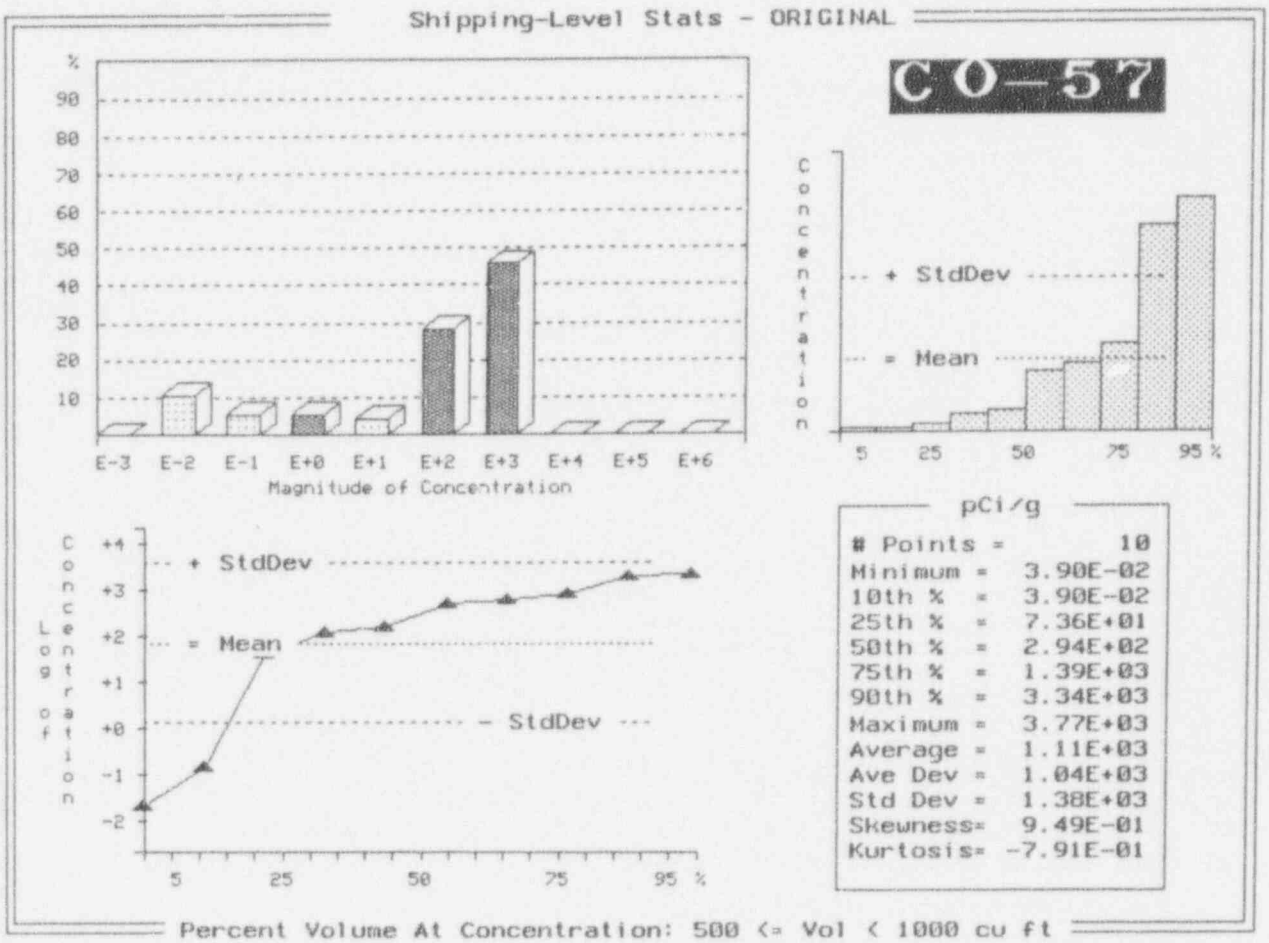

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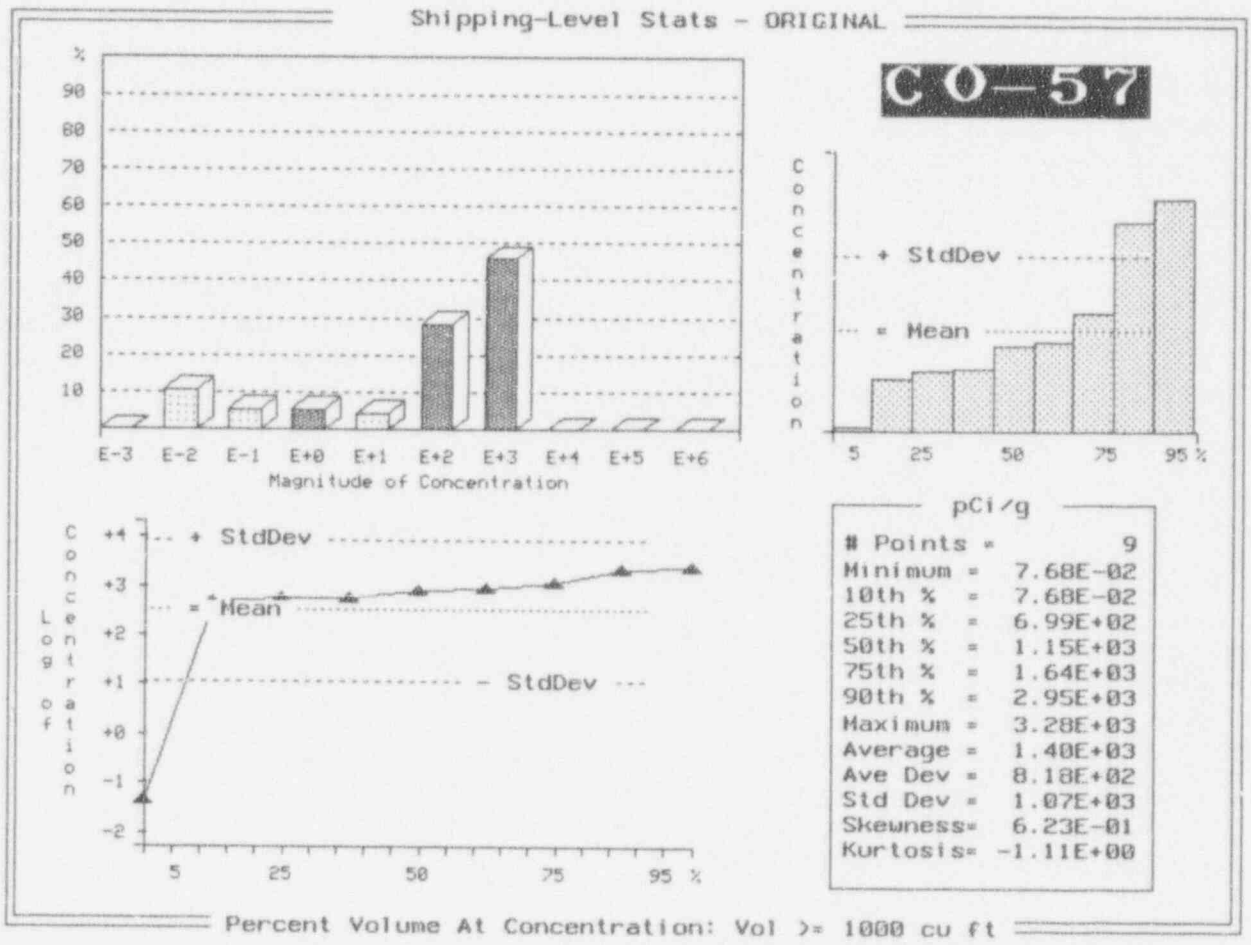

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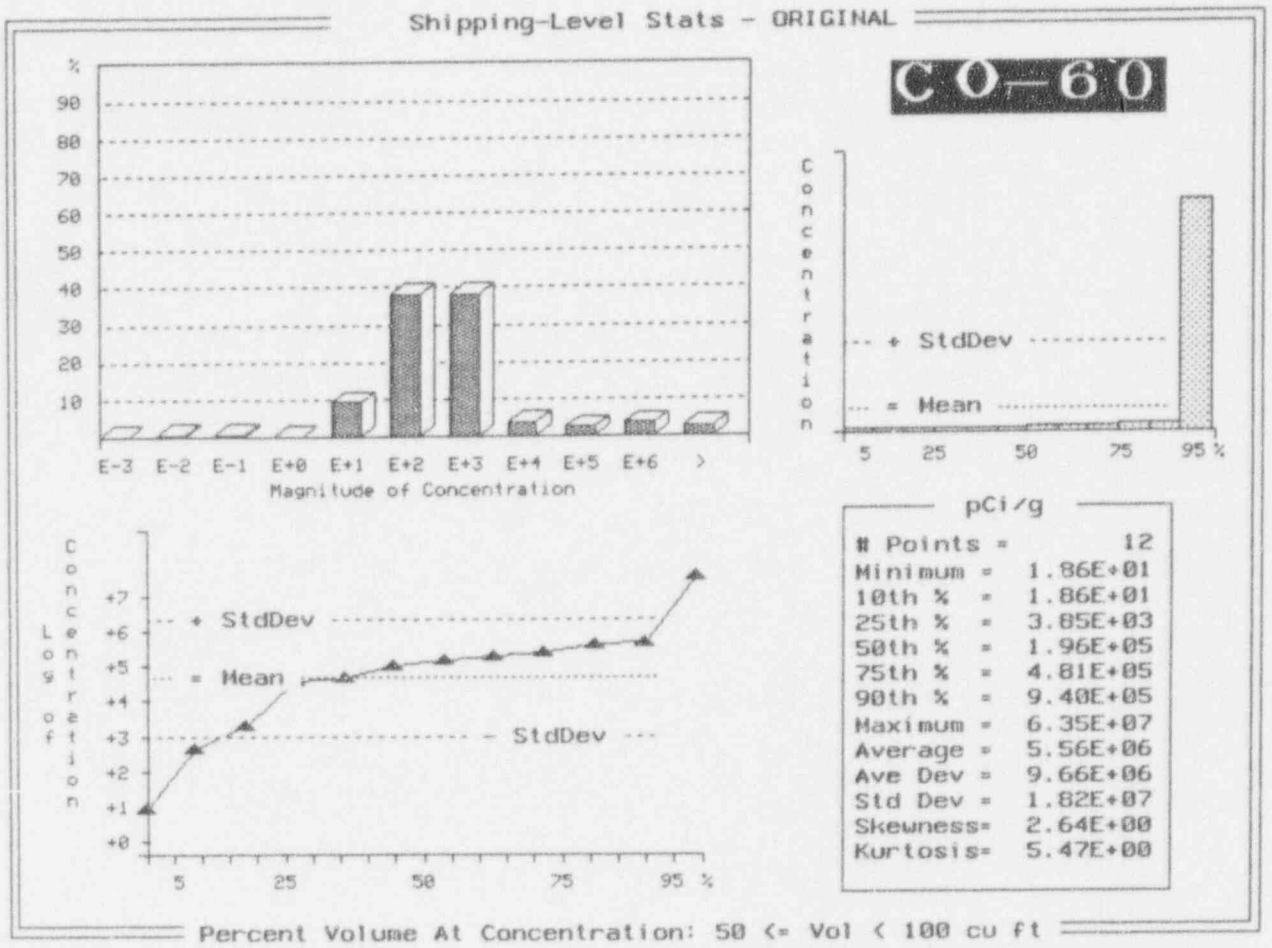

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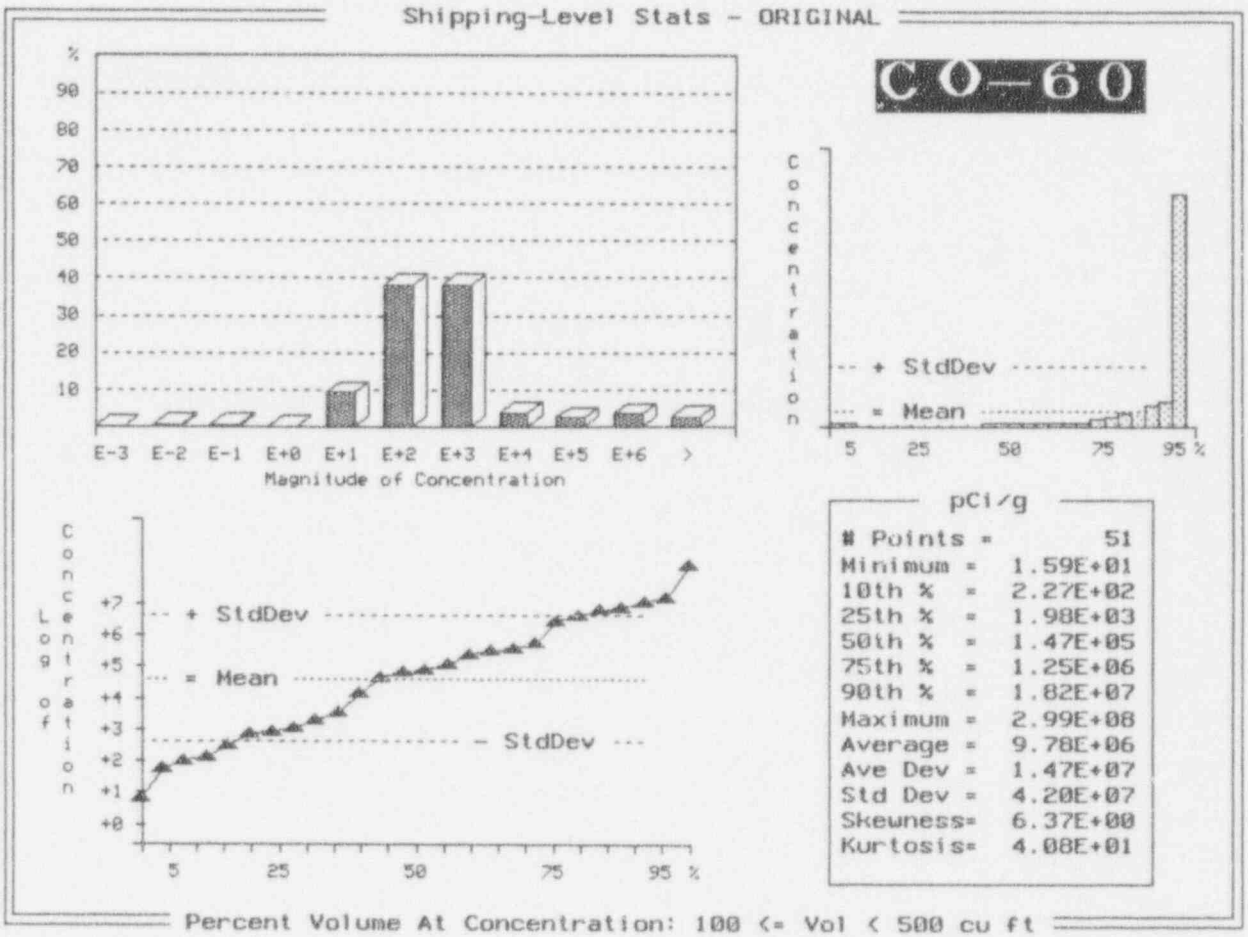

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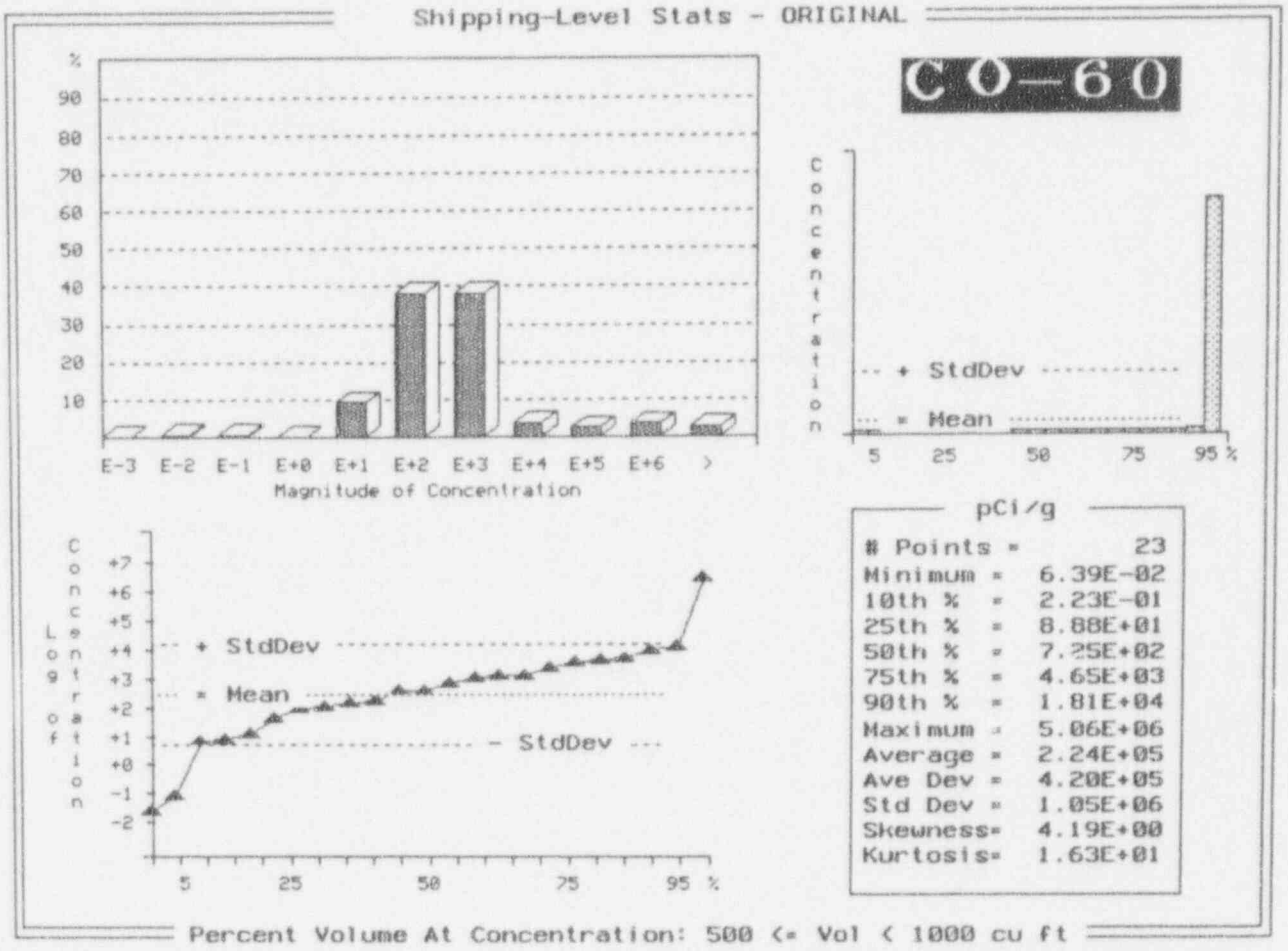

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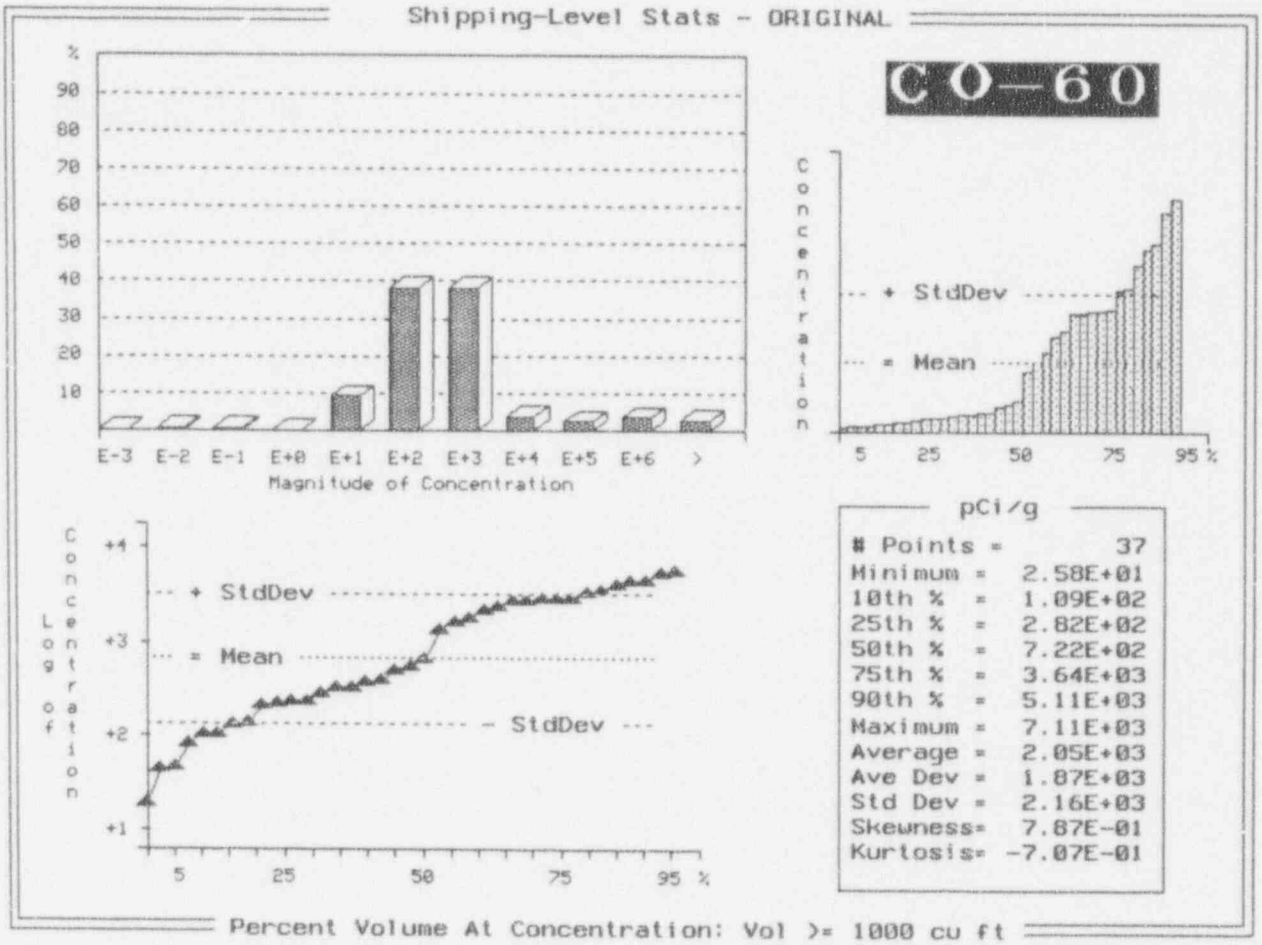

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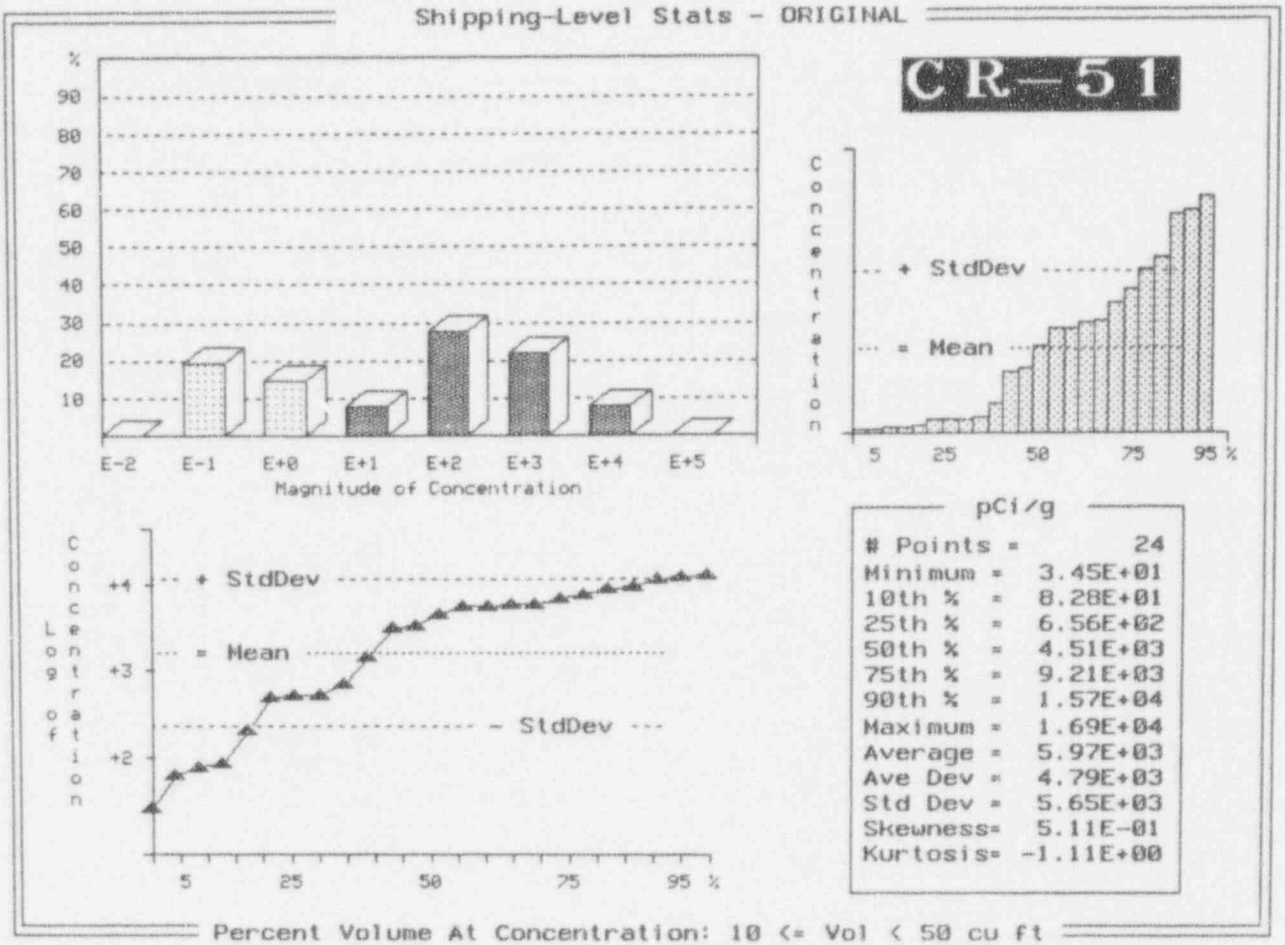

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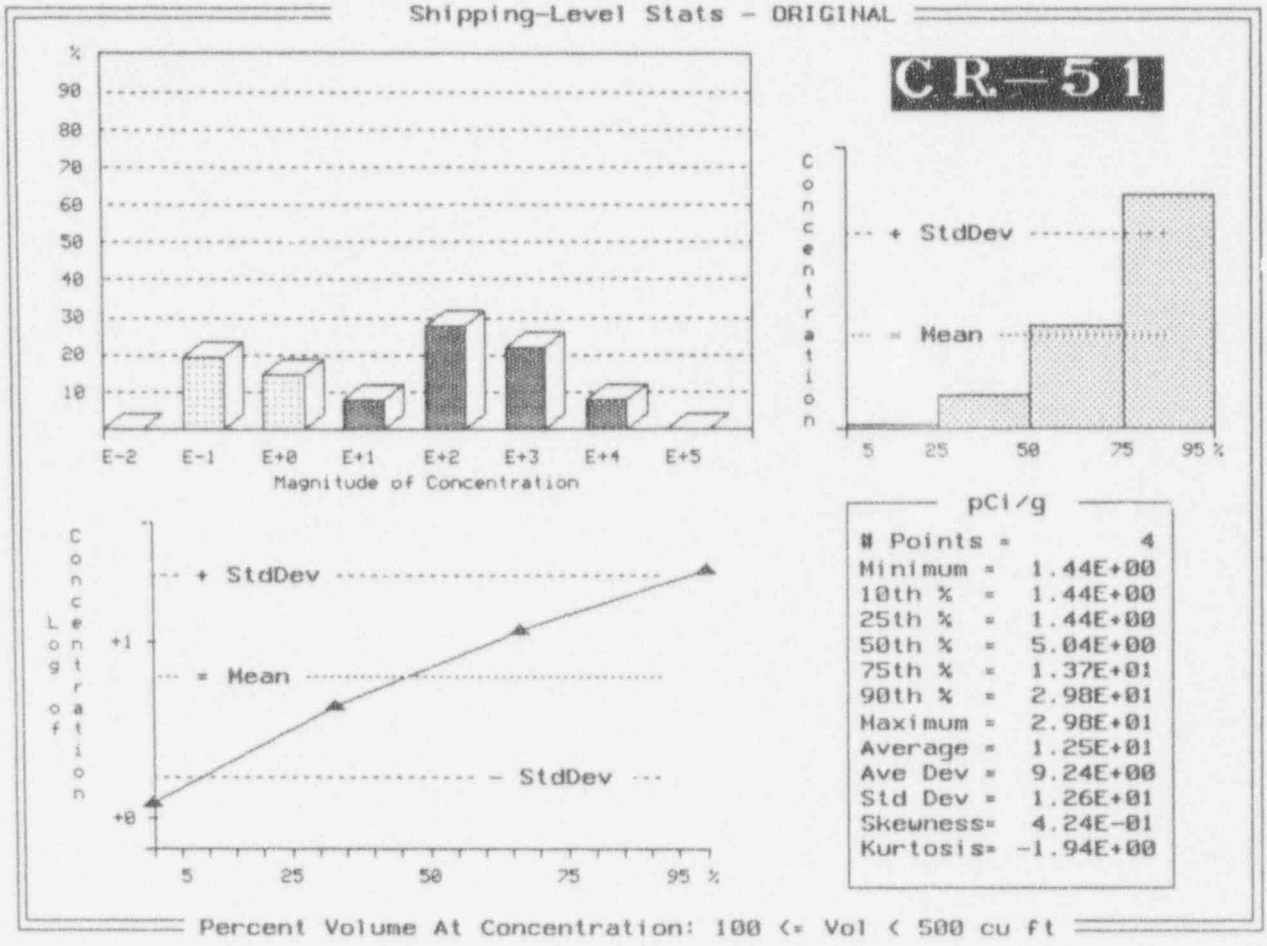

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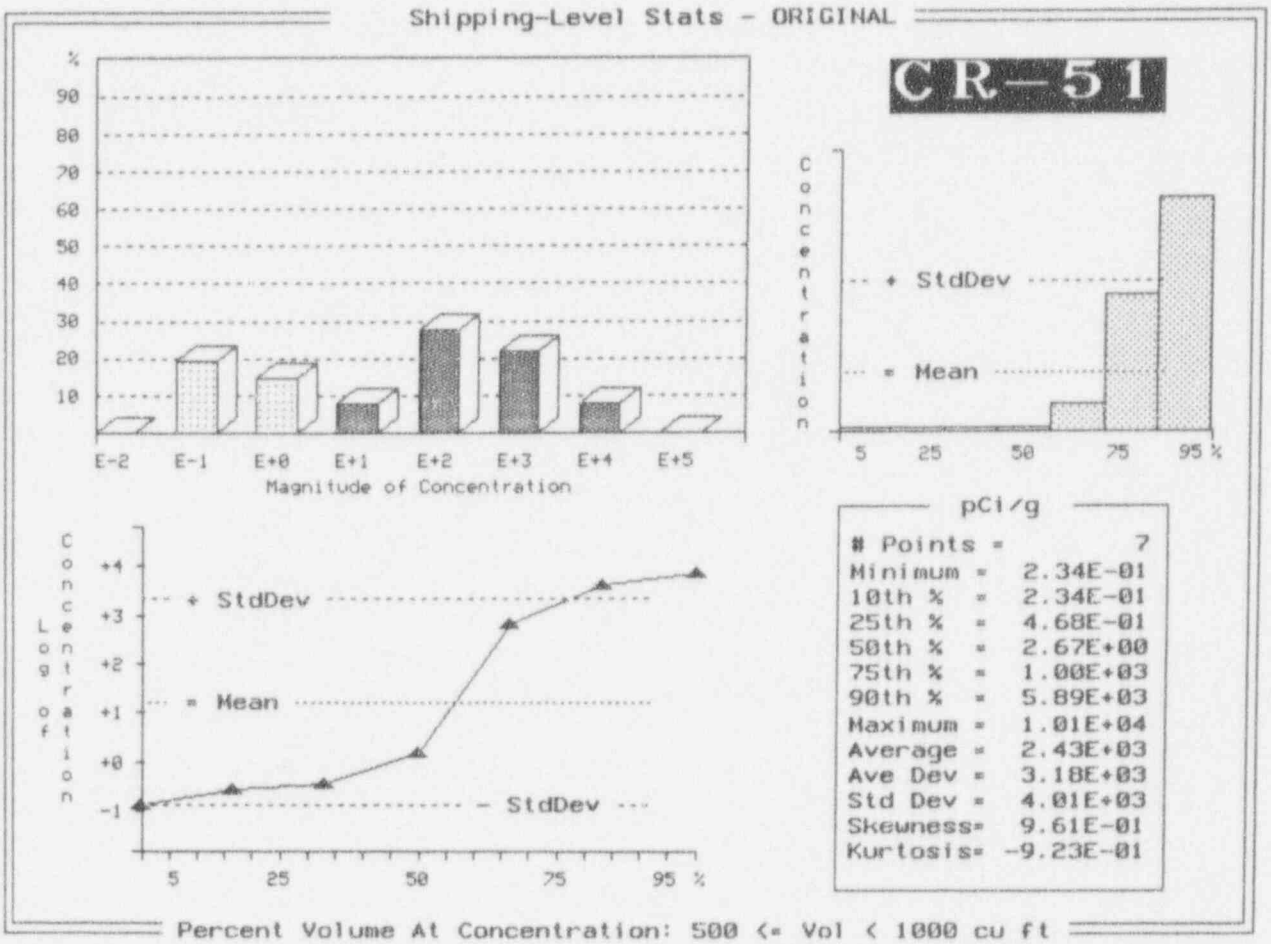

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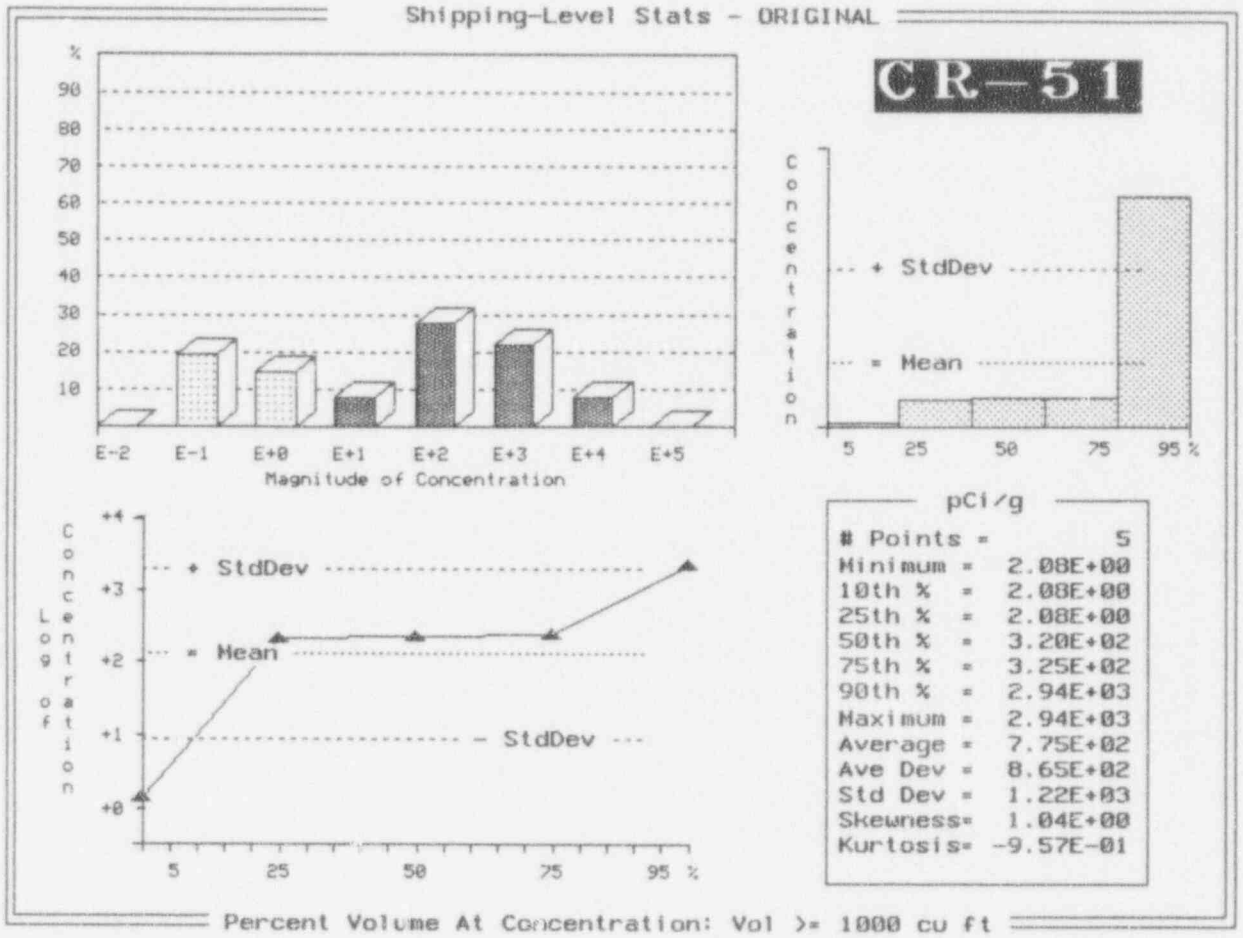

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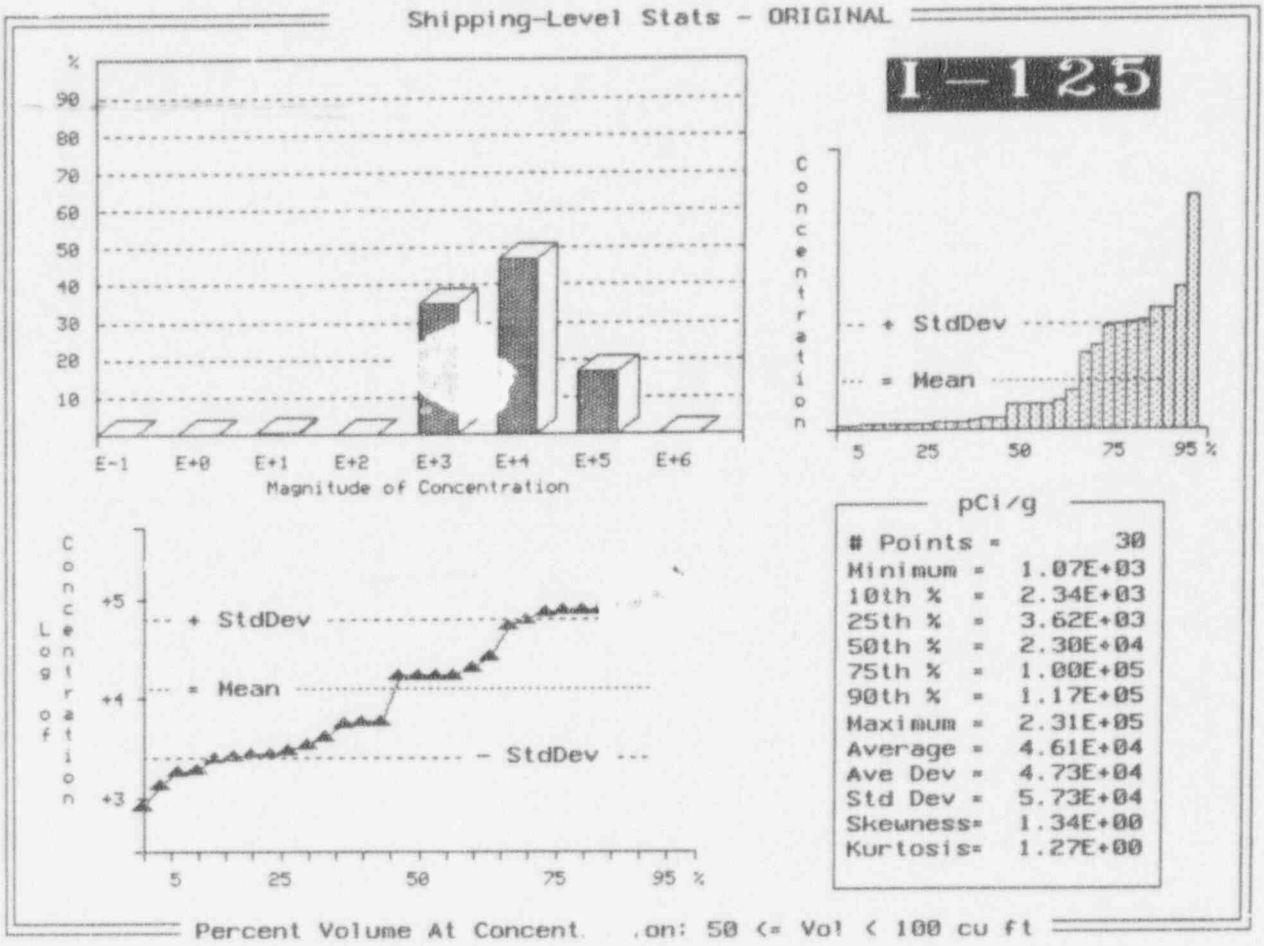

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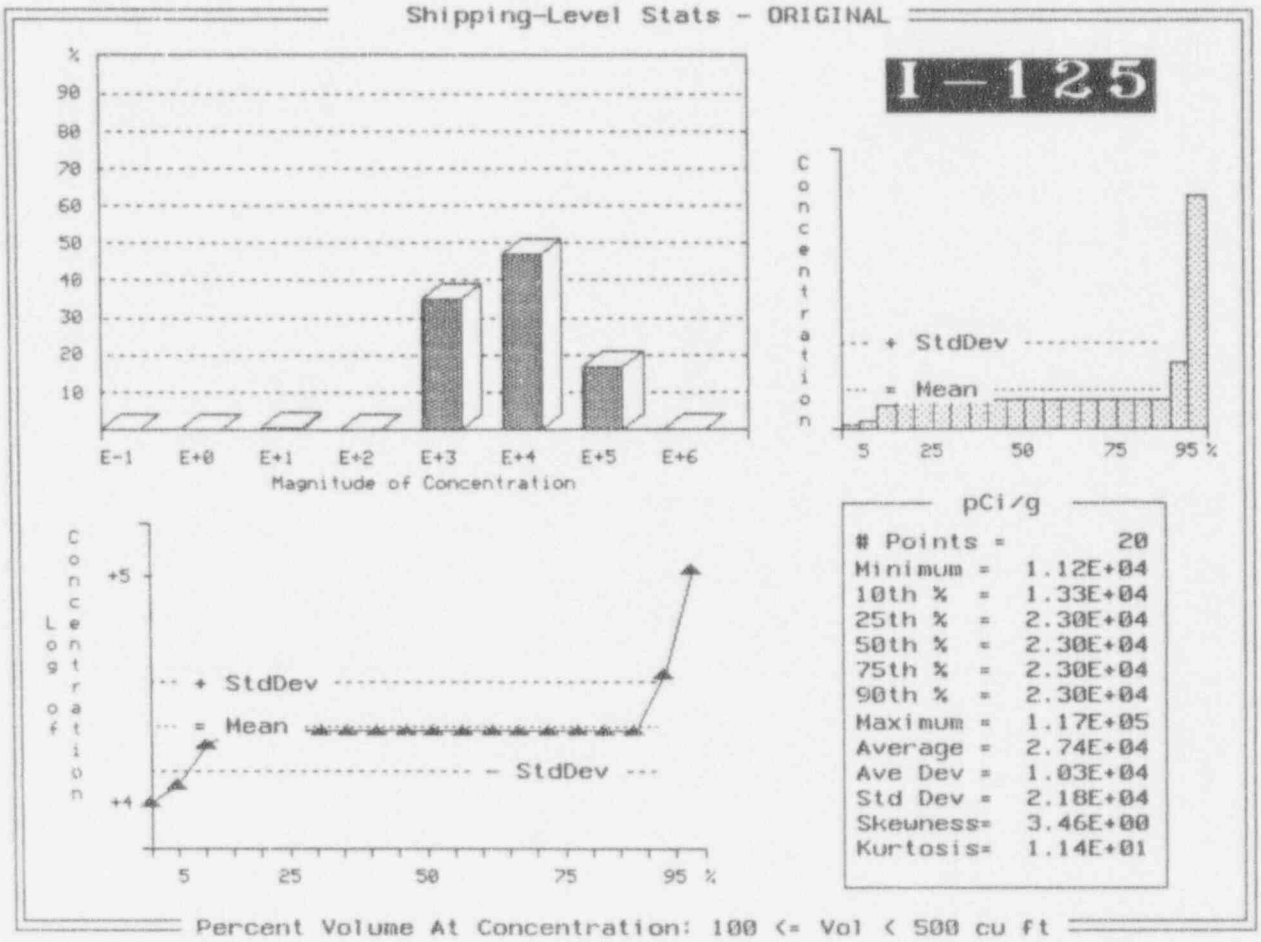

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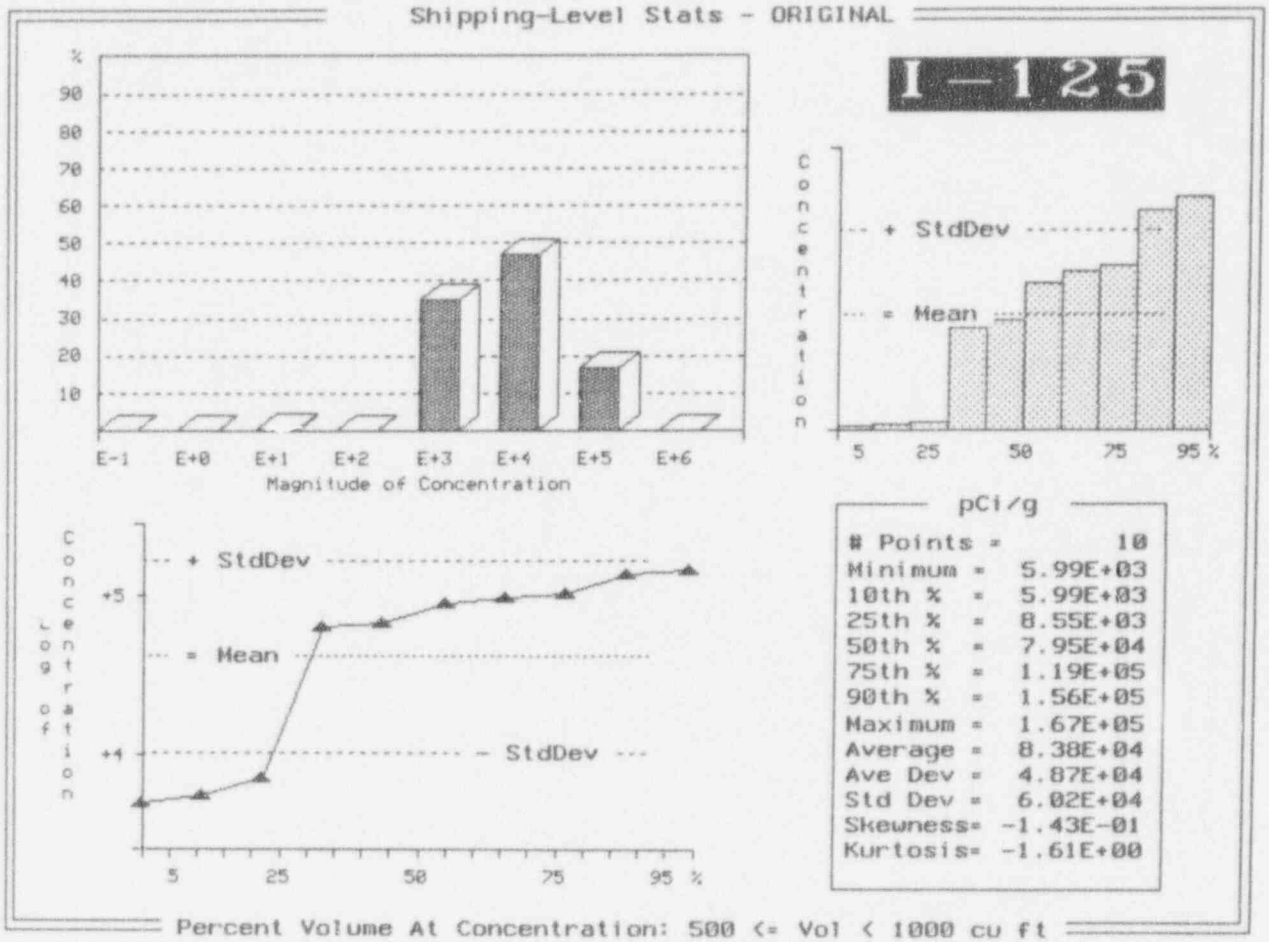

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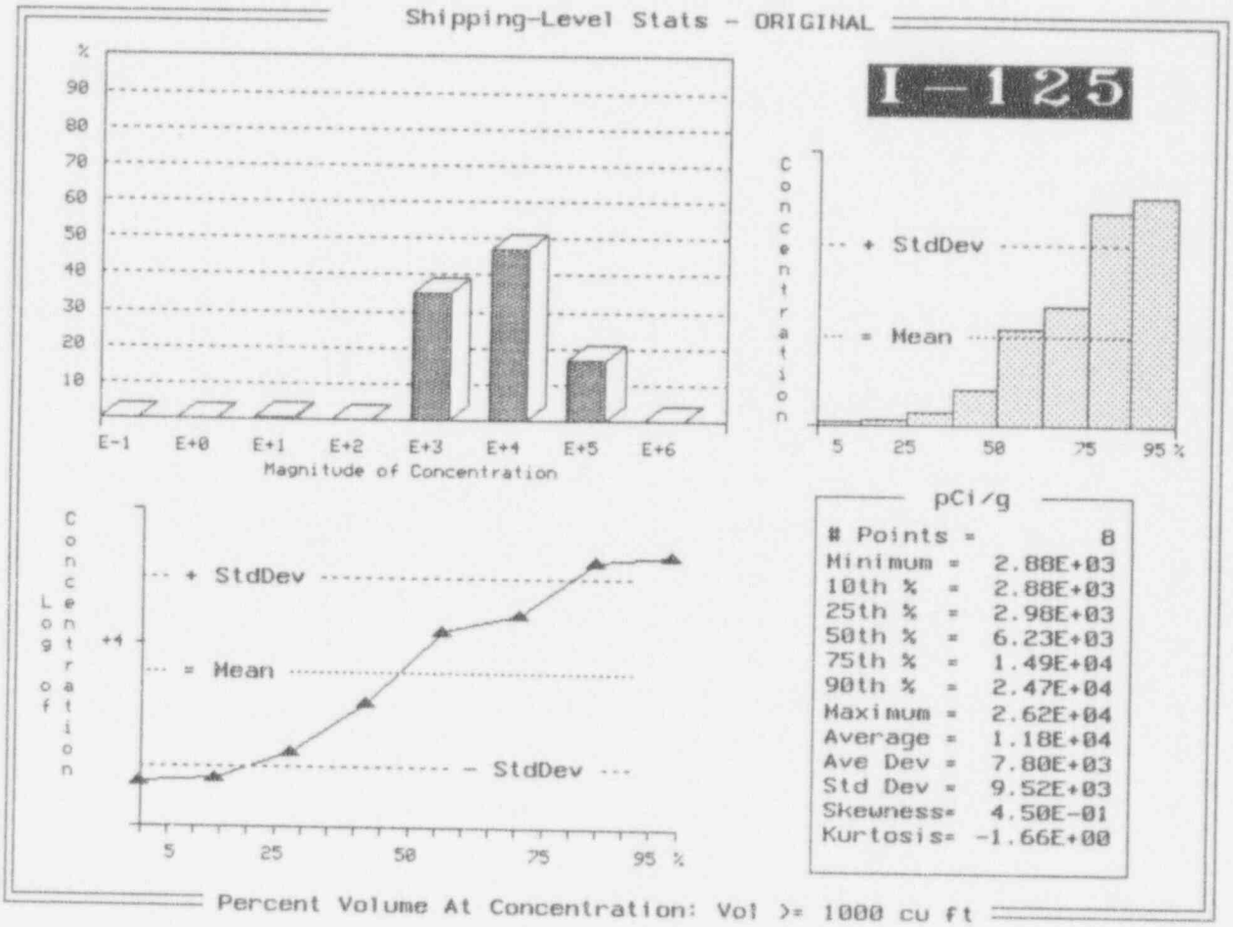

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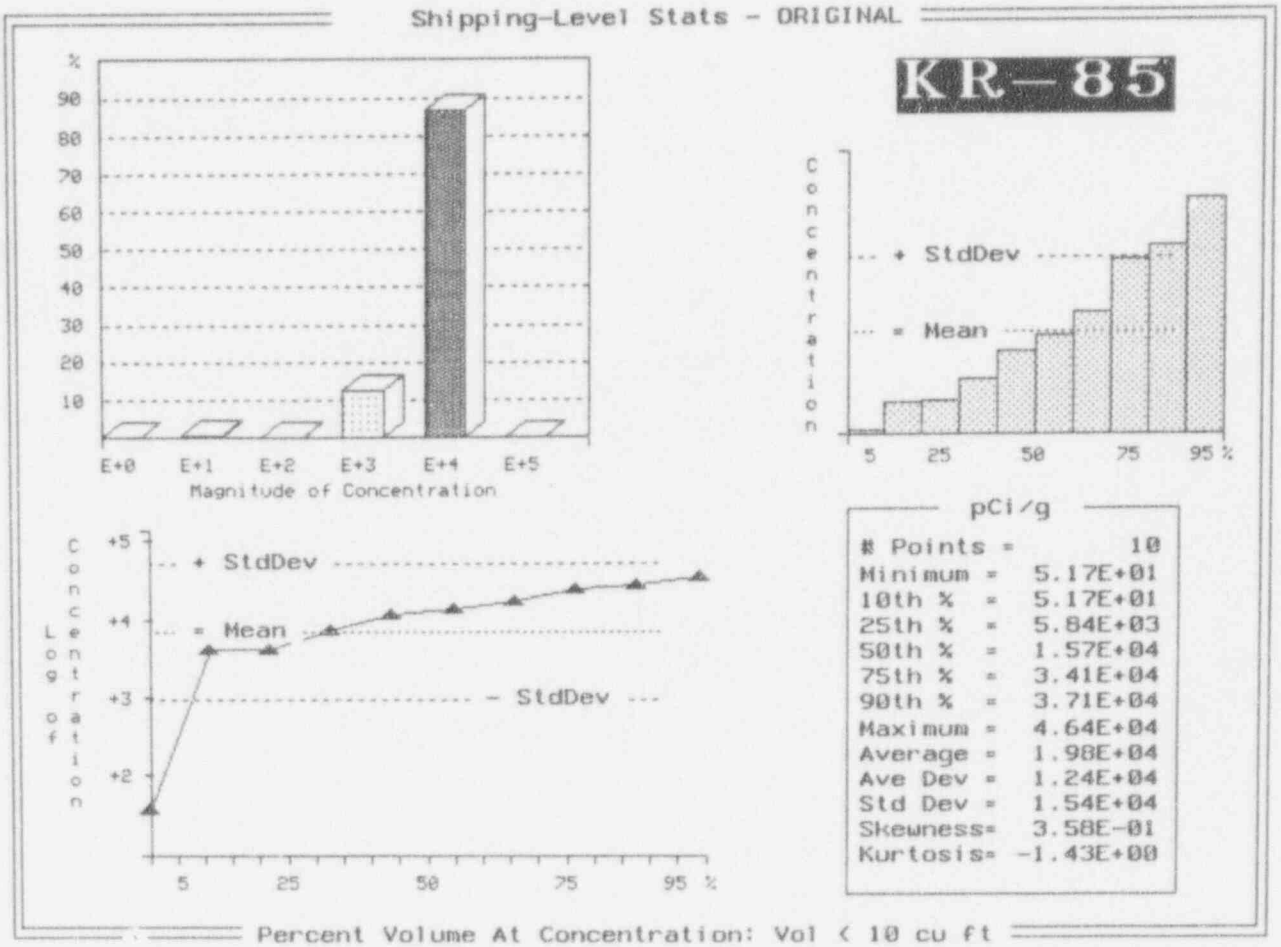

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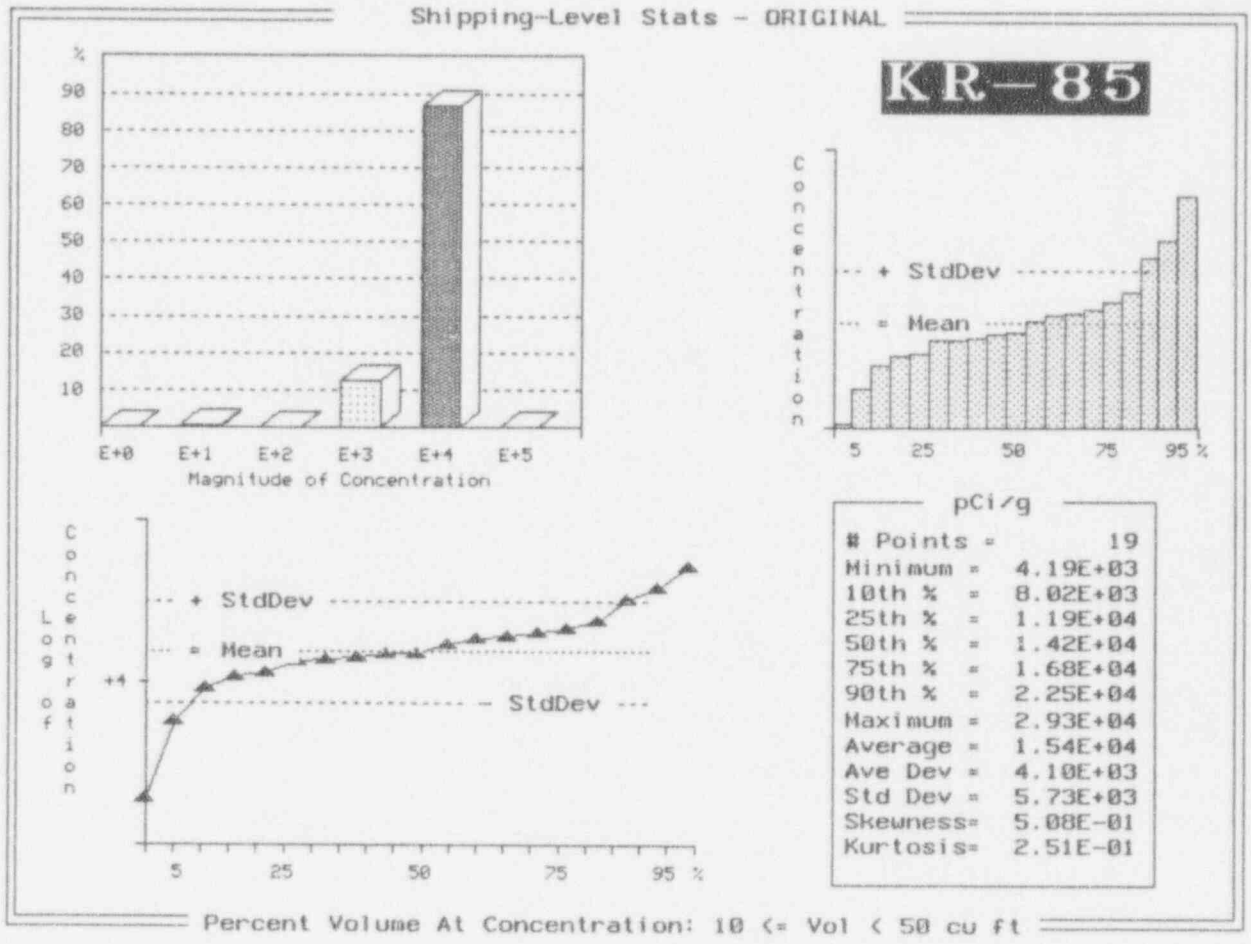

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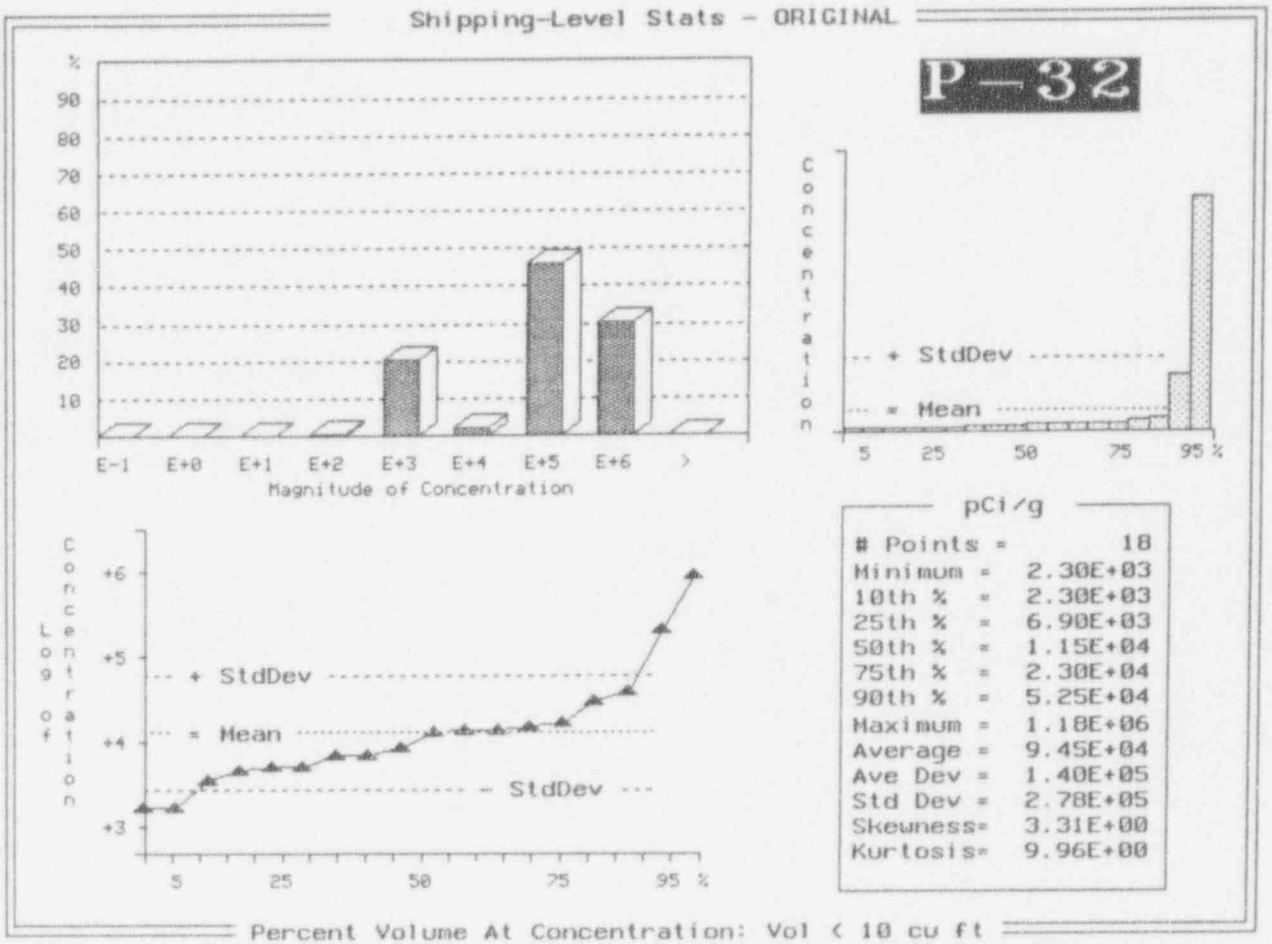

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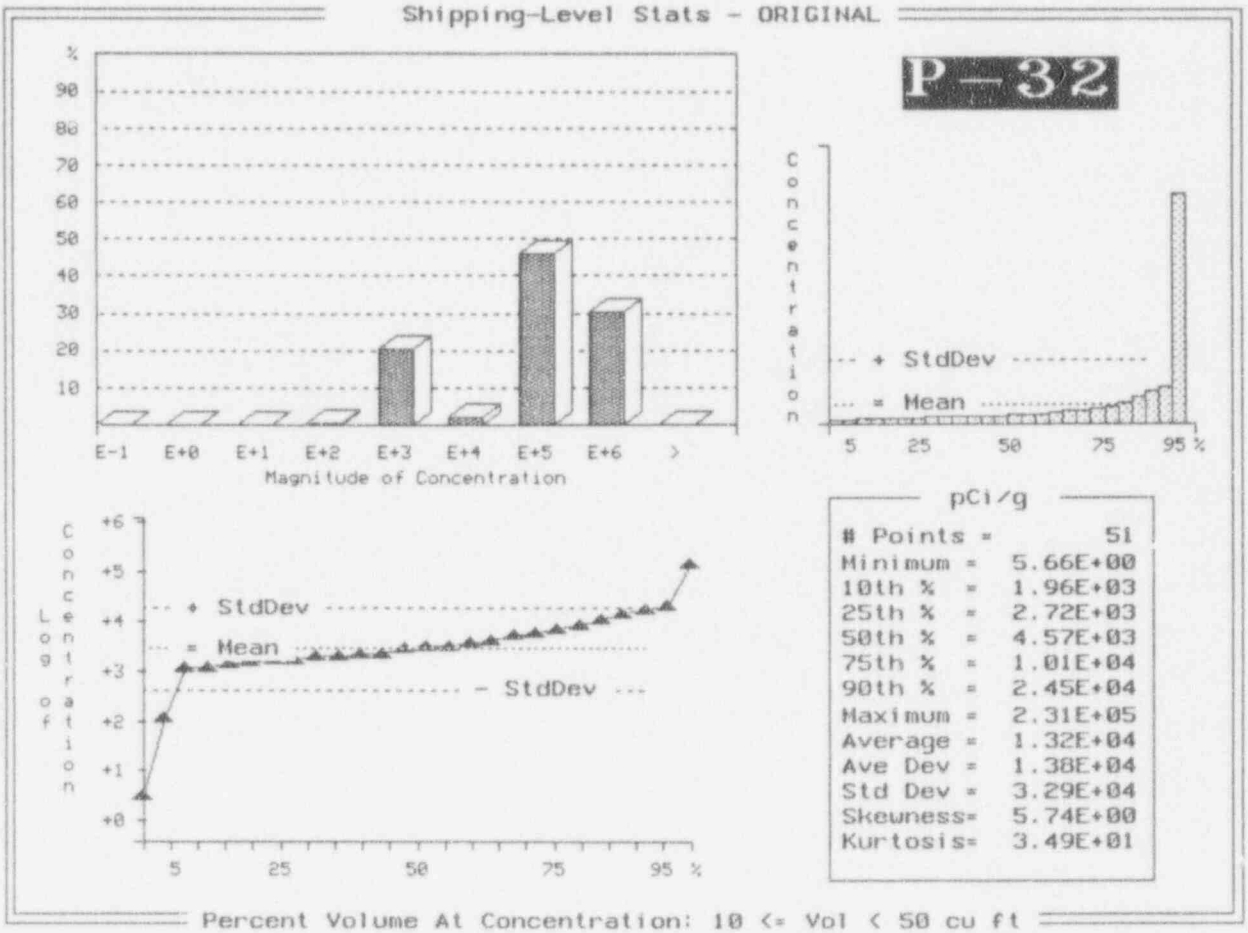

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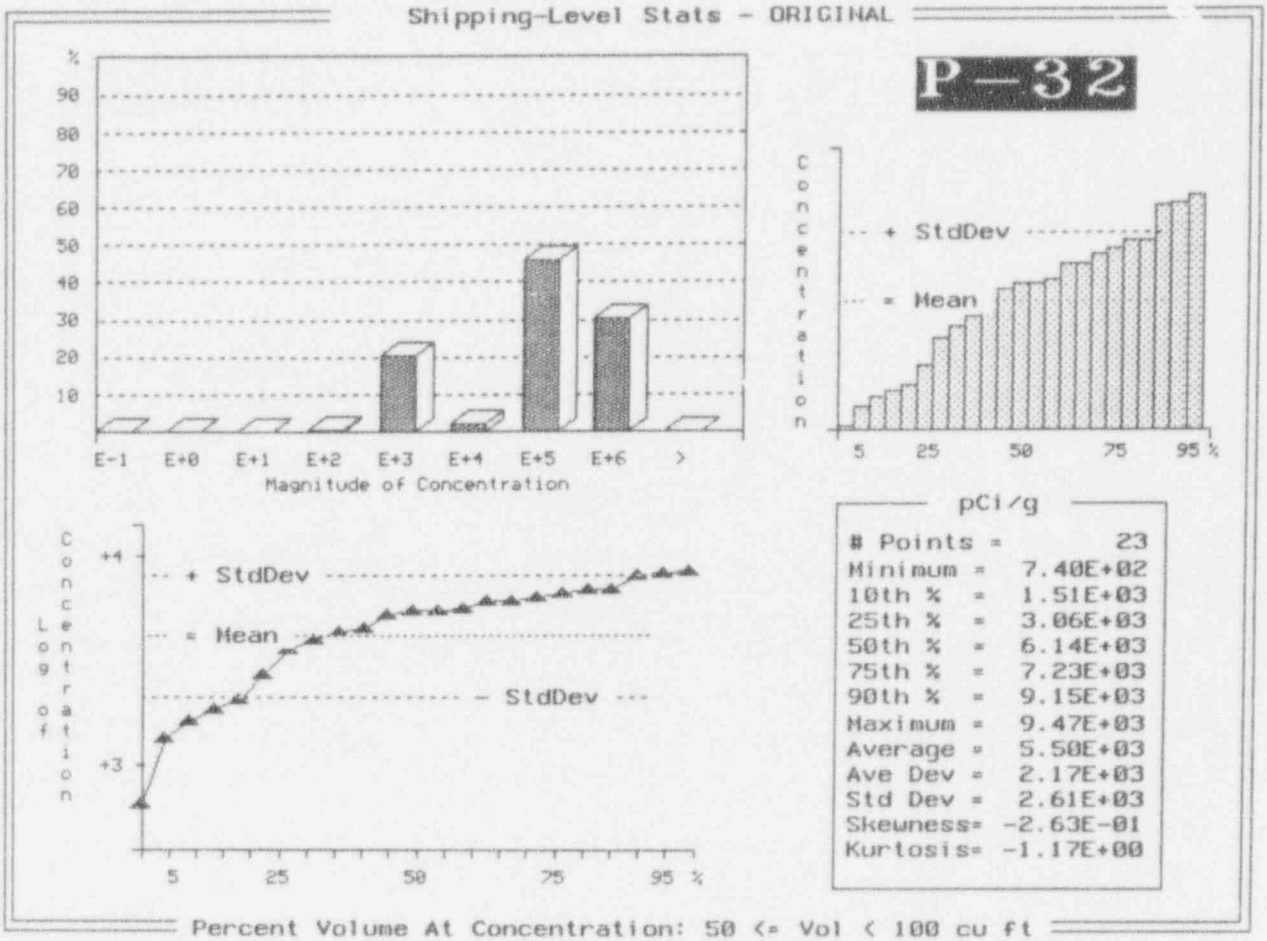


Exhibit F-36 (Continued)

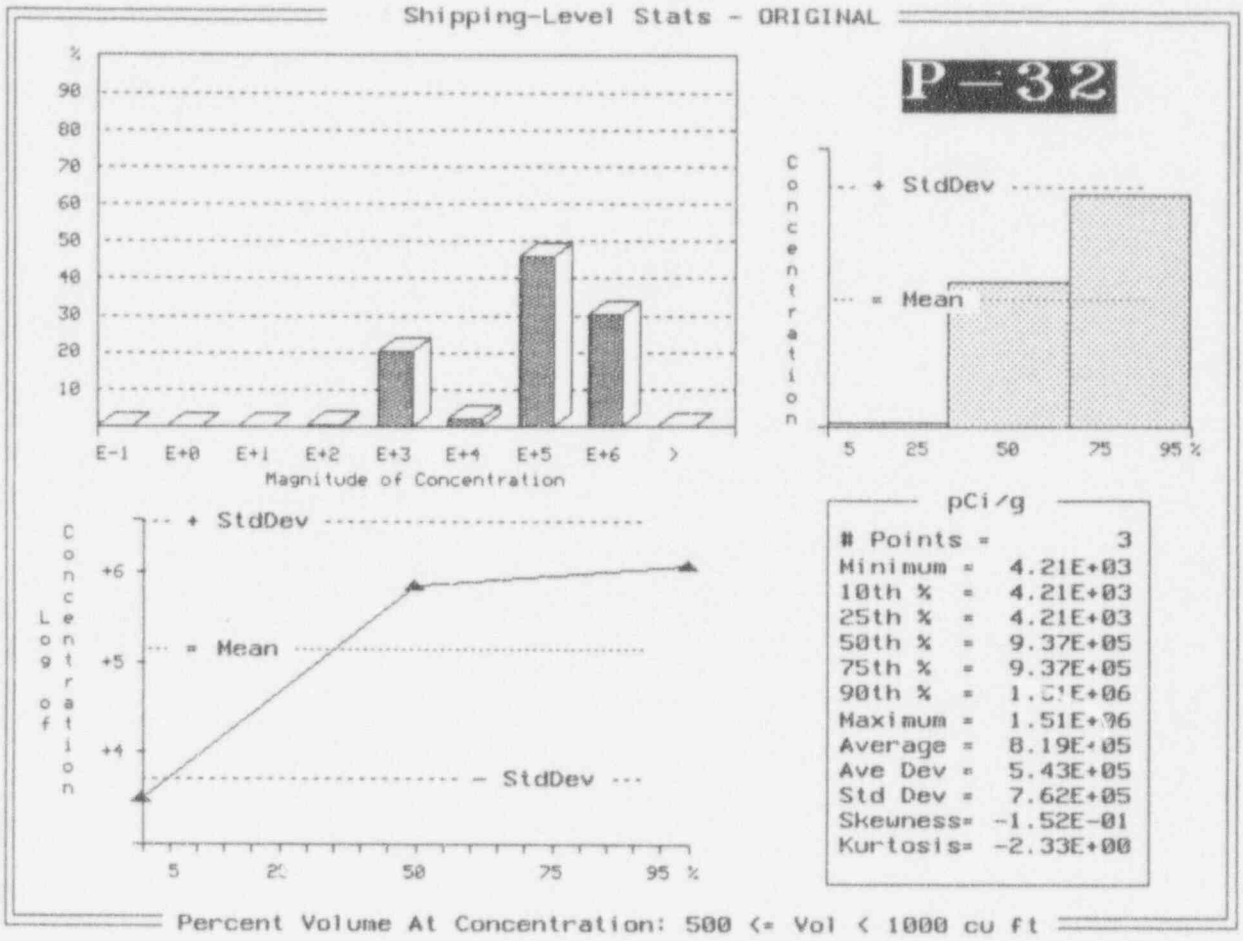


Exhibit F-36 (Continued)

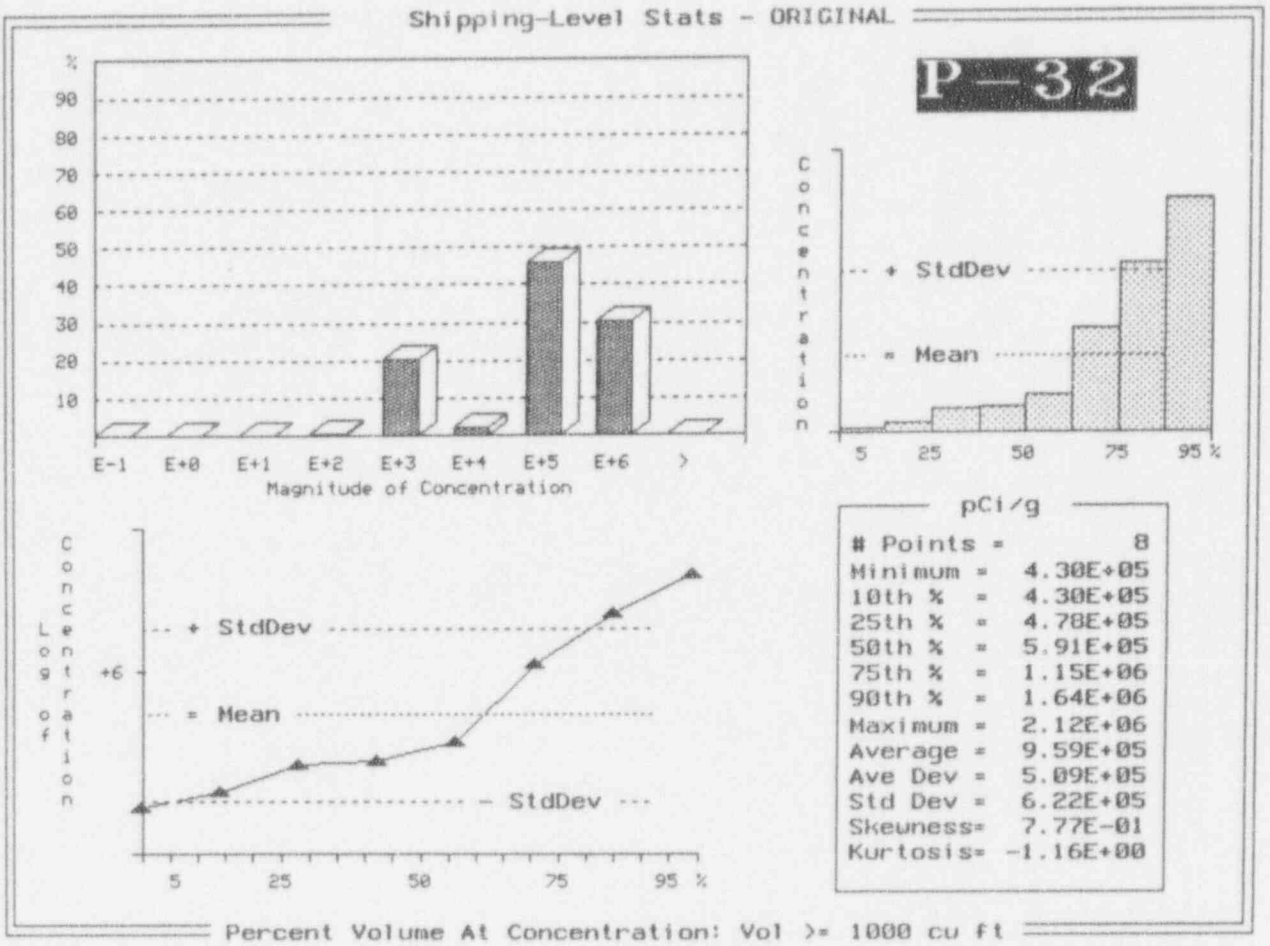


Exhibit F-36 (Continued)

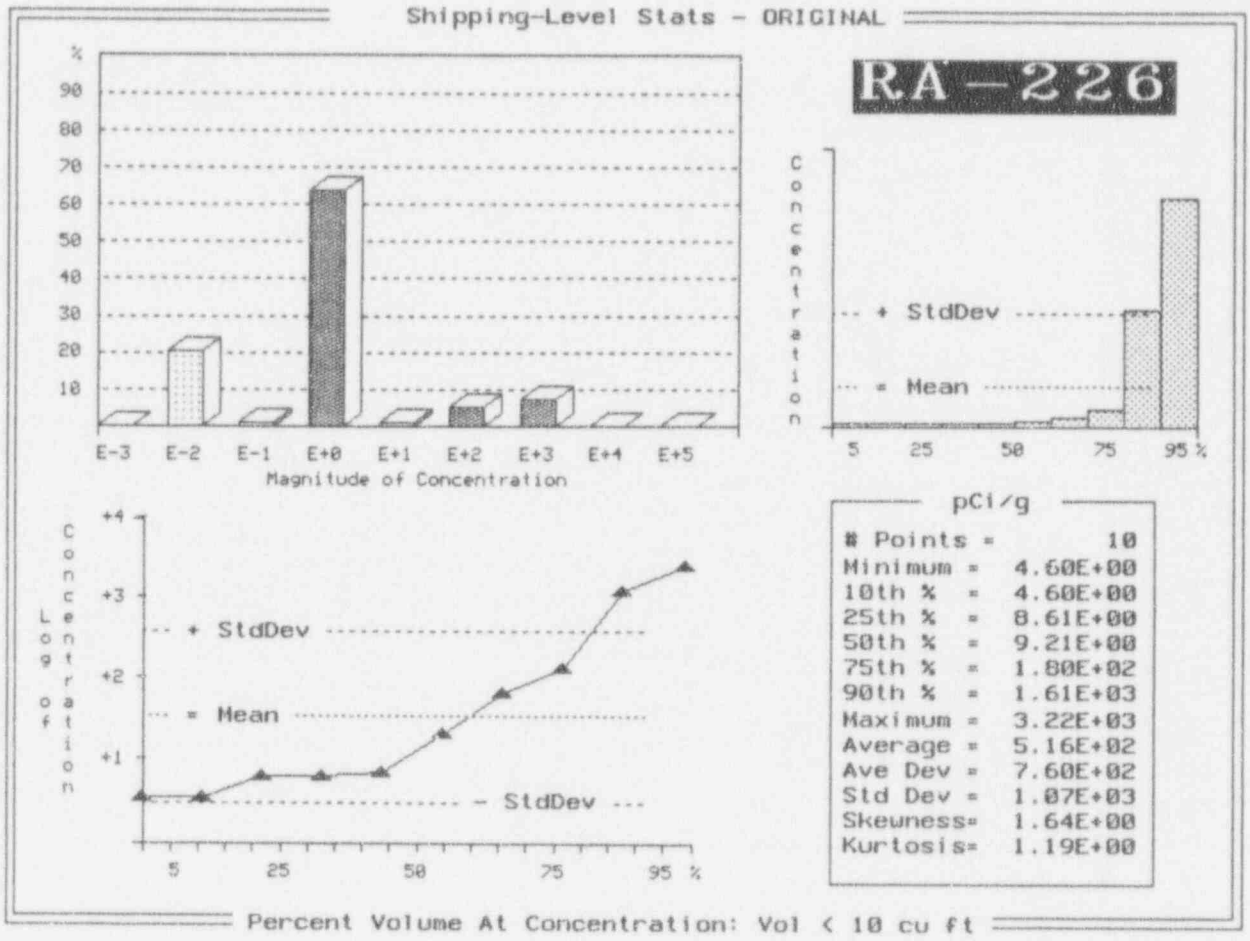


Exhibit F-36 (Continued)

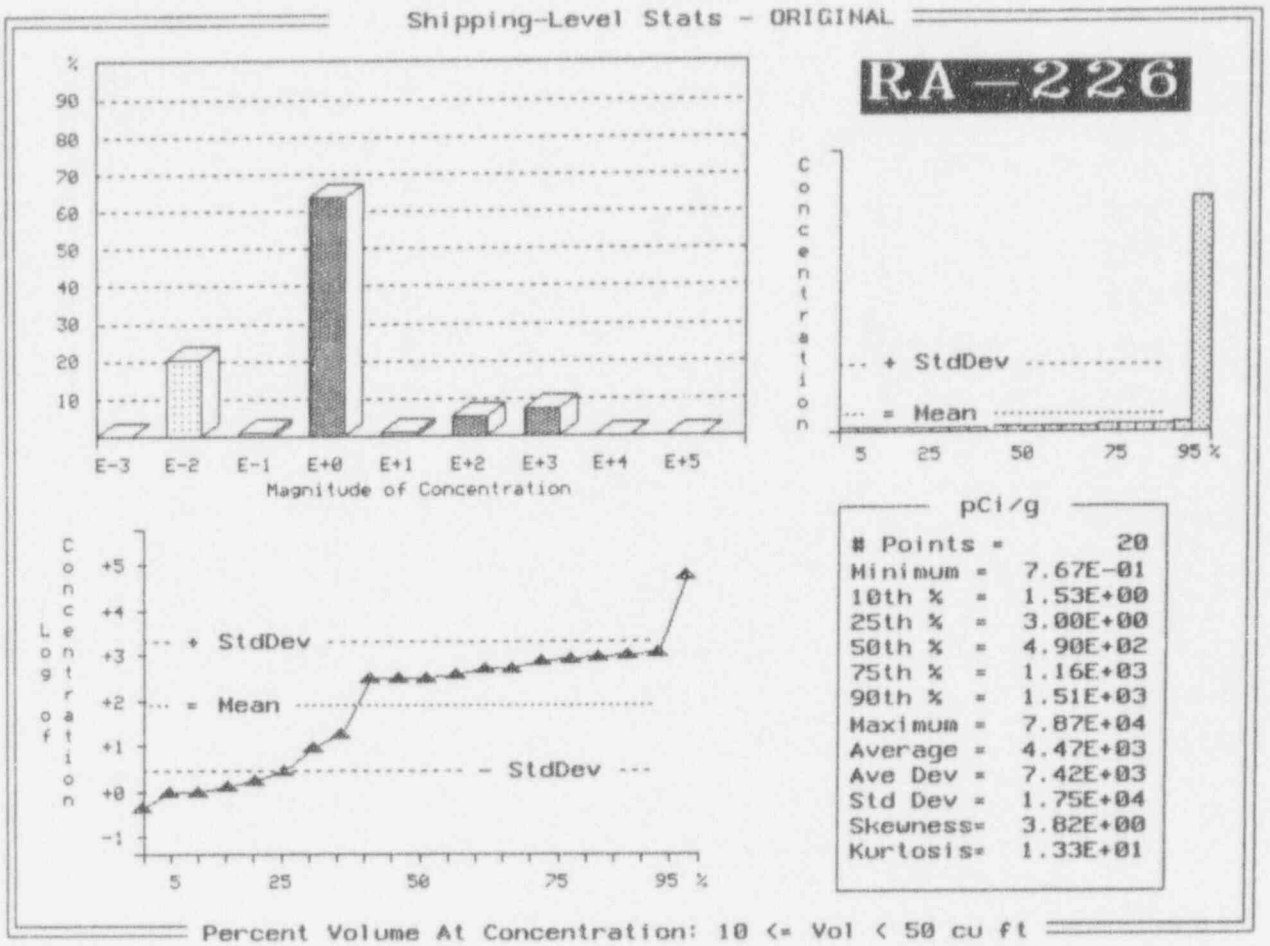


Exhibit F-36 (Continued)

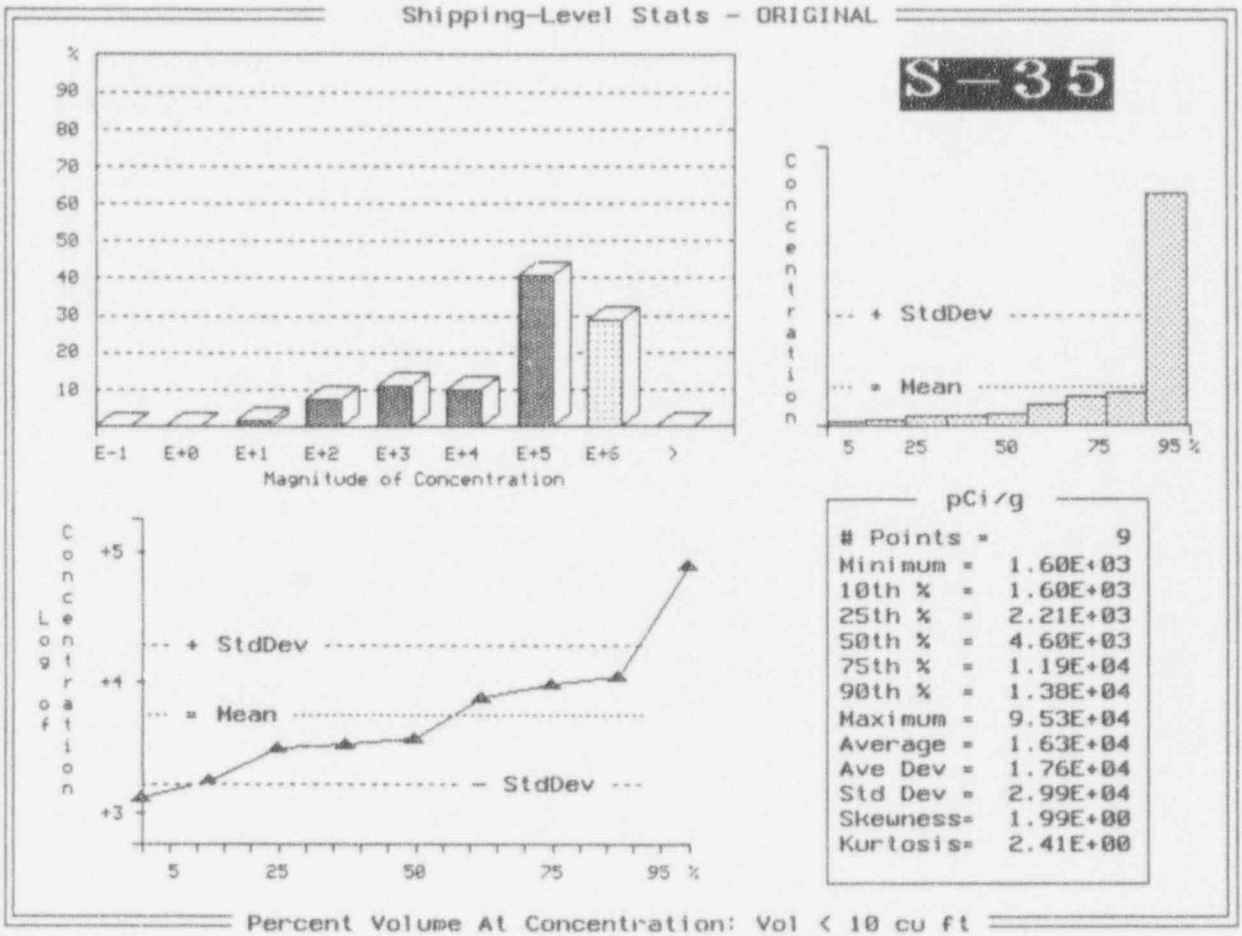


Exhibit F-36 (Continued)

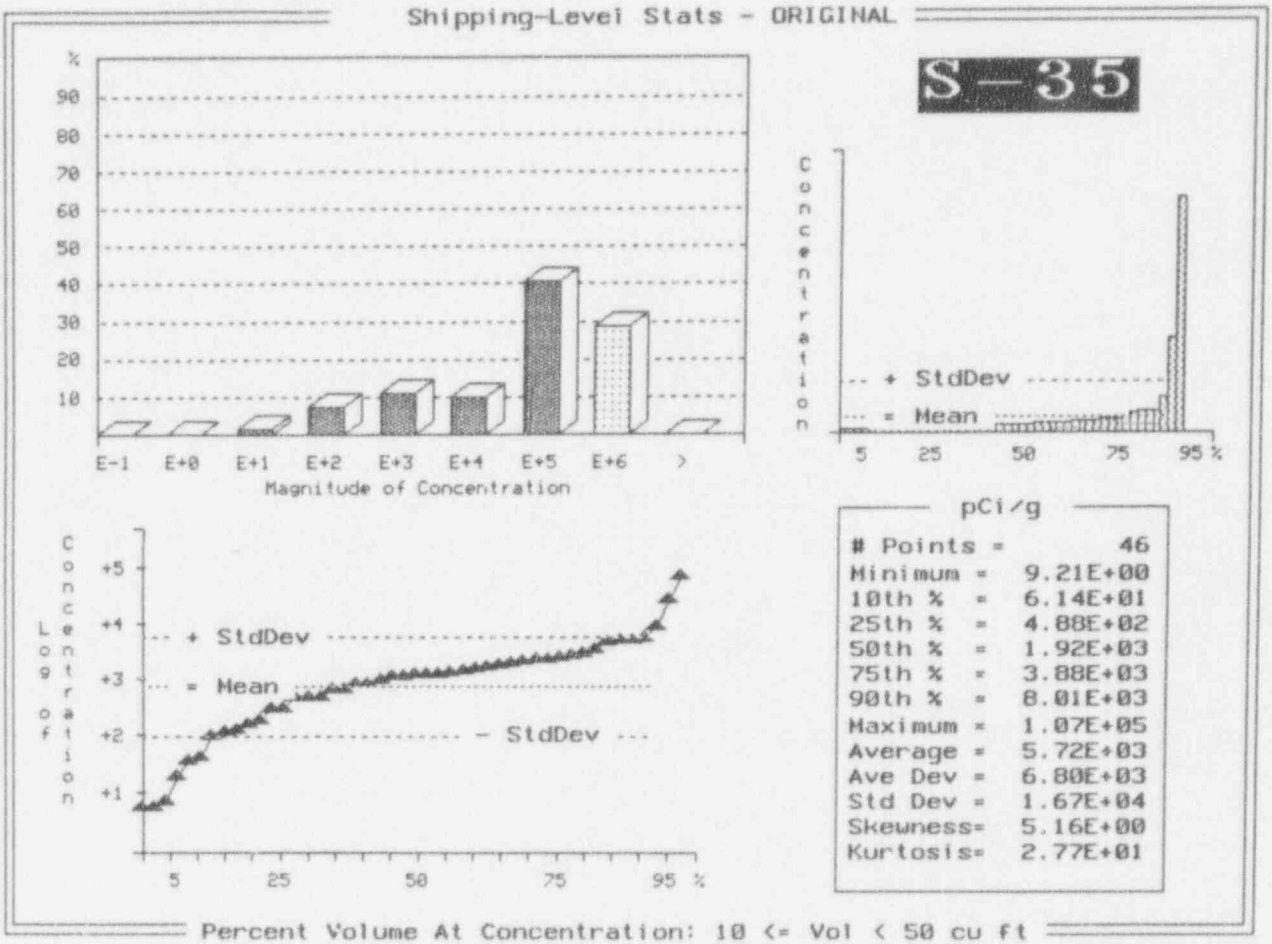


Exhibit F-36 (Continued)

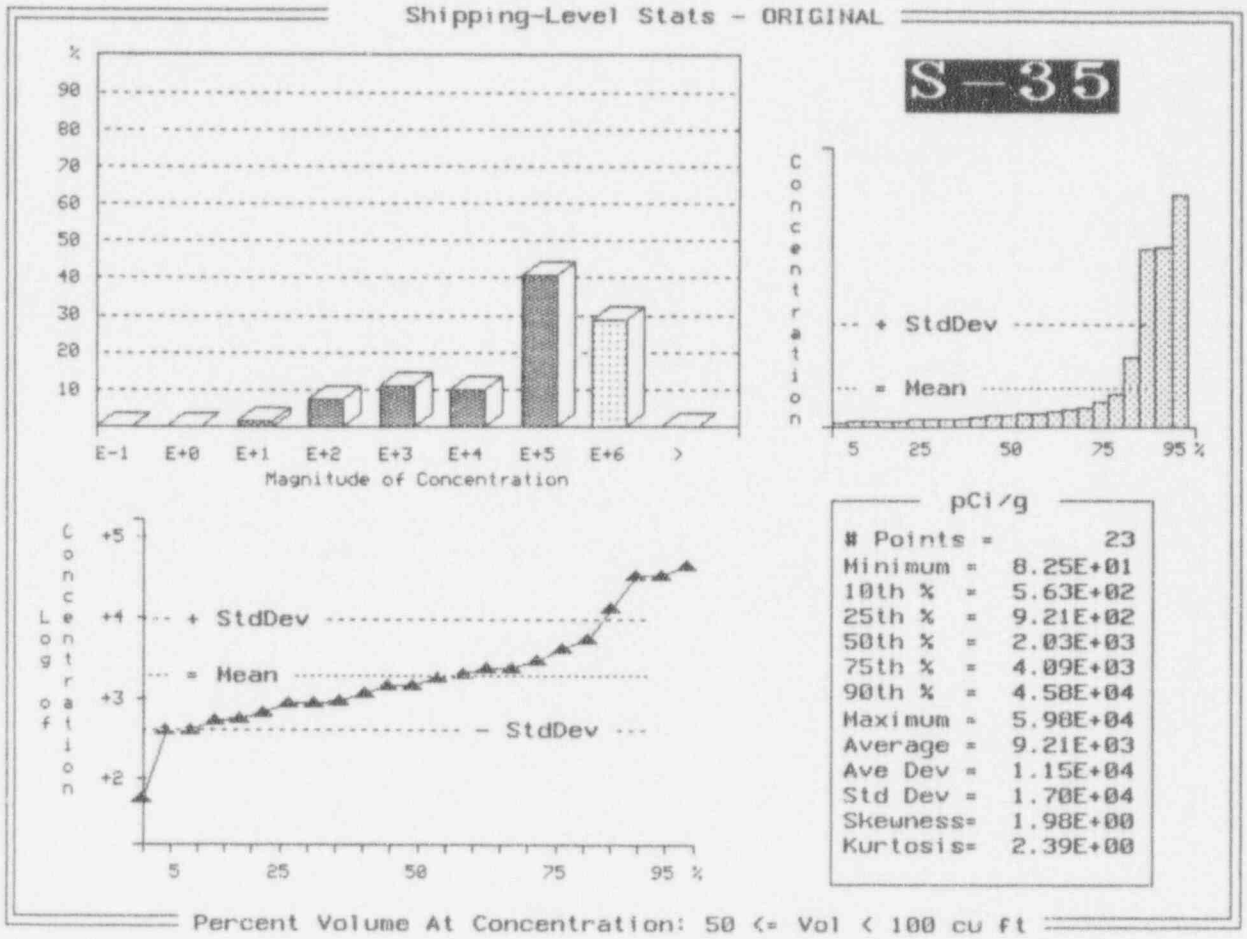


Exhibit F-36 (Continued)

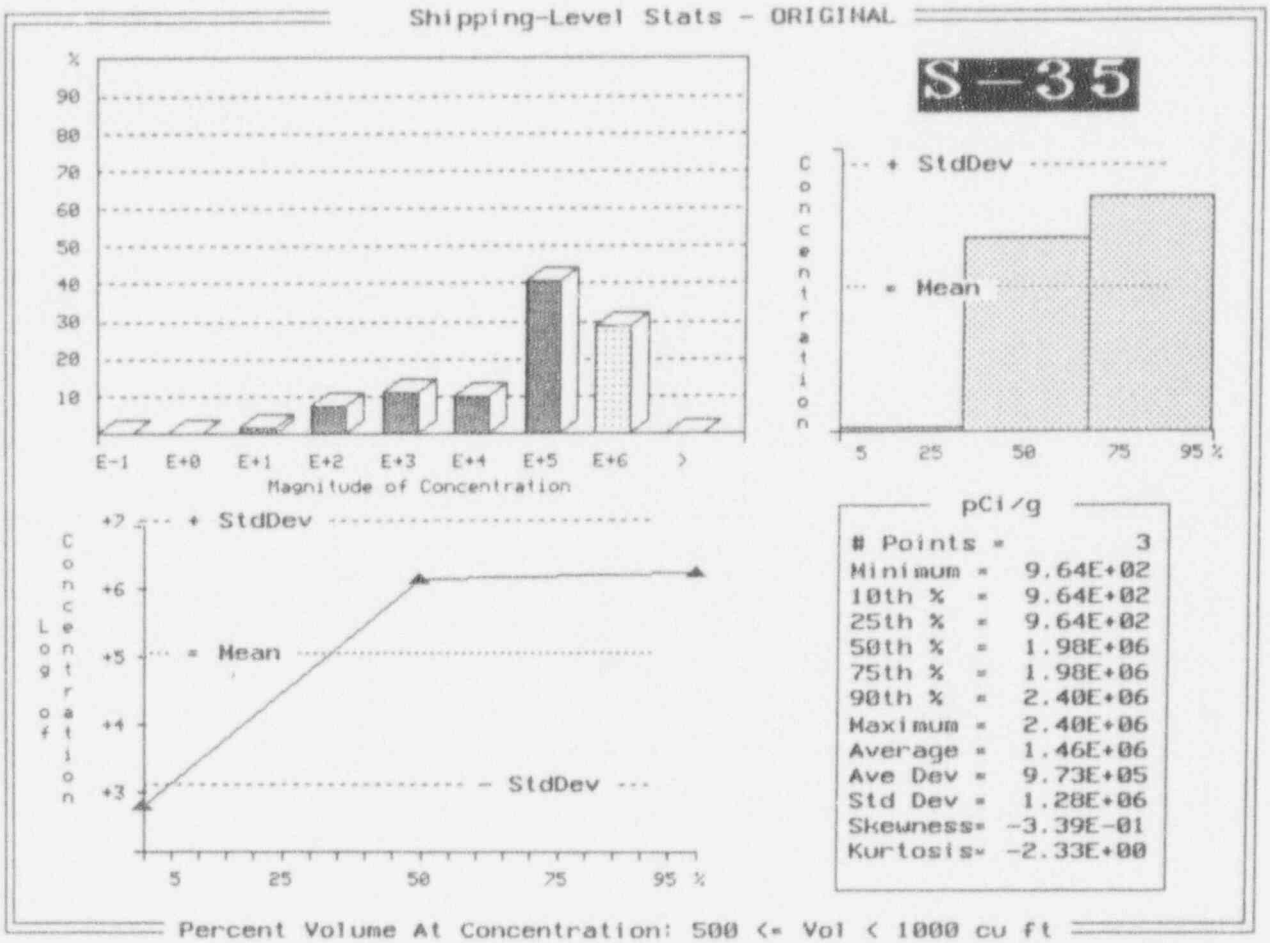


Exhibit F-36 (Continued)

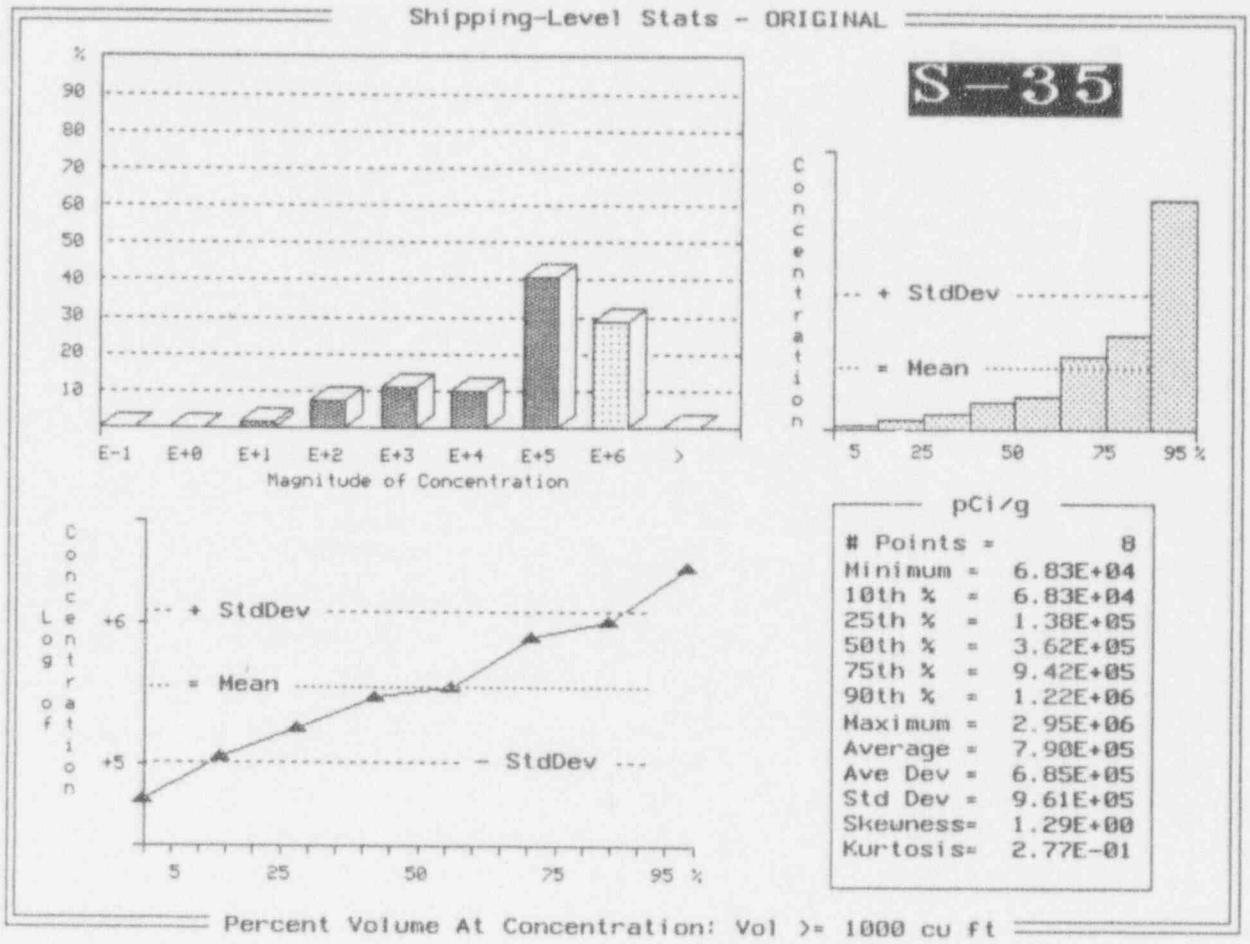


Exhibit F-36 (Continued)

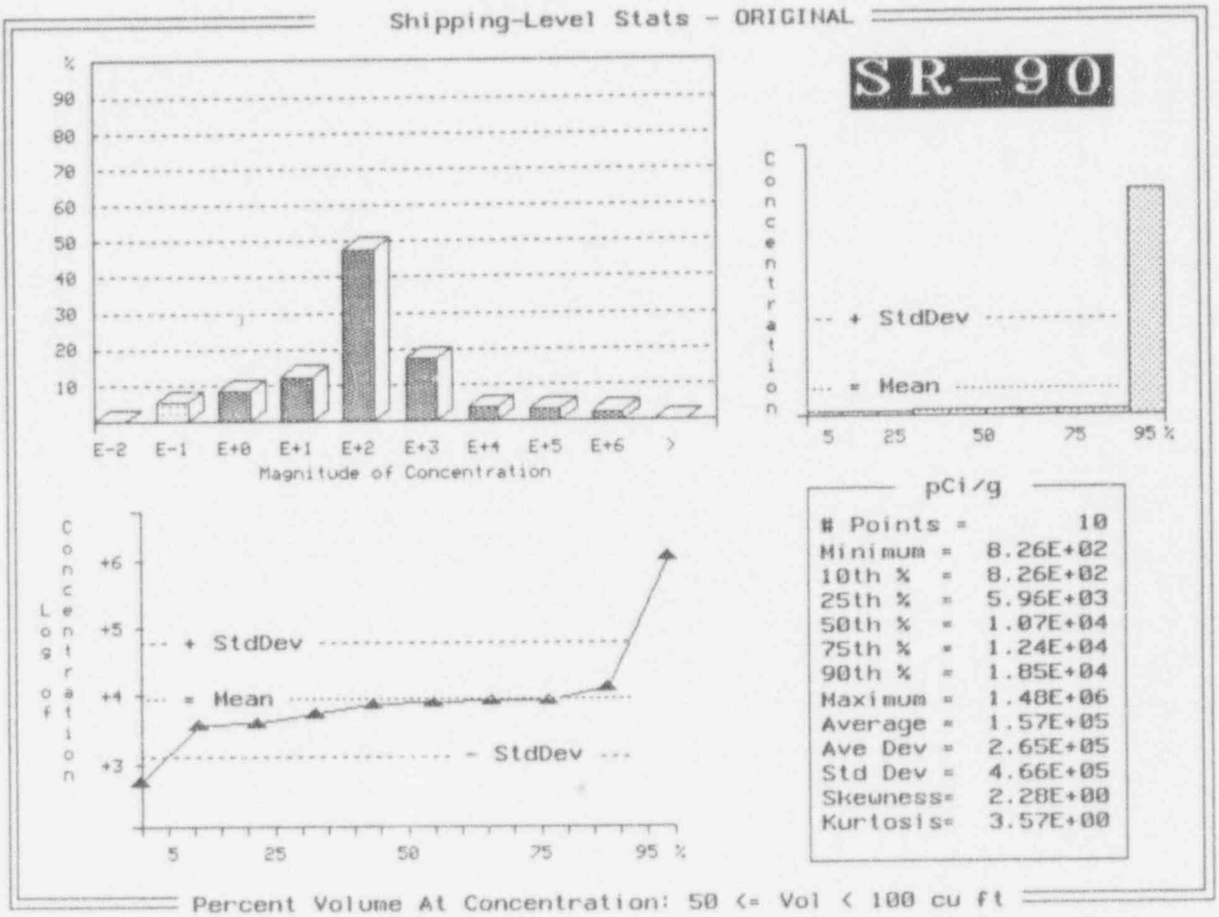


Exhibit F-36 (Continued)

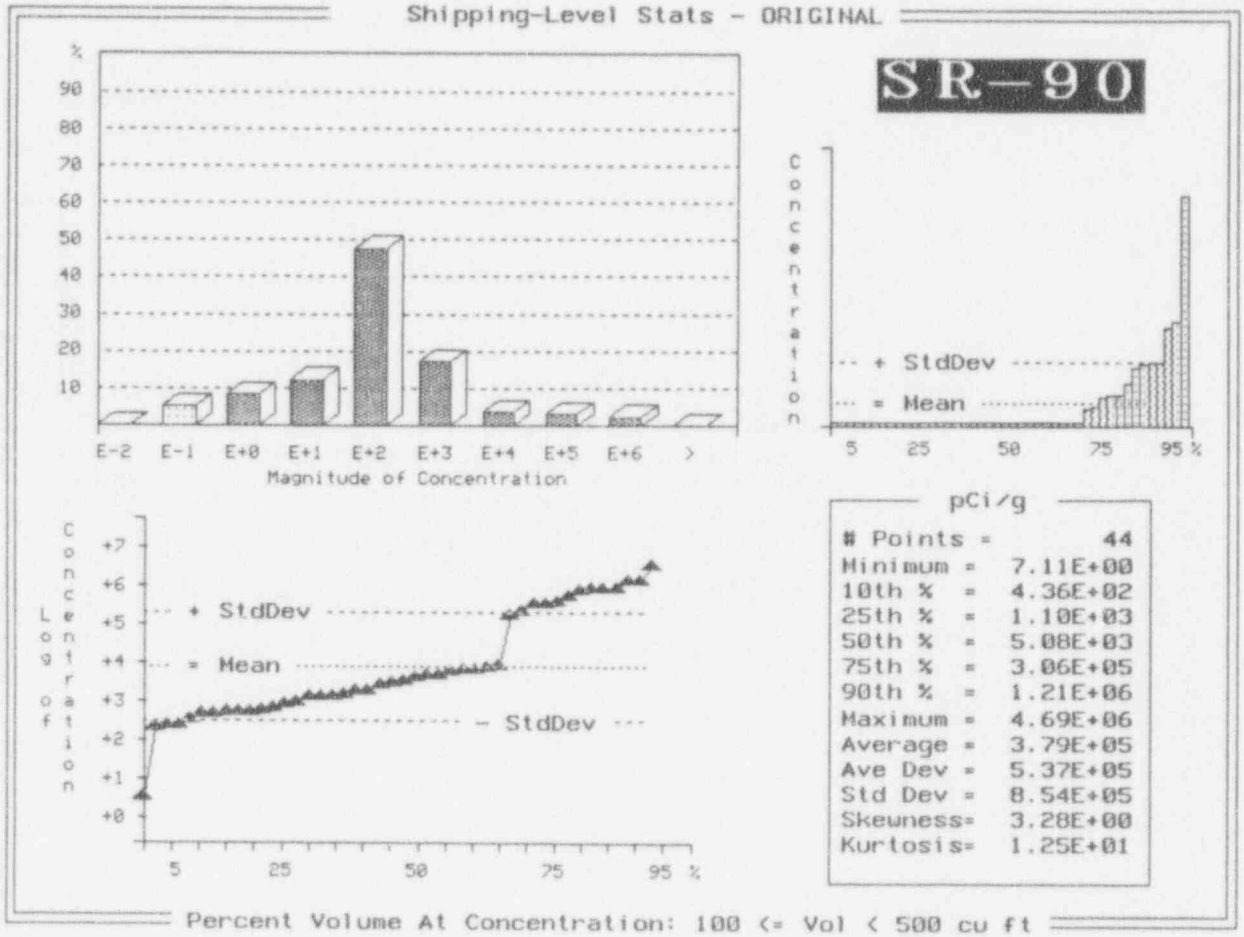


Exhibit F-36 (Continued)

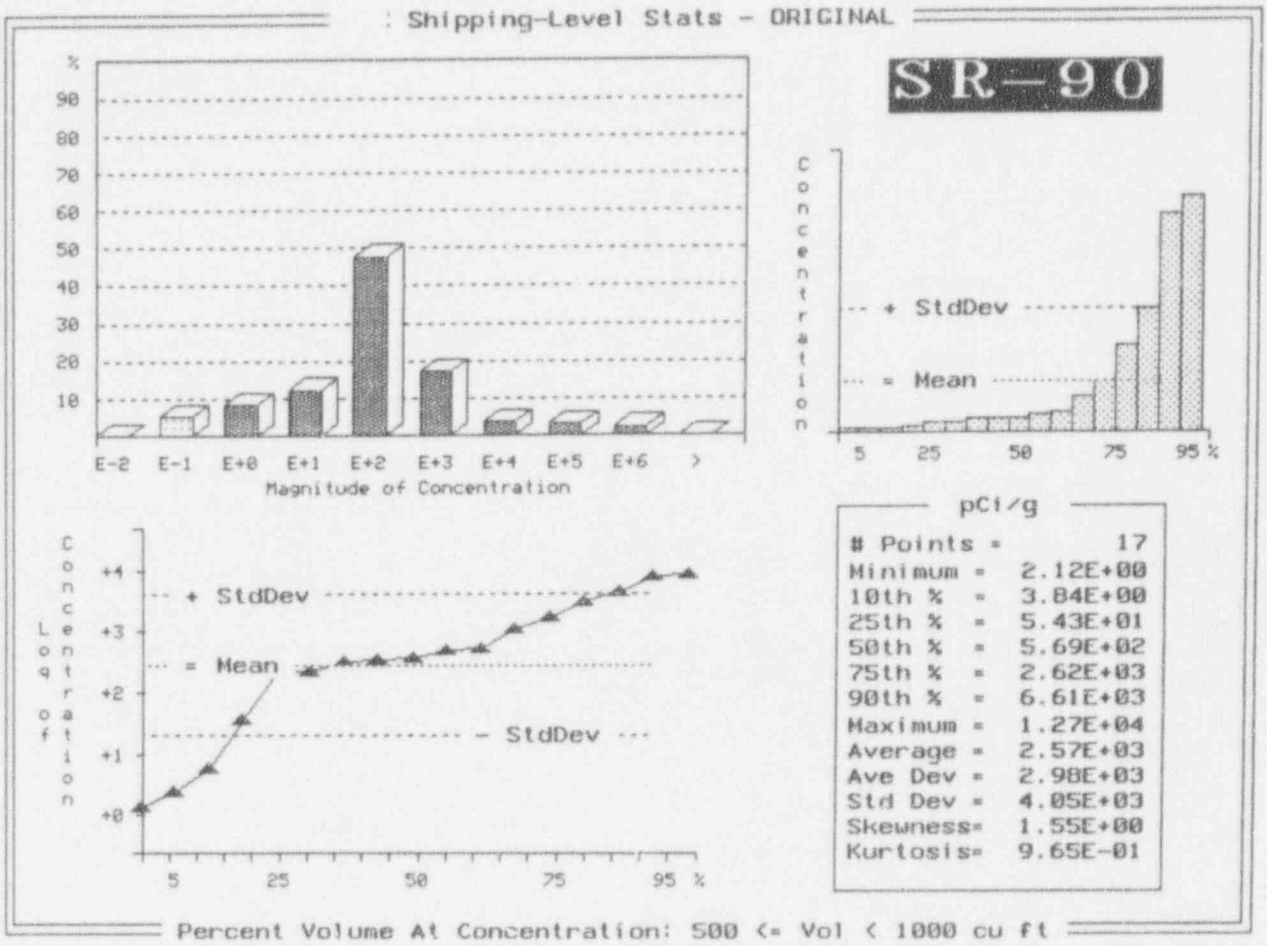


Exhibit F-36 (Continued)

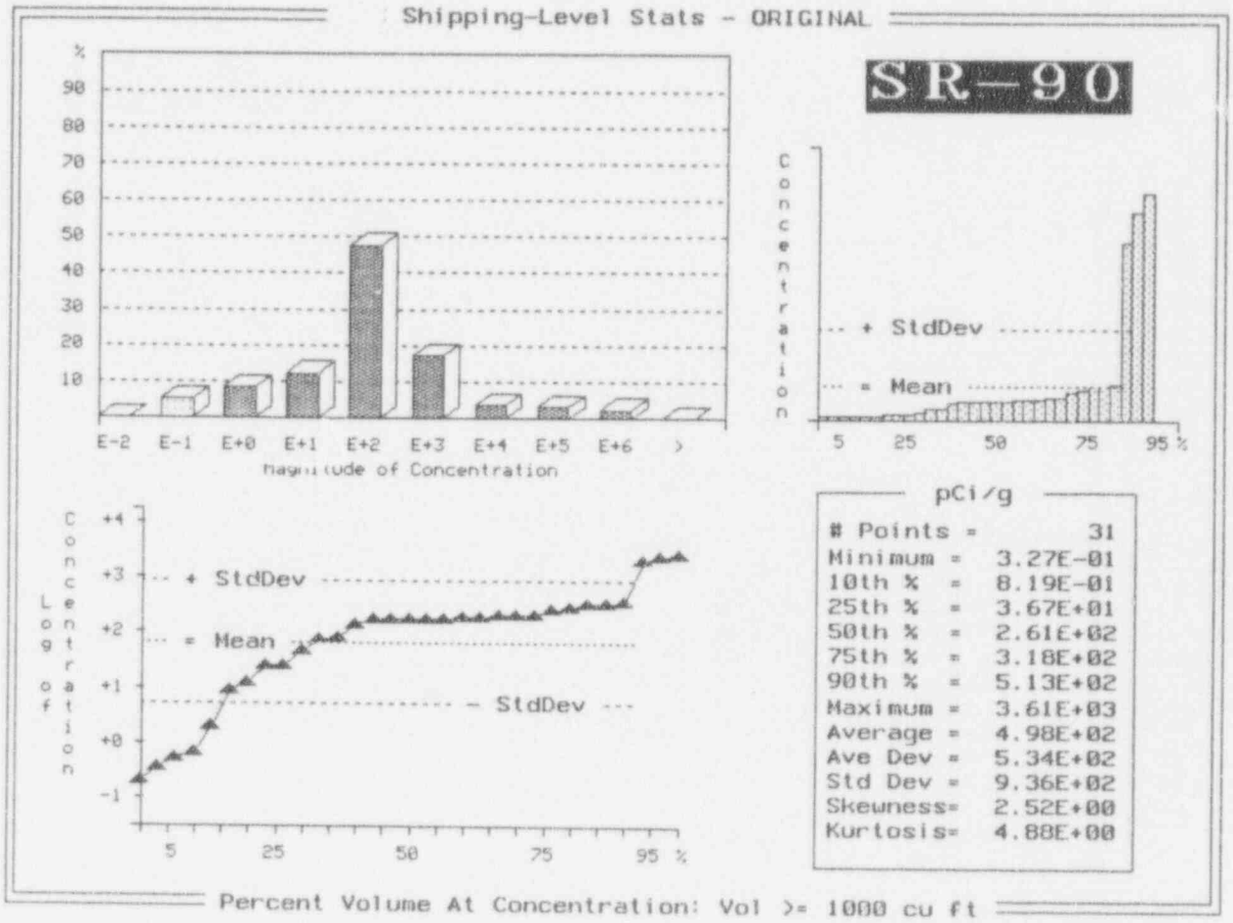


Exhibit F-36 (Continued)

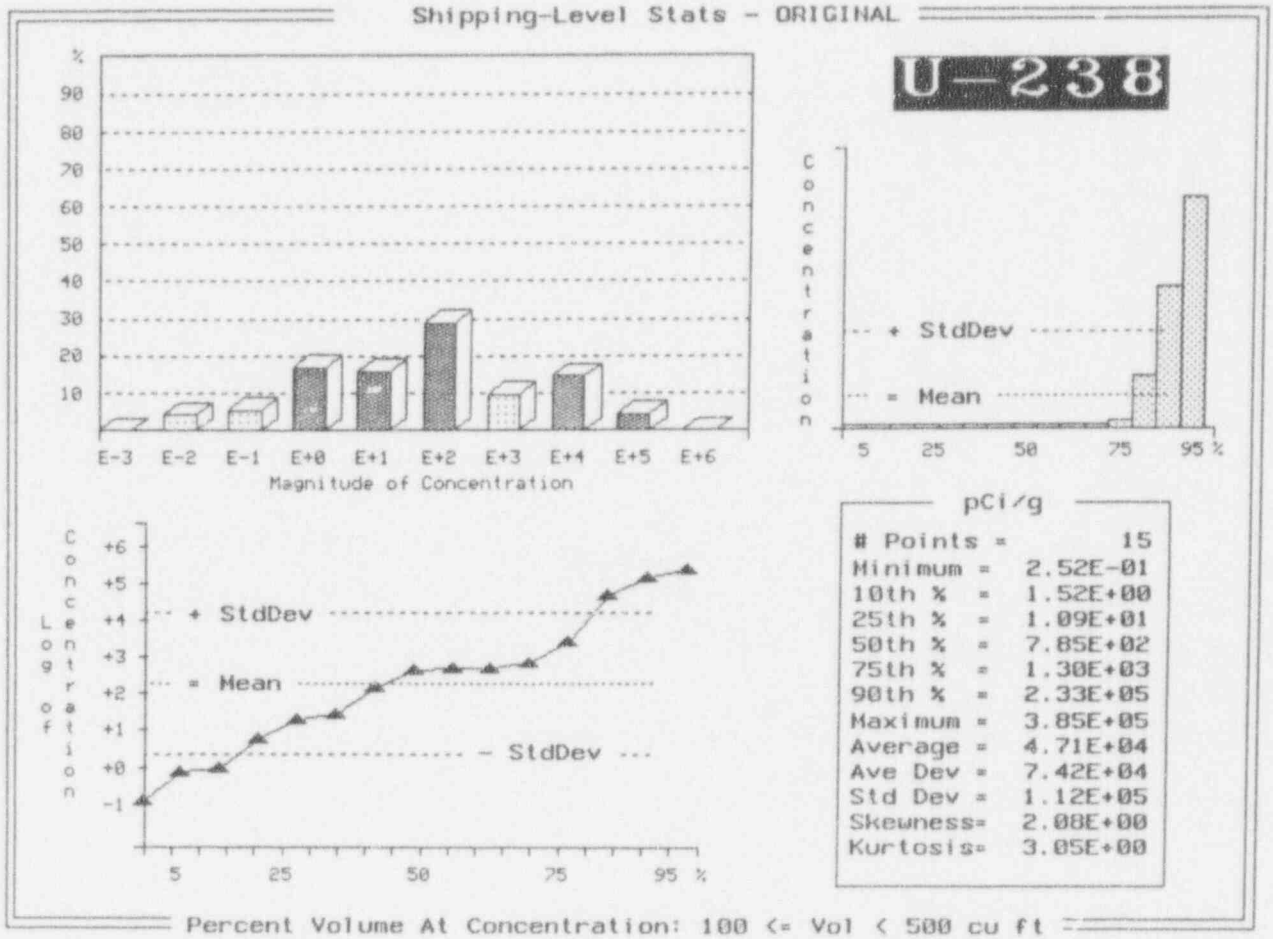


Exhibit F-36 (Continued)

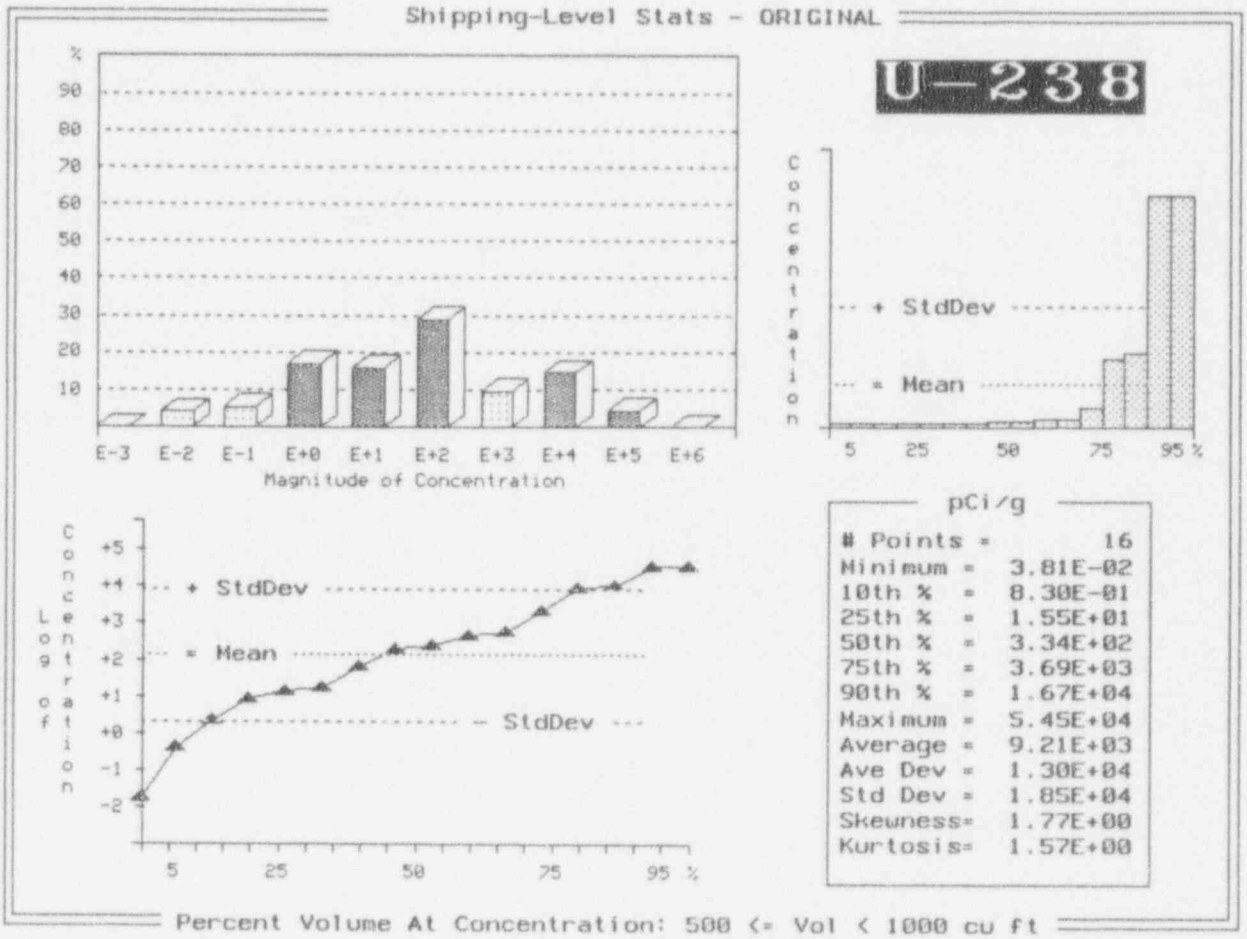


Exhibit F-36 (Continued)

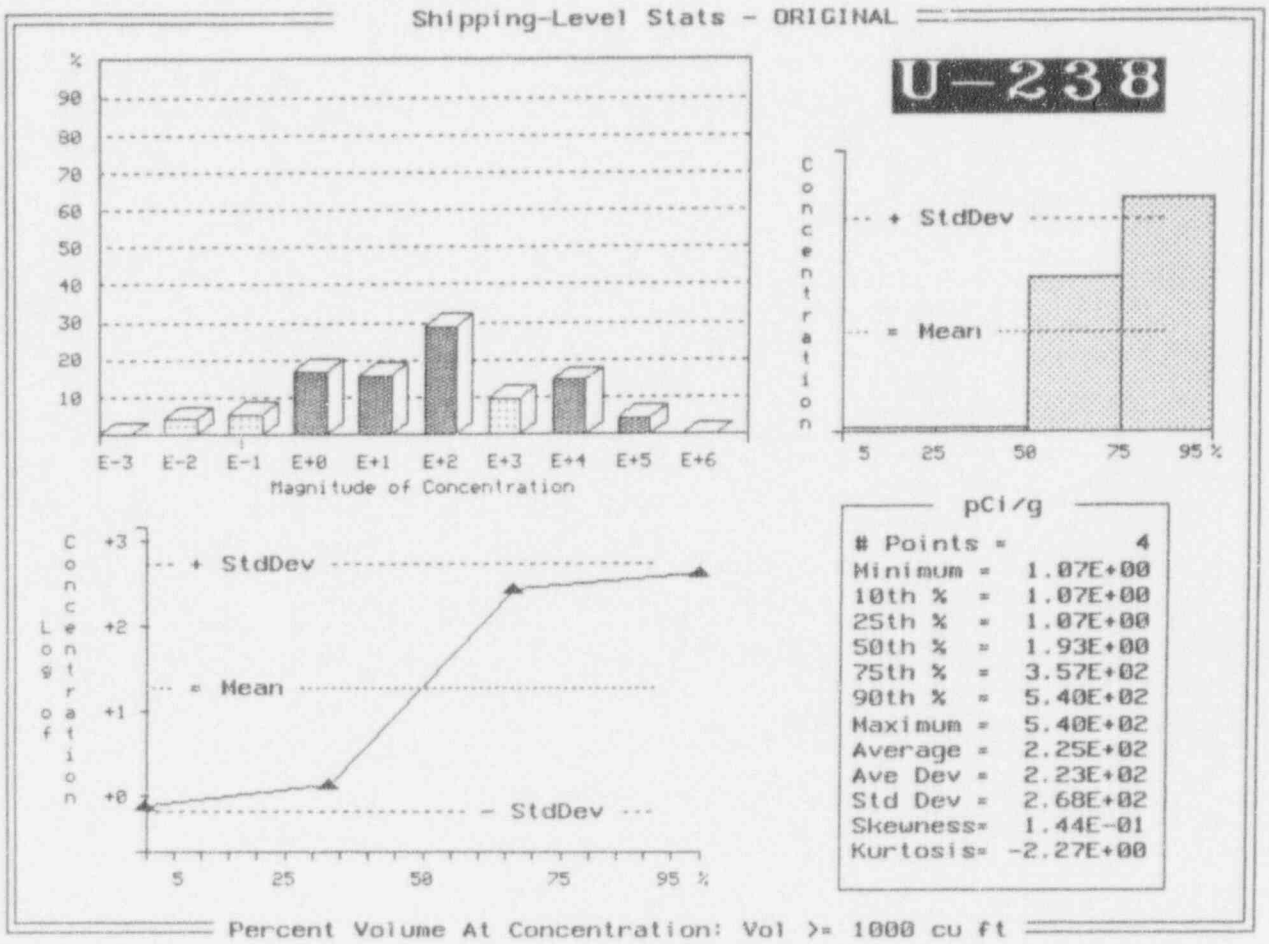


Exhibit F-37
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	District of Columbia
Waste generator class:	Government
Total number of waste generators:	6
Total associated waste volume (m^3):	29.2
Total associated waste activity (Ci):	14.8
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-37 (Continued)

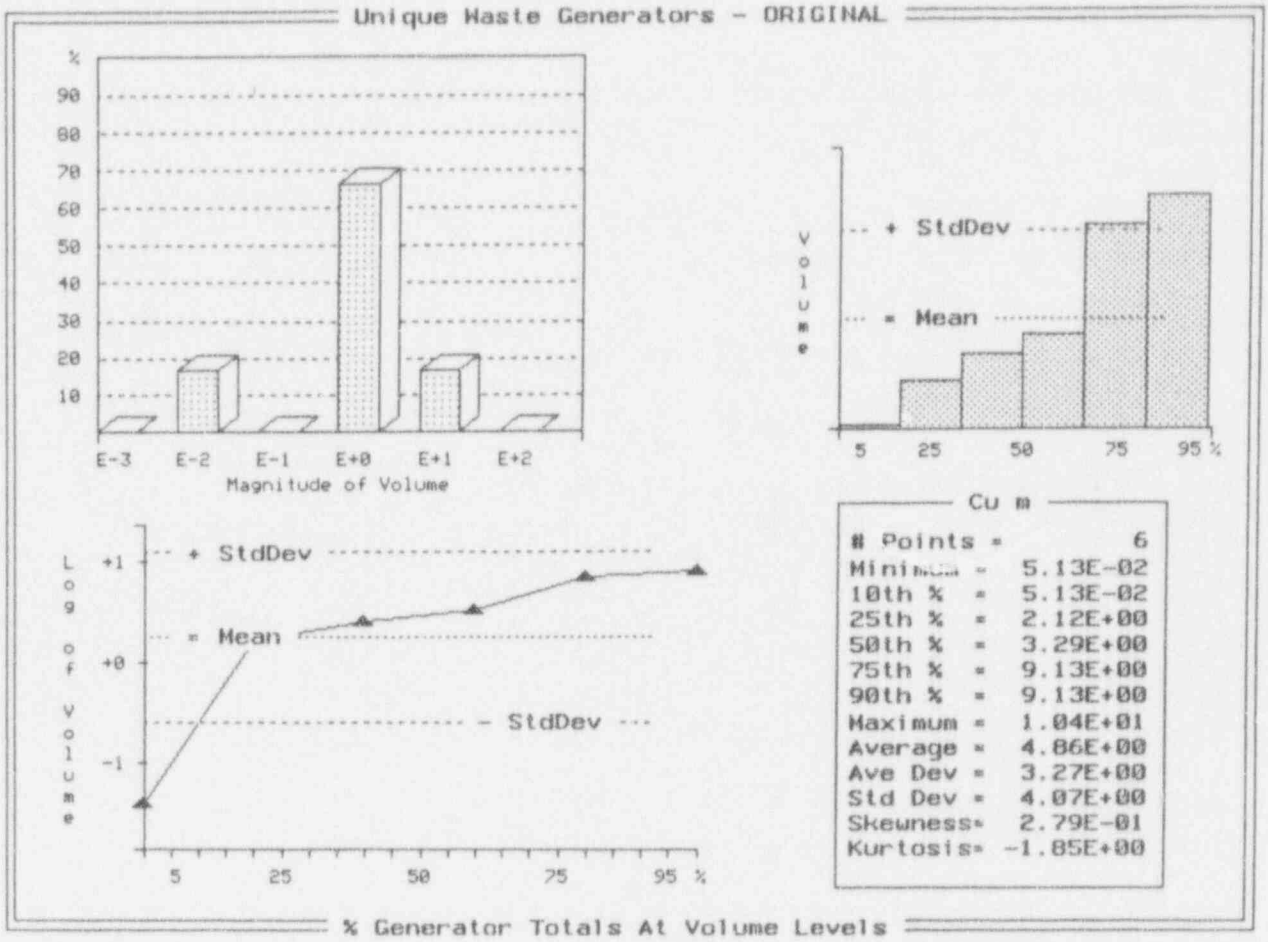


Exhibit F-37 (Continued)

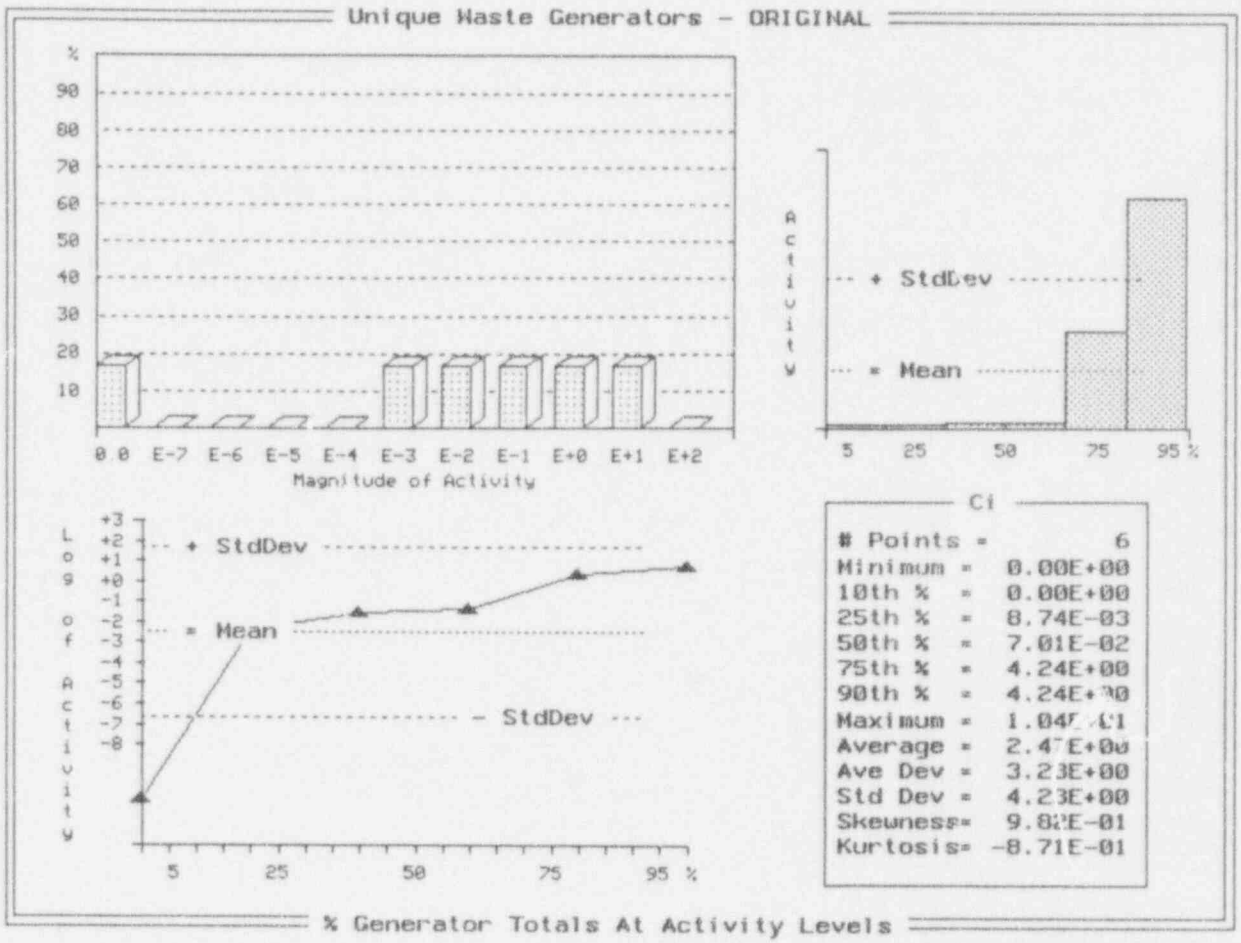


Exhibit F-38
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	District of Columbia
Waste generator class:	Academic
Total number of waste generators:	7
Total associated waste volume (m^3):	14.2
Total associated waste activity (Ci):	1.3
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	29
Total number of shipping records:	6
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	2,654
Total waste volume (m^3):	4.7
Fractional waste volume (%): (this analysis/total)	33
Total waste activity (Ci):	1.0
Fractional waste activity (%): (this analysis/total)	77

Exhibit F-38 (Continued)

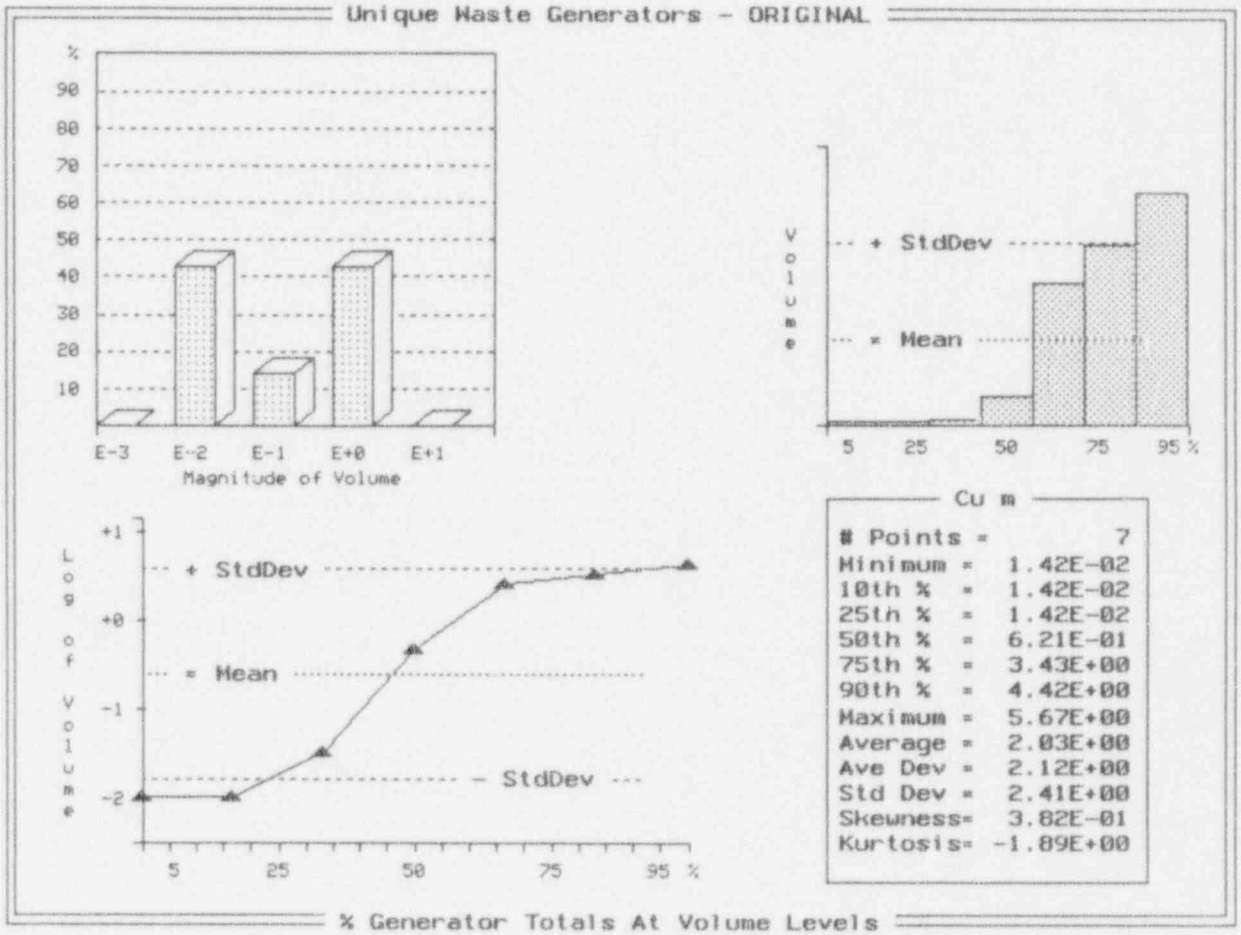


Exhibit F-38 (Continued)

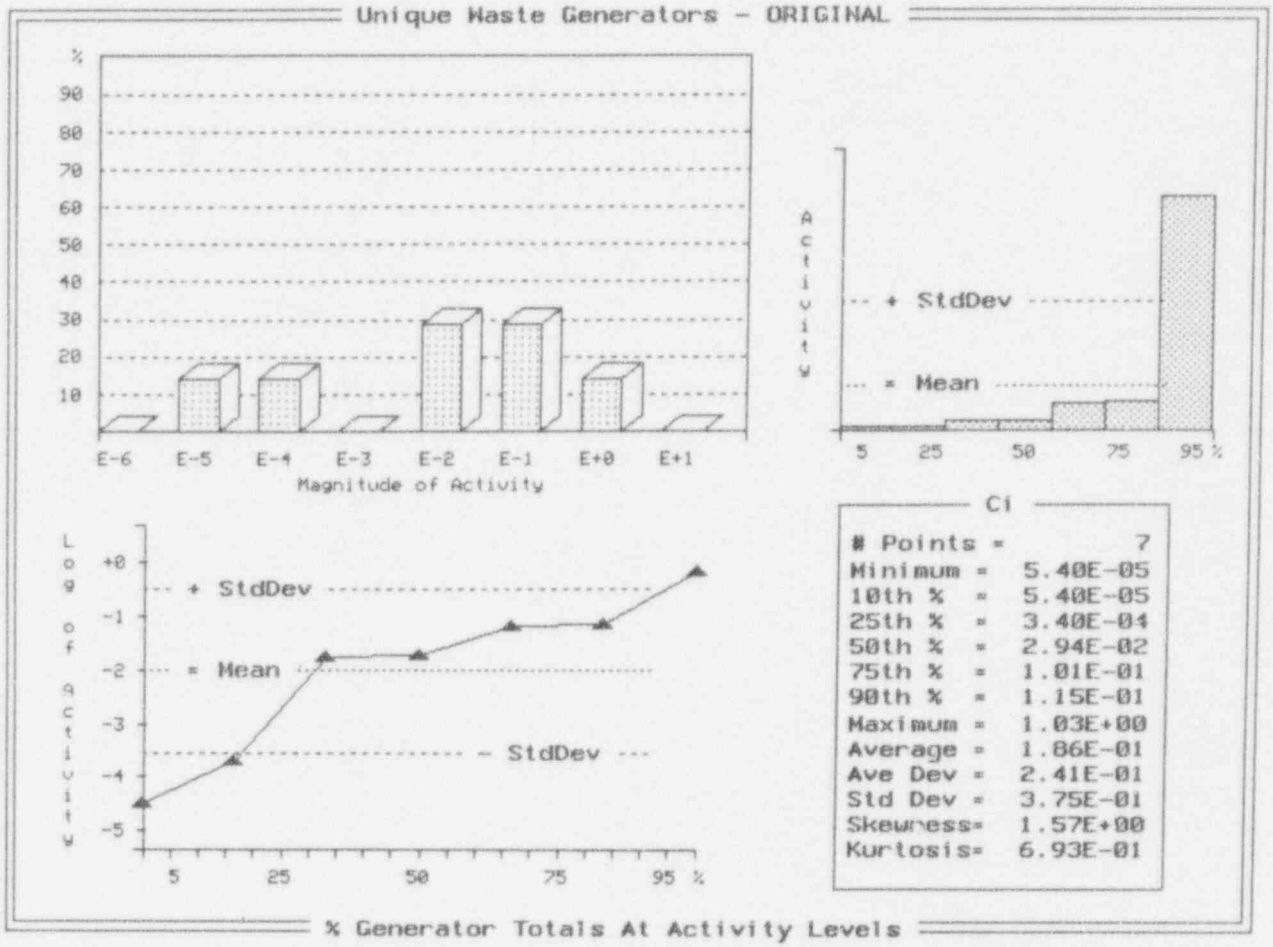


Exhibit F-39
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	District of Columbia
Waste generator class:	Medical
Total number of waste generators:	11
Total associated waste volume (m^3):	25.8
Total associated waste activity (Ci):	0.87
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	9
Total number of shipping records:	1
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	1,646
Total waste volume (m^3):	2.1
Fractional waste volume (%): (this analysis/total)	8
Total waste activity (Ci):	0.005
Fractional waste activity (%): (this analysis/total)	0.6

Exhibit F-39 (Continued)

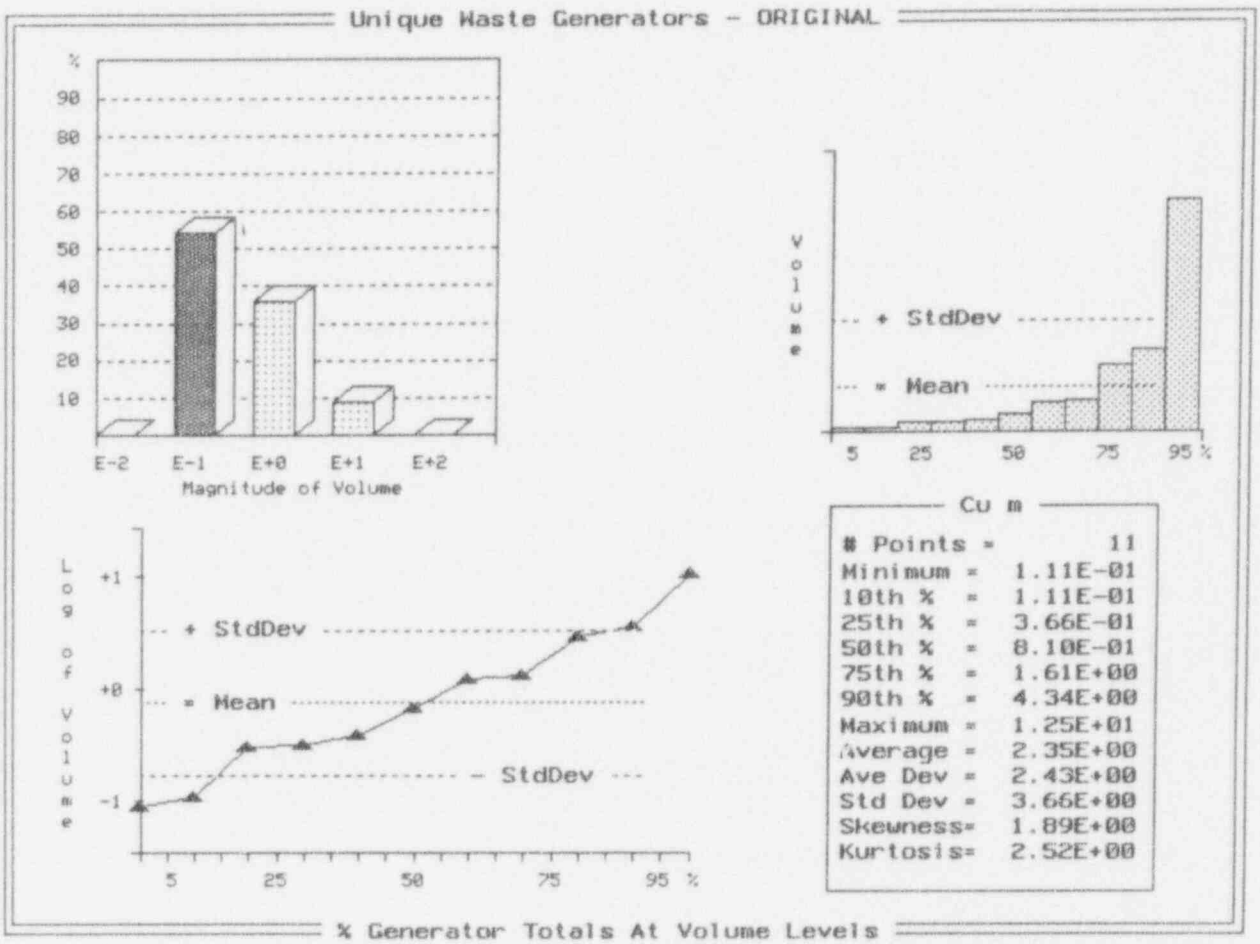


Exhibit F-39 (Continued)

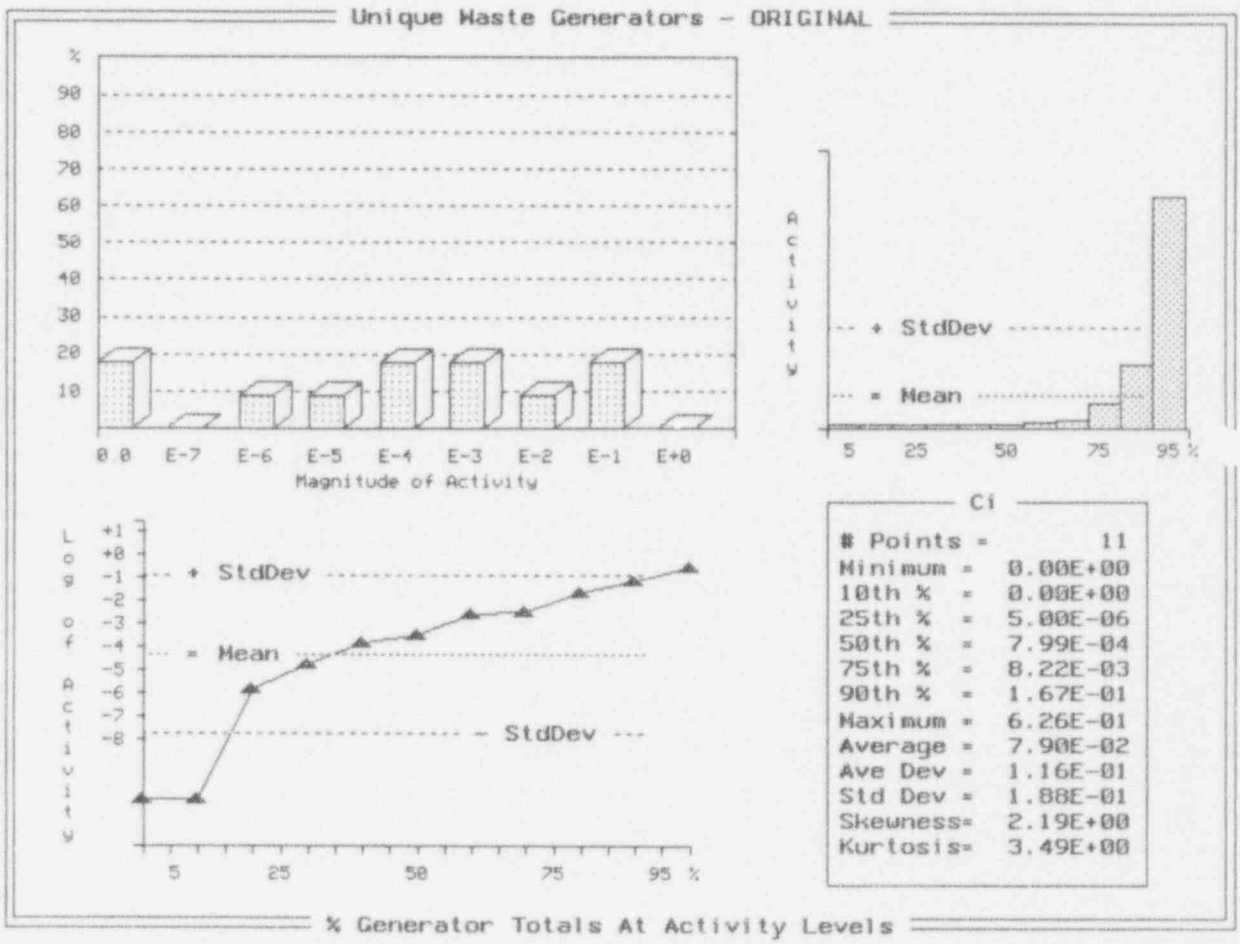


Exhibit F-40
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	District of Columbia
Waste generator class:	Industrial
Total number of waste generators:	6
Total associated waste volume (m^3):	16.2
Total associated waste activity (Ci):	24.2
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	33
Total number of shipping records:	4
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	3,607
Total waste volume (m^3):	3.5
Fractional waste volume (%): (this analysis/total)	22
Total waste activity (Ci):	16.4
Fractional waste activity (%): (this analysis/total)	68

Exhibit F-40 (Continued)

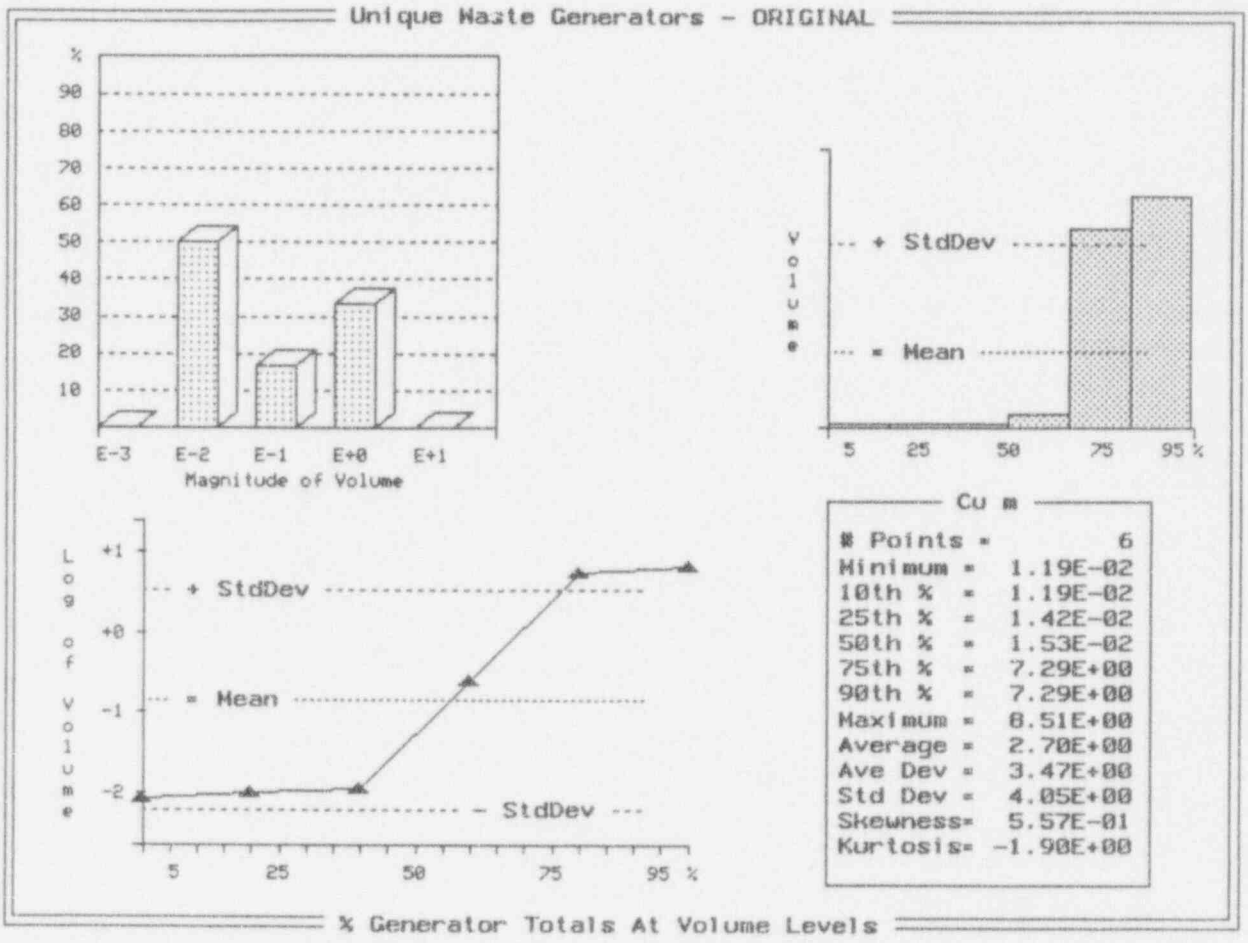


Exhibit F-40 (Continued)

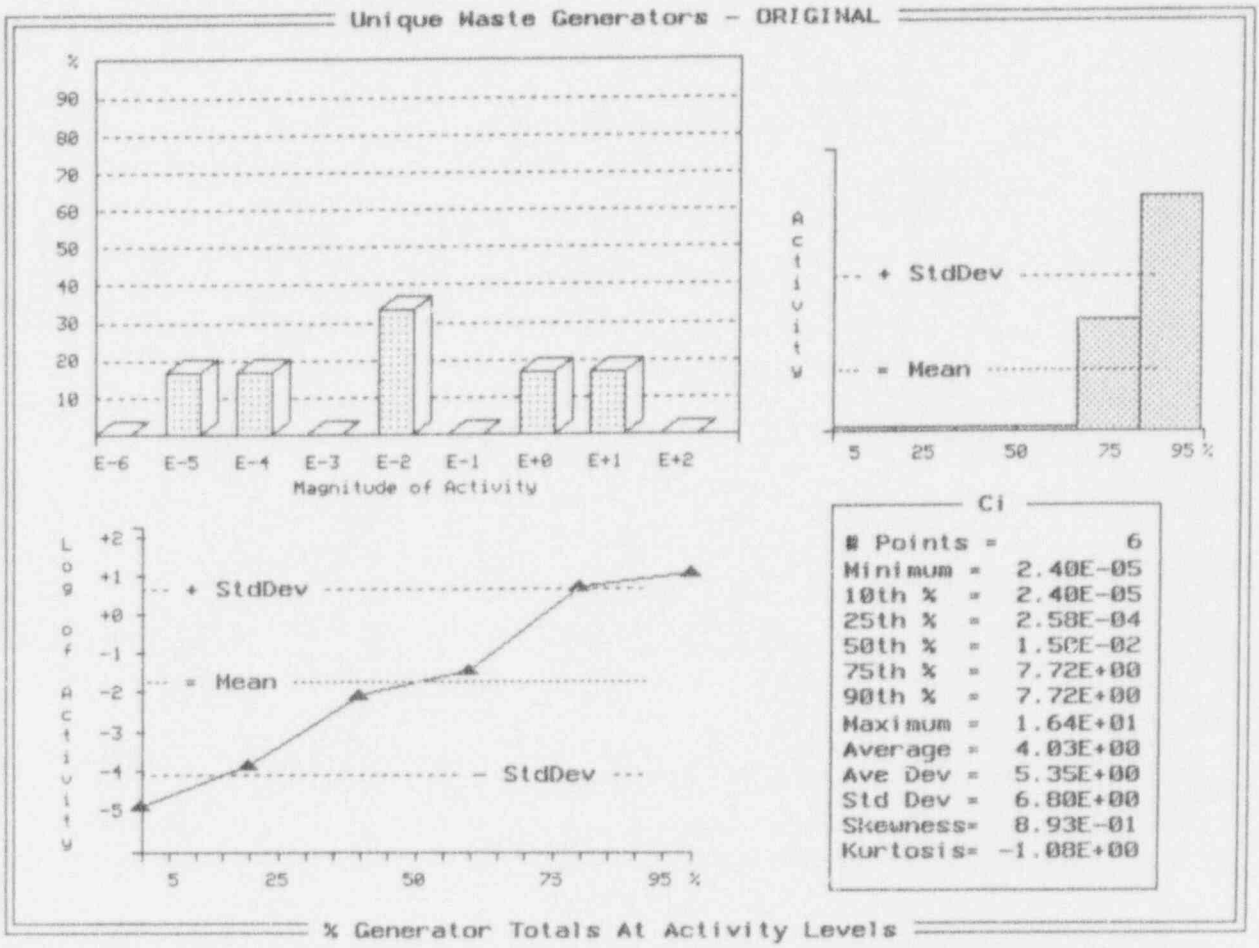


Exhibit F-41
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Maine
Waste generator class:	Government
Total number of waste generators:	3
Total associated waste volume (m^3):	368
Total associated waste activity (Ci):	19.5
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	33
Total number of shipping records:	
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	201,100
Total waste volume (m^3):	287
Fractional waste volume (%): (this analysis/total)	78
Total waste activity (Ci):	2.0
Fractional waste activity (%): (this analysis/total)	10

Exhibit F-41 (Continued)

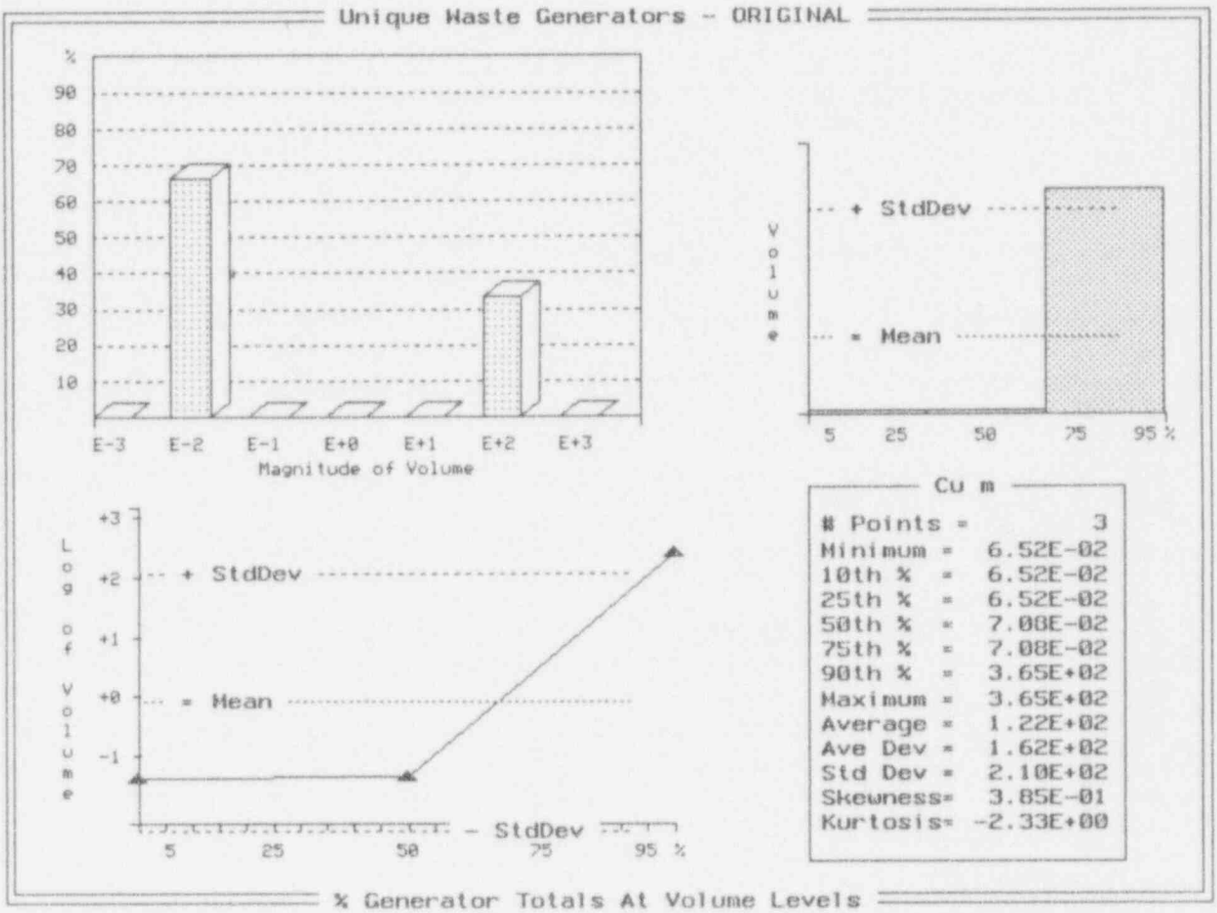


Exhibit F-41 (Continued)

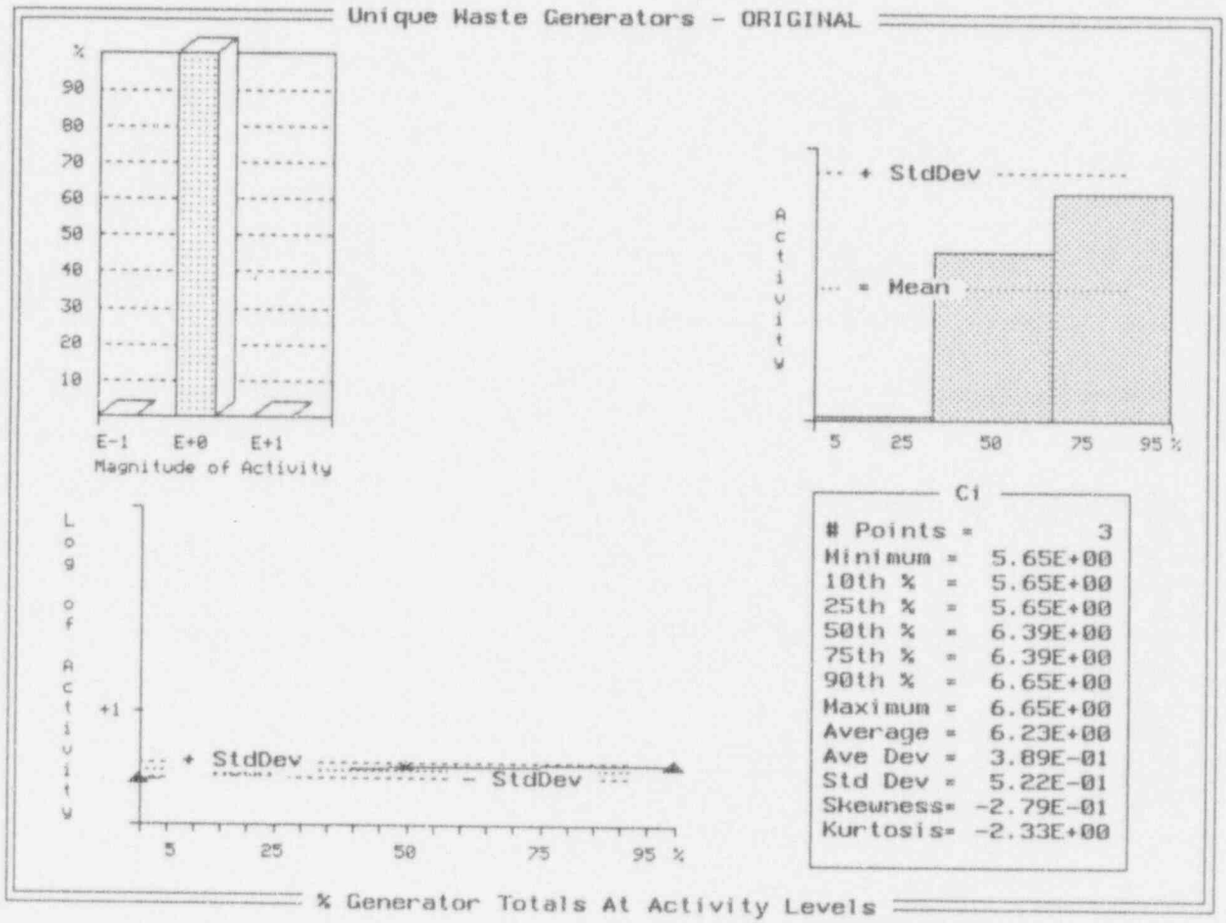


Exhibit F-42
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Maine
Waste generator class:	Academic
Total number of waste generators:	2
Total associated waste volume (m^3):	3.7
Total associated waste activity (Ci):	0.1
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	50
Total number of shipping records:	1
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	2,051
Total waste volume (m^3):	3.6
Fractional waste volume (%): (this analysis/total)	97
Total waste activity (Ci):	0.093
Fractional waste activity (%): (this analysis/total)	93

Exhibit F-42 (Continued)

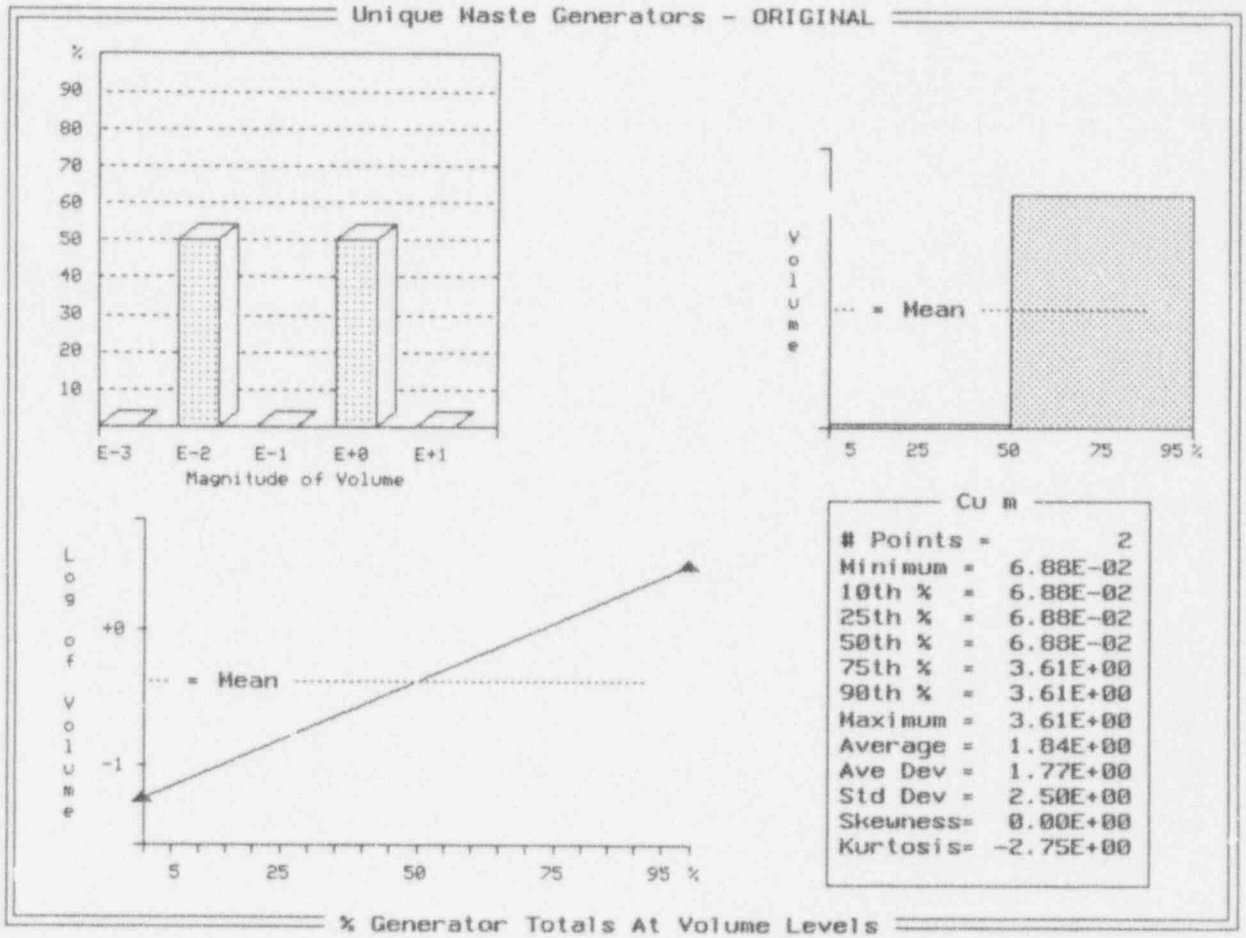


Exhibit F-42 (Continued)

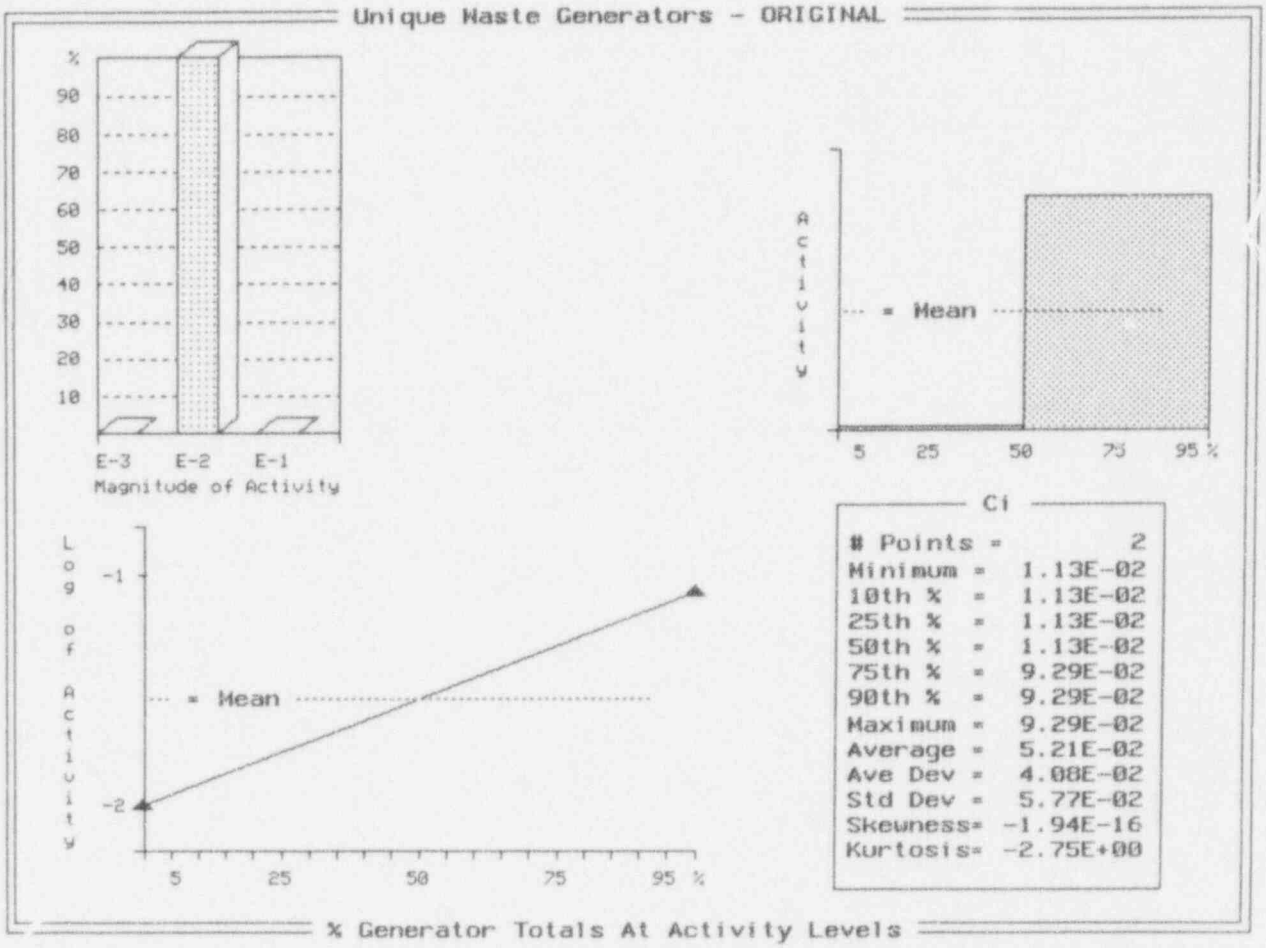


Exhibit F-43
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Maine
Waste generator class:	Medical
Total number of waste generators:	1
Total associated waste volume (m^3):	0.21
Total associated waste activity (Ci):	0.36
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-43 (Continued)

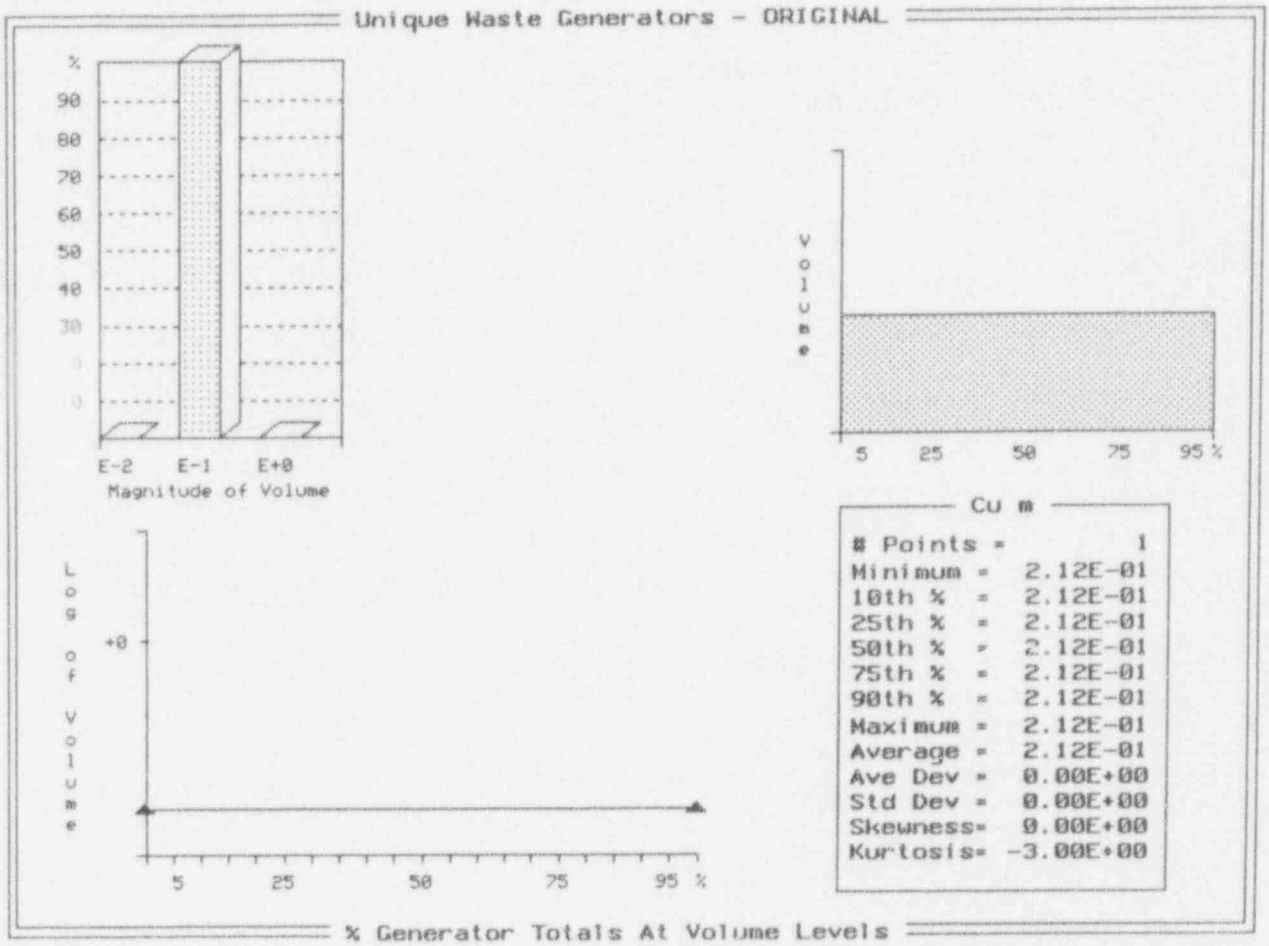


Exhibit F-43 (Continued)

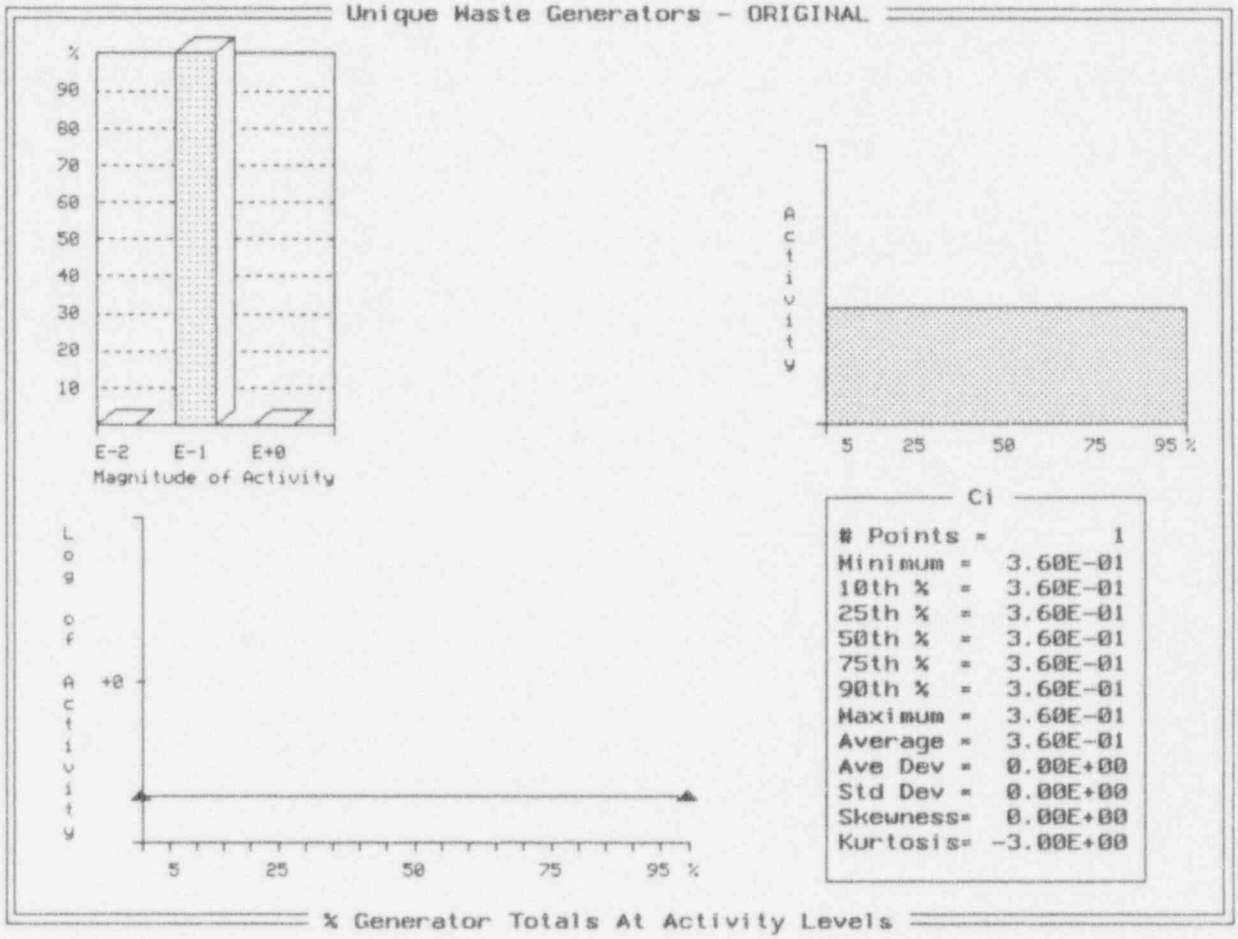


Exhibit F-44
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Maine
Waste generator class:	Industrial
Total number of waste generators:	12
Total associated waste volume (m^3):	14.3
Total associated waste activity (Ci):	1.4
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	4
Percent of total(%):	33
Total number of shipping records:	4
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	8,508
Total waste volume (m^3):	8.3
Fractional waste volume (%): (this analysis/total)	58
Total waste activity (Ci):	0.5
Fractional waste activity (%): (this analysis/total)	36

Exhibit F-44 (Continued)

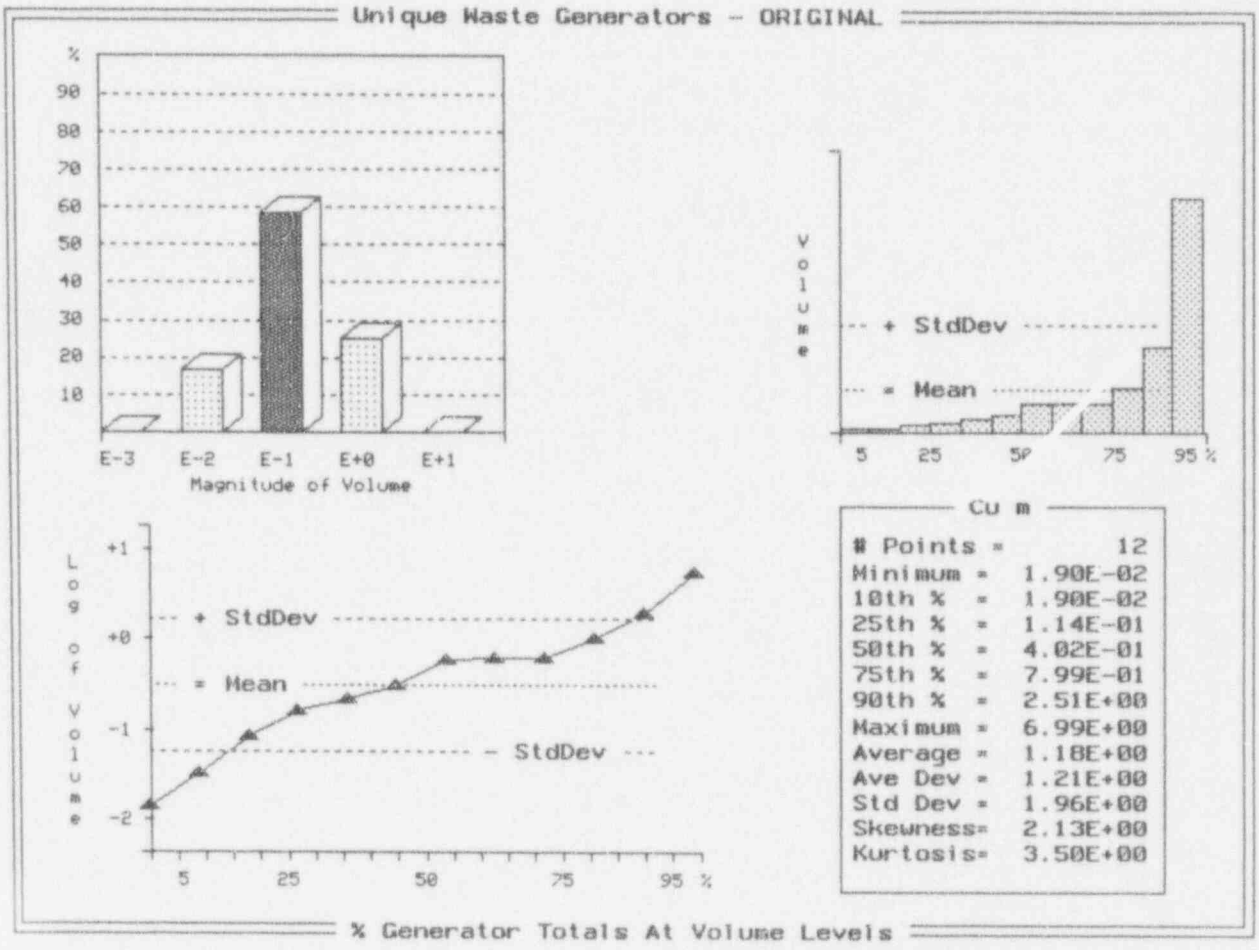


Exhibit F-44 (Continued

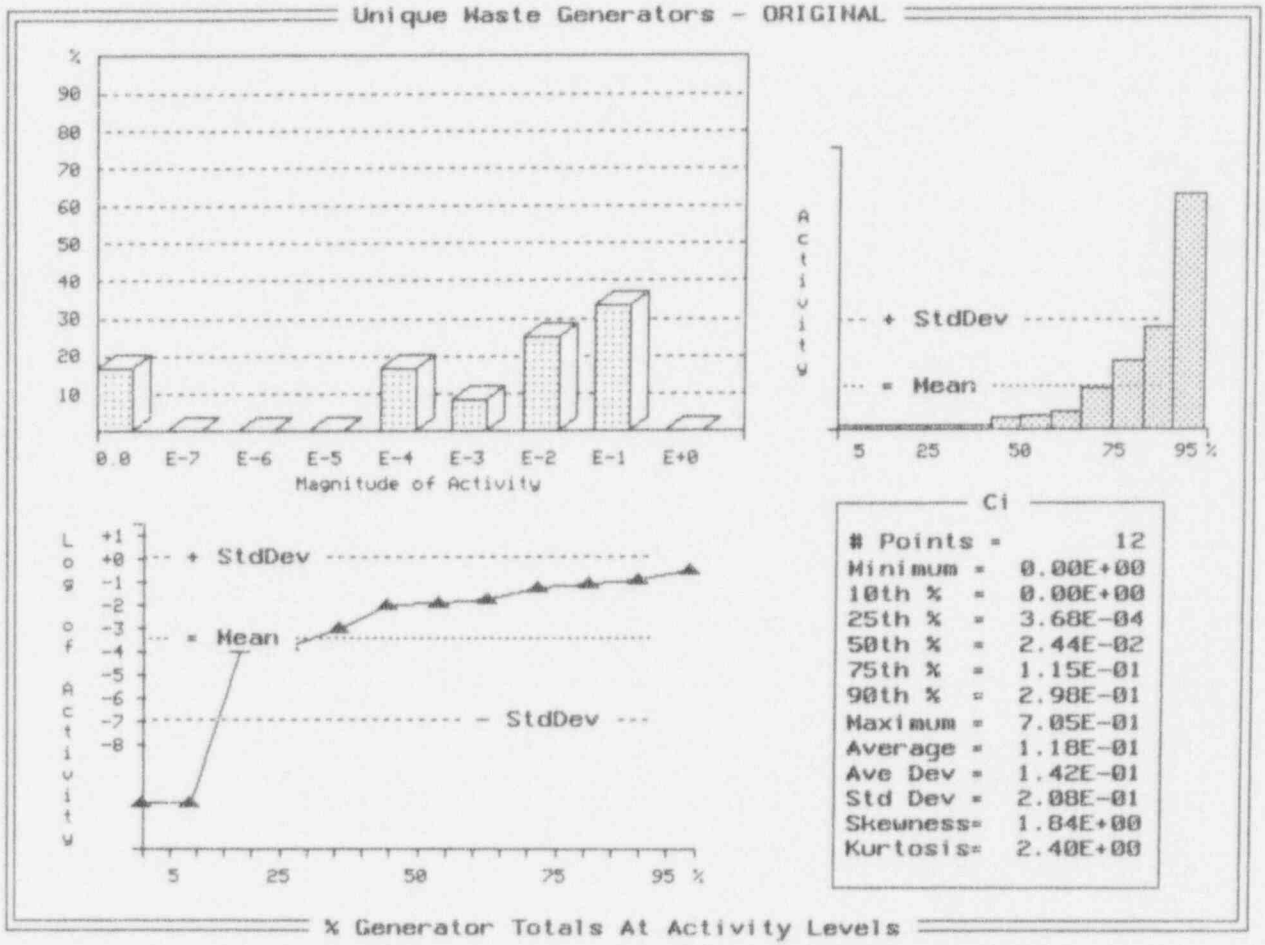


Exhibit F-45
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Massachusetts
Waste generator class:	Government
Total number of waste generators:	5
Total associated waste volume (m^3):	179
Total associated waste activity (Ci):	145
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	40
Total number of shipping records:	13
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	117,800
Total waste volume (m^3):	168
Fractional waste volume (%): (this analysis/total)	94
Total waste activity (Ci):	8.3
Fractional waste activity (%): (this analysis/total)	5.7

Exhibit F-45 (Continued)

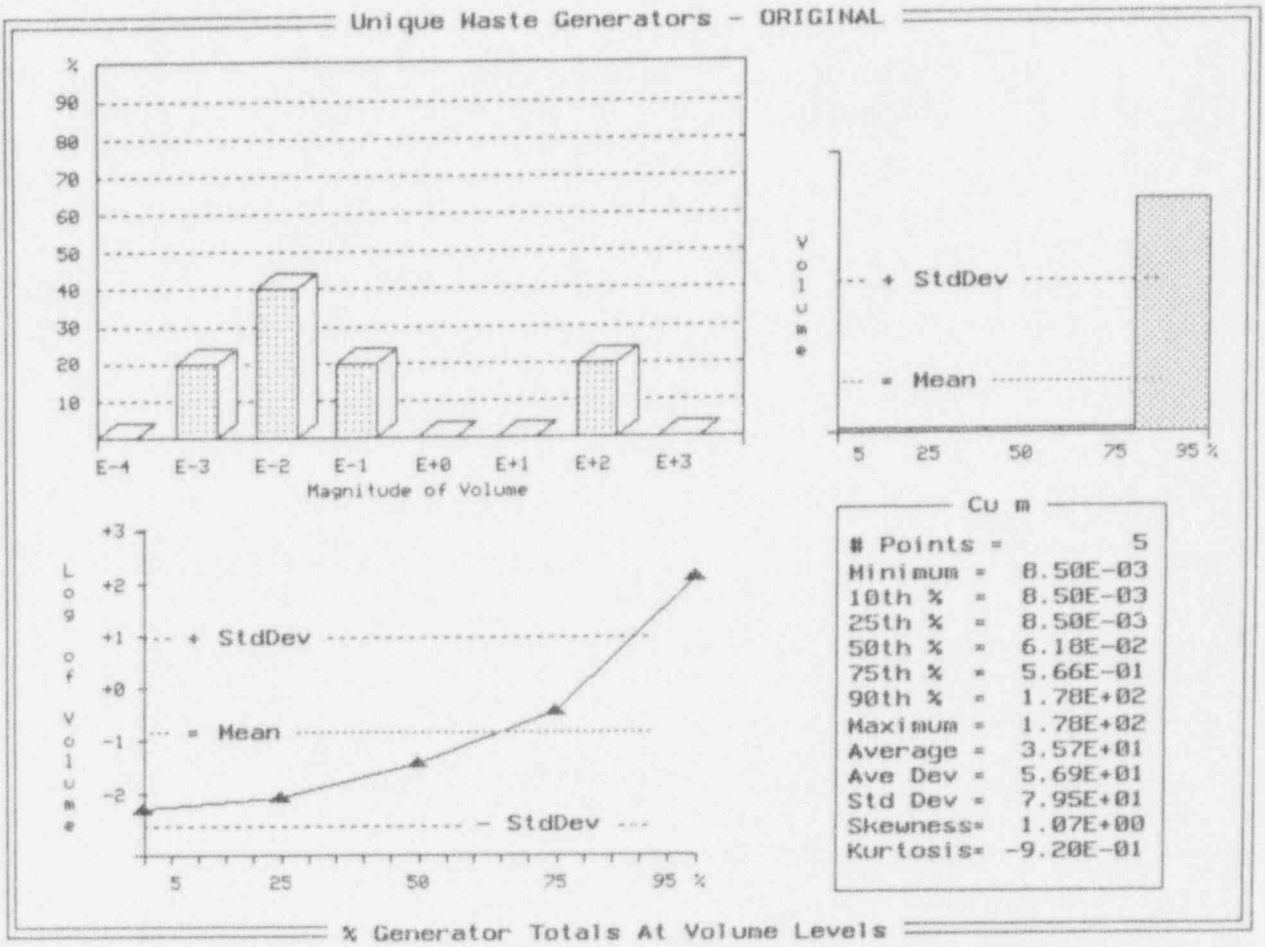


Exhibit F-45 (Continued)

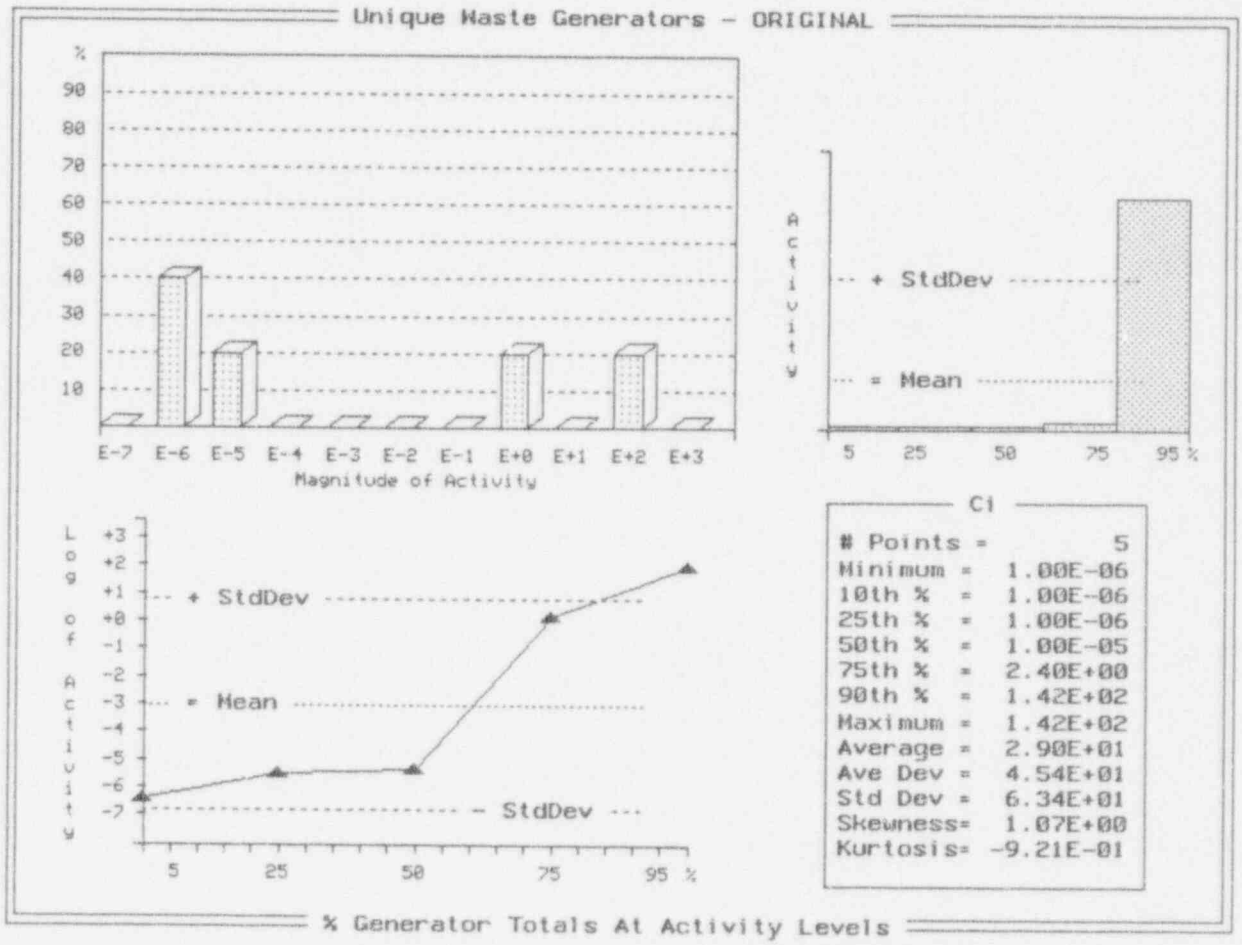


Exhibit F-46
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Massachusetts
Waste generator class:	Academic
Total number of waste generators:	19
Total associated waste volume (m^3):	113
Total associated waste activity (Ci):	86.7
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	7
Percent of total(%):	37
Total number of shipping records:	25
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	16,290
Total waste volume (m^3):	28.7
Fractional waste volume (%): (this analysis/total)	25
Total waste activity (Ci):	25.6
Fractional waste activity (%): (this analysis/total)	29

Exhibit F-46 (Continued)

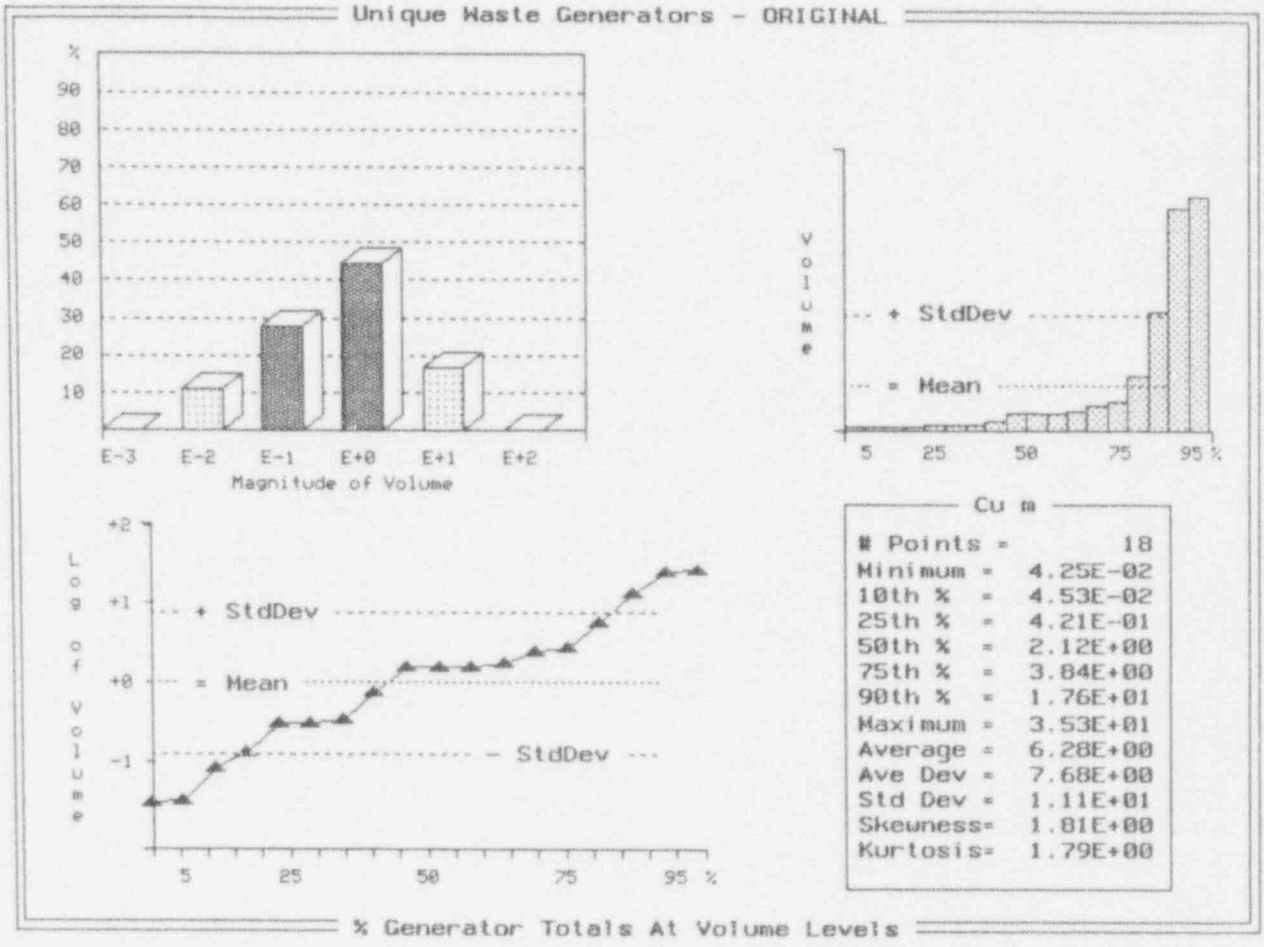


Exhibit F-46 (Continued)

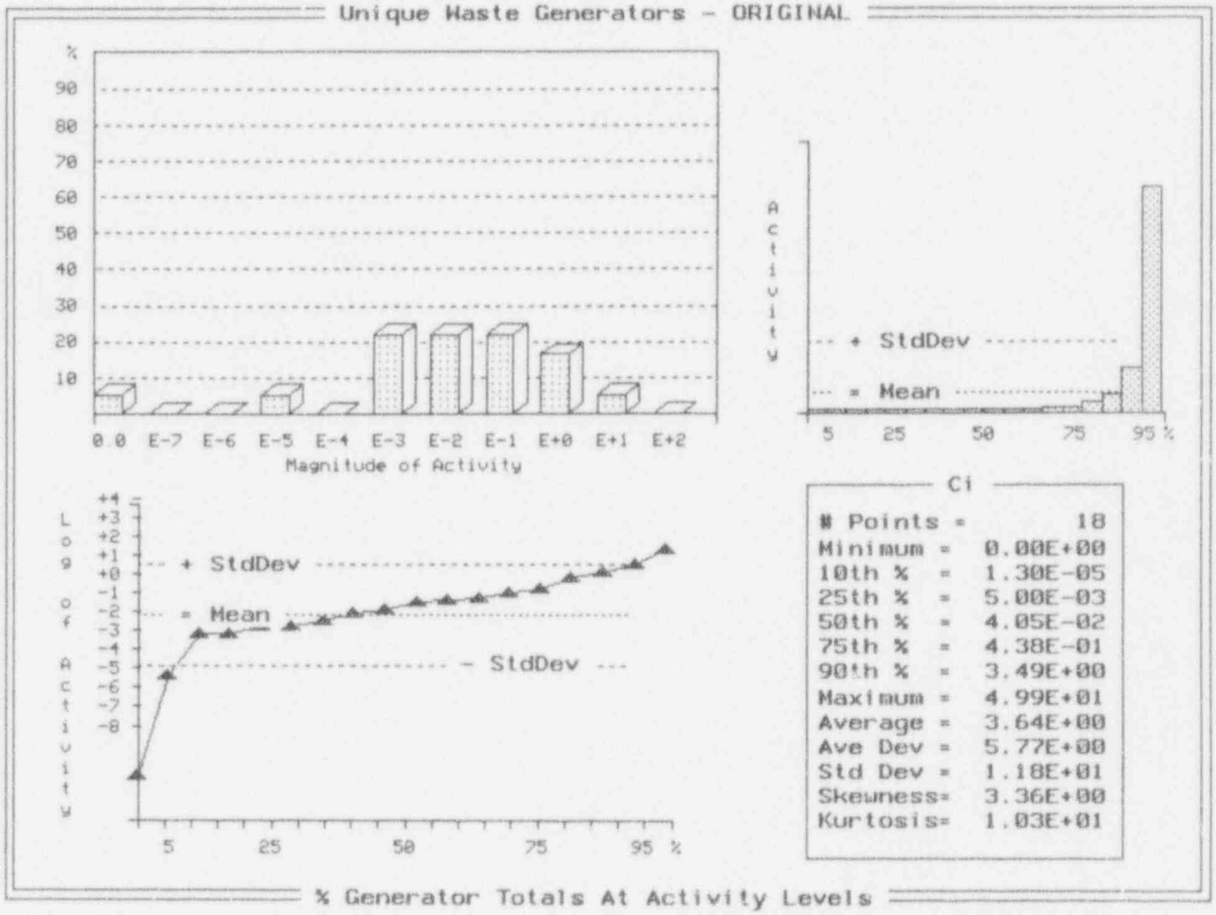


Exhibit F-47
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Massachusetts
Waste generator class:	Medical
Total number of waste generators:	35
Total associated waste volume (m^3):	130
Total associated waste activity (Ci):	15.2
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	5
Percent of total(%):	14
Total number of shipping records:	20
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	26,610
Total waste volume (m^3):	34.3
Fractional waste volume (%): (this analysis/total)	26
Total waste activity (Ci):	0.5
Fractional waste activity (%): (this analysis/total)	3.2

Exhibit F-47 (Continued)

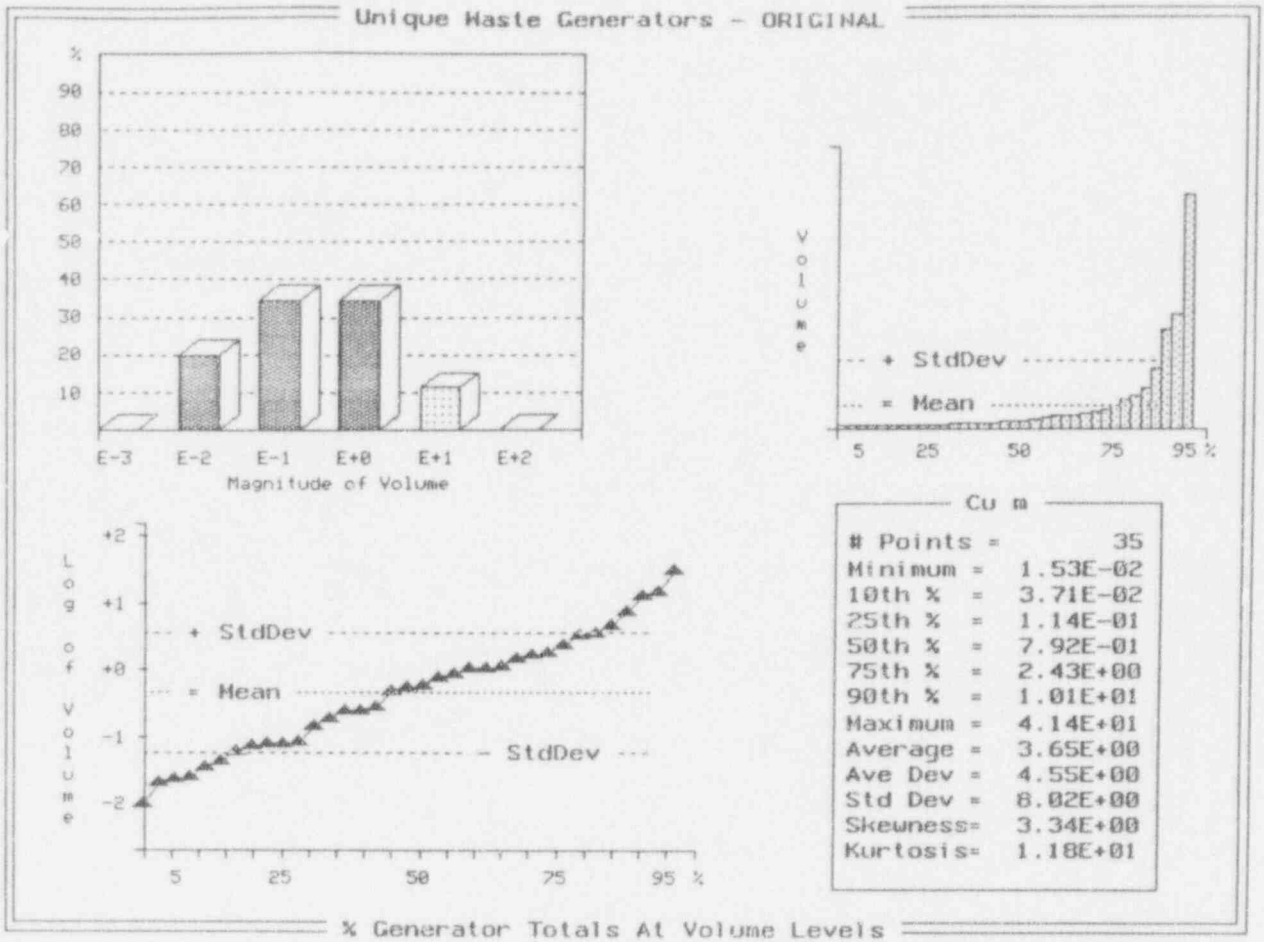


Exhibit F-47 (Continued)

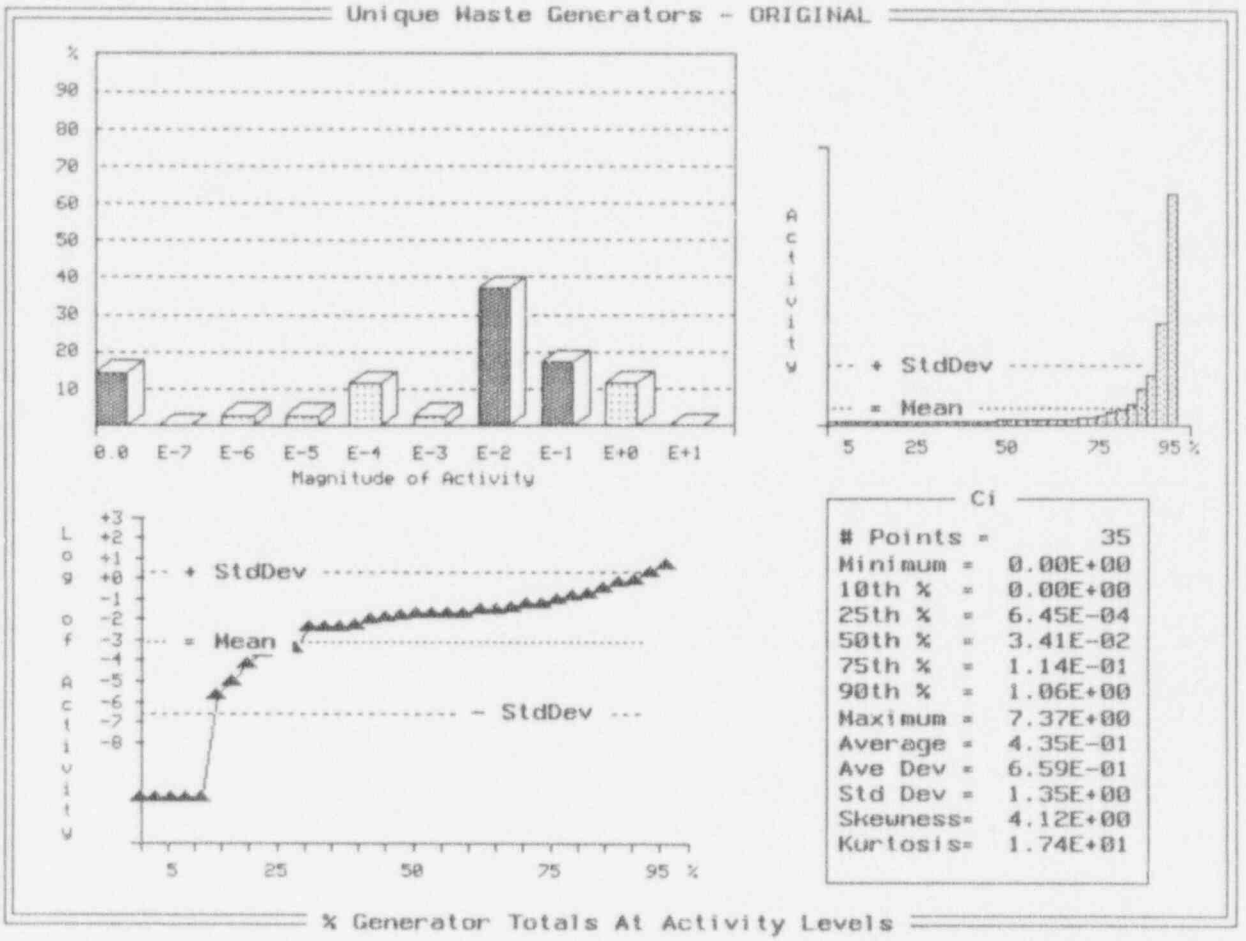


Exhibit F-48
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Massachusetts
Waste generator class:	Industrial
Total number of waste generators:	121
Total associated waste volume (m^3):	4,606
Total associated waste activity (Ci):	132,500
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	42
Percent of total(%):	35
Total number of shipping records:	462
Number of shipping records with container data:	61
Number of waste containers:	3,770
Weight of shipments (kg):	3,792,000
Total waste volume (m^3):	3,707
Fractional waste volume (%): (this analysis/total)	80
Total waste activity (Ci):	14,180
Fractional waste activity (%): (this analysis/total)	11

Exhibit F-48 (Continued)

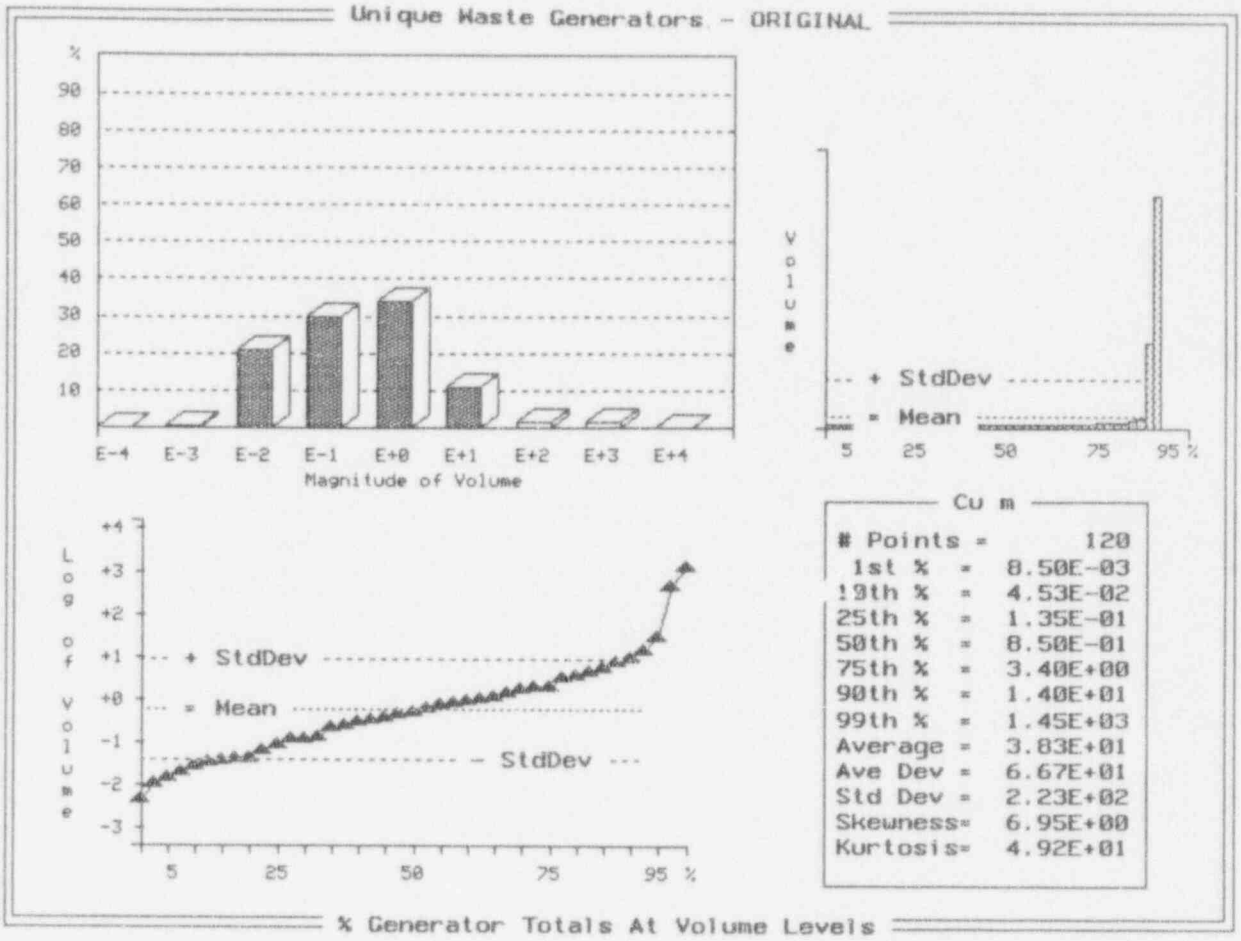


Exhibit F-48 (Continued)

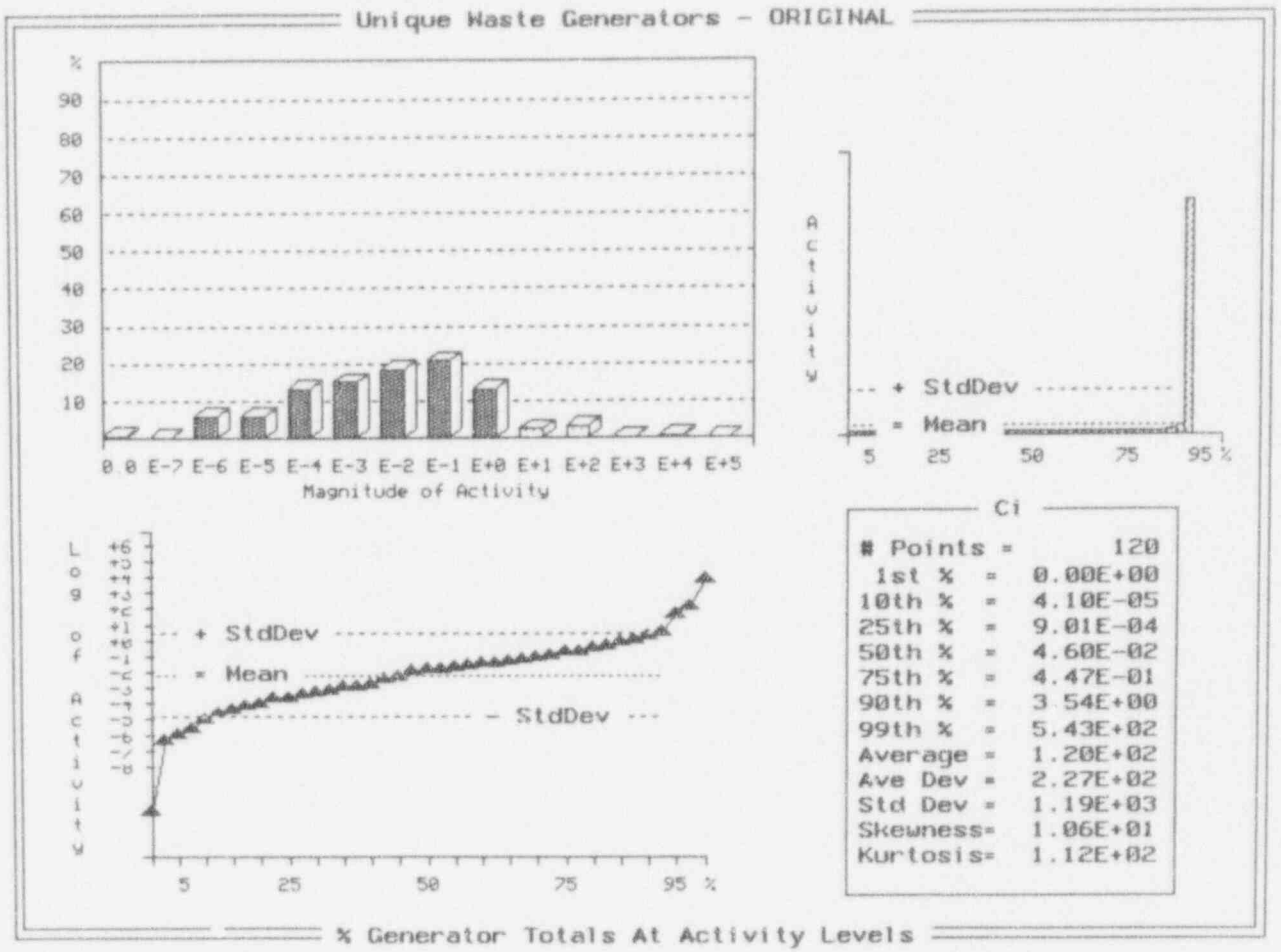


Exhibit F-48 (Continued)

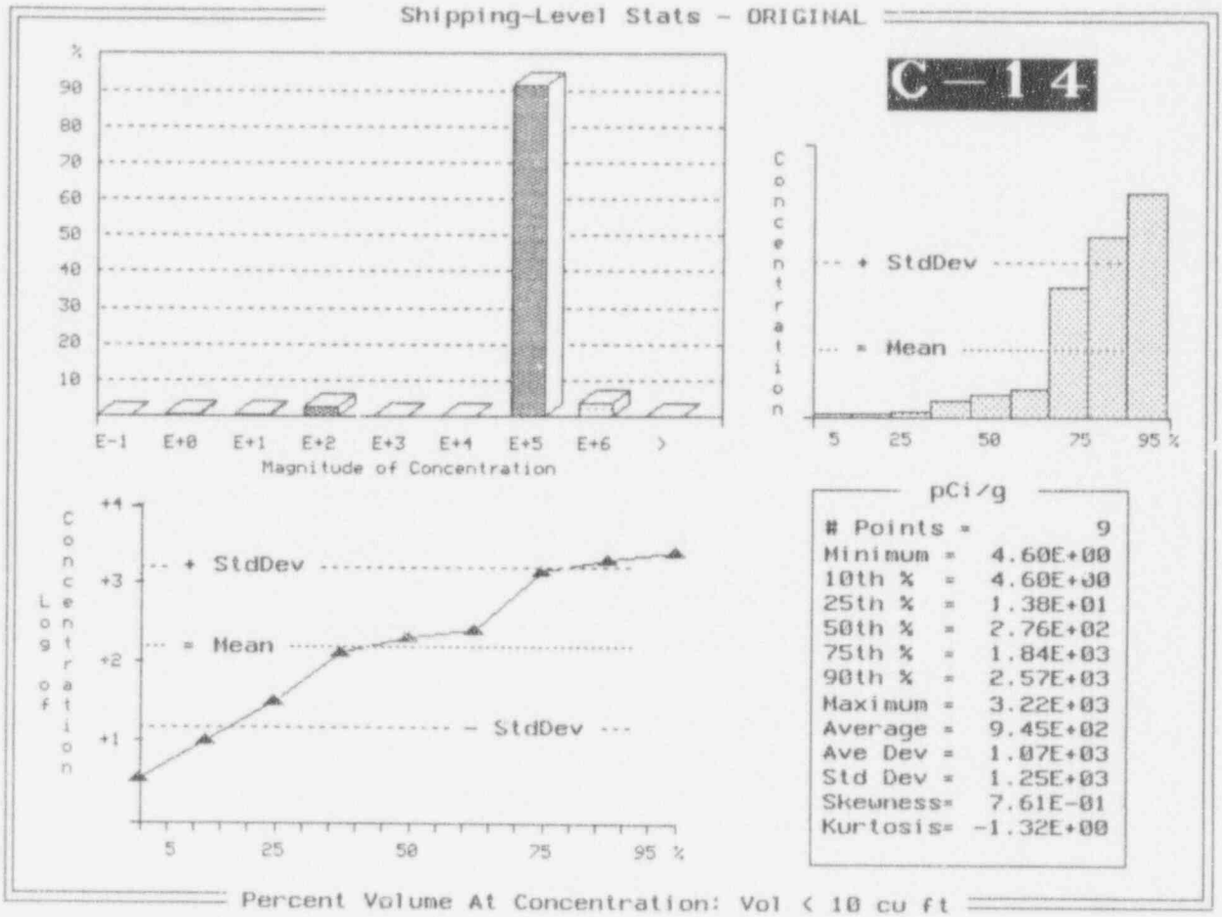


Exhibit F-48 (Continued)

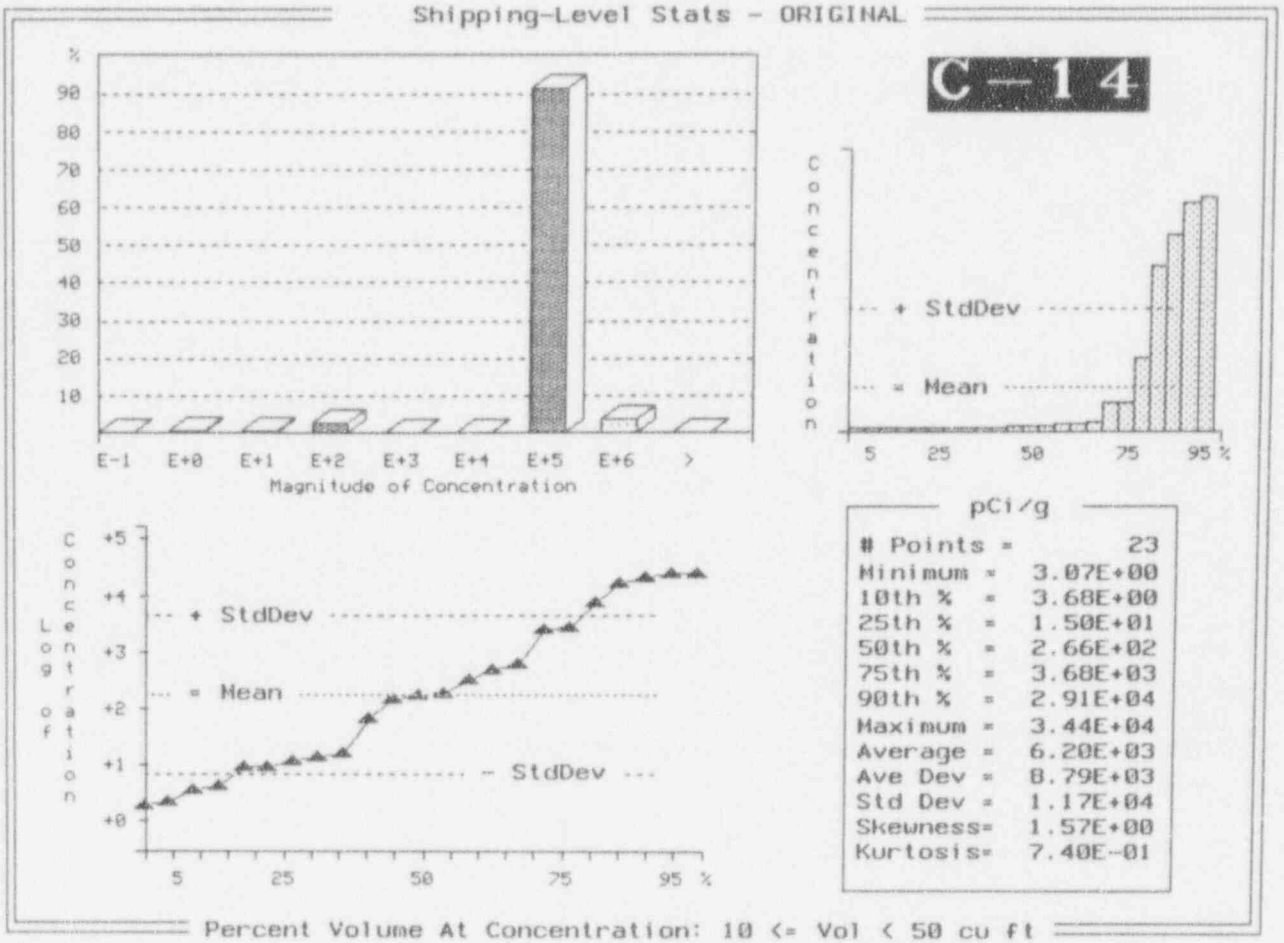


Exhibit F-48 (Continued)

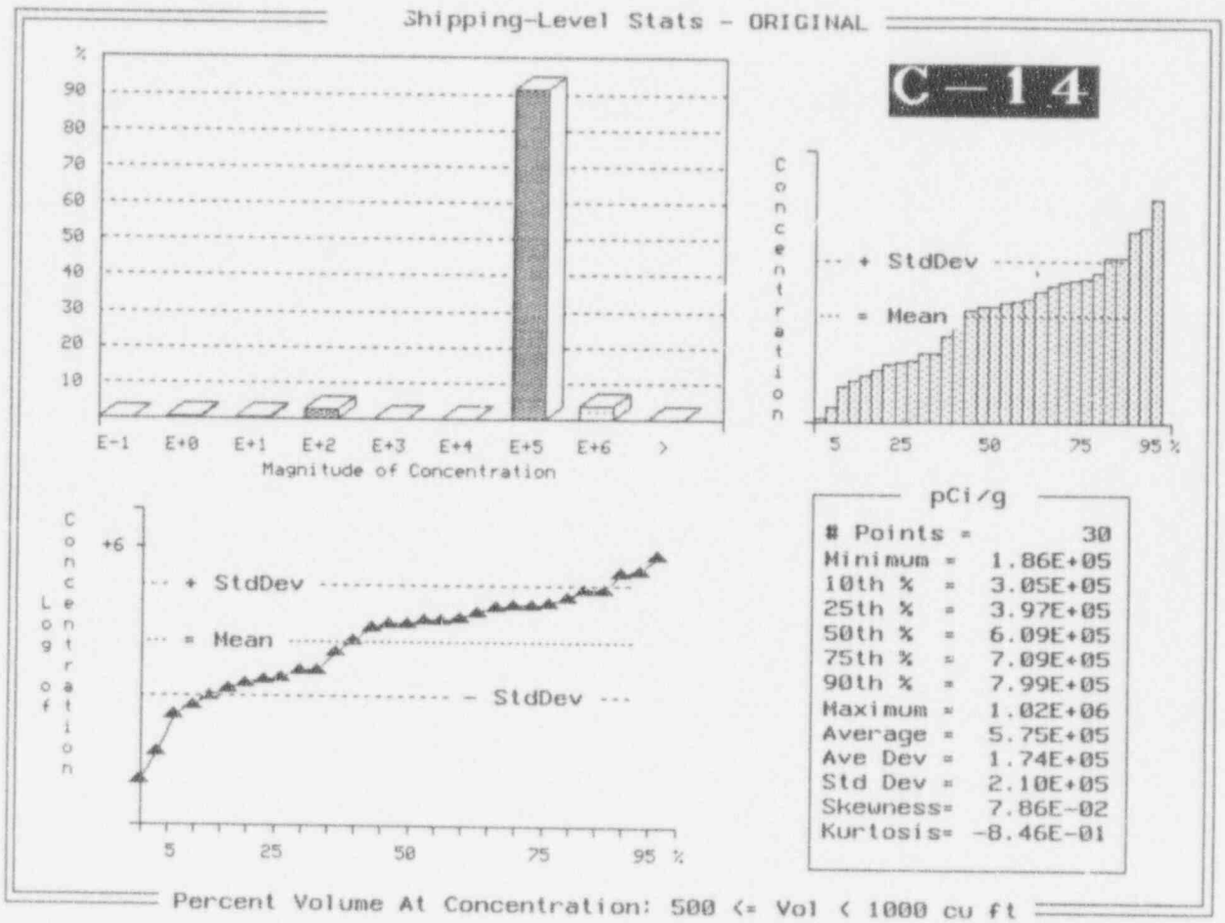


Exhibit F-48 (Continued)

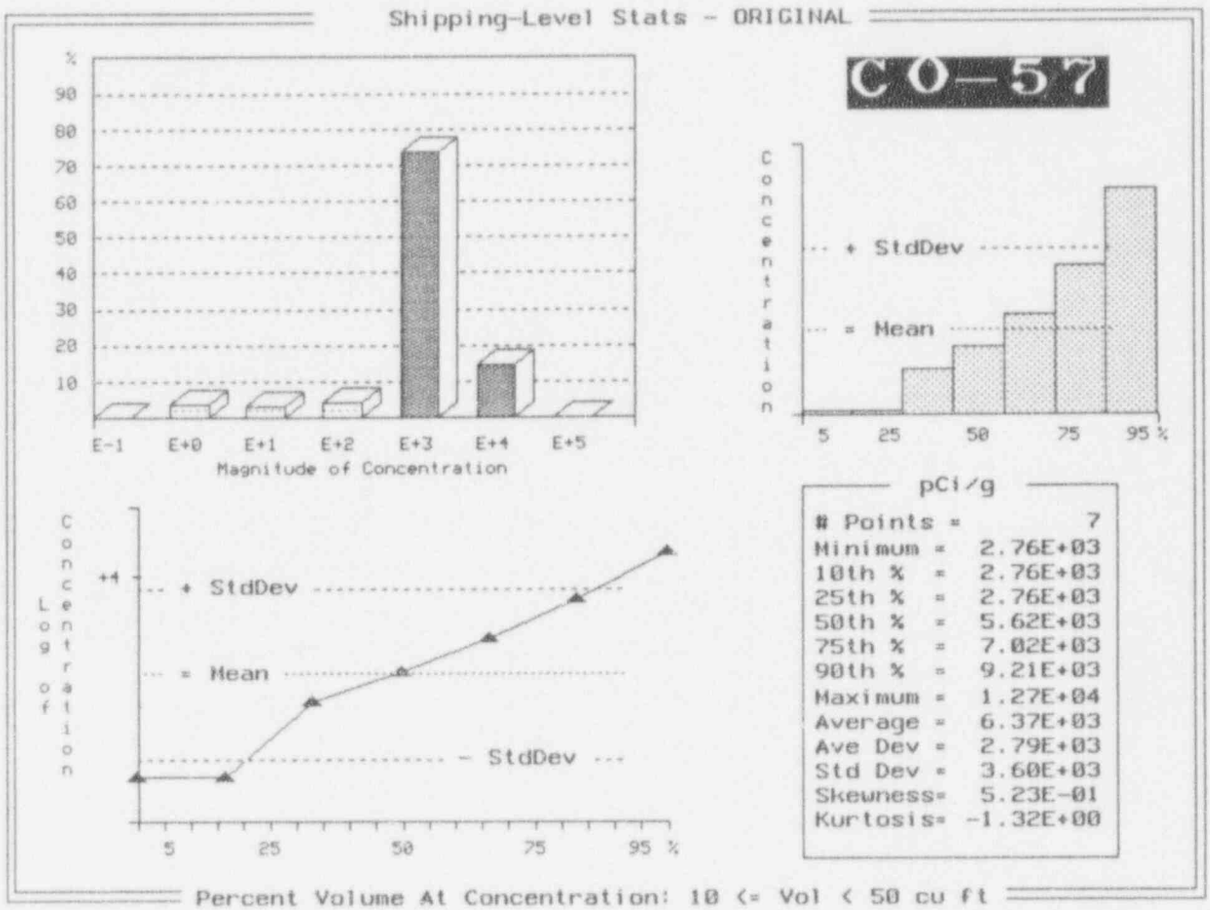
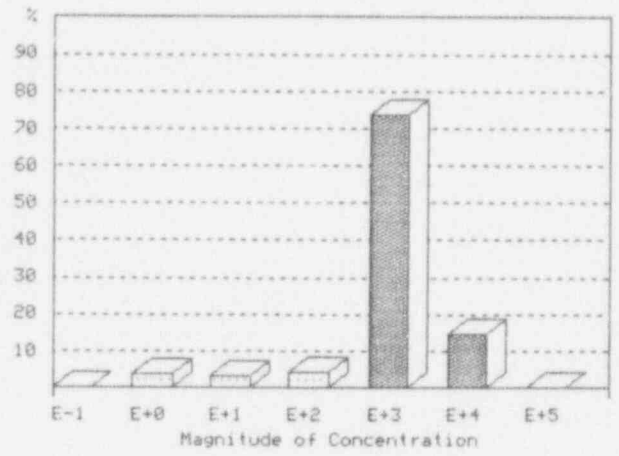
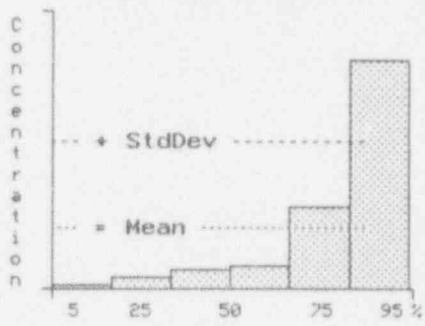


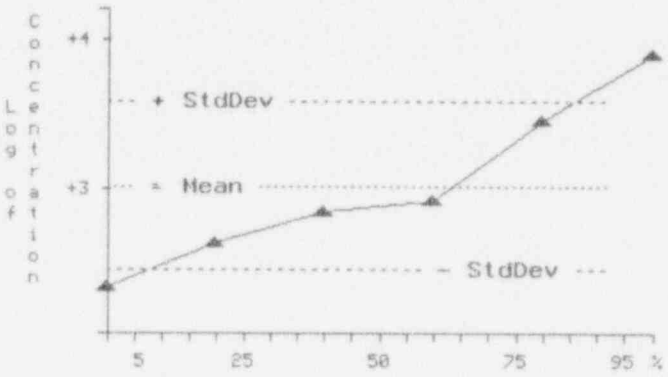
Exhibit F-48 (Continued)

Shipping-Level Stats - ORIGINAL



CO-57





pCi/g

# Points =	6
Minimum =	2.61E+02
10th % =	2.61E+02
25th % =	5.17E+02
50th % =	8.20E+02
75th % =	3.38E+03
90th % =	3.38E+03
Maximum =	9.18E+03
Average =	2.53E+03
Ave Dev =	2.50E+03
Std Dev =	3.45E+03
Skewness=	1.09E+00
Kurtosis=	-6.17E-01

Percent Volume At Concentration: 50 <= Vol < 100 cu ft

Exhibit F-48 (Continued)

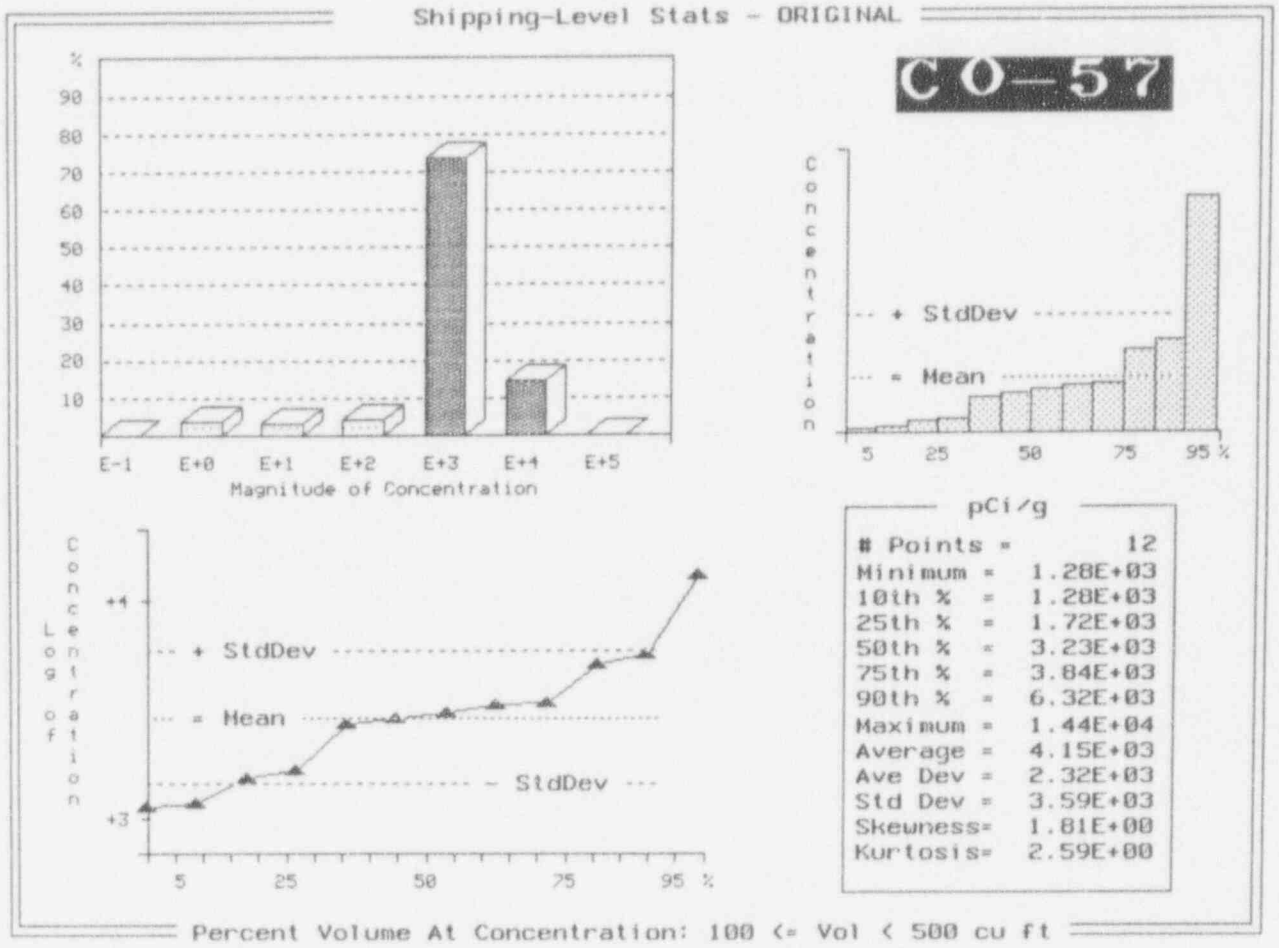


Exhibit F-48 (Continued)

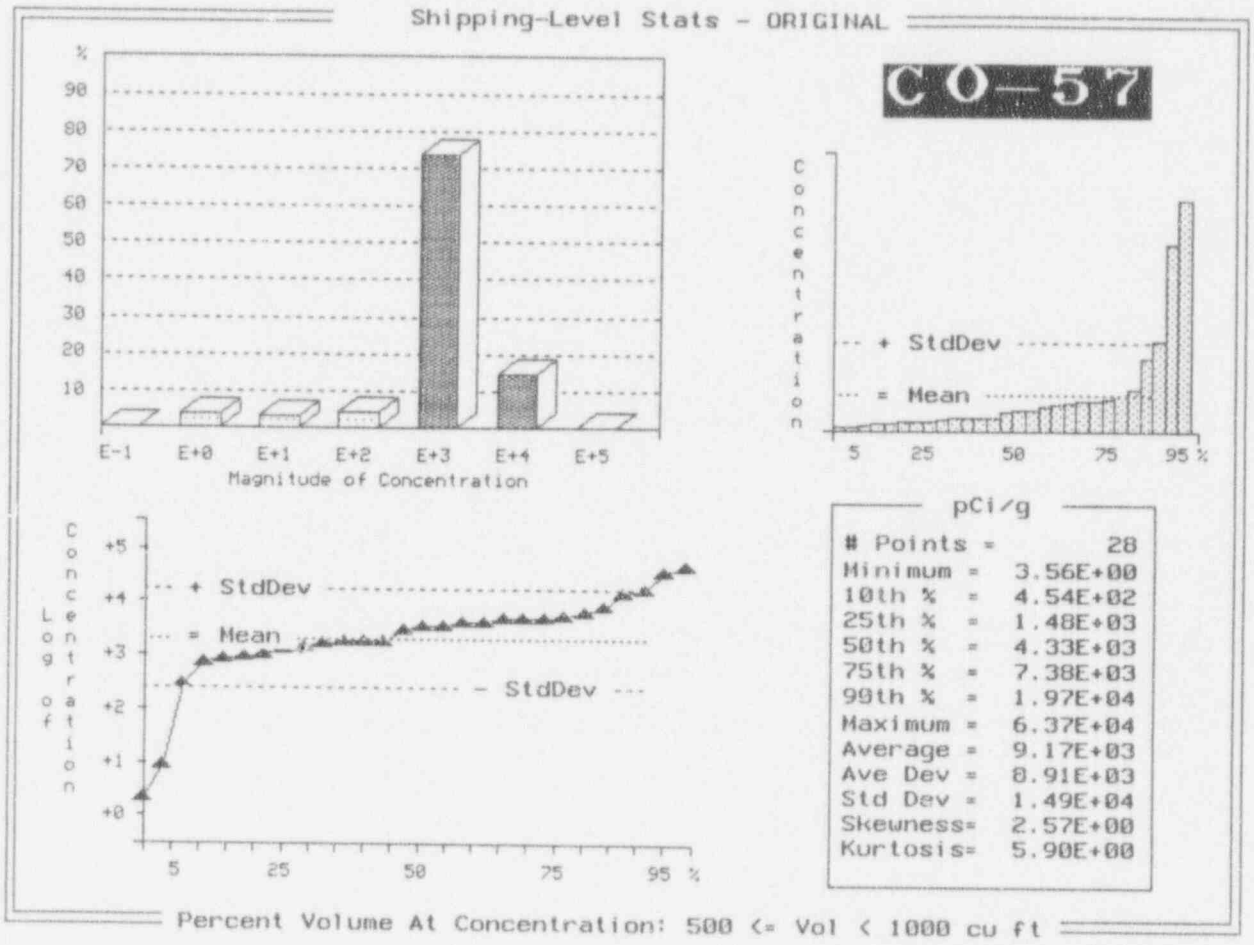


Exhibit F-48 (Continued)

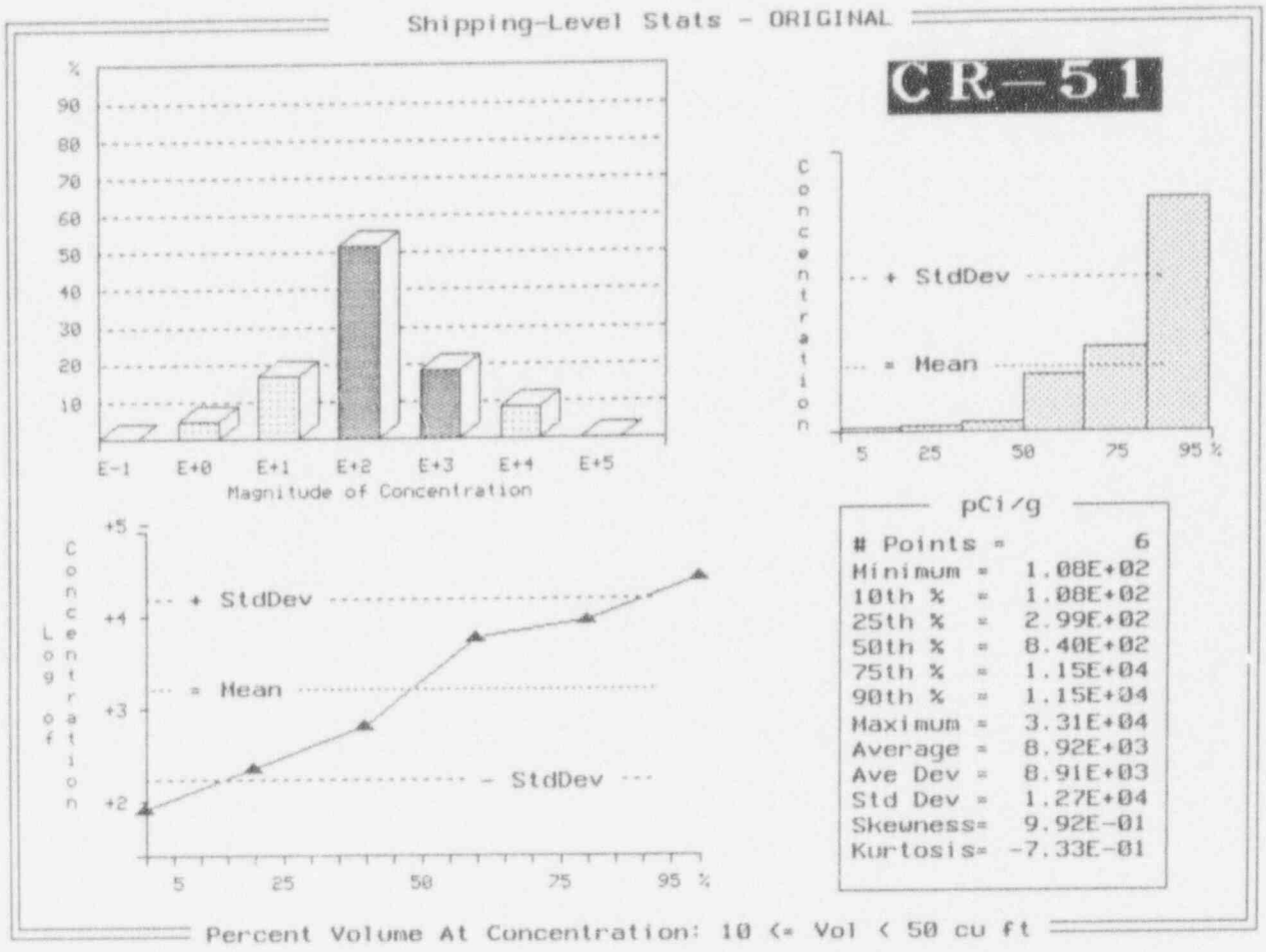
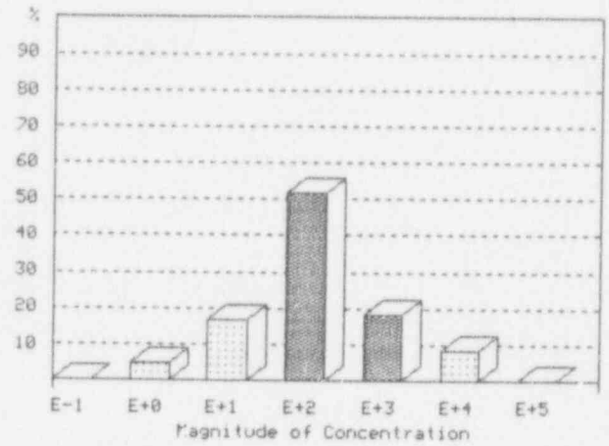
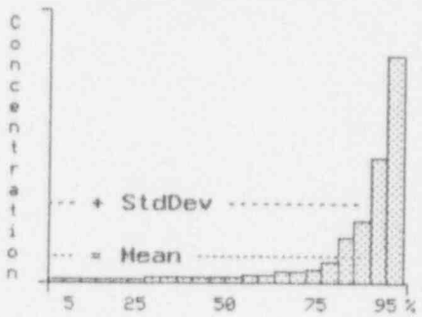


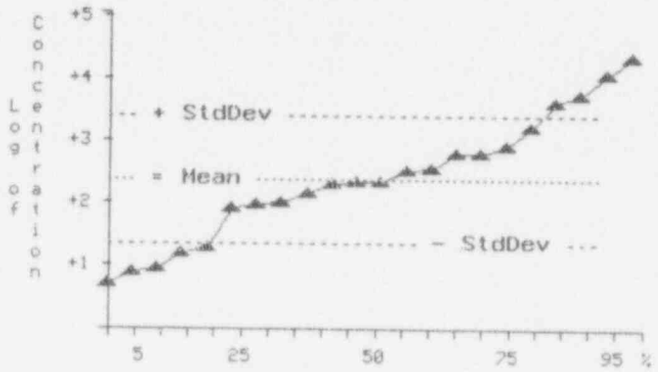
Exhibit F-48 (Continued)

Shipping-Level Stats - ORIGINAL



CR-51





pCi/g

# Points =	22
Minimum =	7.53E+00
10th % =	1.15E+01
25th % =	1.15E+02
50th % =	2.96E+02
75th % =	1.11E+03
90th % =	7.59E+03
Maximum =	2.83E+04
Average =	2.92E+03
Ave Dev =	4.09E+03
Std Dev =	6.72E+03
Skewness=	2.72E+00
Kurtosis=	6.86E+00

Percent Volume At Concentration: 500 <= Vol < 1000 cu ft

Exhibit F-48 (Continued)

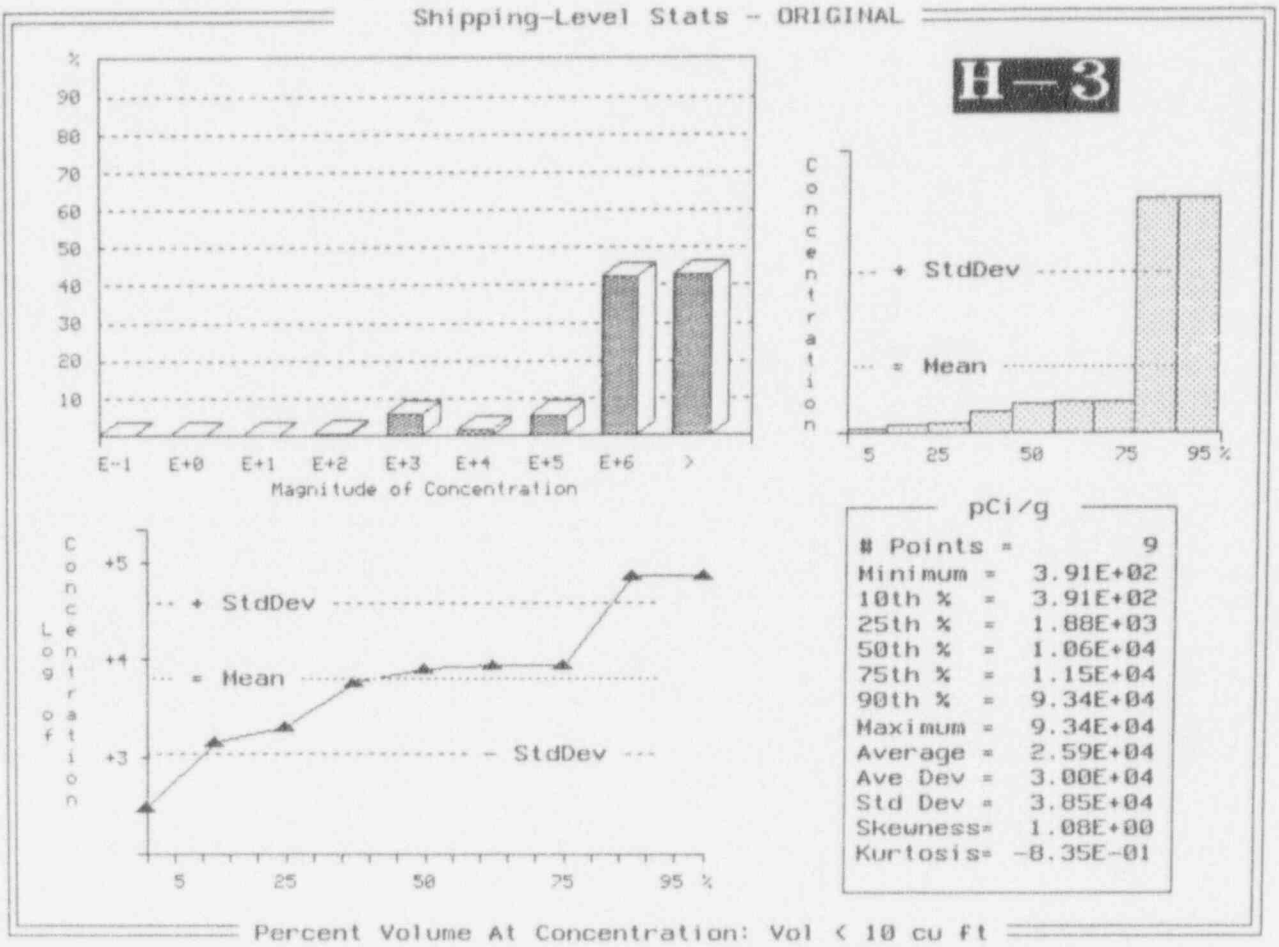


Exhibit F-48 (Continued)

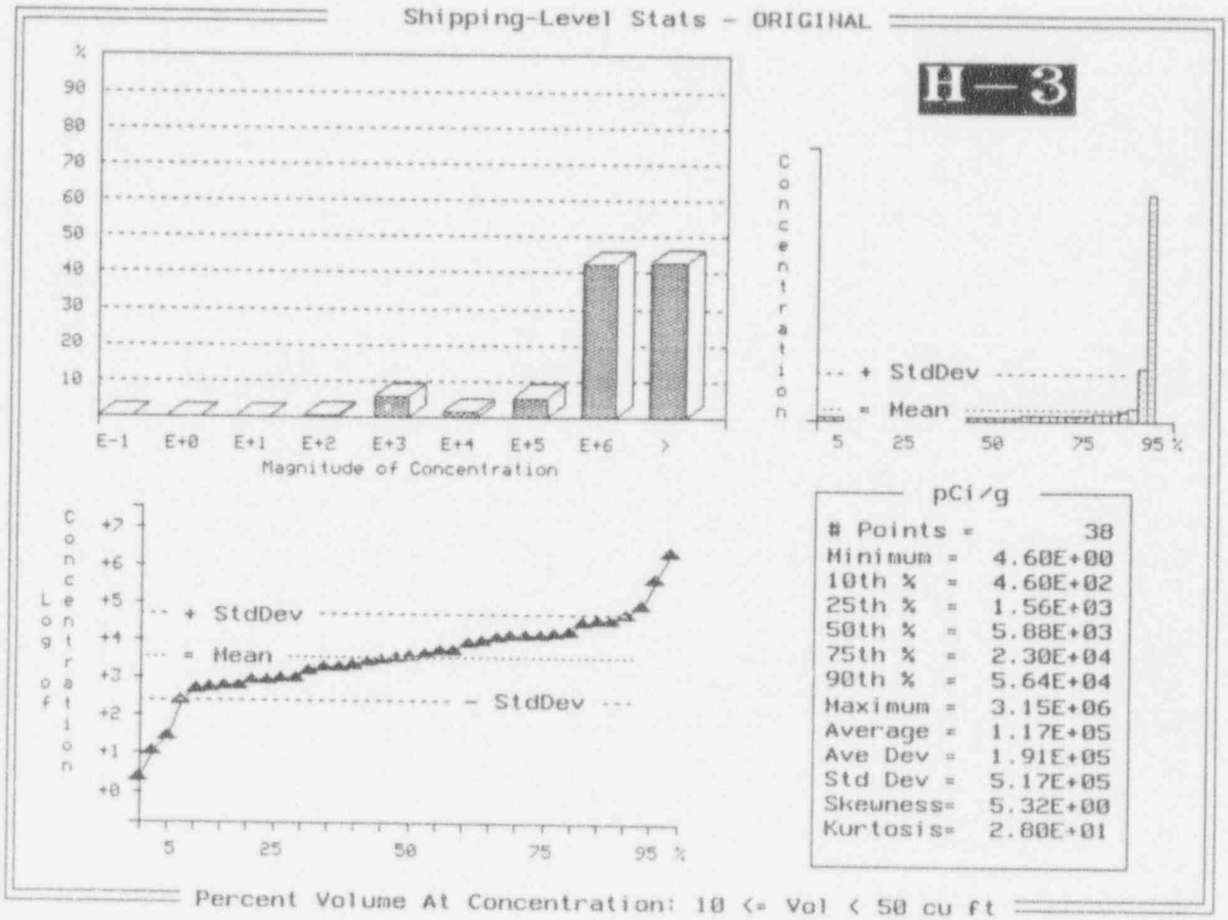


Exhibit F-48 (Continued)

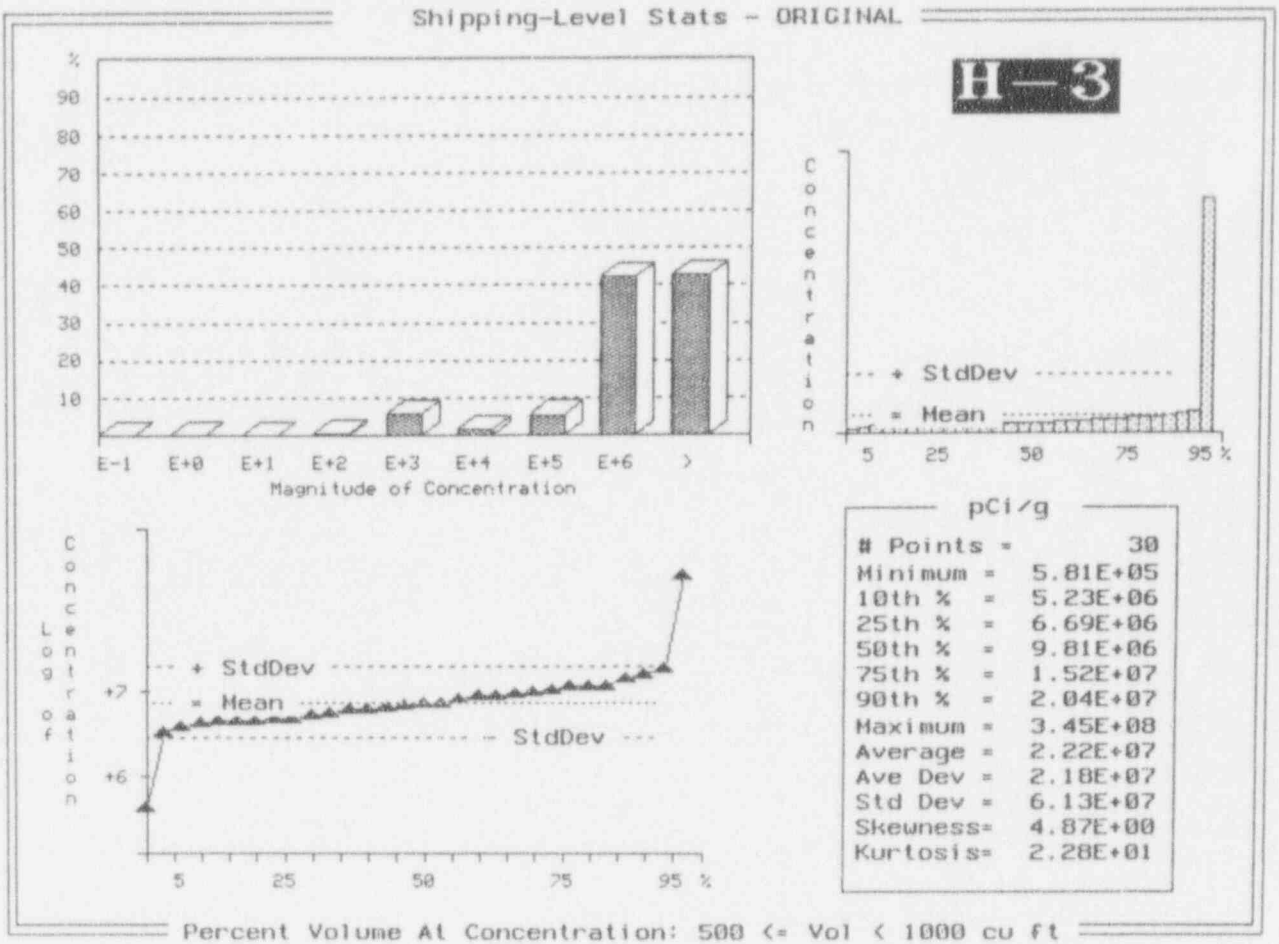


Exhibit F-48 (Continued)

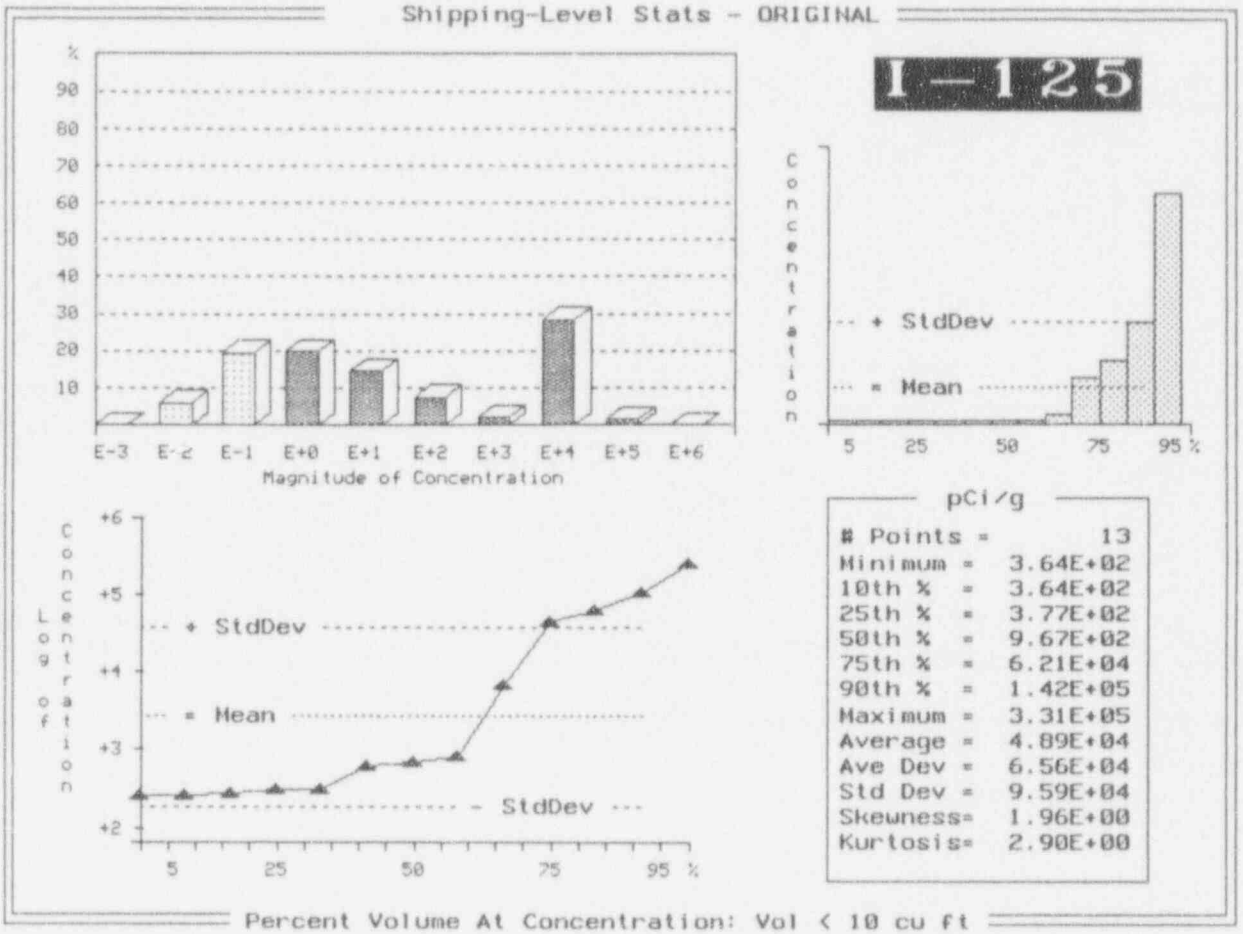


Exhibit F-48 (Continued)

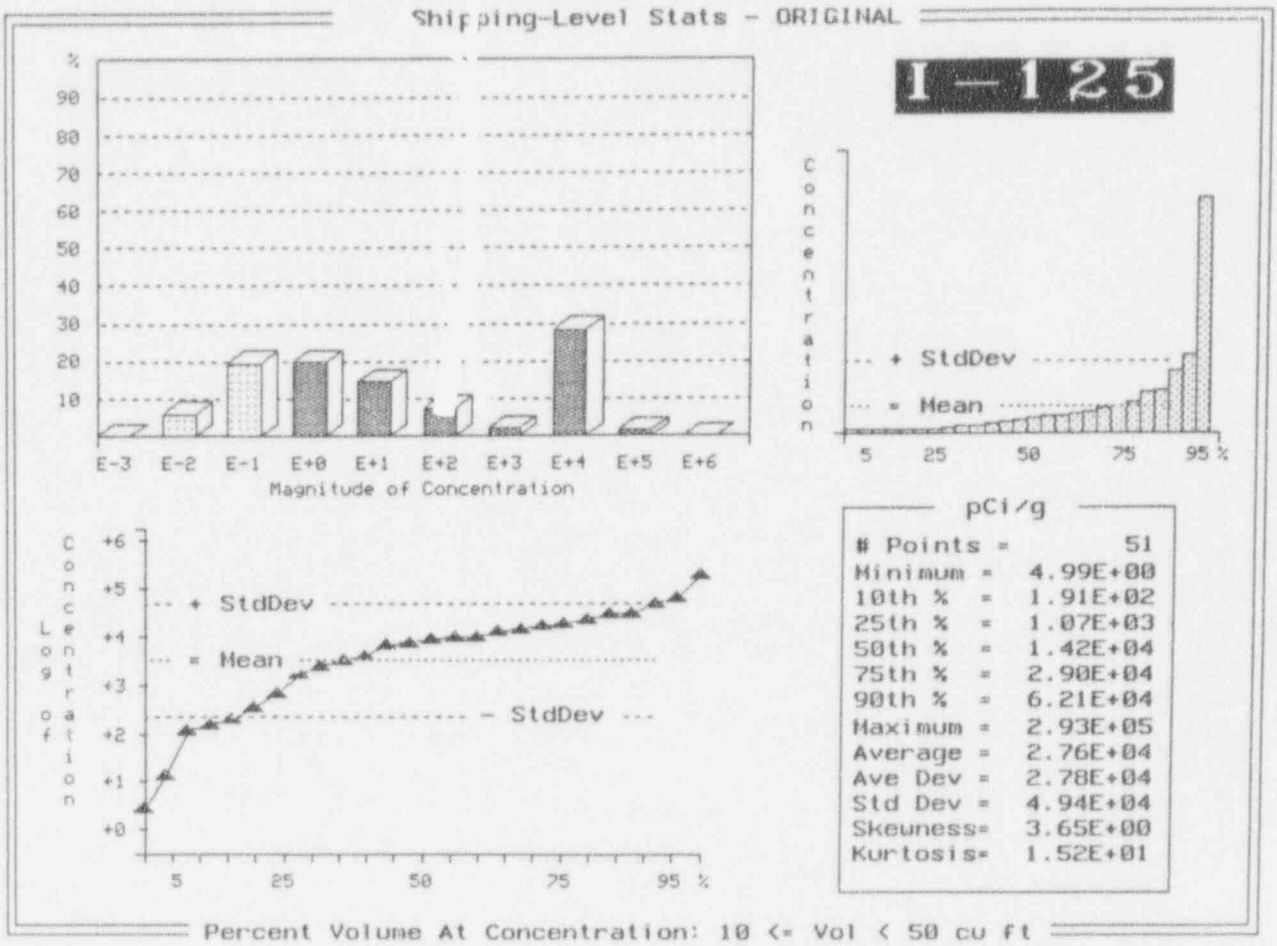


Exhibit F-48 (Continued)

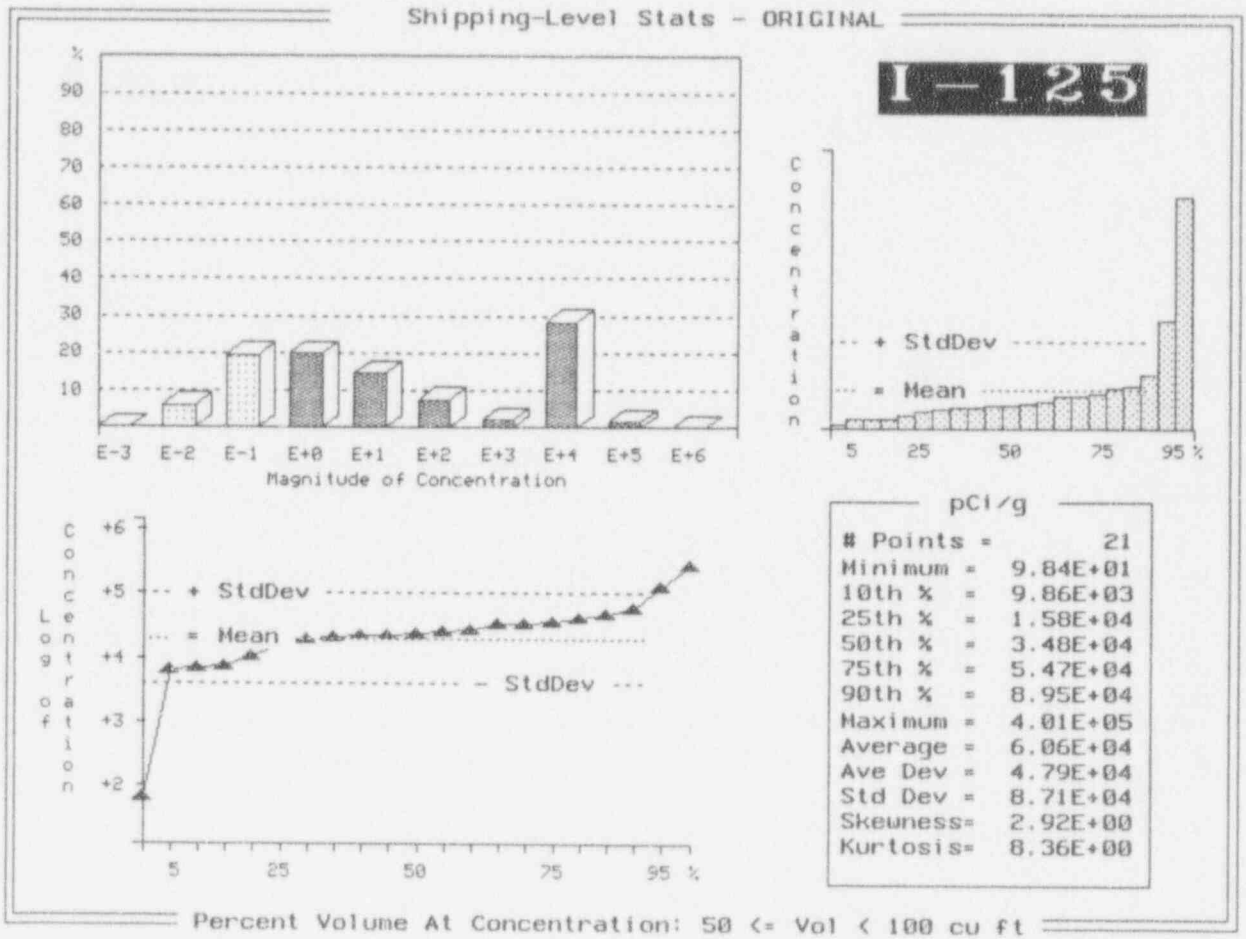


Exhibit F-48 (Continued)

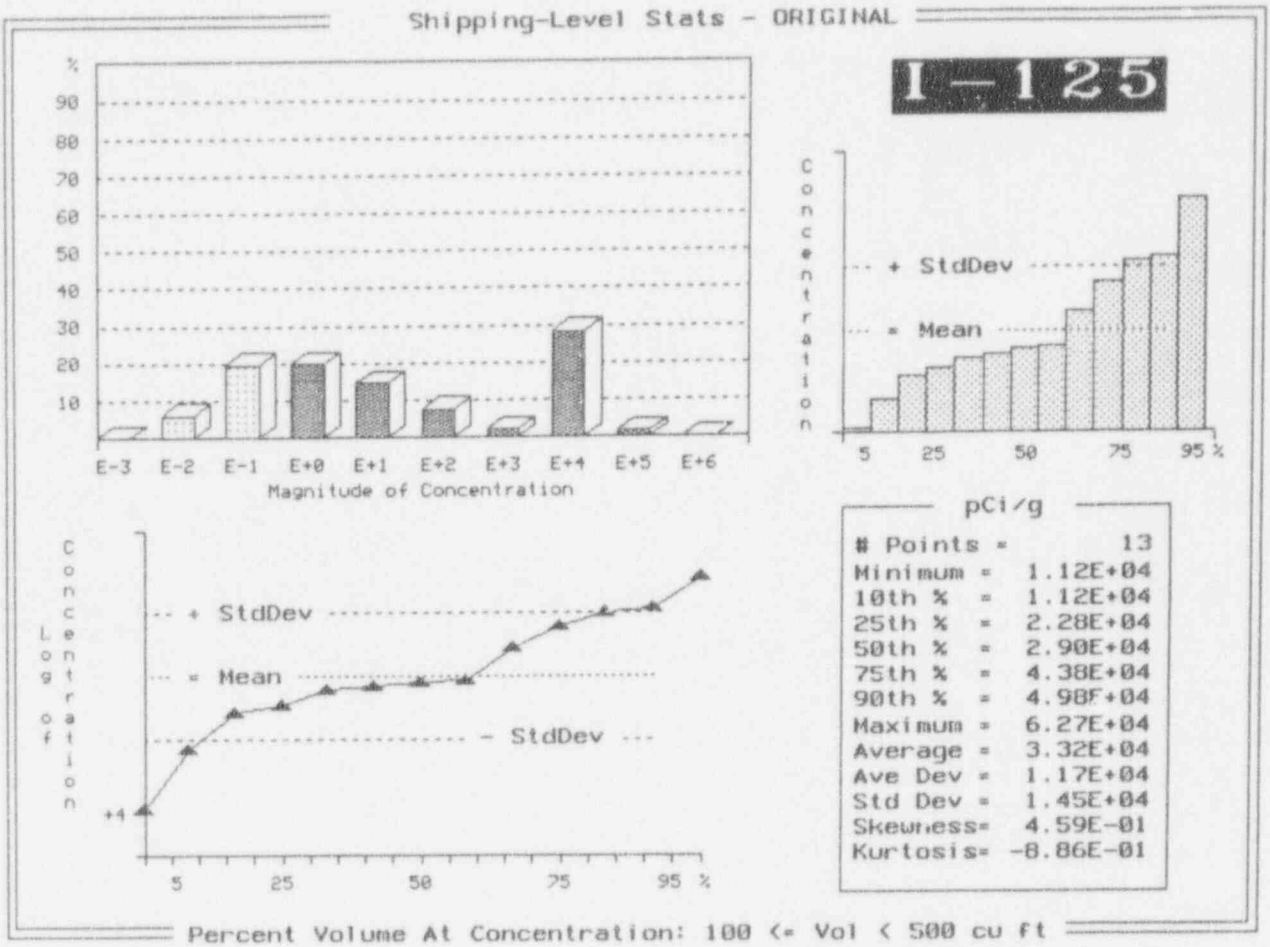


Exhibit F-48 (Continued)

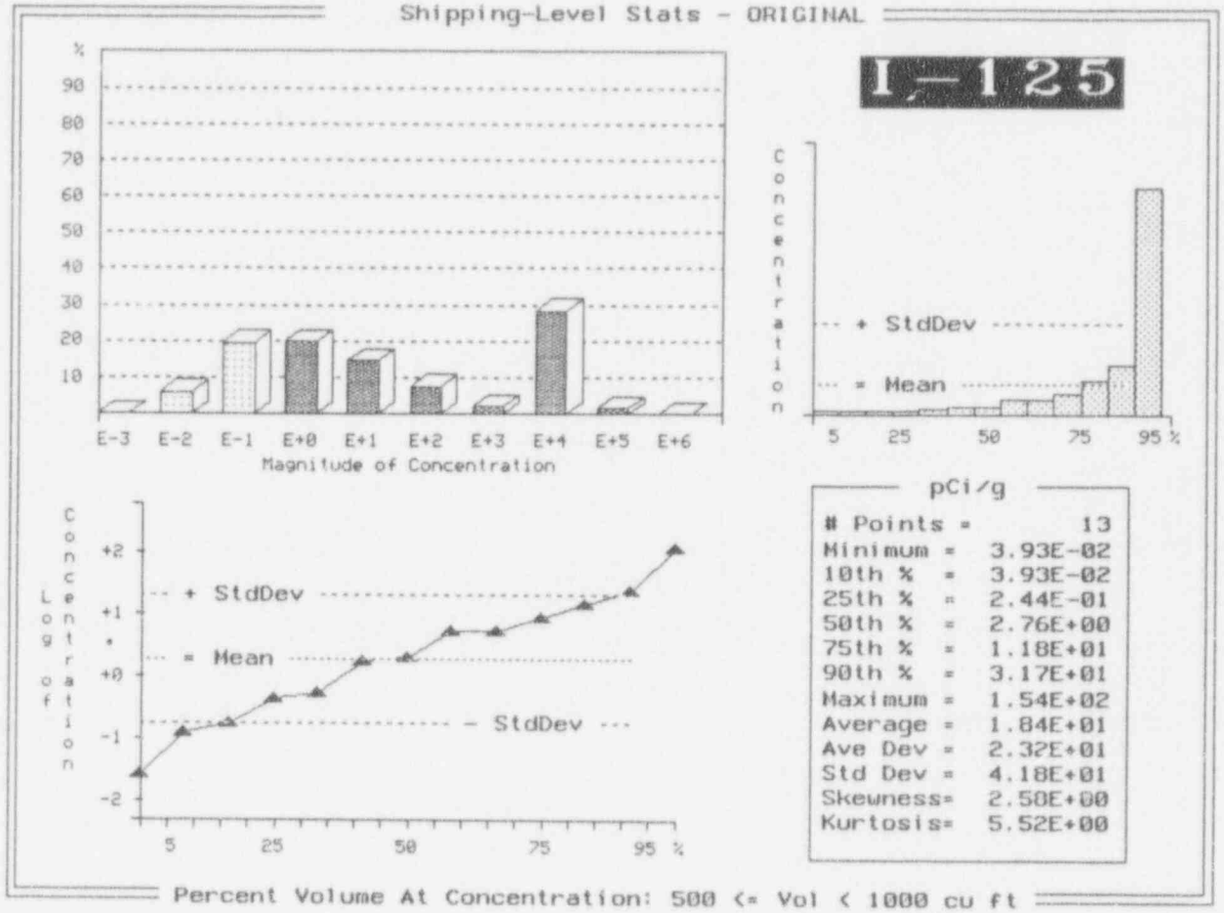


Exhibit F-48 (Continued)

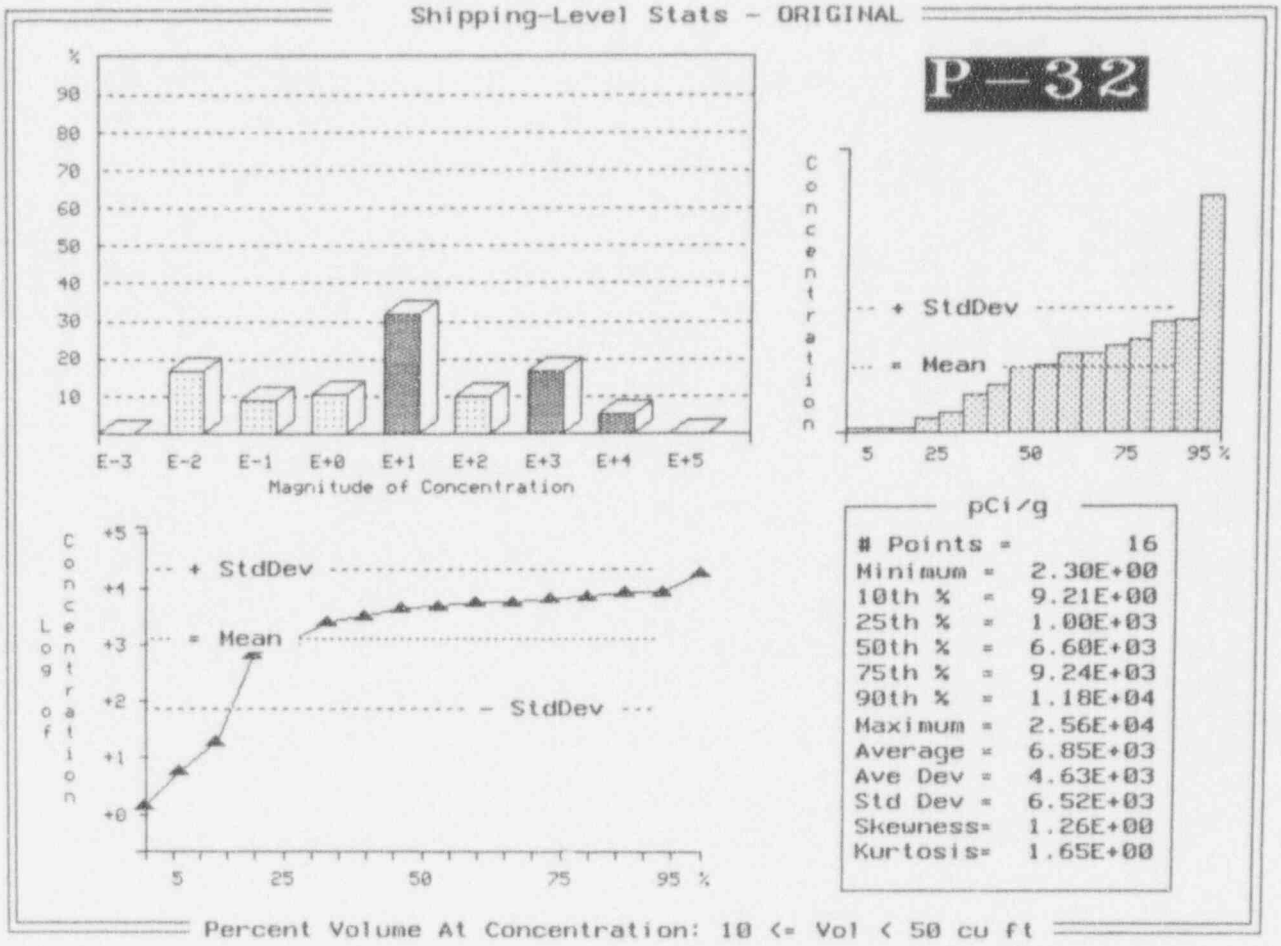


Exhibit F-48 (Continued)

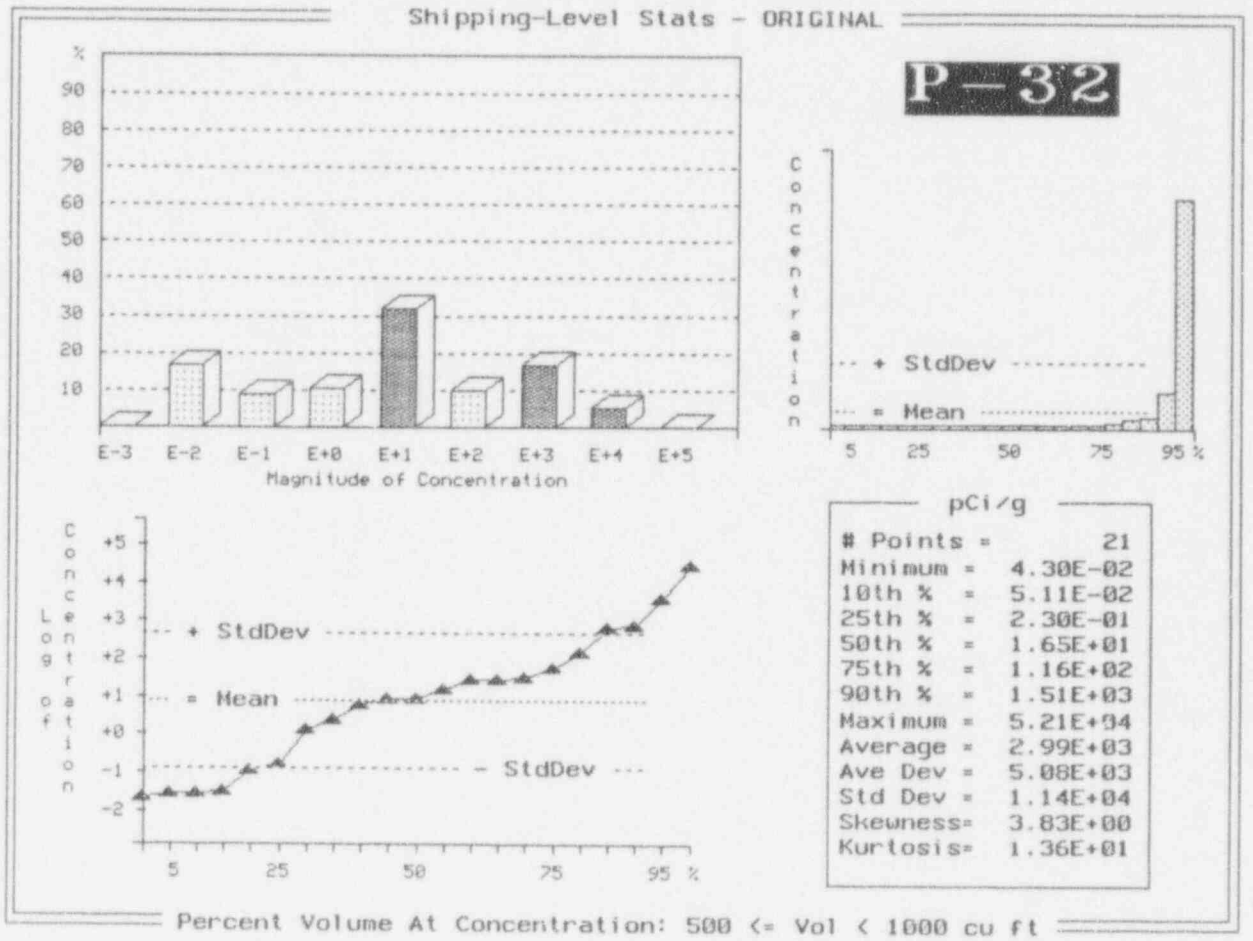


Exhibit F-48 (Continued)

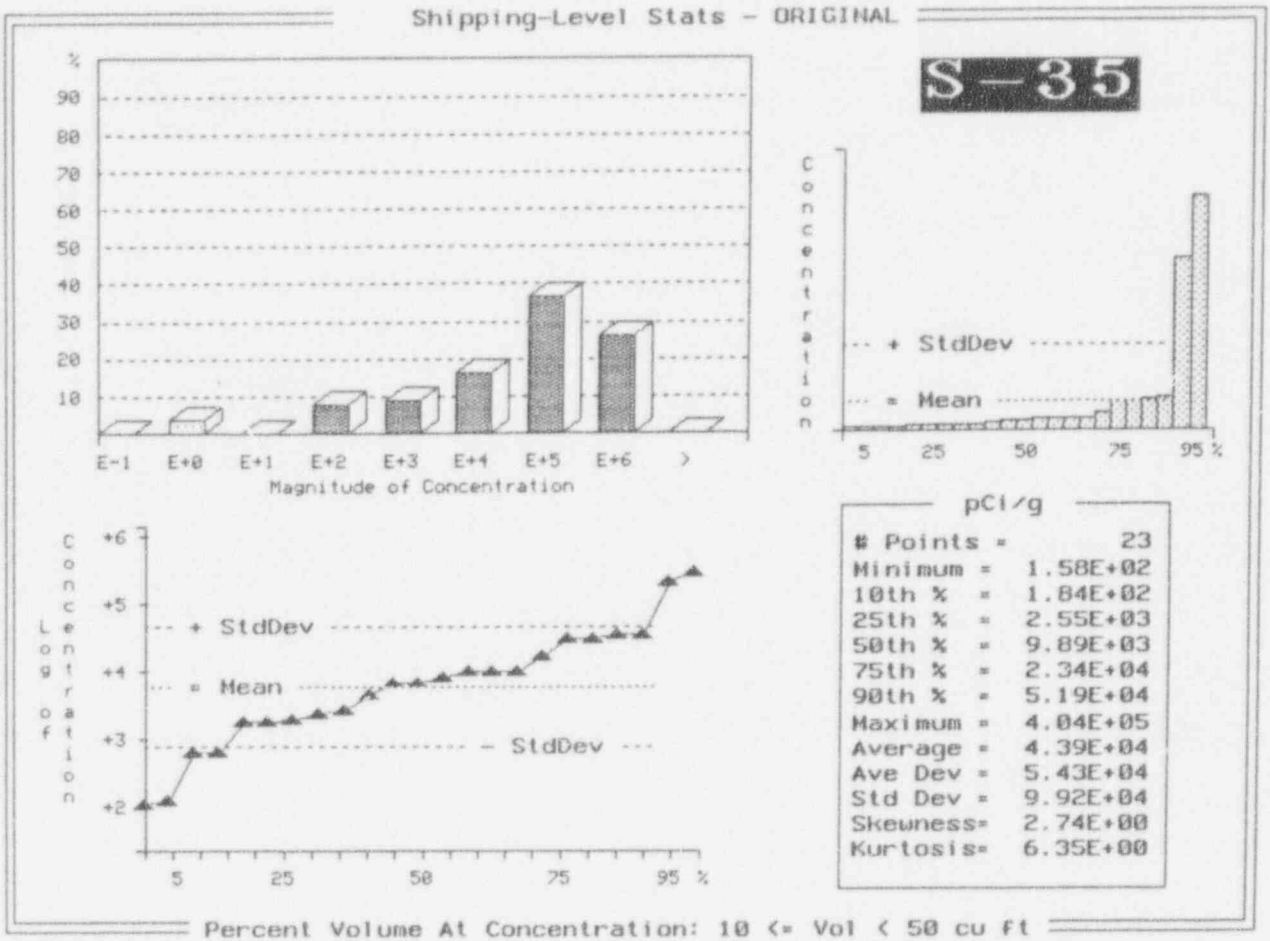


Exhibit F-48 (Continued)

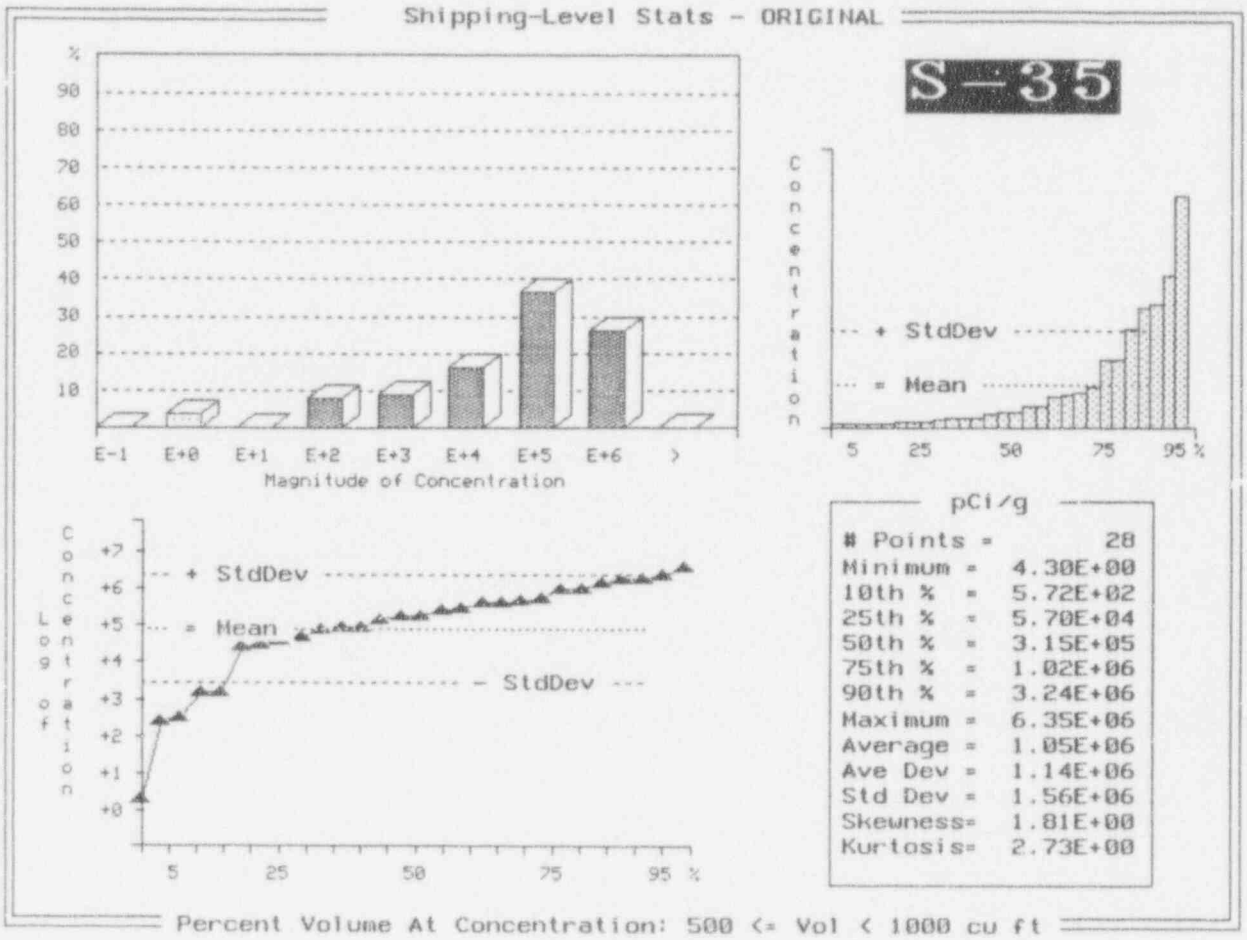


Exhibit F-48 (Continued)

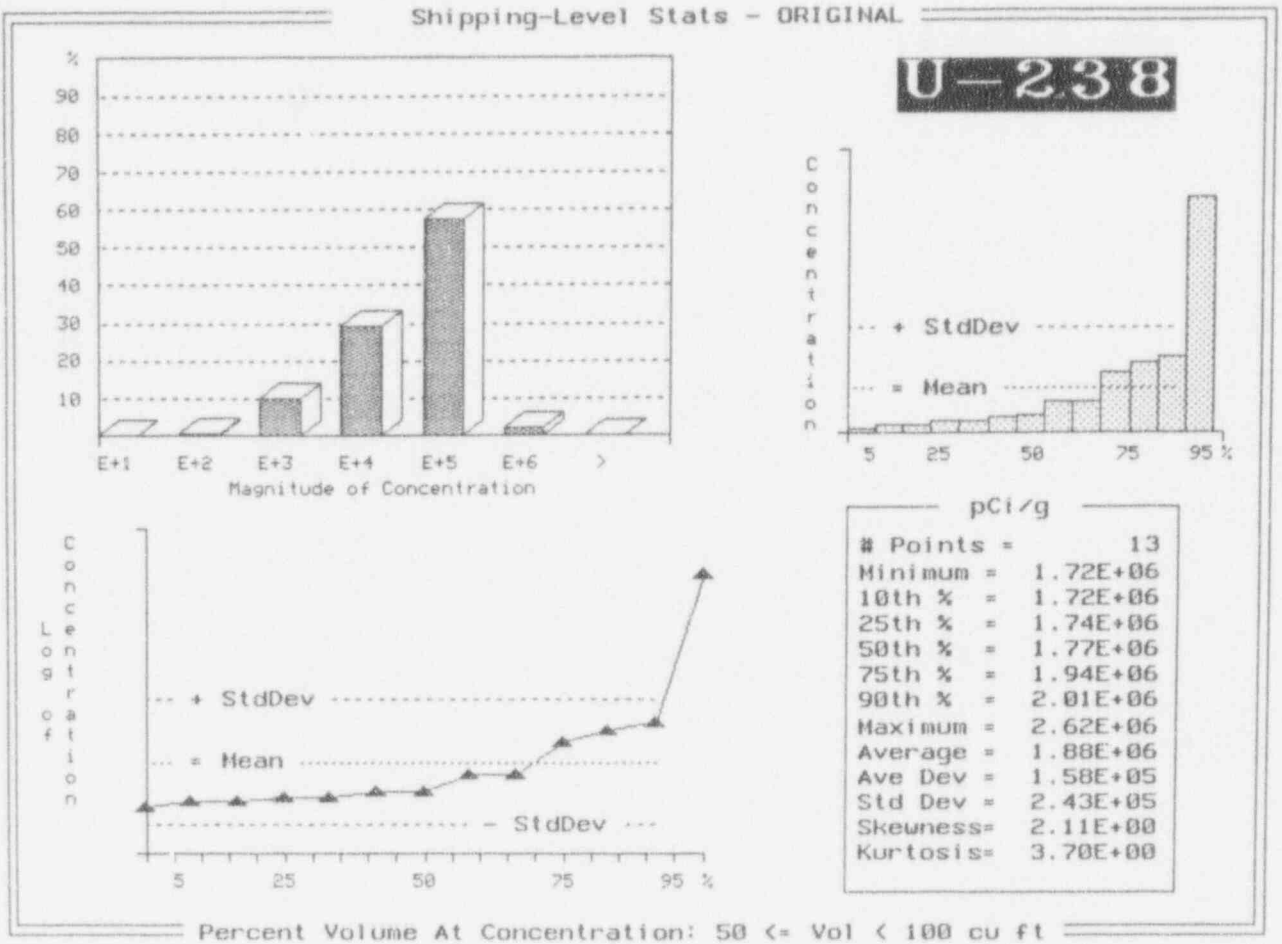


Exhibit F-48 (Continued)

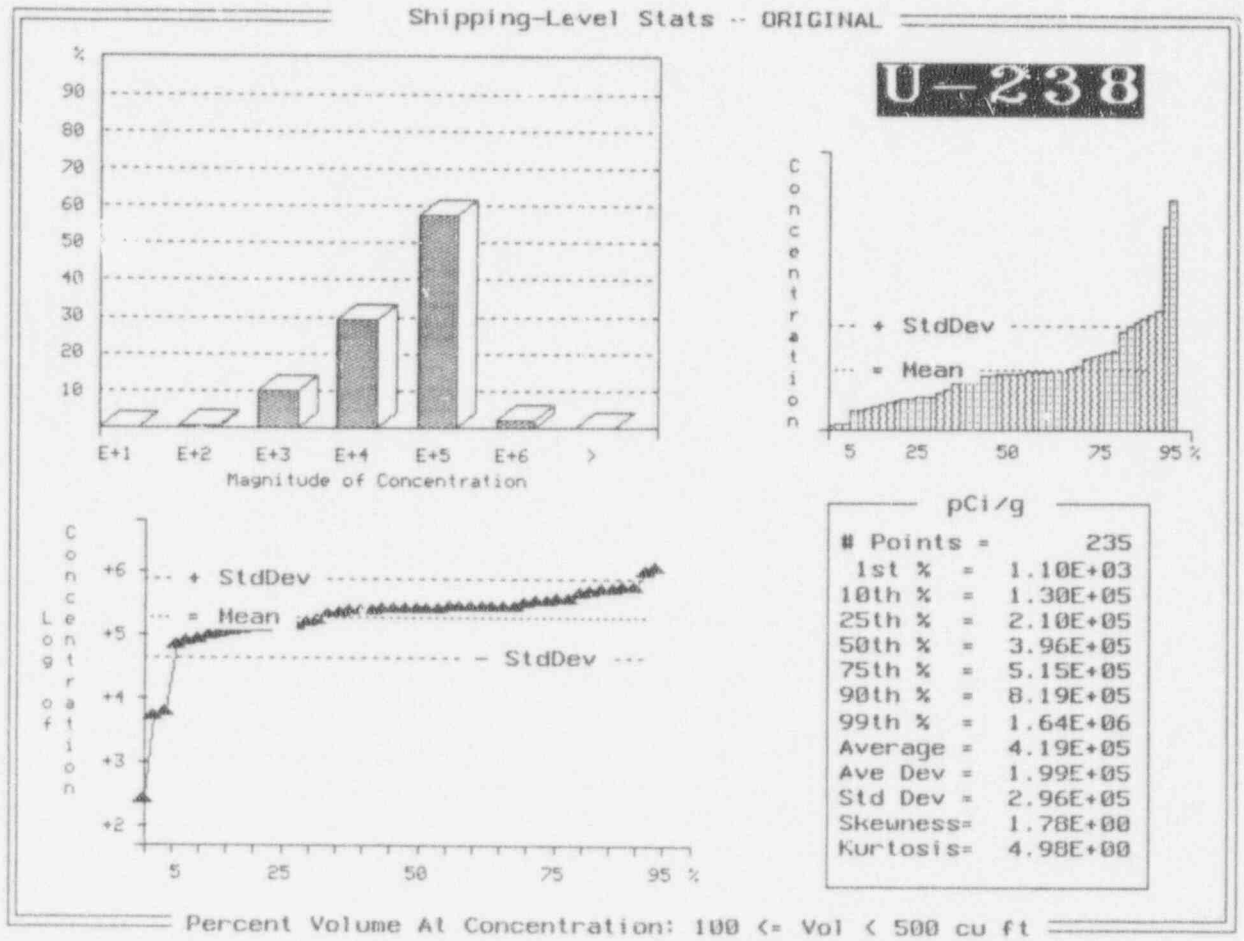


Exhibit F-48 (Continued)

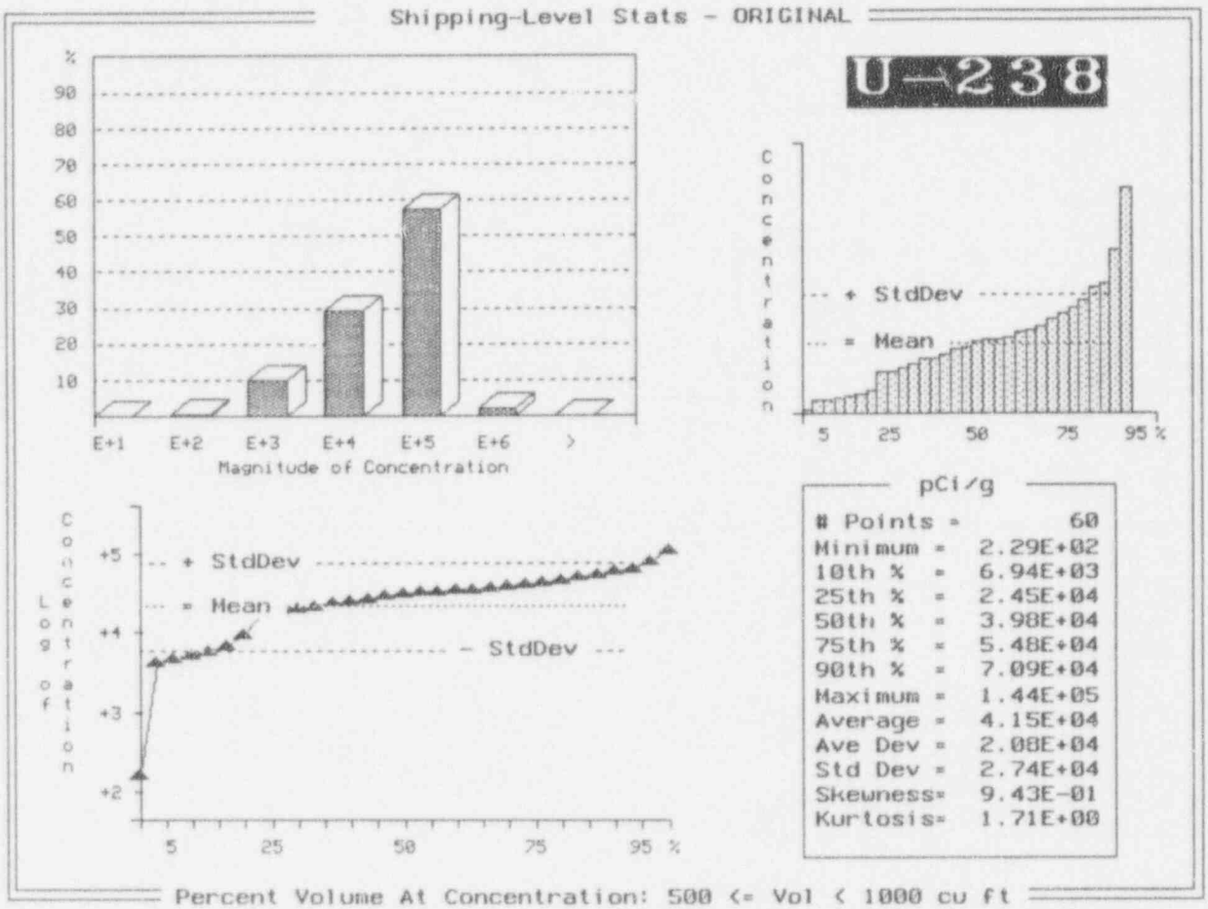


Exhibit F-49
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	New Hampshire
Waste generator class:	Government
Total number of waste generators:	1
Total associated waste volume (m^3):	0.15
Total associated waste activity (Ci):	11.23
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-49 (Continued)

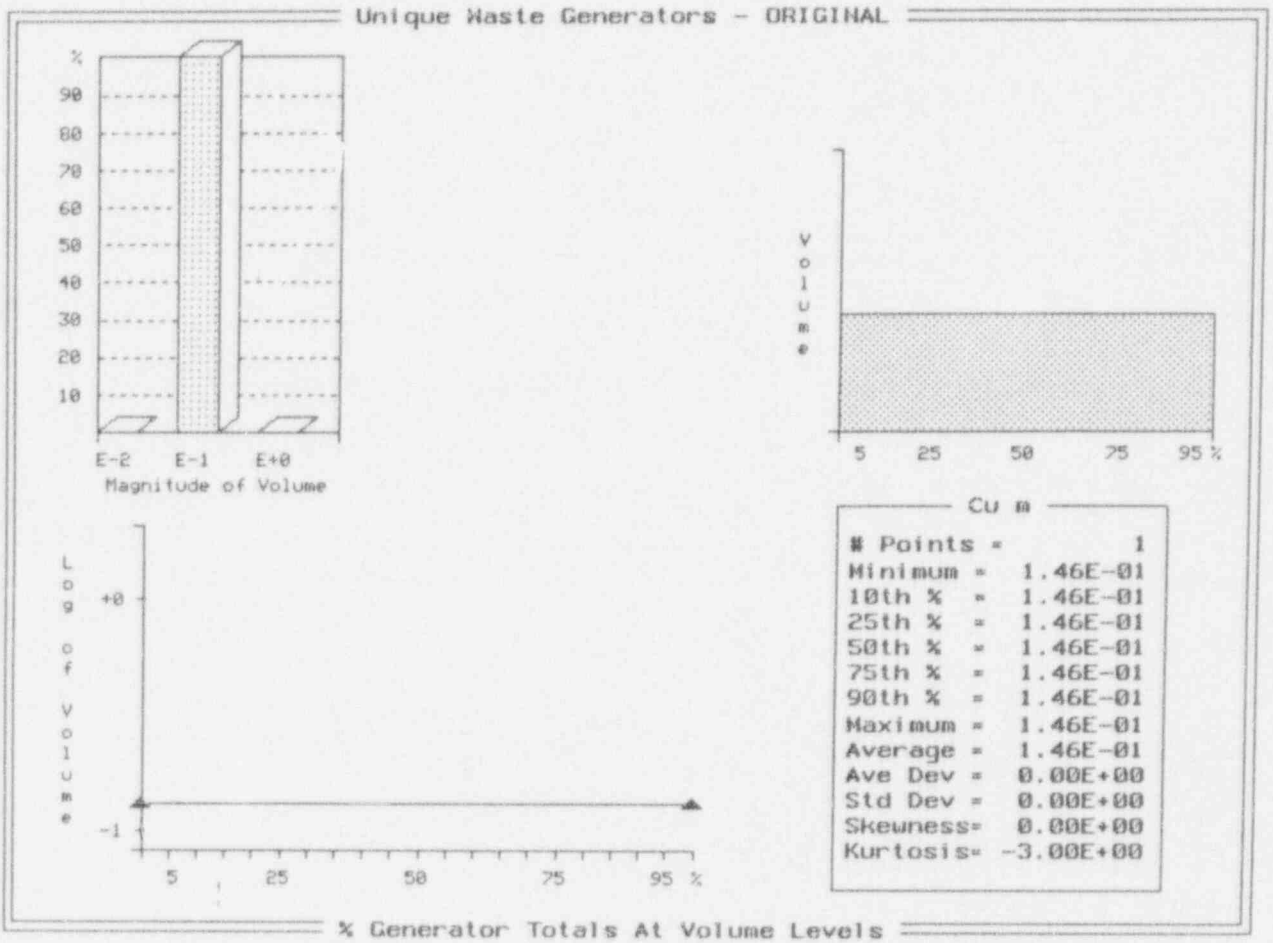


Exhibit F-49 (Continued)

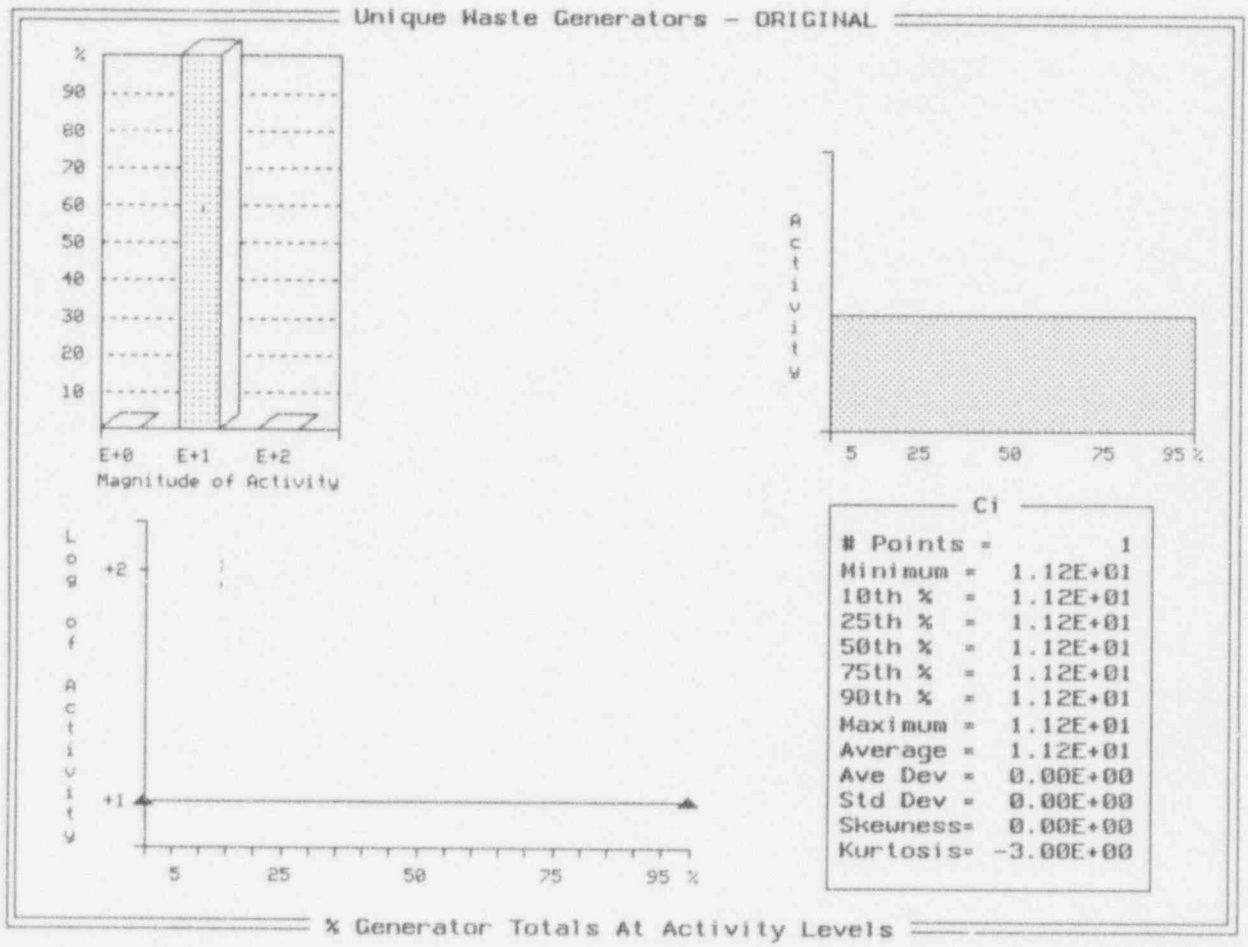


Exhibit F-50
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	New Hampshire
Waste generator class:	Academic
Total number of waste generators:	1
Total associated waste volume (m^3):	3.5
Total associated waste activity (Ci):	57.1
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	100
Total number of shipping records:	1
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	724
Total waste volume (m^3):	1.3
Fractional waste volume (%): (this analysis/total)	37
Total waste activity (Ci):	0.001
Fractional waste activity (%): (this analysis/total)	<0.01

Exhibit F-50 (Continued)

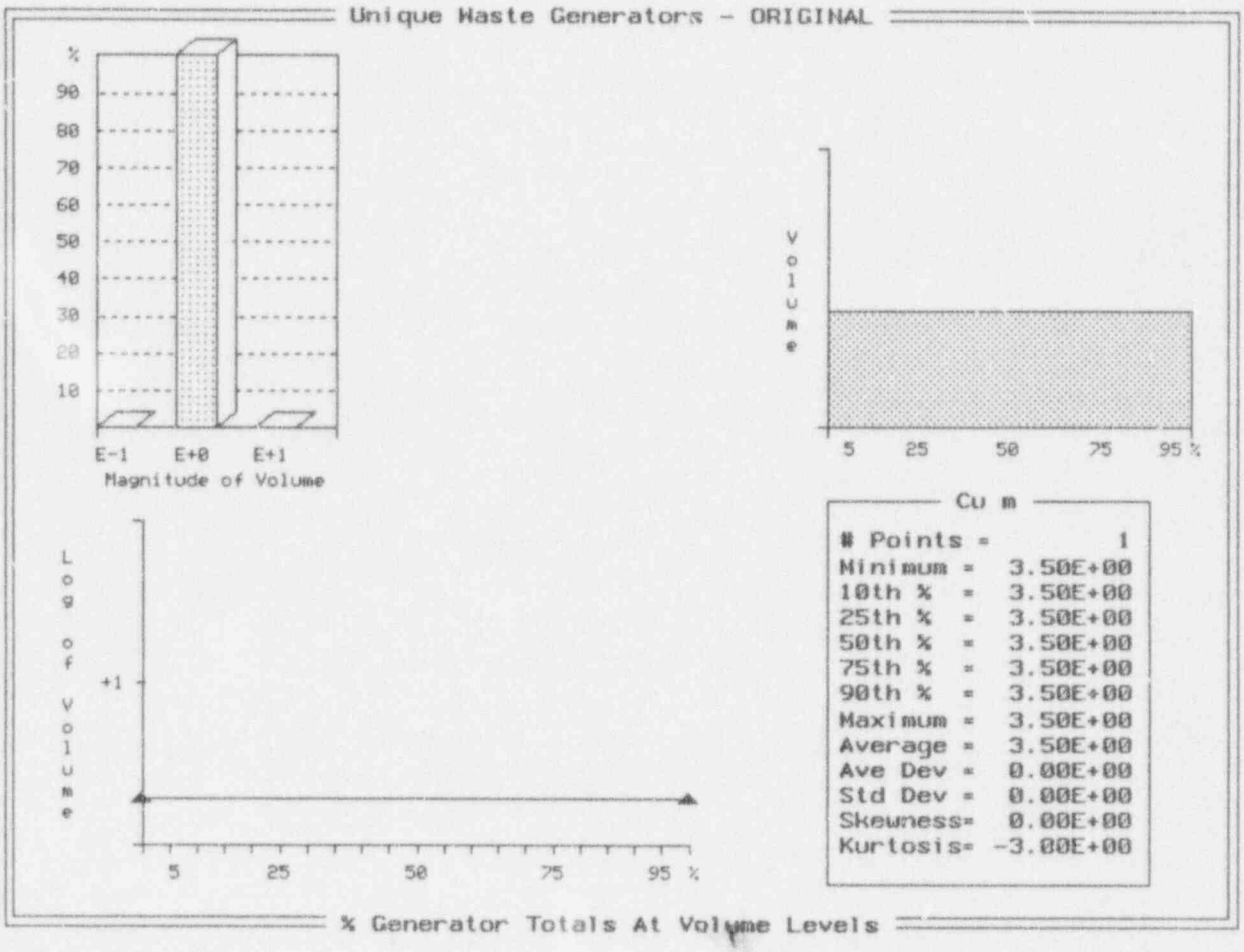


Exhibit F-50 (Continued)

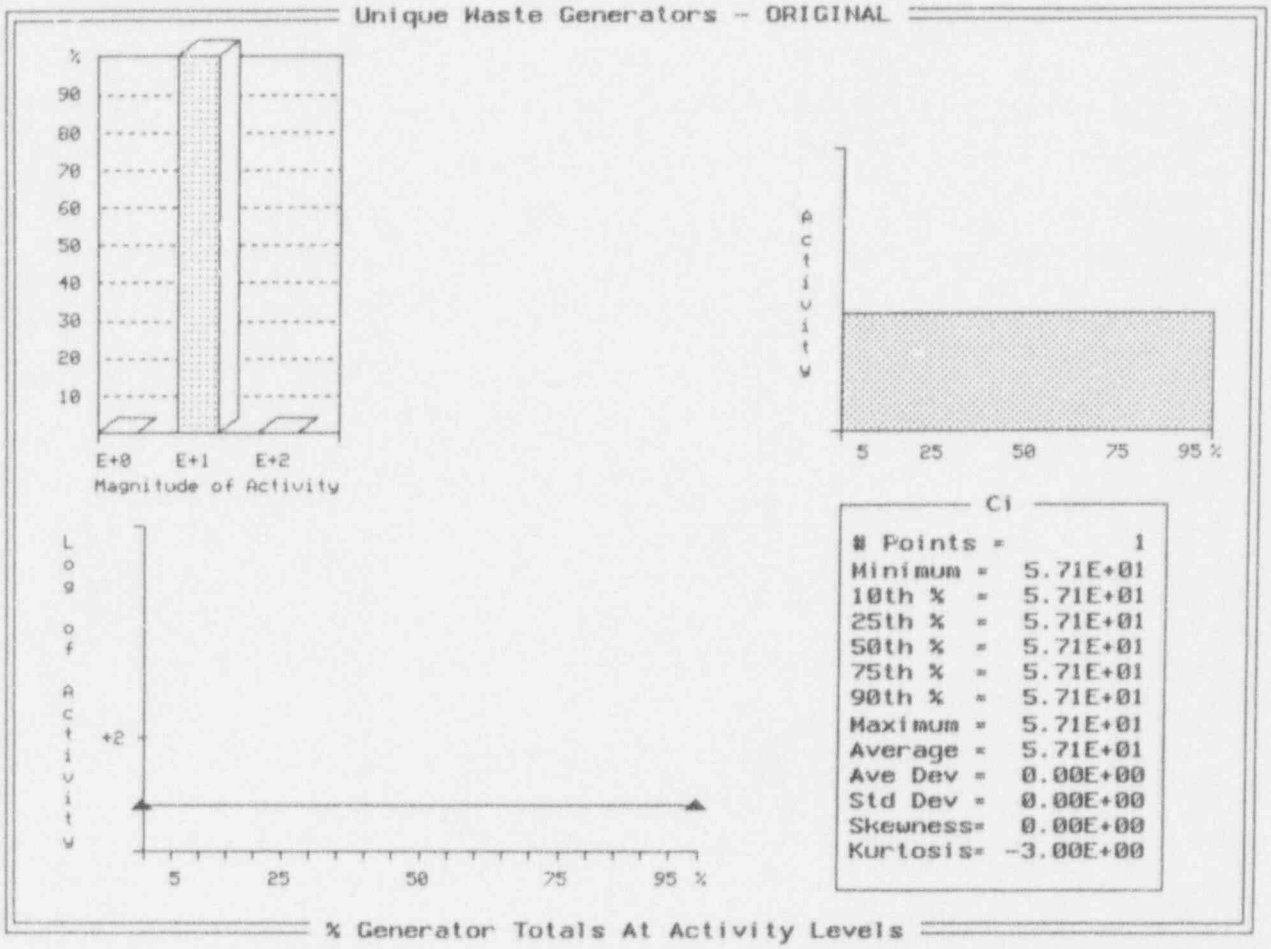


Exhibit F-51
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	New Hampshire
Waste generator class:	Medical
Total number of waste generators:	2
Total associated waste volume (m^3):	0.15
Total associated waste activity (Ci):	0.25
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-51 (Continued)

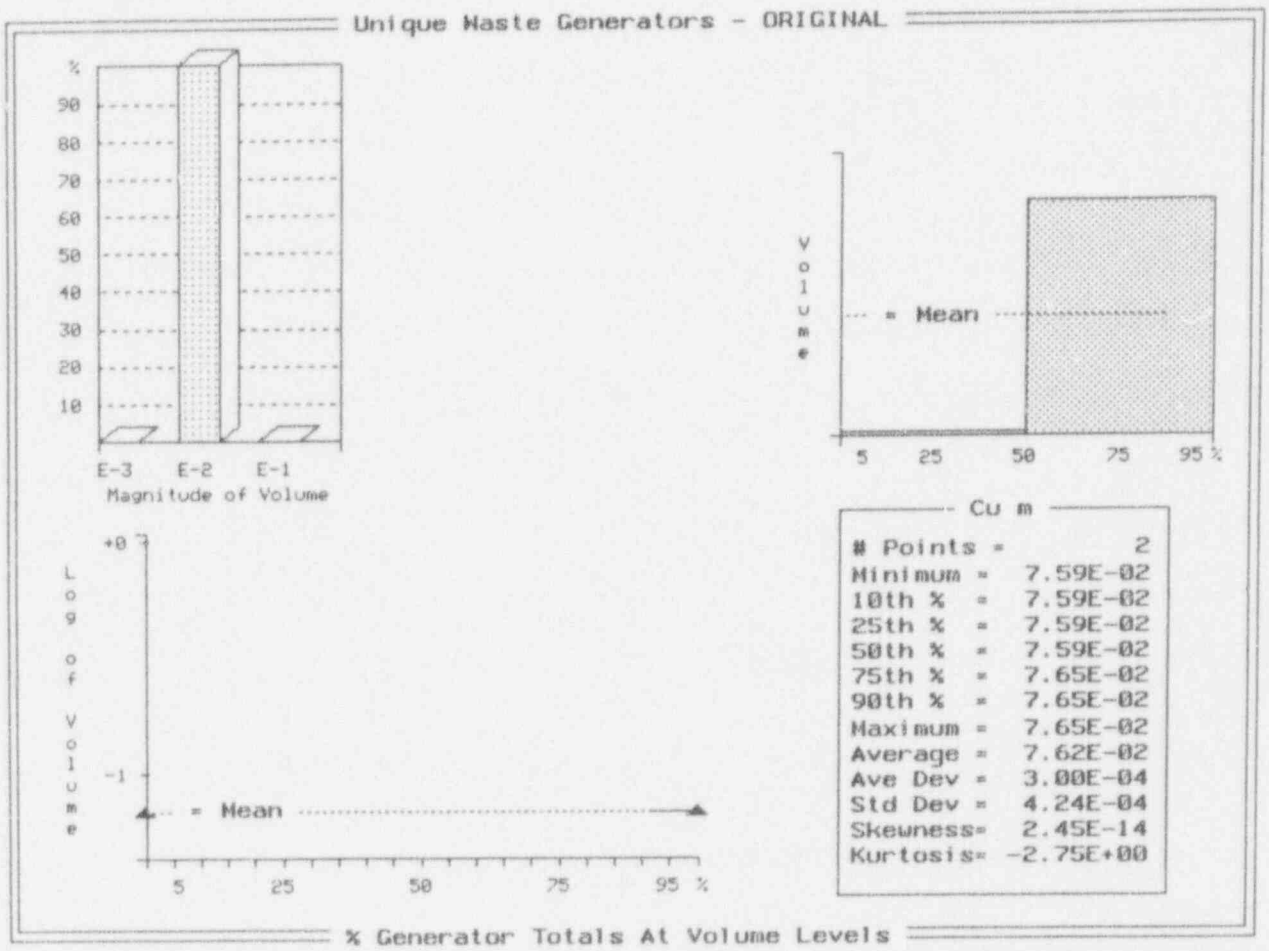


Exhibit F-51 (Continued)

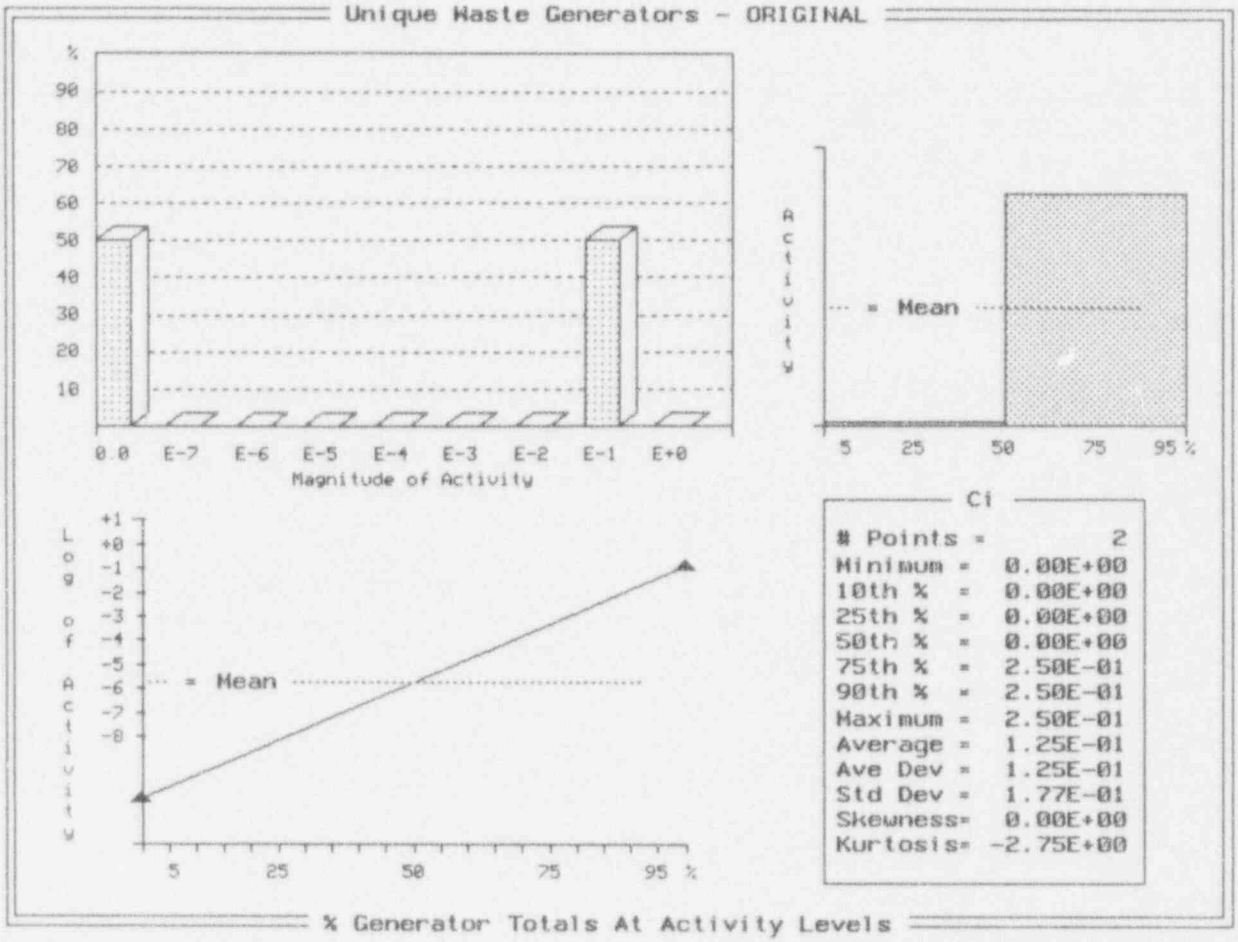


Exhibit F-52
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	New Hampshire
Waste generator class:	Industrial
Total number of waste generators:	7
Total associated waste volume (m^3):	80
Total associated waste activity (Ci):	3.3
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	29
Total number of shipping records:	6
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	75,000
Total waste volume (m^3):	0.9
Fractional waste volume (%): (this analysis/total)	1
Total waste activity (Ci):	2.6
Fractional waste activity (%): (this analysis/total)	79

Exhibit F-52 (Continued)

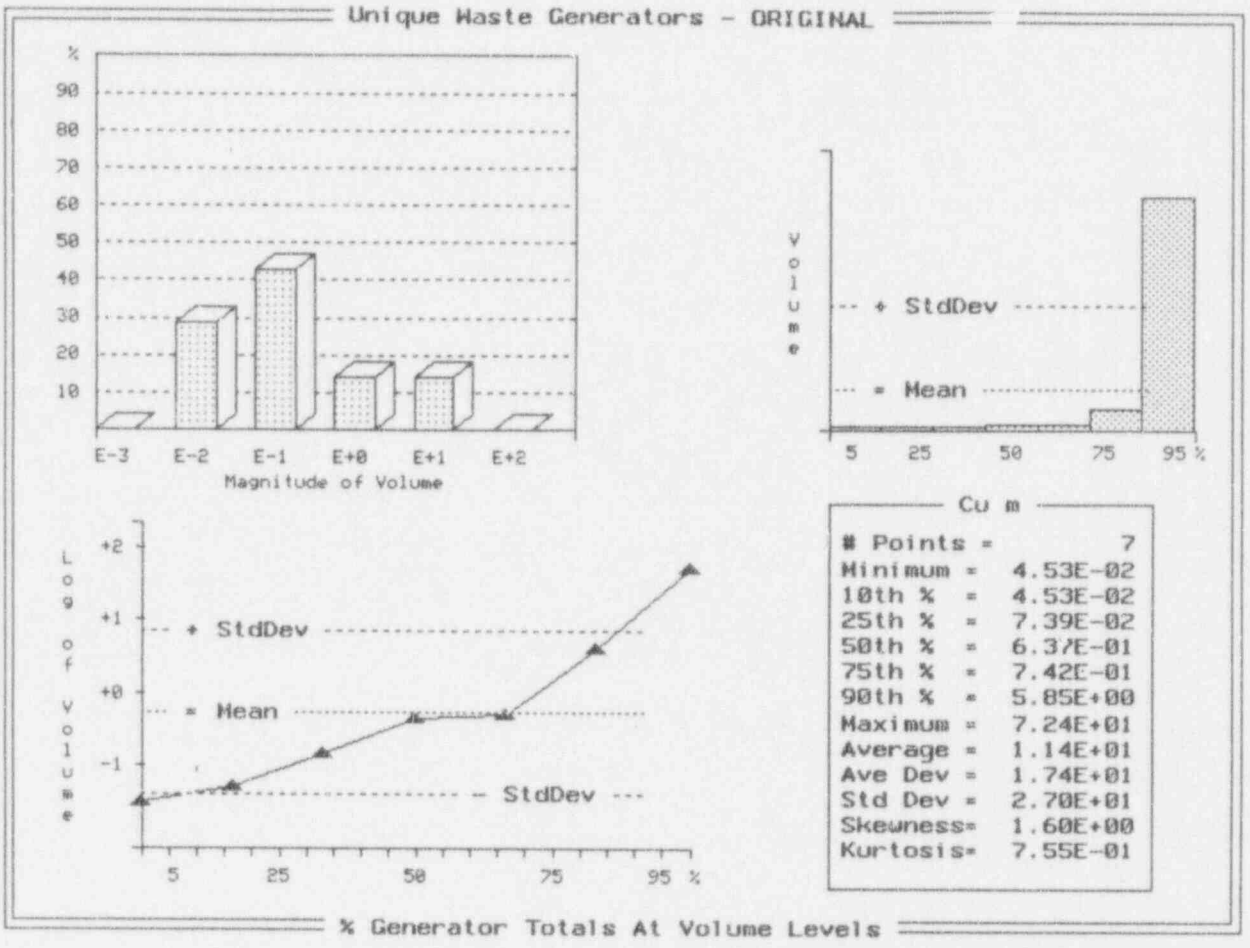


Exhibit F-52 (Continued)

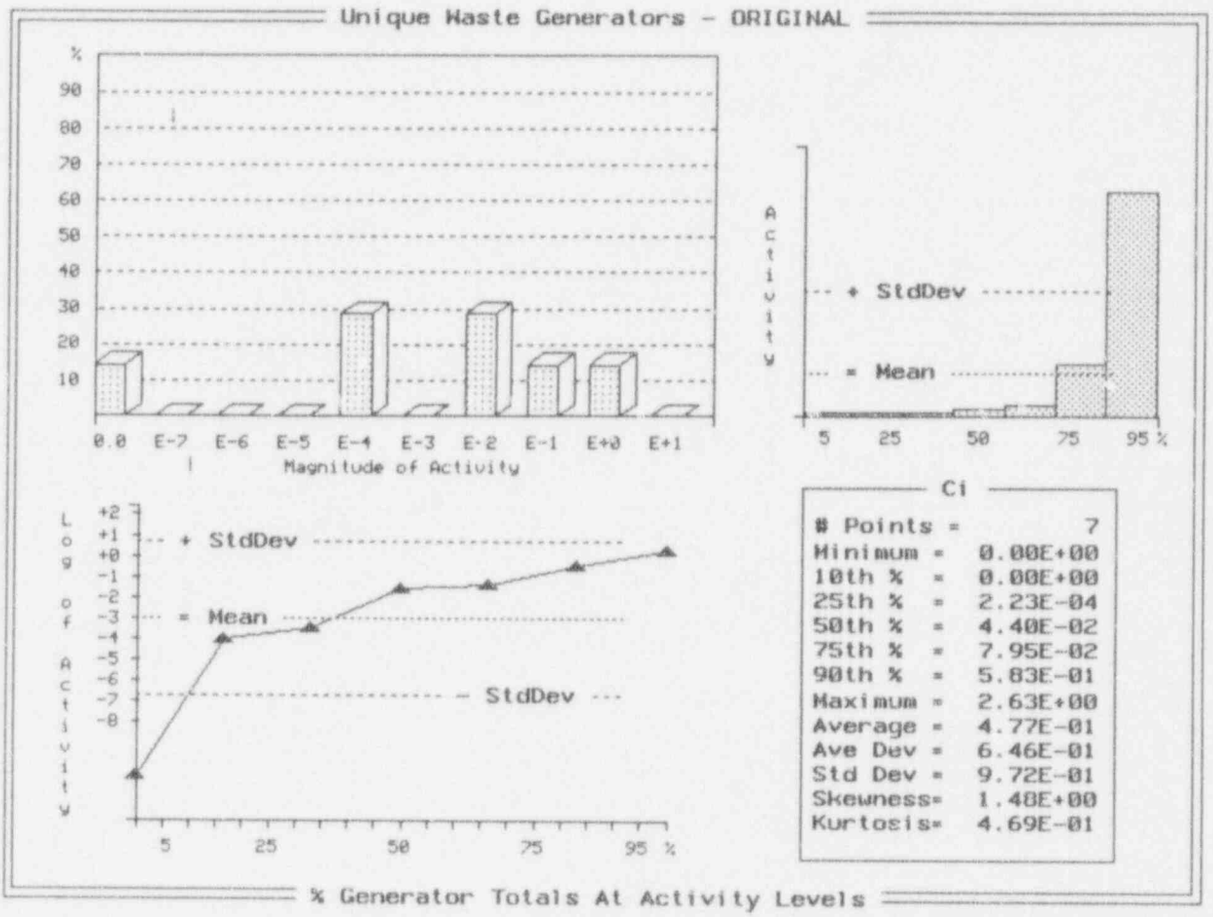


Exhibit F-53
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	New York
Waste generator class:	Government
Total number of waste generators:	21
Total associated waste volume (m^3):	279
Total associated waste activity (Ci):	530
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	3
Percent of total(%):	14
Total number of shipping records:	5
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	26,470
Total waste volume (m^3):	37.8
Fractional waste volume (%): (this analysis/total)	13
Total waste activity (Ci):	0.18
Fractional waste activity (%): (this analysis/total)	0.03

Exhibit F-53 (Continued)

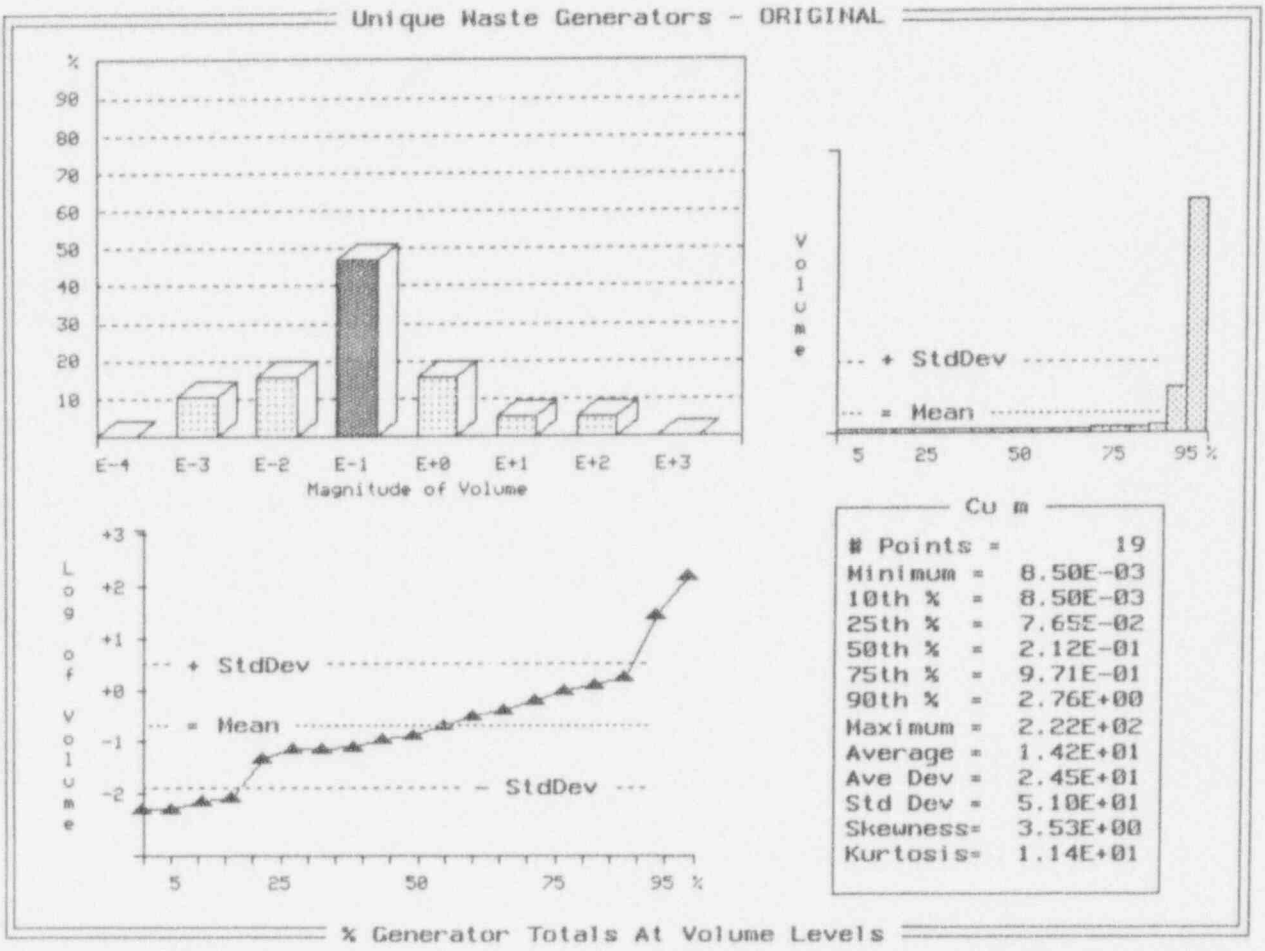


Exhibit F-53 (Continued)

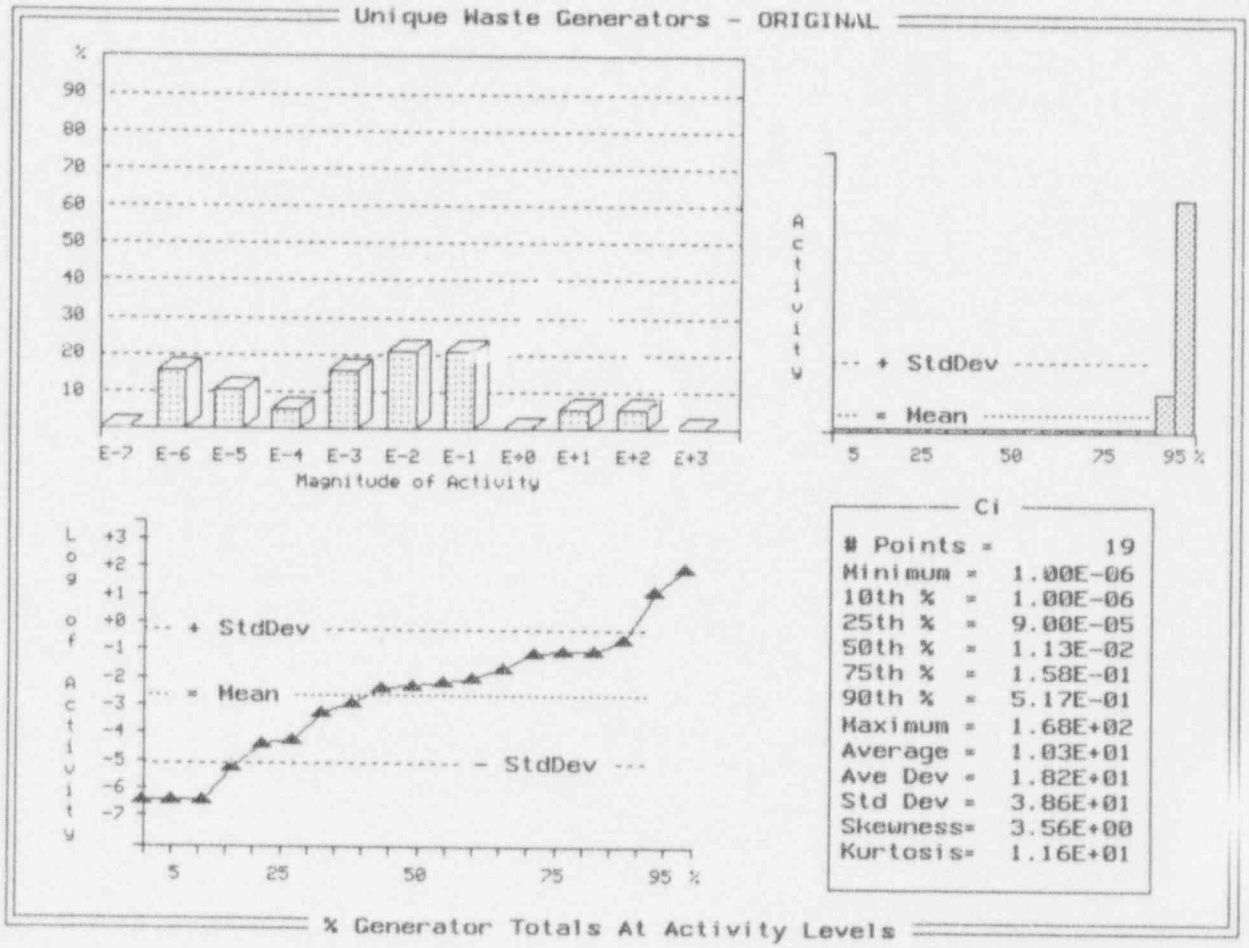


Exhibit F-54
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	New York
Waste generator class:	Academic
Total number of waste generators:	86
Total associated waste volume (m^3):	410
Total associated waste activity (Ci):	2,640
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	23
Percent of total(%):	27
Total number of shipping records:	89
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	33,370
Total waste volume (m^3):	58.8
Fractional waste volume (%): (this analysis/total)	14
Total waste activity (Ci):	18.4
Fractional waste activity (%): (this analysis/total)	0.7

Exhibit F-54 (Continued)

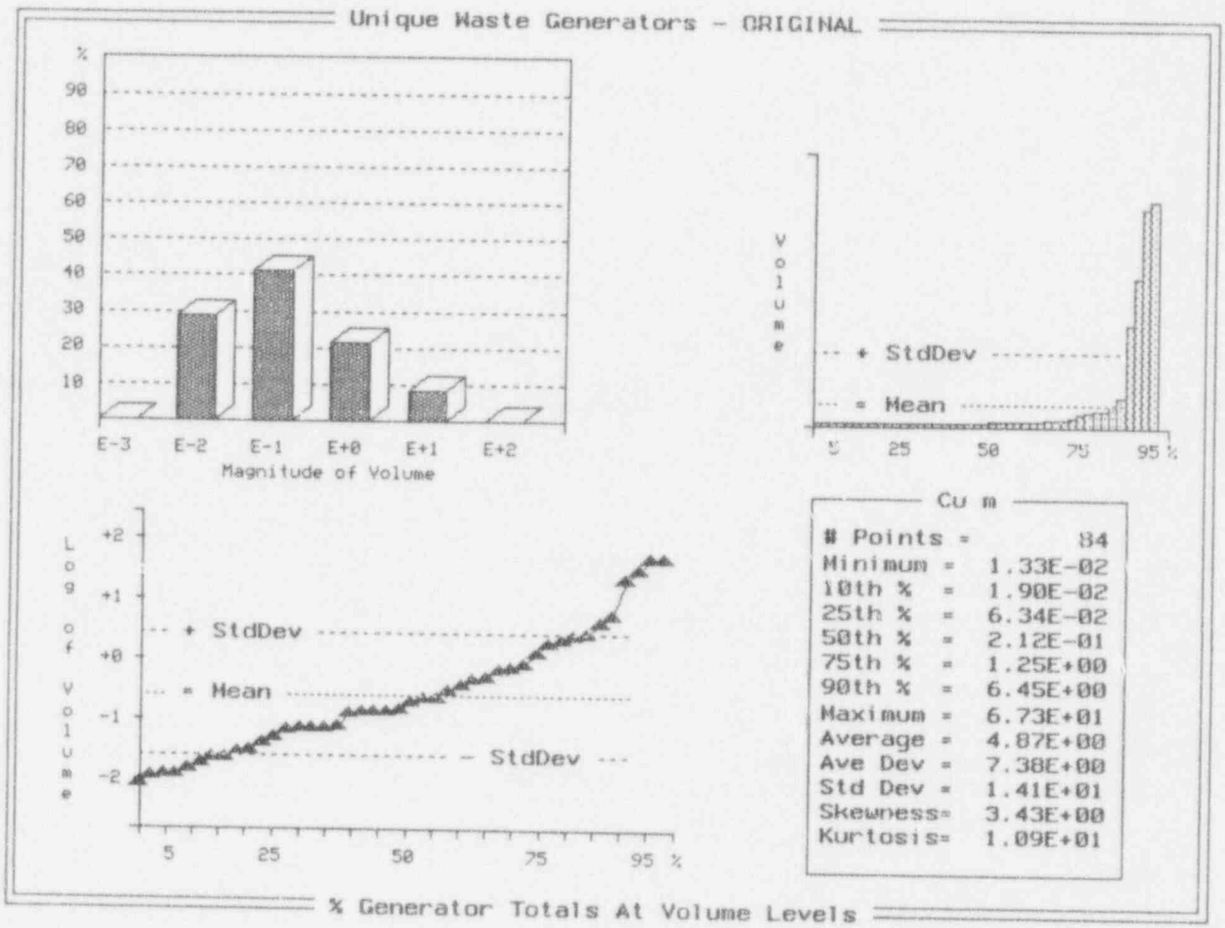


Exhibit F-54 (Continued)

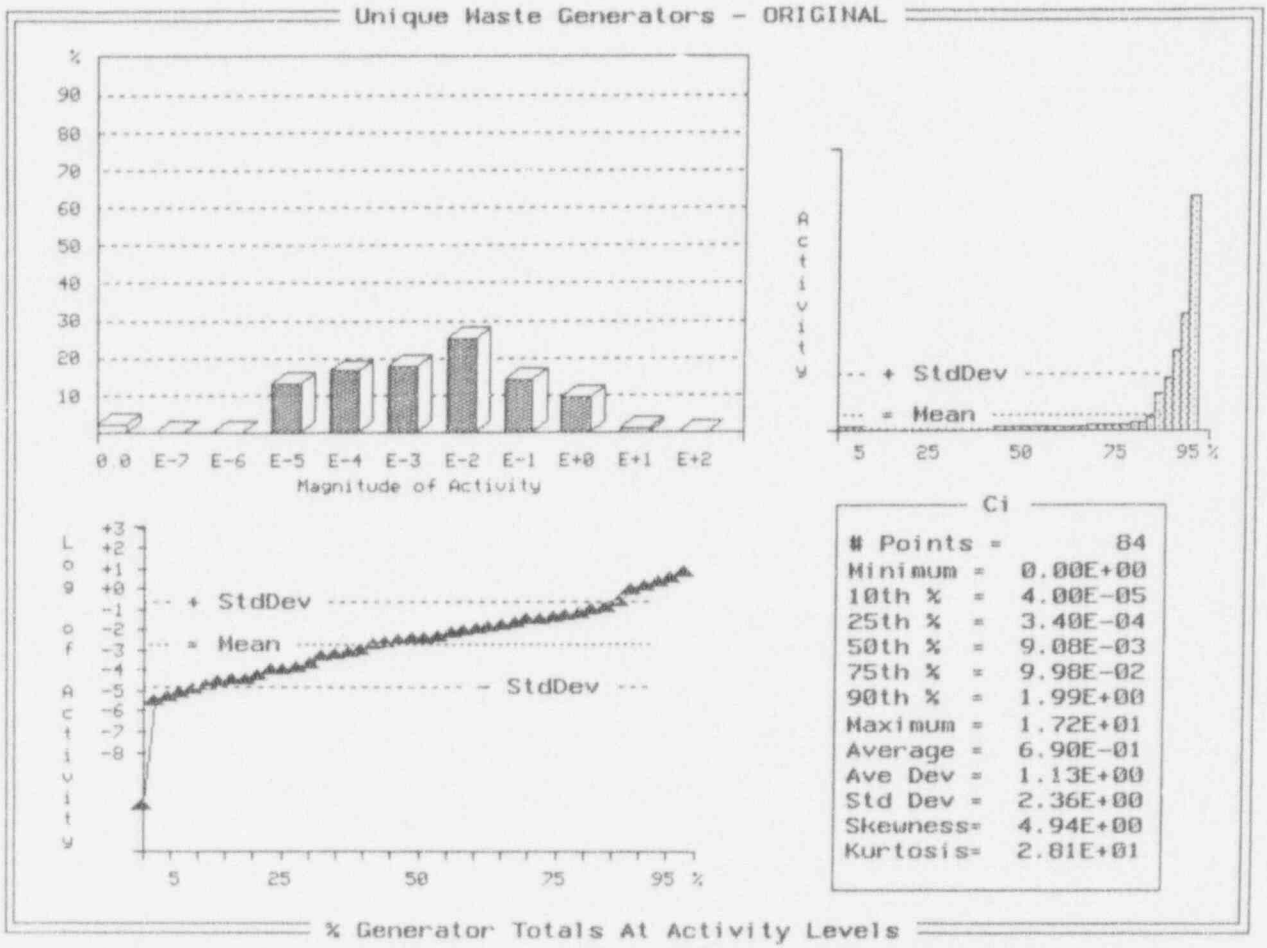


Exhibit F-54 (Continued)

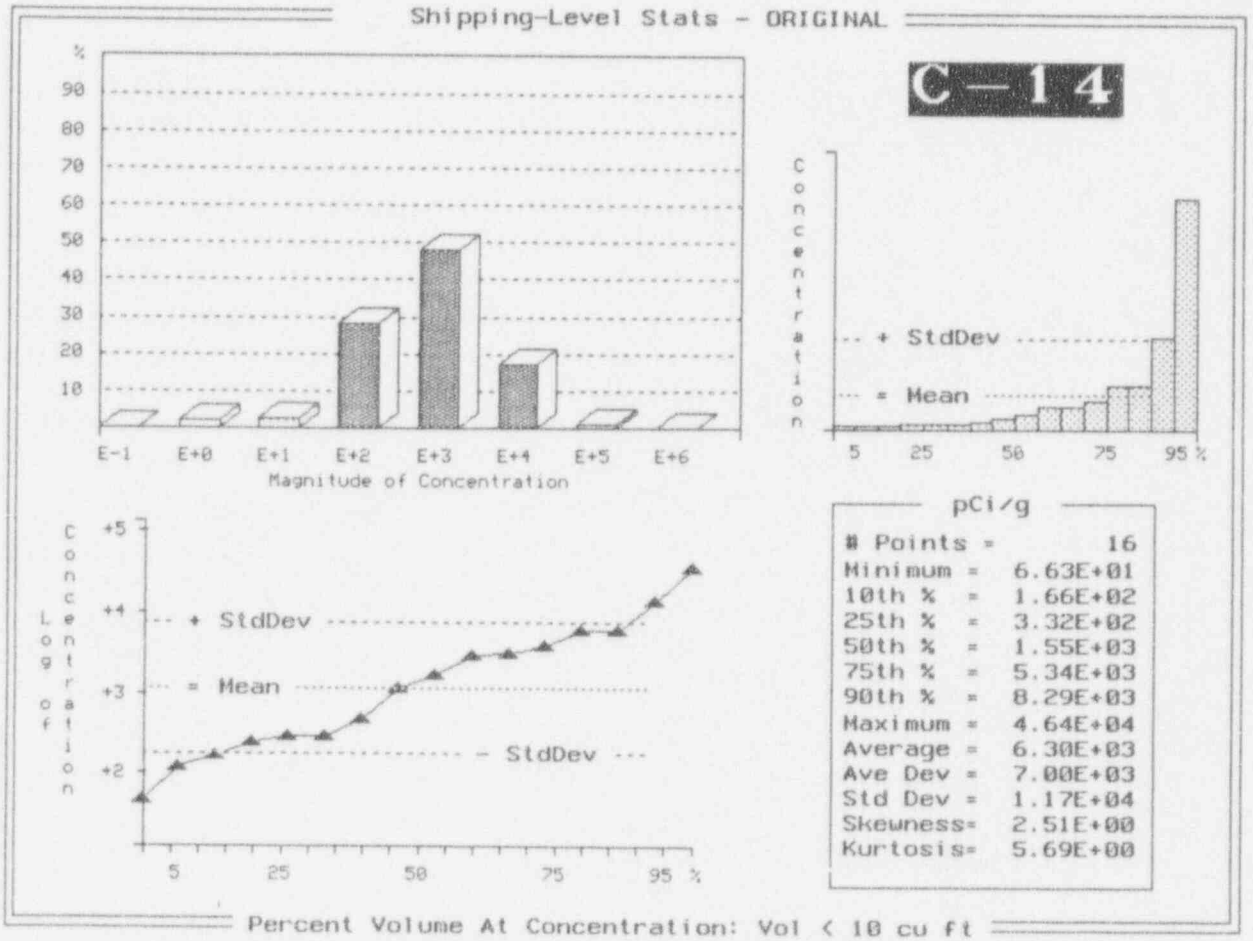


Exhibit F-54 (Continued)

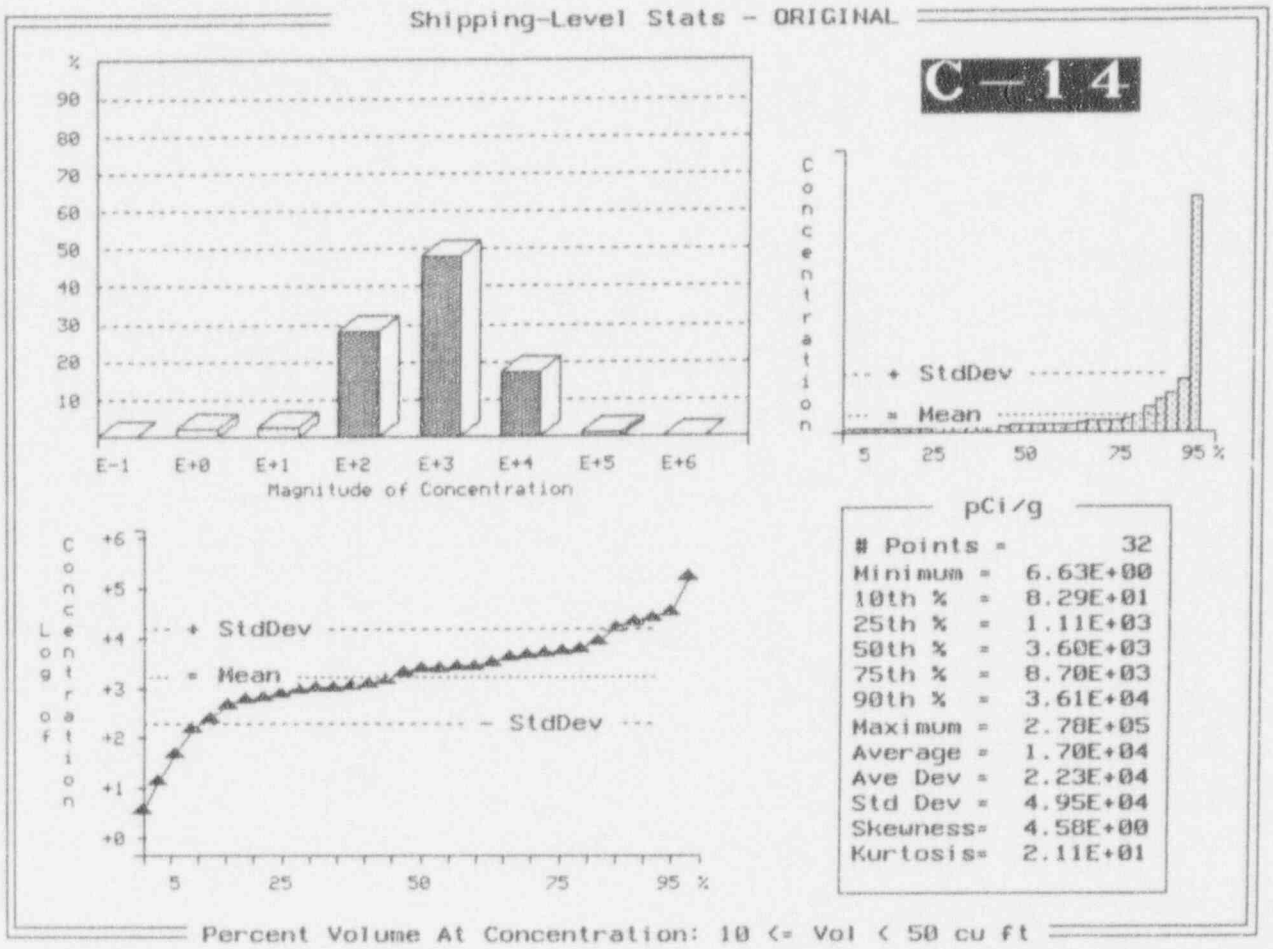


Exhibit F-54 (Continued)

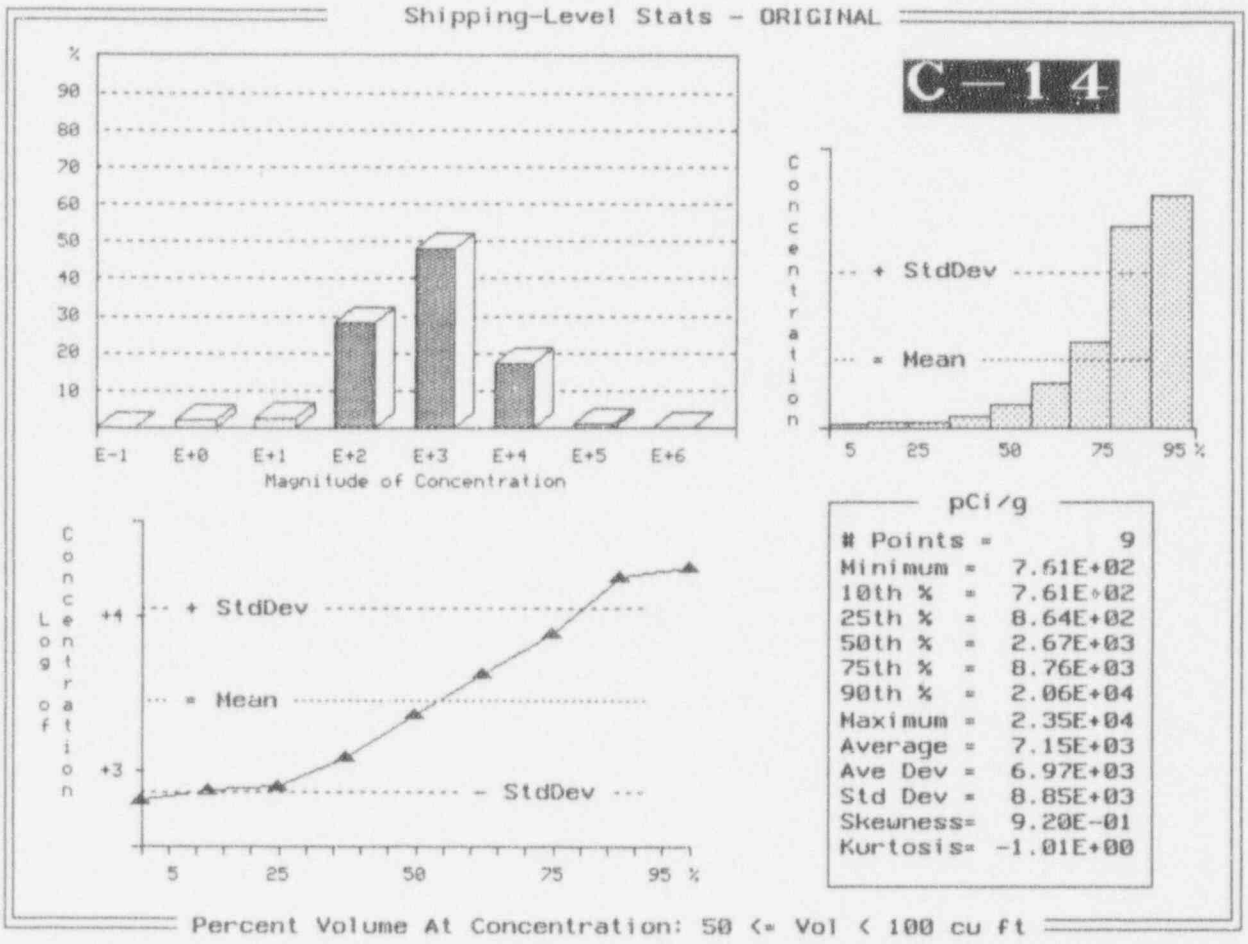


Exhibit F-54 (Continued)

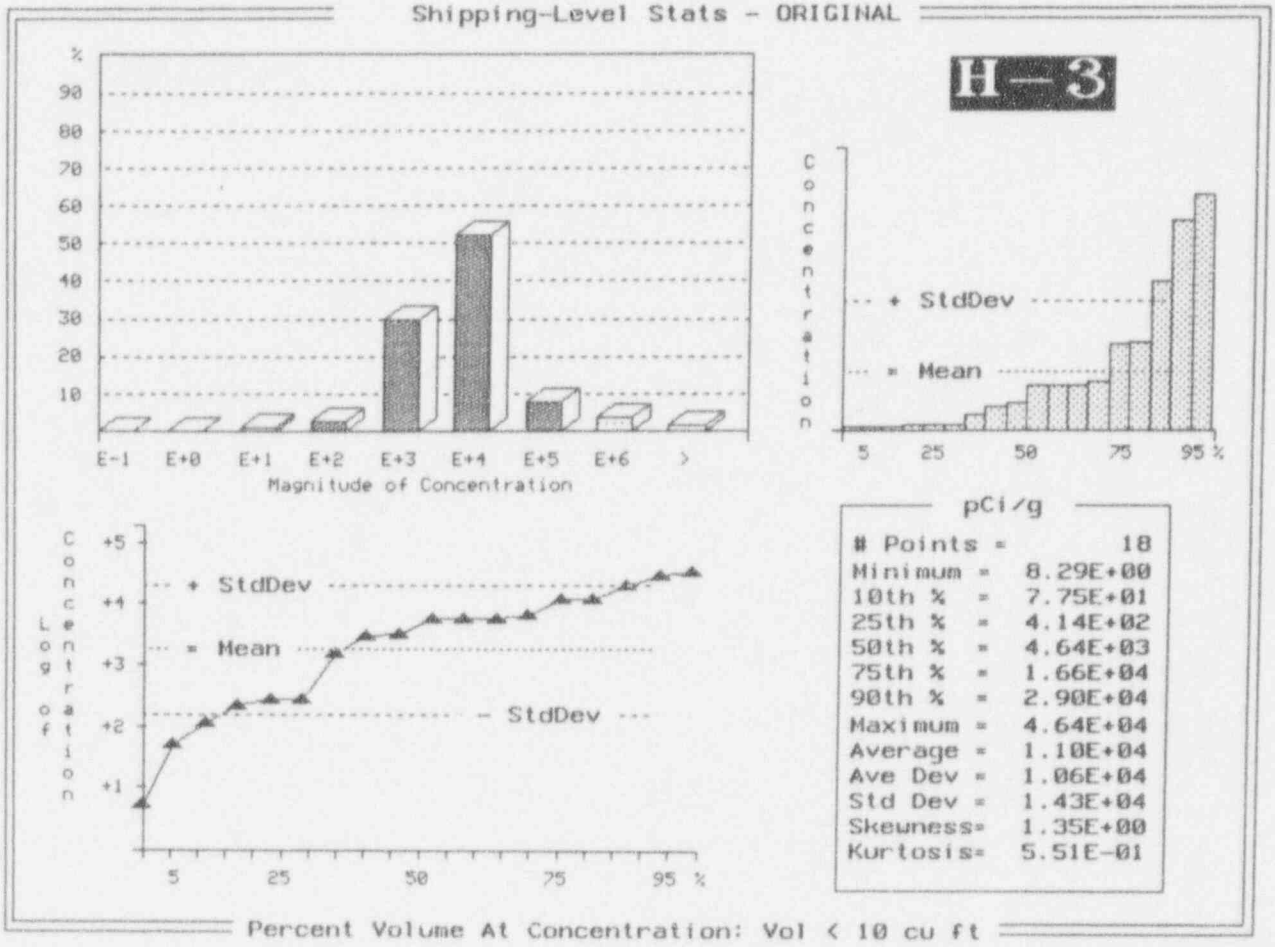


Exhibit F-54 (Continued)

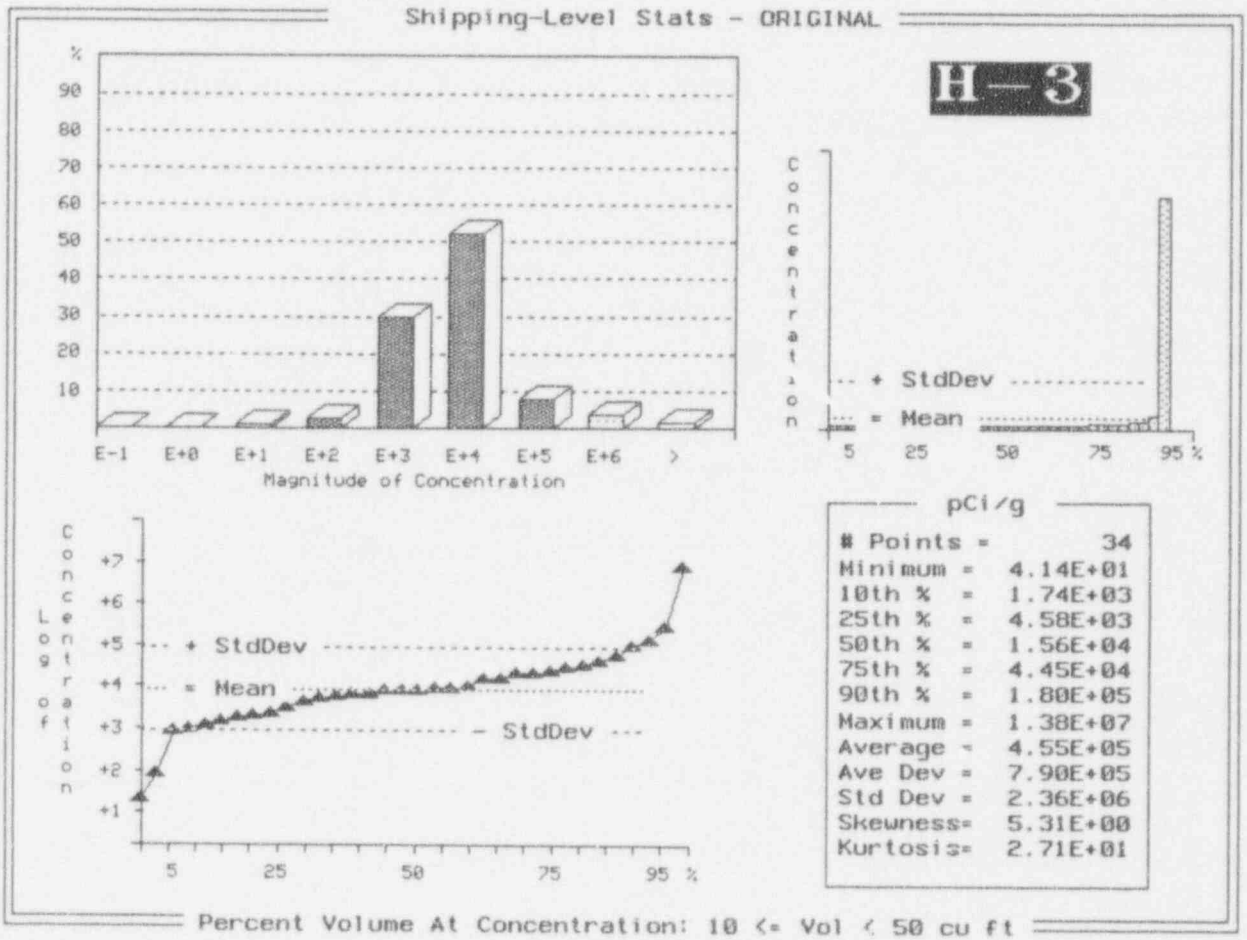


Exhibit F-54 (Continued)

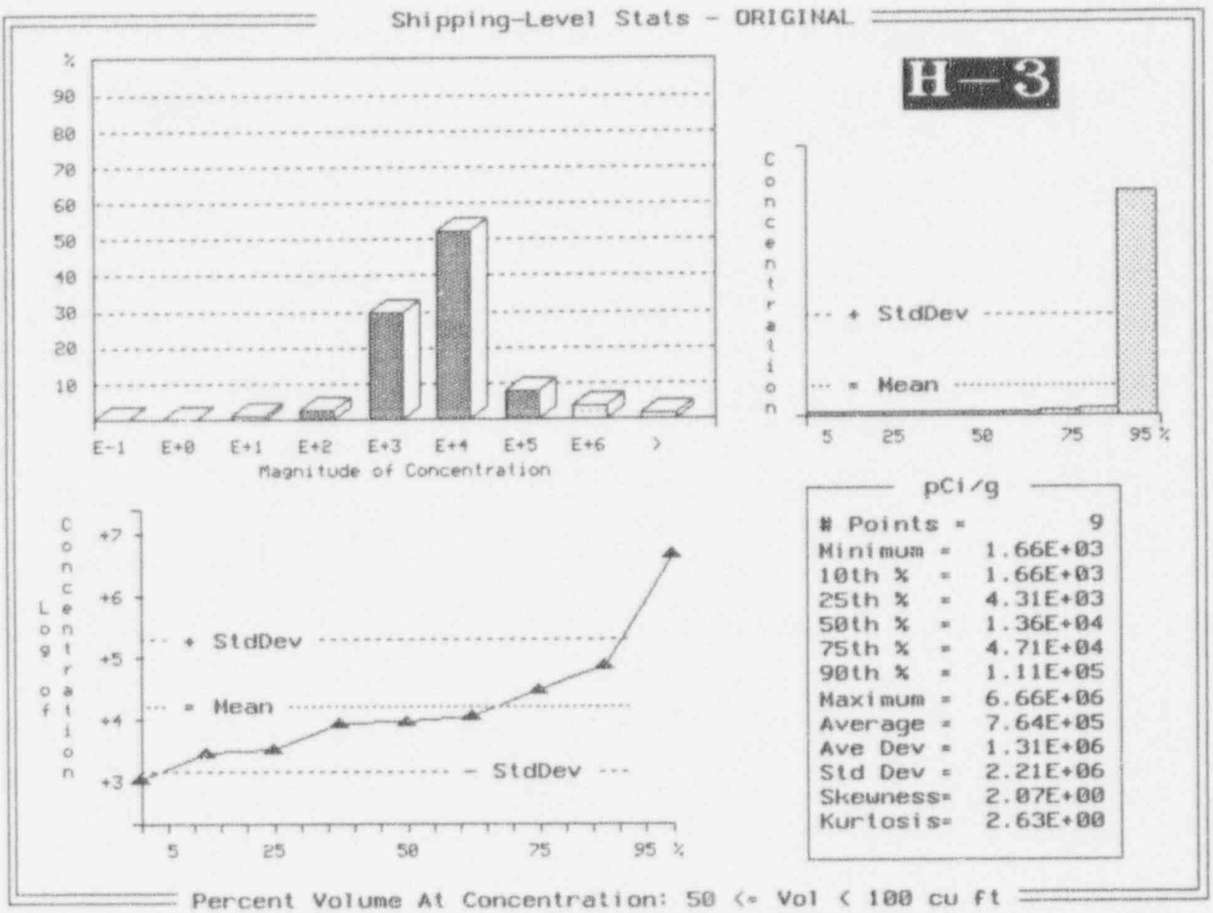


Exhibit F-54 (Continued)

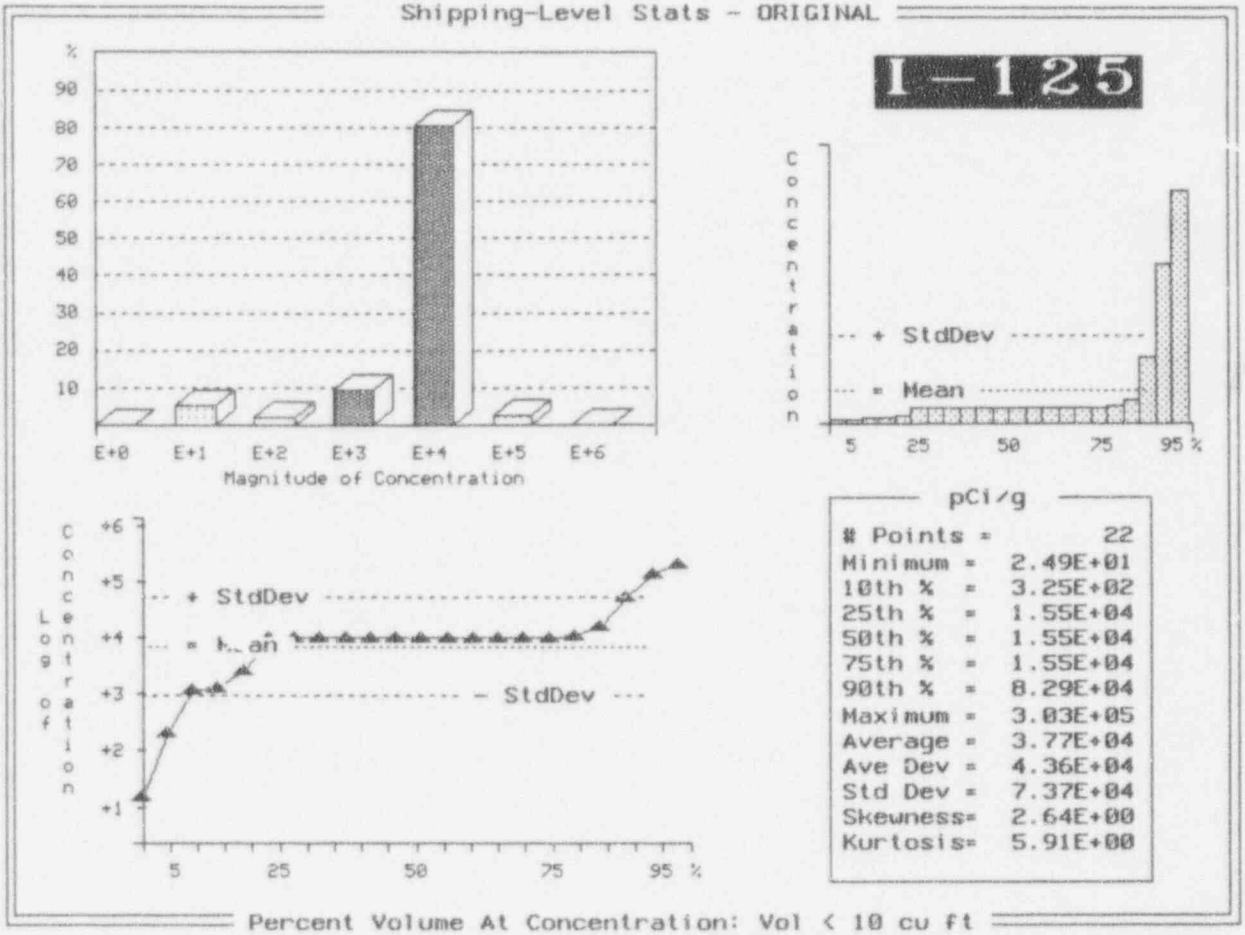


Exhibit F-54 (Continued)

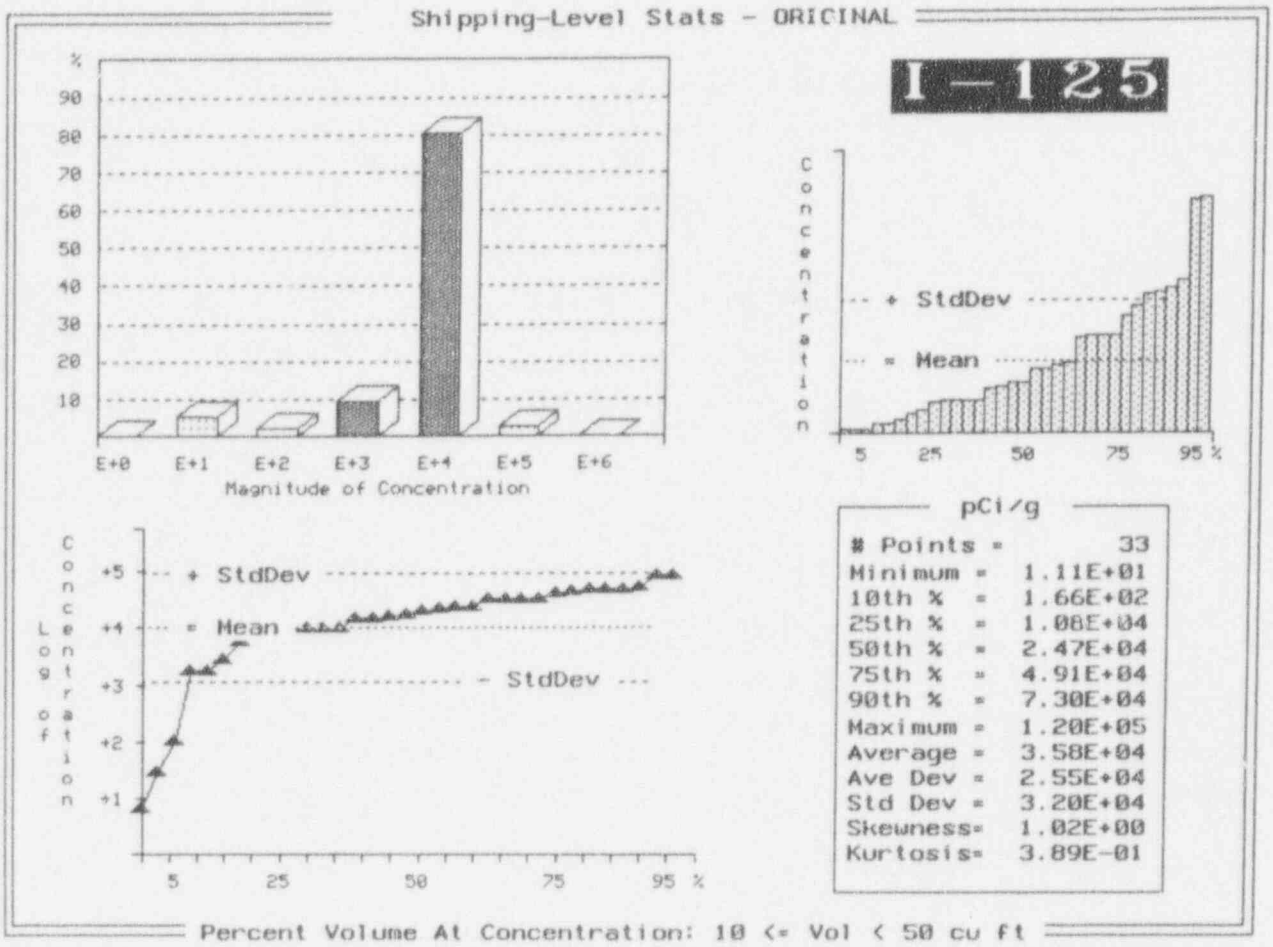
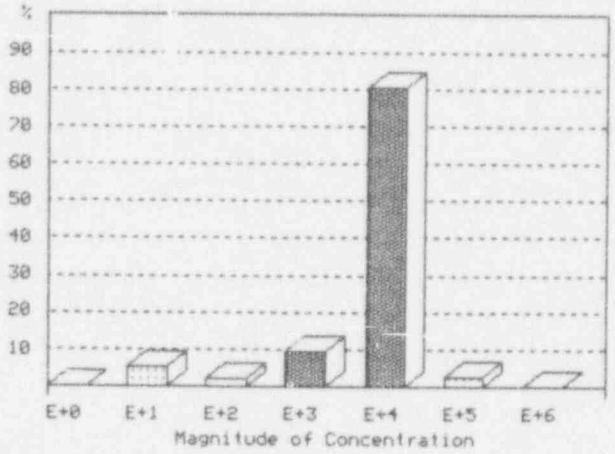
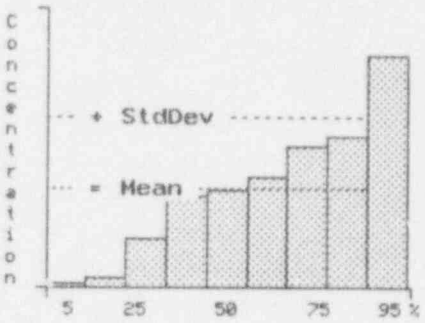


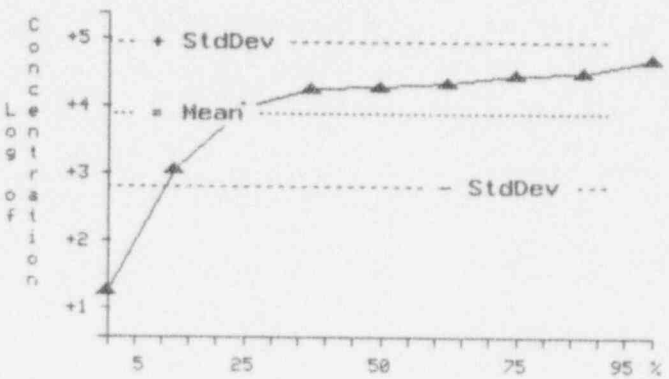
Exhibit F-54 (Continued)

Shipping-Level Stats - ORIGINAL



I-125





pCi/g

# Points =	9
Minimum =	2.72E+01
10th % =	2.72E+01
25th % =	1.68E+03
50th % =	2.85E+04
75th % =	4.27E+04
90th % =	4.56E+04
Maximum =	7.05E+04
Average =	2.92E+04
Ave Dev =	1.67E+04
Std Dev =	2.24E+04
Skewness=	2.71E-01
Kurtosis=	-1.09E+00

Percent Volume At Concentration: 50 <= Vol < 100 cu ft

Exhibit F-54 (Continued)

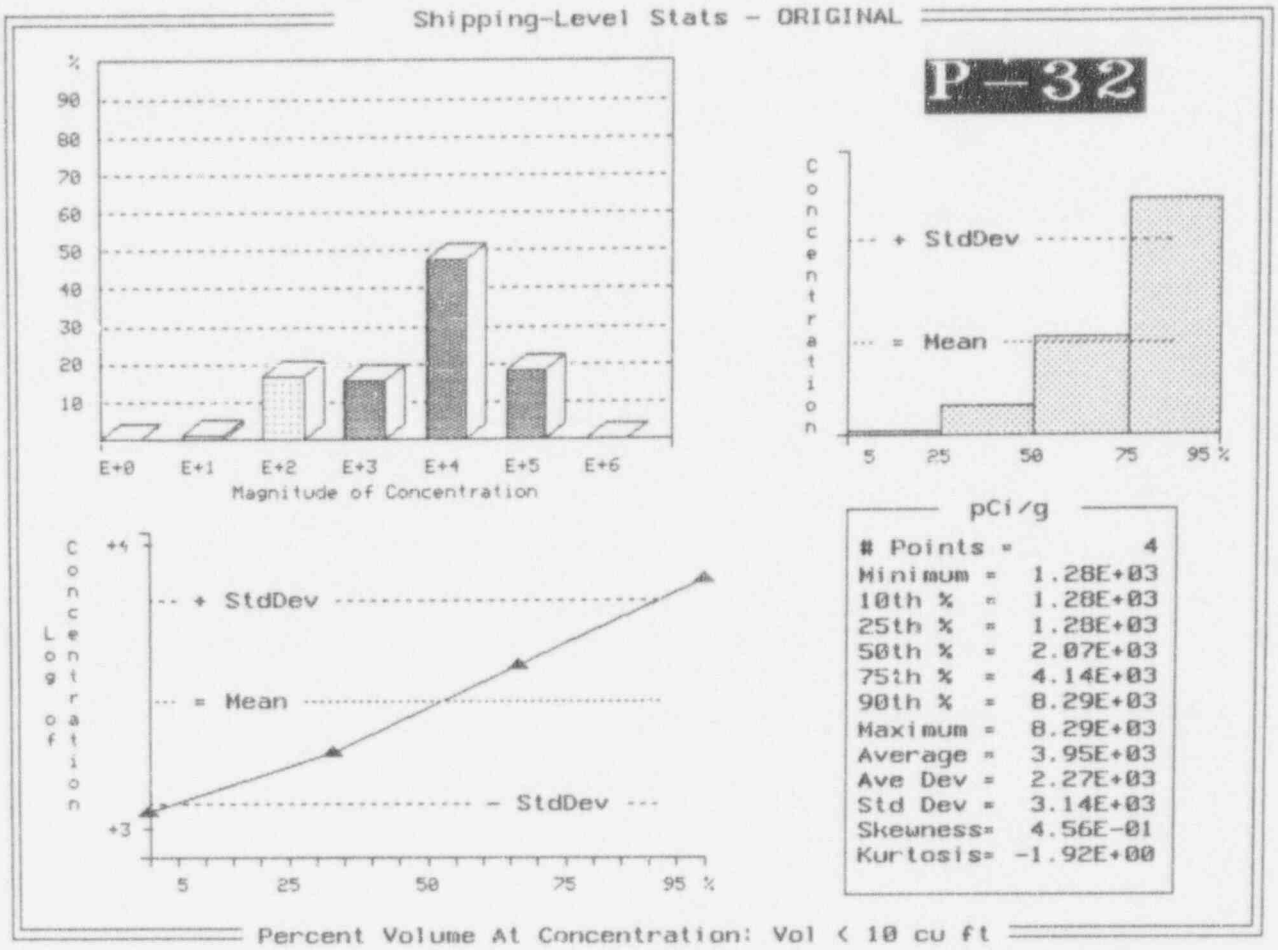


Exhibit F-54 (Continued)

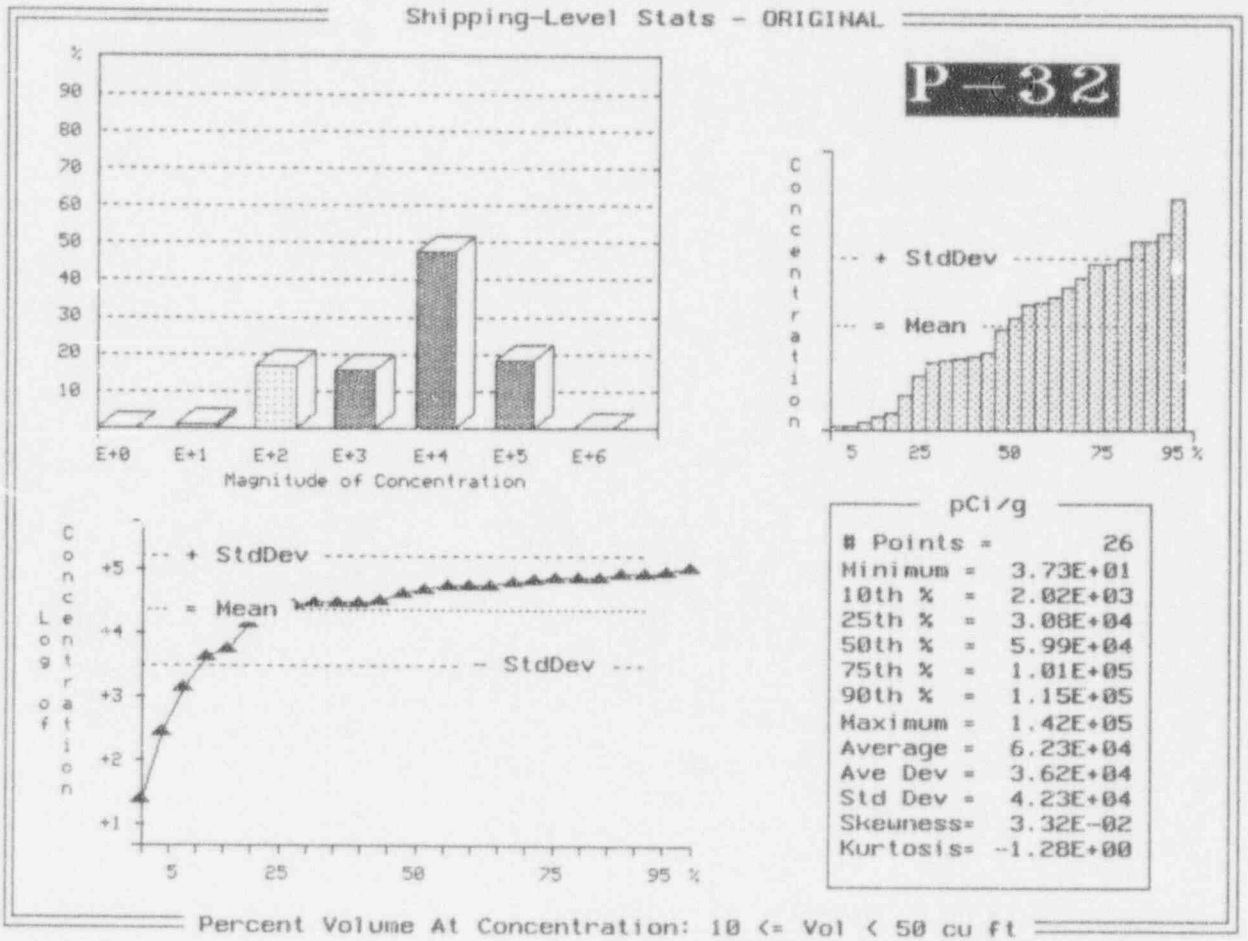


Exhibit F-54 (Continued)

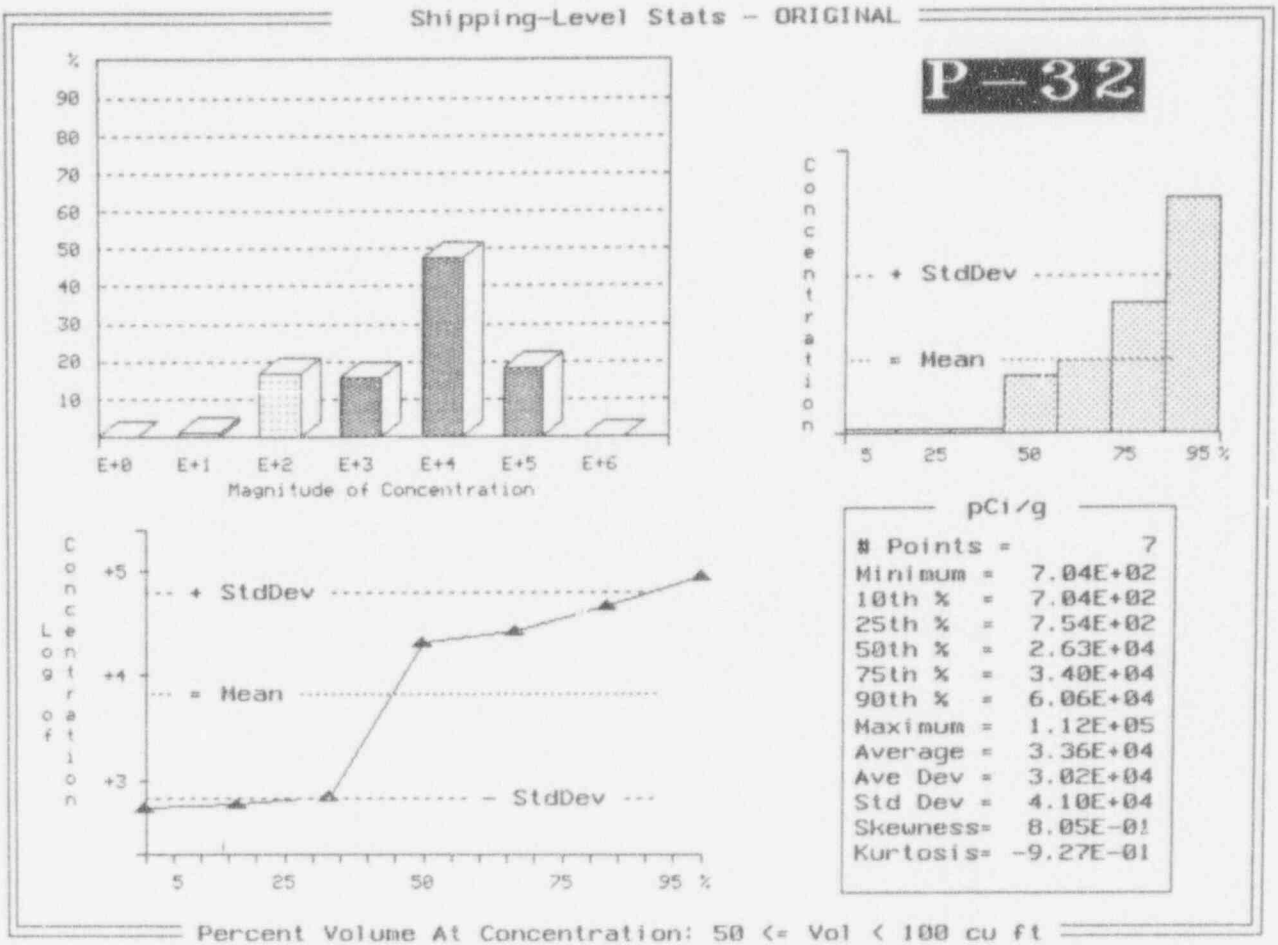


Exhibit F-54 (Continued)

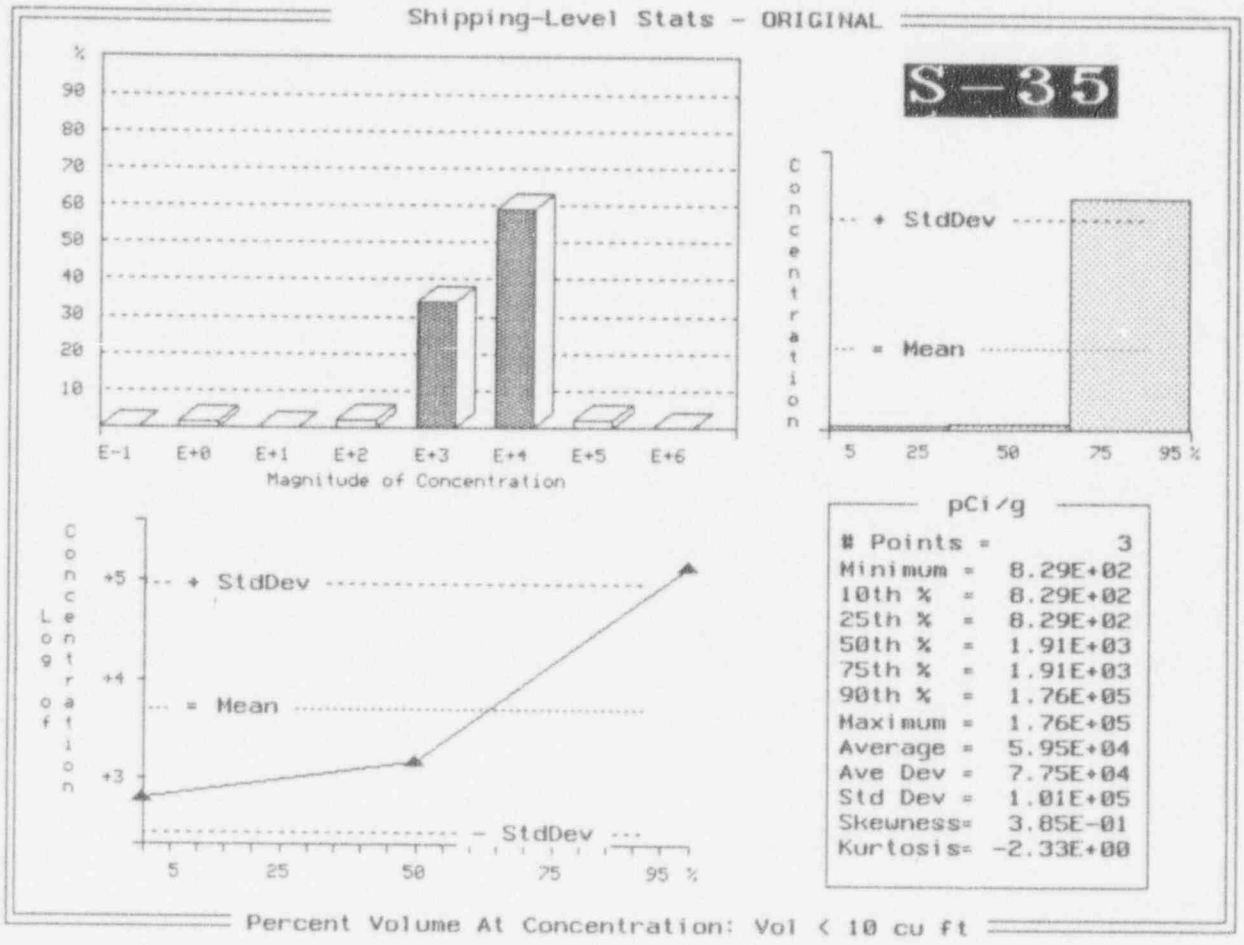


Exhibit F-54 (Continued)

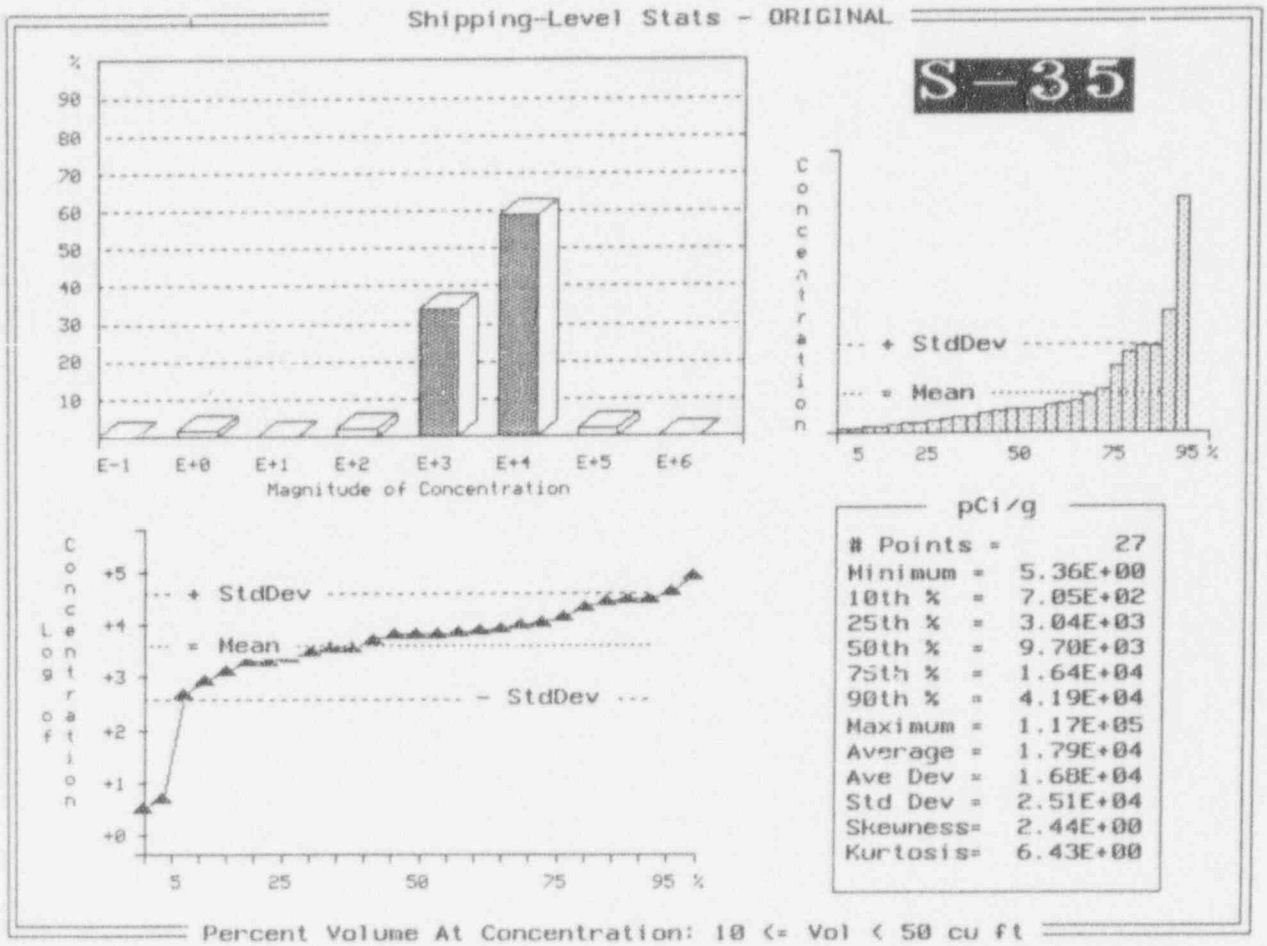


Exhibit F-54 (Continued)

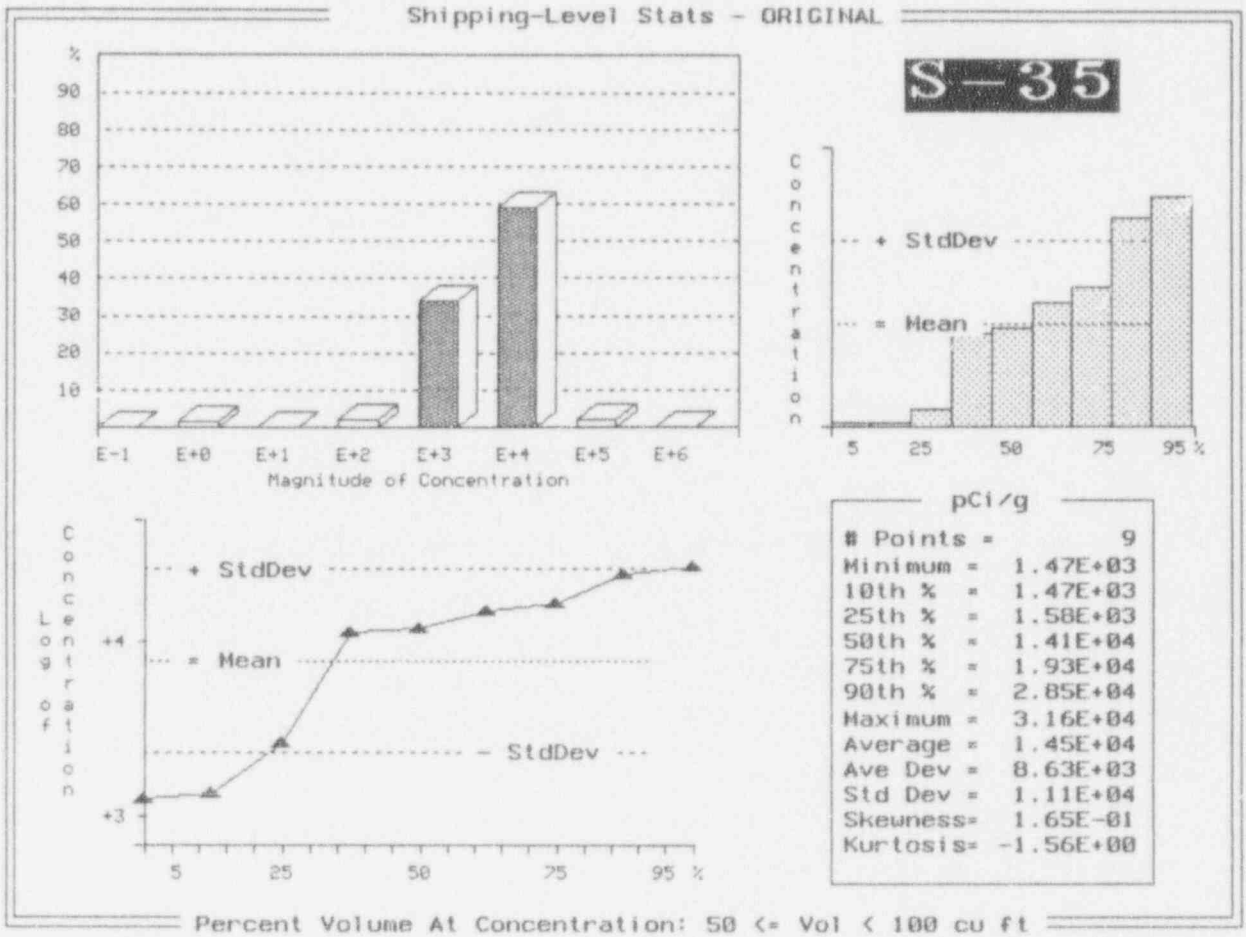


Exhibit F-55
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	New York
Waste generator class:	Medical
Total number of waste generators:	166
Total associated waste volume (m^3):	1,239
Total associated waste activity (Ci):	46.7
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	77
Percent of total(%):	46
Total number of shipping records:	474
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	383,800
Total waste volume (m^3):	495
Fractional waste volume (%): (this analysis/total)	40
Total waste activity (Ci):	12.2
Fractional waste activity (%): (this analysis/total)	26

Exhibit F-55 (Continued)

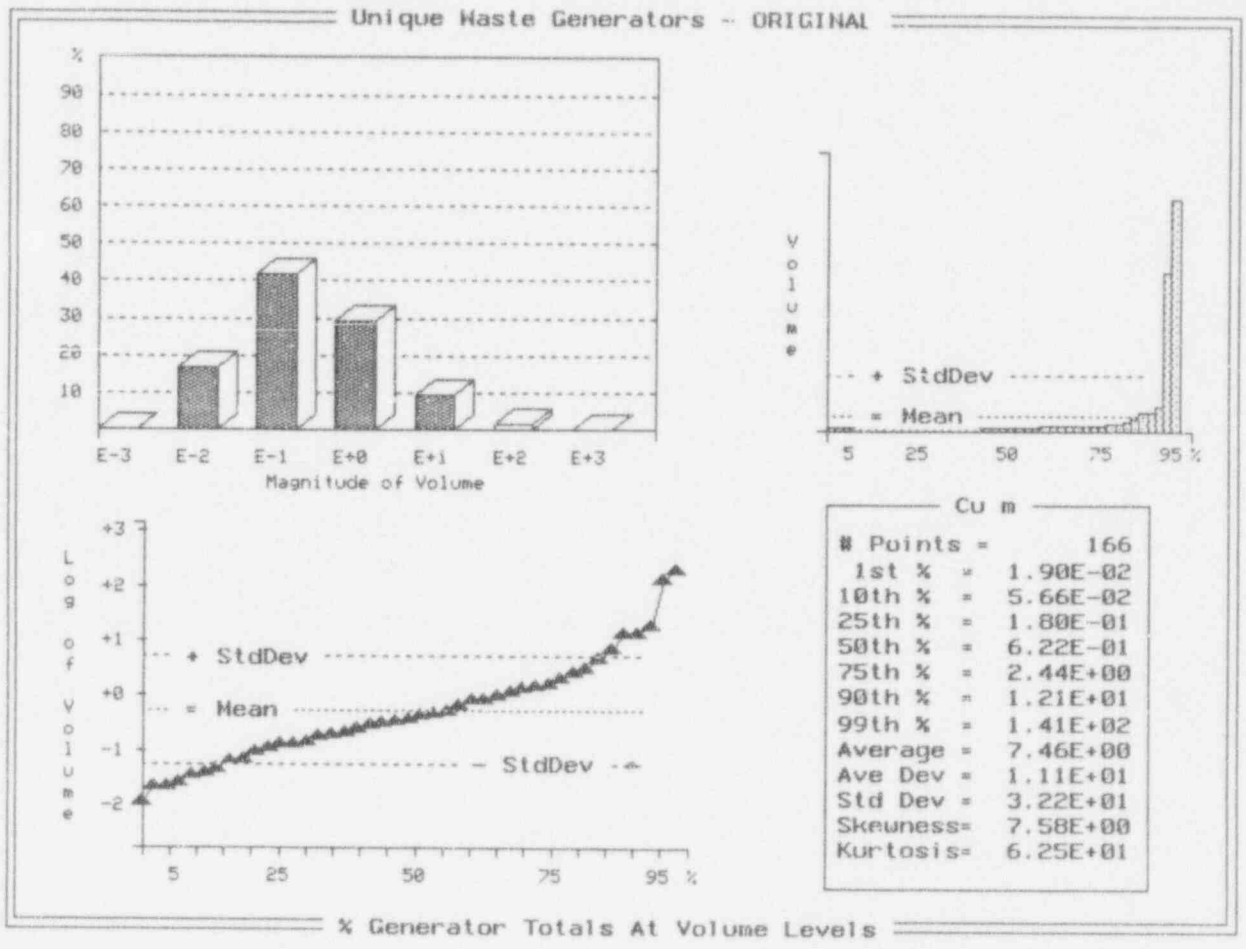


Exhibit F-55 (Continued)

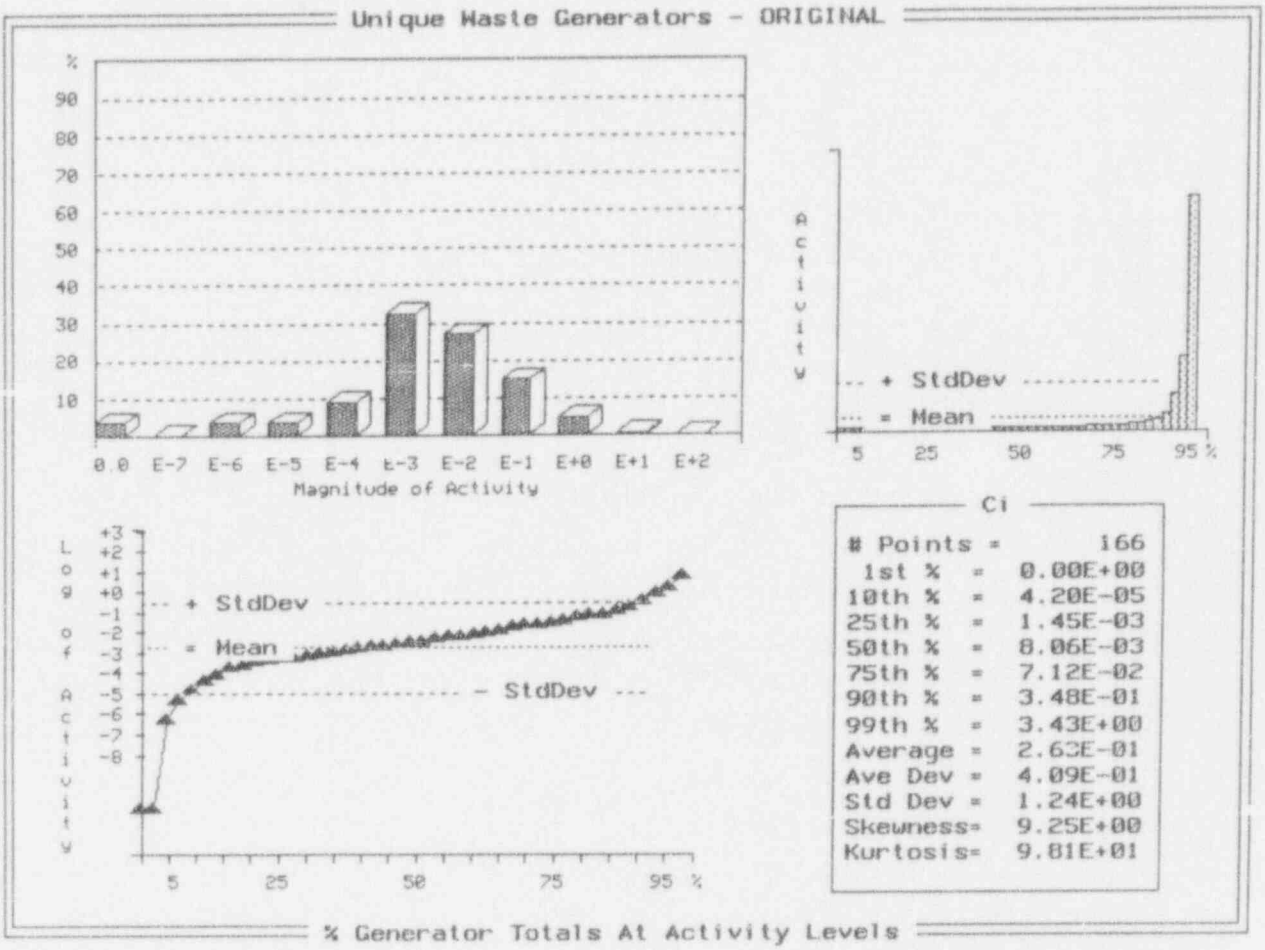


Exhibit [illegible]6
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	New York
Waste generator class:	Industrial
Total number of waste generators:	170
Total associated waste volume (m^3):	1,892
Total associated waste activity (Ci):	23,710
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	67
Percent of total(%):	39
Total number of shipping records:	298
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	1,308,000
Total waste volume (m^3):	1,279
Fractional waste volume (%): (this analysis/total)	68
Total waste activity (Ci):	379
Fractional waste activity (%): (this analysis/total)	2

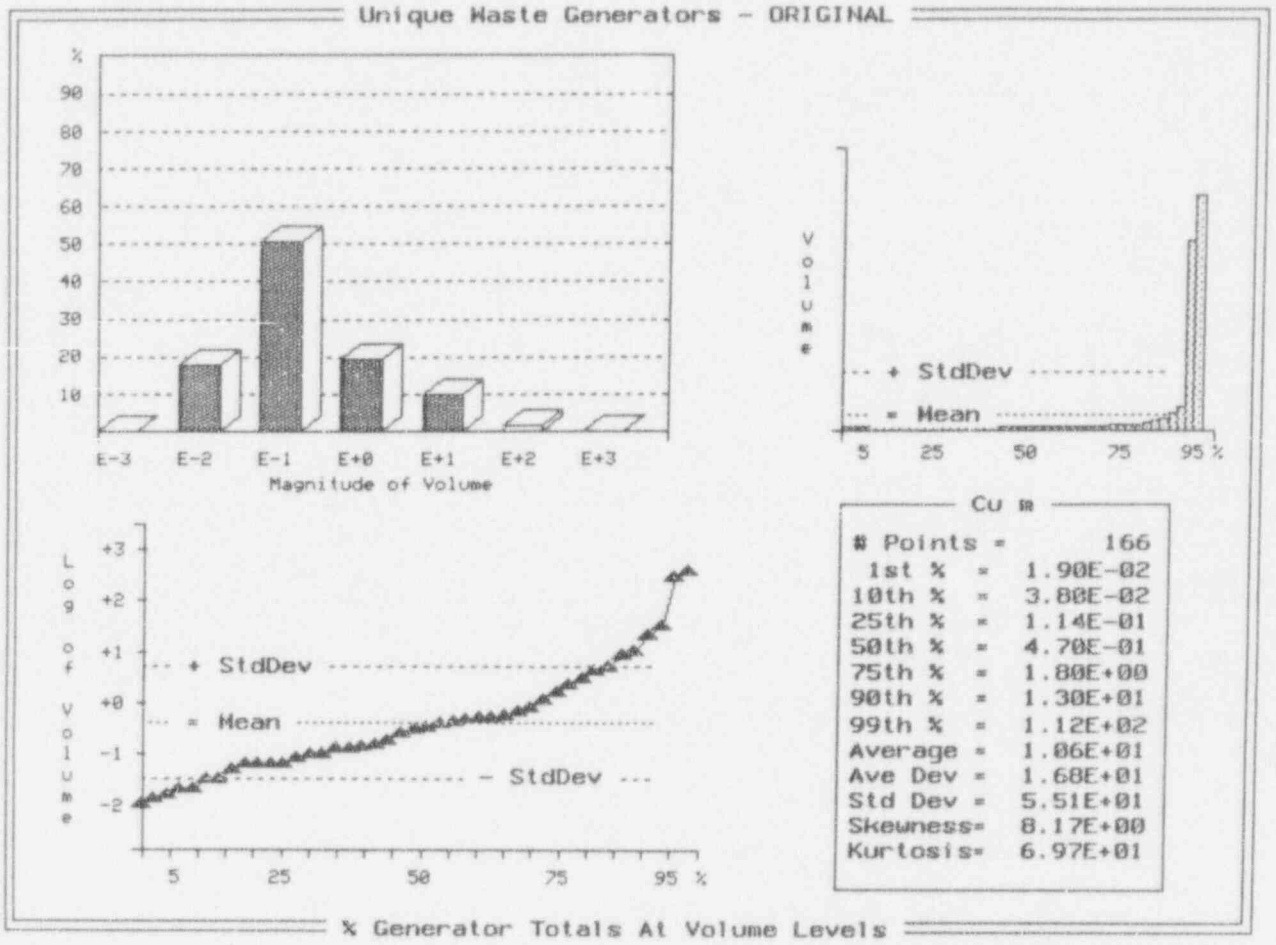

Unique Waste Generators - ORIGINAL
%
90
80
70
60
50
40
30
20
10
E-3
E-2
E-1
E+0
E+1
E+2
E+3
Magnitude of Volume
Volume
+ StdDev
= Mean
5
25
50
75
95 %
Log of Volume
+3
+2
+1
+0
-1
-2
+ StdDev
= Mean
- StdDev
5
25
50
75
95 %
Cu
Points = 166
1st % = 1.90E-02
10th % = 3.80E-02
25th % = 1.14E-01
50th % = 4.70E-01
75th % = 1.80E+00
90th % = 1.30E+01
99th % = 1.12E+02
Average = 1.06E+01
Ave Dev = 1.68E+01
Std Dev = 5.51E+01
Skewness= 8.17E+00
Kurtosis= 6.97E+01
% Generator Totals At Volume Levels

Exhibit F-56 (Continued)

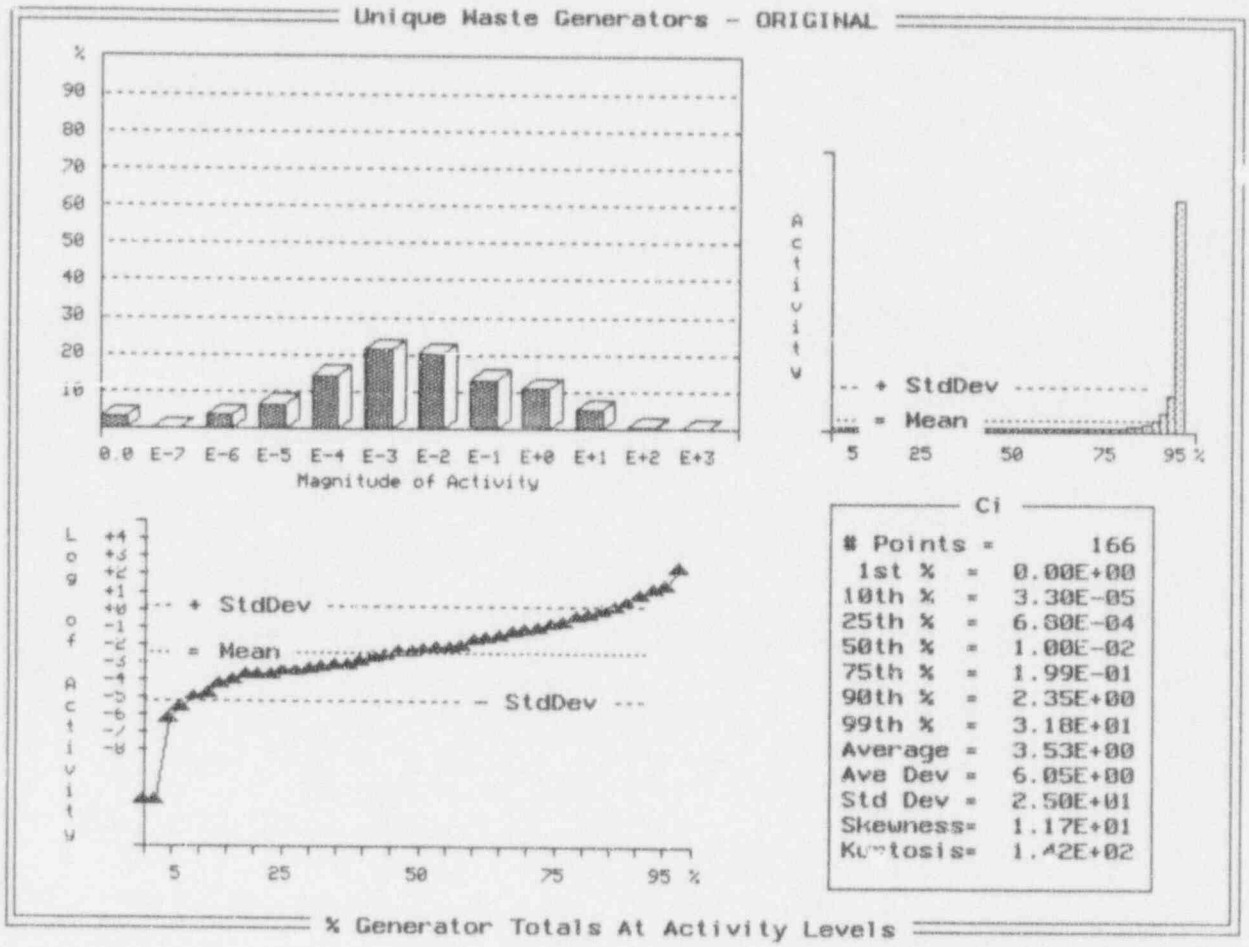


Exhibit F-56 (Continued)

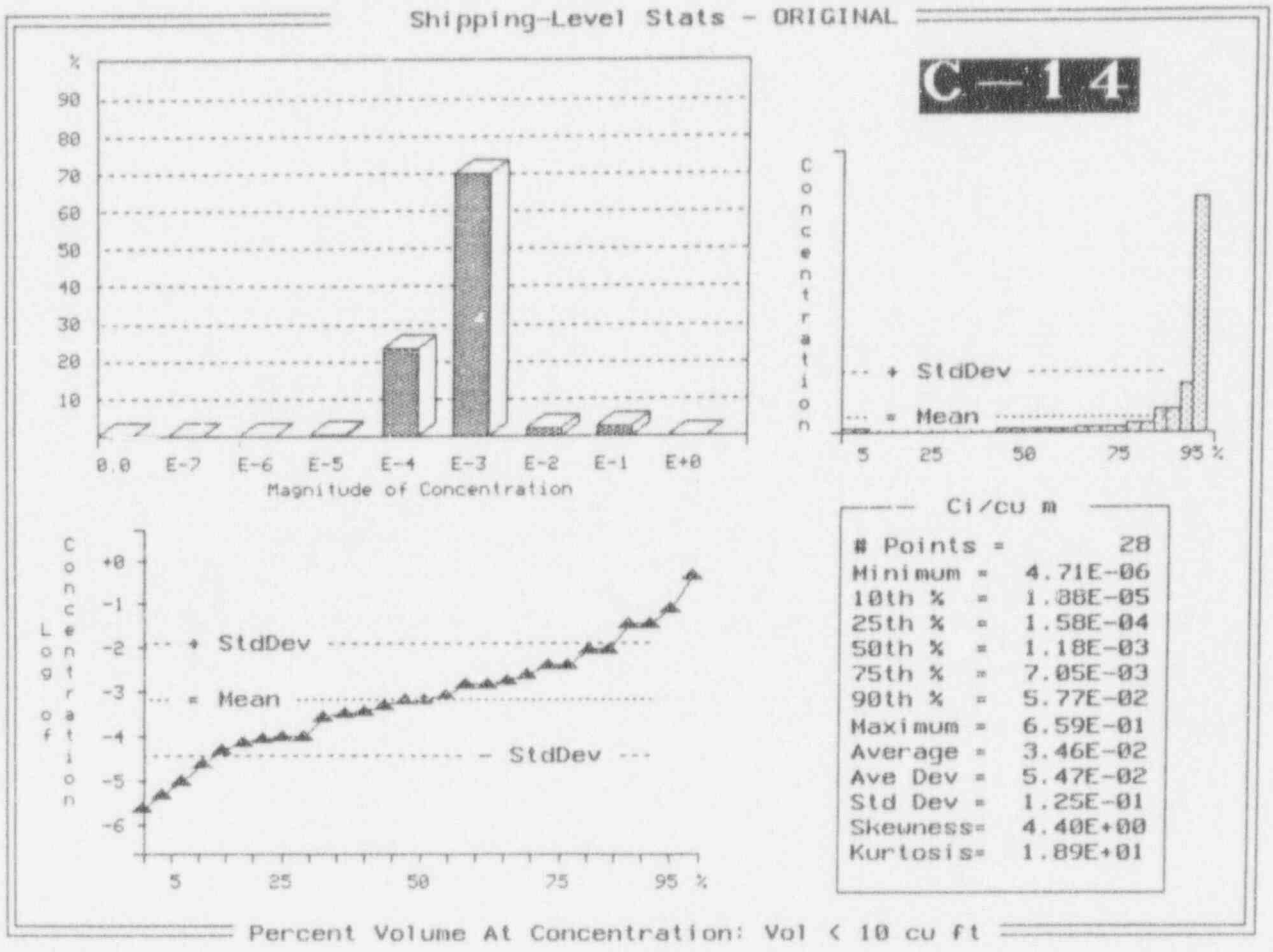
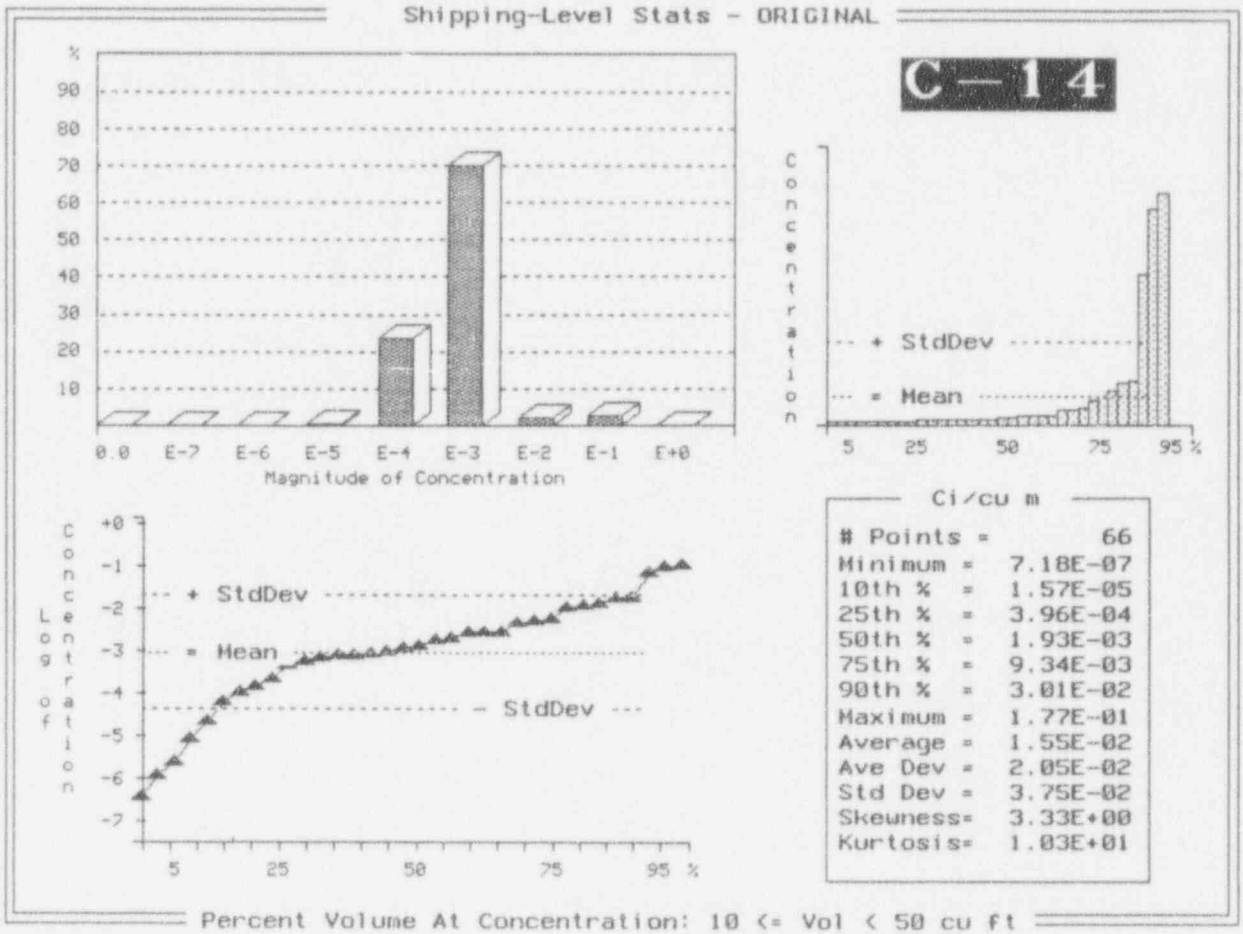


Exhibit F-56 (Continued)



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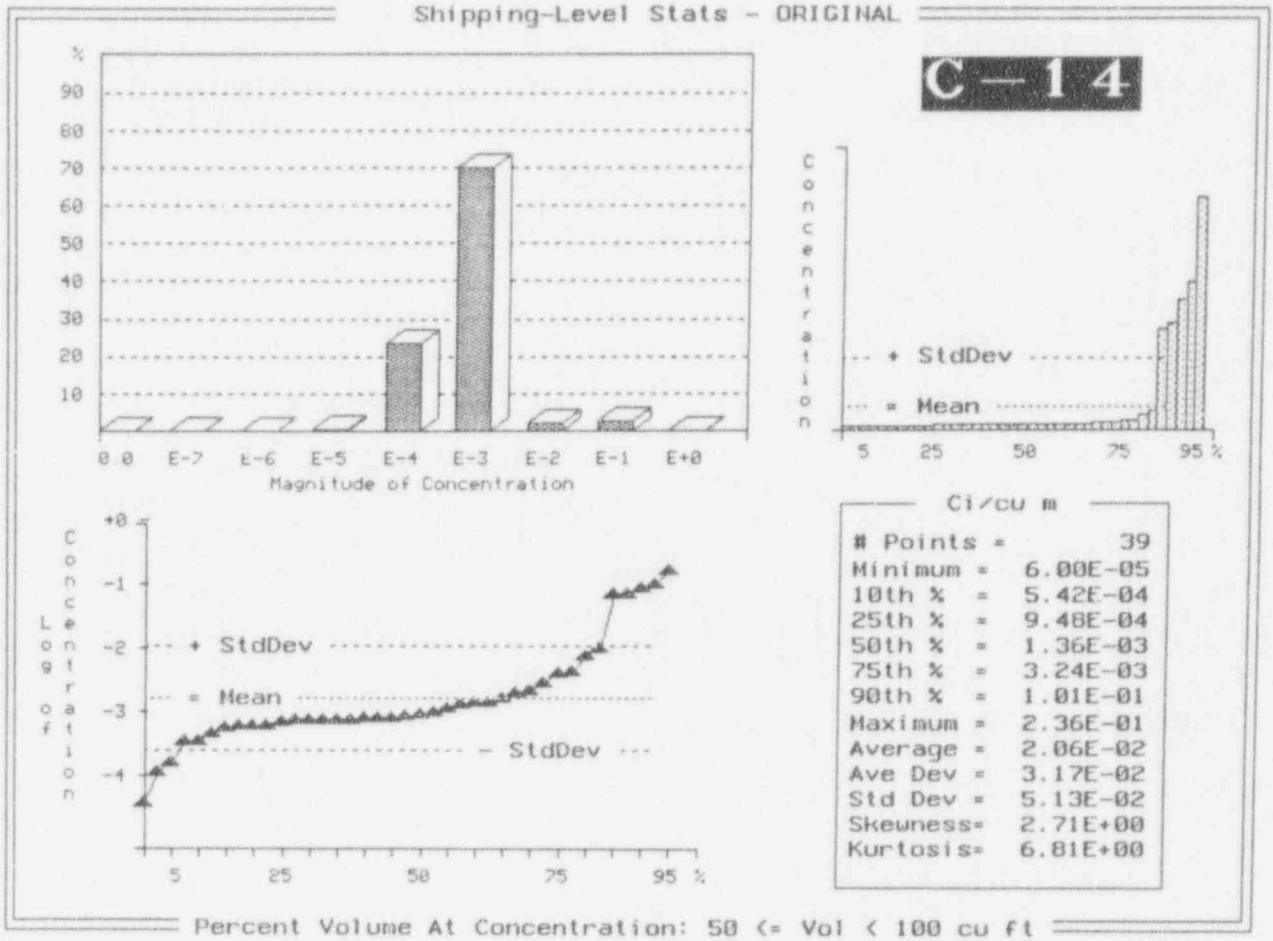


Exhibit F-56 (Continued)

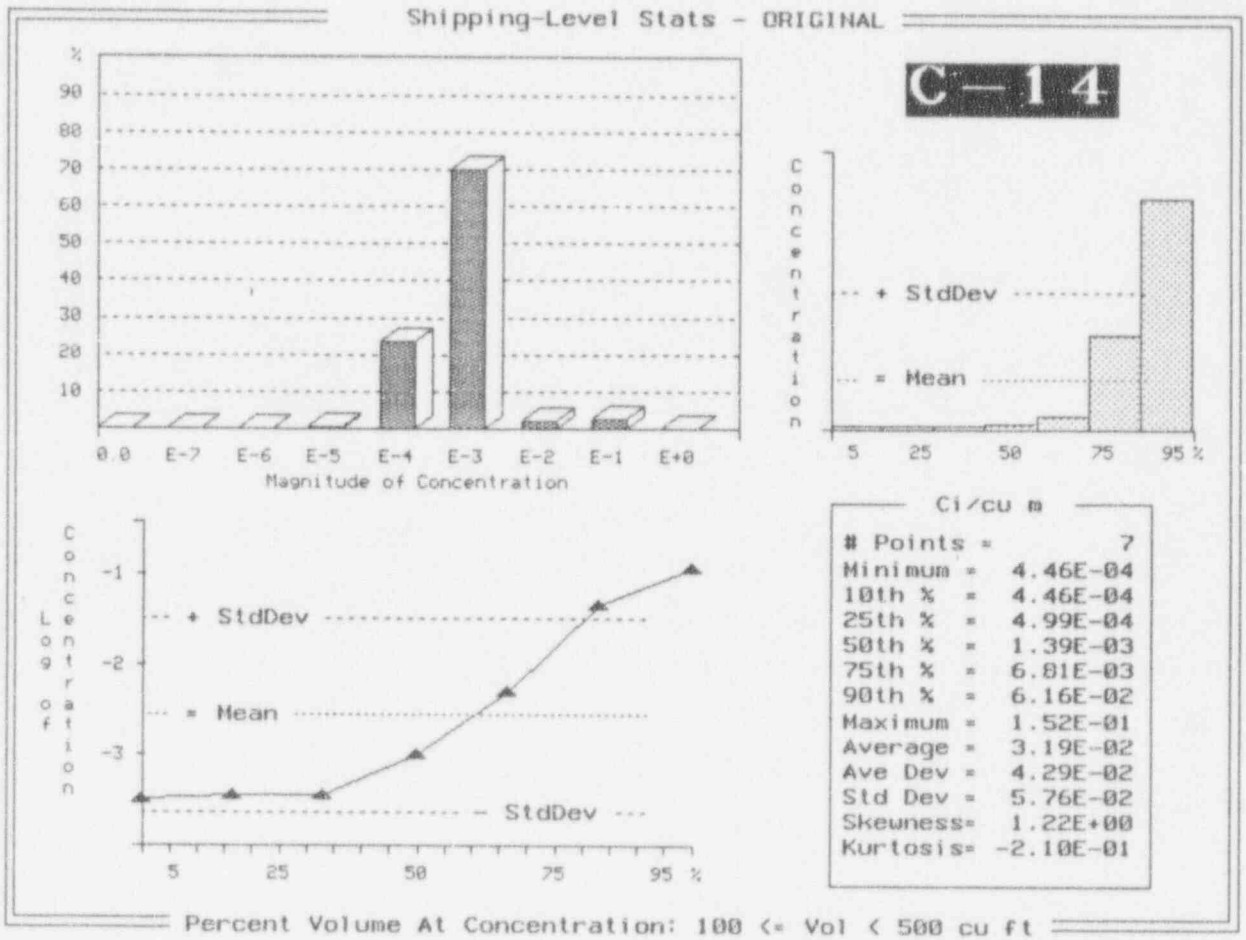


Exhibit F-56 (Continued)

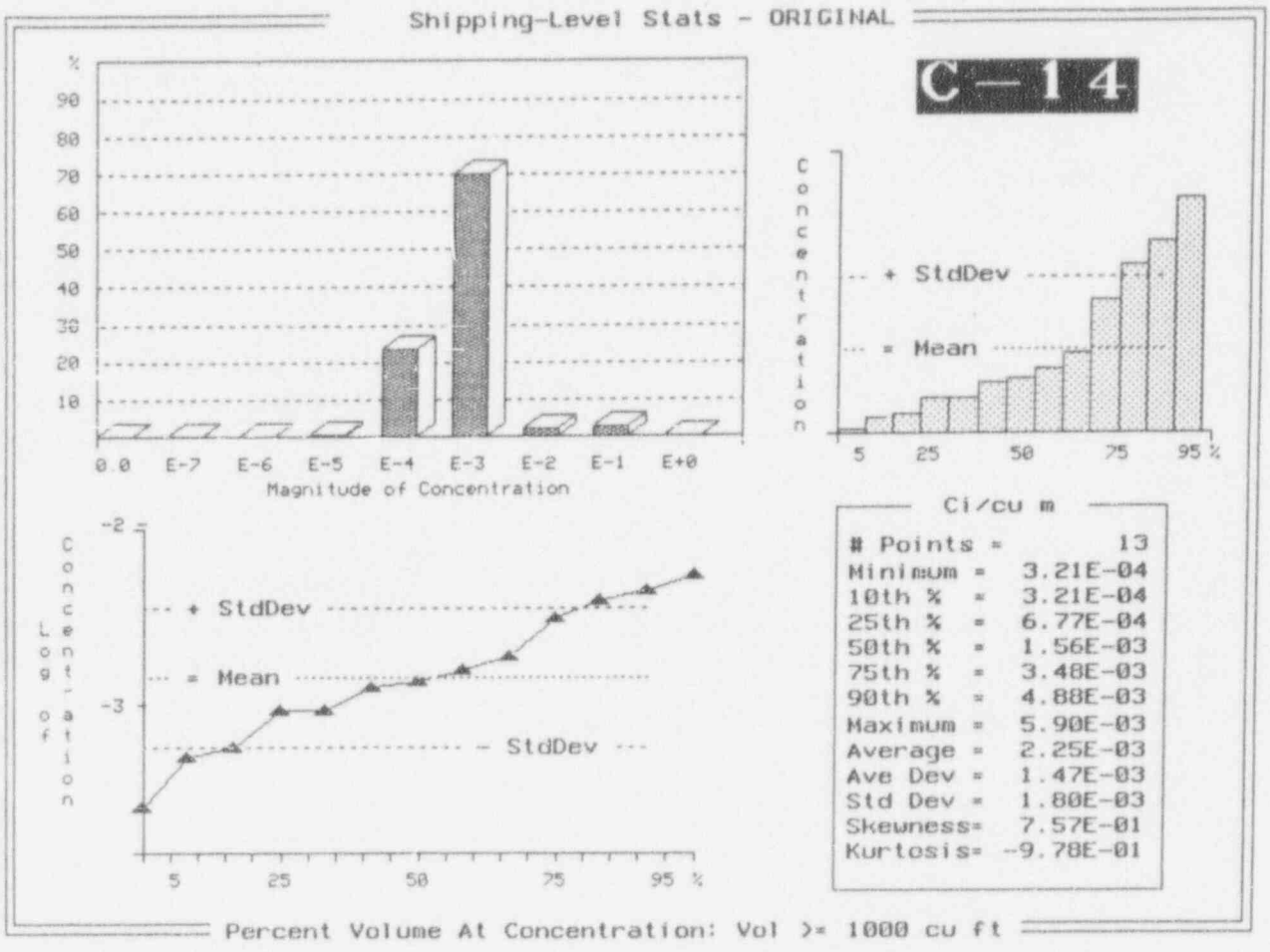
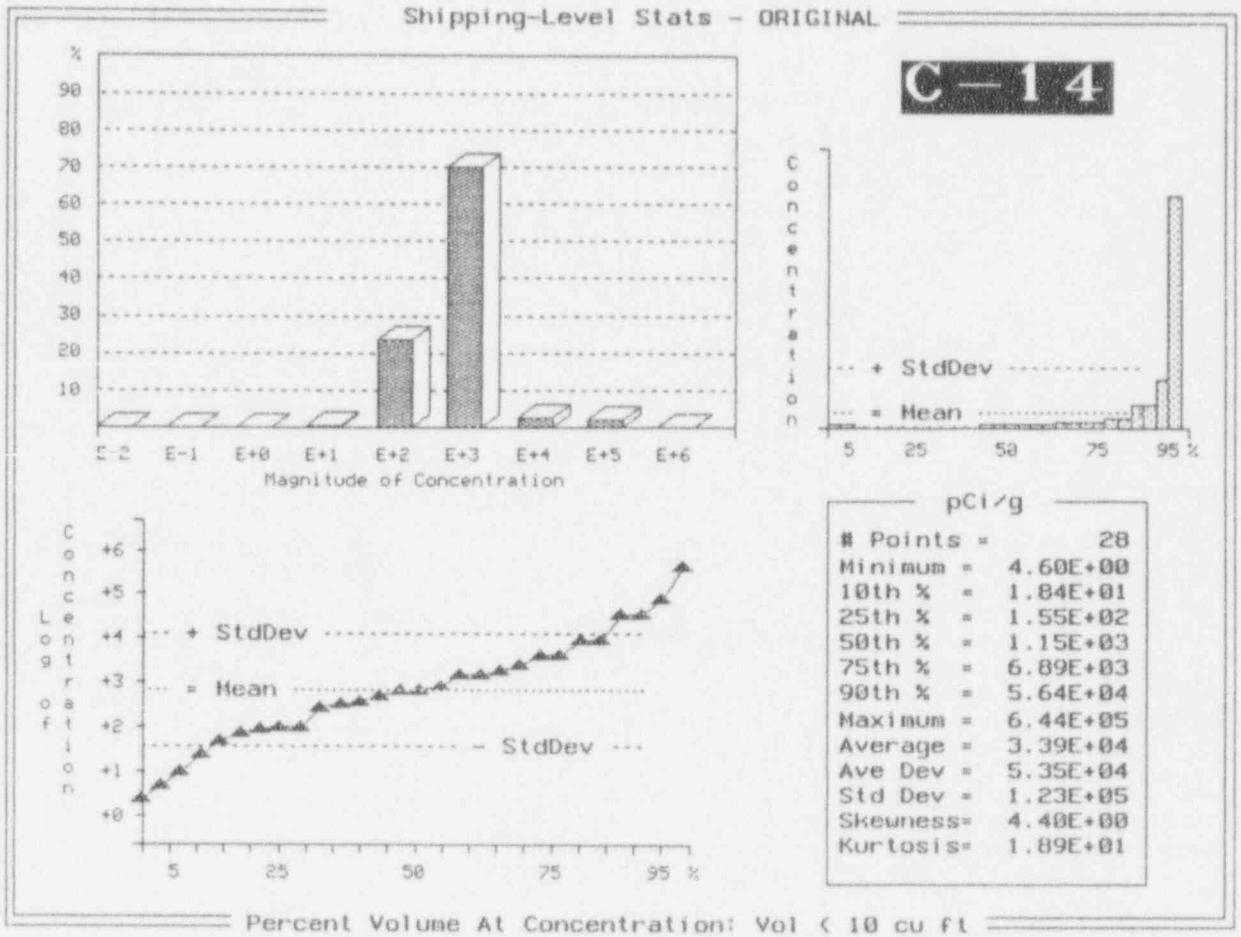


Exhibit F-56 (Continued)



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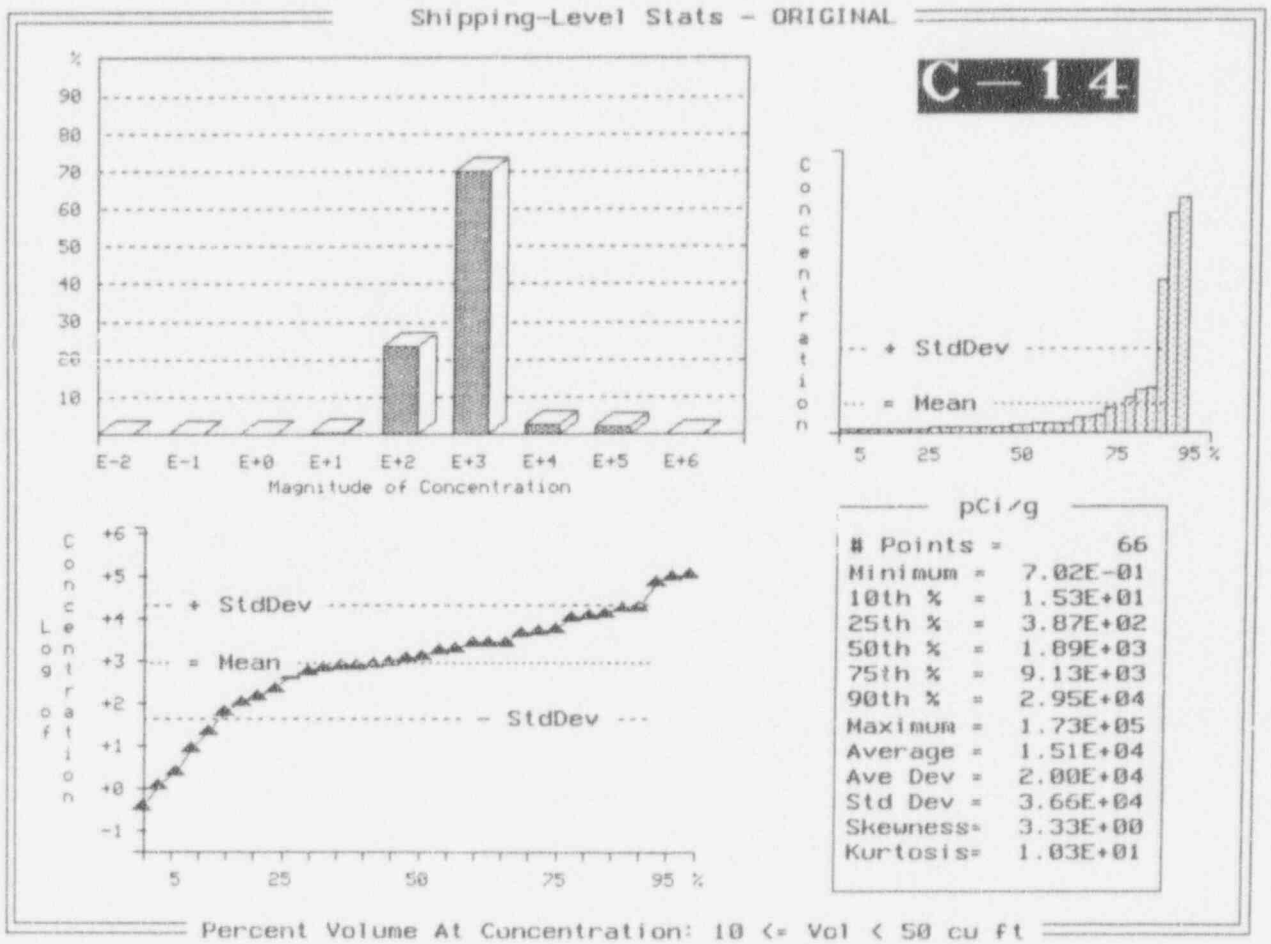


Exhibit F-56 (Continued)

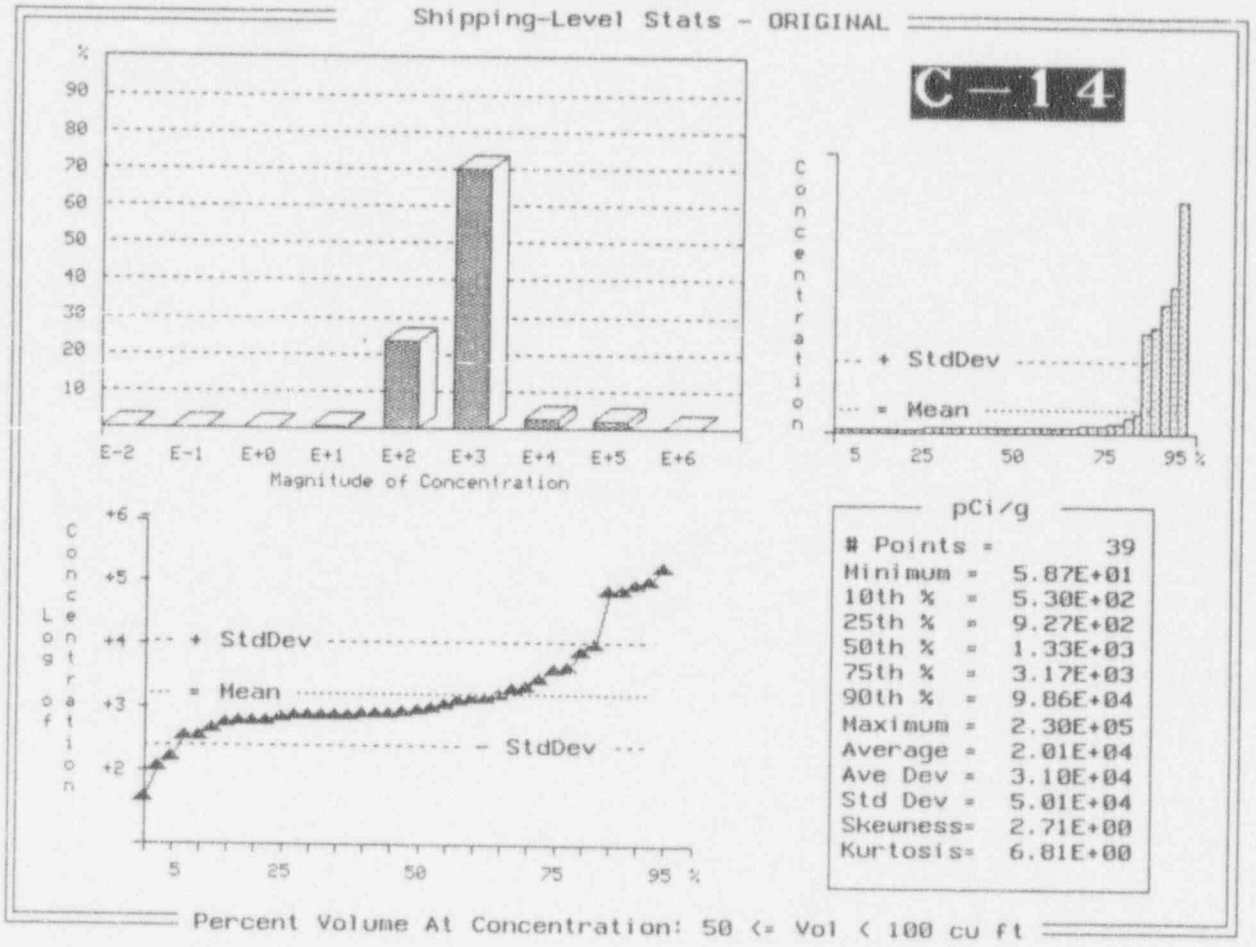


Exhibit F-56 (Continued)

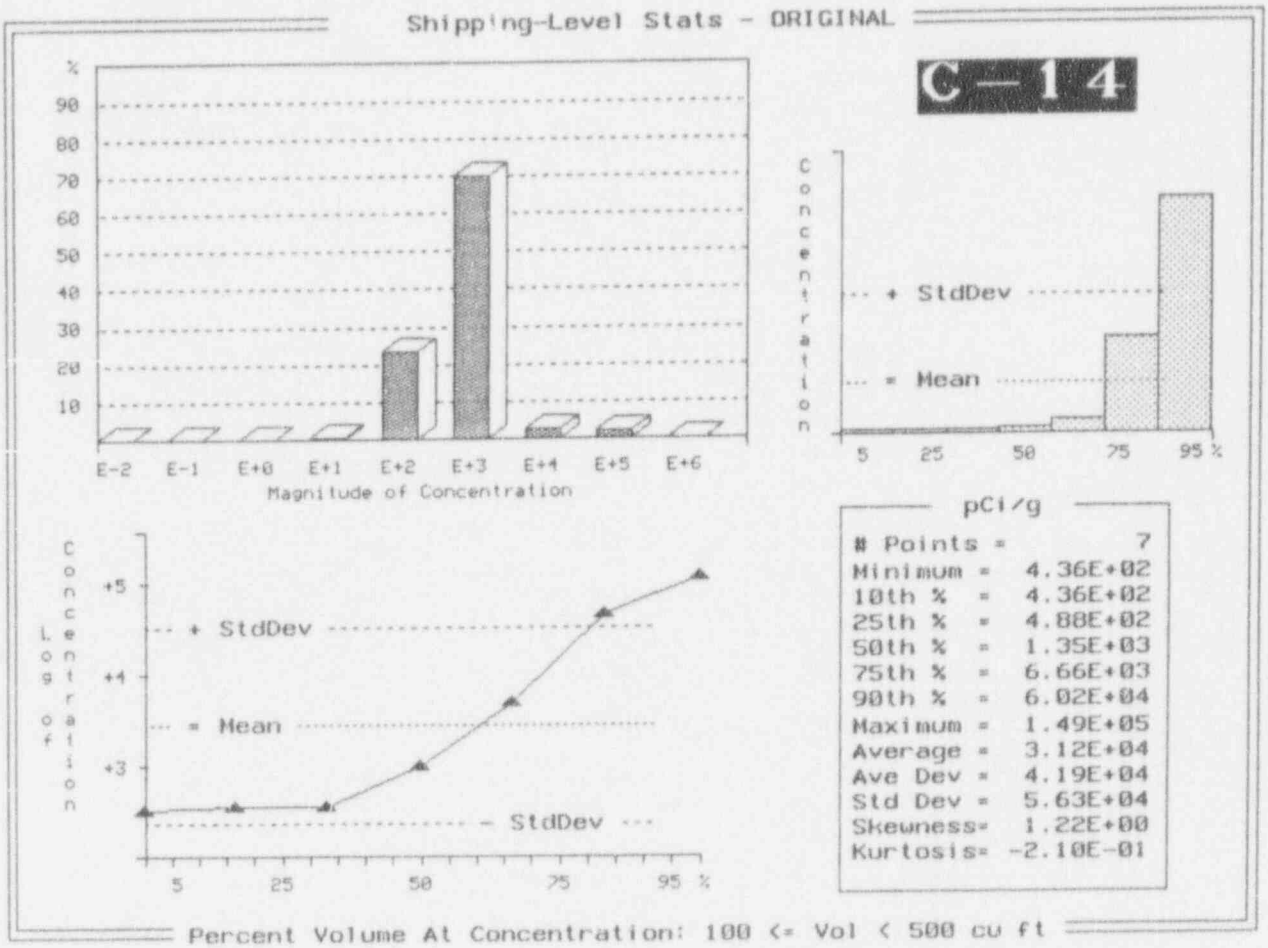


Exhibit F-56 (Continued)

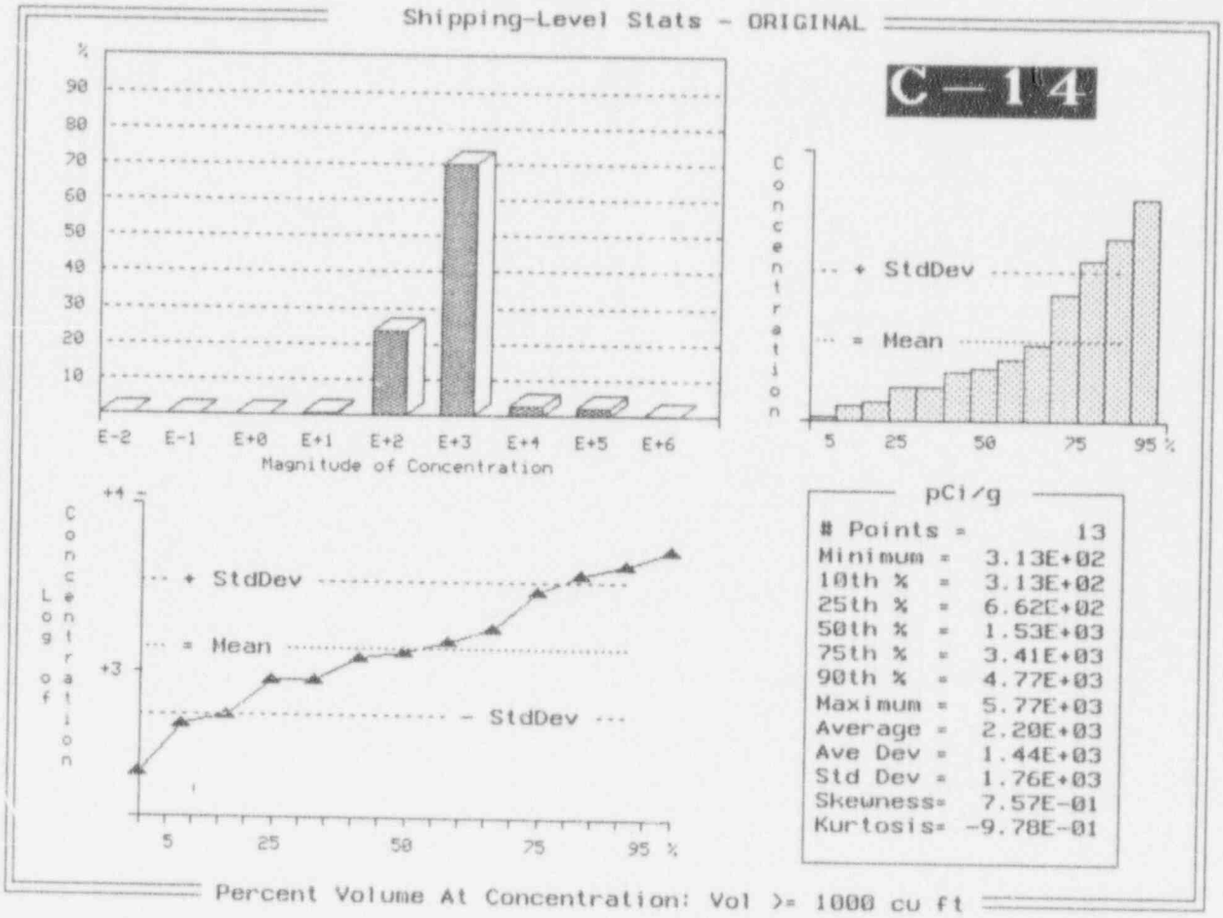


Exhibit F-56 (Continued)

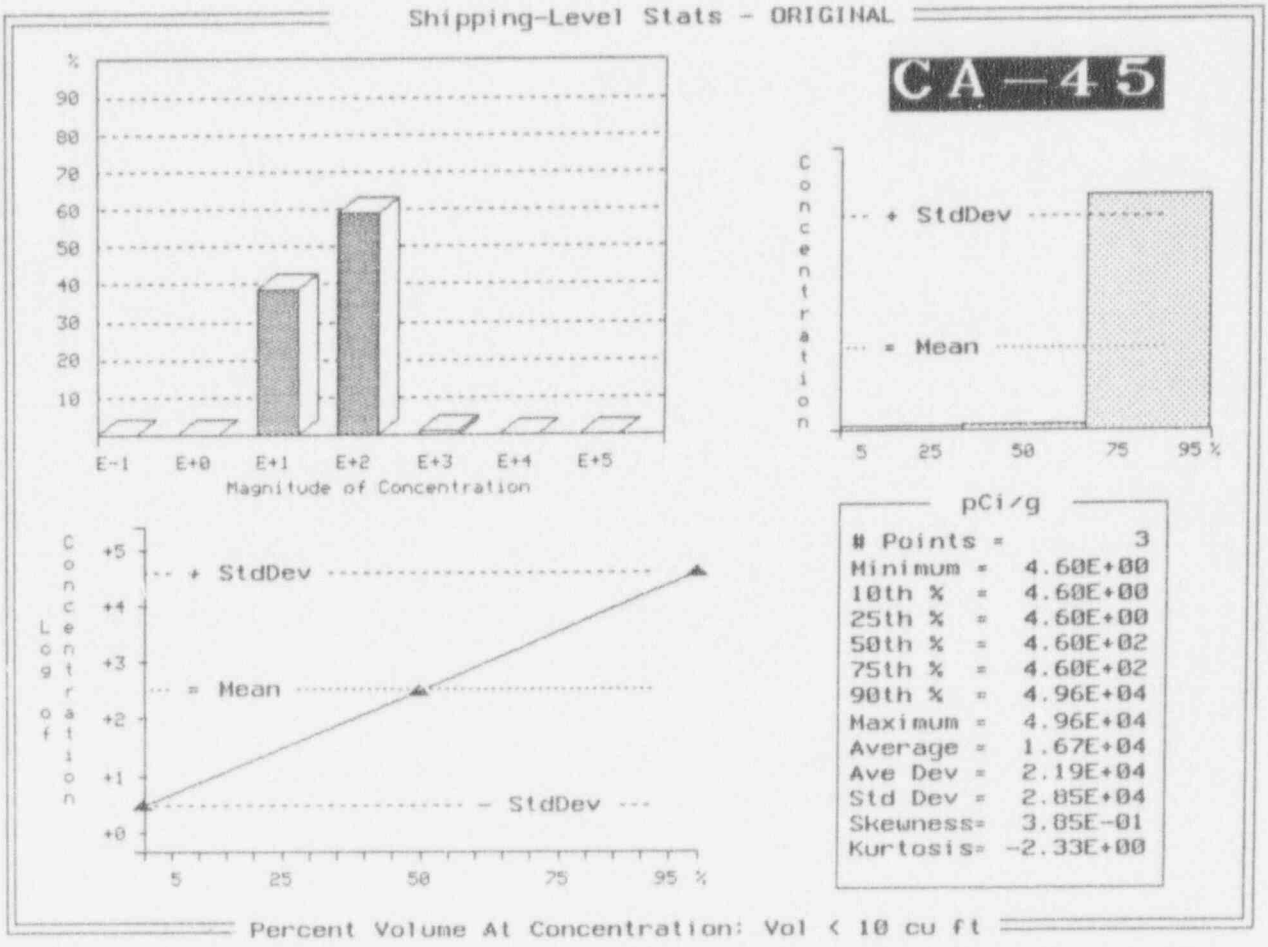


Exhibit F-56 (Continued)

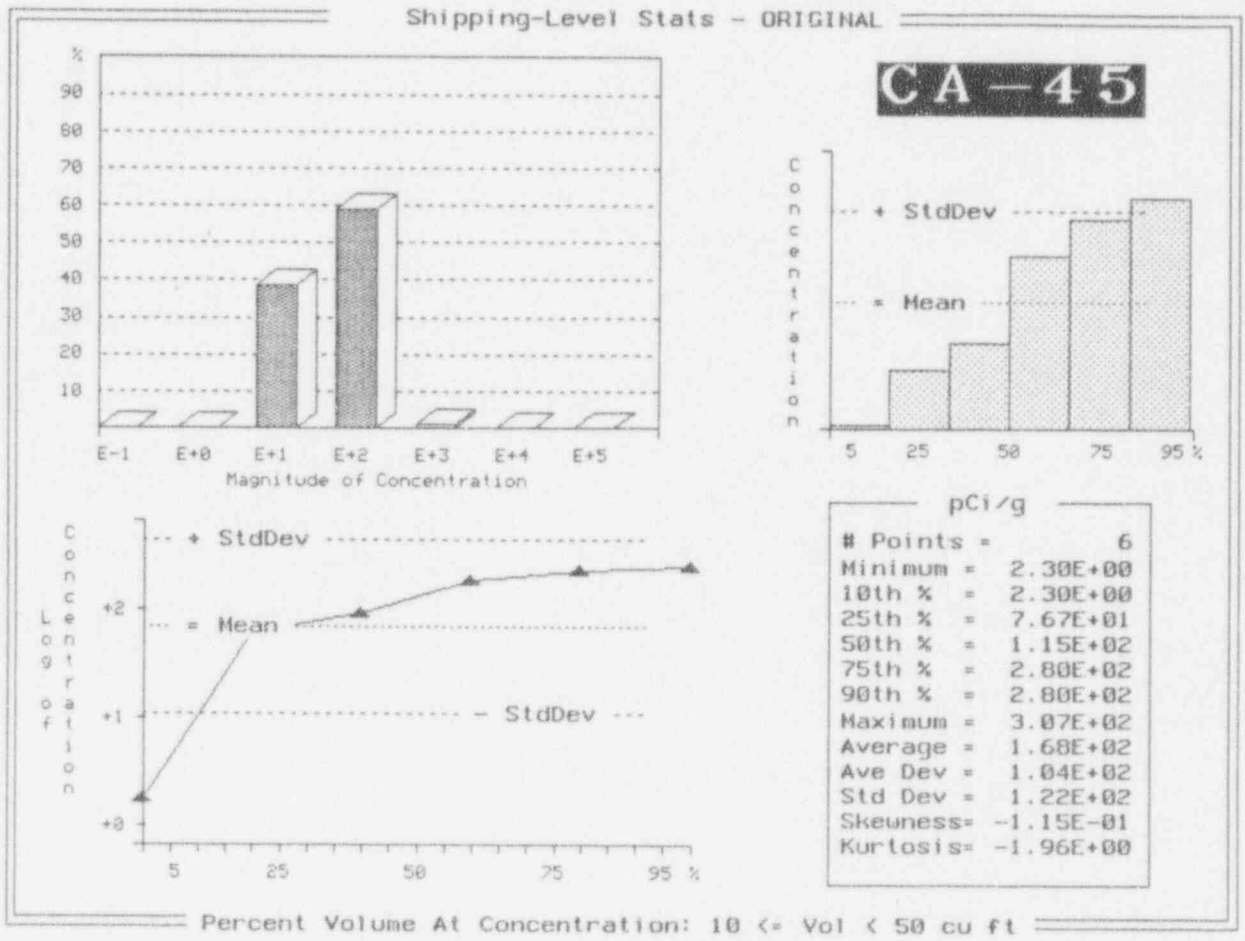


Exhibit F-56 (Continued)

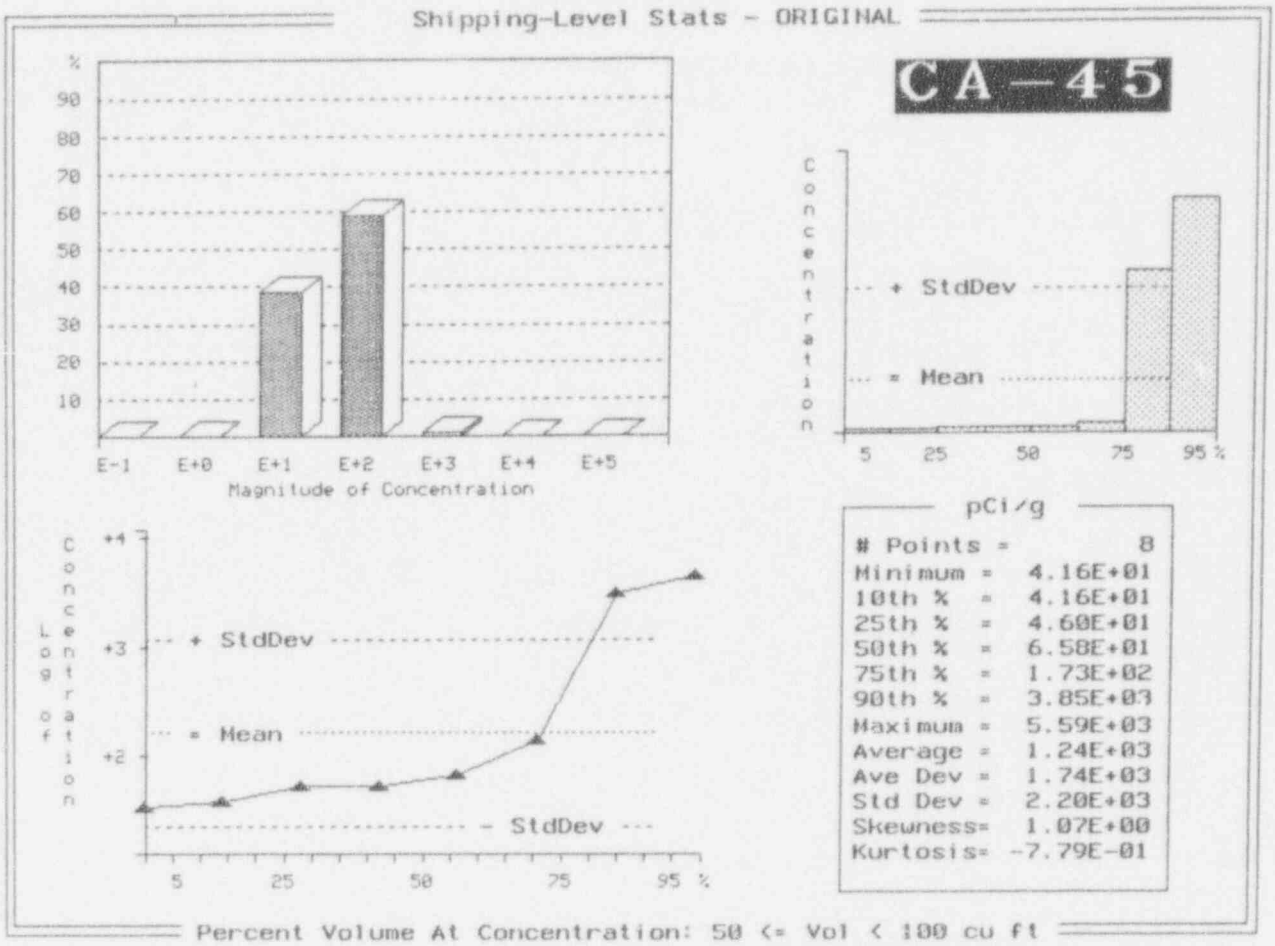


Exhibit F-56 (Continued)

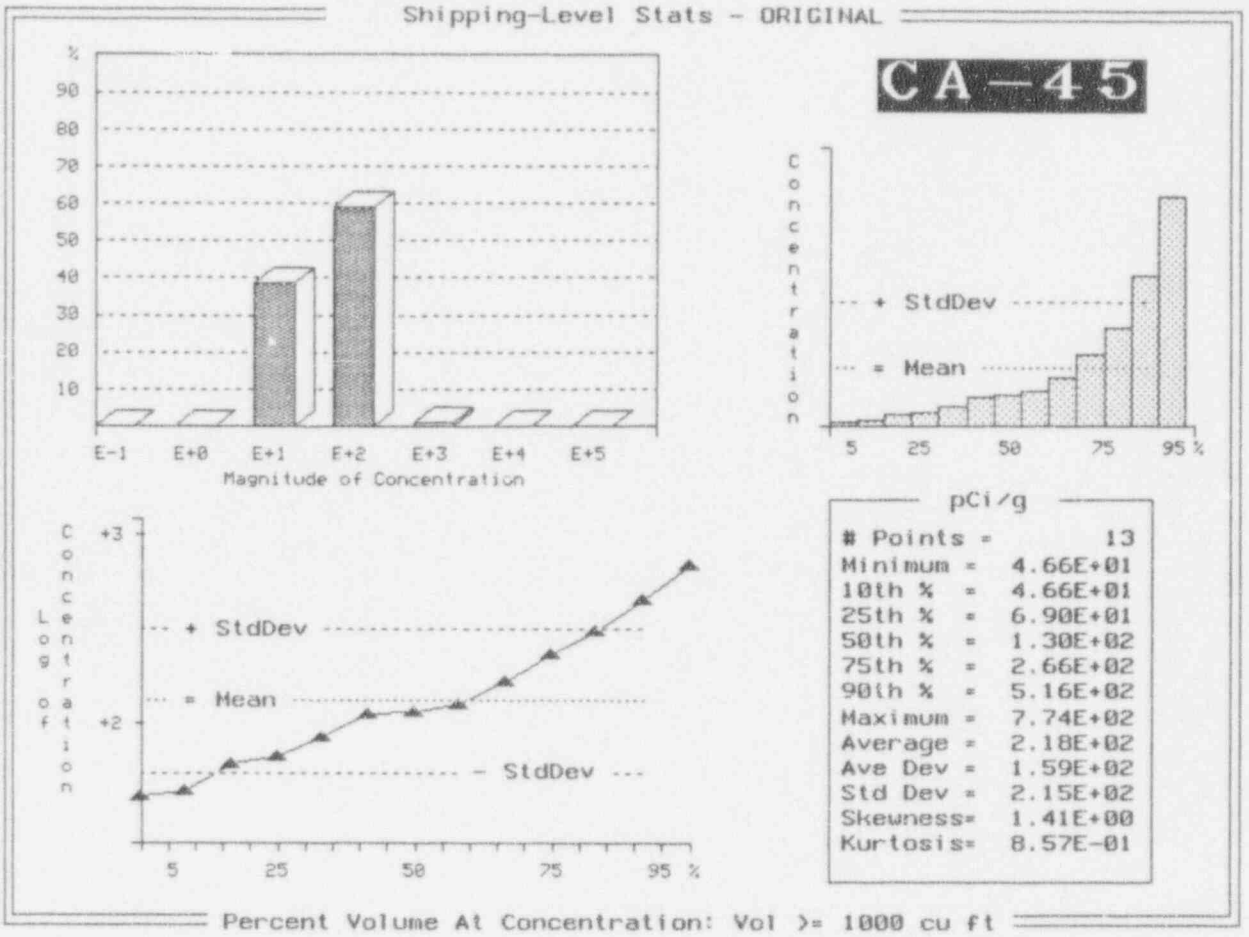


Exhibit F-56 (Continued)

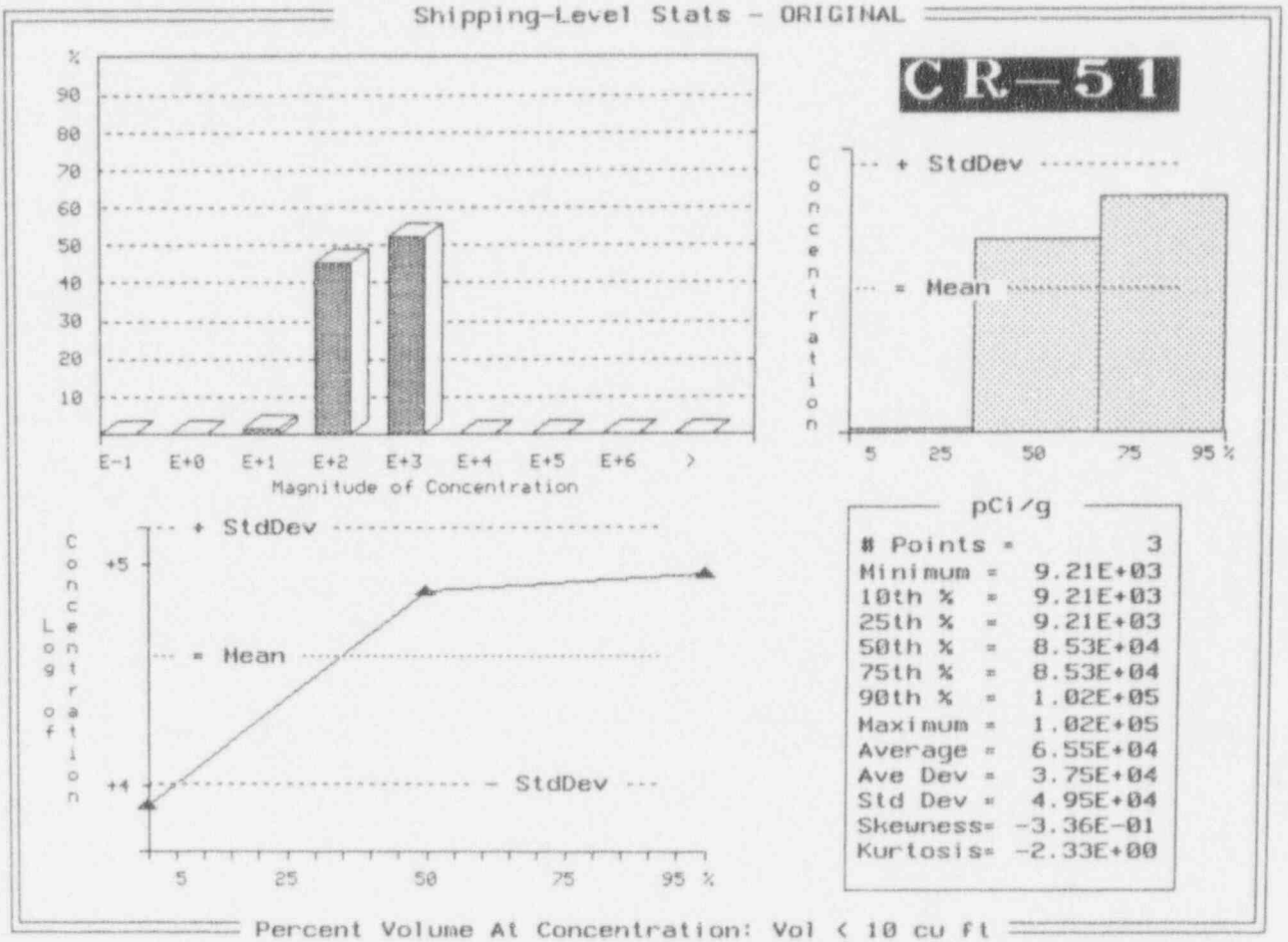
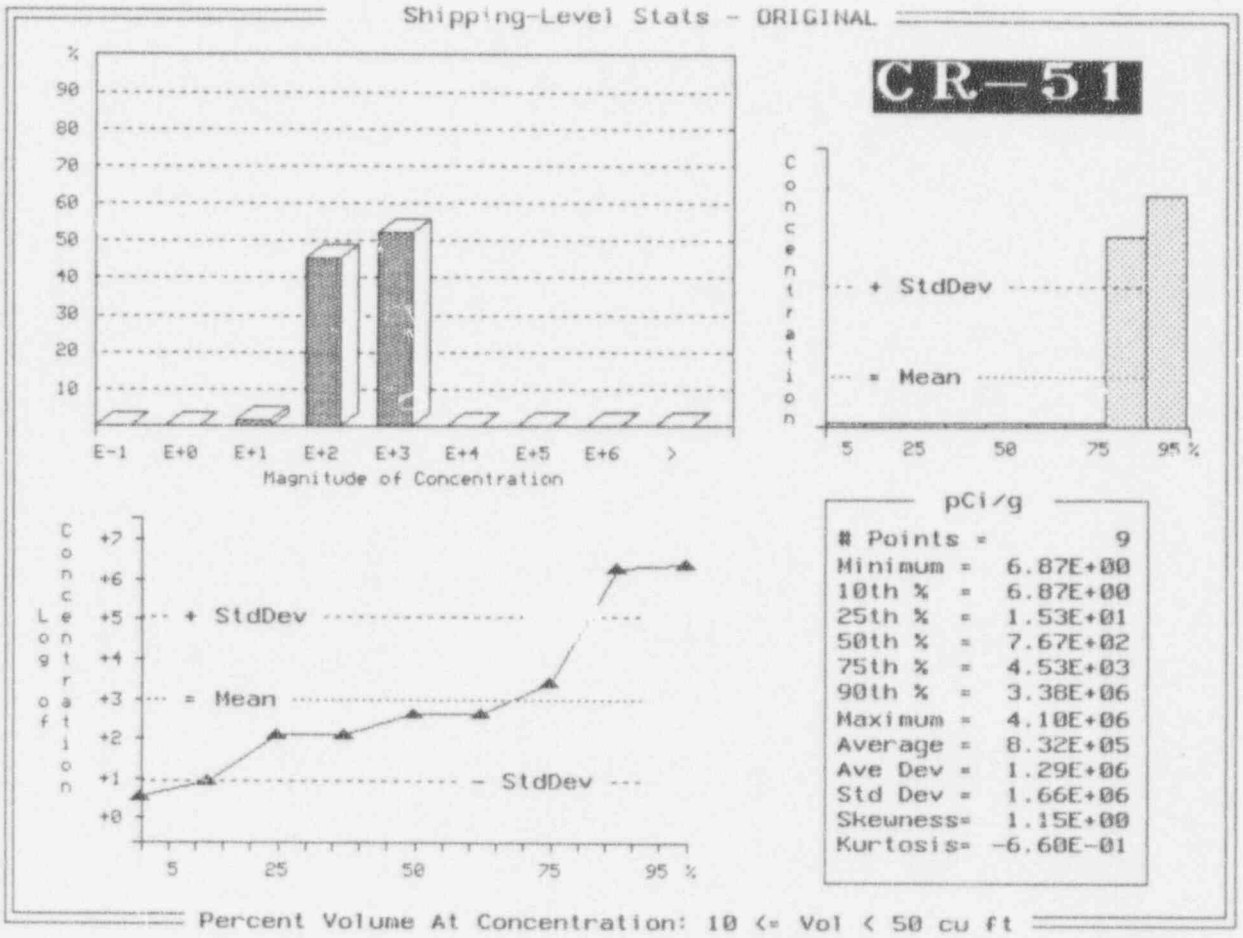


Exhibit F-56 (Continued)



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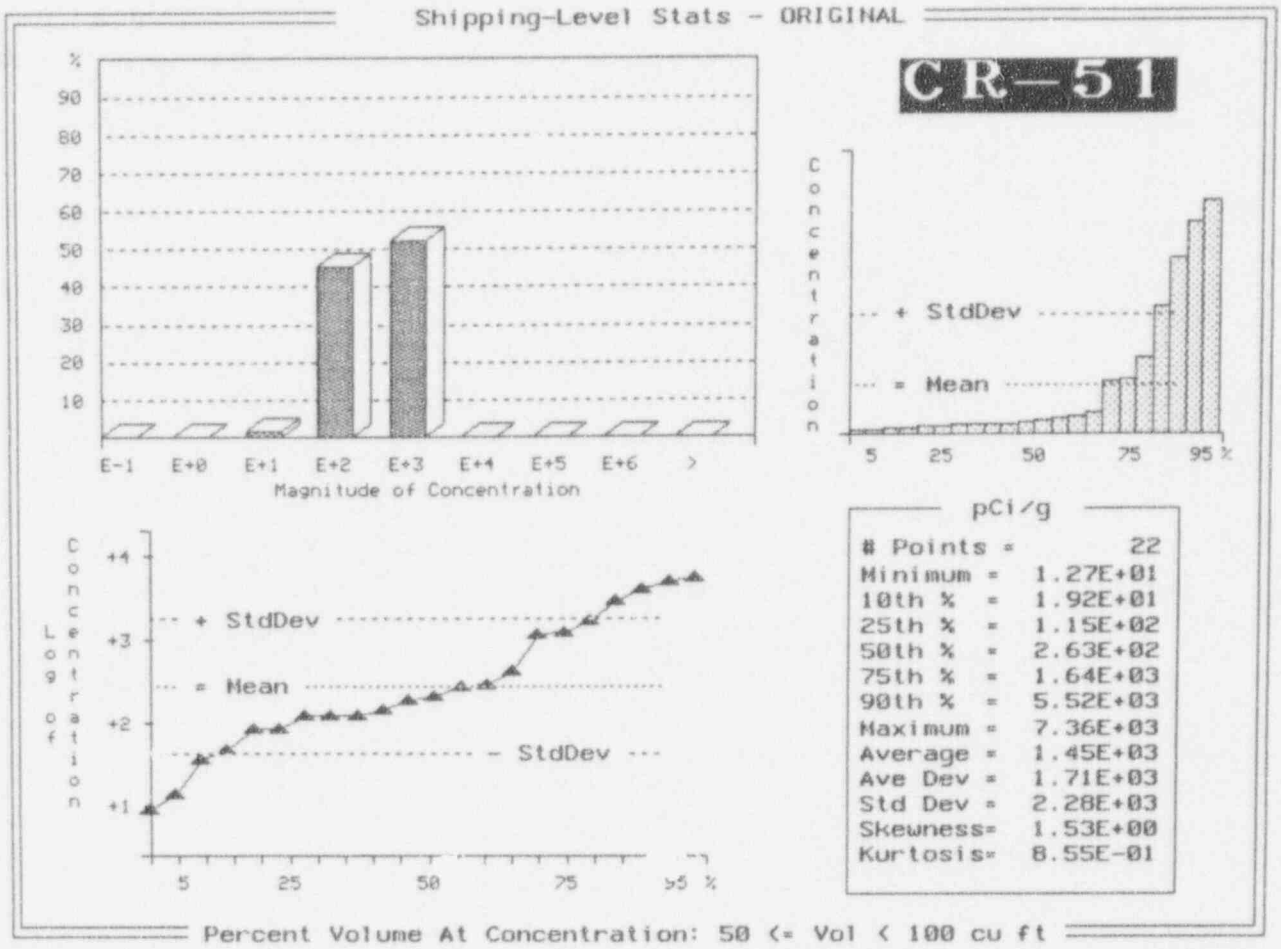
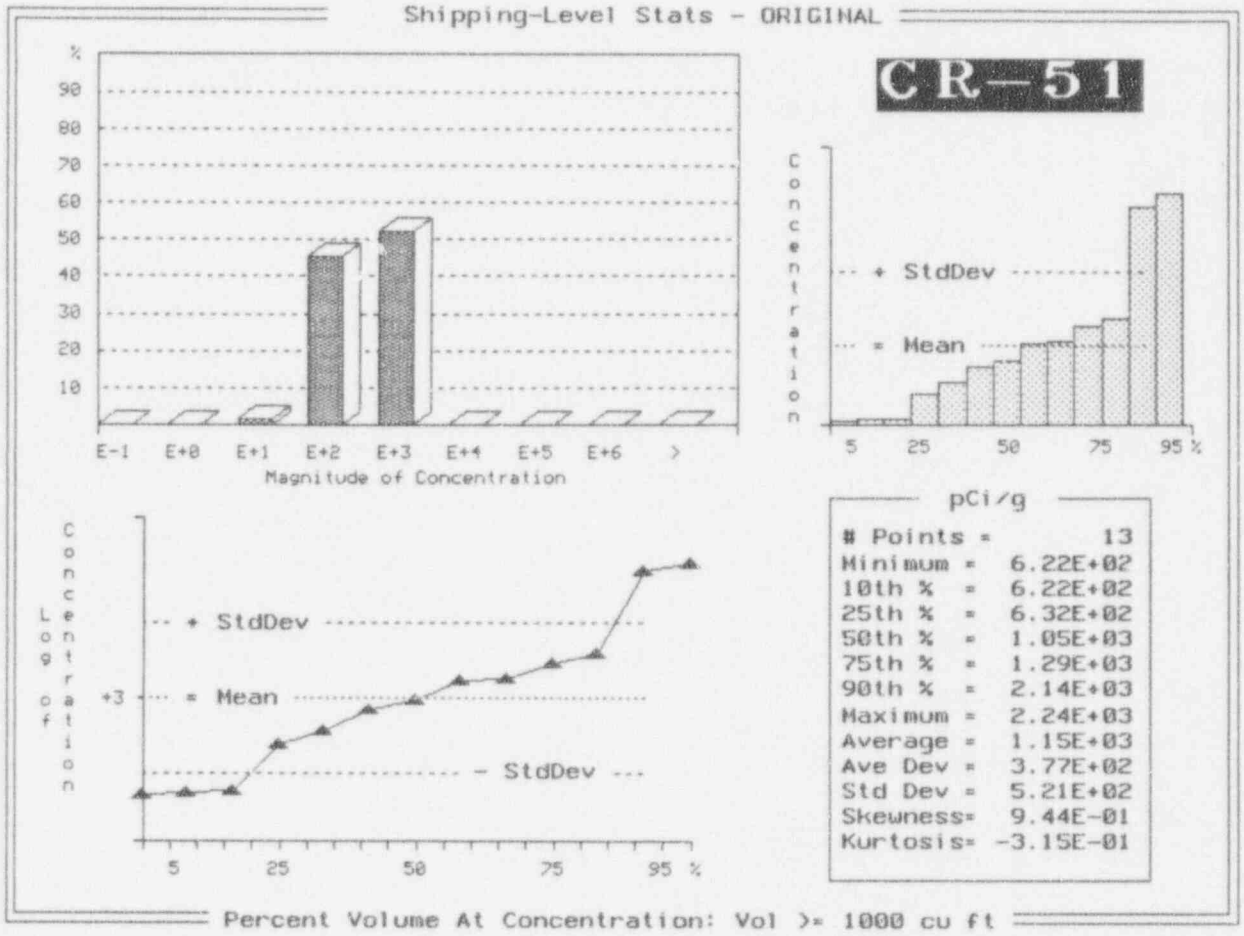


Exhibit F-56 (Continued)



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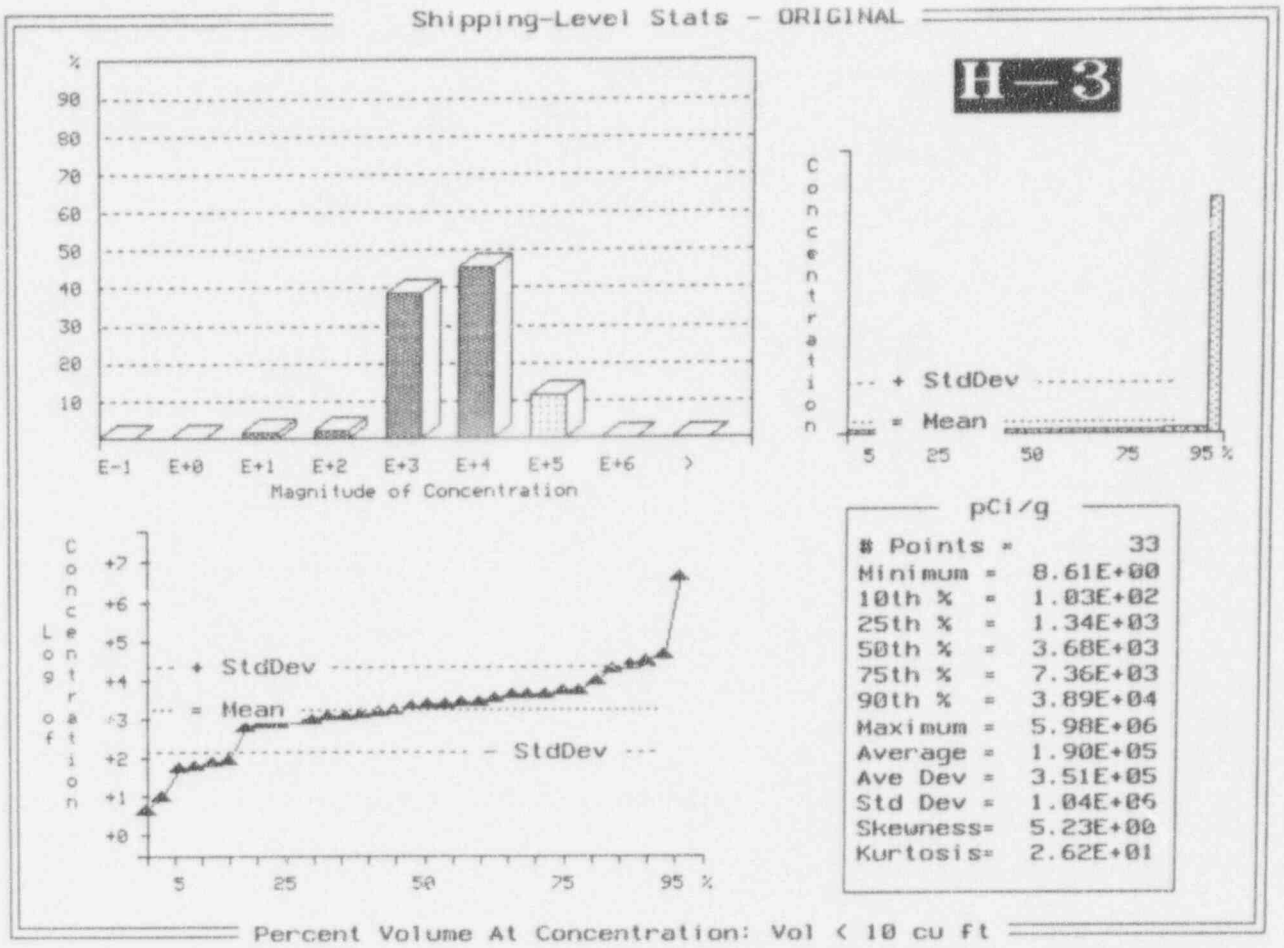


Exhibit F-56 (Continued)

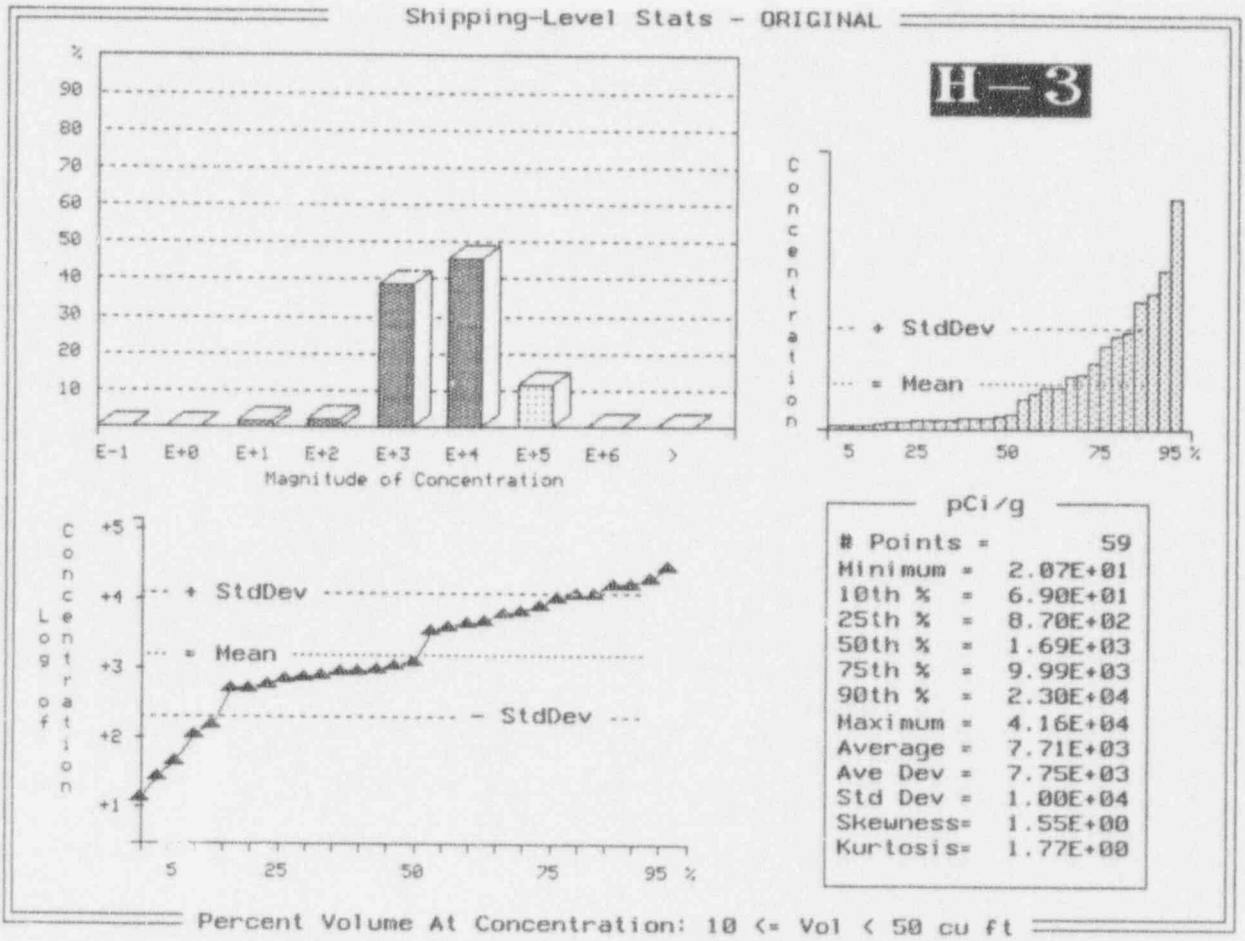


Exhibit F-56 (Continued)

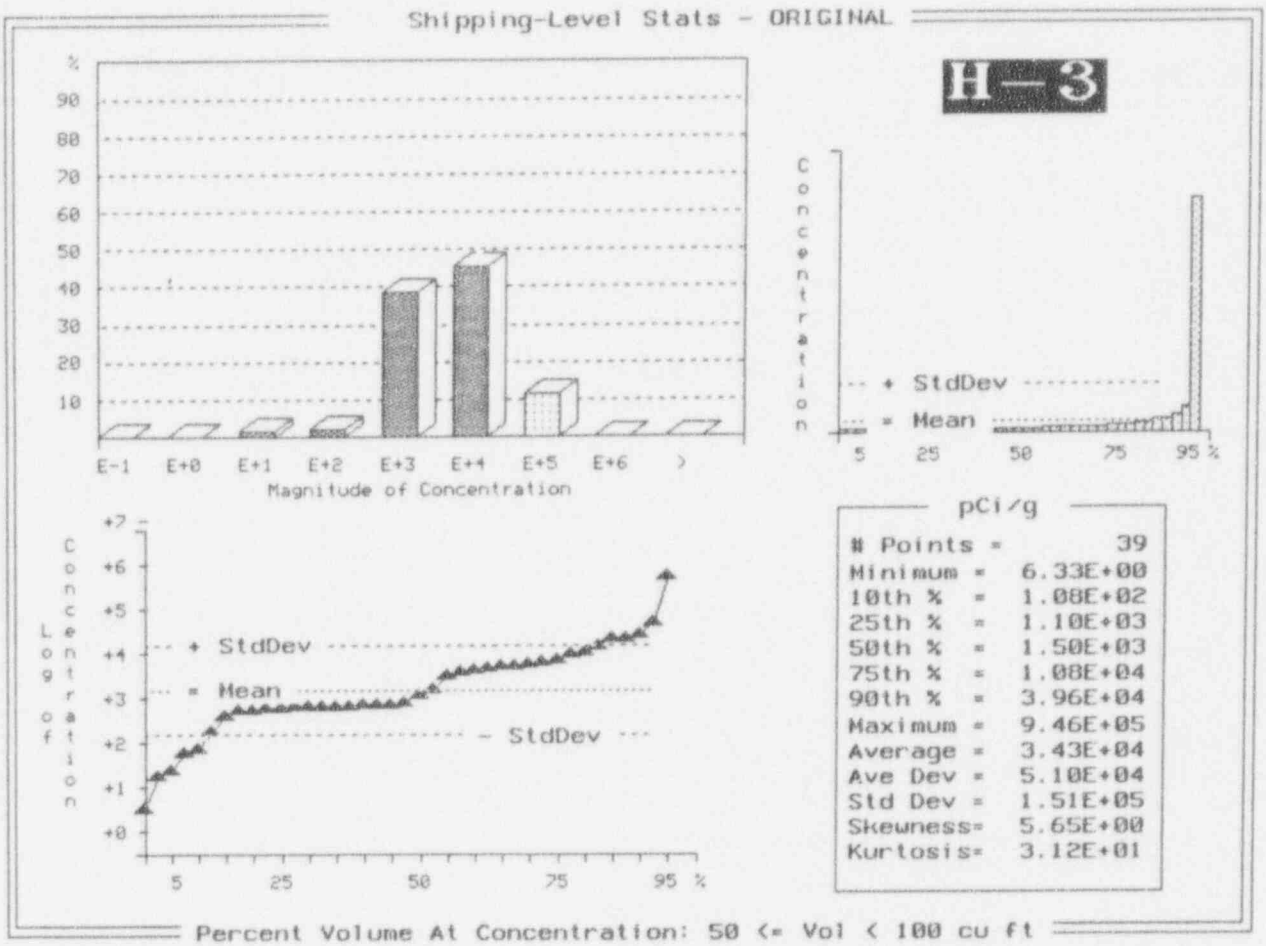


Exhibit F-56 (Continued)

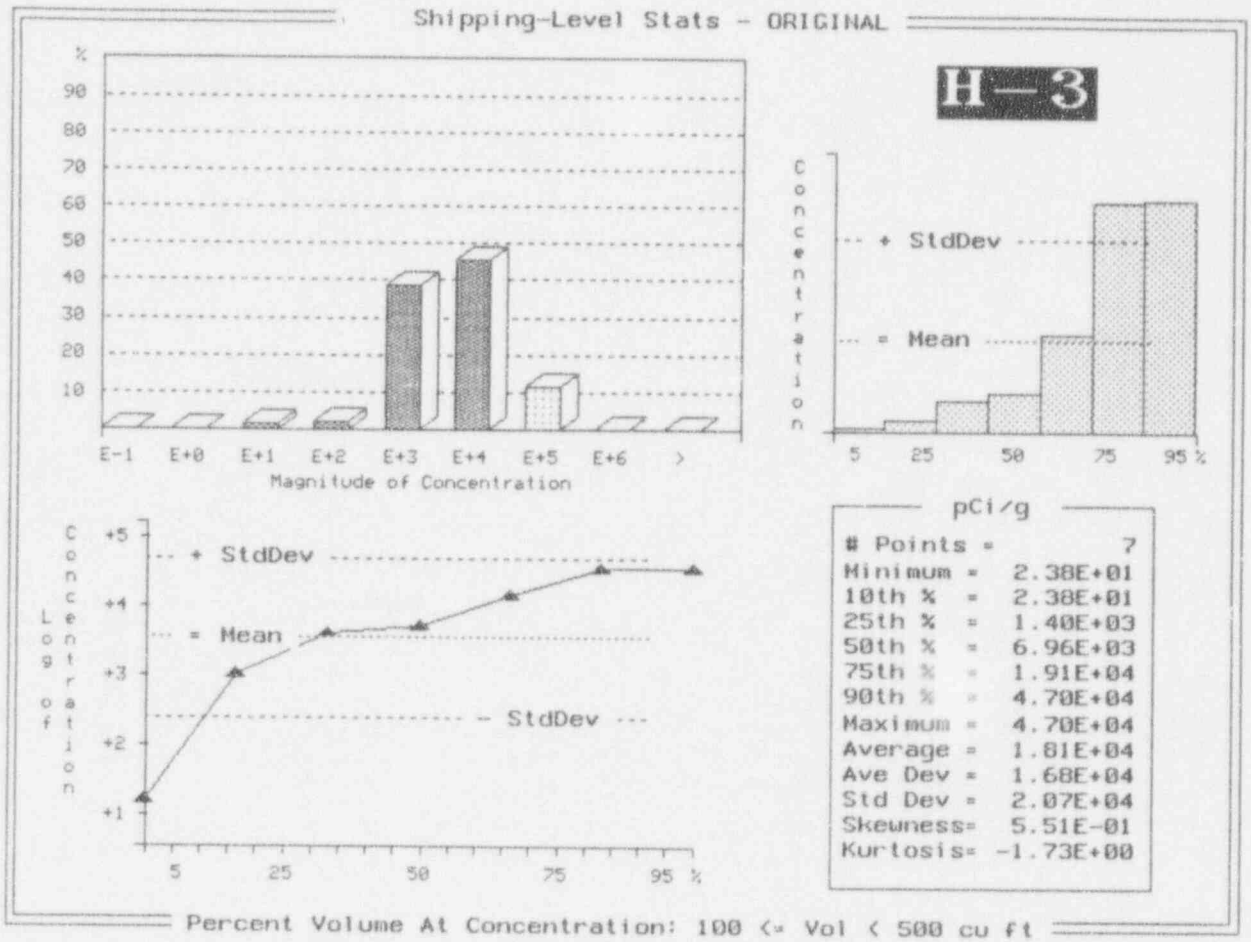


Exhibit F-56 (Continued)

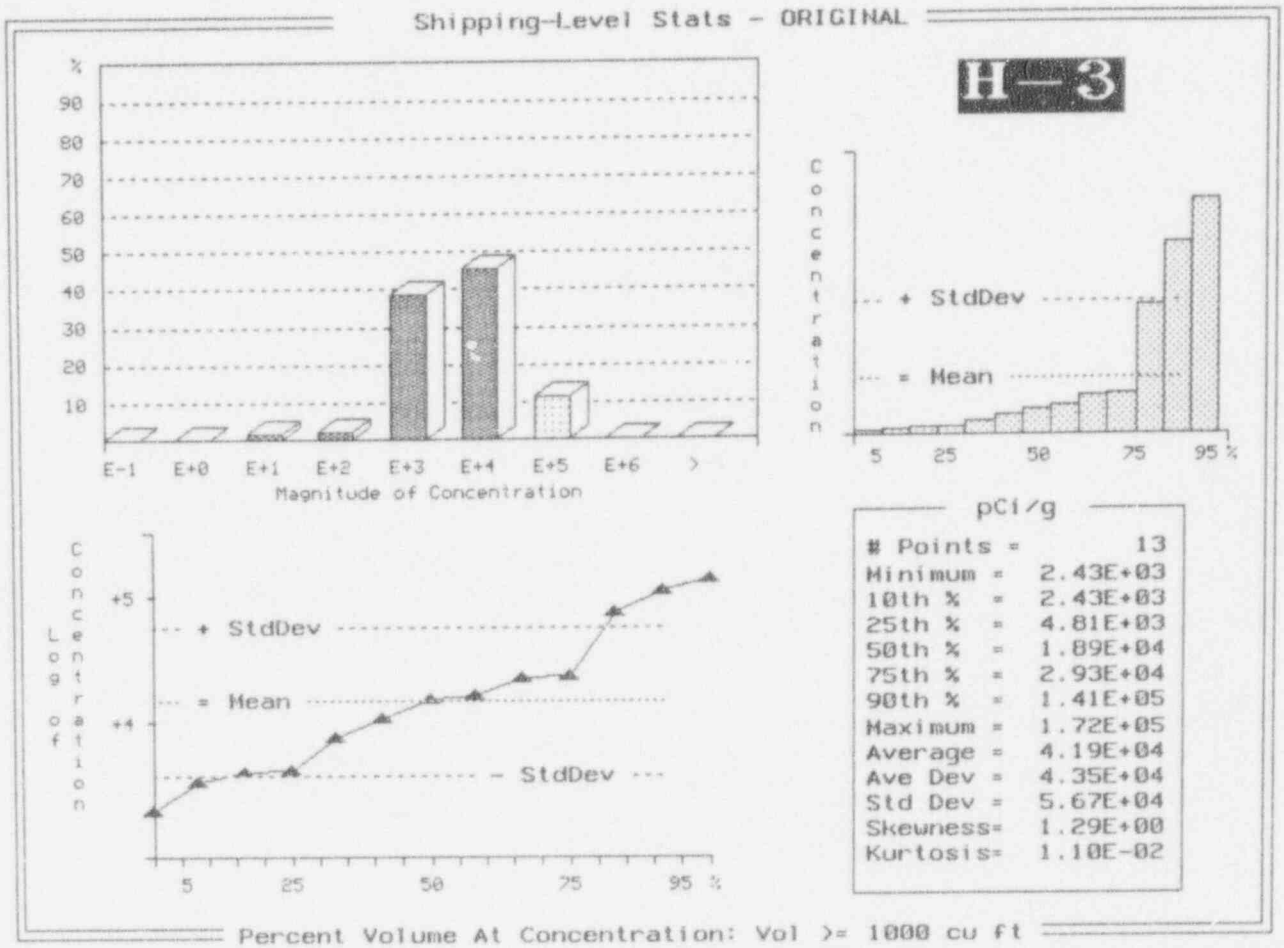


Exhibit F-56 (Continued)

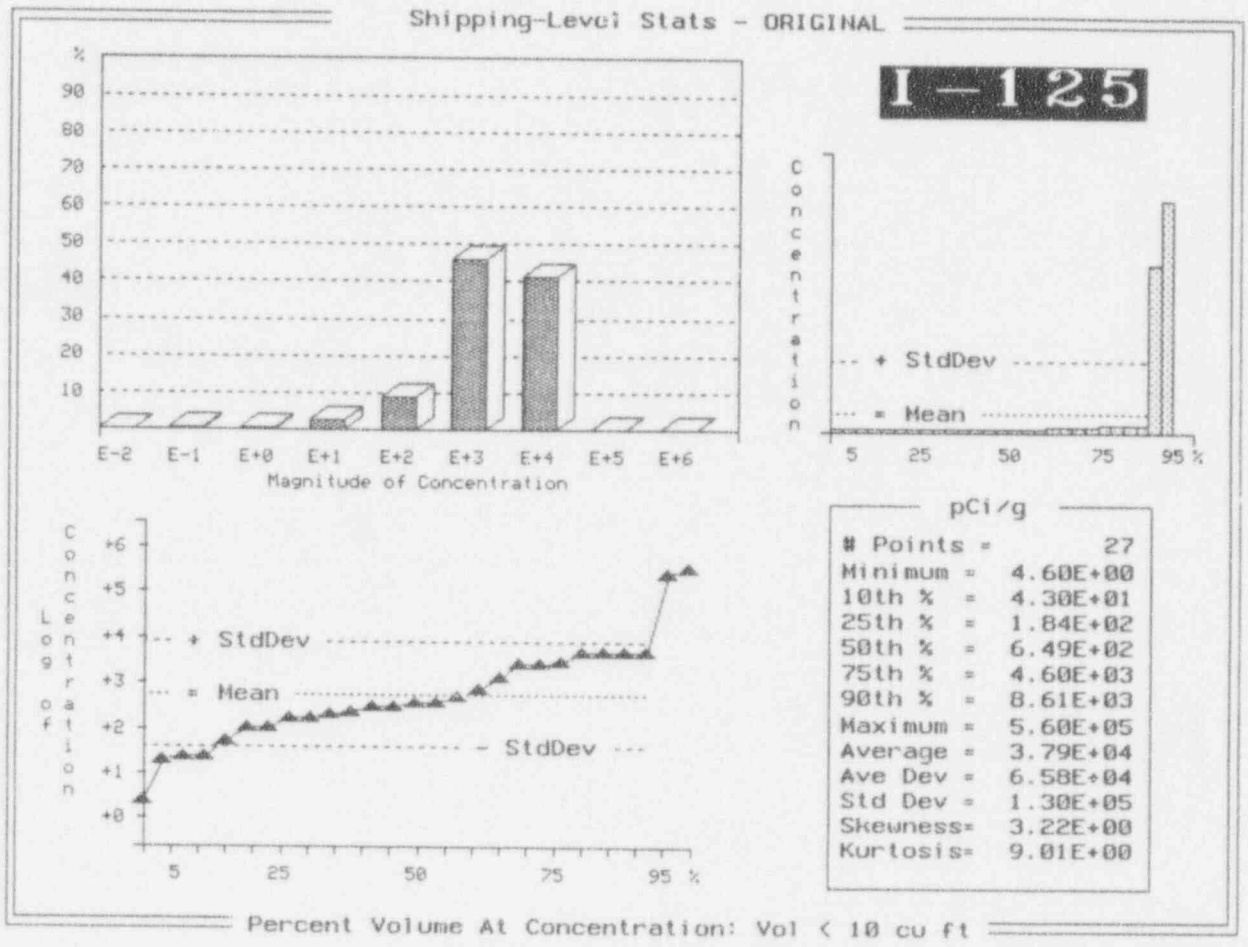


Exhibit F-56 (Continued)

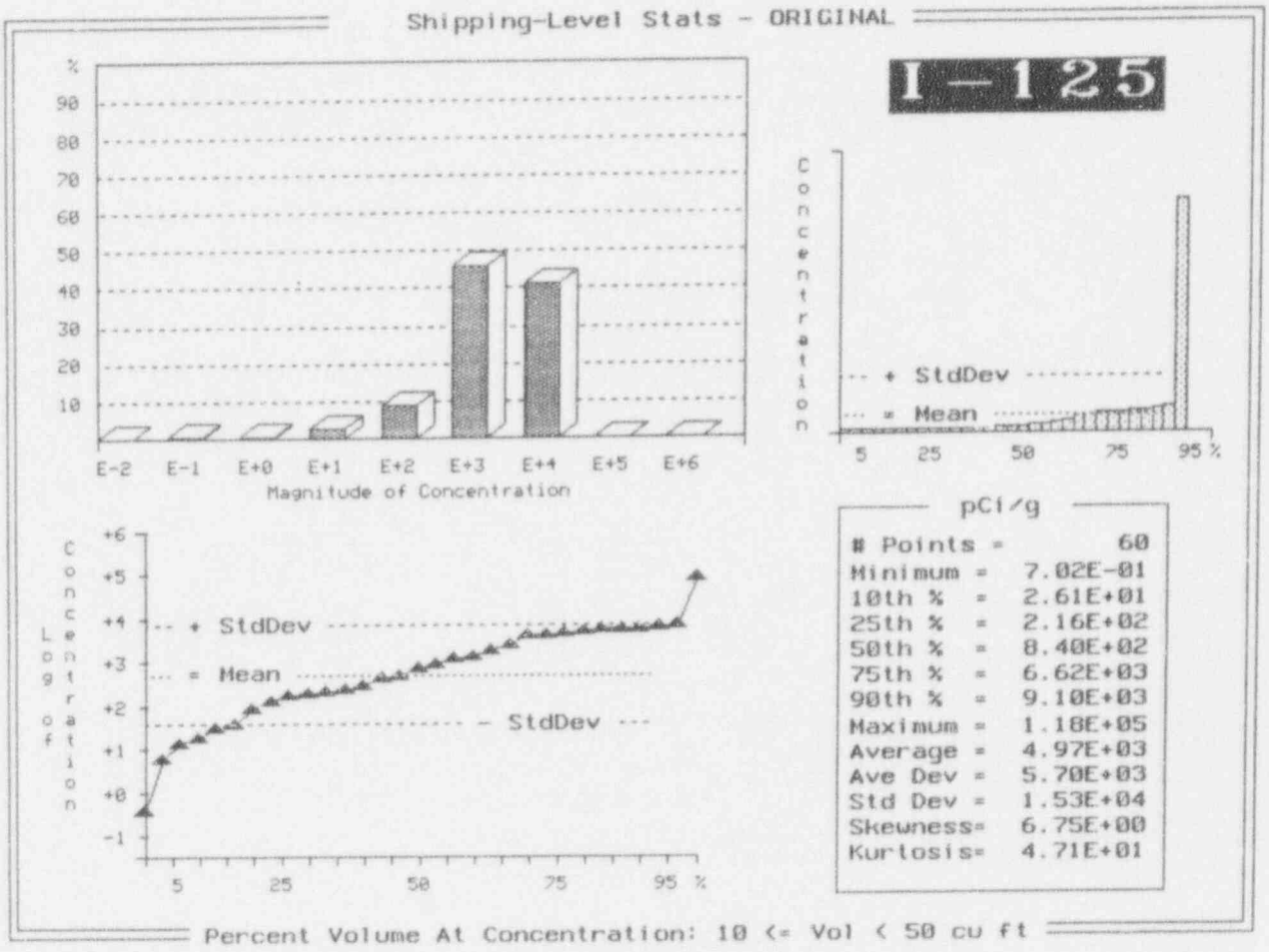


Exhibit F-56 (Continued)

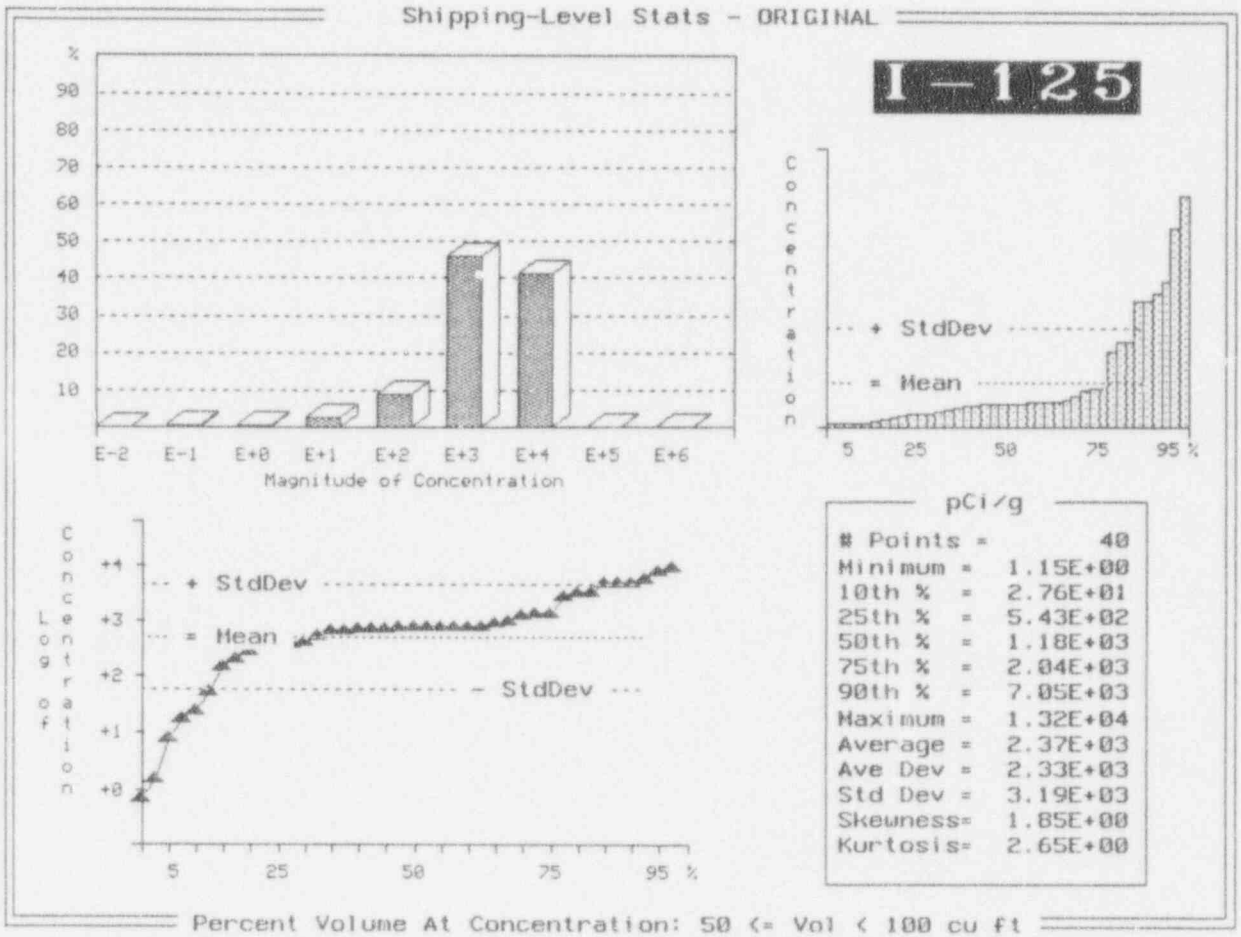


Exhibit F-56 (Continued)

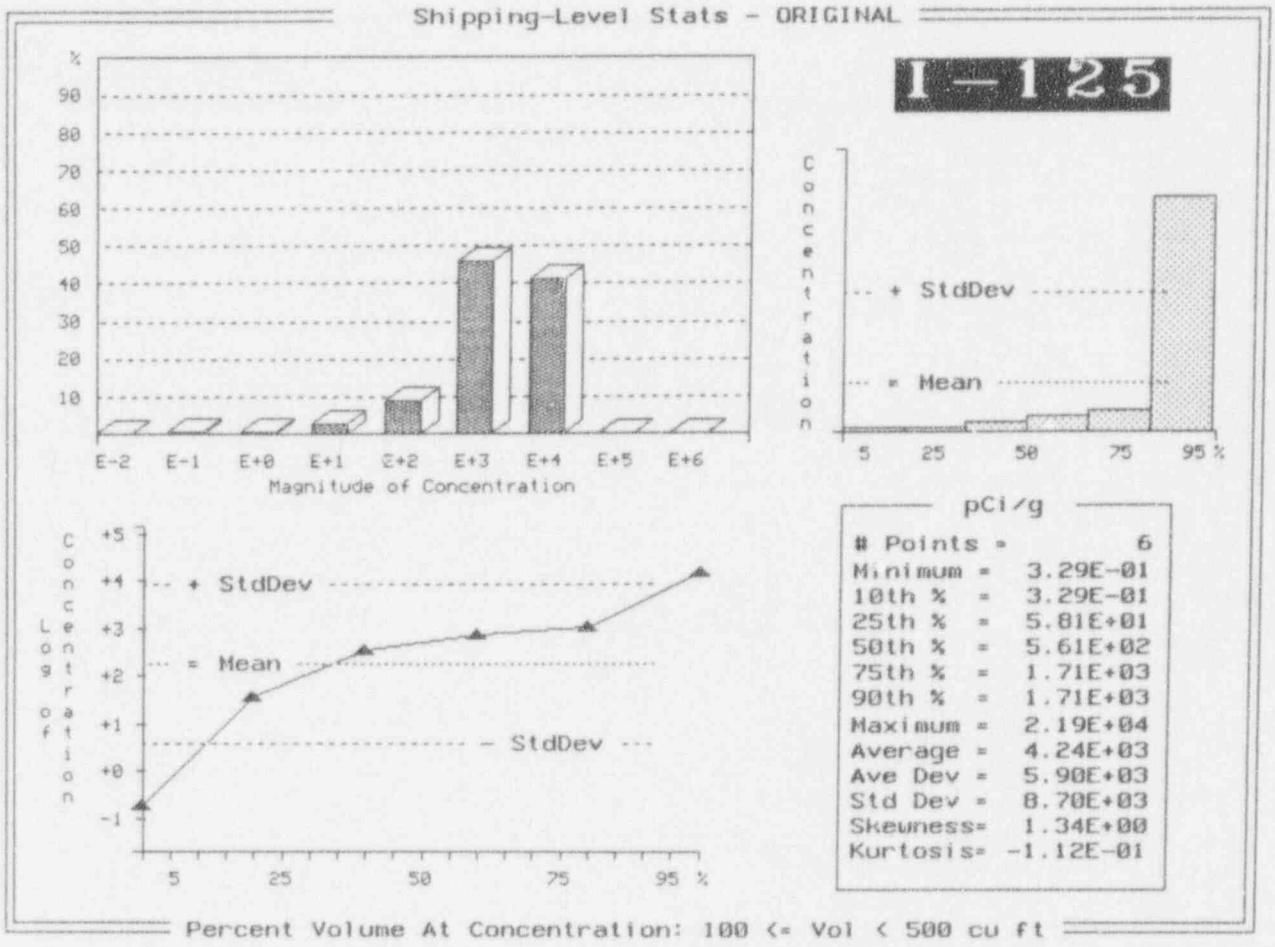


Exhibit F-56 (Continued)

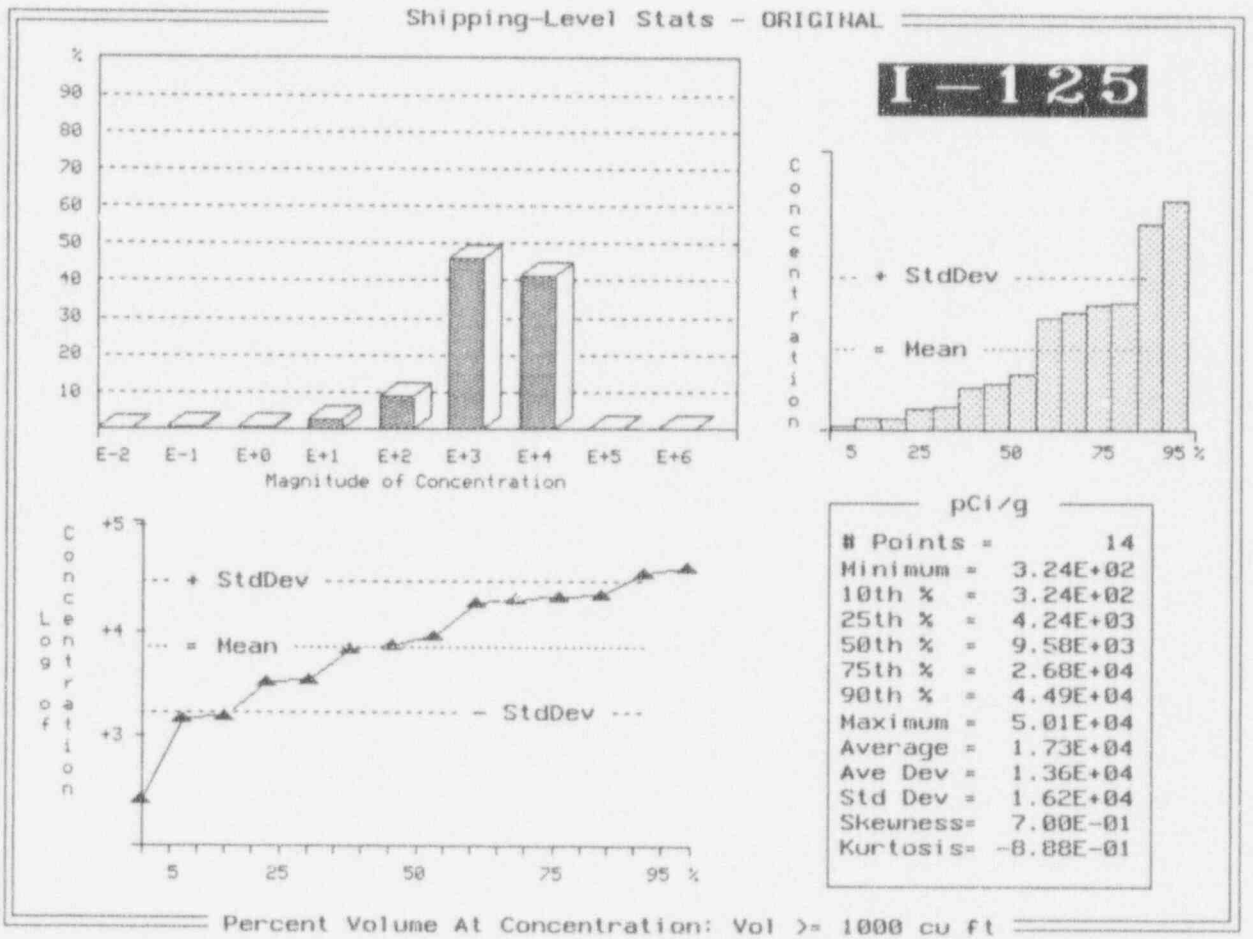


Exhibit F-56 (Continued)

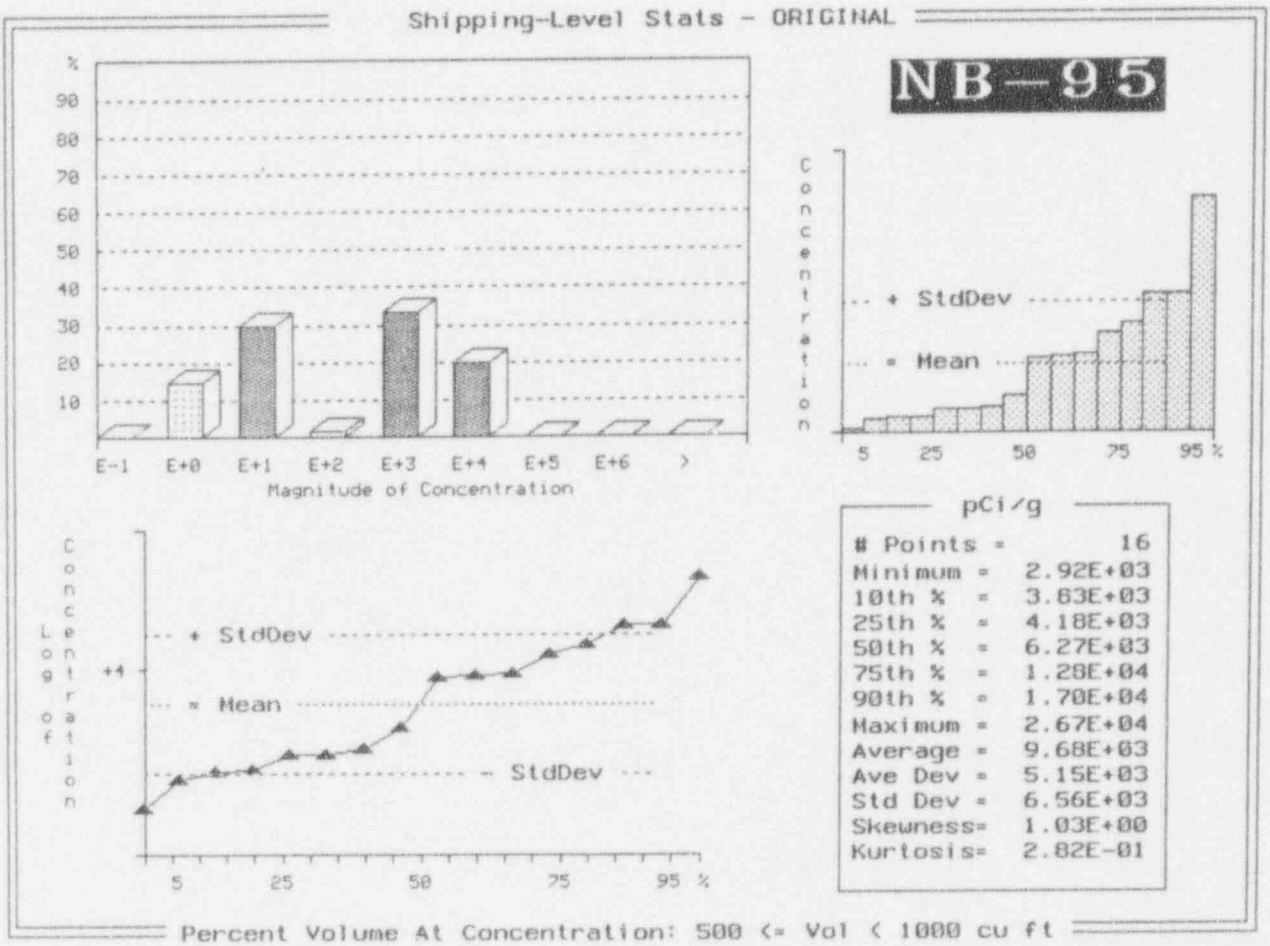


Exhibit F-56 (Continued)

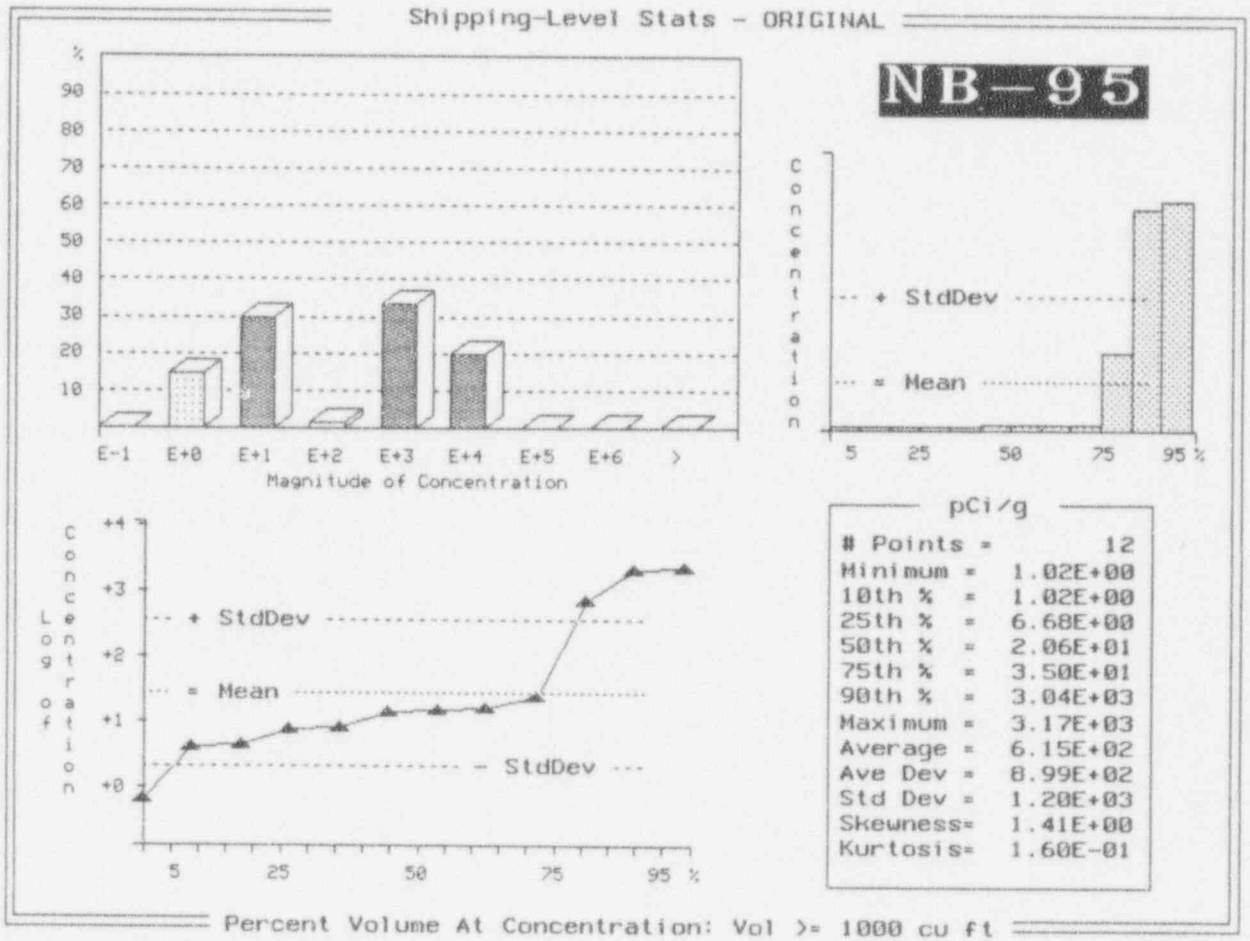


Exhibit F-56 (Continued)

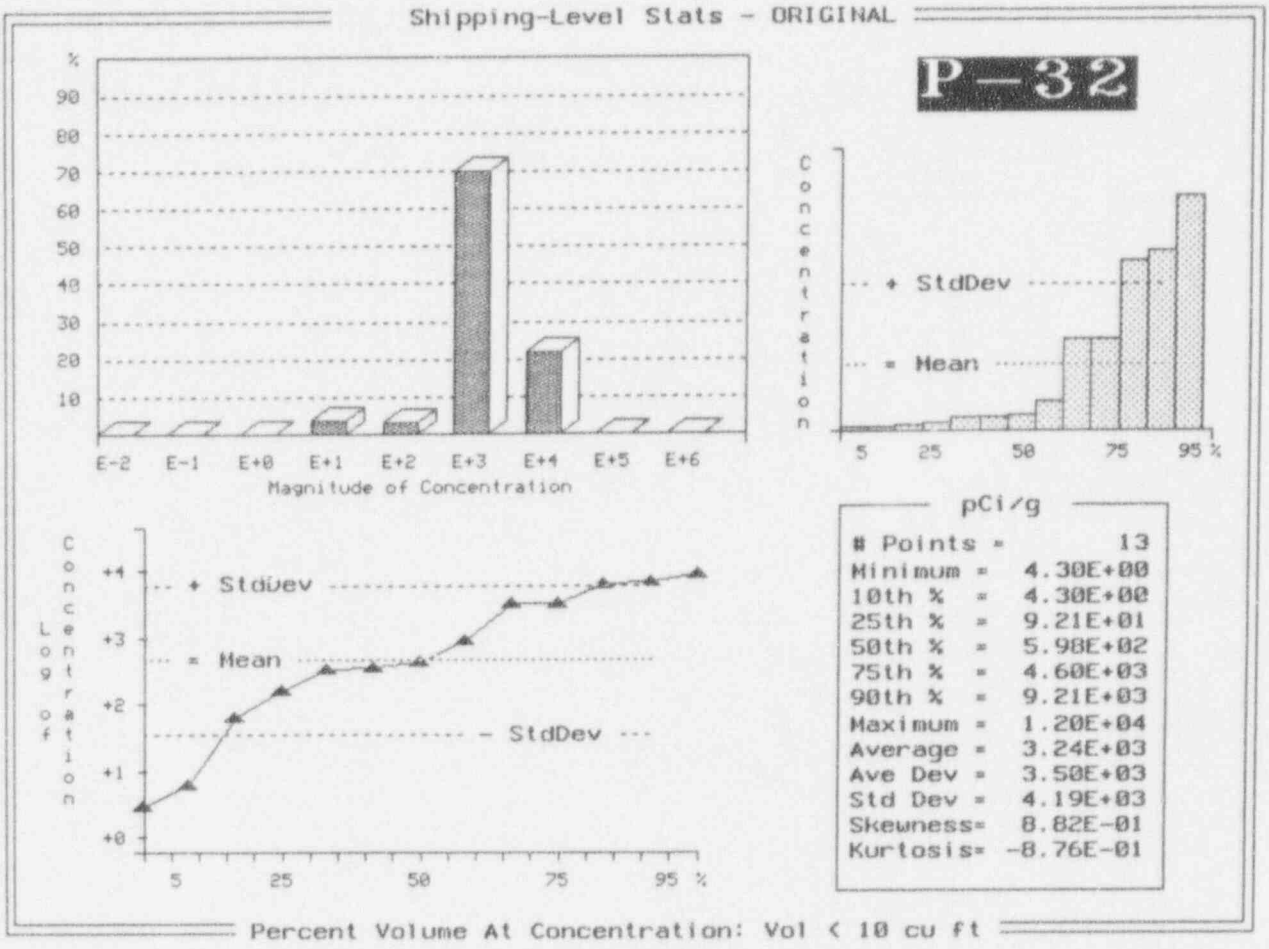


Exhibit F-56 (Continued)

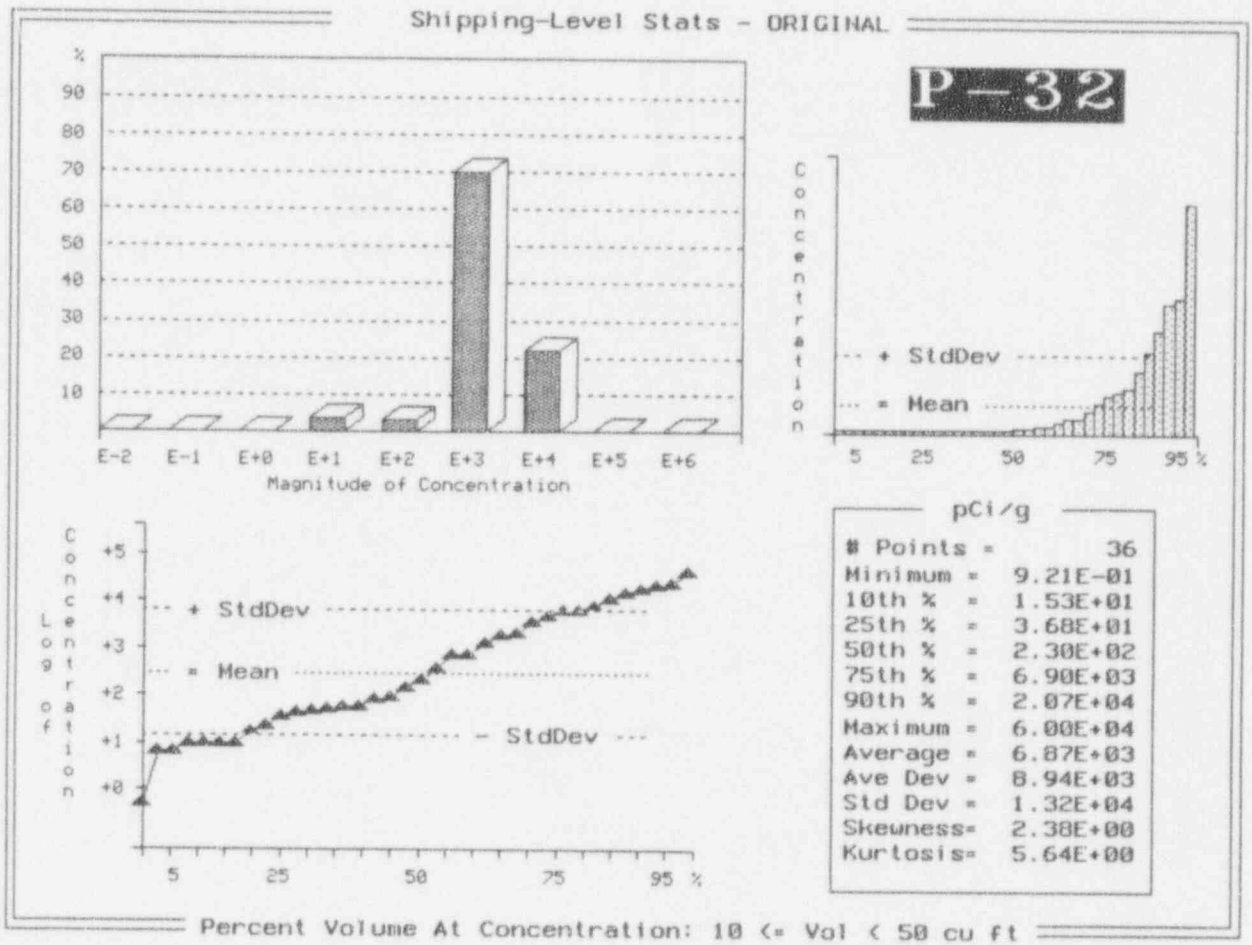


Exhibit F-56 (Continued)

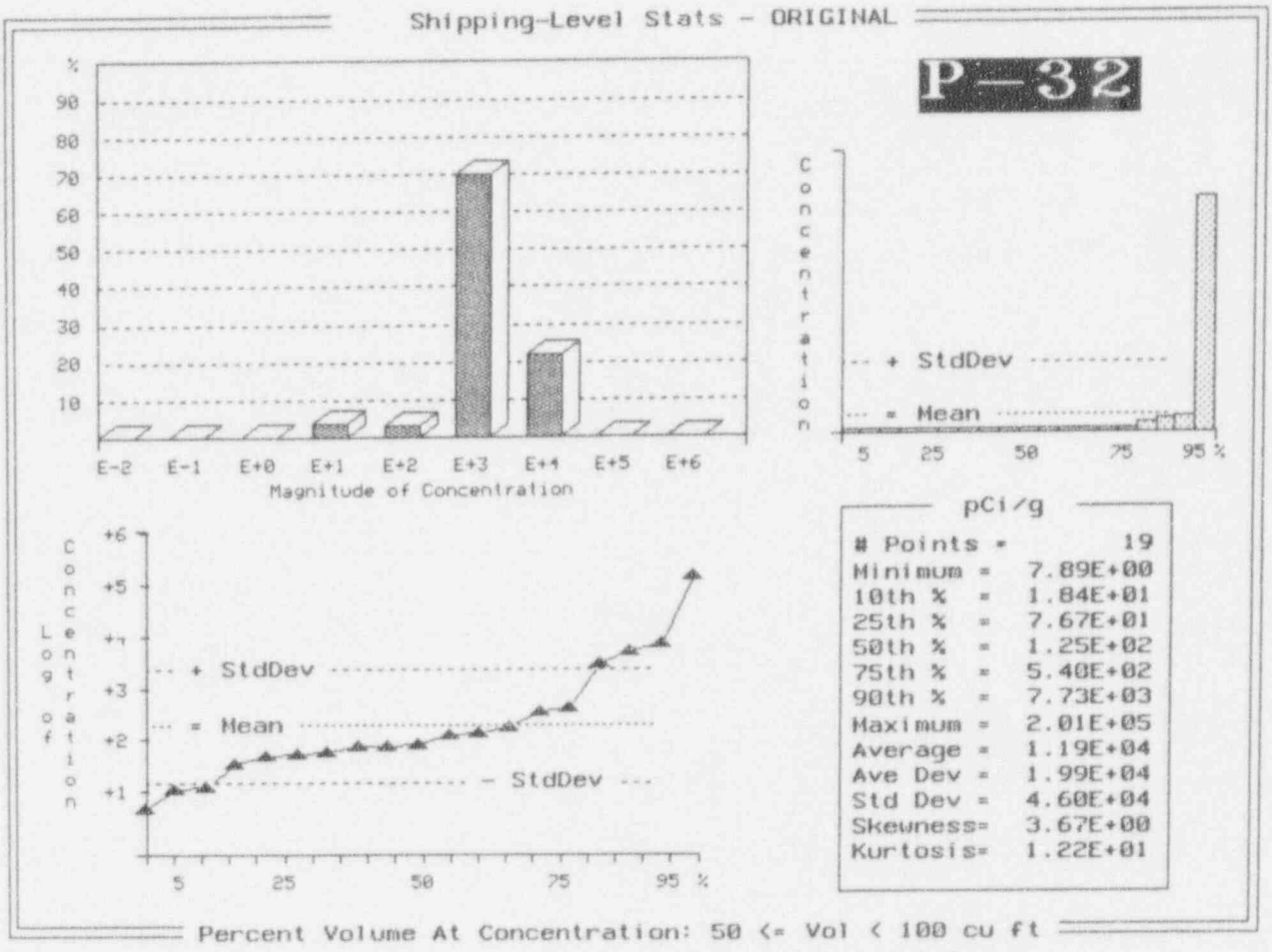


Exhibit F-56 (Continued)

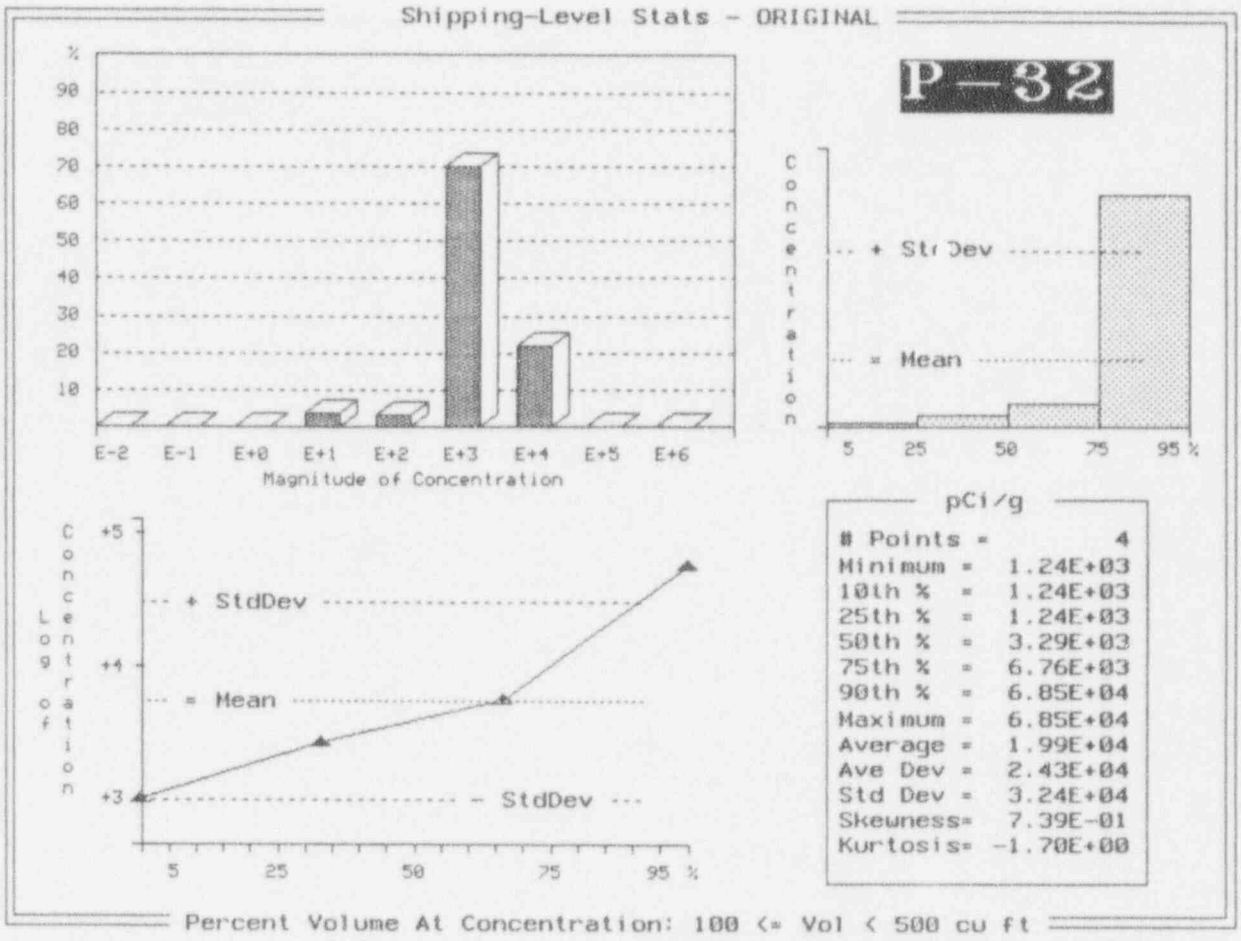


Exhibit F-56 (Continued)

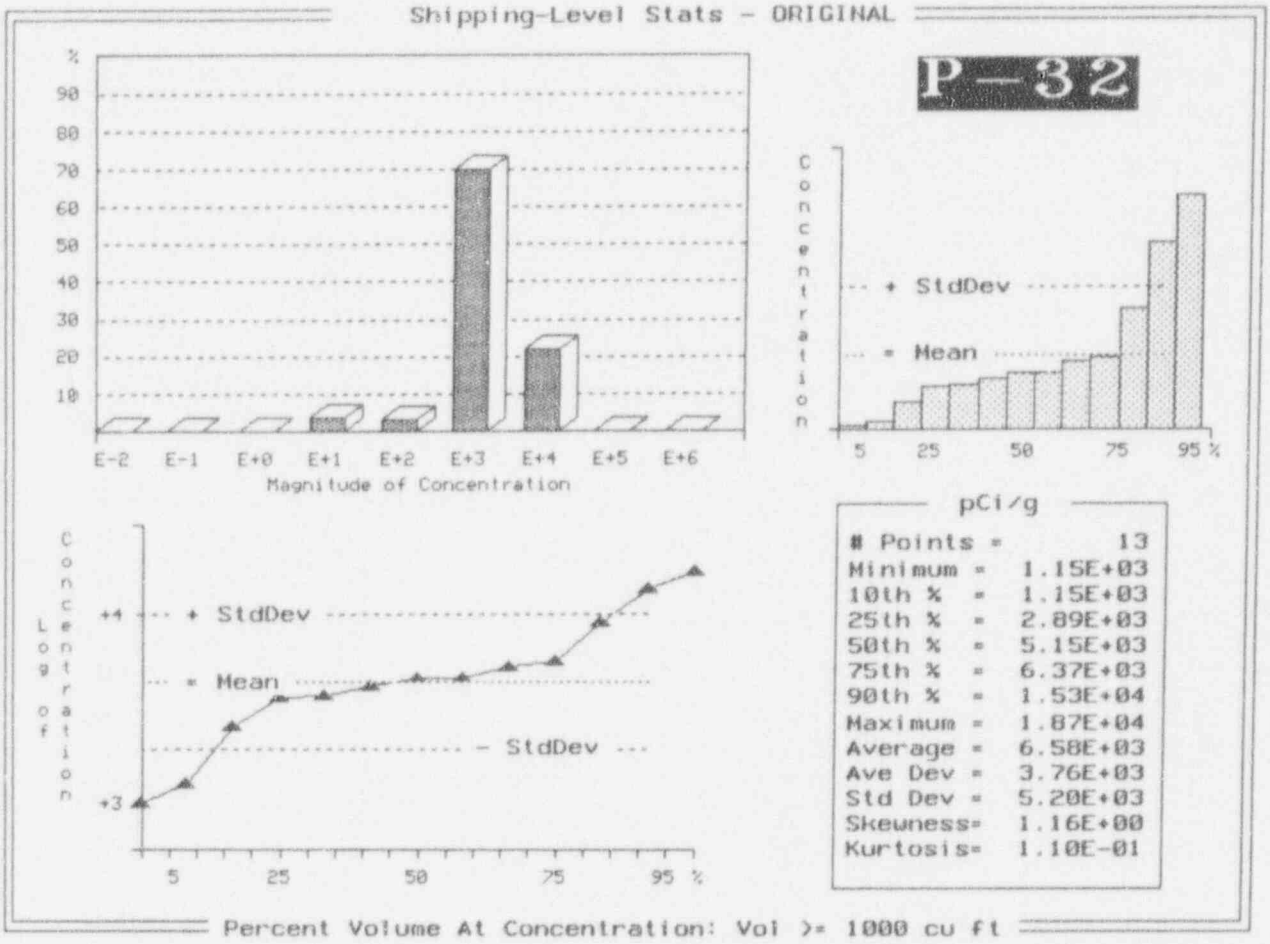


Exhibit F-56 (Continued)

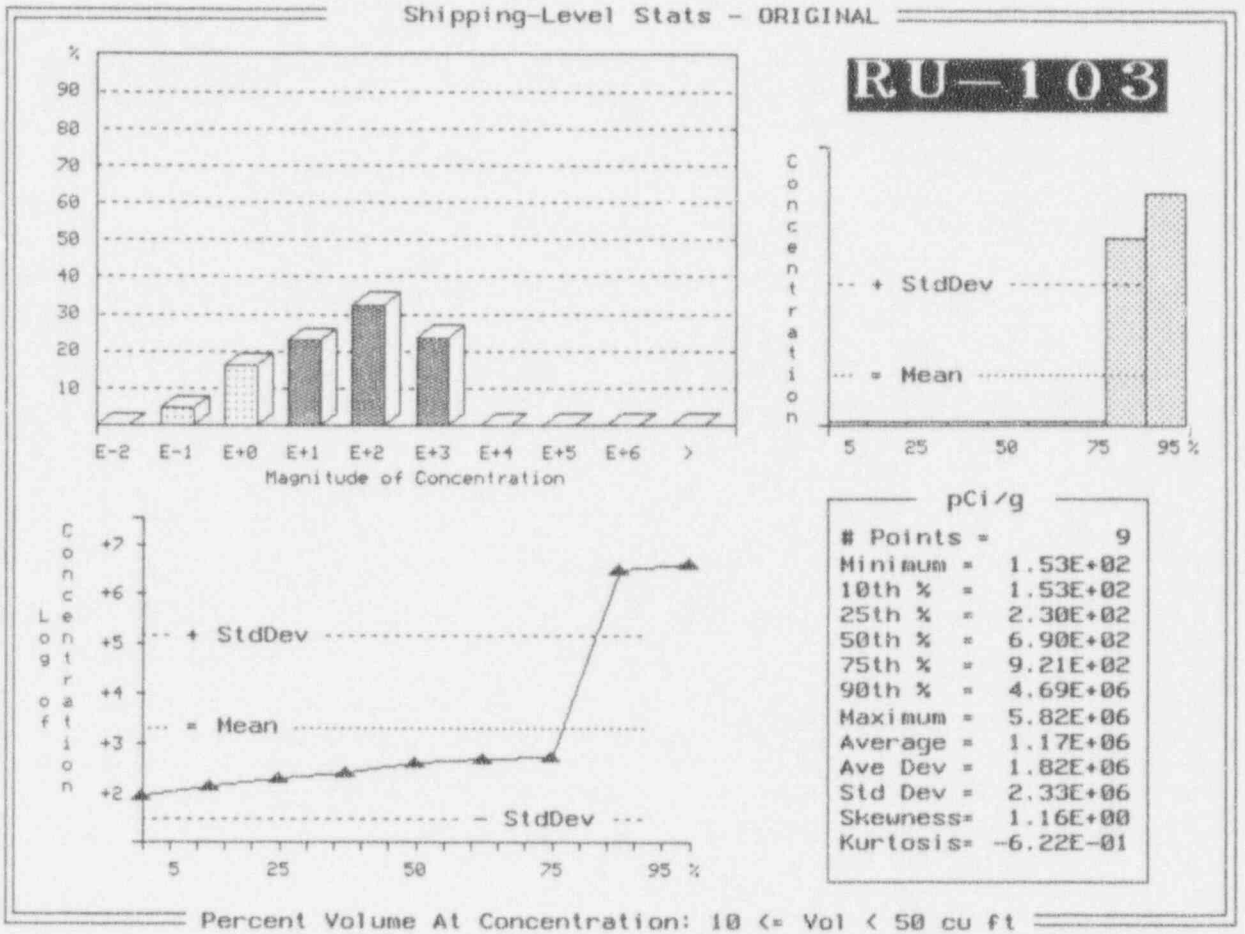


Exhibit F-56 (Continued)

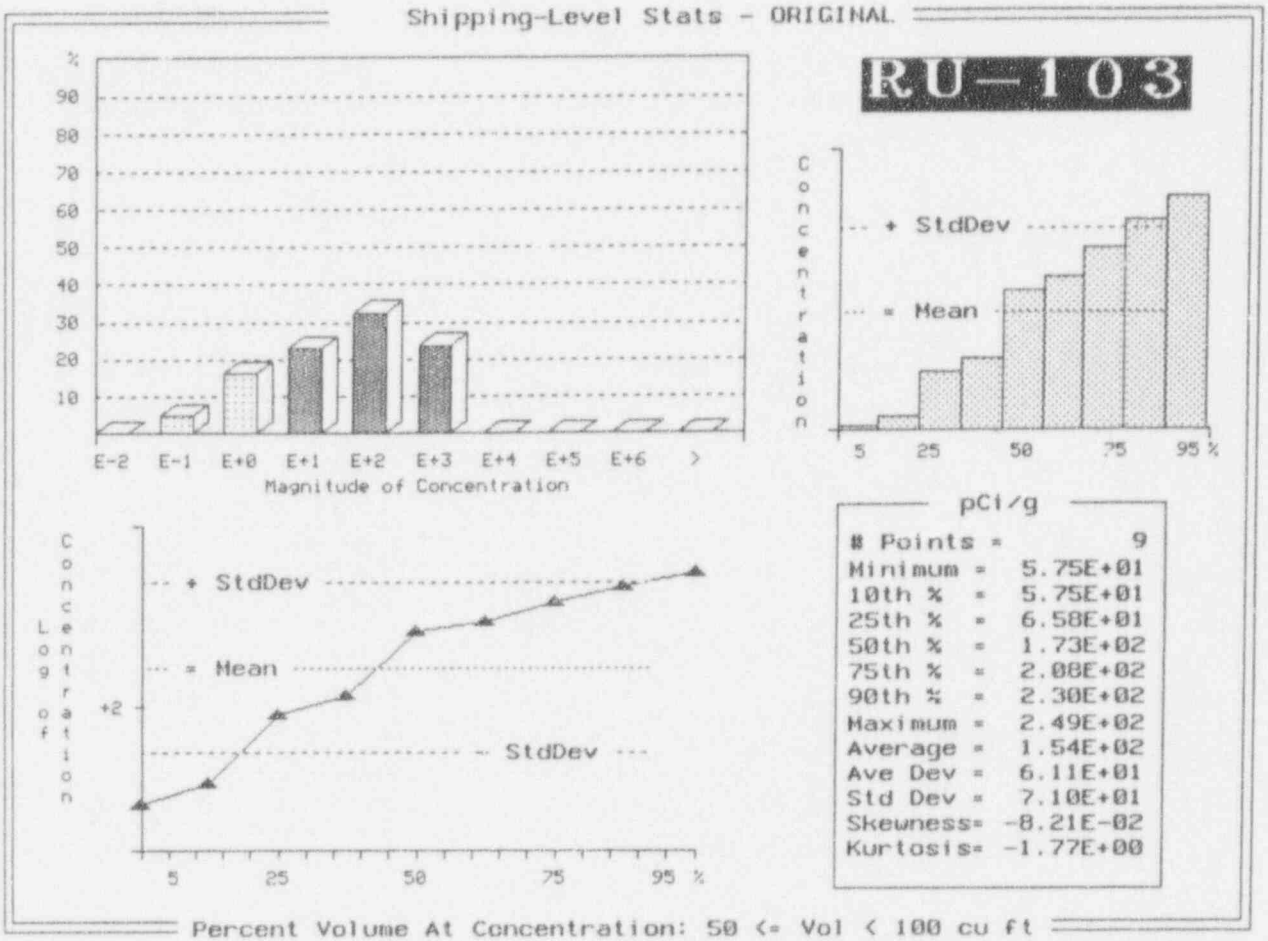


Exhibit F-56 (Continued)

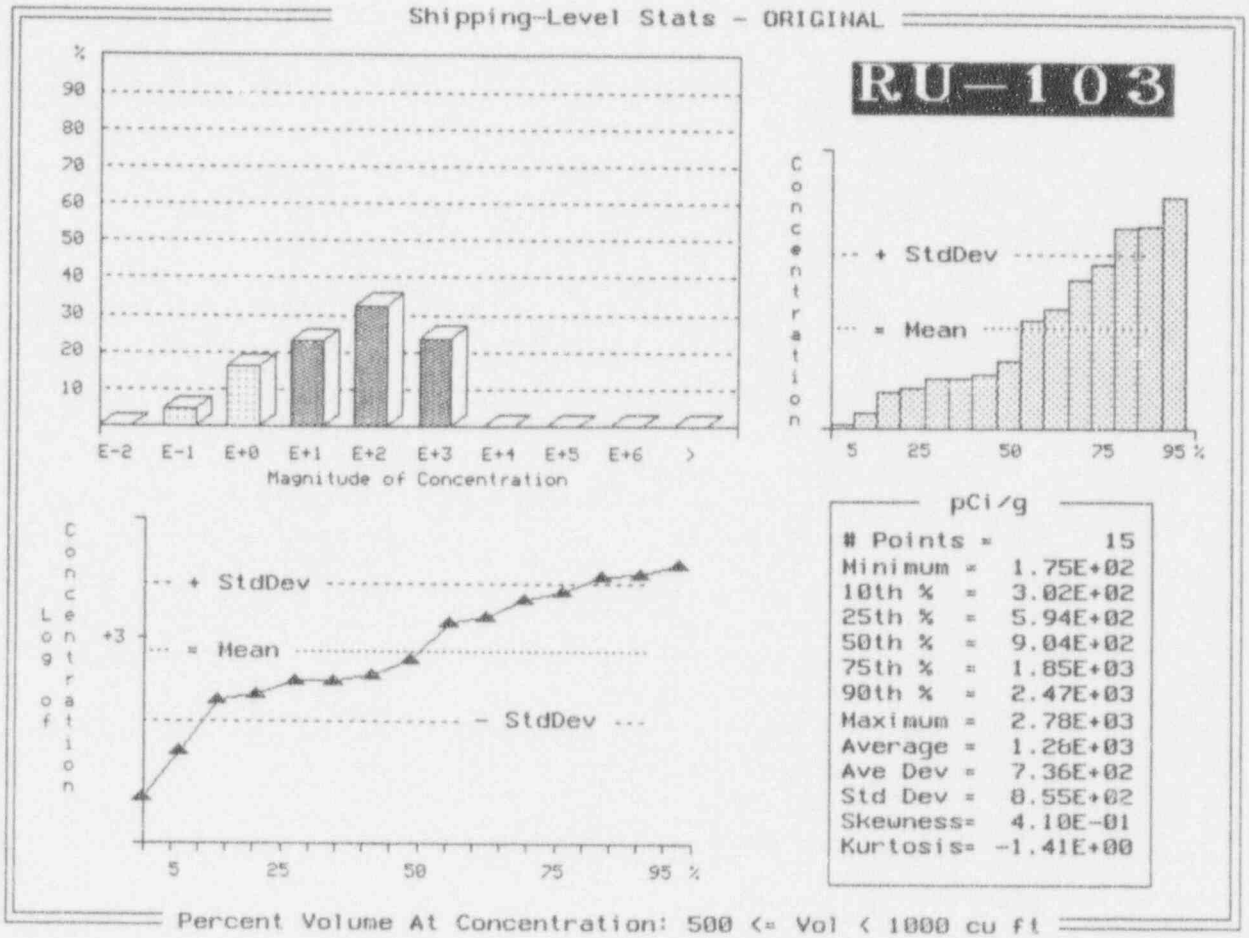


Exhibit F-56 (Continued)

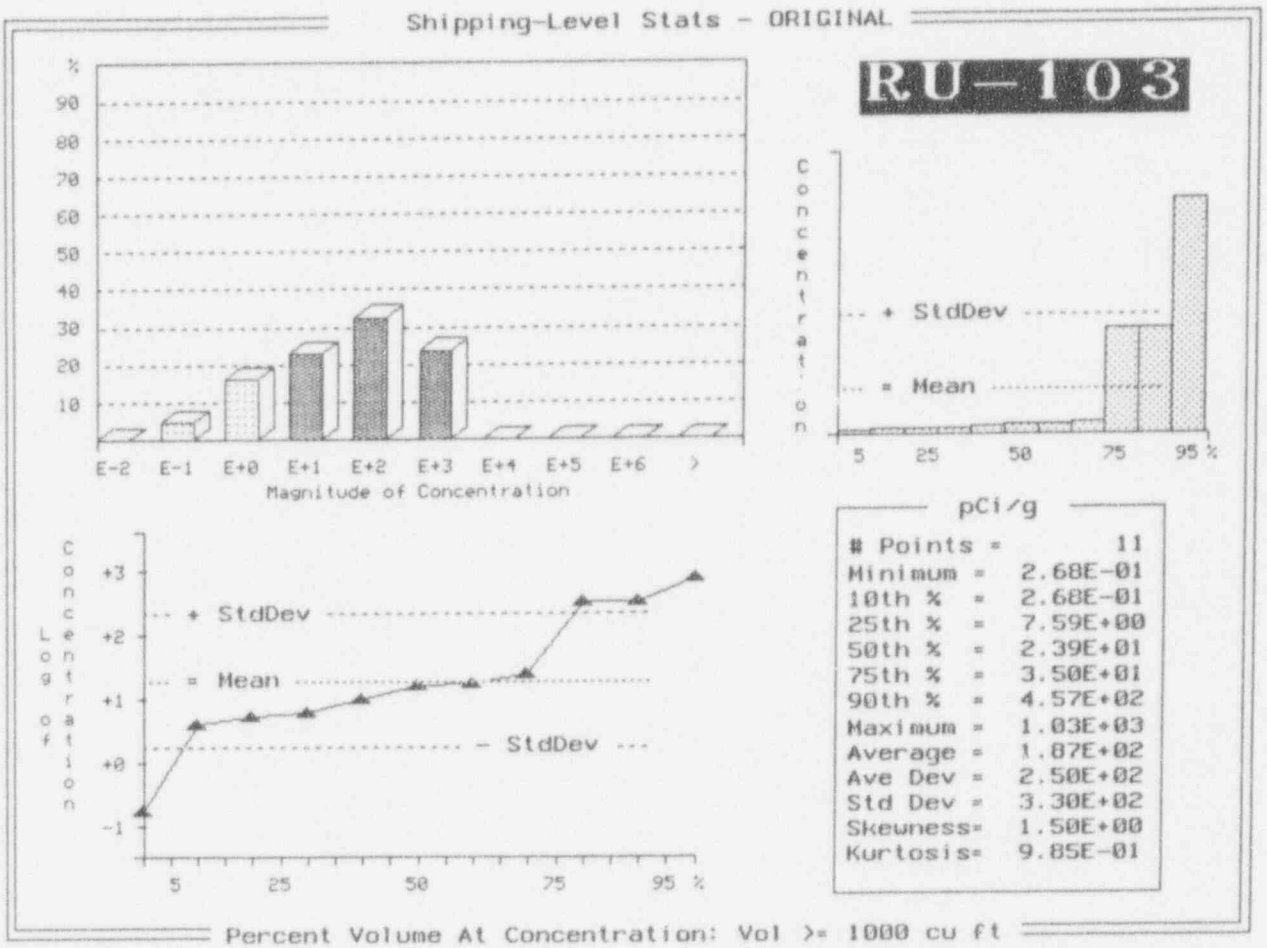


Exhibit F-56 (Continued)

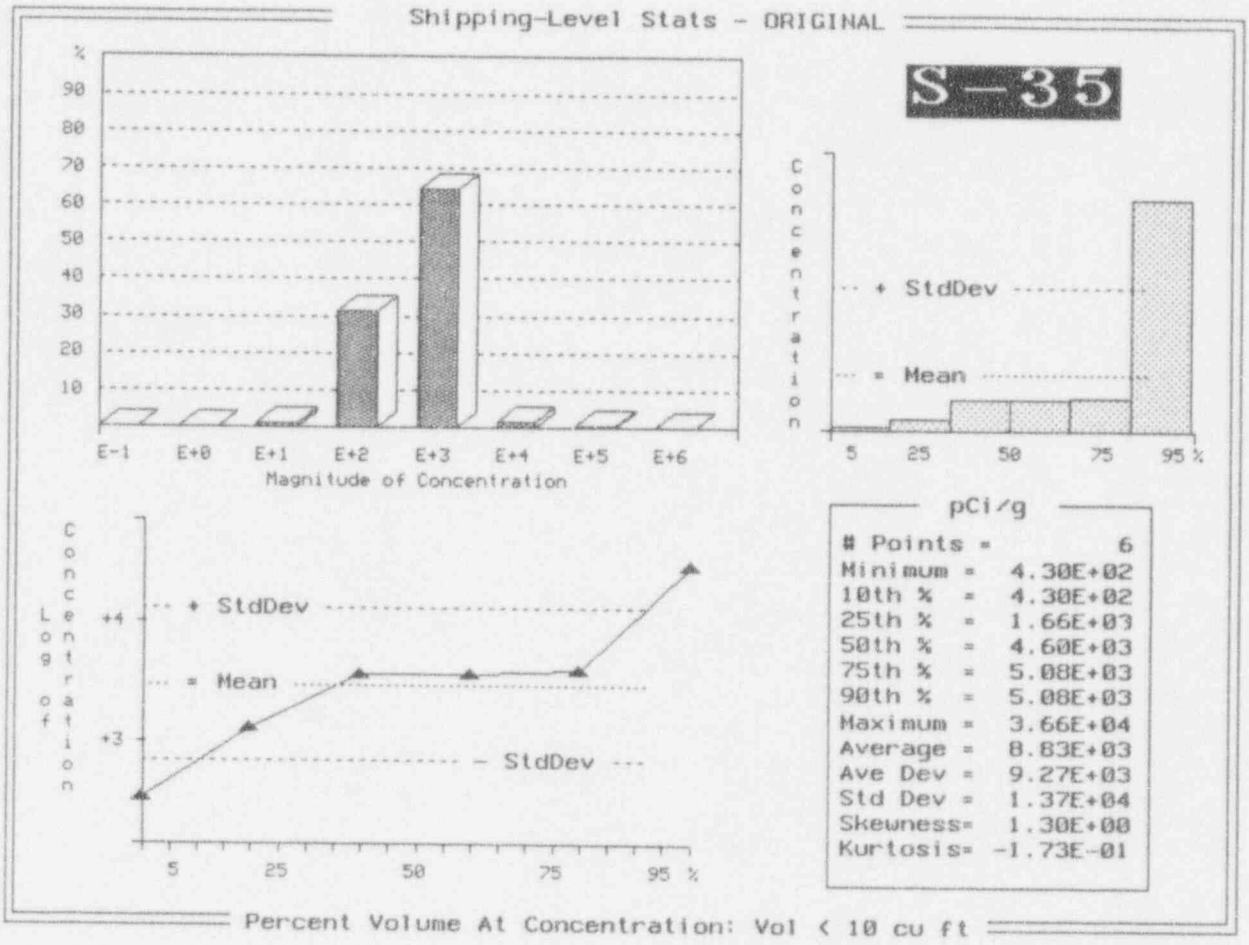


Exhibit F-56 (Continued)

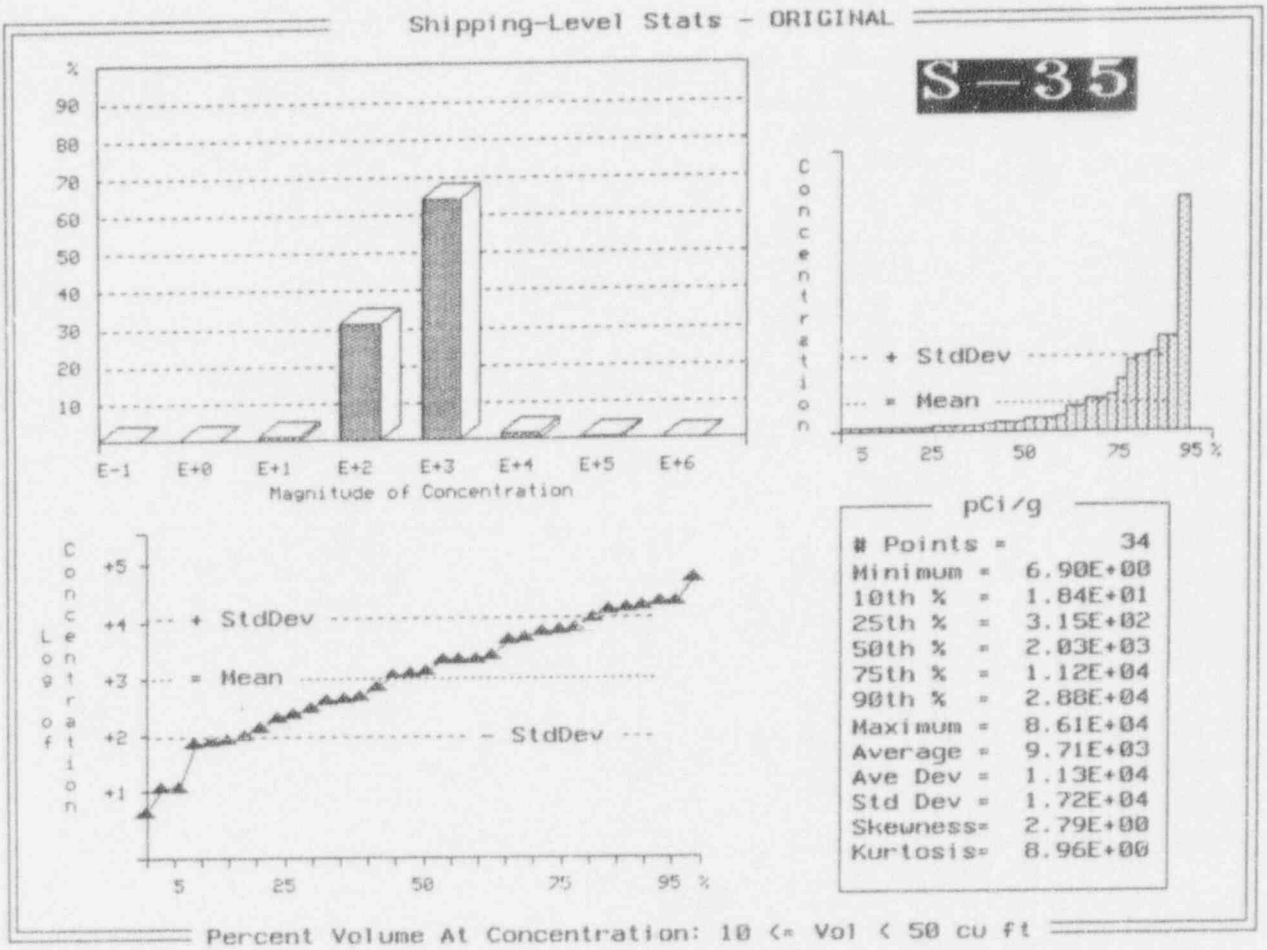


Exhibit F-56 (Continued)

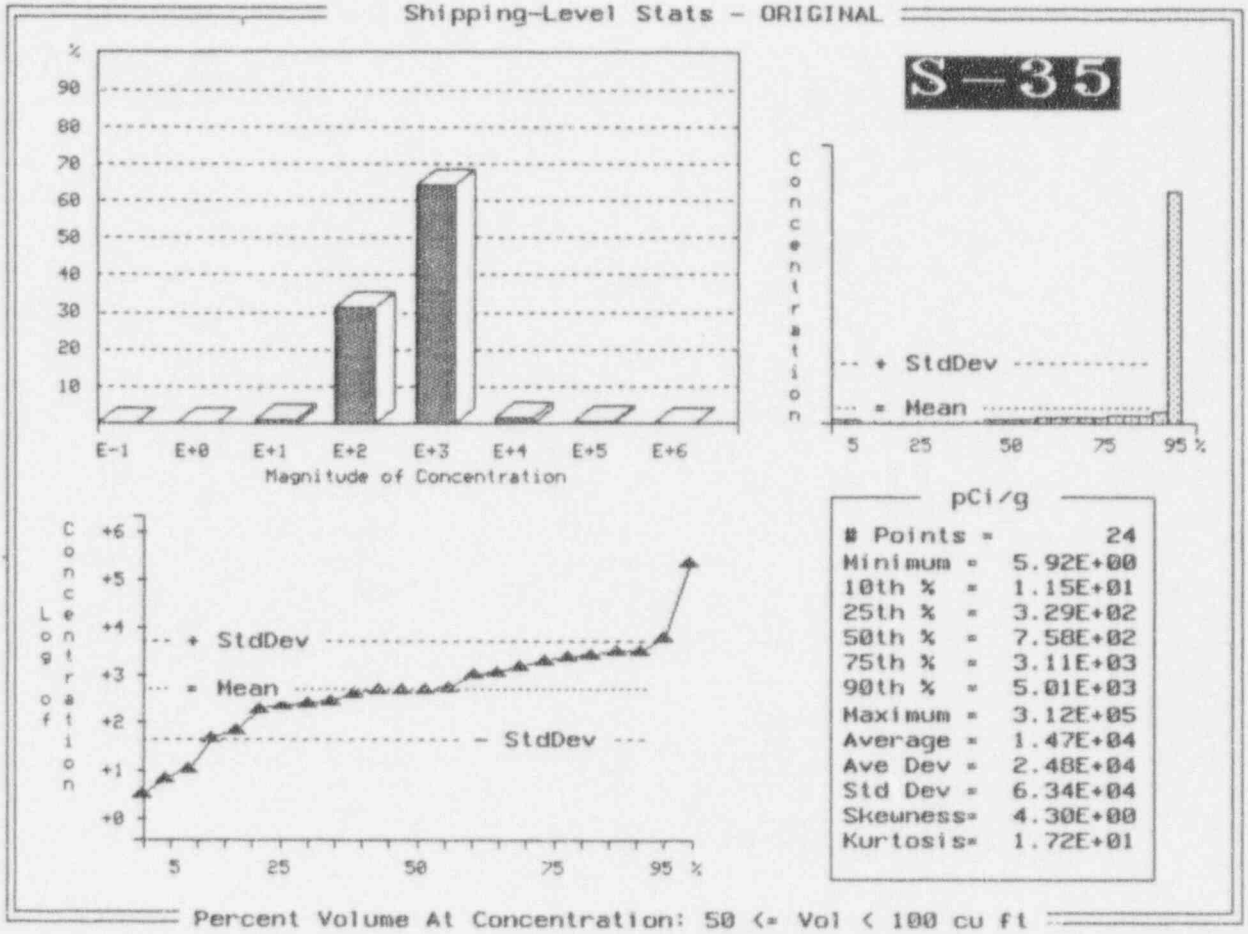


Exhibit F-56 (Continued)

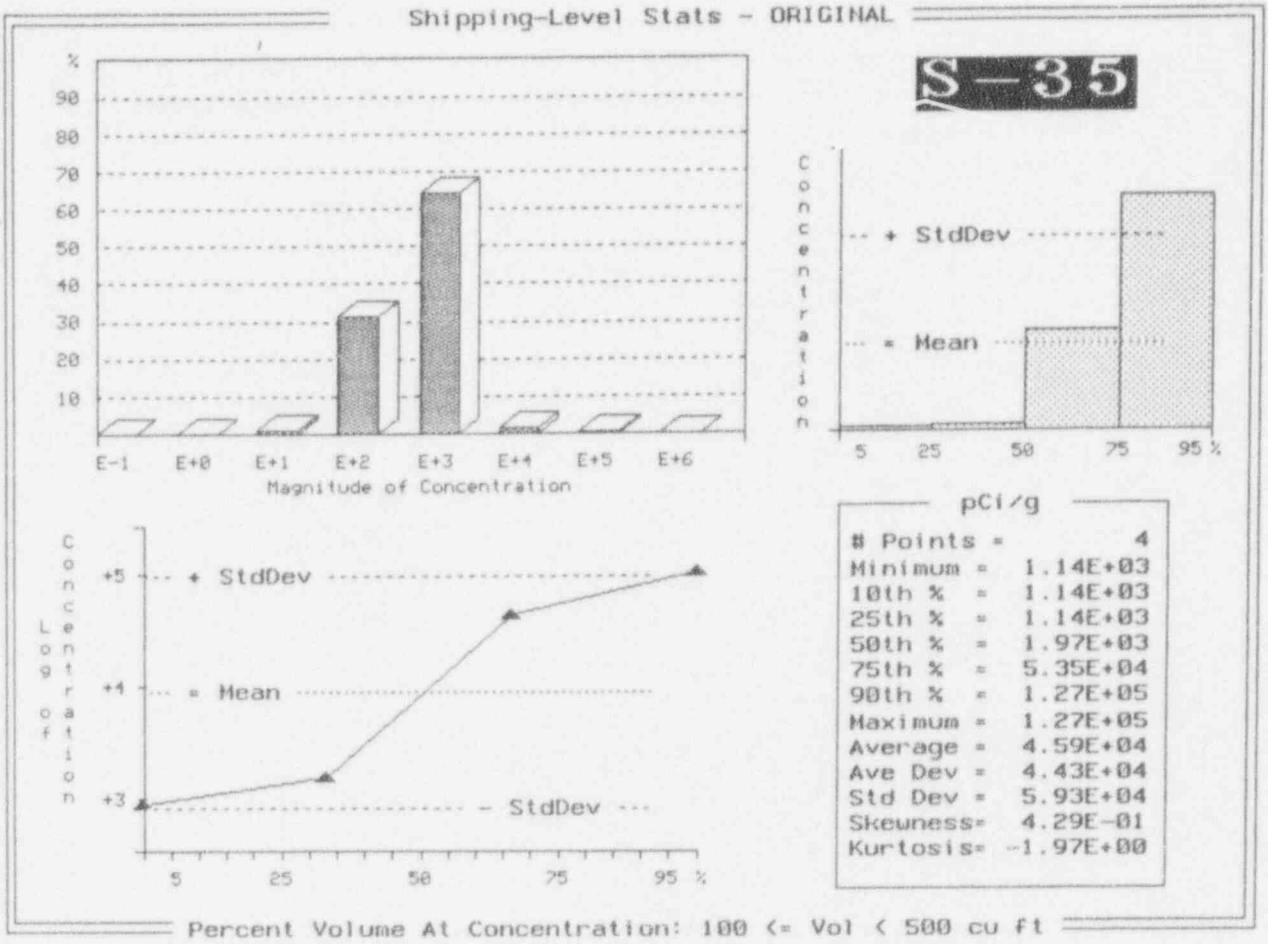


Exhibit F-56 (Continued)

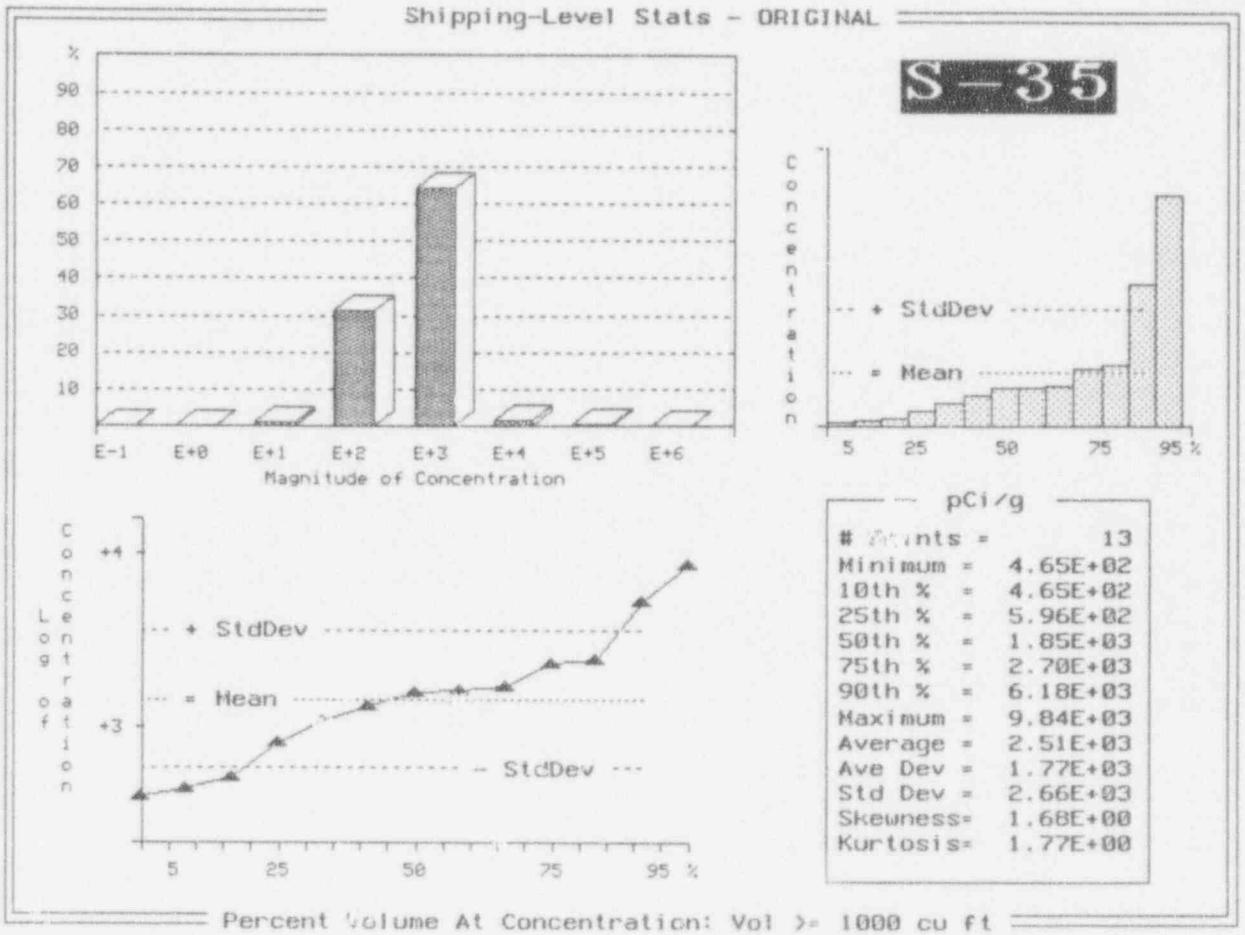


Exhibit F-57
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Rhode Island
Waste generator class:	Government
Total number of waste generators:	2
Total associated waste volume (m^3):	0.9
Total associated waste activity (Ci):	8.5
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	50
Total number of shipping records:	1
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	596
Total waste volume (m^3):	0.9
Fractional waste volume (%): (this analysis/total)	91
Total waste activity (Ci):	0.0038
Fractional waste activity (%): (this analysis/total)	0.04

Exhibit F-57 (Continued)

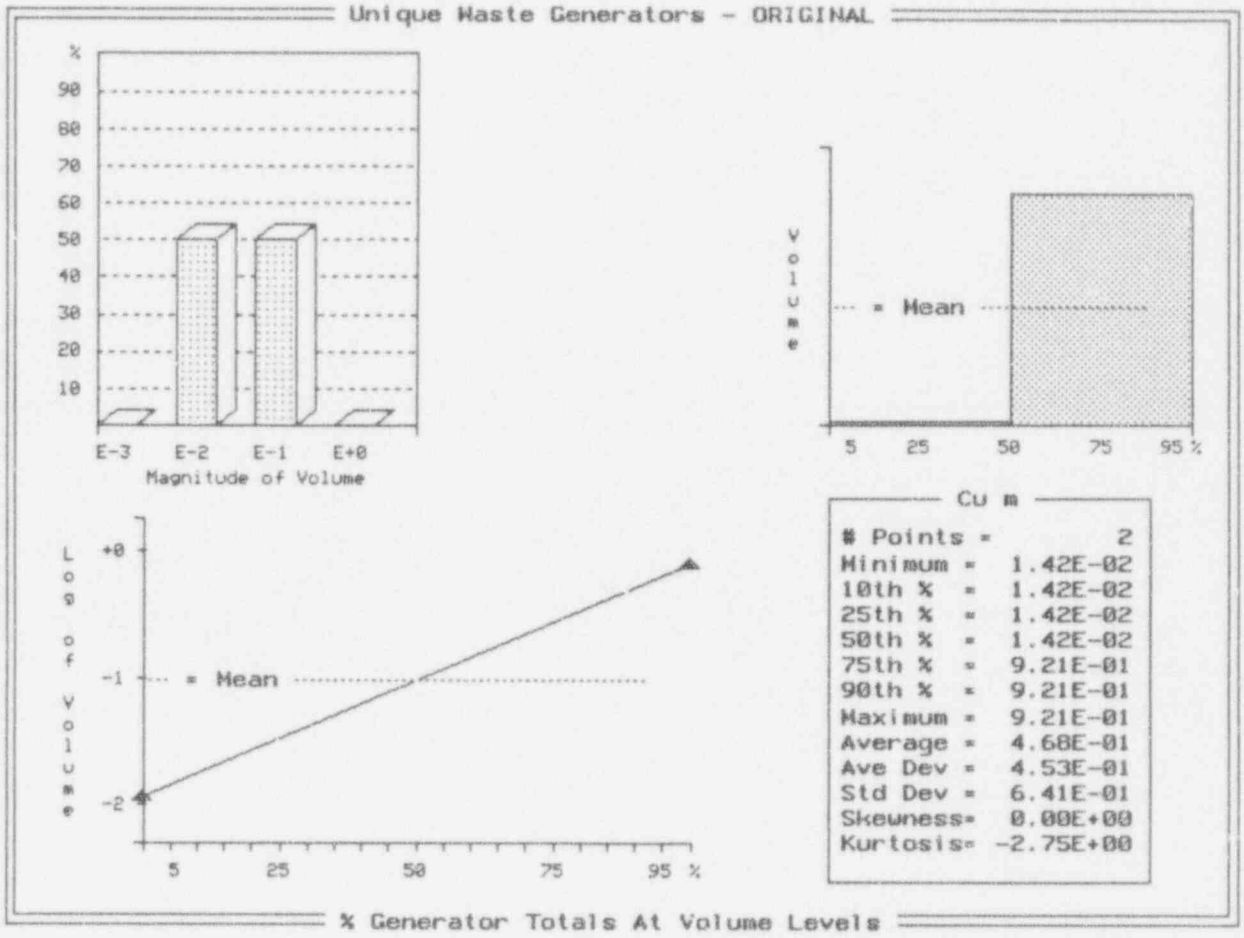


Exhibit F-57 (Continued)

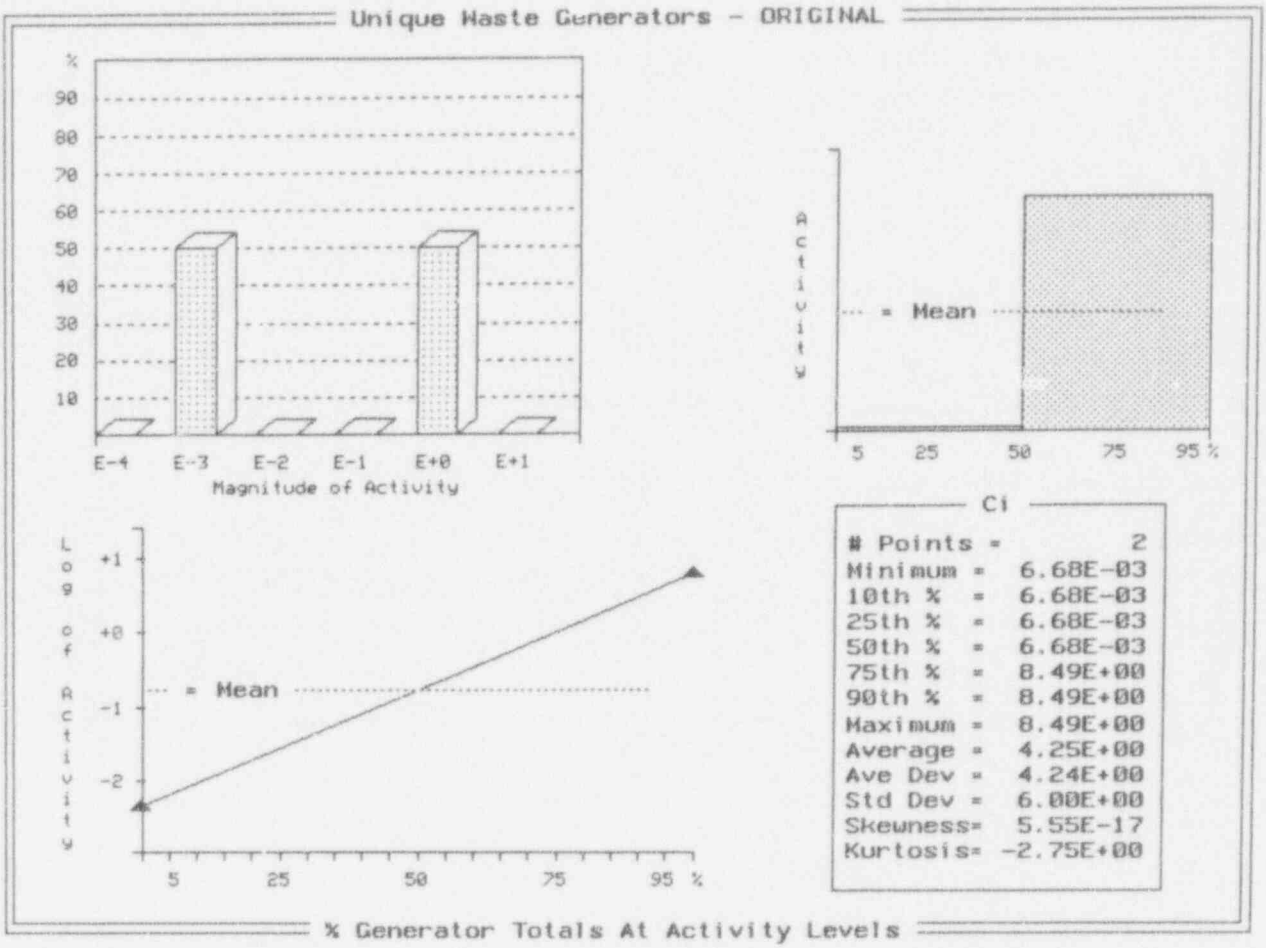


Exhibit F-58
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Rhode Island
Waste generator class:	Academic
Total number of waste generators:	5
Total associated waste volume (m^3):	28.1
Total associated waste activity (Ci):	0.9
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	40
Total number of shipping records:	9
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	5,083
Total waste volume (m^3):	8.9
Fractional waste volume (%): (this analysis/total)	32
Total waste activity (Ci):	0.8
Fractional waste activity (%): (this analysis/total)	85

Exhibit F-58 (Continued)

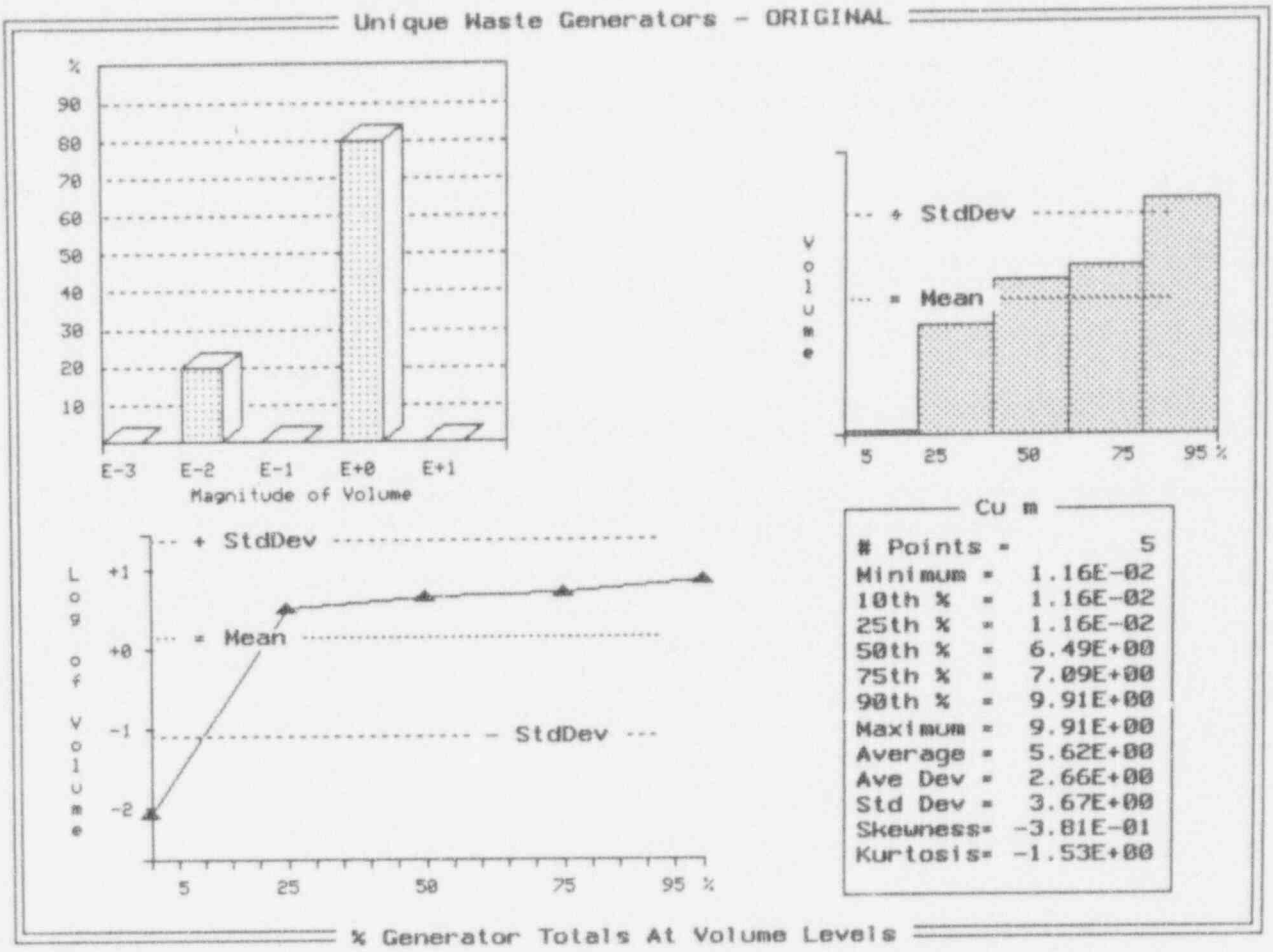


Exhibit F-58 (Continued)

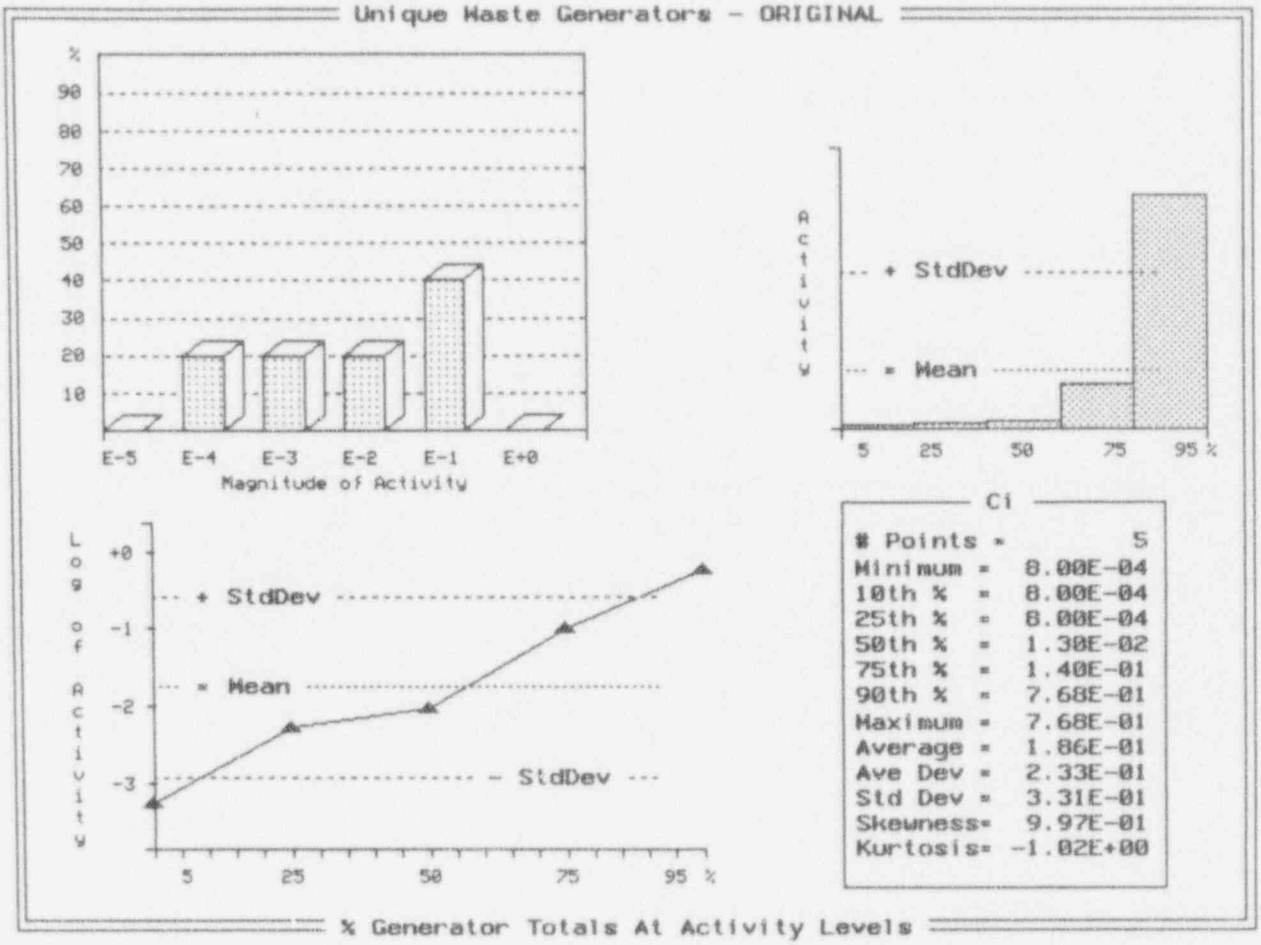


Exhibit F-59
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Rhode Island
Waste generator class:	Medical
Total number of waste generators:	9
Total associated waste volume (m^3):	116
Total associated waste activity (Ci):	2.2
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	5
Percent of total(%):	56
Total number of shipping records:	20
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	9,446
Total waste volume (m^3):	12.2
Fractional waste volume (%): (this analysis/total)	11
Total waste activity (Ci):	0.6
Fractional waste activity (%): (this analysis/total)	28

Exhibit F-59 (Continued)

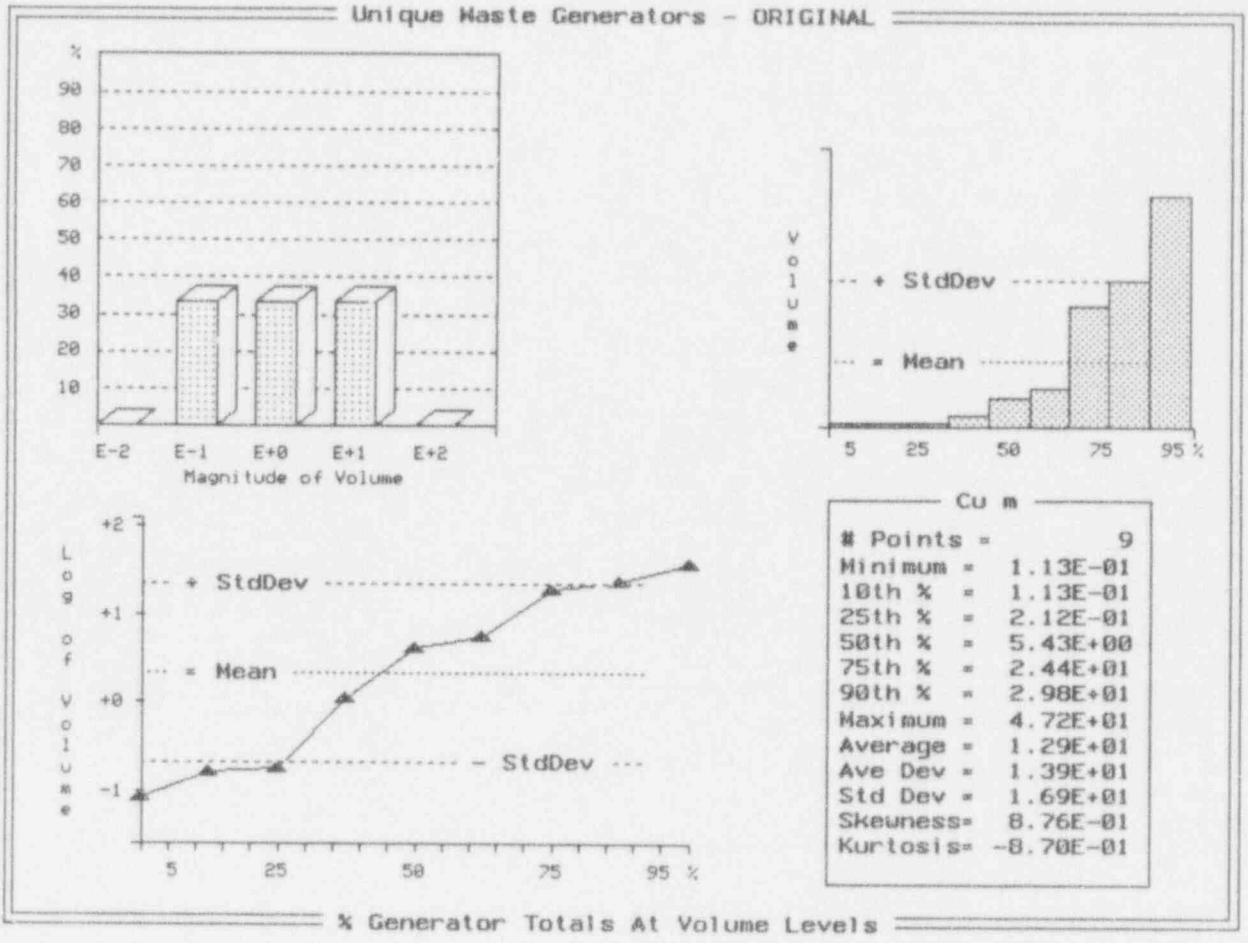


Exhibit F-59 (Continued)

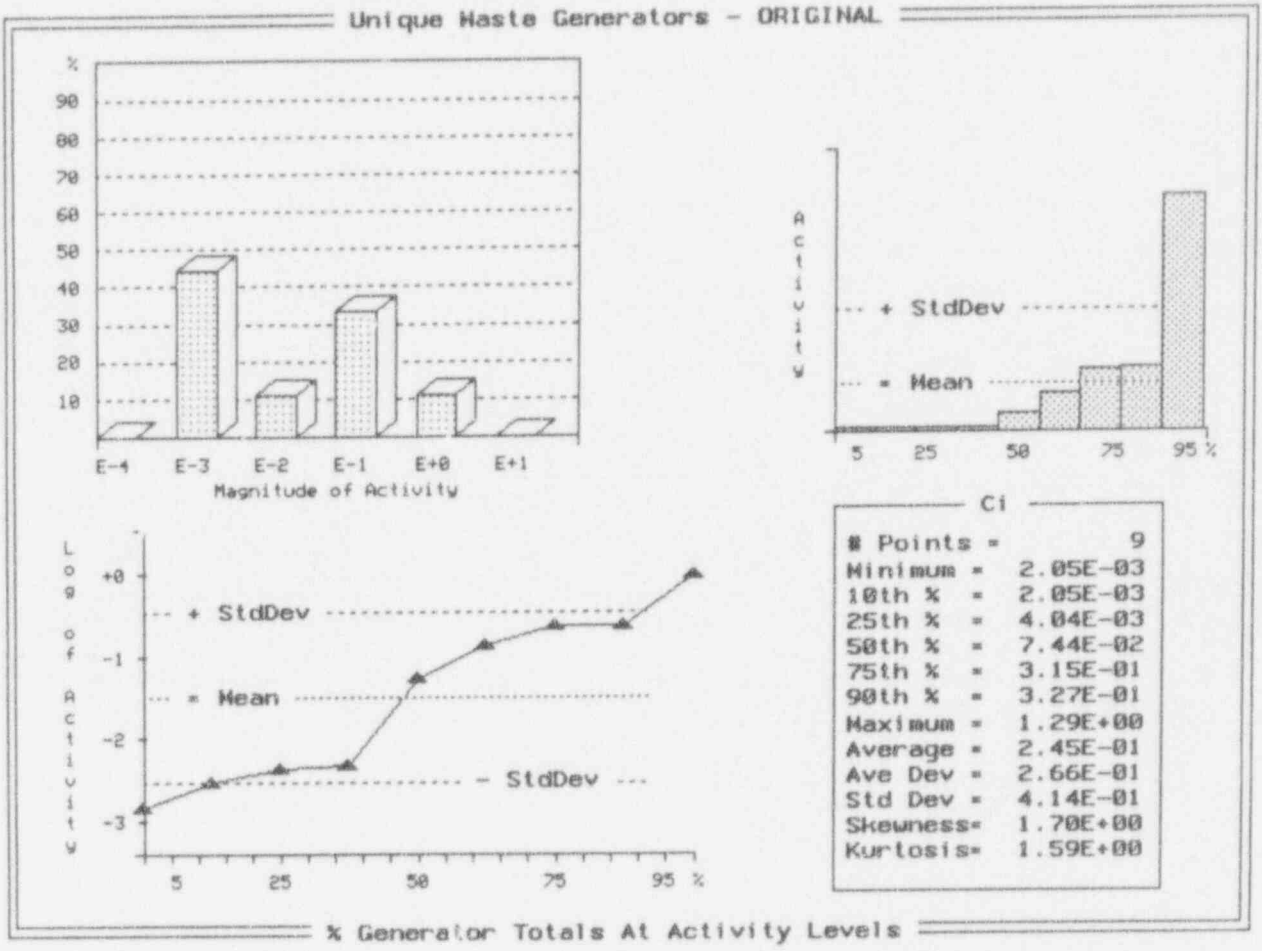


Exhibit F-60
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Rhode Island
Waste generator class:	Industrial
Total number of waste generators:	3
Total associated waste volume (m^3):	3.5
Total associated waste activity (Ci):	24.2
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	67
Total number of shipping records:	4
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	1,861
Total waste volume (m^3):	1.8
Fractional waste volume (%): (this analysis/total)	52
Total waste activity (Ci):	9.0
Fractional waste activity (%): (this analysis/total)	37

Exhibit F-60 (Continued)

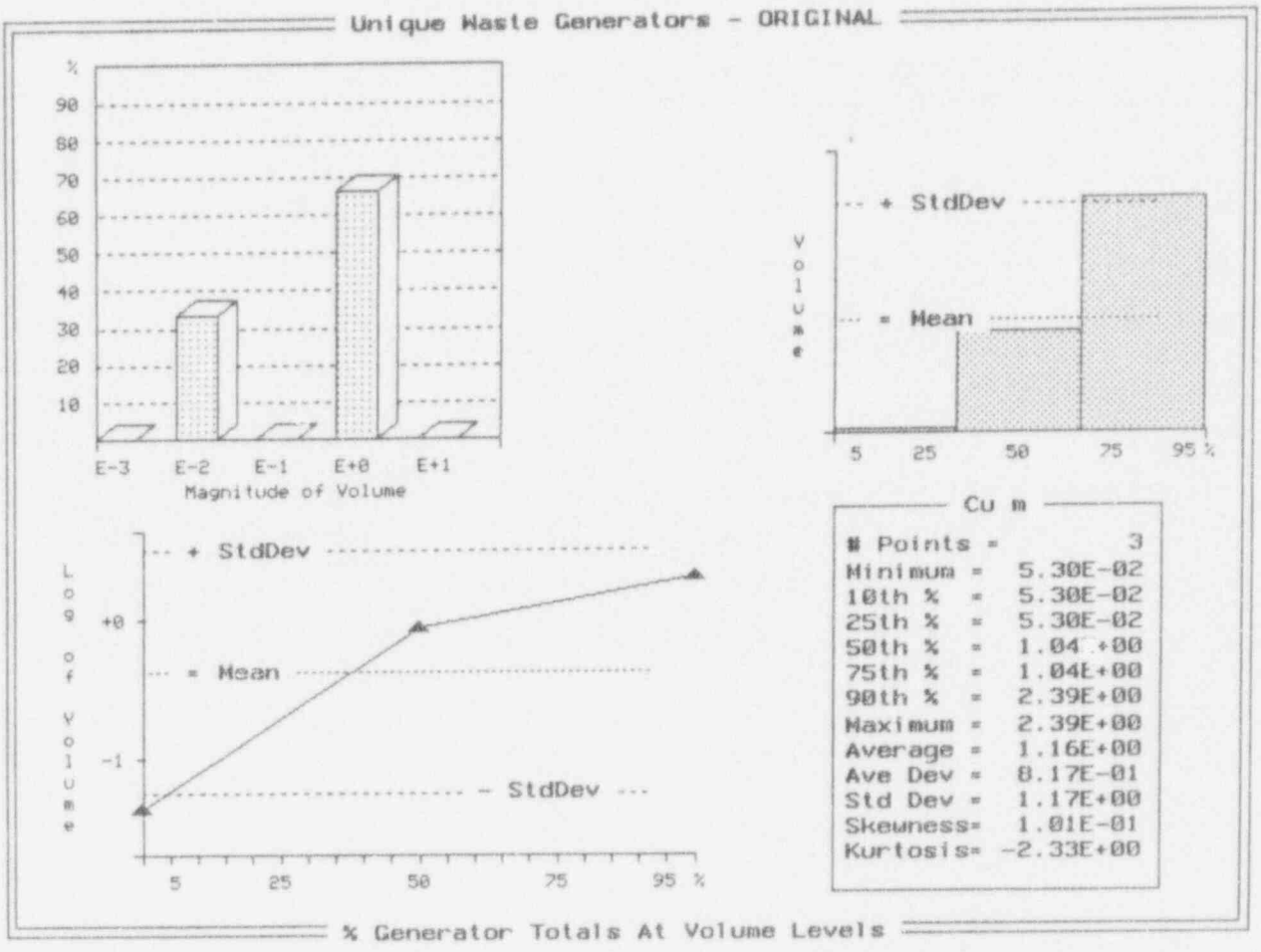


Exhibit F-60 (Continued)

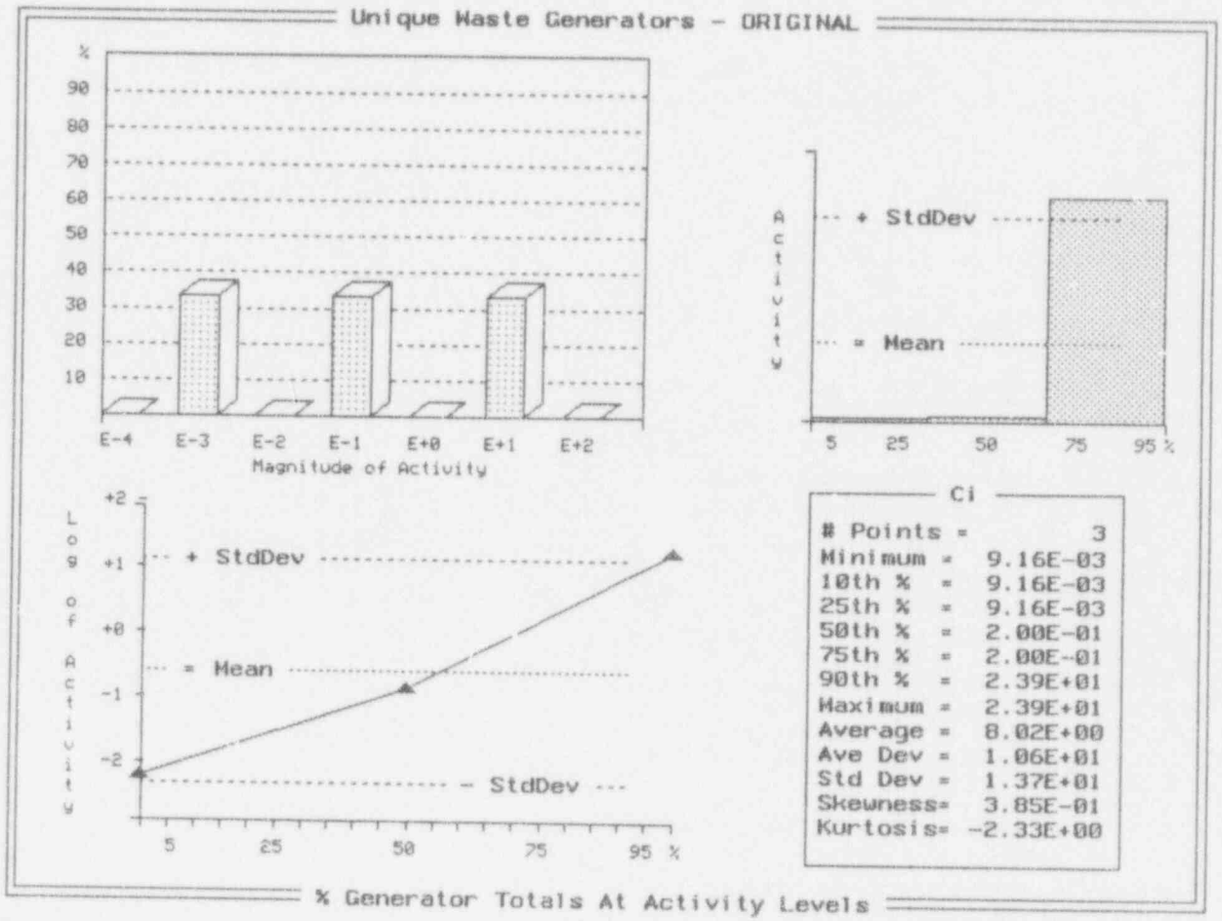


Exhibit F-61
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Texas
Waste generator class:	Government
Total number of waste generators:	7
Total associated waste volume (m^3):	1,806
Total associated waste activity (Ci):	5,031
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	4
Percent of total(%):	57
Total number of shipping records:	128
Number of shipping records with container data:	1
Number of waste containers:	2
Weight of shipments (kg):	1,222,000
Total waste volume (m^3):	1,743
Fractional waste volume (%): (this analysis/total)	97
Total waste activity (Ci):	8.9
Fractional waste activity (%): (this analysis/total)	0.18

Exhibit F-61 (Continued)

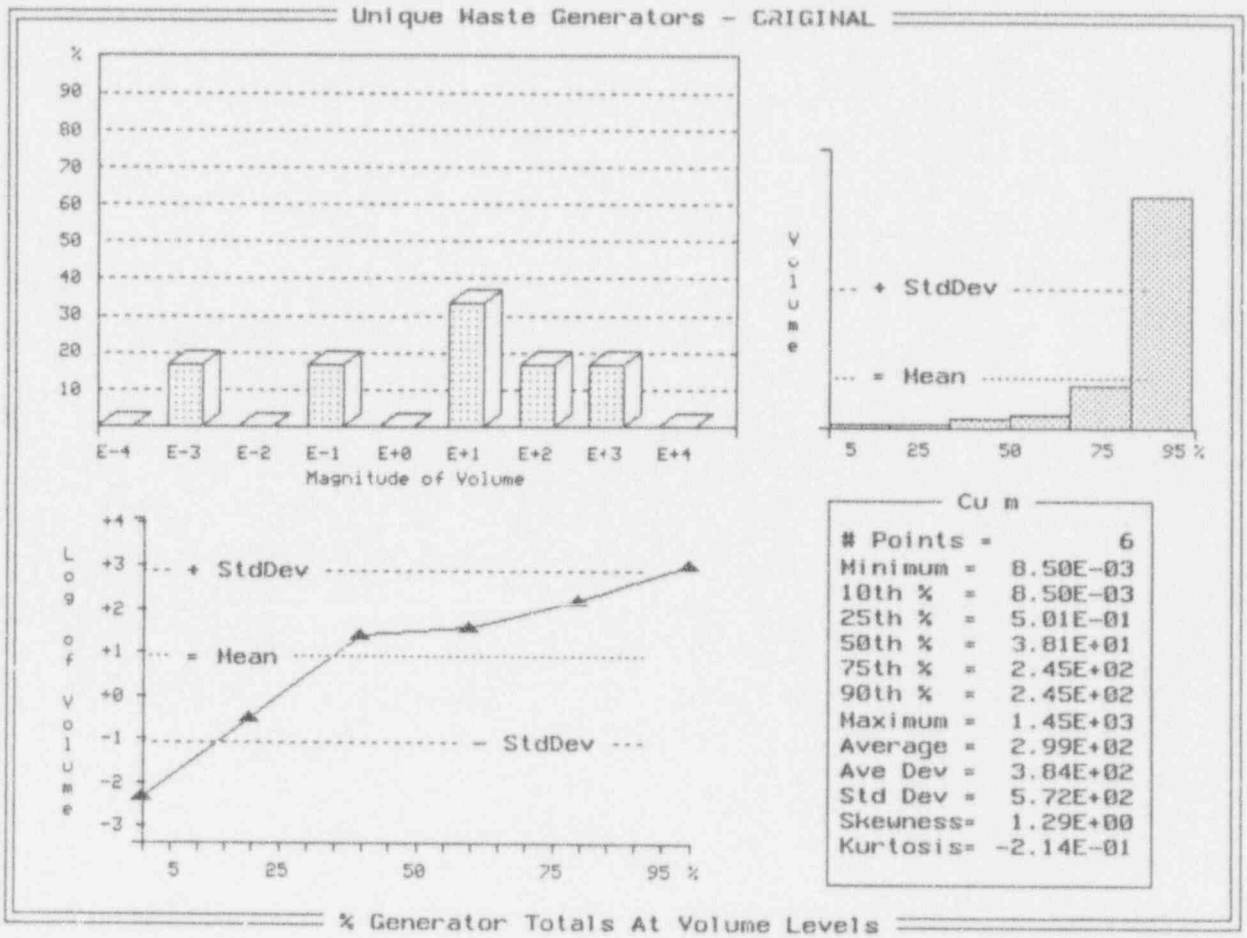


Exhibit F-61 (Continued)

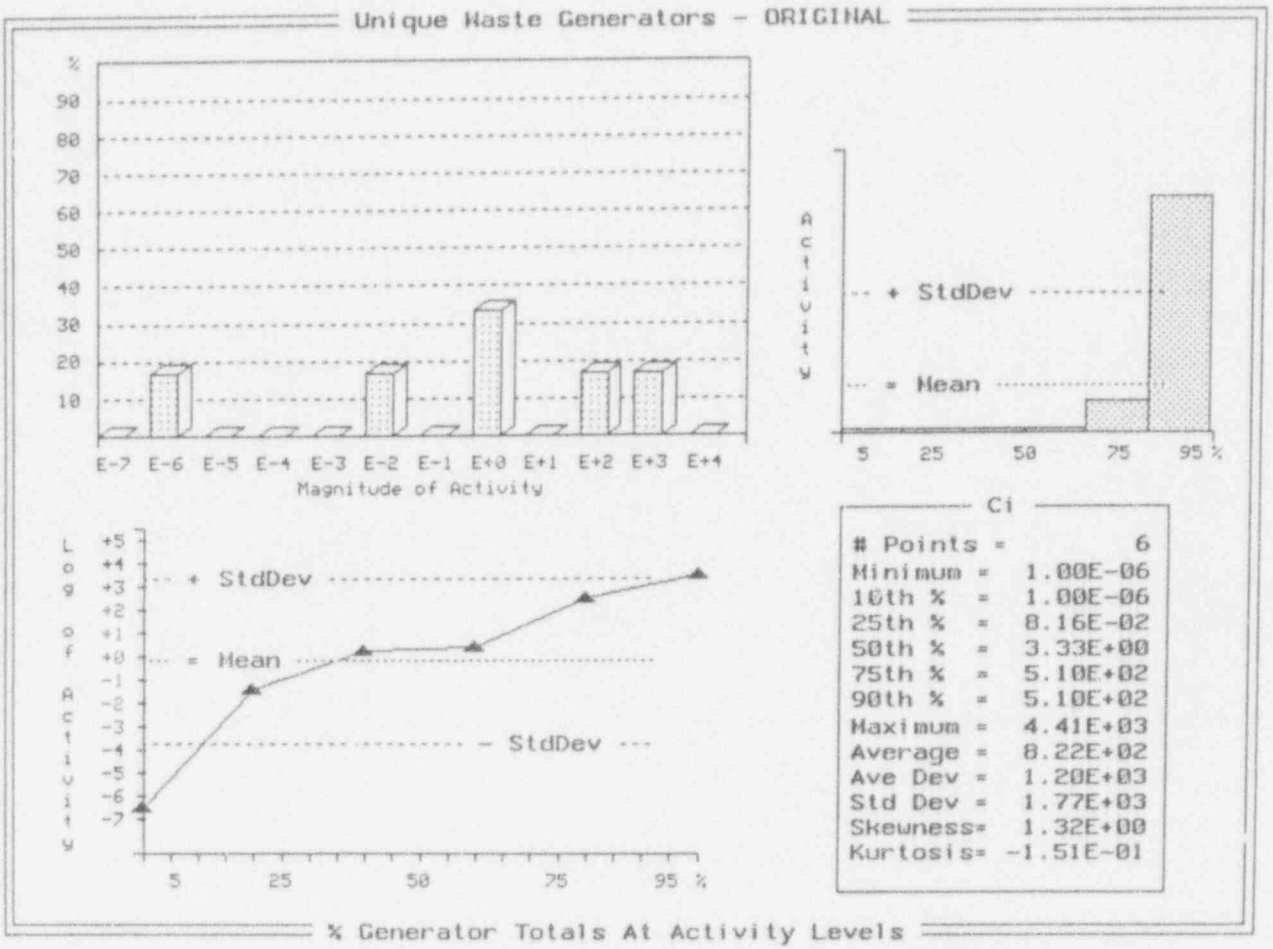


Exhibit F-62
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Texas
Waste generator class:	Academic
Total number of waste generators:	27
Total associated waste volume (m^3):	410
Total associated waste activity (Ci):	73.0
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-62 (Continued)

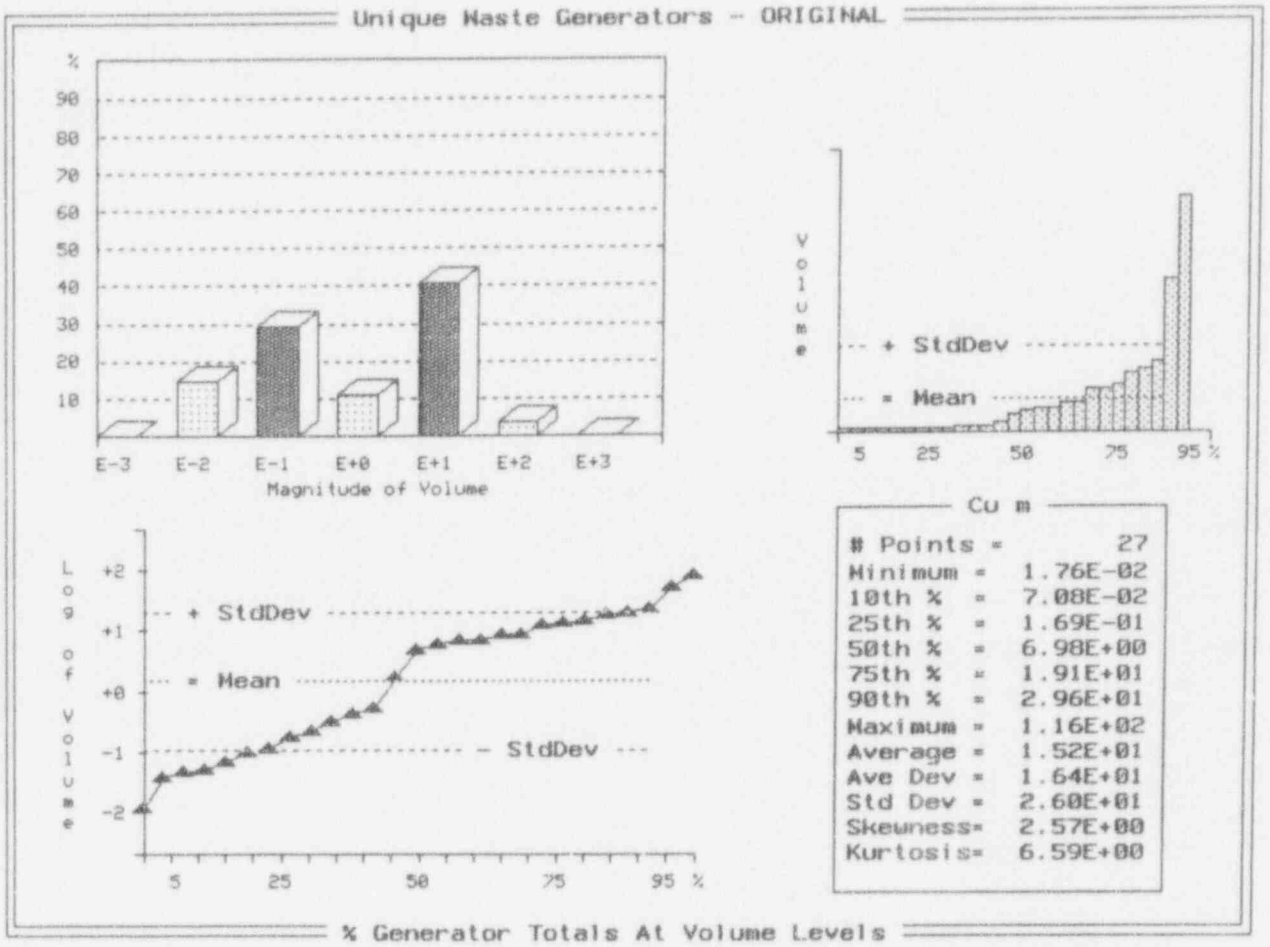


Exhibit F-62 (Continued)

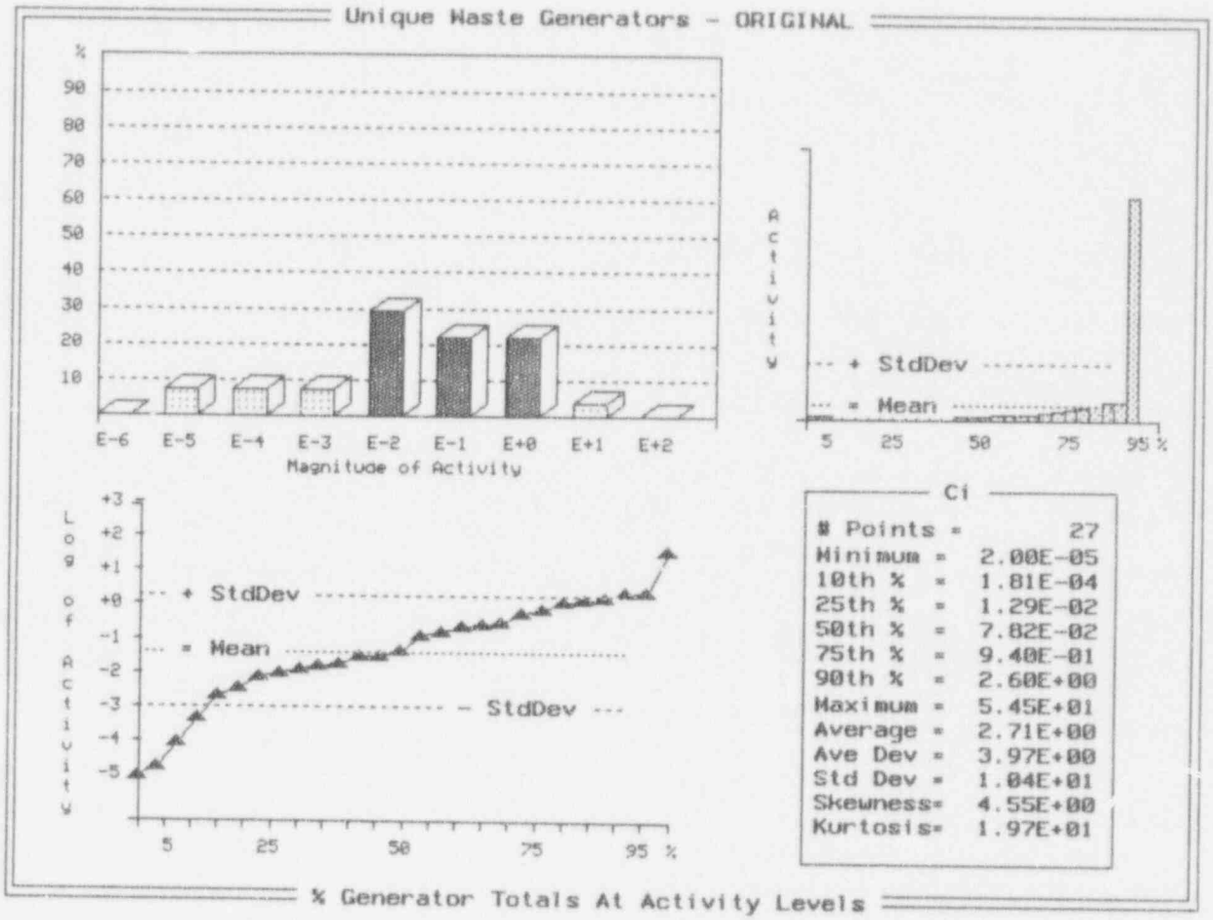


Exhibit F-63
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Texas
Waste generator class:	Medical
Total number of waste generators:	19
Total associated waste volume (m^3):	45.1
Total associated waste activity (Ci):	5.8
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	no data
Percent of total(%):	--
Total number of shipping records:	--
Number of shipping records with container data:	--
Number of waste containers:	--
Weight of shipments (kg):	--
Total waste volume (m^3):	--
Fractional waste volume (%): (this analysis/total)	--
Total waste activity (Ci):	--
Fractional waste activity (%): (this analysis/total)	--

Exhibit F-63 (Continued)

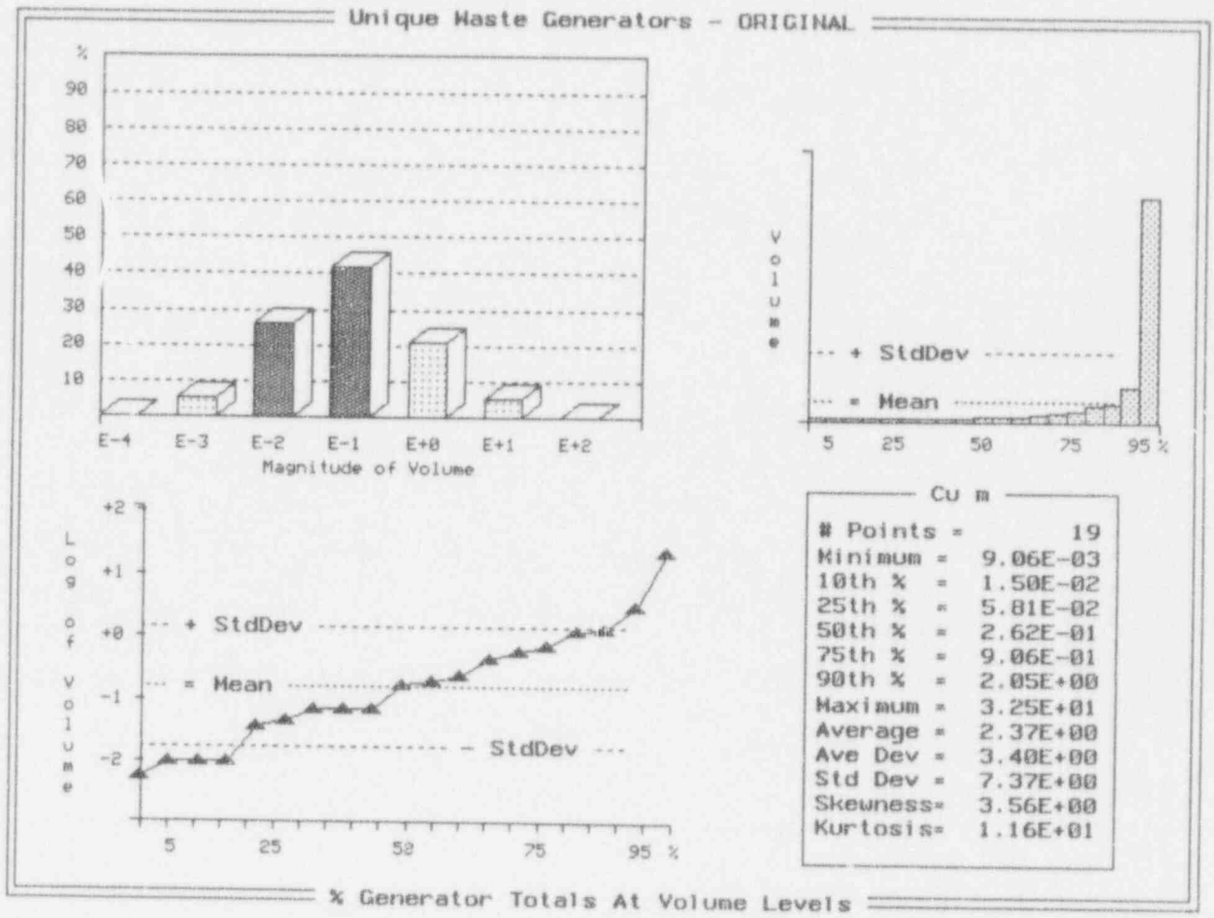


Exhibit F-63 (Continued)

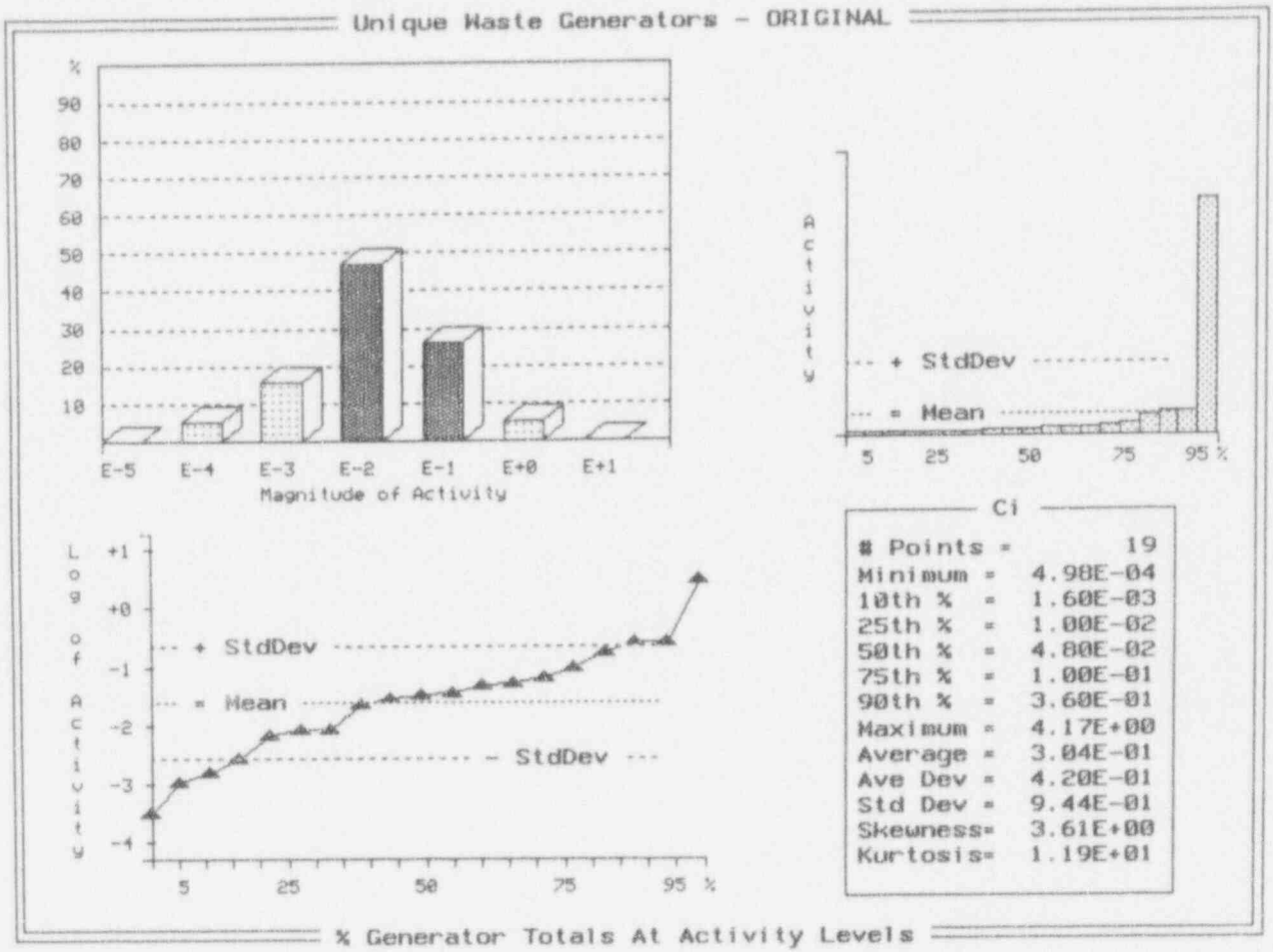


Exhibit F-64
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Texas
Waste generator class:	Industrial
Total number of waste generators:	46
Total associated waste volume (m^3):	892
Total associated waste activity (Ci):	13,310
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	4
Percent of total(%):	9
Total number of shipping records:	51
Number of shipping records with container data:	27
Number of waste containers:	540
Weight of shipments (kg):	67,140
Total waste volume (m^3):	656
Fractional waste volume (%): (this analysis/total)	73
Total waste activity (Ci):	12,100
Fractional waste activity (%): (this analysis/total)	91

Exhibit F-64 (Continued)

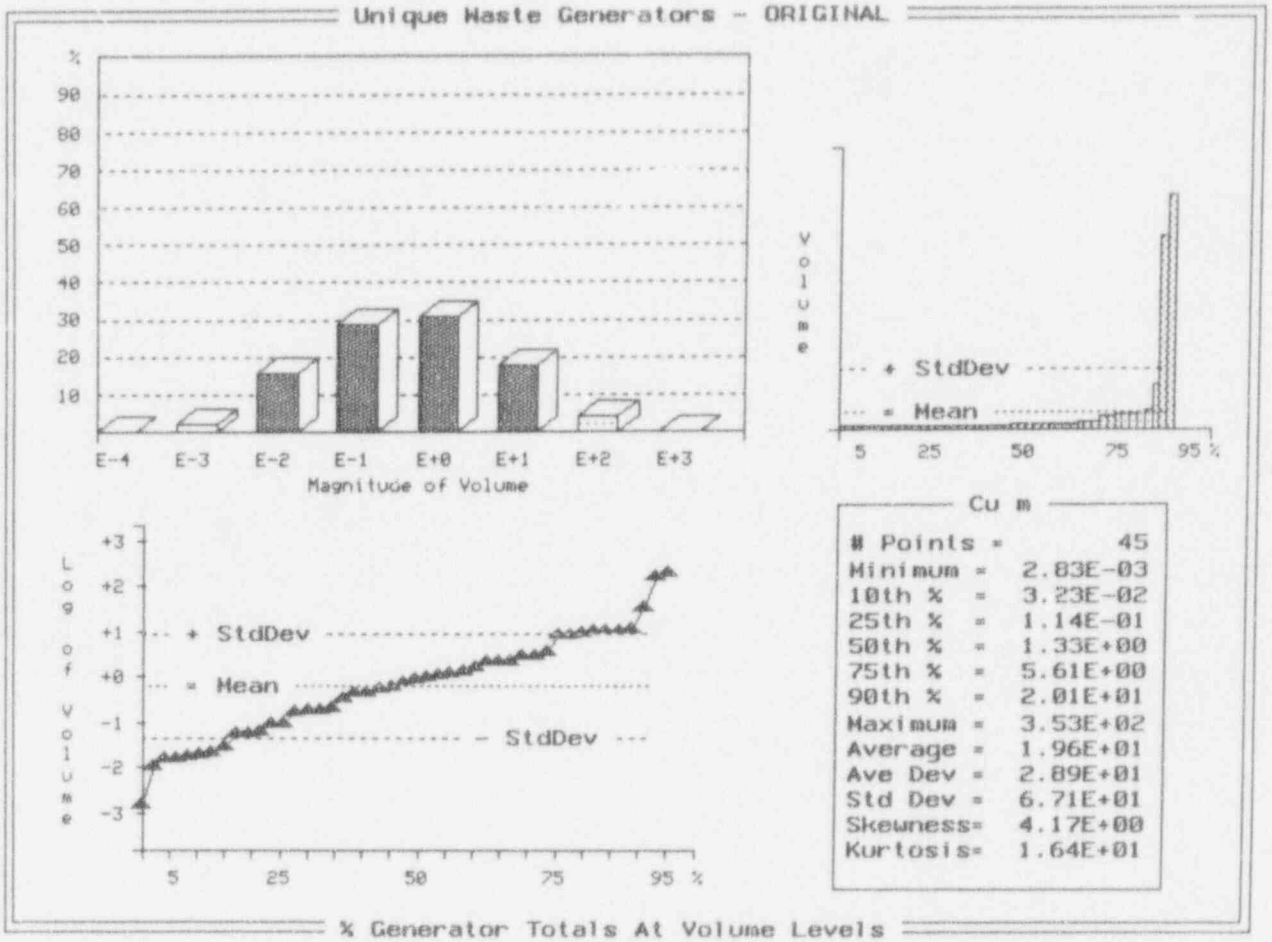


Exhibit F-64 (Continued)

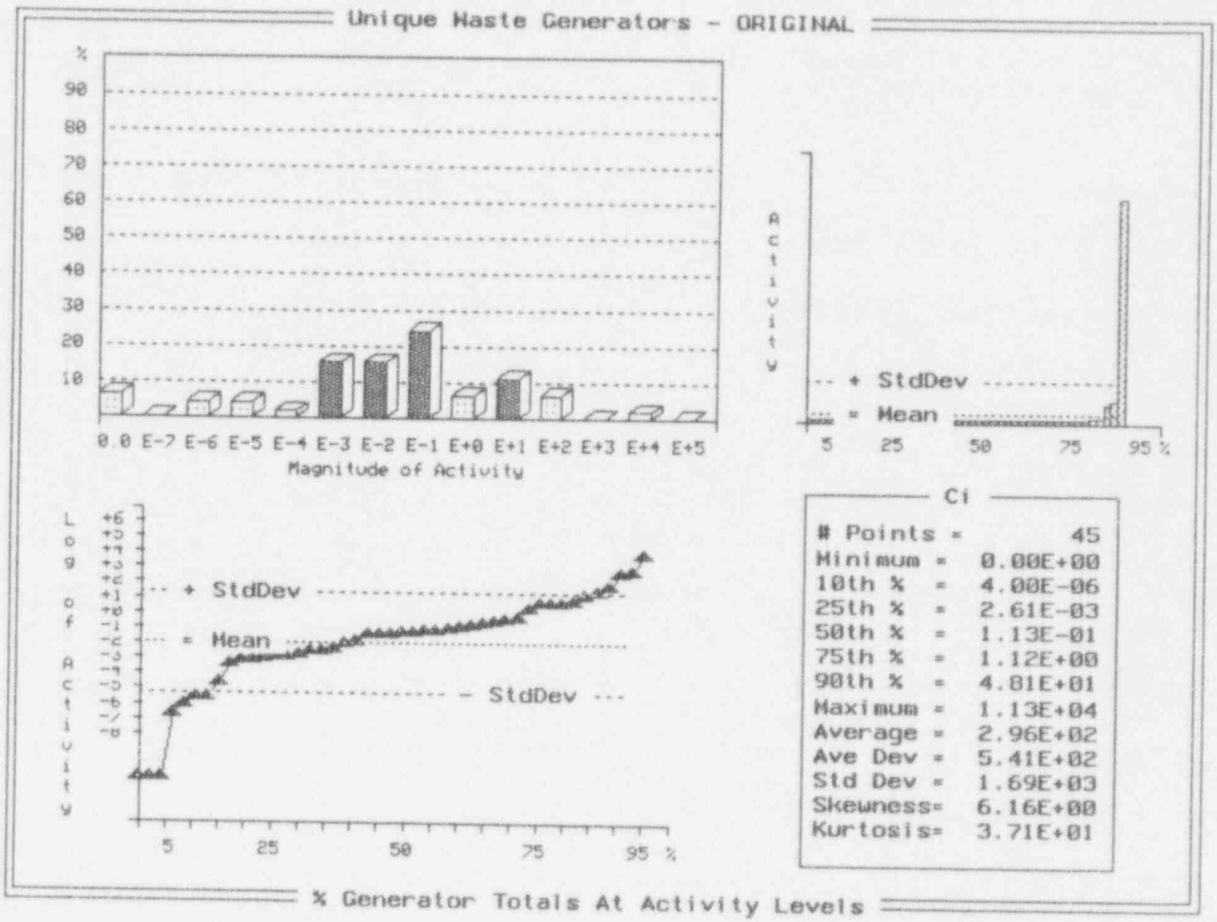


Exhibit F-65
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Vermont
Waste generator class:	Academic
Total number of waste generators:	3
Total associated waste volume (m^3):	34
Total associated waste activity (Ci):	1.0
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	67
Total number of shipping records:	5
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	10,250
Total waste volume (m^3):	18
Fractional waste volume (%): (this analysis/total)	53
Total waste activity (Ci):	0.7
Fractional waste activity (%): (this analysis/total)	67

Exhibit F-65 (Continued)

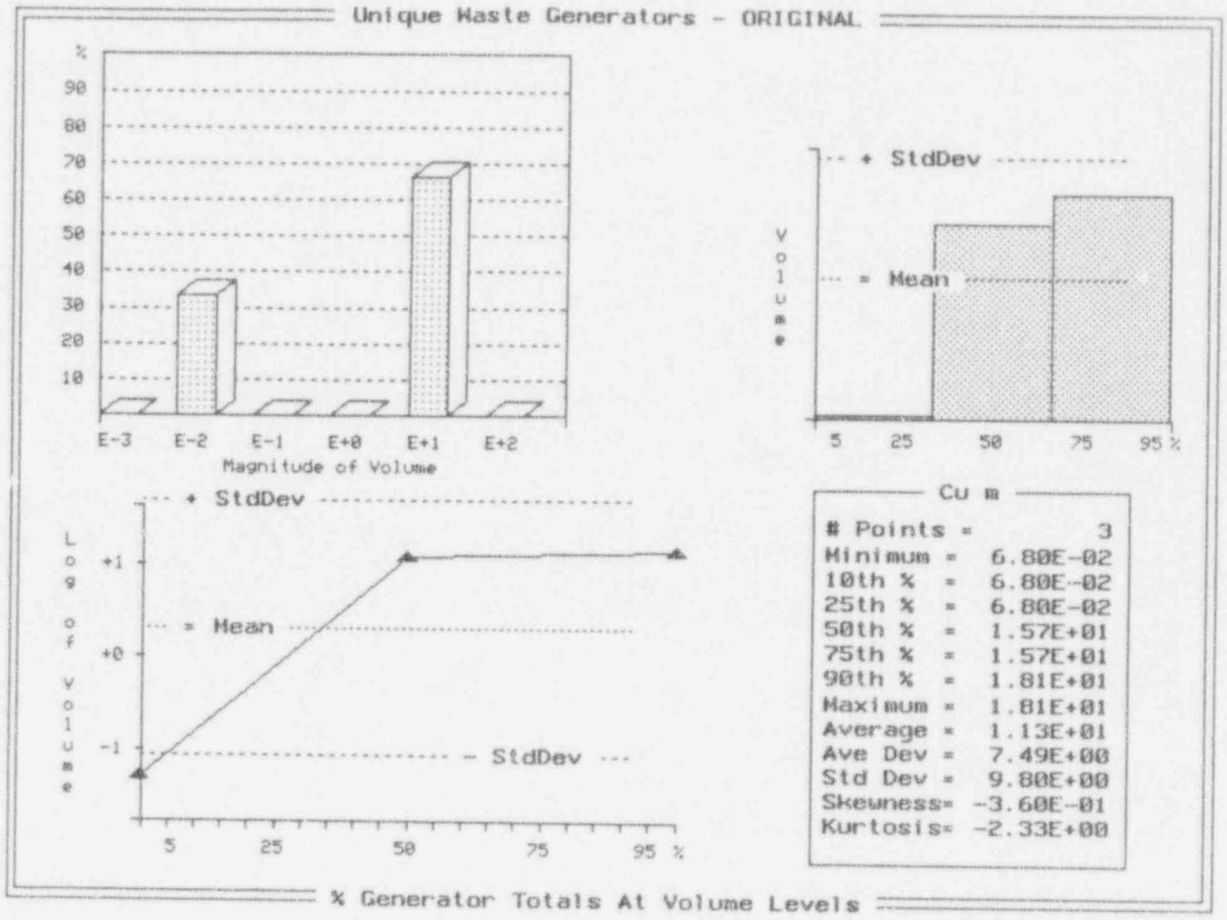


Exhibit F-65 (Continued)

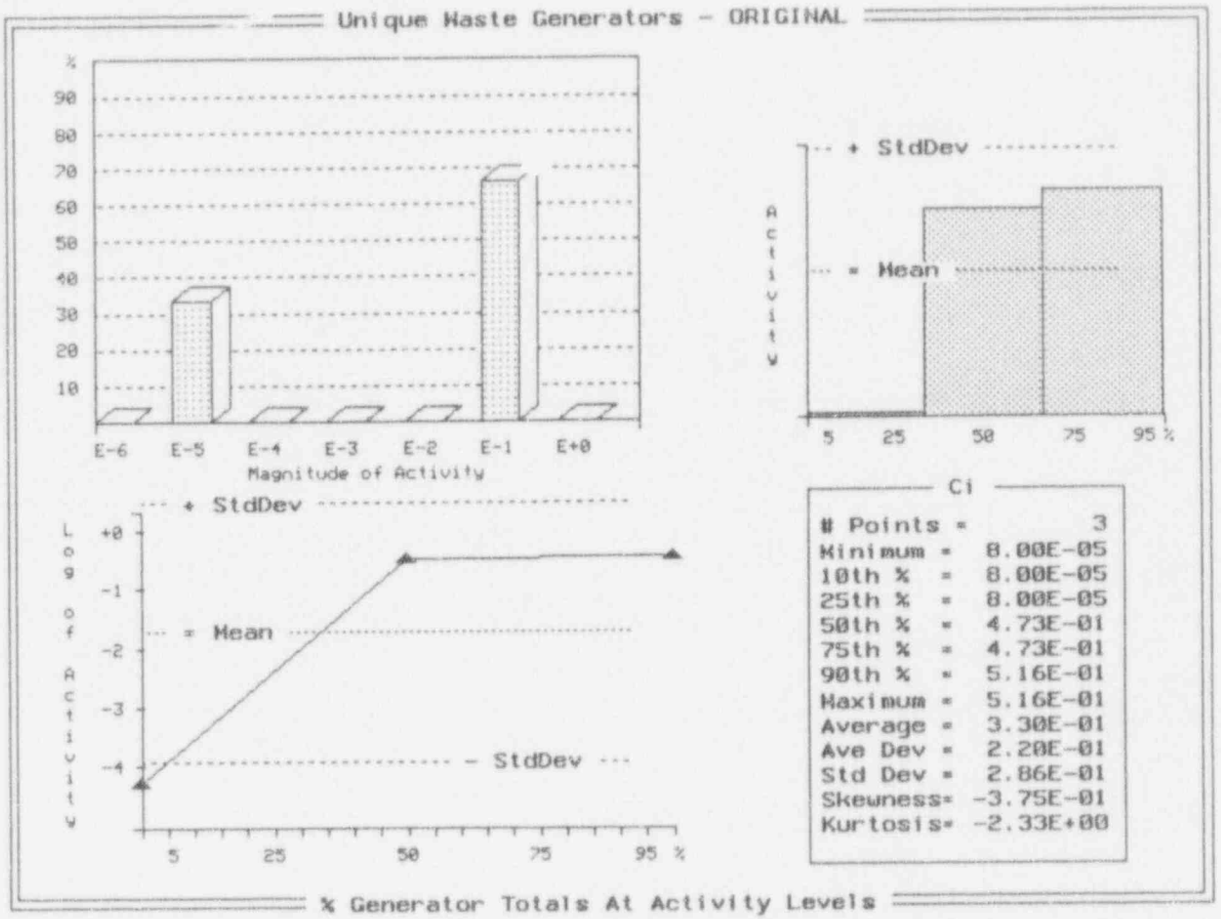


Exhibit F-66
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Vermont
Waste generator class:	Medical
Total number of waste generators:	2
Total associated waste volume (m^3):	0.5
Total associated waste activity (Ci):	0.011
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	1
Percent of total(%):	50
Total number of shipping records:	1
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	329
Total waste volume (m^3):	0.42
Fractional waste volume (%): (this analysis/total)	84
Total waste activity (Ci):	0.01
Fractional waste activity (%): (this analysis/total)	91

Exhibit F-66 (Continued)

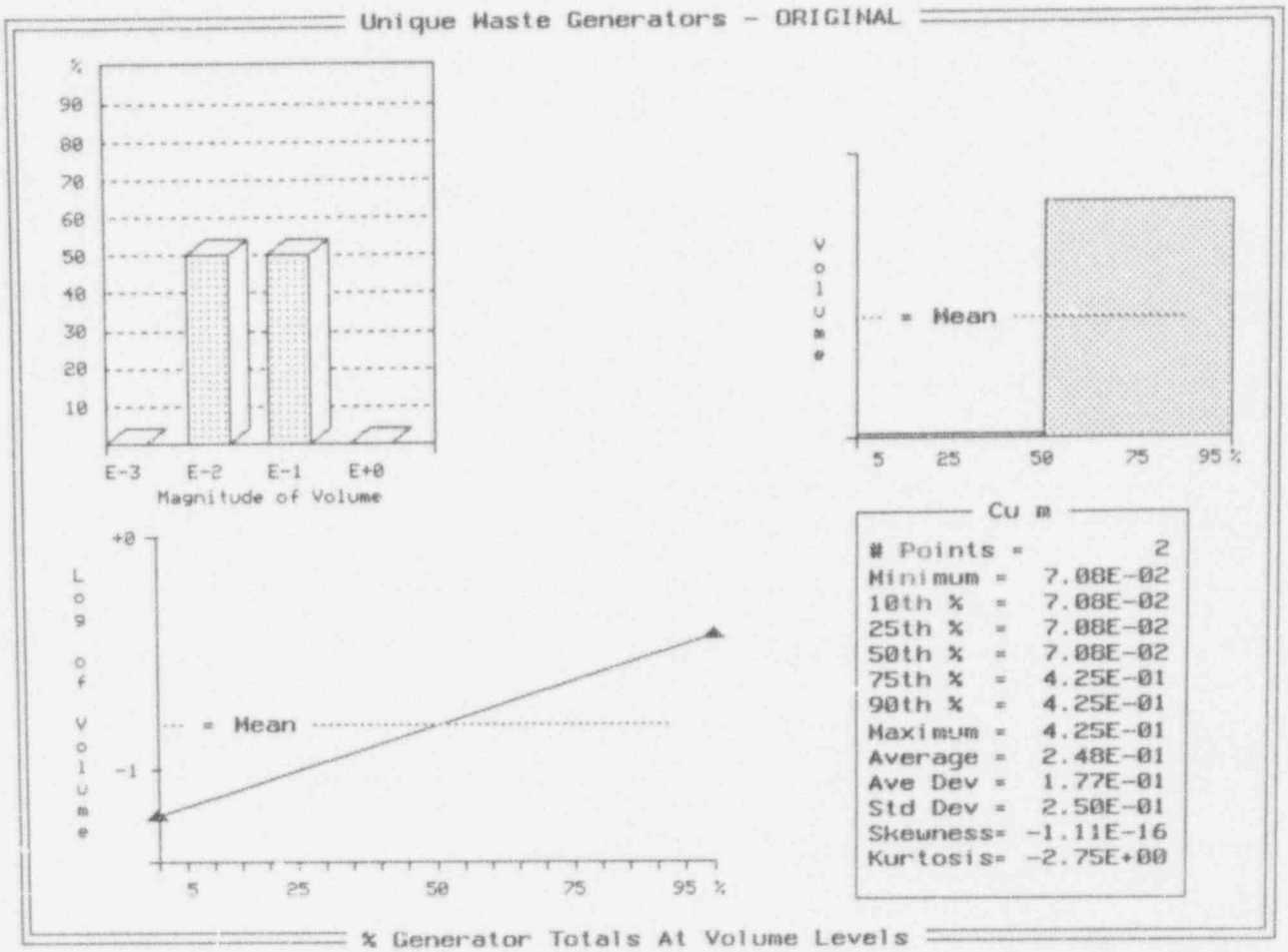


Exhibit F-66 (Continued)

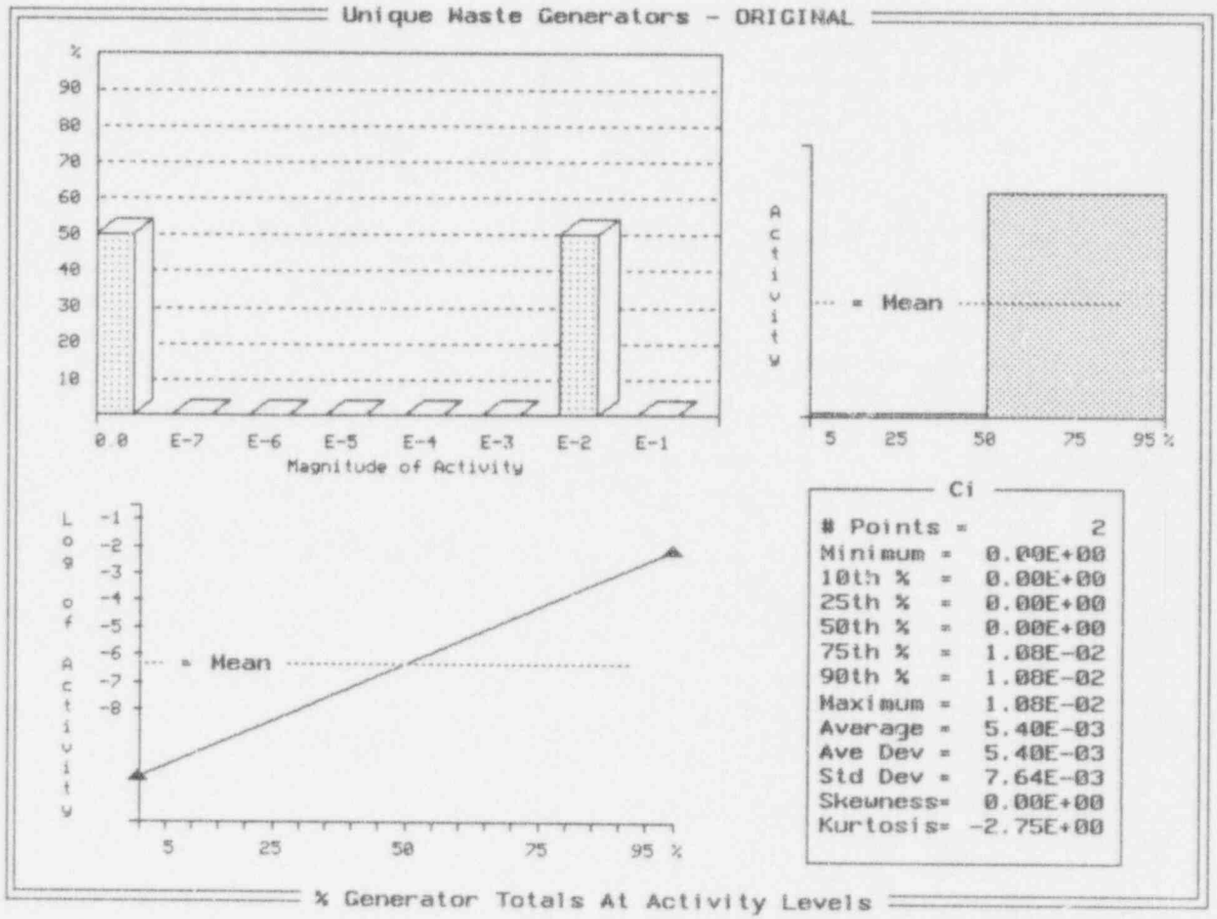


Exhibit F-67
Data Summary - Analyses at the Shipment Level
(Aggregate Practices for non-brokered waste: 1986 to 1990)

	Data or Parameters
Compact or unaffiliated state:	Vermont
Waste generator class:	Industrial
Total number of waste generators:	2
Total associated waste volume (m^3):	0.14
Total associated waste activity (Ci):	0.019
Waste class:	A-Unstable and A-Stable
Identified waste generators for this analysis:	
Number:	2
Percent of total(%):	100
Total number of shipping records:	2
Number of shipping records with container data:	0
Number of waste containers:	0
Weight of shipments (kg):	138
Total waste volume (m^3):	0.14
Fractional waste volume (%): (this analysis/total)	100
Total waste activity (Ci):	0.019
Fractional waste activity (%): (this analysis/total)	100

Exhibit F-67 (Continued)

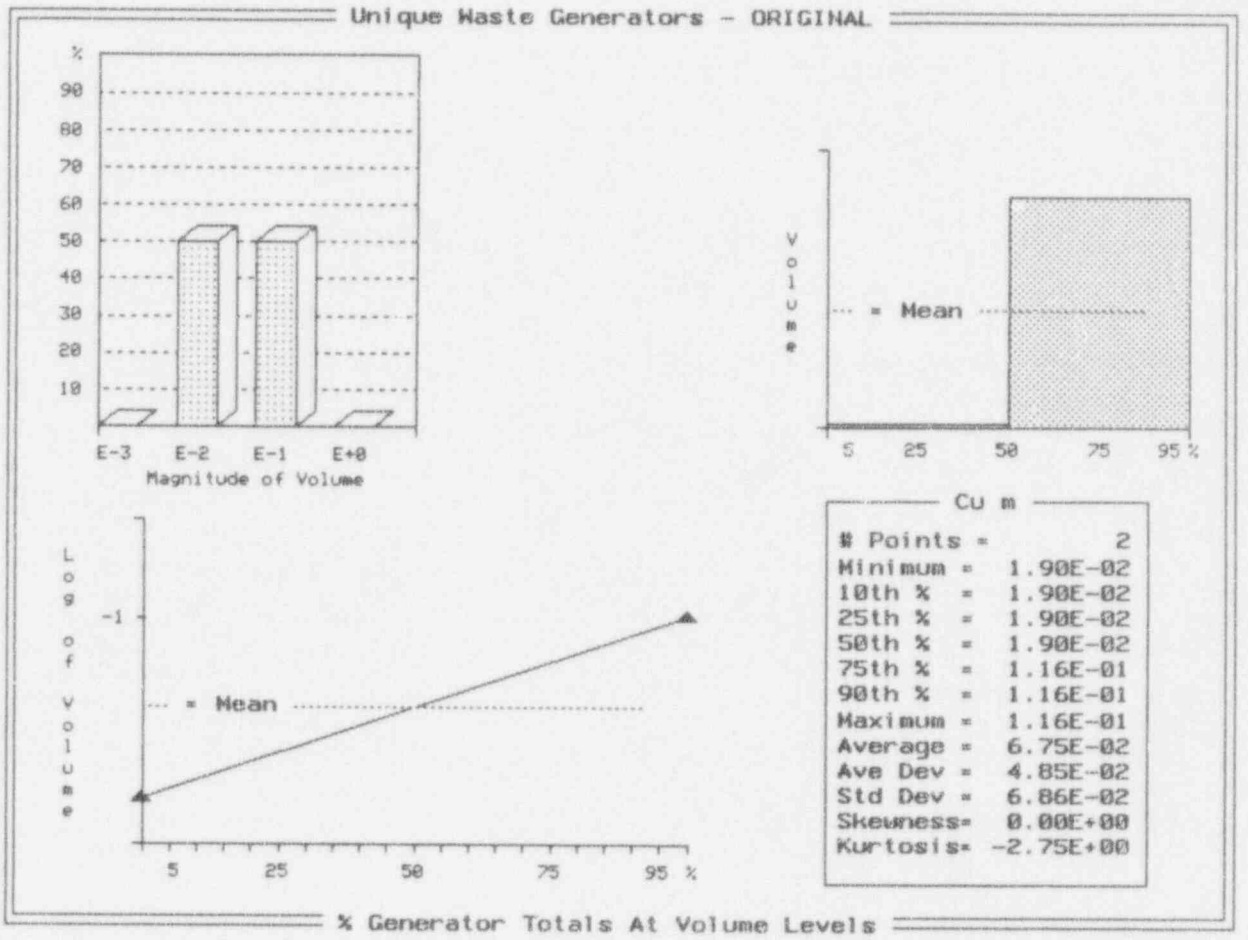
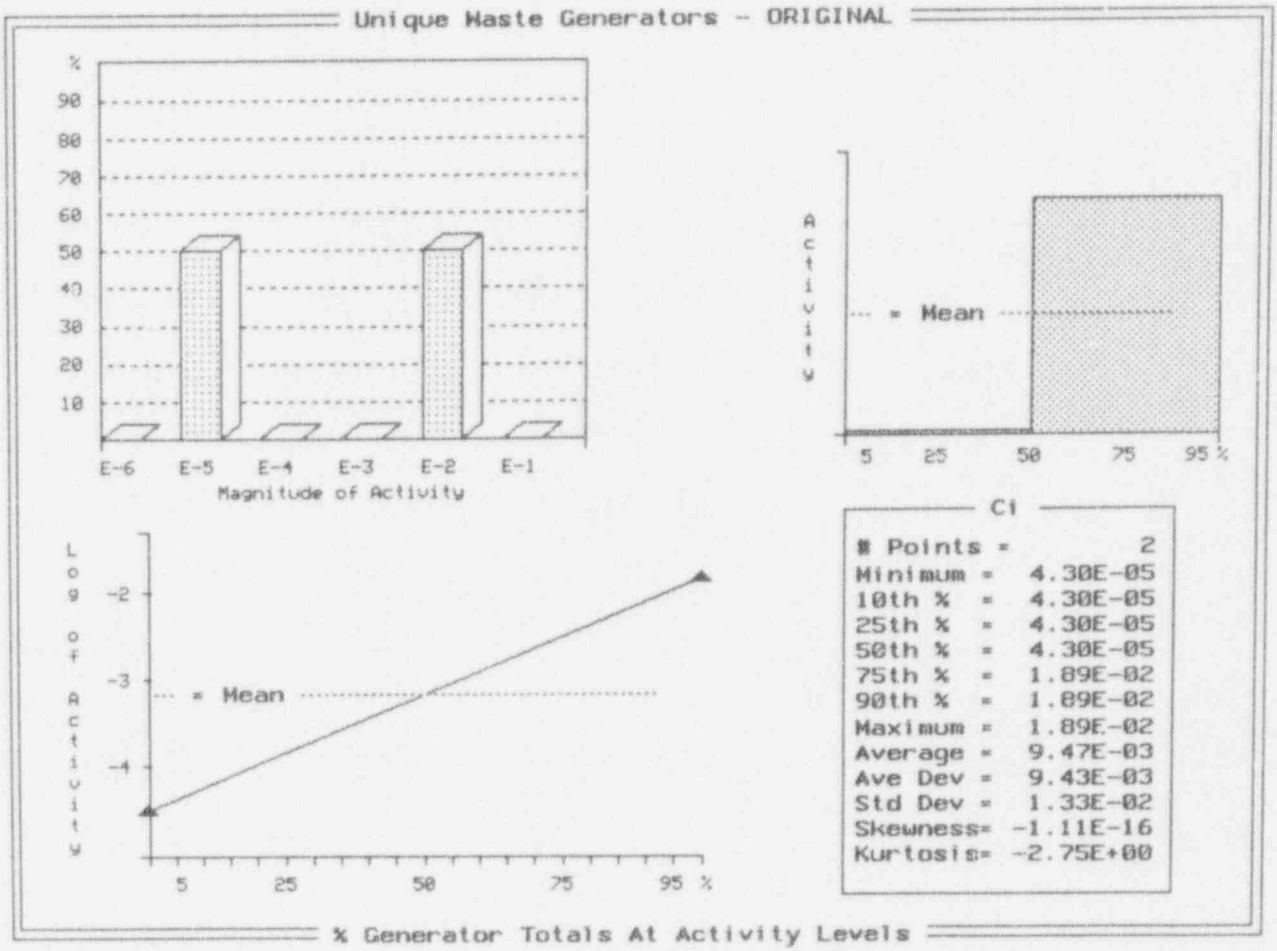


Exhibit F-67 (Continued)



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Appendix F

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10. SUPPLEMENTARY NOTES

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11. ABSTRACT (200 words or less)

This report describes the physical, chemical, and radiological properties of Class A low-level radioactive waste using data contained in the Manifest Information Management System (MIMS). Other sources of information include reports prepared by the NRC, DOE, low-level waste Compacts and States, and trade industries. The database characterizes low-level waste shipped for disposal from 1986 to 1990. A computer program was developed to analyze the data, with the results summarized in tables, histograms, and cumulative distribution curves presenting radionuclide concentration distributions in Class A waste as a function of waste streams, waste generators, and by regions.

The report also provides information characterizing the methods and facilities used to treat and dispose of non-radioactive waste, including industrial, municipal, and hazardous waste regulated under Subparts C and D of RCRA. The information includes a list of disposal options, the geographical locations of such facilities, and a description of such processing and disposal facilities.

12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)

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waste activity levels
waste volumes
waste generators/sectors
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