

L-37 Surveillance Panel Teleconference Minutes
Thursday 07/10/2008

Attendees:

Dana -	Miller, Pappademos, Horvath, Sullivan, Guzikowski, Ottley,
SwRI -	Koehler
Lubrizol -	Bartlett, Greene, Gropp
Afton -	Koglin, Hyguchi
Park -	Smith, joined part way through teleconference
TMC -	Lind
DA Stuart	Vettel

Lubrited Hardware, New and Retrofit – Discussion

Ottley - Lugoff reported that they have completed building of approximately 180 of the 234 units and plan to be done on Friday and ship on Monday, July 14th.

Miller – has finished his report (see Attachment # 1). The build went off without a hitch. Adjustments in build were minor to get the backlash consistent.

Lind – Requested that the laboratories participating/testing on the New Lubrited hardware batch, P4L870A/V1L500, send the TMC an email requesting the assignment of one TMC 127 (discrimination) and one TMC 155 (category reference oil).

Sullivan – with respect to lubriting process, have multiple sets of test panels sent to Hinkle and Ft. Wayne and still being processed.

Horvath – Reported that Maumee to date has received 813 gear sets out of 968.

Action Item - Pappademos or Sullivan to confirm where the remaining sets are and insure that they remaining sets get to Maumee ASAP.

Horvath – Reported that the first build pictures from assembly at Maumee were received this morning. They are building with one line and plan to ship one pallet each to the four labs for TMC 127 discrimination run and TMC 155 category reference oil run. Axle should start being received by the labs the 3rd or 4th week of July.

Non-lubrited hardware – Discussion

Lind reviewed the matrix test results to date – See attachment # 2.

Attachment # 3, 4, 5, & 6 represent Wear, Rippling, Ridging, and Spitting LTMS Lab by gear batch performance.

Lubrizol & SwRI recently completed testing on TMC 153-1 that are not in the table. Results for pinion were added manually to attachment # 2. Much concern about the series of broken teeth.

Miller, for all that we are seeing and hearing, it is a disappointment from Dana's point of view too. We all have been working hard at the process. The right thing to do is look at what we have and try to determine what is going on.

Bartlett - 10 tests have completed, should we stop testing and wait to see some results on the New-lubrited.?

Koglin, two questions . . . how far do we proceed down the non-lubrited trail before we stop? With respect to lubrited performance, we should run a sanity check.

We confirmed that Guzikowski and Fett have photos of the runs from SwRI and Afton

Gropp suggested that we have digital photos of parts before shipping.

Action Item: TMC to confirm if they can receive and include a hyper link based on CMIR code?

Koehler - Labs agree that we need to stop the non-lubrited matrix. Need to identify a couple of runs to be conducted on the lubrited batch. We need to agree what parts to send to Maumee facility for analysis.

Koglin - Tooth breakage has been on full-length tests. May need to consider a 20-hour test length or a modified version of the test.

Motions:

- 1) Koehler/Smith - labs temporarily suspend testing on the non-lubrited hardware matrix. Vote was 5-0-1
- 2) Koglin/Smith - The two facilities that purchased the new lubrited axles, upon receipt hardware, run one TMC 127 discrimination and one TMC 155 category pass oil. Vote was 5-0-1.

Other Action items:

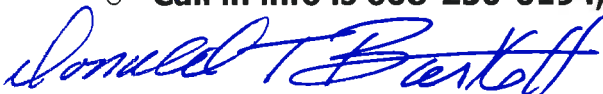
- 1) Send ring, pinion, and pinion bearings to Maumee facility - CMIR 61848, TMC 155 with a 9.6 pitting/spalling (Lubrizol)
- 2) Send ring, pinion, and pinion bearings to Maumee facility – CMIR 58891, TMC 155, with broken tooth (Afton).
- 3) Lubrizol and SwRI are to send their ring, pinion, and pinion bearings to Maumee facility the exhibited broken teeth.
- 4) Not interested in TMC 127 or TMC 134
- 5) Send to:

Dana Corporation
Attn: Joe Guzikowski
3939 Technology Drive
Maumee, Ohio 43537

- 6) The question of adequate Tooling Marks for rating wear – The Afton rater mentioned that the tooling marks (after test) were diminished compared to previous batches. Afton will take apart a new non-lubrited axle and send the ring and pinion to Mr. Lind. He will bring it to the GO RTF Calibration Workshop at the end of July for review and report back to the Panel.

Next teleconference call is for the L-37 Surveillance Panel:

- **Thursday, July 17th, at 10:00 a.m.**
- **Call in info is 608-250-0194, code 324160**



Donald T. Bartlett, L-37 SP Chairman



Attachment	1
Page	1 → 6
Reference	137 SF 7/10/08

Product Engineering

Audit of diff builds of 060GA104X lubrited gearset, 5.86 (7 x 41), ref. Diff assy P/N 060CA103-2X and Axle assy P/N 060AA100-4. Documented are gearset match numbers, contact pattern position photos, contact pattern positioning labels, pinion rotating torque, and two backlash values (initial and at 180°). A quantity of 10 diff builds are documented. Ref. V1L500 (pinion) & P4L870A (RG) heat code.

Kenny Miller, Gear Engineering

July 7, 2008



Off-Highway Systems



ATT #1 pg 2



9th diff DS



10th diff DS

MN = 1T
RT = 45 in-lbs
B/L = .005-.007
Pos = L2F0

MN = 1J
RT = 35 in-lbs
B/L = .007-.007
Pos = L2F0

ASTM L-37 lubrited hypoid gearset P/N 060GA104X, 5.86 ratio

July 7, 2008



9th diff CS



10th diff CS

MN = 1T
RT = 45 in-lbs
B/L = .005-.007
Pos = L2F-1

MN = 1J
RT = 35 in-lbs
B/L = .007-.007
Pos = L2F0

ATT #1 pg 3



7th diff DS

MN = 1C
RT = 45 in-lbs
B/L = .004-.004
Pos = L2F0



8th diff DS

MN = 0H
RT = 30 in-lbs
B/L = .004-.006
Pos = L2F0

ASTM L-37 lubrited hypoid gearset
P/N 060GA104X, 5.86 ratio

July 7, 2008



7th diff CS

MN = 1C
RT = 45 in-lbs
B/L = .004-.004
Pos = L2F0



8th diff CS

MN = 0H
RT = 30 in-lbs
B/L = .004-.006
Pos = L2F-1

ATT 3 1093



5th diff DS

MN = 1V
RT = 30 in-lbs
B/L = .007-.007
Pos = L2F0



6th diff DS

MN = 0A
RT = 35 in-lbs
B/L = .008-.008
Pos = L2F0

ASTM L-37 lubrited hypoid gearset
P/N 060GA104X, 5.86 ratio

July 7, 2008



5th diff CS

MN = 1V
RT = 30 in-lbs
B/L = .007-.007
Pos = L2F-1



6th diff CS

MN = 0A
RT = 35 in-lbs
B/L = .008-.008
Pos = L2F-1

ATT 3, P93



3rd diff DS

MN = 0T
RT = 35 in-lbs
B/L = .004-.004
Pos = L2F0



4th diff DS

MN = 1N
RT = 45 in-lbs
B/L = .006-.007
Pos = L2F0

ASTM L-37 lubrited hypoid gearset
P/N 060GA104X, 5.86 ratio

July 7, 2008



3rd diff CS

MN = 0T
RT = 35 in-lbs
B/L = .004-.004
Pos = L2F-1



4th diff CS

MN = 1N
RT = 45 in-lbs
B/L = .006-.007
Pos = L3F-1

ATT 3 P46



1st diff DS

MN = 7X
RT = 30 in-lbs
B/L = .006-.006
Pos = L2F0

MN = 0P
RT = 40 in-lbs
B/L = .005-.005
Pos = L2F0



2nd diff DS

ASTM L-37 lubrited hypoid gearset
P/N 060GA104X, 5.86 ratio

July 7, 2008



1st diff CS

MN = 7X
RT = 30 in-lbs
B/L = .006-.006
Pos = L3F-1

MN = 0P
RT = 40 in-lbs
B/L = .005-.005
Pos = L2F-1



2nd diff CS

V1L500/P4T813 NON-LUBRICATED MATRIX RESULTS

Testkey	Lab	STD	Run	Oil	VAL	Pinbat	DTCOMP	Pwear	Pridg	Pripp	Pspit	Rwear	Rridg	Rripp	Rspit	fpccrat	lpcrat	B/Lash	AVG	KUSA
59315	A	4	215	127	MG	V1L500	20080628	7	8	7	8	7	9	9	9.9	0	2	0.008	4625	
59293	B	191	2636	127	AG	V1L500	20080701	6	7	8	9.6	6	7	9	9.9	0	2	0.008	4593	
59290	D	3A	924	127	AG	V1L500	20080708	7	7	8	9.9	7	7	10	9.8	0	2	0.006	4930	
67290	B	191	2640	134	AG	V1L500	20080706	6	5	7	7	5	4	9	9.8	1	2	0.004	4692	
58911	A	4	214	155	AG	V1L500	20080628	7	9	9	9.6	8	10	9	9.9	0	2	0.008	4913	
61848	B	191	2637	155	AG	V1L500	20080702	7	9	9	9.6	8	10	10	9.9	0	2	0.008	5143	
58891	D	3A	923	155	MG	V1L500	20080706	7	8	9	2	7	9	8	2	0	2	0.008	4927	

6 8 4 2

6 7 7 9.8

A

Broken tooth

Broken tooth

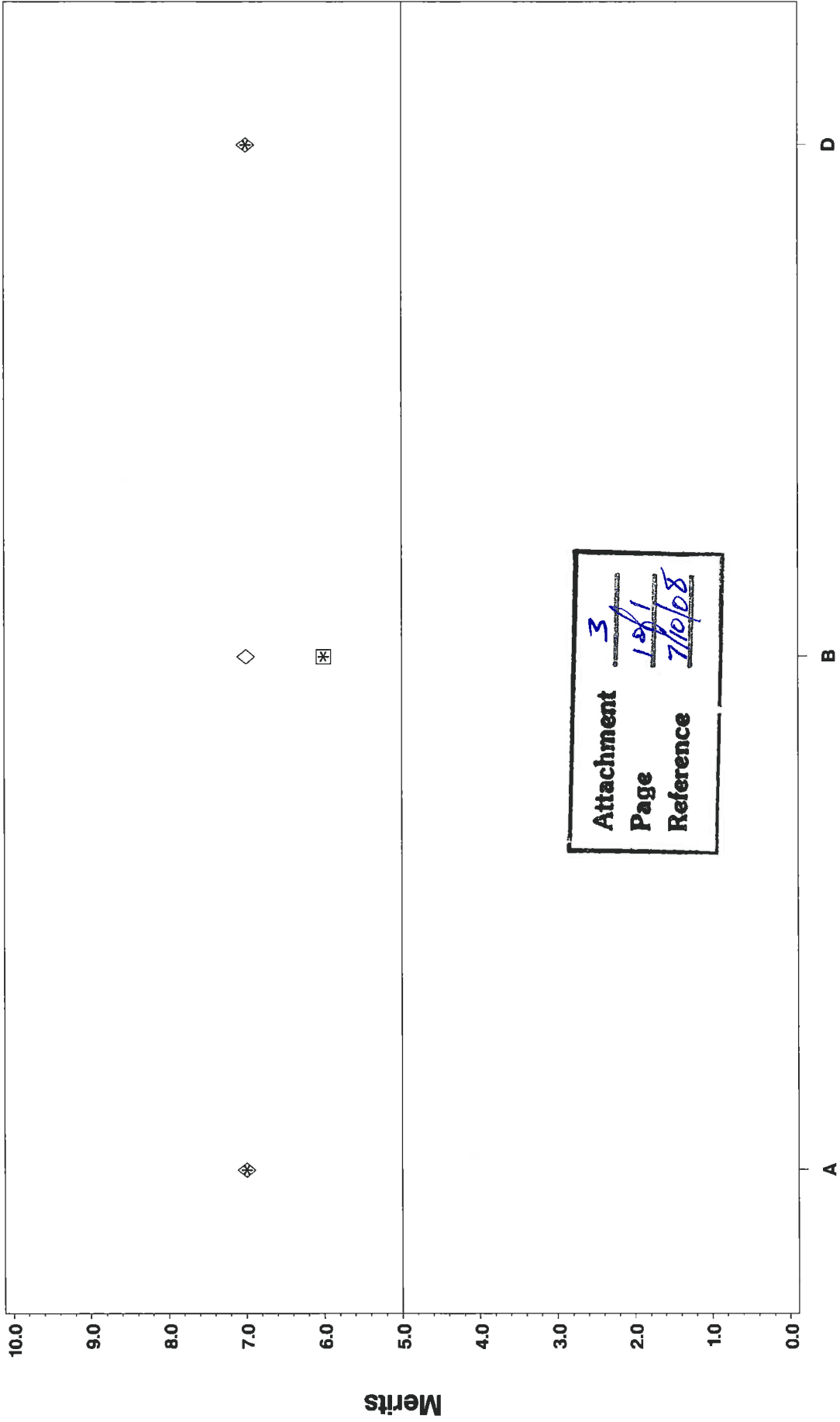
Broken tooth

Attachment	<i>2 of 1</i>
Page	<i>1 of 1</i>
Reference	<i>372/10/18</i>

L-37 Reference Oil Performance by LTMSLAB

Wear - NON - LUBRITED

Gear Batch V1L500/P4T813



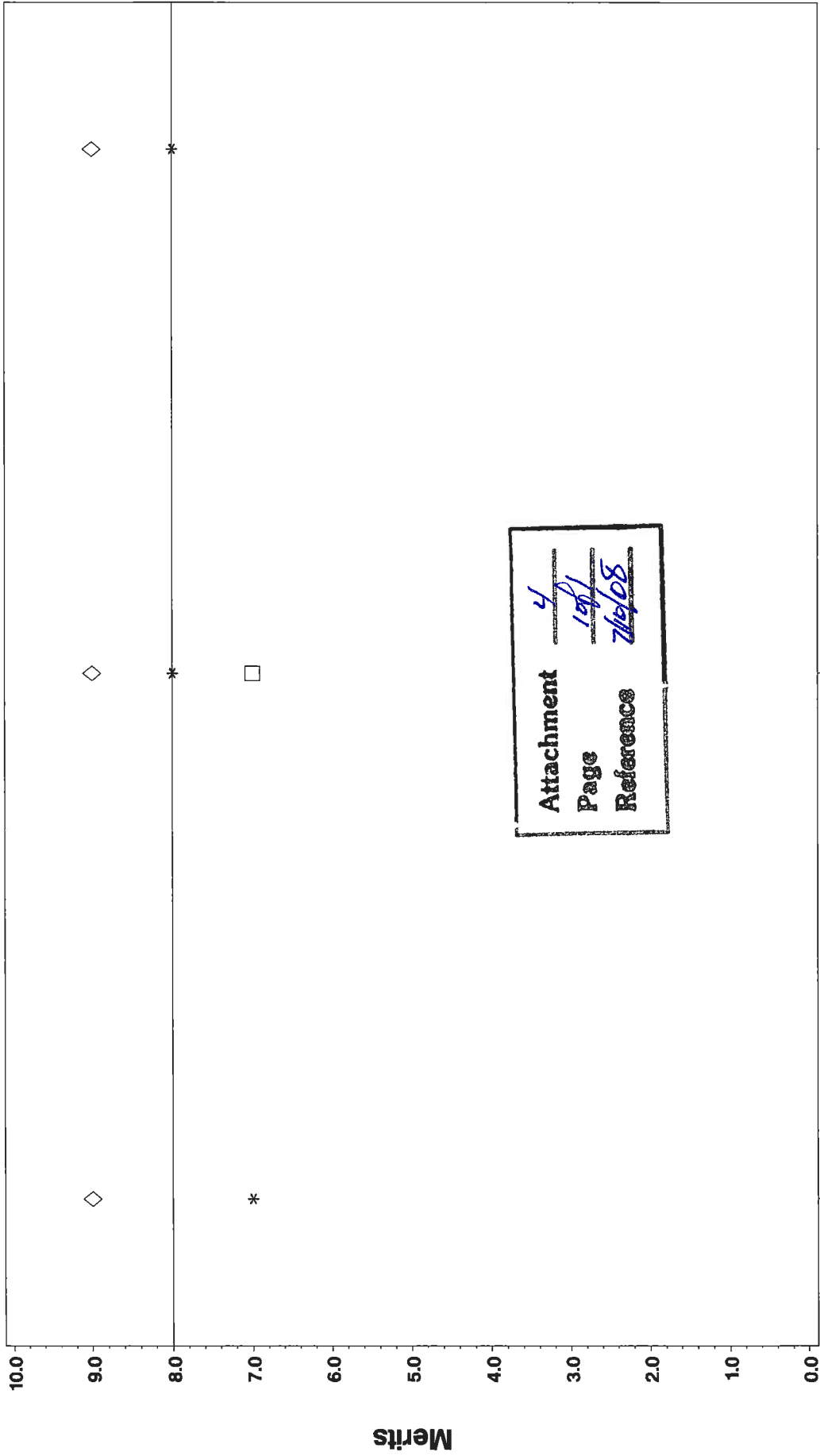
Attachment
Page 3
Reference 18/1
7/10/08

TMC OIL CODE * * * 127 134 155

L-37 Reference Oil Performance by LTMSLAB

Rippling - NON - LUBRICATED

Gear Batch V1L500/P4T613



D

B

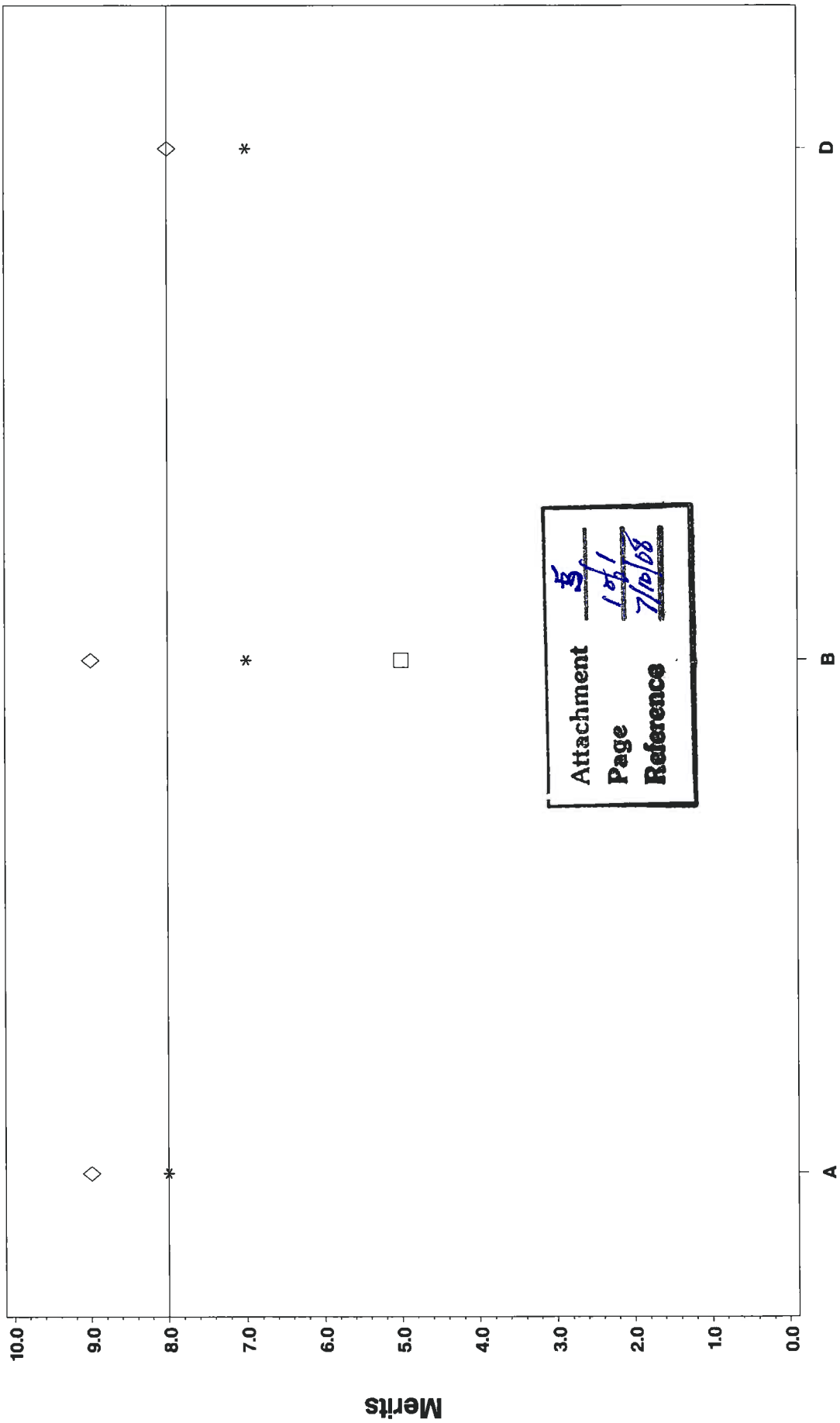
A

TMC OIL CODE * * * 127 134 155

L-37 Reference Oil Performance by LTMSLAB

Ridging - NON - LUBRICATED

Gear Batch VIL500/P4T613

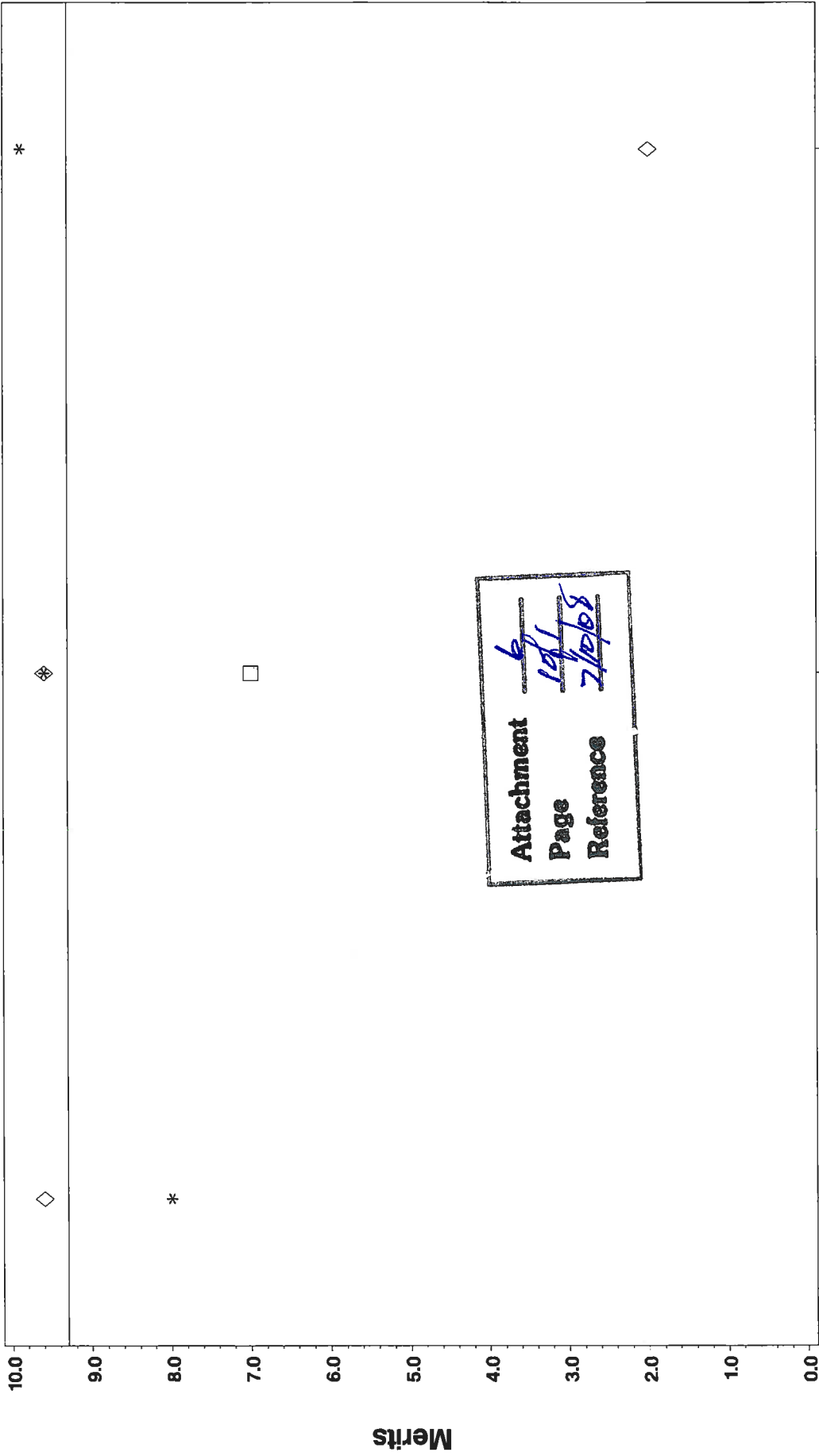


TMC OIL CODE * * * 127 □ □ □ 134 ◇ ◇ ◇ 155

L-37 Reference Oil Performance by LTMSLAB

Spitting -- NON - LUBRICATED

Gear Batch VIL500/P4T813



Attachment 6
Page 127
Reference 7/10/08

D

B

A

TMC OIL CODE * * * 127 134 155