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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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May 23, 2007

Reply to:

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ASTM D02.B0.03 L-37 Surveillance Panel

Members and Guests:

Attached for your review and comment are the unconfirmed minutes of the:

- o May 10, 2007 L-37 Surveillance Panel Teleconference Meeting

Please direct any corrections or comments to my attention.

Sincerely,

Donald T. Bartlett, Chairman

L-37 Surveillance Panel

Attachments

Report of Meeting
L-37 Hardware Task Force
May 10, 2007 11:00 EDT

I. Attendees:

ASTM TMC:	Don Lind	Ethyl Corp:	Cory Koglin
Lubrizol Corp:	Don Bartlett	Lubrizol Corp:	Jerry Gropp
Dana Corp:	Don Kreinbring	SwRI:	Brian Koehler
PARC:	Dale Smith	Dana Corp:	Marko Ojanen
Dana Corp:	Kenny Miller	Dana Corp:	Steve Bird
Lubrizol Corp:	Chris Prengaman	WT Sullivan Inc:	Bill Sullivan
Dana:	Greg Fett	Dana:	Joe Guzlowski
Dana Corp:	Gene Lawrence	Lubrizol Corp:	Chris Prengaman

II. Agenda:

- Review Phase 1 Gear Batch B6L566/P4L816 Lubrited Hardware data on TMC 127 and 155 results from the four labs
- Discussion with Dana on options to address L1 pattern contacts
- Target next SP teleconference call for ?
- Ridging rating mold status.

III. Summary of Panel Discussion, Consensus Actions, and Motions:

1. We welcome Greg Fett back to the panel. He also introduced Joe Guzlowski. Both Greg and Joe will be replacing Mike Follis as the LRI committee member.
2. The four labs completed Phase one of the matrix, reported their data, and Mr. Lind reviewed the data that was distributed to the panel by email prior to this meeting (1 table and 5 graphs). Please see **Attachment # 1**. There is slight concern for wear and ridging and increased concern with respect to pitting/spalling severity. At the same token, while there was some concern with severity, the data for the 4 tests on each oil was still encouraging enough to support continuation of the matrix.
 - **Participant comments:** There was continued discussion on the fact that there are L1 axle contact patterns and where do we go.
 - **Bartlett:** Reported the axle count as follows from the Dana build spreadsheet for contact length and flank patterns:

○	L1F+1 =	6	0 .005
○	L1F0 =	144	14
○	L1F-1 =	20	1.9
○	L2F+1 =	15	1.4
○	L2F01 =	780	74.9
○	L2F-1 =	74	7.1
○	L3F0 =	3	0 .003

- **Miller:**
 - That the pattern flank position affects the stresses more than the pattern length.
 - Ring Gears remade due to the 1st order position problem.
 - Non-acceptance of L1 patterns was a surprise.
- **Fett:** Requested that the FEA analysis be resent to him.
- **Bird:** Dana considers the L1's as a defect on arrival and asked that the labs return them.
- **Koehler:** Since the labs are going to run 2 tests each on L1 hardware, would Dana please consider crediting the labs at least the cost of labor Dana would incur along with the 2-way shipping? Or consider reimbursing the labs $\frac{1}{2}$ of the cost of off spec product?
- *Secretary's Note: an email was received on 5-21-2007 from Dana Lugoff, Gene Lawrence stating that, "Our general Manager would rather have all 170 Units returned to Lugoff and reworked. Shared our last discussion with him about crediting ASTM the cost of us returning, reworking and shipping back to ASTM. His final decision is to have them returned and reworked at Lugoff."*

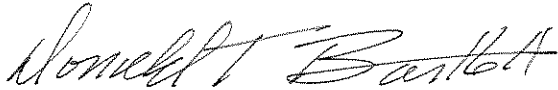
Motion 1 \Rightarrow Cory Koglin, Second \Rightarrow Don Lind): Labs to continue running the full matrix and use only the L2 contact patterns, especially since there were only 3 axles out of the whole batch. The motion carried unanimously with a vote of 6-0-0.

- The labs agreed that they would proceed and complete the original 44-test matrix as designed and hold for a teleconference or panel meeting.
 - A decision to commence running the L1 contact pattern axles would come later and the labs were asked to hold off testing until the panel makes the request.
3. **Next Panel meeting** is at the call of the chairman and most likely be a meeting somewhere in mid June time frame. The TMC & chairman will communicate timing of matrix completion with the labs with the goal of completing the matrix by the end of May.

4. Update on Ridging Mold board request of GO RTF:

- **Request of the gear rating task force:** After review of the Ridging mold and the discussion with Astro Manufacturing the Rating Task Force would like to propose the following changes. These changes hopefully would make the ridging mold easier to use. The biggest challenge is the glare or reflectivity of this mold. In order to reduce this glare Astro Manufacturing suggests adding a release agent to the process to remove some of the gloss on the black molded teeth. Also, tinting the white background would further reduce the glare on this ridging board. The Rating Task force would like to be able to send this ridging moldboard around to the various labs and discuss the results before the next LRI.
- **Lubrizol has issued a PO** for \$ 78.00 and Astro has confirmed that the board will be ready sometime the end of May.

Respectfully submitted:



Donald T. Bartlett

L-37 Surveillance Panel Chairman

GEAR BATCH B6L566/P4L816 LUBRITED HARDWARE MATRIX DATA

CMIR	Lab	Stand	Run	Oil	PinBat	RingBat	DTCOMP	Pwear	Pridg	Pripp	Pspit	Rwear	Rridg	Rripp	Rspit	fpcrat	lpcrat
58284	B	191	2426	127	B6L566	P4L816	20070501	6	4	9	1	5	5	10	9.3	0	2
49504	D	3A	728	127	B6L566	P4L816	20070503	7	8	4	10	8	8	9	10	0	2
49555	A	2	73	127	B6L566	P4L816	20070503	3	7	9	3	4	8	10	9.4	0	2
49192	E	2	880	127	B6L566	P4L816	20070506	5	5	6	2	6	5	9	9.9	0	2
58915	B	191	2427	155	B6L566	P4L816	20070502	7	7	9	9	8	9	10	9.9	0	2
58889	D	3A	729	155	B6L566	P4L816	20070504	7	8	10	9.9	8	10	10	10	0	2
58909	A	2	74	155	B6L566	P4L816	20070505	7	8	7	6	8	9	9	9.8	0	2
58921	E	2	881	155	B6L566	P4L816	20070508	7	8	8	9.9	7	9	9	9.9	-1	2

Attachment	1
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Reference	L-37

GEAR BATCH B6L566/P4L816 LUBRICATED HARDWARE MATRIX DATA

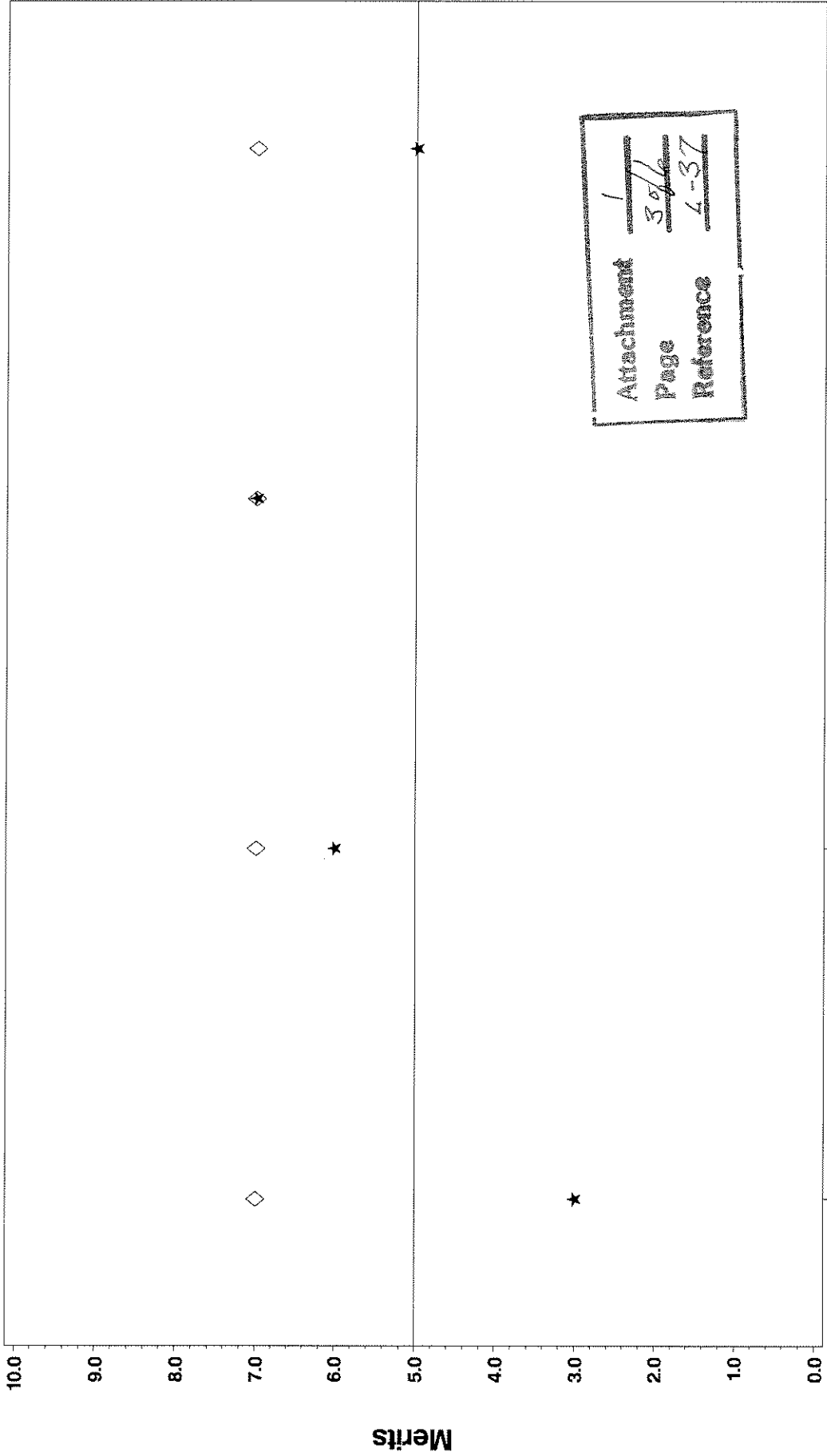
MIR	Lab	Stand	Run	Oil	PinBat	RingBat	DTCOMP	Pwear	Pridg	Prpp	Pspit	Rwear	Rridg	Rripp	Rspit	fpcrat	Ipccrat
8284	B	191	2426	127	B6L566	P4L816	20070501	6	4	9	1	5	5	10	9.3	0	2
9504	D	3A	728	127	B6L566	P4L816	20070503	7	8	4	10	8	8	9	10	0	2
9555	A	2	73	127	B6L566	P4L816	20070503	3	7	9	3	4	8	10	9.4	0	2
9192	E	2	880	127	B6L566	P4L816	20070506	5	5	6	2	6	5	9	9.9	0	2
8915	B	191	2427	155	B6L566	P4L816	20070502	7	7	9	9	8	9	10	9.9	0	2
8889	D	3A	729	155	B6L566	P4L816	20070504	7	8	10	9.9	8	10	10	10	0	2
8909	A	2	74	155	B6L566	P4L816	20070505	7	8	7	6	8	9	9	9.8	0	2
8921	E	2	881	155	B6L566	P4L816	20070508	7	8	8	9.9	7	9	9	9.9	-1	2

Attachment	1
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Reference	L-3.7

L-37 Reference Oil Performance by LTMSLAB

Wear - LUBRITED

Gear Batch B6L566/P4L816



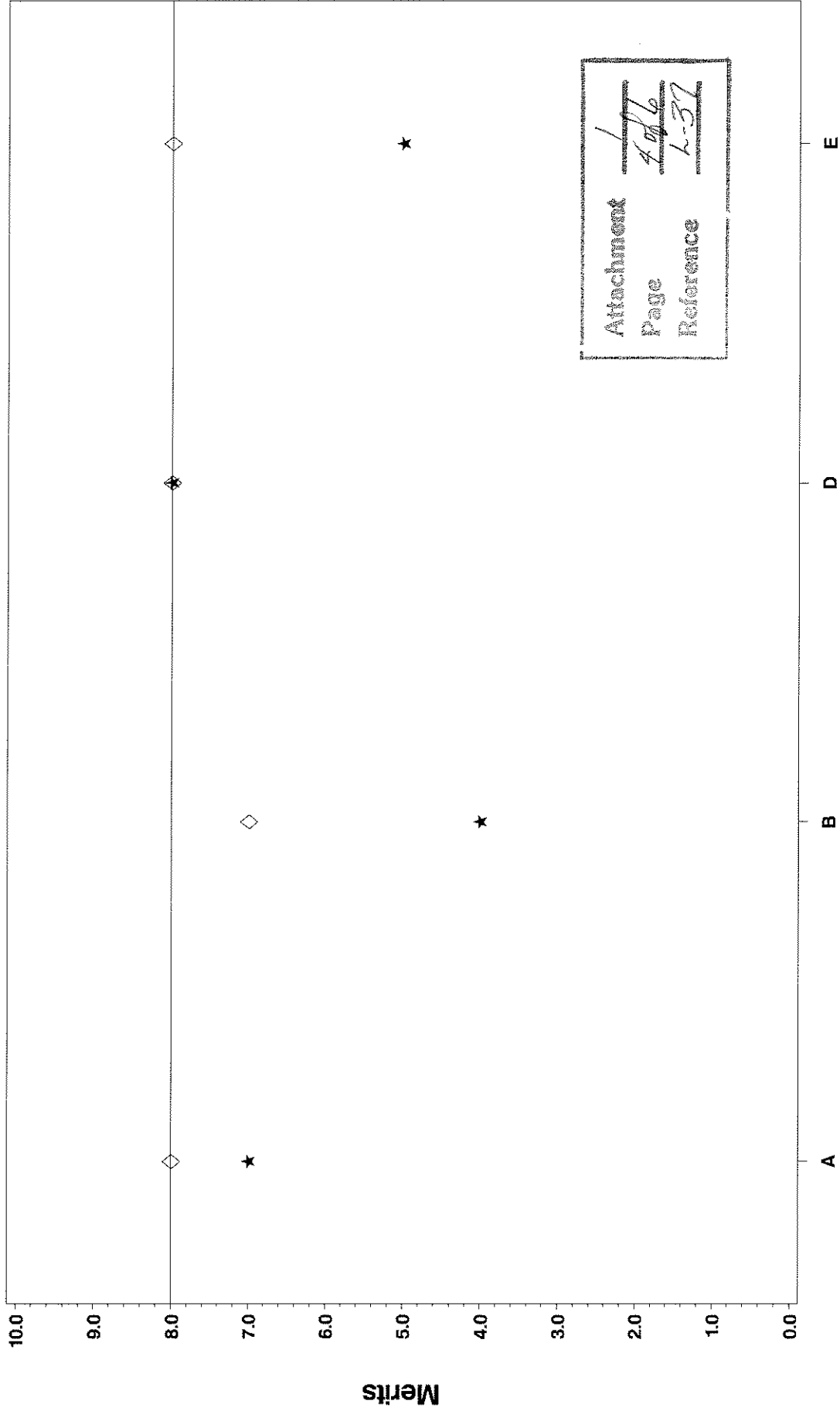
Attachment 1
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Reference L-37

TMC OIL CODE ★ ★ ★ 127 ◇ ◇ ◇ 155

L-37 Reference Oil Performance by LTMSLAB

Ridging - LUBRITED

Gear Batch B6L566/P4L816

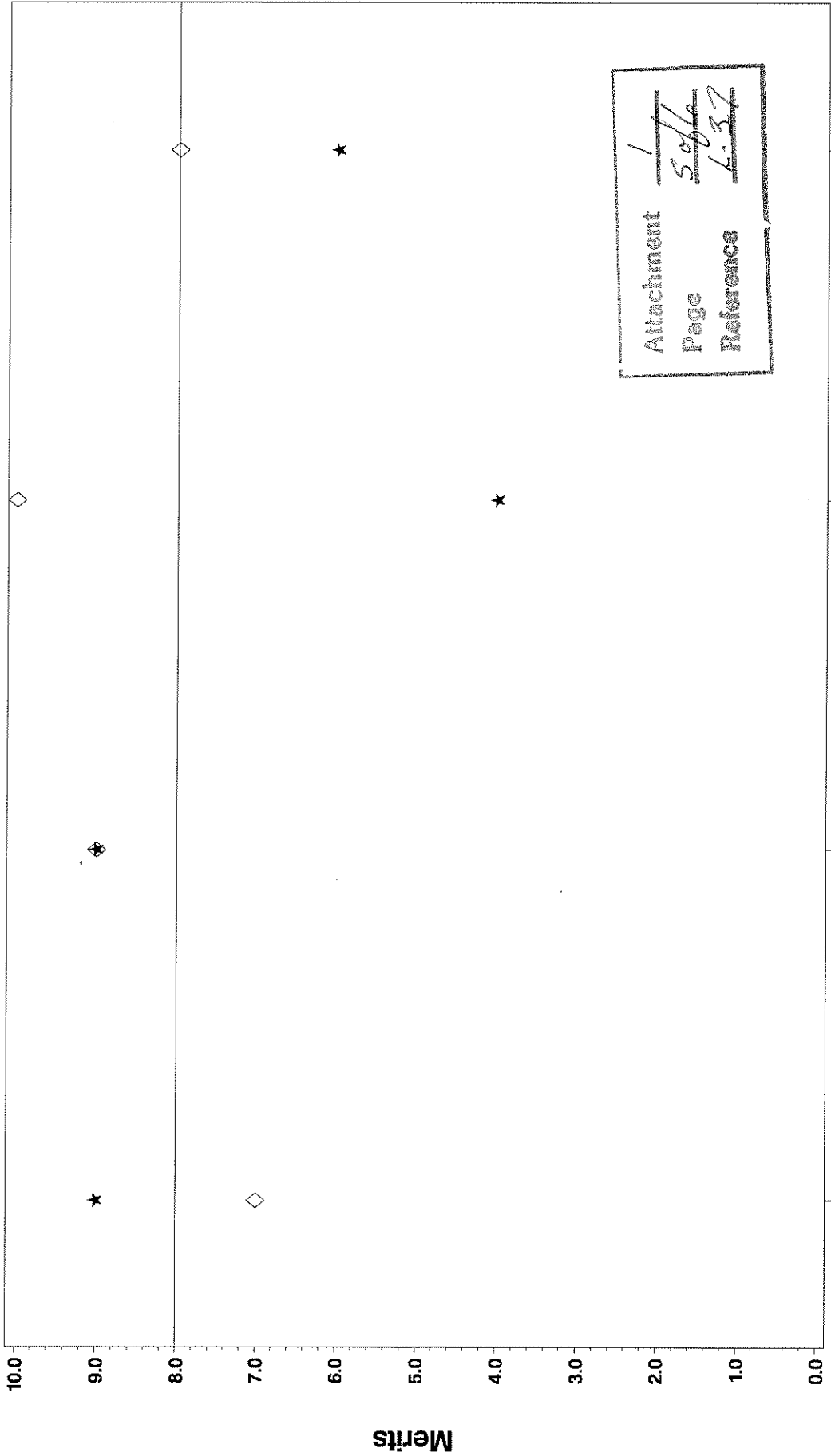


Attachment
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Reference L-37

L-37 Reference Oil Performance by LTMSLAB

Rippling - ~~NON~~ - LUBRITED

Gear Batch B6L566/P4L816

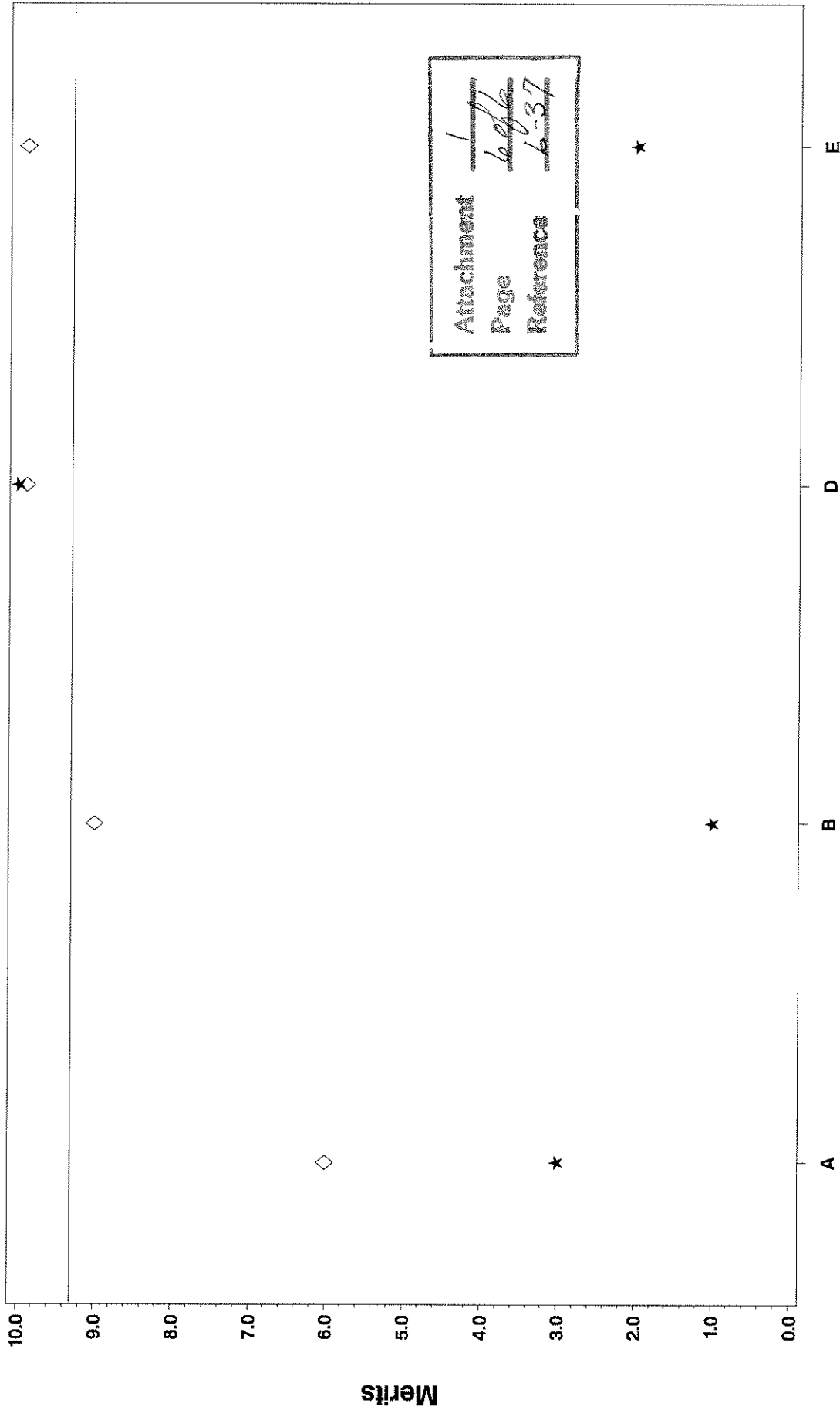


TMC OIL CODE ★ ★ ★ 127 ◇ ◇ ◇ 155

L-37 Reference Oil Performance by LTMSLAB

Spitting - LUBRICATED

Gear Batch B6L566/P4L816



TMC OIL CODE ★ ★ 127 ◇ ◇ 155