Test Monitoring Center
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(412) 365-1000

MEMORANDUM: 01-148

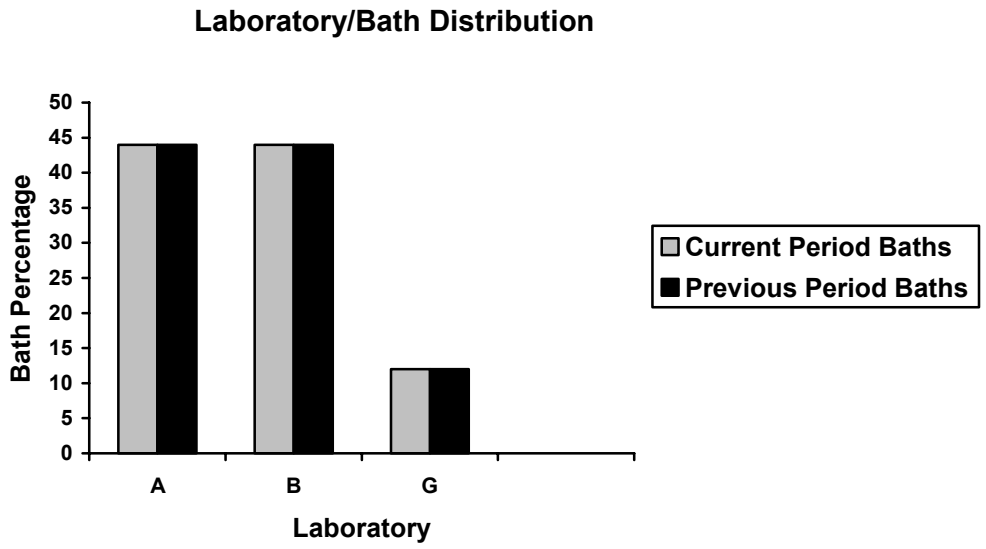
DATE: November 6, 2001

TO: Jerry Wang, Chairman, CBT Surveillance Panel

FROM: Jeff Clark

SUBJECT: High Temperature Corrosion Bench Test Status from April 1, 2001 through September 30, 2001

A total of 135 High Temperature Corrosion Bench Test results from nine baths in three labs were reported to the TMC during the period from April 1, 2001 through September 30, 2001. The following chart shows the distribution by laboratory.



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

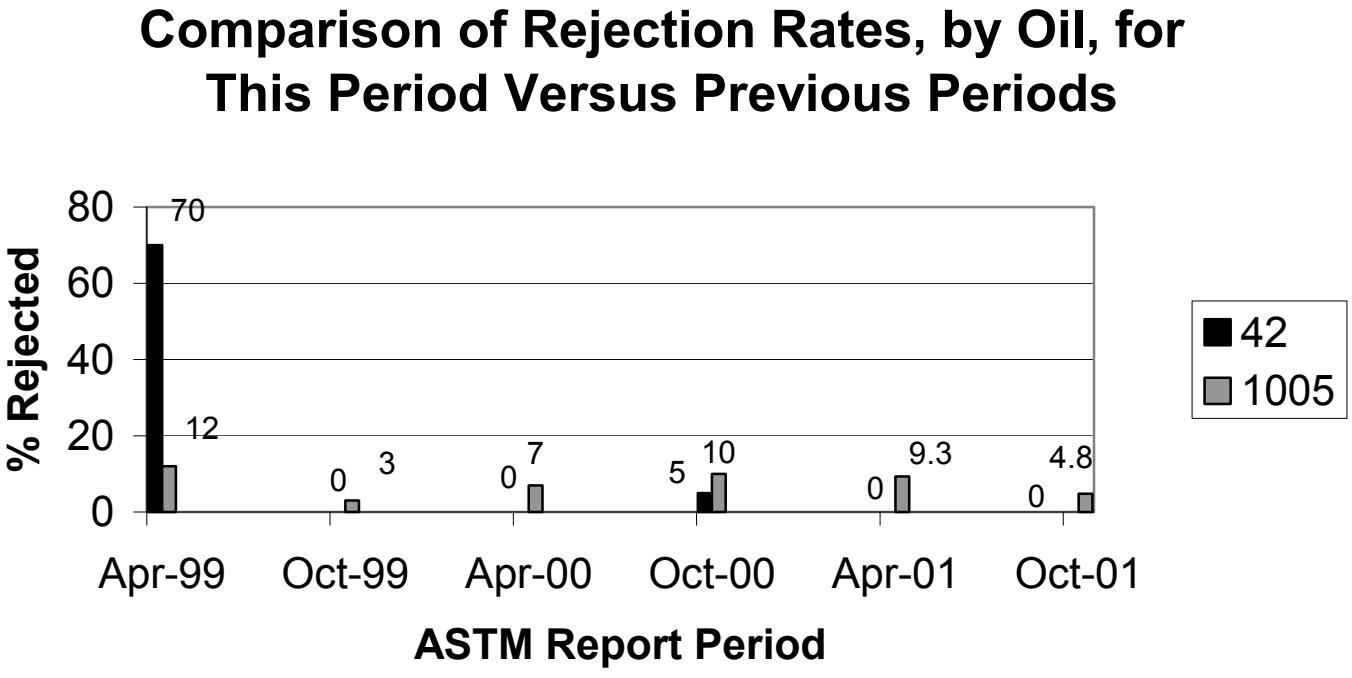
	TMC Validity Codes	No. of Tests
Operationally and Statistically Acceptable	AC	113
Failed Acceptance Criteria	OC	3
Operationally Invalid, Lab Judgement	LC	1
Aborted	XC	2
Coupon Batch Approval	AI	16
Total		135

One test was operationally invalid due to high bath temperature. One of the aborted tests was due to temperature control problems. No reason was given for the other aborted test.

The following tabulates the statistically unacceptable tests:

Reason	Number of Tests
Severe Copper, Severe Lead (Reference oil 1005)	1
Severe Copper (Reference oil 1005)	1
Mild Copper (Reference oil 1005)	1

A total of 54 operationally valid results run on reference oil 42 of which 0 failed (0% fail rate). A total of 62 operationally valid results were run on reference oil 1005 of which 3 failed (4.8% fail rate). The following presents the fail rate for this period with the fail rates of previous periods, by reference oil:

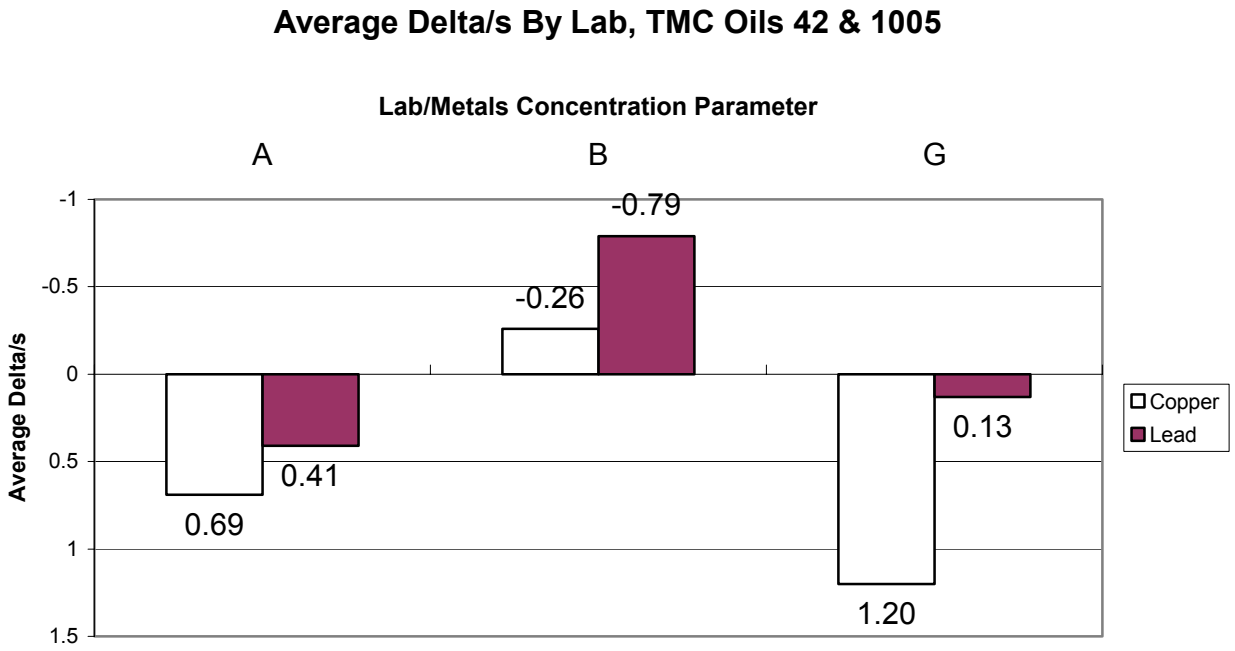


Industry Severity and Precision

The current severity for the change in metals concentration parameters on all operationally valid tests, for the current and previous periods, is tabulated below.

Period	n	Δ Cu Mean Δ/s	Δ Pb Mean Δ/s
4/1/01 through 10/1/01	116	0.28	-0.26
10/1/00 through 3/31/01	87	0.02	-0.29
4/1/00 through 9/30/00	99	-0.05	-0.24
10/1/99 through 3/31/00	84	-0.40	-0.27
4/1/99 through 9/30/99	63	-0.16	0.16

Figures 1 and 2 plot the Summation delta/s from target for both change in copper and change in lead, respectively. Figure 1 shows copper change trending severe for the period. Figure 2 shows lead change trending mild during the period. Laboratory severity for both reference oils 1005 and 42 is depicted below.



Industry Severity by Reference Oil

The industry performance (severity and precision) for reference oil 42, comparing the current period with the previous ASTM report periods, is tabulated below. Values in parentheses are in transformed (natural log) units.

Period	n	Δ Cu mean	Δ Cu S	Δ Cu Mean Δ/s	Δ Pb mean	Δ Pb s	Δ Pb Mean Δ/s
4/1/01 to 9/30/01	54	38.0 (3.638)	(0.293)	0.24	102.0	15.56	-0.25
10/1/00 to 3/31/01	44	25.4 (3.236)	(0.263)	0.02	97.75	12.51	-0.42
4/1/00 to 9/30/00	48	19.7 (2.981)	(0.424)	-0.42	104.9	25.10	-0.12
10/1/99 to 3/31/00	42	20.1 (2.999)	(0.273)	-0.39	104.1	16.03	-0.16
4/1/99 to 9/30/99	32	24.3 (3.189)	(0.264)	-0.06	115.6	11.68	0.33

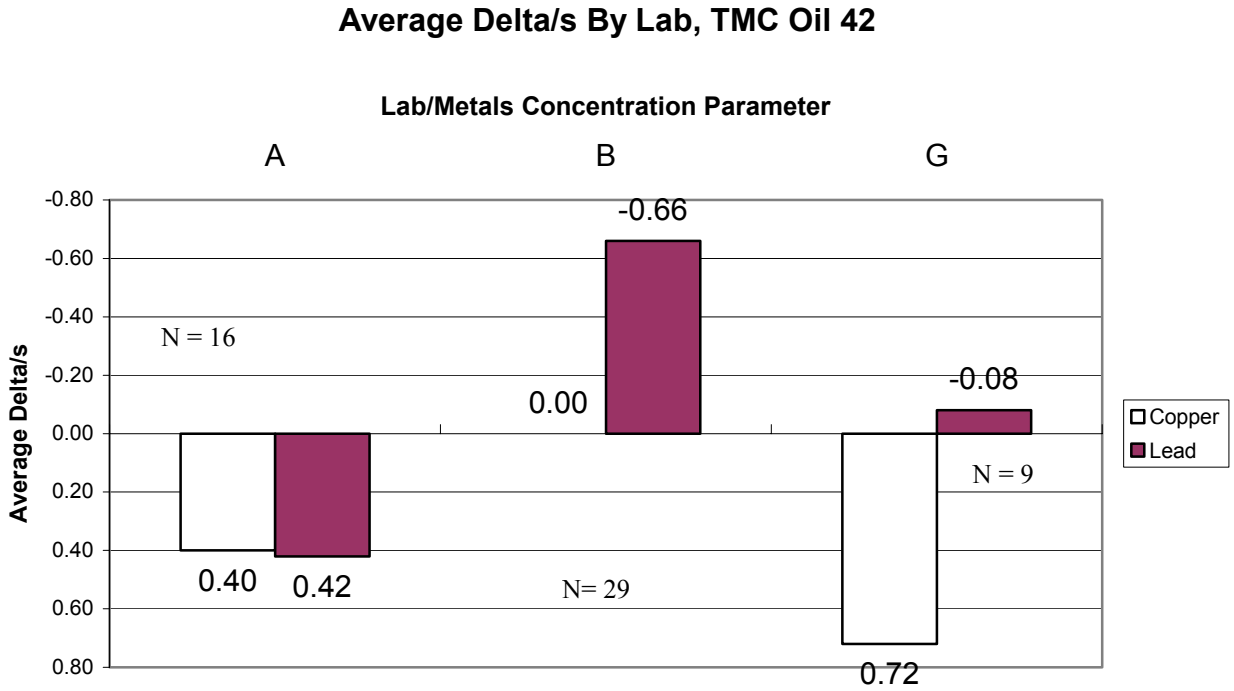
The industry performance (severity and precision) for reference oil 1005, comparing the current period with the previous ASTM report periods, is tabulated below. Values in parentheses are in transformed (natural log) units.

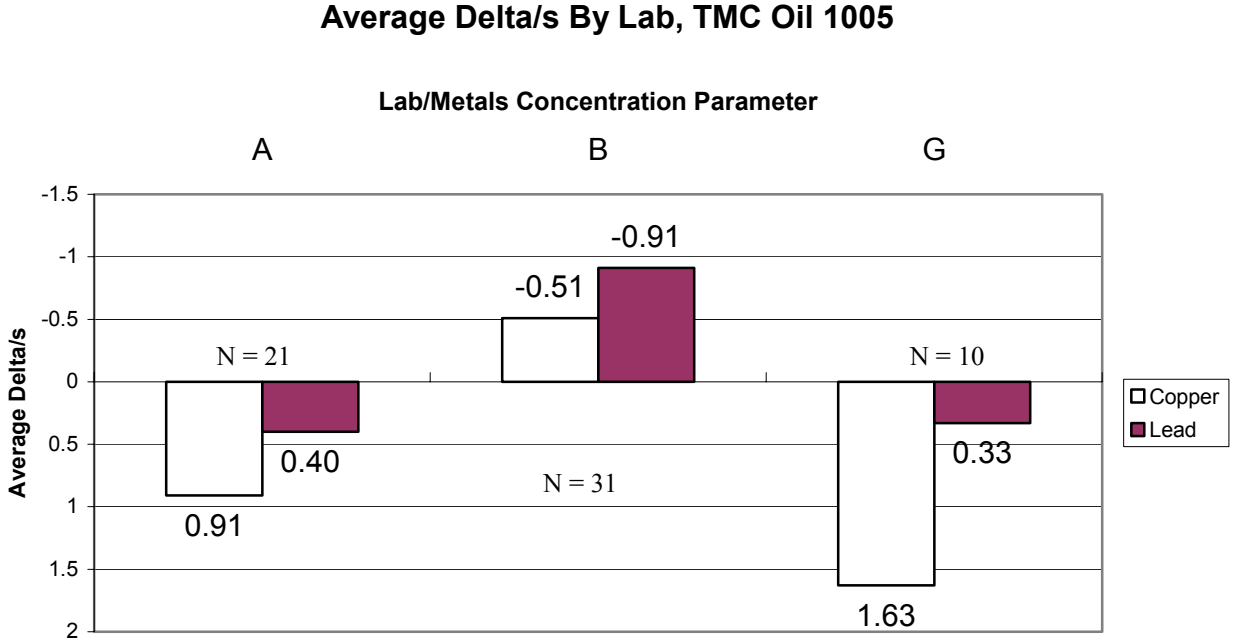
Period	n	Δ Cu mean	Δ Cu S	Δ Cu Mean Δ/s	Δ Pb mean	Δ Pb s	Δ Pb Mean Δ/s
4/1/01 to 9/30/01	62	10.0 (2.300)	(0.151)	0.31	28.8	10.1	-0.27
10/1/00 to 3/31/01	43	9.6 (2.258)	(0.190)	0.02	30.3	33.5	-0.15
4/1/00 to 9/30/00	51	9.9 (2.297)	(0.380)	0.29	27.7	12.27	-0.35
10/1/99 to 3/31/00	42	9.0 (2.197)	(0.154)	-0.42	27.2	6.76	-0.39
4/1/99 to 9/30/99	31	9.2 (2.219)	(0.128)	-0.26	32.1	12.01	-0.1

Precision compares well with historical rates for all other oils/parameters. For this period, for both oils, copper was severe and lead was mild.

Laboratory Severity by Oil

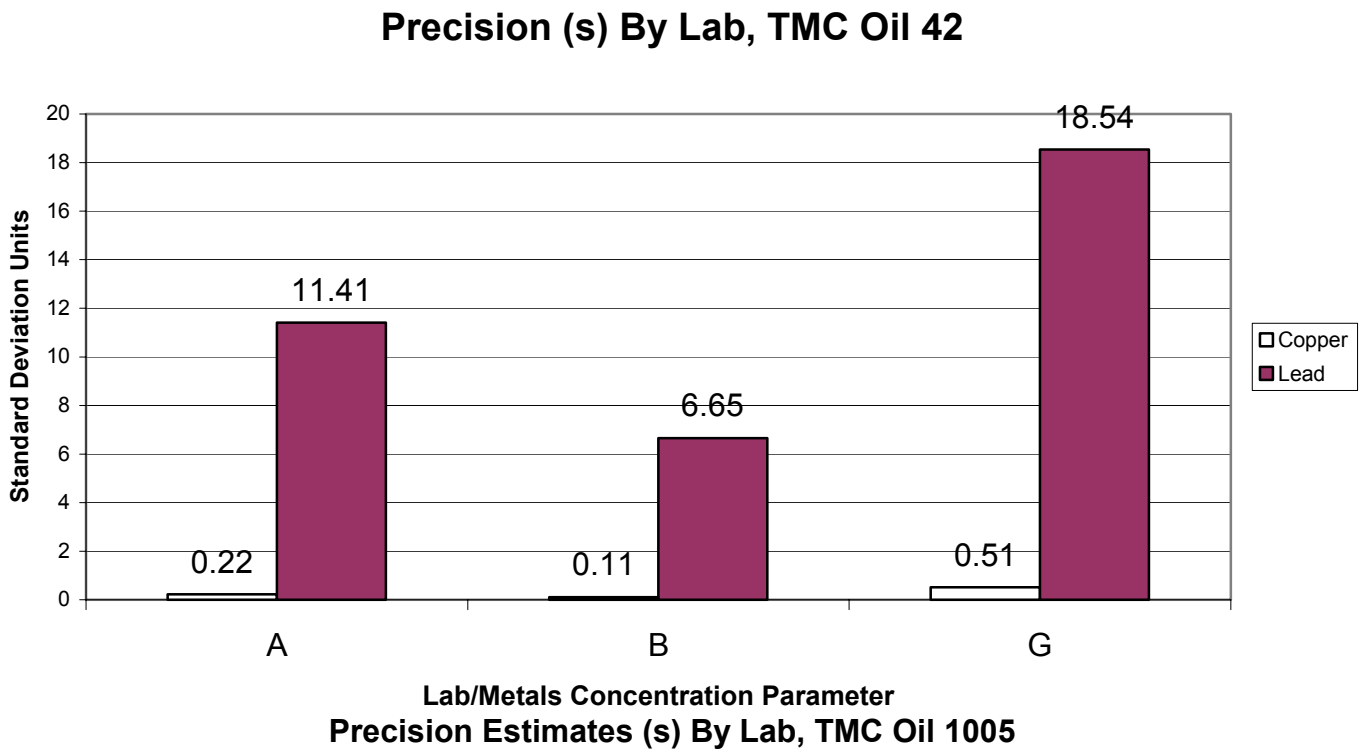
Severity, for both oils, is plotted by laboratory on the following page.

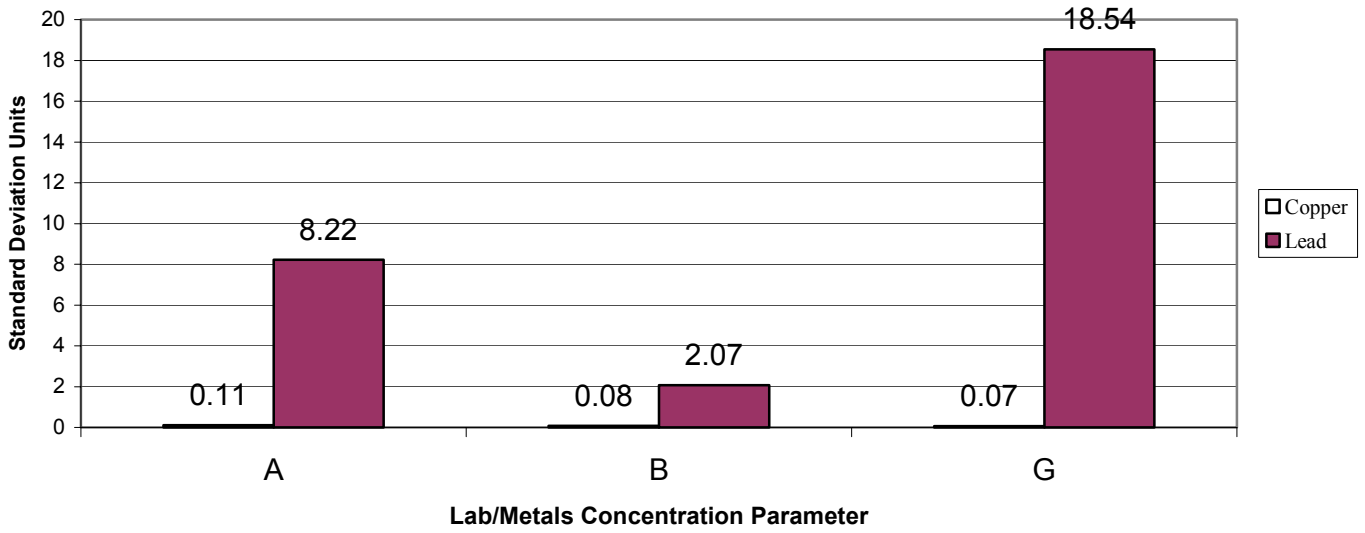




The charts show some laboratory differences in severity. Lab A shows severe results on both oils, while lab B shows mild results with exception of copper on oil 42. Lab G shows severe results with the exception of lead on oil 41.

The following plots show the precision for this period, by lab and oil.





Copper standard deviations were calculated in transformed (natural log, ln) units. Lead variability was significantly higher in lab G, for both oils. Copper variability for oil 42 is also higher at lab G. Lab B shows significantly lower variability for lead on both oils.

Reference Oil Supply

Reference oil quantities available at the laboratories and TMC, as well as estimated life of these oils, is tabulated below.

Oil	TMC Inventory, in gallons	TMC Inventory, in tests	Laboratory Inventory, in tests	Estimated life
42	11.77	376	36	4 years
1005	78.5	2512	26	20+ years

Information Letters

No information letters were issued this report period.

Additional Information

The HTCBT database is available from the TMC's website. If you are uncertain how to access this data, contact the TMC.

JAC/jac/mem-0148.jac.doc

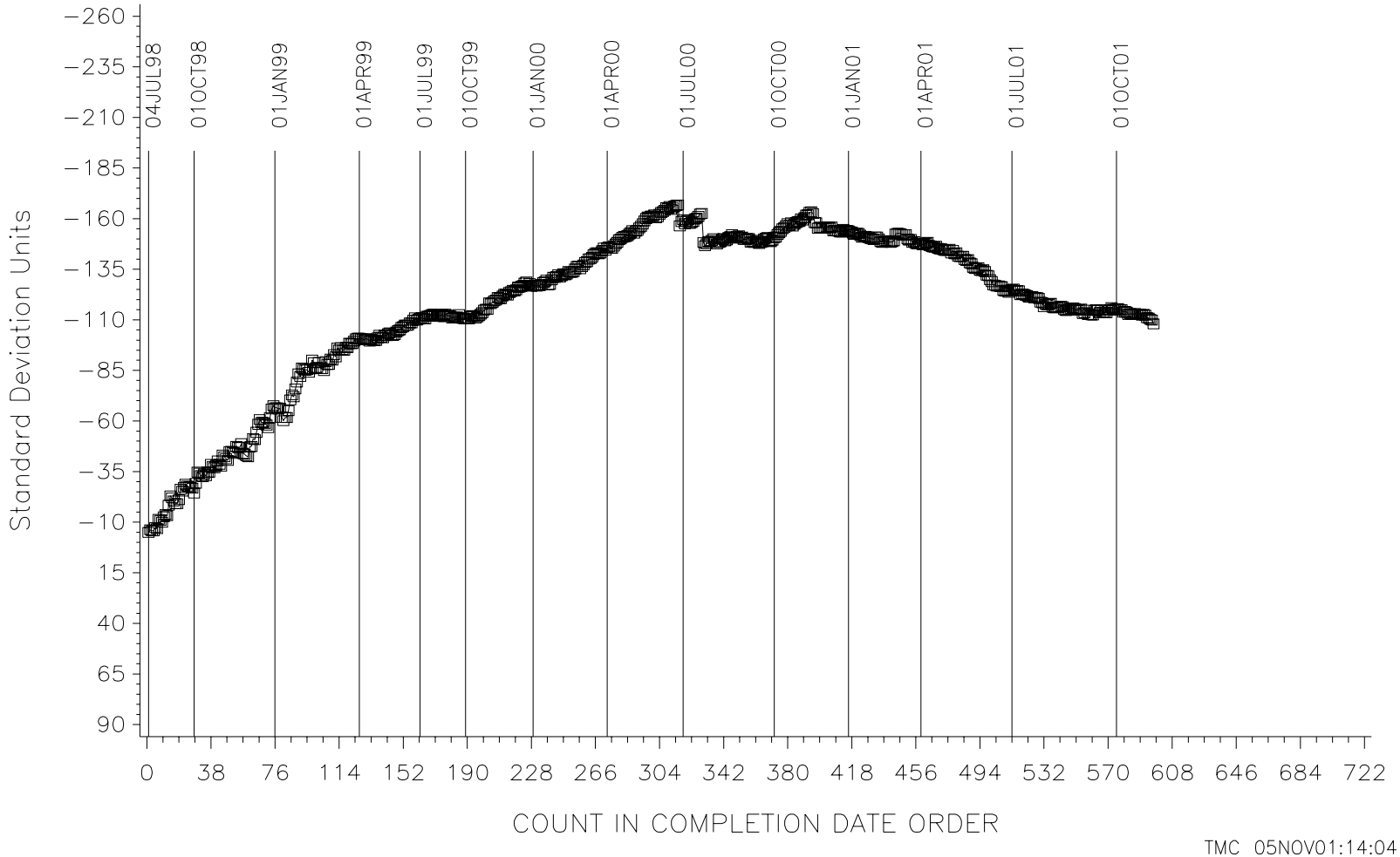
c: HTCBT Surveillance Panel
ftp://www.tmc.astm.cmri.cmu.edu/docs/bench/htcbt/semiannualreports/htcbt-10-2001.pdf
J. L. Zalar
F. M. Farber

HIGH TEMP CBT INDUSTRY OPERATIONALLY VALID DATA

FIGURE 1

REF. COPPER CHANGE IN CONCENTRATION [<](ppm)

CUSUM Severity Analysis



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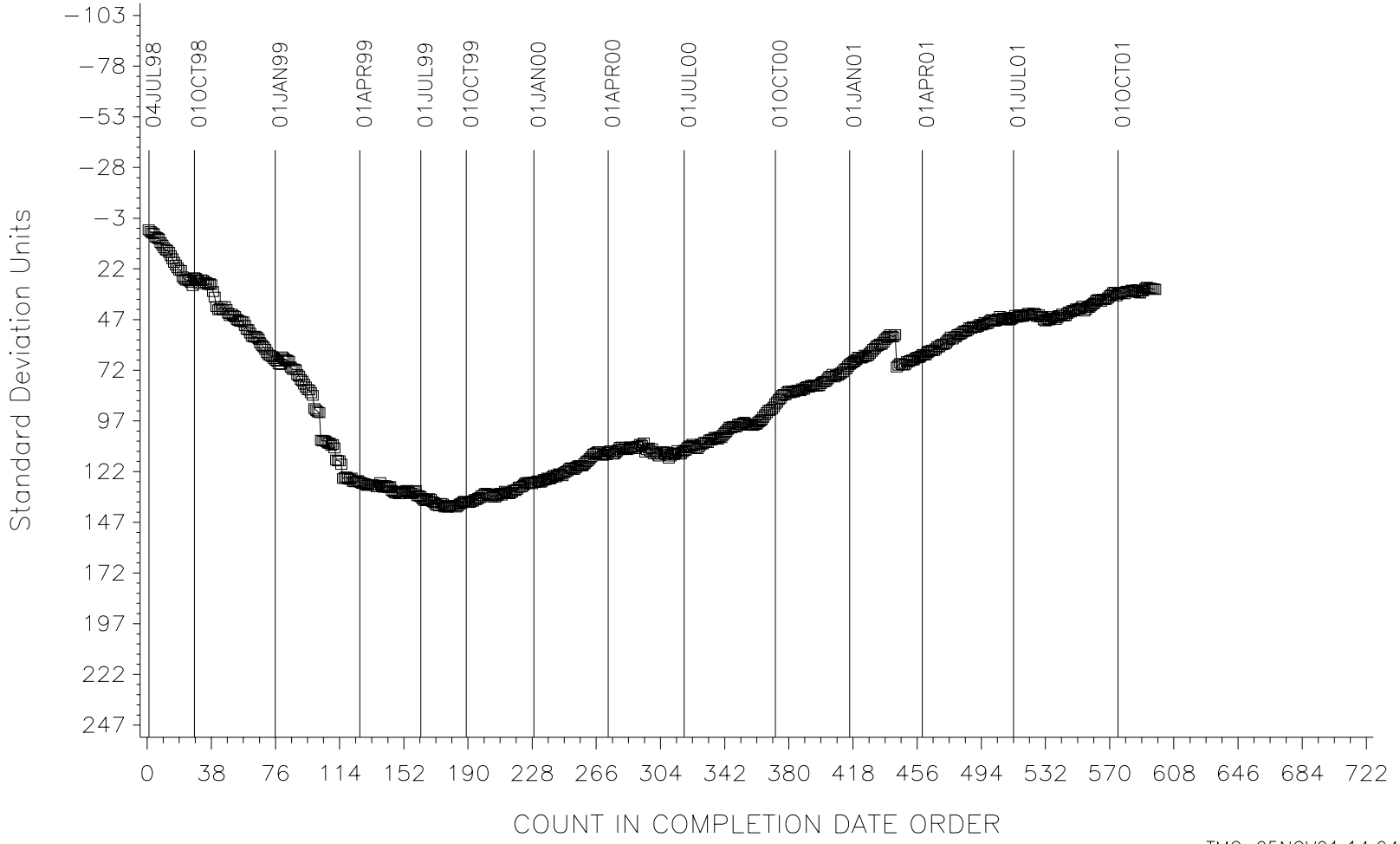
HIGH TEMP CBT INDUSTRY OPERATIONALLY VALID DATA

FIGURE 2

REF. LEAD CHANGE IN CONCENTRATION [<](ppm)

CUSUM Severity Analysis



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