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ENVIRONMENTAL SCIENCE
AND ENGINEERING, INC.

January 14, 1986
Contract No. N62740-85-B-7972

Ms. Cherryl Barnett
Department of the Navy
Atlantic Division, Code 1143
Naval Facilities Engineering Command
Bldg. IIA, Gilbert Street
Norfolk, Virginia 23511

Dear Ms. Barnett:

Enclosed is a QA/QC Progress Report for the Puerto Rico Confirmation Study for samples collected and analyzed prior to January 1, 1986. The contents of the report are based on the Sampling and Chemical Analysis Quality Assurance Guide for the NACIP program (September 1985). Please note that we have requested an analytical change in the report. A quick response to this request would be greatly appreciated.

If you have any questions concerning the report or would like additional information, please let me know.

Sincerely,

William Coulombe /ms

William Coulombe
Laboratory
Quality Assurance Coordinator

WC:mt

cc: R. Bowen, ESE
Dr. J. Fitzgerald, MITRE

QA/QC PROGRESS REPORT FOR THE PERIOD
NOVEMBER 21, 1985 THROUGH DECEMBER 31, 1985
PUERTO RICO CONFIRMATION STUDY

Prepared for:

DEPARTMENT OF THE NAVY
Naval Facilities Engineering Command
Atlantic Division
Norfolk, Virginia 23511

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
Gainesville, Florida

Contract No. N62740-85-B-7972
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January 15, 1986

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1.0 LABORATORY OPERATIONS

1.1 SAMPLING STATUS AND ANALYTICAL RESULTS

The number, type, and location of samples collected for laboratory analysis are summarized in Table 1-1. It is anticipated that the remaining soil, sediment, and surface water samples will be collected, and 70 percent of the ground water samples will be sampled during January 1 through 31, 1986.

All samples have been extracted and/or analyzed within established United States Environmental Protection Agency (EPA) holding times. A partial analytical report (computer printout) has been generated based on completed analytical batches and is attached.

Why file 1 side #?
Why 10 - 50 #?

The following explanations of data may aid in review of the printout:

1. Samples of surface waters, soils, and sediments have been grouped into "FIELD GROUPS" called PRSW1, PRS01, and PRSE1, respectively (ground water will appear in field group PRGW1);
2. "NRQ" (Not Requested) indicates that analytical parameters will not be run for the given sample;
3. "IL" (In Laboratory) indicates that preliminary analysis for the given analytical parameter is complete and data management has begun; and
4. A blank space under a sample number for the given parameter(s) indicates that analysis for the parameter(s) has either not begun or is in progress, but data management has not begun.

1.2 REQUESTED CHANGES IN ANALYTICAL METHODS

The Environmental Science and Engineering, Inc. (ESE) results of performance evaluation samples (supplied by MITRE) for thallium were unacceptable using the inductively coupled plasma (ICP) technique. For

Table 1-1. Sampling Status Summary--November 21, 1985 through
December 31, 1985

Site Number	Ground Water Samples	Surface Water Samples	Sediment Samples	Soil Samples	Analytical Constituents ^a
<u>NAVSTA Roosevelt Roads</u>					
1	3	0	3	6	pH, oil and grease, VOA, xylene, MEK, MIBK, EDB, Cr (total and hexavalent), Pb
2	0	5	5	8	pH, Cr (total and hexavalent), Pb, VOA, xylene, MEK, MIBK
3	1	0	0	0	pH, Priority Pollutant scan
5	5	5*	5*	0	pH, Priority Pollutant scan, Cr hexavalent, xylene, MEK, MIBK, EDB
6	0	3*	3*	15*	pH, Priority Pollutant scan, Cr hexavalent, xylene, MEK, MIBK, EDB
7	8	0	0	0	pH, Priority Pollutant scan, Cr hexavalent
	0	0	0	2*	Oil and grease, VOA, xylene, MEK, MIBK, EDB
8	0	3	3	1	Oil and grease, Pb, VOA, xylene, MEK, MIBK, EDB
9	0	4*	30*	0	PCBs
10	8	0	0	0	pH, Priority Pollutant scan, Cr hexavalent, xylene, MEK, MIBK, EDB
11	0	0	0	0	--
12	6	1*	1	20 ^{b*}	pH, VOA, EDB, xylene, oil and grease, Pb
	--	--	--	2	EP Toxicity Test metals

Table 1-1. Sampling Status Summary--November 21, 1985
through December 31, 1985 (Continued, Page 2 of 2)

Site Number	Ground Water Samples	Surface Water Samples	Sediment Samples	Soil Samples	Analytical Constituents ^a
13	11	6	6	0	pH, VOA, Pb, oil and grease, EDB, xylene
14	0	12*	12*	0	pH, VOA, Pb, EDB, xylene, MEK, MIBK, oil and grease
15	0	0	0	16*	PCBs
16	0	0	0	9*	PCBs, oil and grease, VOA, Pb, EDB, xylene, MEK, MIBK
18	0	2*	2*	15*	Pesticides
<u>NSGA Sabana Seca</u>					
6	0	0	2*	34*	Pesticides
7	6	1*	1*	0	pH, Priority Pollutants scan

*Sample groups collected.

-- = not applicable.

^a = Key to Constituent Abbreviations:

- Cr = chromium.
- Pb = lead.
- VOA = volatile organic analysis.
- PCBs = polychlorinated biphenyls.
- EDB = ethylene dibromide.
- MEK = methyl ethyl ketone.
- MIBK = methyl isobutyl ketone.

Priority Pollutant Scan = EPA Priority Pollutant list of 129 pollutants, excluding asbestos, cyanide, and dioxin.

EP Toxicity Test Metals = Arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver by the extraction procedure (EP) toxicity test as described in 40 CFR Part 261.24, Appendix II.

^b = no analyses. Only visual inspection for oil and measurement of thickness of oil layer, if found.

Source: ESE, 1986.

this reason, Navy approval of analytical methods for thallium was limited to atomic absorption until the ICP problem could be isolated and corrected.

It has been determined that the ICP problem with thallium is due to spectral interferences. Establishing a computer correction of the raw data (K factor) within the ICP system, as detailed in the operating manual for the instrument, has yielded satisfactory results. Analyses of multielemental interference solutions were within 5 percent of the target value, and an EPA reference solutions provide by the ESE Quality Assurance (QA) Division was within acceptable criteria.

For each batch, a multielemental interference check solution will be included in the quality control (QC) procedures. Results of the check must be within +20 percent of the true value, or a new correction factor will be established. It is anticipated that these procedures will provide quality data for thallium with the ICP. ESE, therefore, requests approval to use ICP for Navy samples.

DC - ...

2.0 CONTROL CHART STATUS

Control charts have been established for all Navy analytical parameters which use percent recovery of standard matrix spikes as a QC measure. The protocol for processing the charts is included in Appendix A.

Control charts associated with the completed analytical data as of December 31, 1985 (computer printout attachment), are presented in Appendix B. Charts for mercury, lead, EDB, and oil and grease have been included for water and solid matrices. All points were in-control and there were insufficient data to discern trends or shifts. In a mercury batch requiring two pairs of duplicate spikes (>20 samples in the batch), one spike was inadvertently not duplicated [mercury microgram per gram (mg/g) chart, Appendix B]. In evaluation of all available QC data by the Laboratory Quality Assurance Coordinator (LQAC), the system was judged in control.

3.0 OUT-OF-CONTROL INCIDENTS FOR REPORT PERIOD

All analytical systems were judged to be in control for the completed analysis in this report, and no corrective action reports were generated.

4.0 QA/QC PLAN CHANGES

No QA/QC procedural changes were made during the report period. The ESE Laboratory Coordinator for Navy projects changed from Tom Park to Lisa Bare. The functions of the coordinator are to receive samples from field personnel, coordinate the processing of samples by departments within the chemistry division, and to assist the LQAC.

APPENDIX A

APPENDIX A

PROTOCOL FOR PROCESSING OF NAVY QUALITY CONTROL CHARTS (1/9/85)

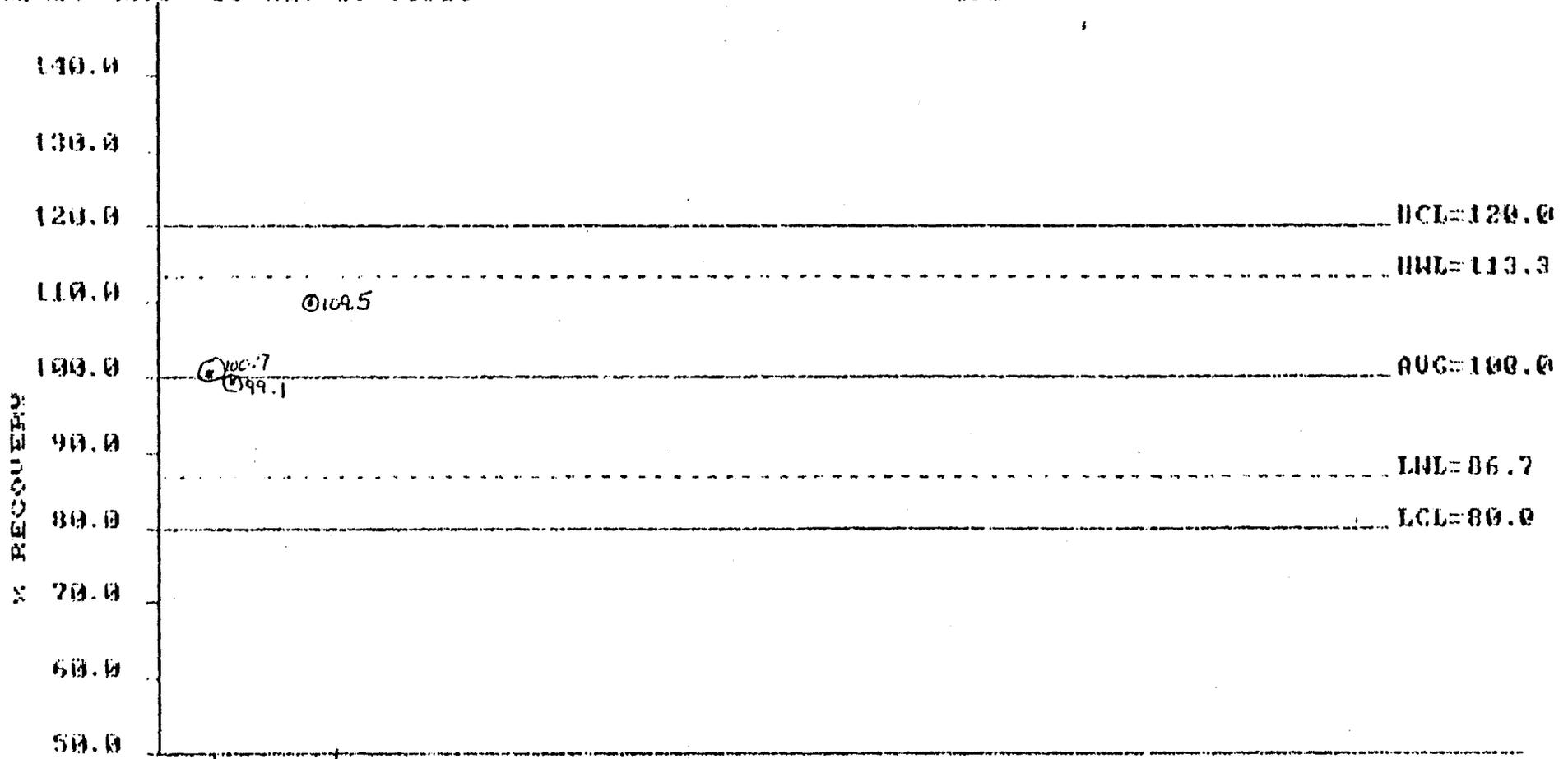
1. Original charts are filed with analyst(s) performing the particular analyses.
2. Percent recovery of standard matrix spike duplicates are plotted versus time on computer generated charts (see attached example).
3. Both replicate recoveries are plotted side by side. Provide space (arbitrary) between replicate pairs run between every 20 samples or different batches. The x-axis of the chart (time) does not need to be to scale.
4. Points are plotted in black ink by making a single point and circling the point. If the replicates are identical, circle the point twice to denote that there are two points located in the same space.
5. There is no need to draw a line to connect the points.
6. On the first day of each month, charts updated with the previous month's data should be copied (a quality photocopy will be needed) and routed to the Navy LQAC through the Departmental Manager. The charts will be included in a progress report to the Navy which must be received by the 15th of every month.

APPENDIX B

Accuracy MERCURY HG/G -D

Code: NAU7 STORET #: 71921

ESE

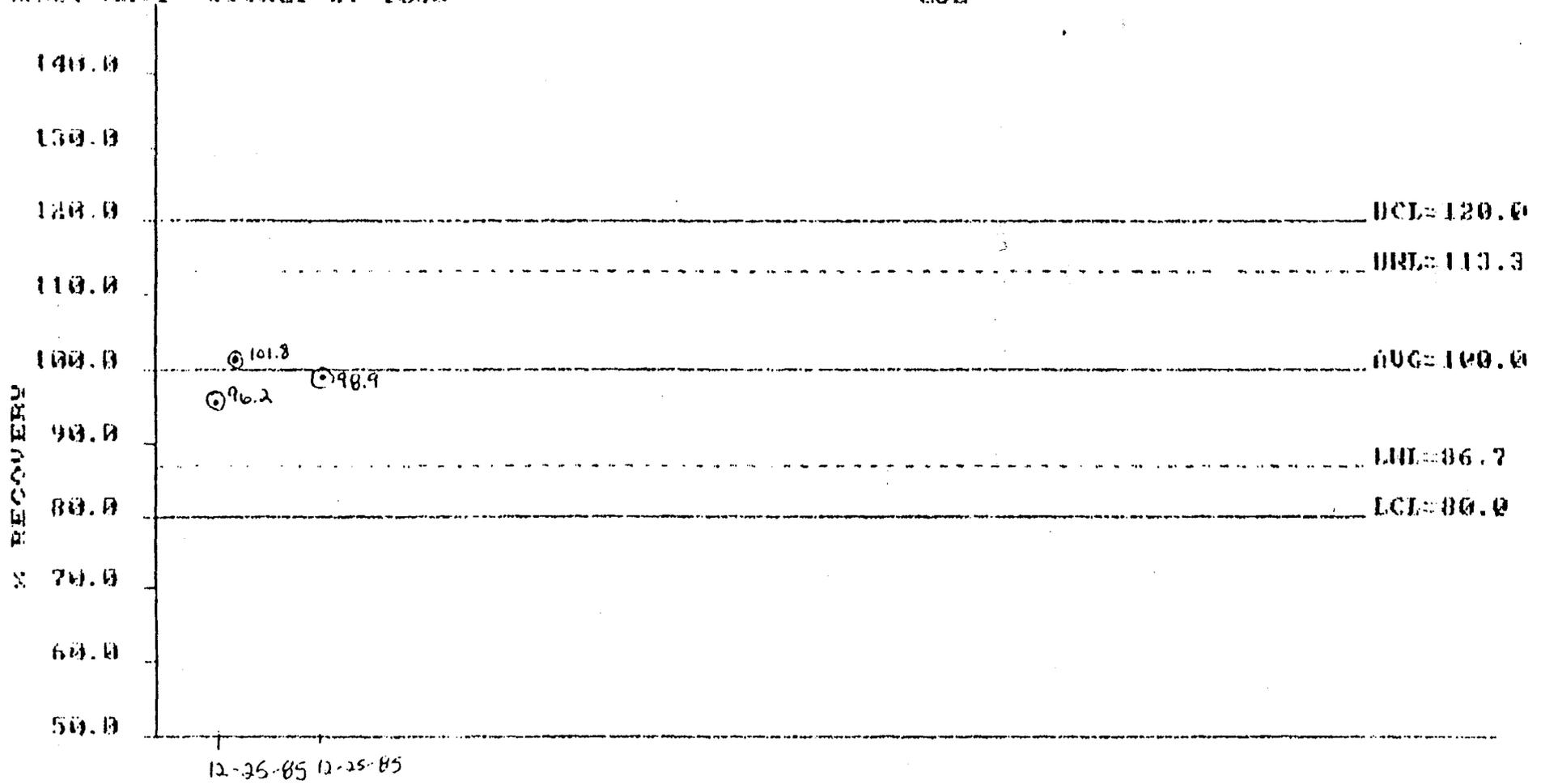


~~12-17-85~~ 12-17-85
11-17-85

Accuracy LEAD HG/G -D

Code: H407 STORET #: 1052

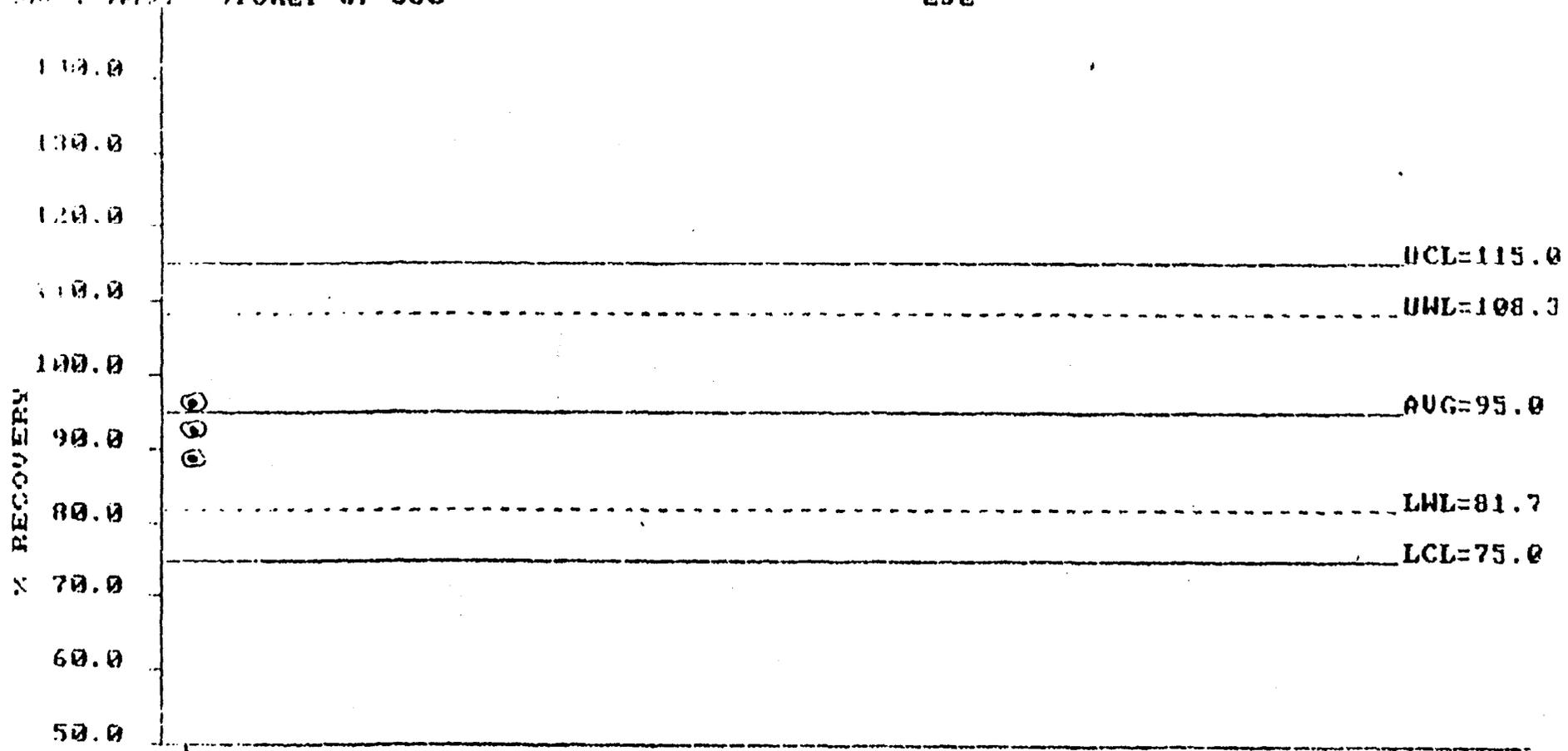
ESE



Oil and Grease MG/L

UNIT: NAUT STORET #: 560

ESE

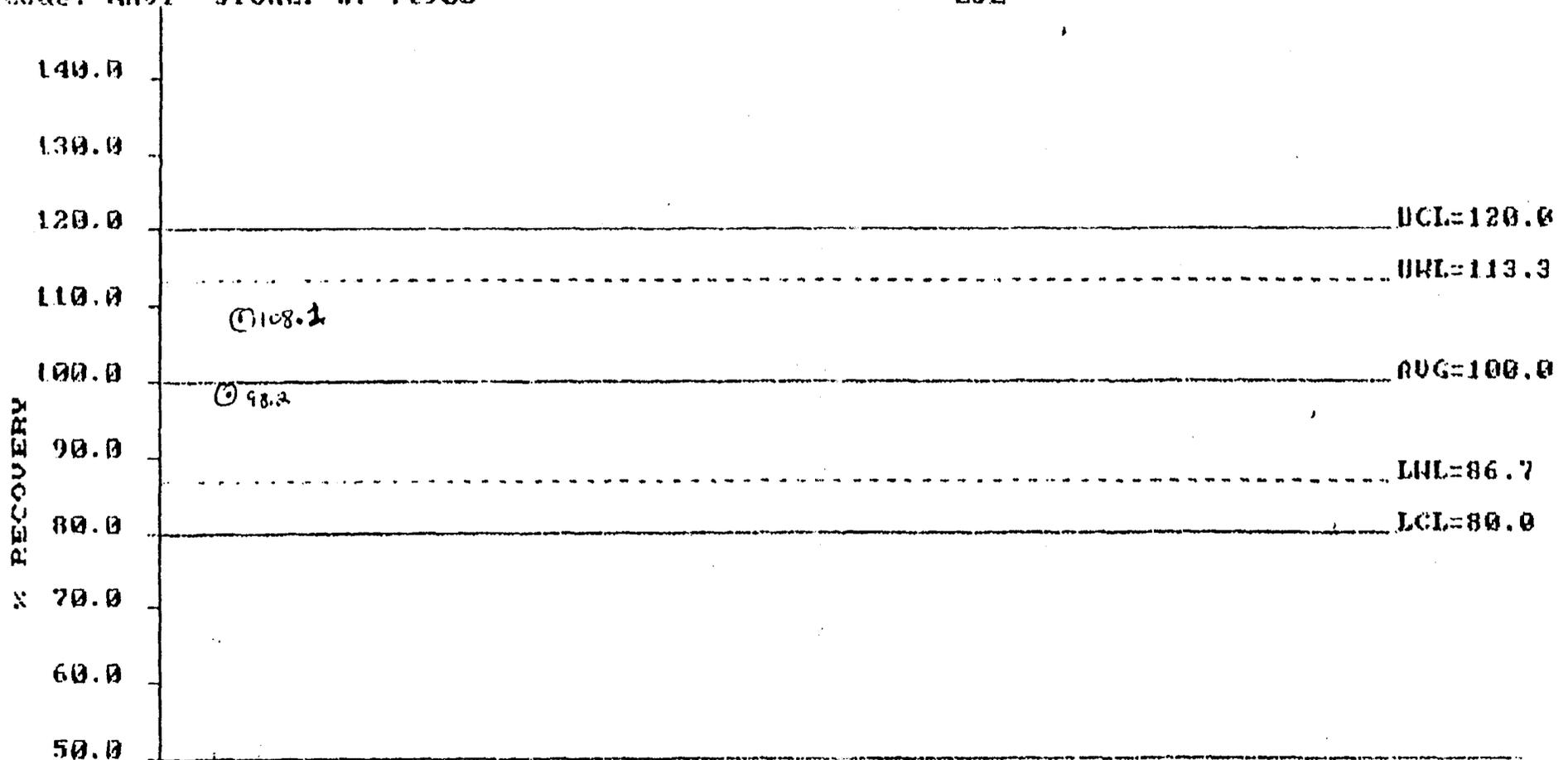


12/19/85

Accuracy MERCURY IIG/L

Code: NAVY STORET #: 71900

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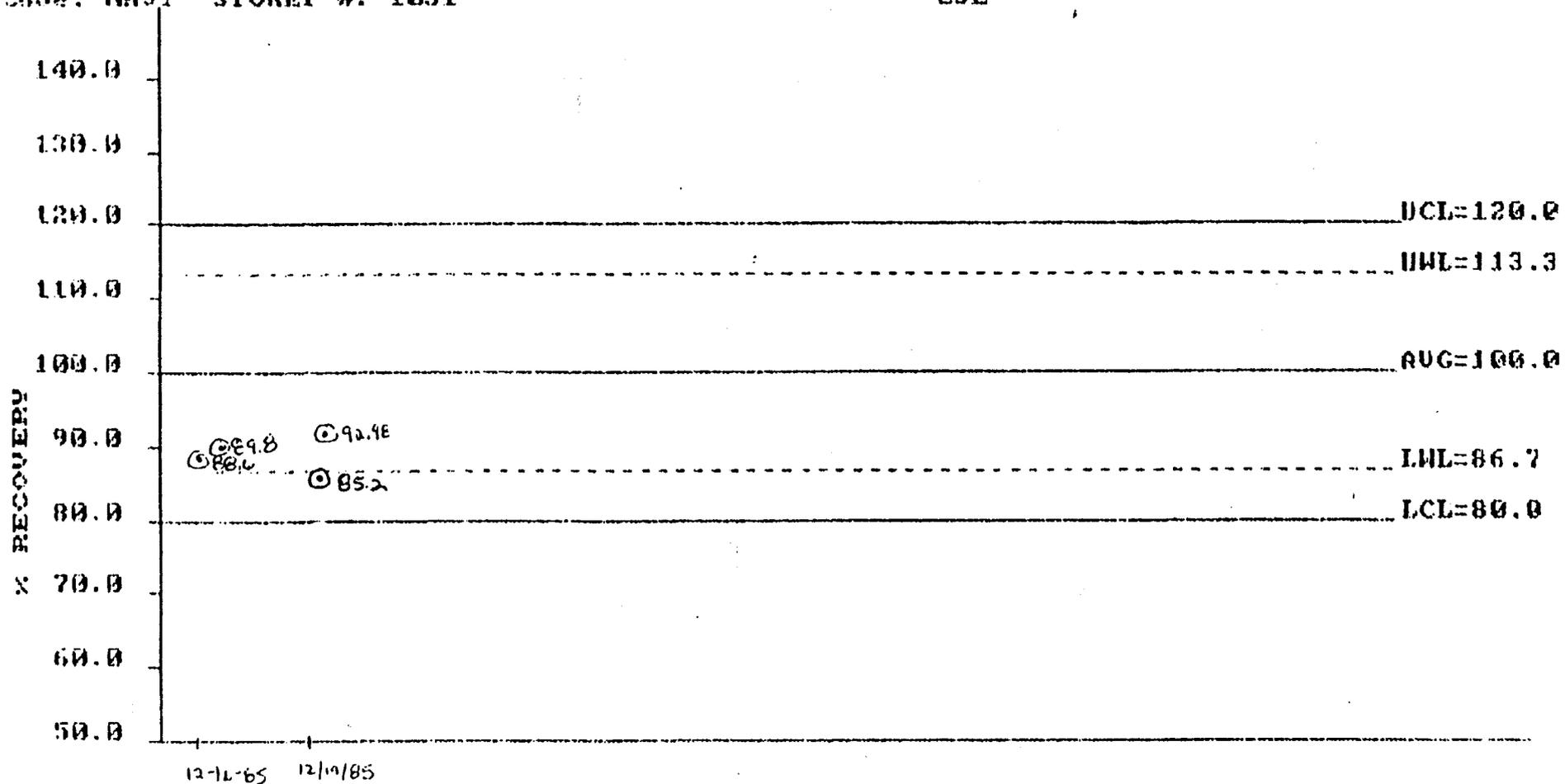


12-21-85

Accuracy LEAD UG/L

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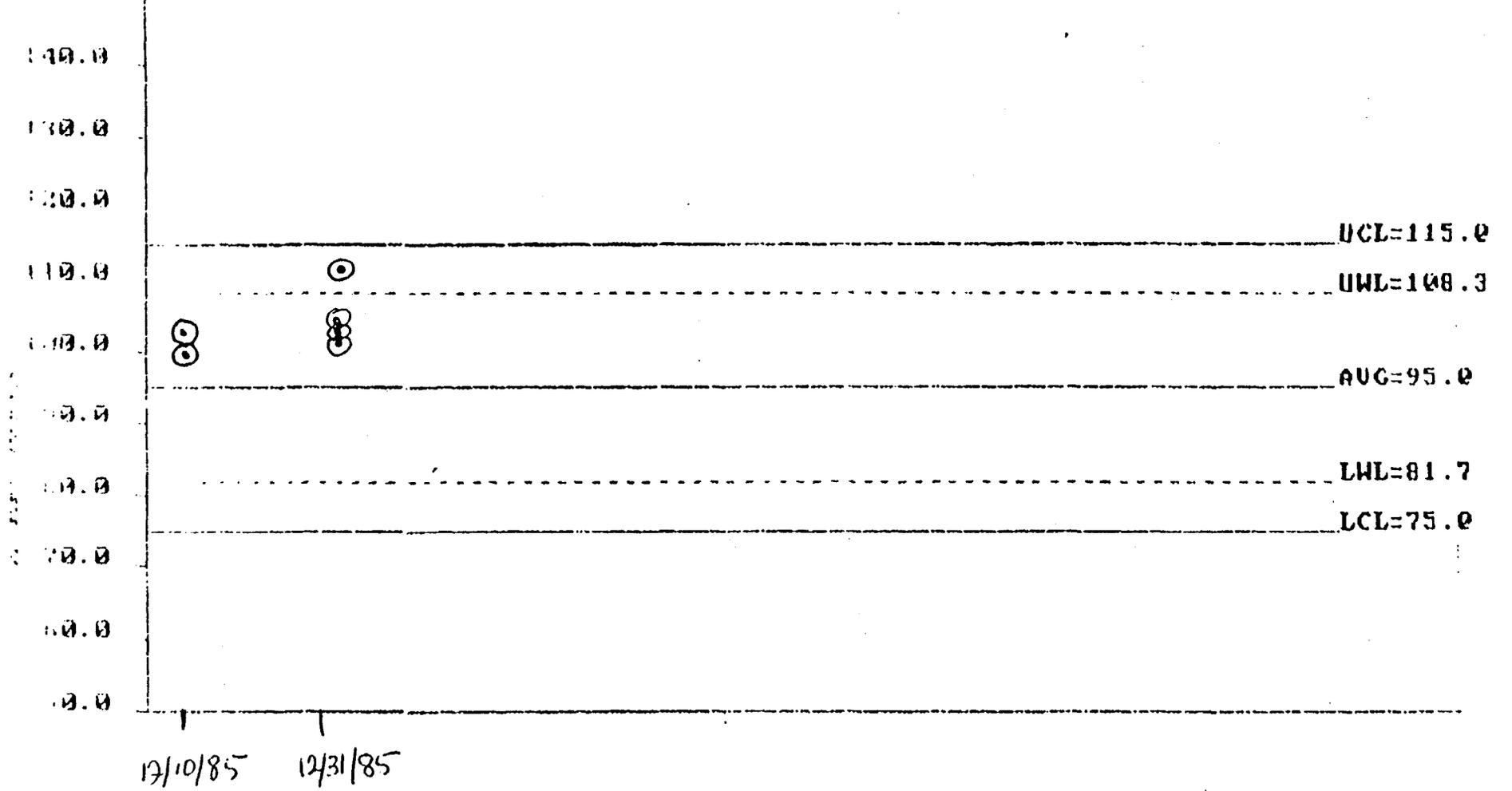
ESE



IMPACT OIL AND GREASE UG/G

NO: 1497 STORET #: 561

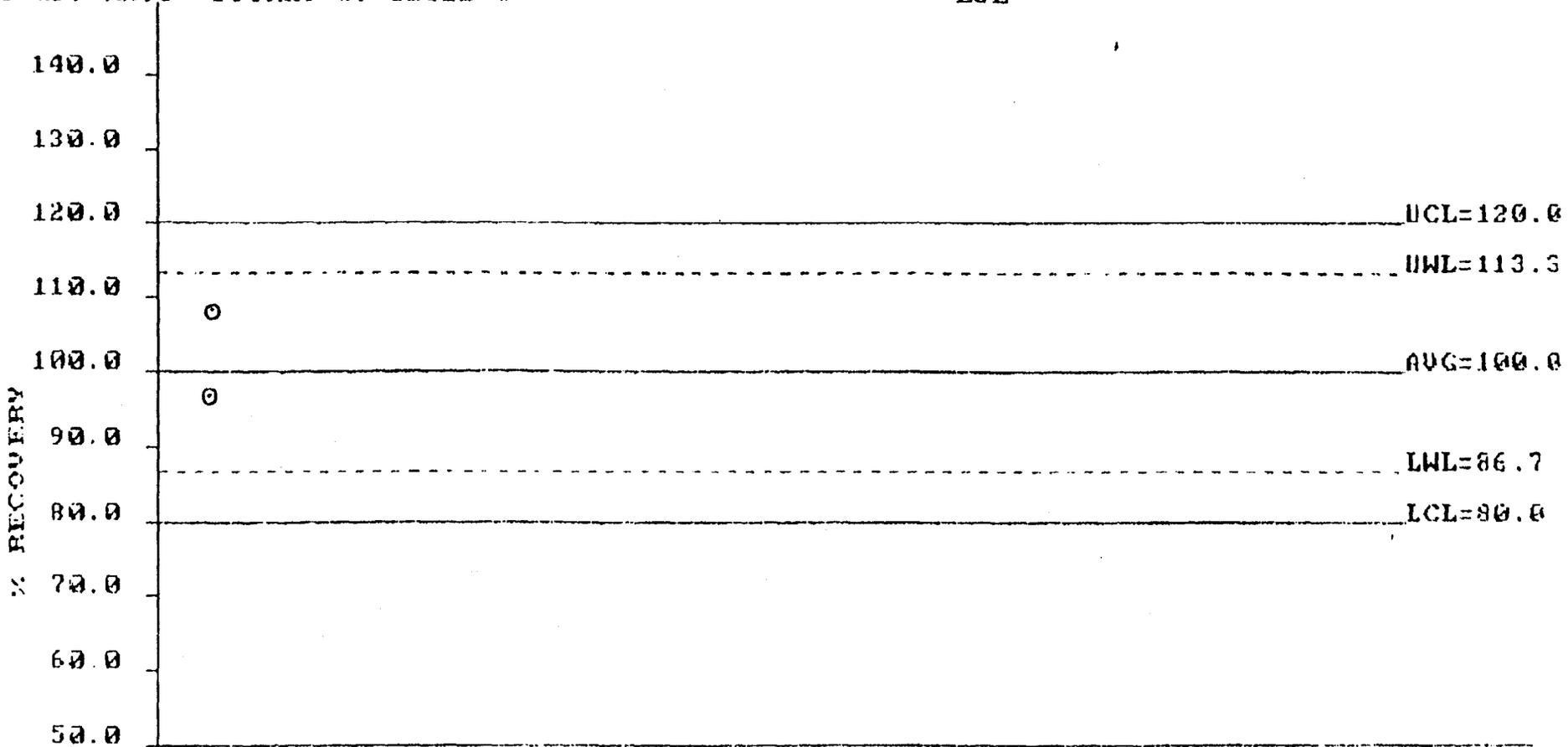
ESE



Accuracy EDB HG/L

Code: NAVY STORET #: 81522 0

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