Test Monitoring Center
6555 Penn Avenue
Pittsburgh, PA 15206-4489
(412) 365-1000

Memorandum: 01-141

Date: October 25, 2001

To: Zack Bishop, Chairman, Sequence VIII Surveillance Panel

From: Michael T. Kasimirsky

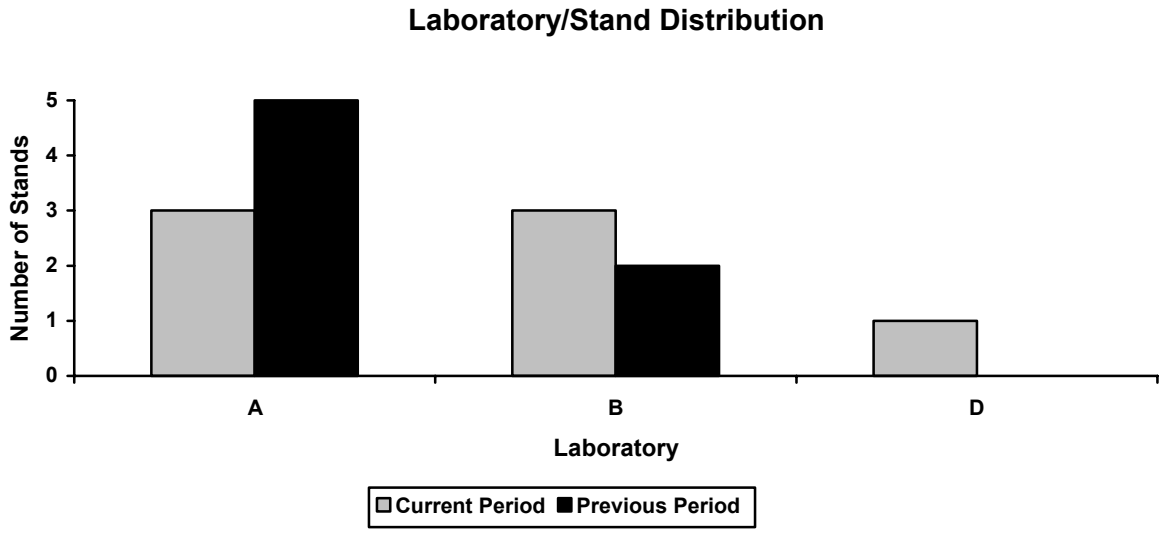
Subject: Sequence VIII Semiannual Report: April 1, 2001 to September 30, 2001

The following is a summary of Sequence VIII reference oil tests that were reported to the Test Monitoring Center during the period from April 1, 2001 to September 30, 2001.

Lab/Stand Distribution

	Reporting Data	Calibrated as of September 30, 2001
Number of Laboratories:	3	3
Number of Stand/Engine Combinations:	7	7

The following chart shows the laboratory/stand distribution:

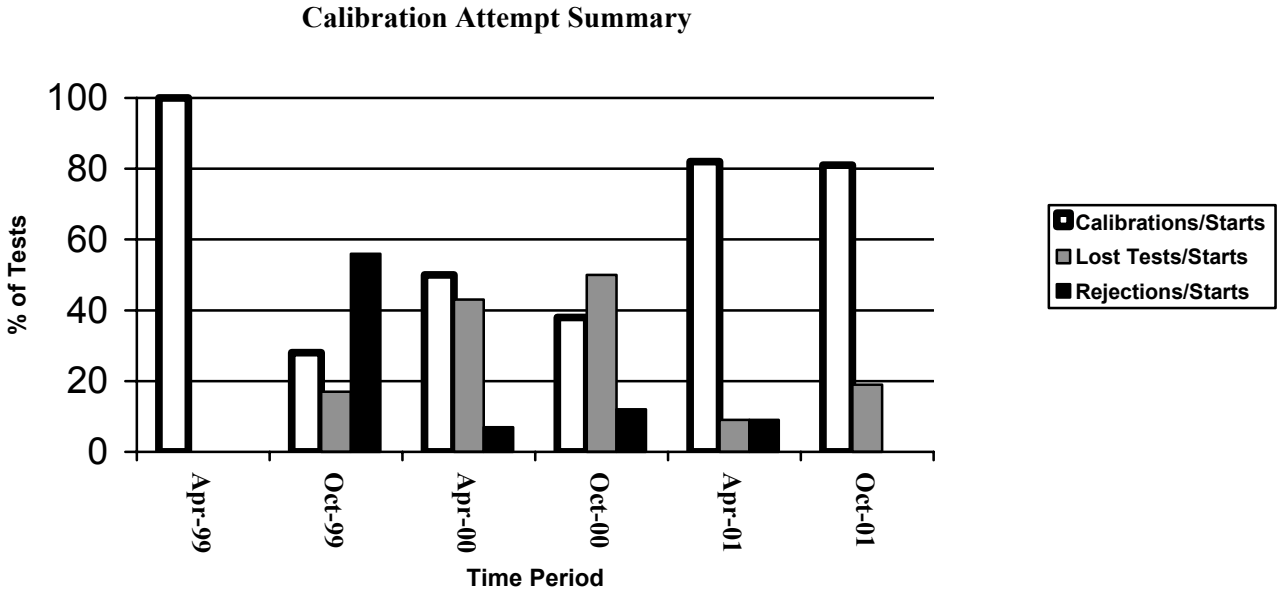


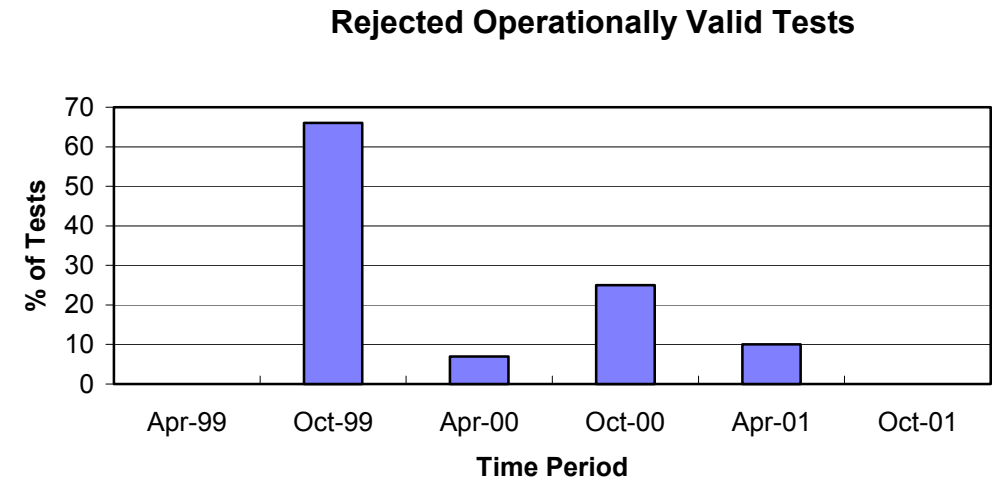
The following summarizes the status of the reference oil tests reported to the TMC:

Calibration Start Outcomes	TMC Validity Code	No. of Tests
Operationally and Statistically Acceptable	AC	13
Failed Acceptance Criteria	OC	0
Stand/Engine failed to successfully calibrate, engine abandoned and data pulled	MC	1
Operationally Invalid (Laboratory Judgment)	LC	2
Operationally Invalid (Laboratory & TMC Judgment)	RC	0
Aborted	XC	0
Total		16

Donated & Industry Support Outcomes	TMC Validity Code	No. of Tests
Shakedown Run	AG	1
Total		1

Calibrations per start, lost tests per start and rejection rates are summarized below:





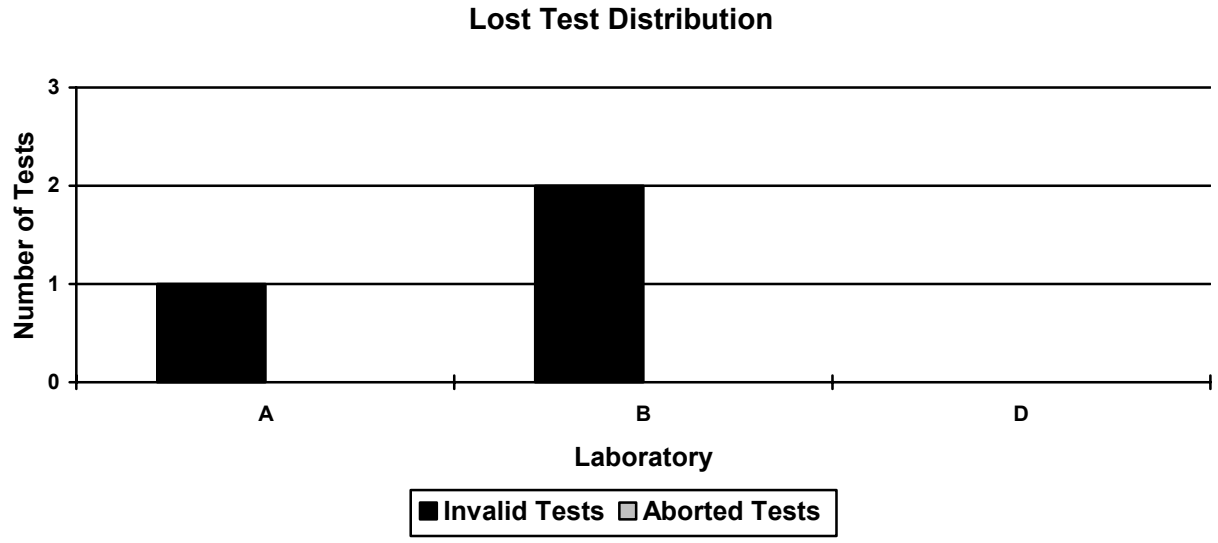
No tests failed this period. One test sounded an EWMA Lab Precision Warning on BWL. Subsequent testing cleared the alarm.

There were no LTMS Deviations this period. There have been no deviations from the LTMS since its introduction in 1999.

During the period, the TMC visited one laboratory. Any discrepancies noted during this visit were identified to the laboratory and corrective action is being taken.

Lost Test Summary

Three tests were lost this period due to mechanical bearing wear. Aborts and Operationally Invalid tests by laboratory are summarized with the following chart:



Information Letters

No Information Letters were issued this period.

Severity and Precision Analysis

Below is a summary of the average Δ/s, pooled standard deviation, and average Δ in reported units for the tests reported during this period. Also below is a summary of the average Δ/s value for all laboratories reporting data during this period.

Industry Severity Summary			
Parameter	Average Δ/s	Pooled standard deviation (degrees of freedom)	Average Δ, in reported units
BWL	-0.05	4.16 (df=11)	-0.2 mg
SVIS	0.21	0.088 (df=11)	0.02 cSt

Average Δ/s by Laboratory		
Lab	BWL	SVIS
A	0.28	0.19
B	-0.62	0.22
D	-0.38	0.27

Bearing Weight Loss (BWL)

The Industry BWL mean Δ/s is -0.05 mild for this report (see Figure 3). This equates to a shift of –0.2 mg in reported units. The pooled standard deviation for the period is 4.16 mg (see Figure 4). The industry has been within limits for the period for severity and experienced a single-point precision alarm (see Figure 1). Subsequent testing cleared the precision alarm.

Stripped Viscosity (SVIS)

The Industry SVIS mean Δ/s is 0.21 mild for this report (see Figure 5). This equates to a shift of 0.02 in reported units. The pooled standard deviation for the period is 0.088 cSt (see Figure 6). The industry has been within limits for both severity and precision for the period (see Figure 2).

Hardware

There were no hardware changes for the period.

Reference Oils

Oil	TMC Inventory, In gallons	TMC Inventory, In tests	Laboratory Inventory, in tests	Estimated Life
704-1	488	244	4	10+ years[1]
1006	46	23	5	3 months[1]
1006-2	5,342	2,671	6	3+ years[1]

[1] Multiple test area reference oil; total TMC inventory shown

MTK/mtk

Attachments

c: F. M. Farber, TMC
Sequence VIII Surveillance Panel
ftp://tmc.astm.cmri.cmu.edu/docs/gas/sequenceviii/semiannualreports/VIII-10-2001.pdf

List of Figures

- Figure 1 graphically presents the Industry control charts for BWL and also the CUSUM delta/s plot (by count in completion date order) of bearing weight loss for operationally valid tests.

- Figure 2 graphically presents the Industry control charts for SVIS and also the CUSUM delta/s plot (by count in completion date order) of bearing weight loss for operationally valid tests.

- Figure 3 graphically presents a historic perspective for BWL mean delta/s by report period.

- Figure 4 graphically presents a historic perspective for BWL pooled standard deviations by report period.

- Figure 5 graphically presents a historic perspective for SVIS mean delta/s by report period.

- Figure 6 graphically presents a historic perspective for SVIS pooled standard deviations by report period.

- Figure 7 graphically presents a comparison of Total Bearing Weight Loss (Delta/s) vs. the amount of lead content, in ppm, in the bearing storage oil.

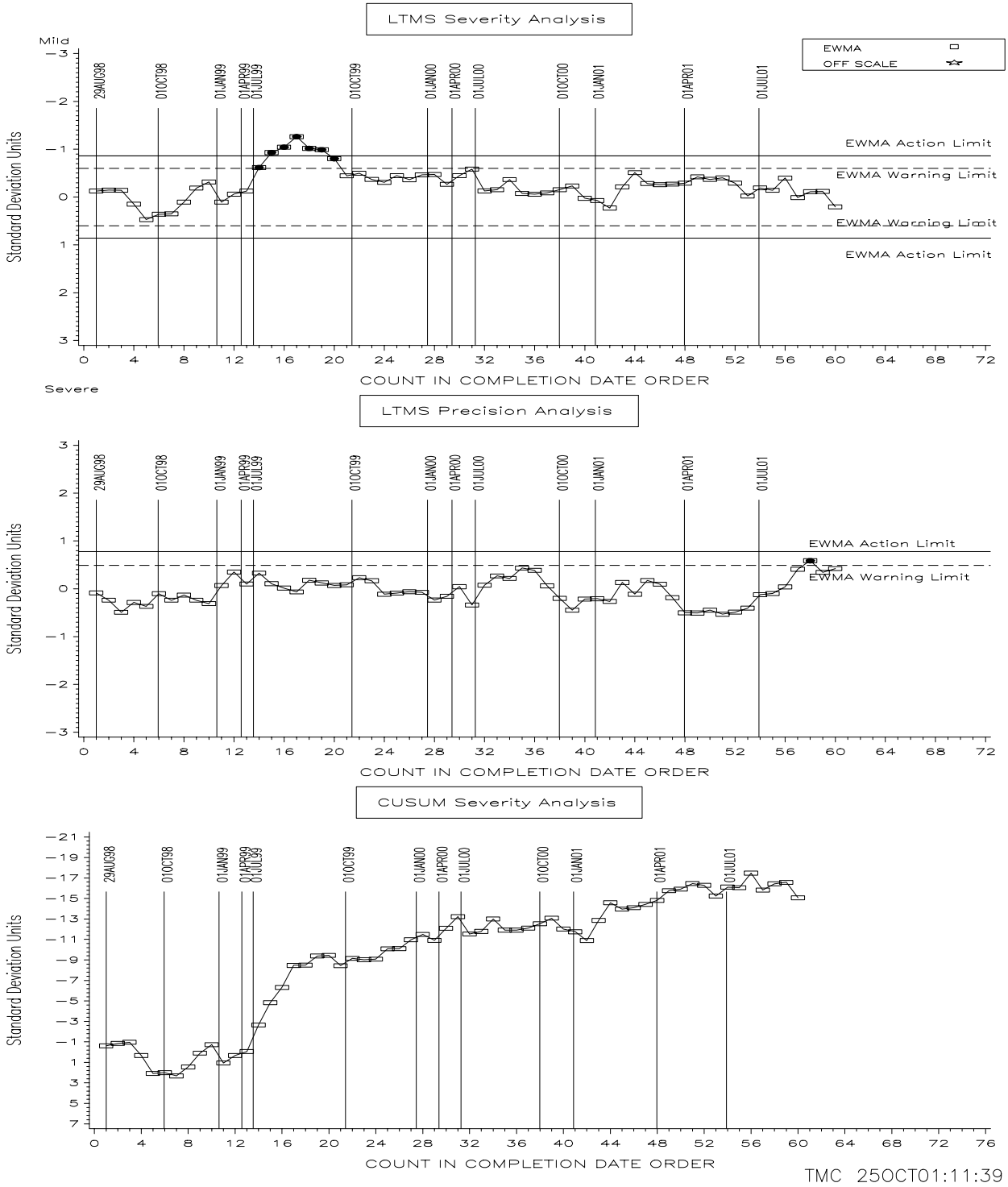
- Figure 8 graphically presents the amount of lead content, in ppm, in the bearing storage oil by completion date order (Sequence VIII and L-38 data combined).

- Figure 9 is the Sequence VIII Timeline, created to track changes in test hardware and operations.

SEQUENCE VIII INDUSTRY OPERATIONALLY VALID DATA

FINAL BEARING WEIGHT LOSS

Figure 1



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SEQUENCE VIII INDUSTRY OPERATIONALLY VALID DATA

STRIPPED VIS. @ 100 DEG C

Figure 2

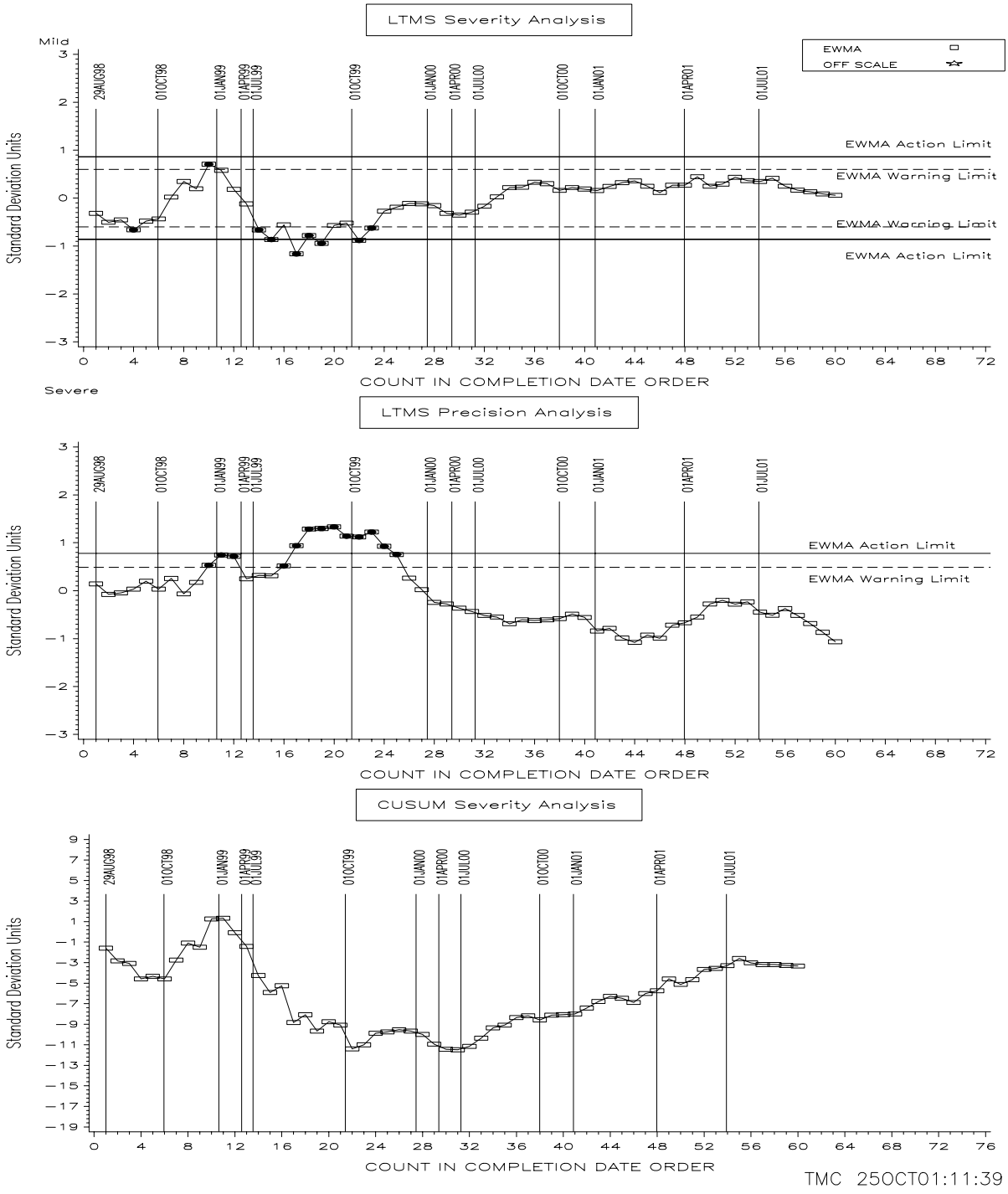

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Figure 3 - Sequence VIII Reference Oil Data
Bearing Weight Loss

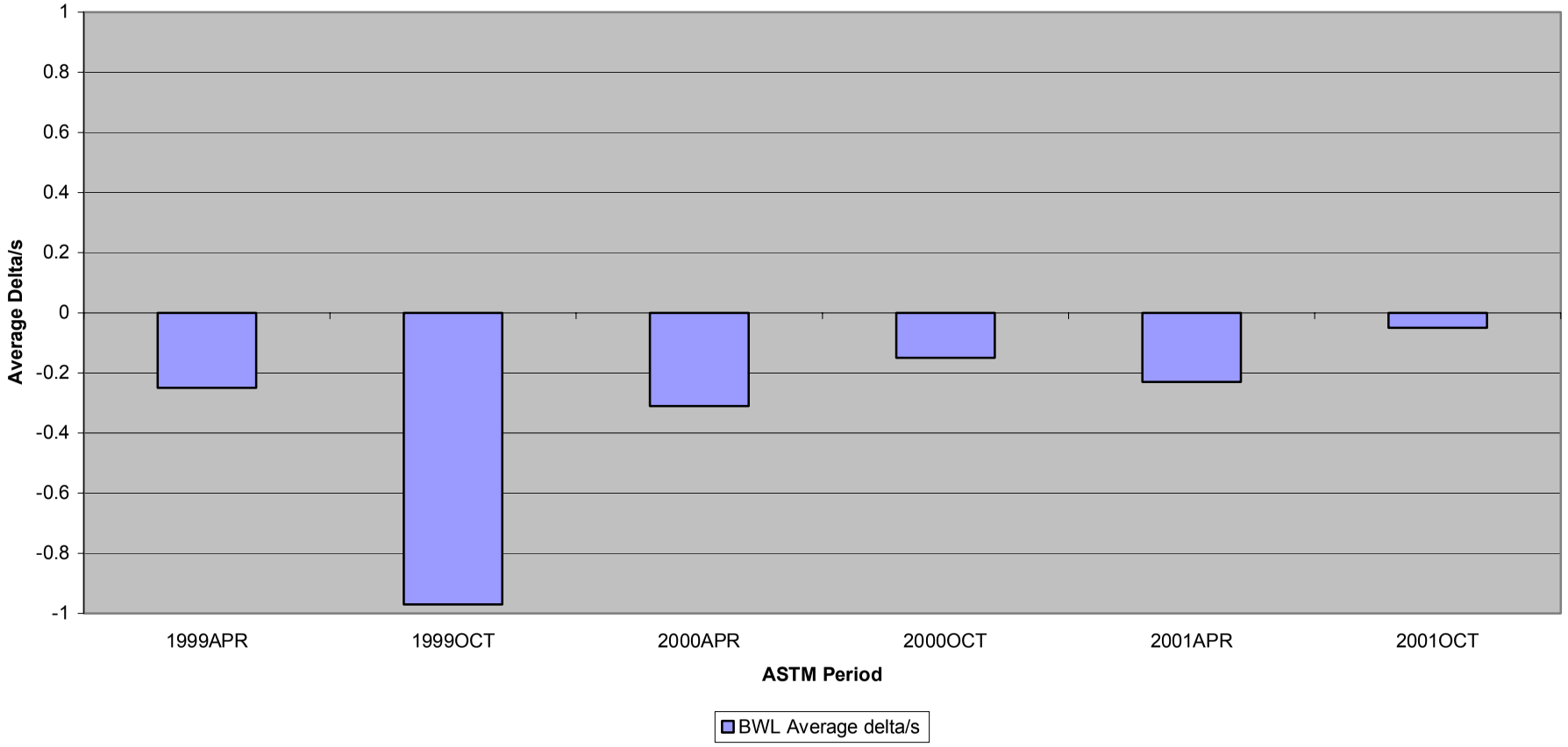


Figure 4 - Sequence VIII Reference Oil Data
Bearing Weight Loss

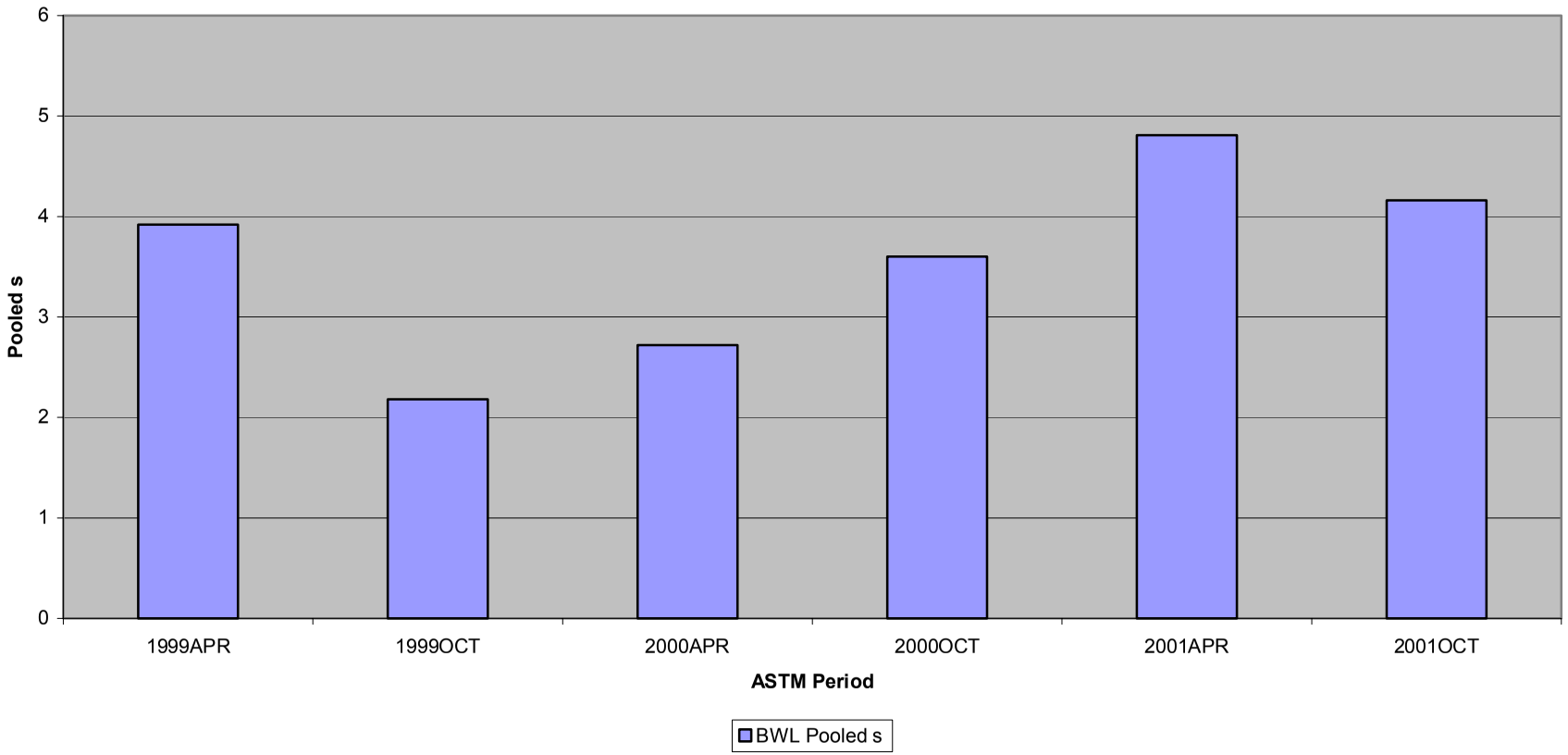


Figure 5 - Sequence VIII Reference Oil Data
Stripped Viscosity

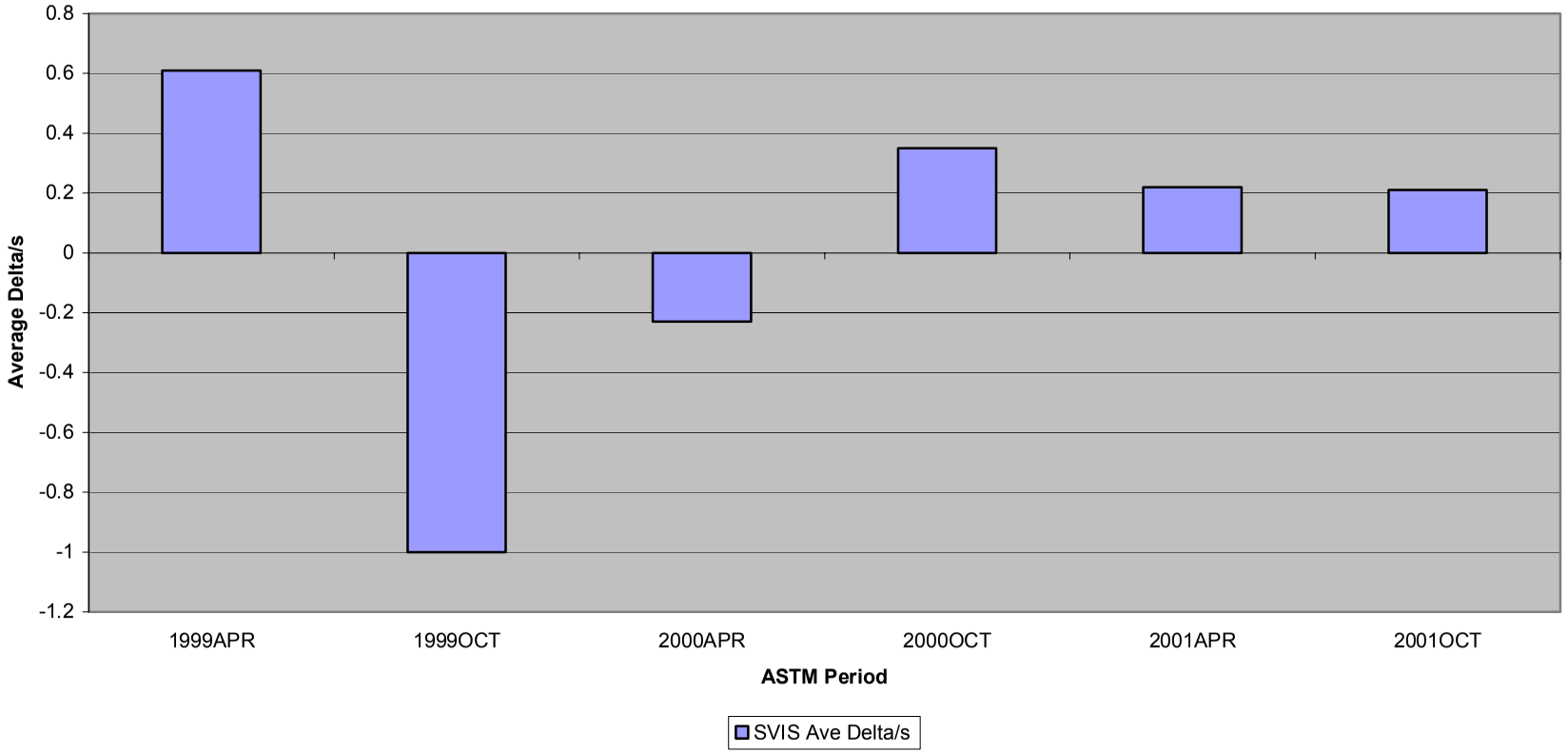
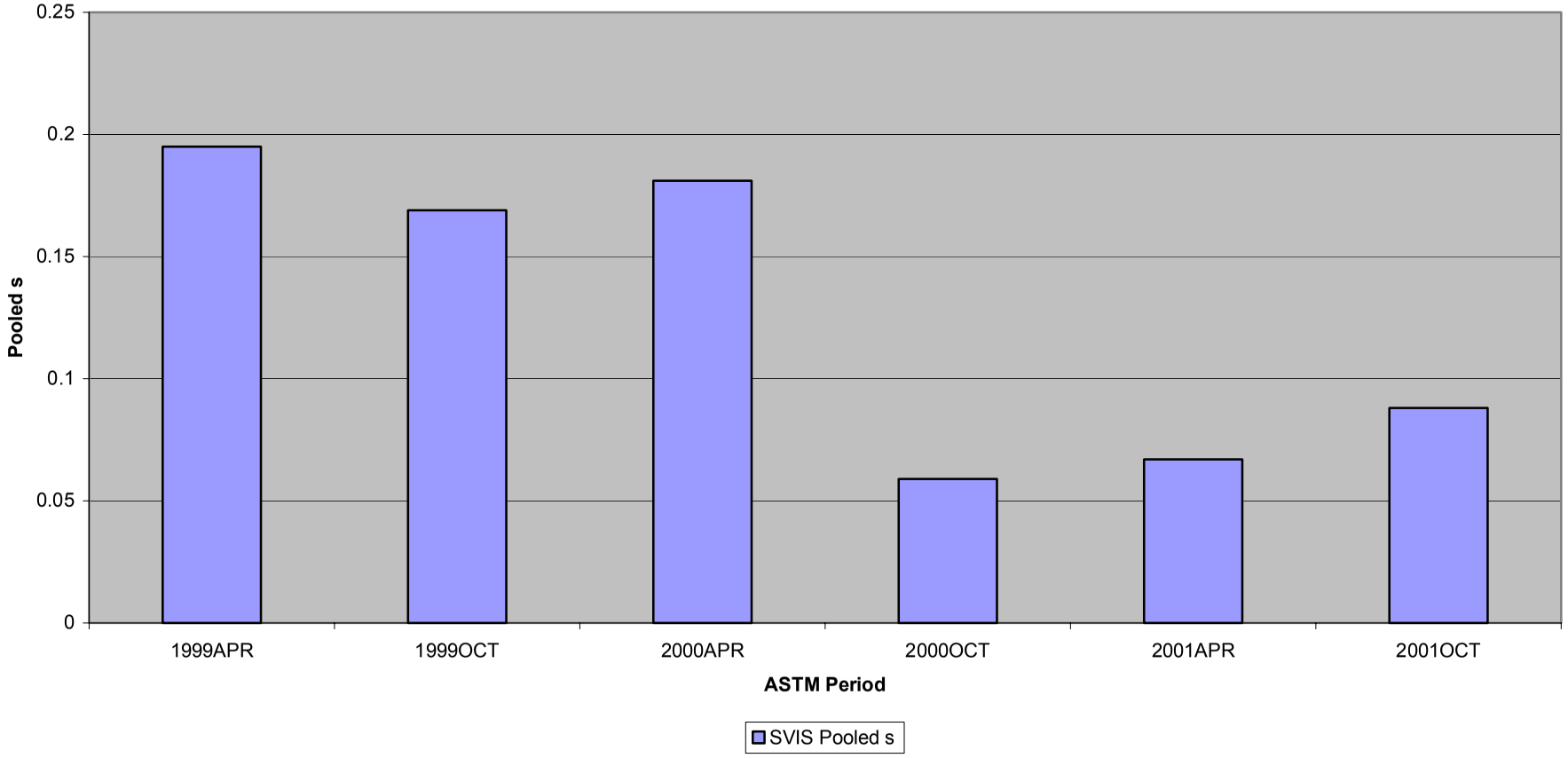


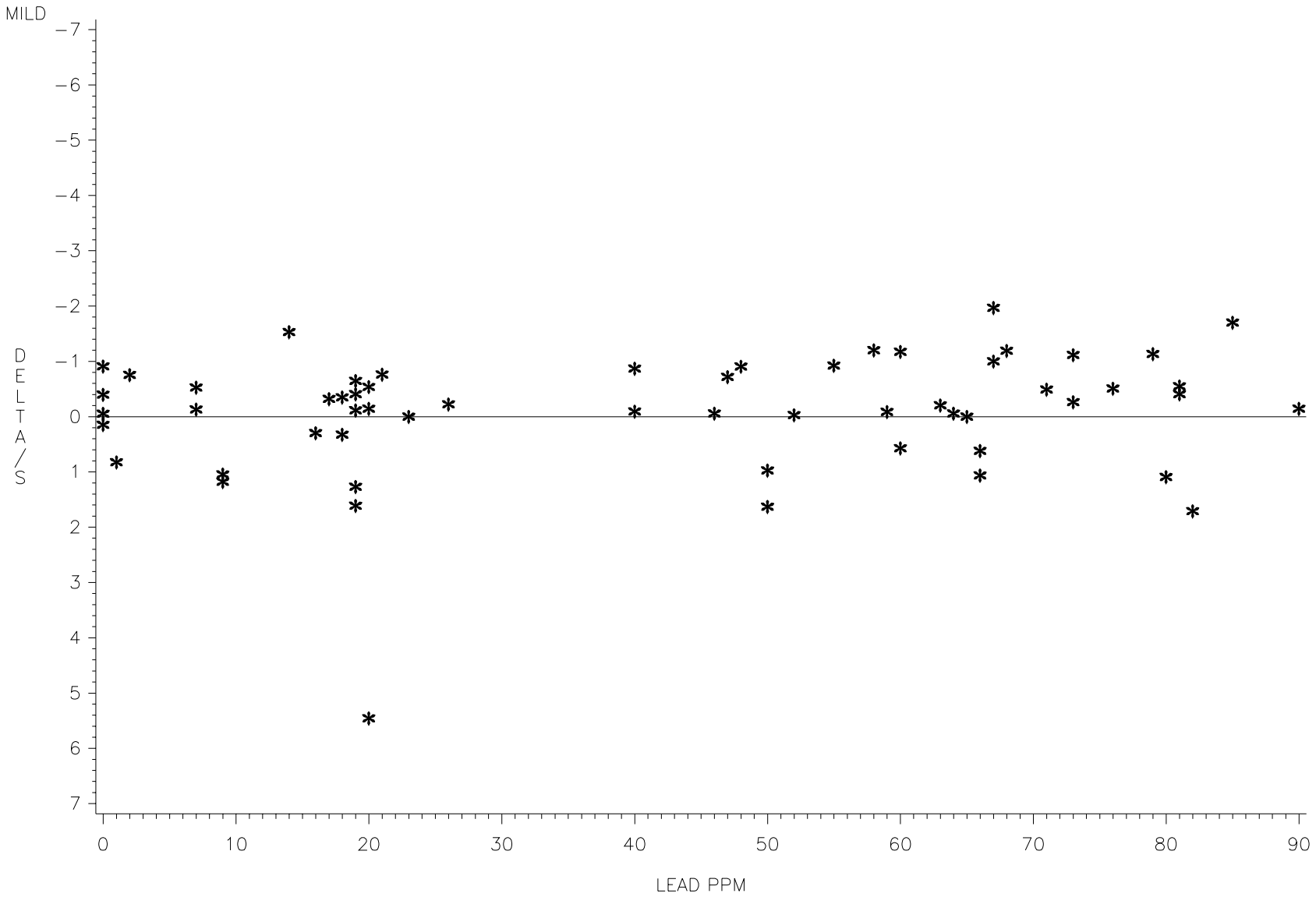
Figure 6 - Sequence VIII Reference Oil Data
Stripped Viscosity



SEQUENCE VIII TBWL DELTA/S vs LEAD PPM

FIGURE 7

September 1, 1998 through September 30, 2001



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(*) BEARING BATCH 11/93

BEARING OIL STORAGE LEAD PPM vs COMPLETION DATE

September 1, 1994 through September 30, 2001

FIGURE 8

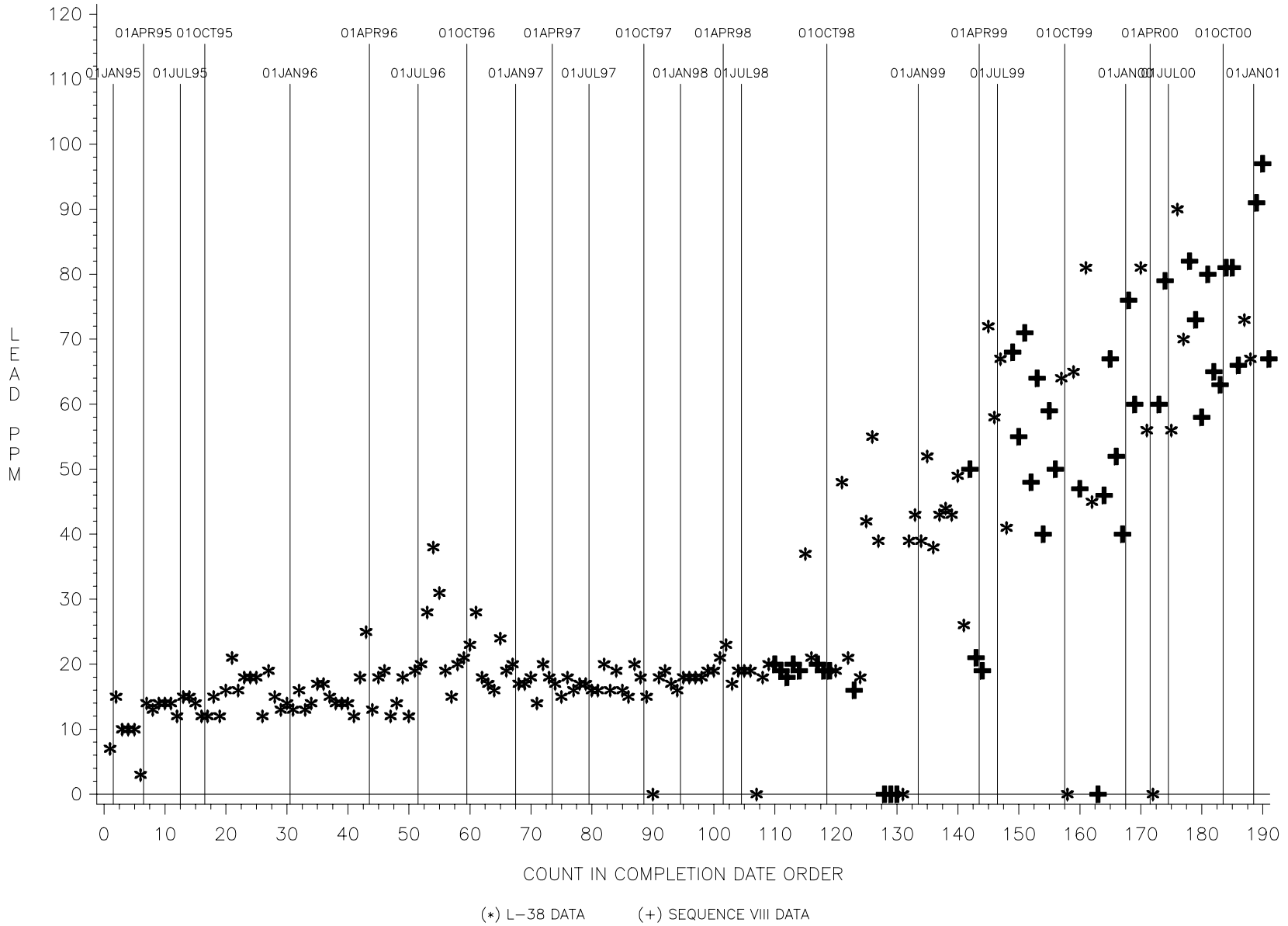

Figure 9 - Sequence VIII Timeline		
Date	**Topic**	**Information Letter**
4/16/1999	DRAFT 3.1 OF THE SEQUENCE VIII TEST PROCEDURE ISSUED	99-1
2/10/1999	REMOVAL OF RING BATCH REPORTING REQUIREMENTS	00-1
5/19/1999	NEW OIL FILTER (RAYCOR LFS-62) IMPLEMENTED INTO TESTING	00-1
11/16/1999	TEST ENGINEERING INC. NEW TEST PARTS SUPPLIER	00-1
1/28/2000	PISTON CLEANING PROCEDURE FOR REUSING PISTONS IN SEQUENCE VIII TESTING	00-1