Test Monitoring Center
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MEMORANDUM: 02-032

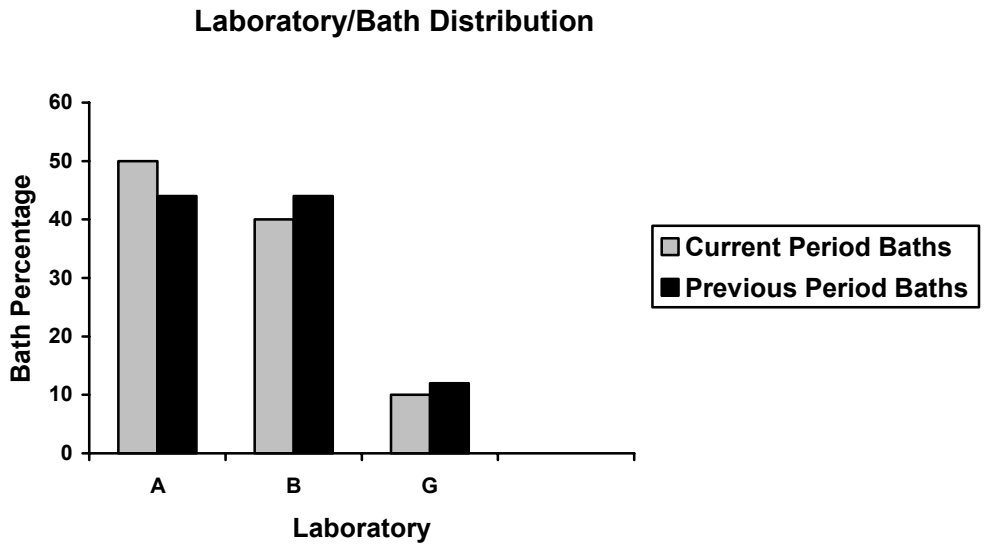
DATE: May 6, 2002

TO: Jerry Wang, Chairman, CBT Surveillance Panel

FROM: Jeff Clark

SUBJECT: High Temperature Corrosion Bench Test Status from October 1, 2001 through March 31, 2002

A total of 144 High Temperature Corrosion Bench Test results from ten baths in three labs were reported to the TMC during the period from October 1, 2001 through March 31, 2002. The following chart shows the distribution by laboratory.



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

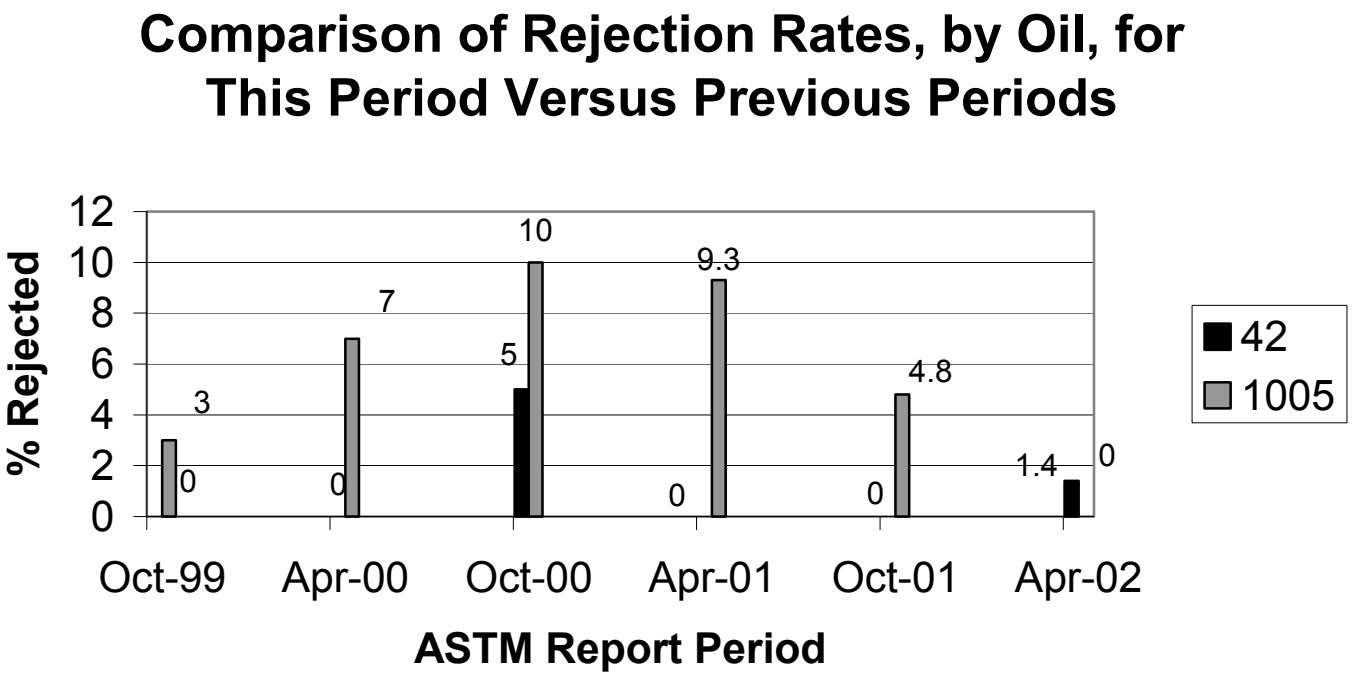
	TMC Validity Codes	No. of Tests
Operationally and Statistically Acceptable	AC	136
Failed Acceptance Criteria	OC	1
Operationally Invalid, Lab Judgement	LC	4
Aborted	XC	3
Total		144

Two tests were operationally invalid due to air source depletion. One test was operationally invalid due to high bath temperature and one test ran beyond the standard test length. One of the aborted tests was due to bath flooding and two were due to power failures.

The following tabulates the statistically unacceptable tests:

Reason	Number of Tests
Severe Copper, Severe Lead (Reference oil 1005)	0
Severe Copper (Reference oil 42)	1
Mild Copper (Reference oil 1005)	0

A total of 71 operationally valid results were run on reference oil 42 of which 1 failed (1.4% fail rate). A total of 66 operationally valid results were run on reference oil 1005 of which 0 failed (0% fail rate). The following presents the fail rate for this period with the fail rates of previous periods, by reference oil:

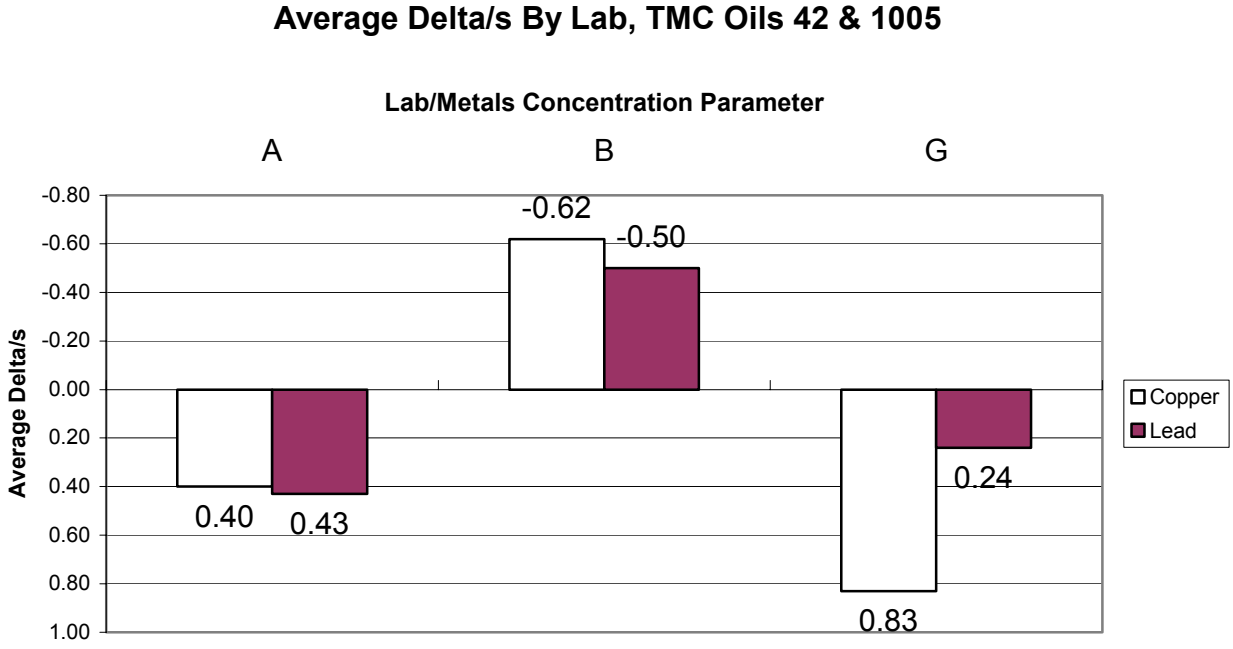


Industry Severity and Precision

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
10/1/01 through 3/31/02	137	0.02	-0.05
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

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 to be on target for the period. Figure 2 shows lead change to be on target for 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
10/1/01 to 3/31/02	71	26.4 (3.274)	(0.376)	0.09	108.9	16.75	0.05
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

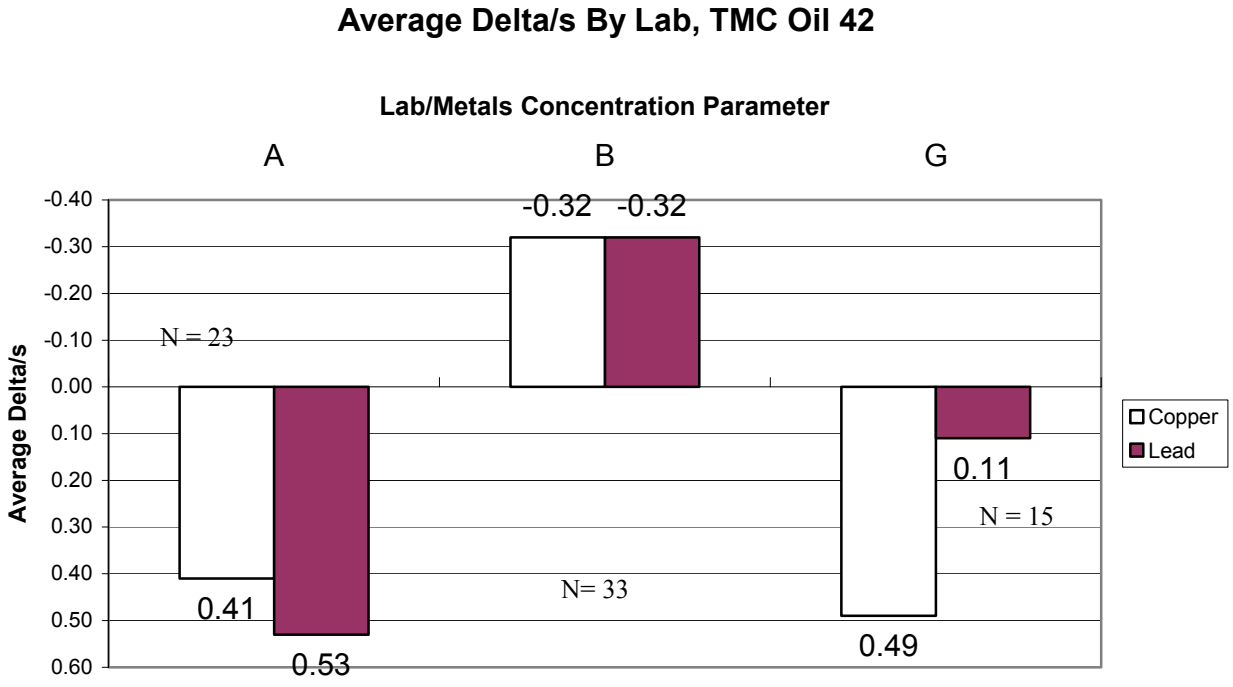
The industry performance (severity and precision) for reference oil 1005, comparing the current period with the previous ASTM report periods, is tabulated below. Values in parentheses are in transformed (natural log) units.

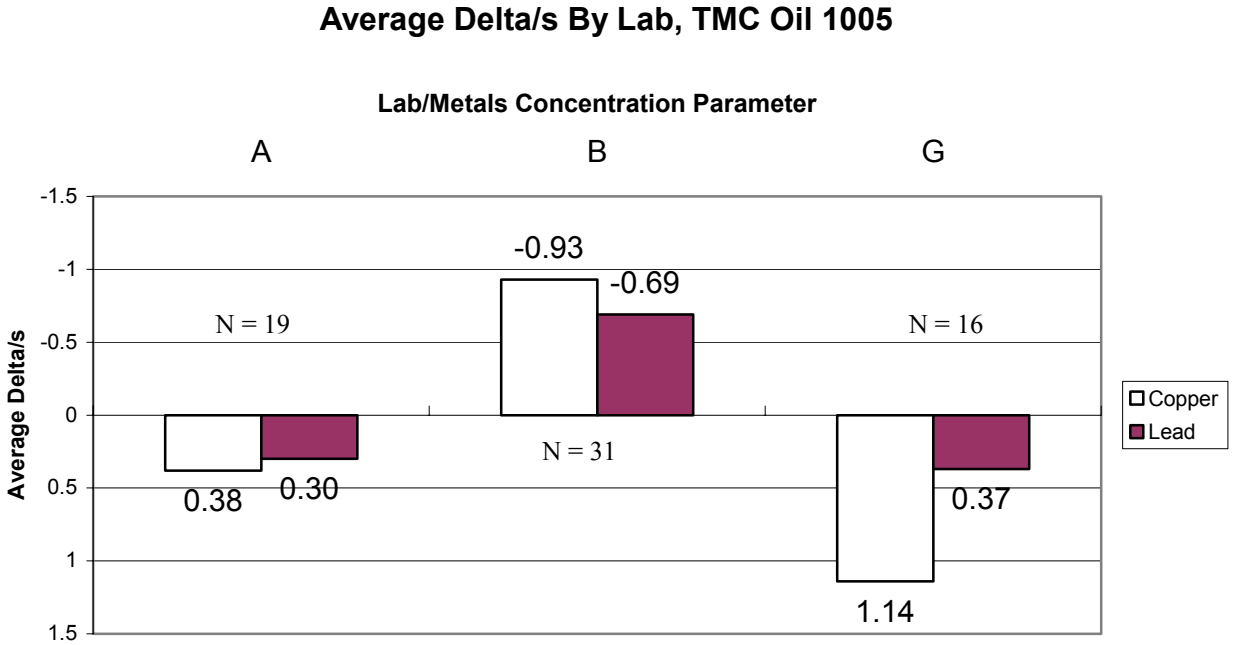
Period	n	Δ Cu mean	Δ Cu S	Δ Cu Mean Δ/s	Δ Pb mean	Δ Pb s	Δ Pb Mean Δ/s
10/1/01 to 3/31/02	66	9.5 (2.248)	(0.154)	-0.05	30.3	9.3	-0.15
4/1/01 to 9/30/01	62	10.0 (2.300)	(0.151)	0.31	28.8	10.1	-0.27
10/1/00 to 3/31/01	43	9.6 (2.258)	(0.190)	0.02	30.3	33.5	-0.15
4/1/00 to 9/30/00	51	9.9 (2.297)	(0.380)	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

Precision is within historical levels for all other oils/parameters. For this period, copper and lead were on target for oil 42. Copper was on target and lead was slightly mild for oil 1005.

Laboratory Severity by Oil

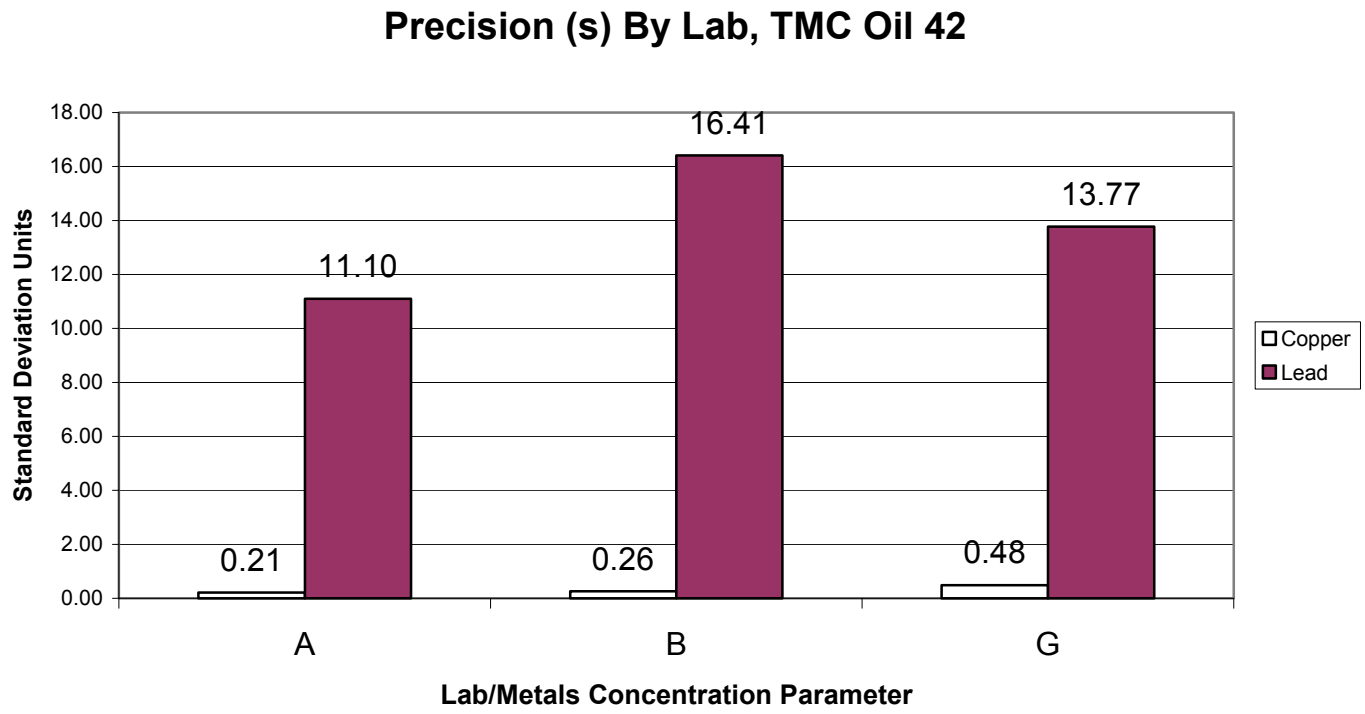
Severity, for both oils, is plotted by laboratory on the following page.

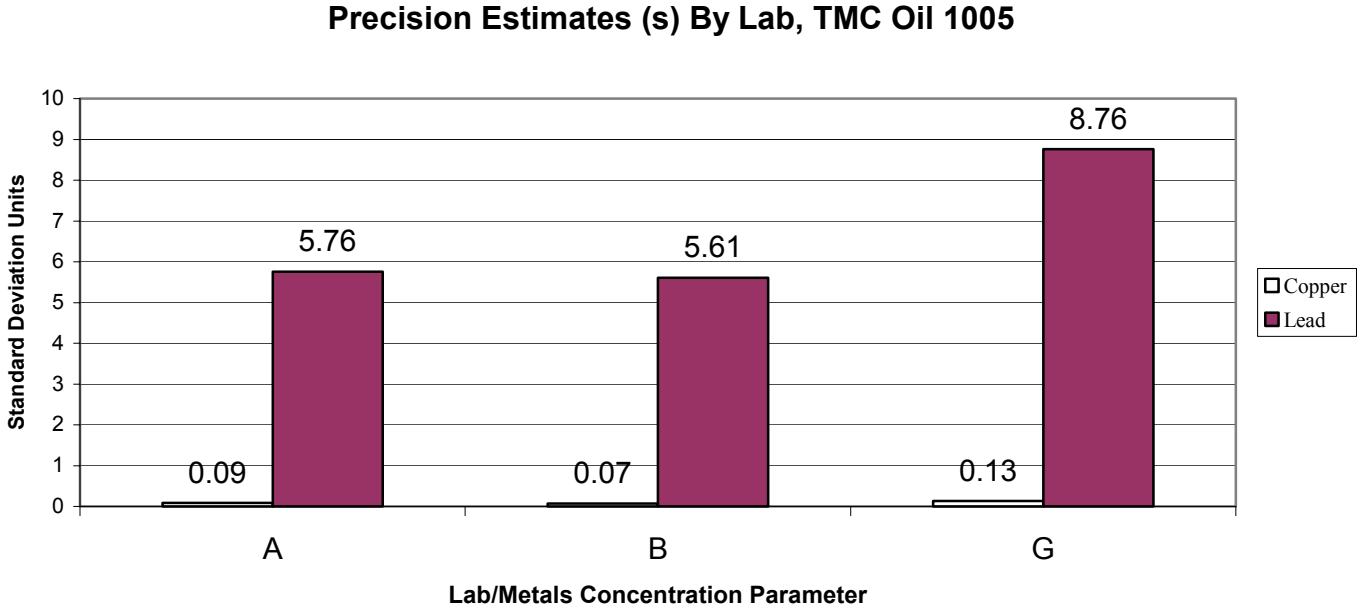




The charts show some laboratory differences in severity. Labs A and G show severe results on both oils, while lab B shows mild results on both oils.

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





Copper standard deviations were calculated in transformed (natural log, ln) units. For oil 42, copper variability was higher at lab G and lead variability was higher at lab B. For oil 1005, lead variability was higher at lab G.

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	8.90	285	47	2.3 years
1005	75.6	2419	46	18+ 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/mem02-032.jac.doc

c: HTCBT Surveillance Panel
ftp://ftp.astmtmc.cmu.edu/docs/bench/htcbt/semiannualreports/htcbt-04-2002.pdf
J. L. Zalar
F. M. Farber

Distribution: Email

HIGH TEMP CBT INDUSTRY OPERATIONALLY VALID DATA

FIGURE 1

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

CUSUM Severity Analysis

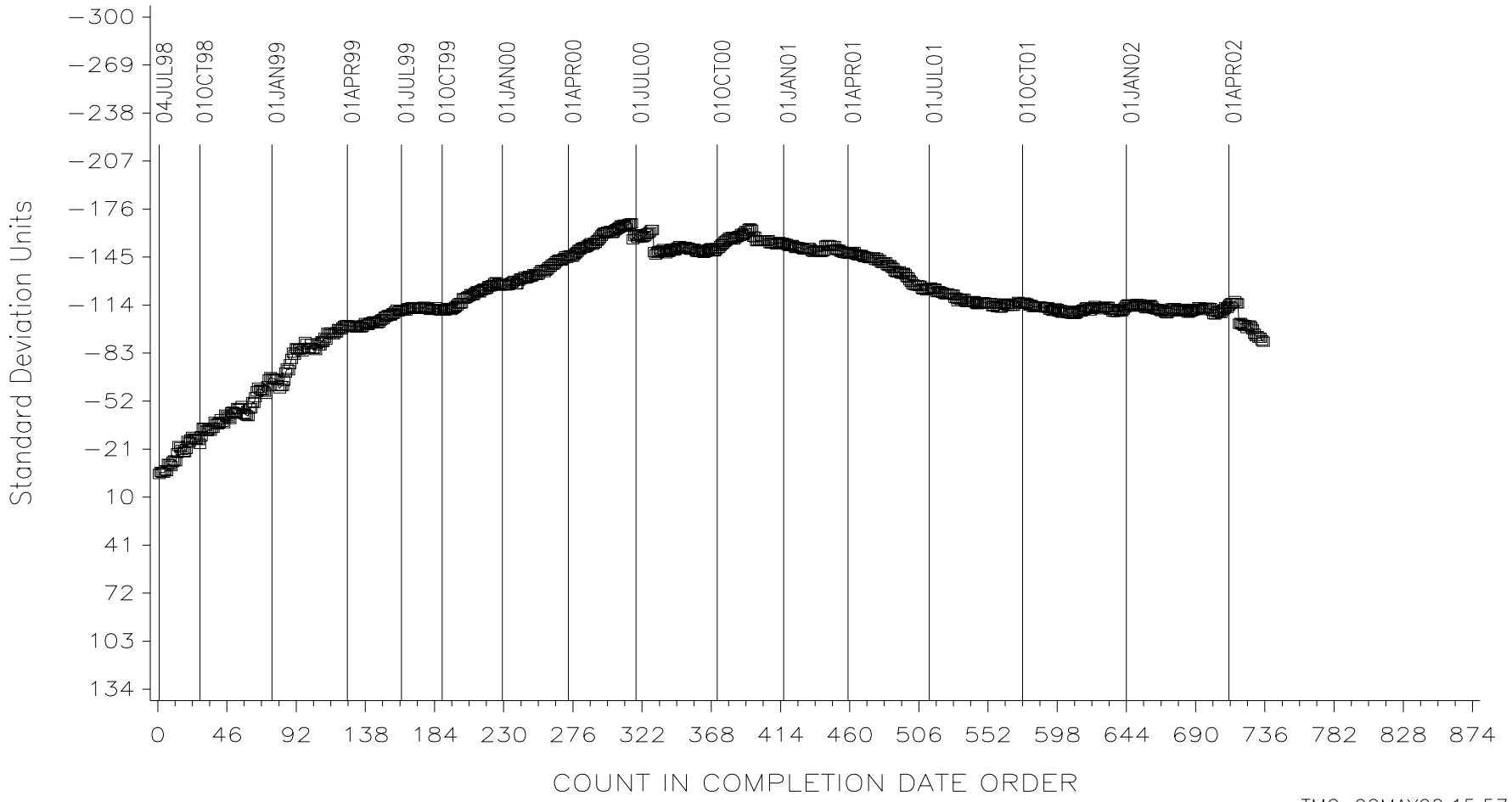


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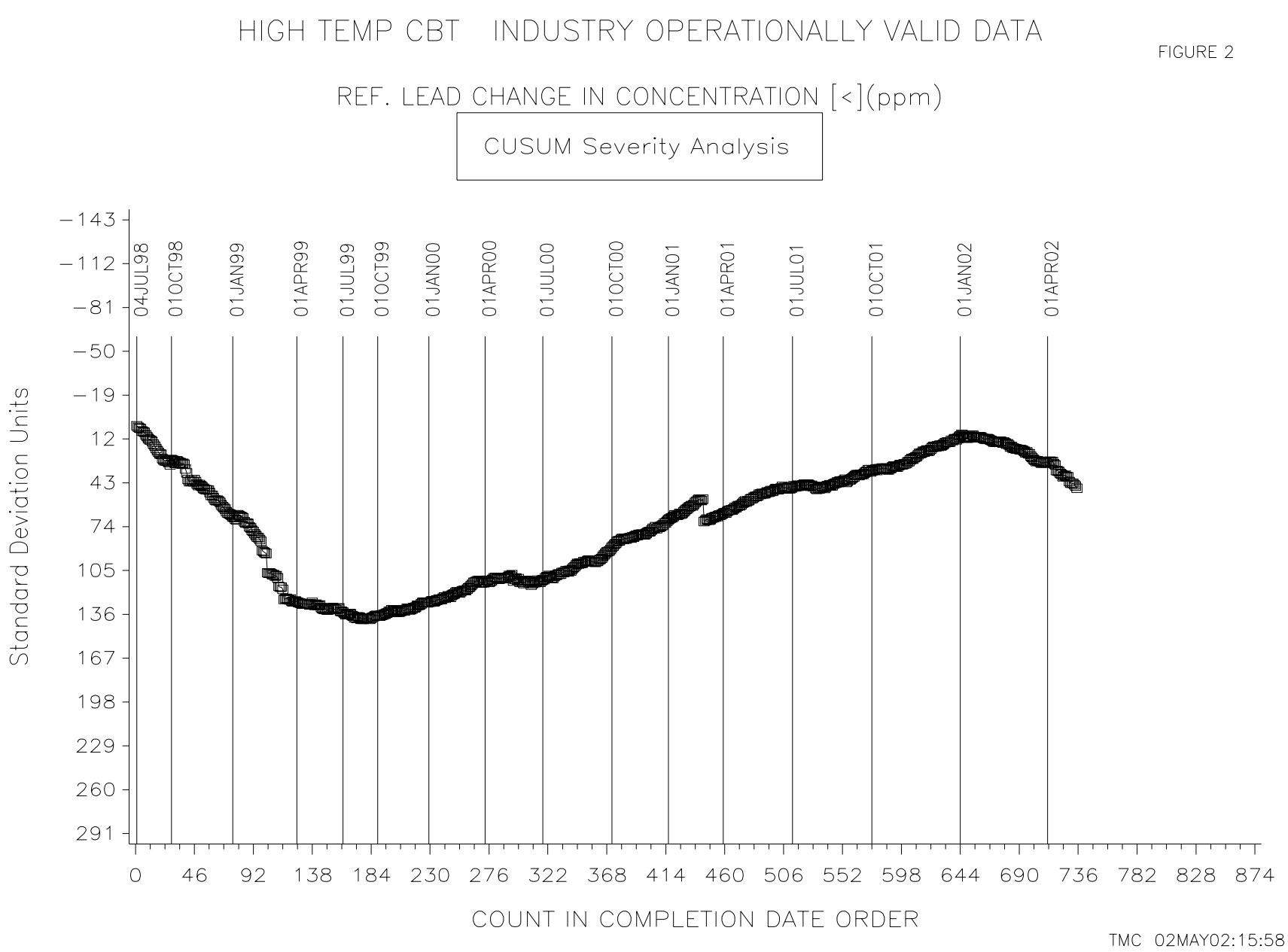
FIGURE 2


HIGH TEMP CBT INDUSTRY OPERATIONALLY VALID DATA
REF. LEAD CHANGE IN CONCENTRATION [<](ppm)
CUSUM Severity Analysis
Standard Deviation Units
−143
−112
−81
−50
−19
12
43
74
105
136
167
198
229
260
291
04JUL98
01OCT98
01JAN99
01APR99
01JUL99
01OCT99
01JAN00
01APR00
01JUL00
01OCT00
01JAN01
01APR01
01JUL01
01OCT01
01JAN02
01APR02
0
46
92
138
184
230
276
322
368
414
460
506
552
598
644
690
736
782
828
874
COUNT IN COMPLETION DATE ORDER
TMC 02MAY02:15:58