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## **Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS**

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Issued: November 16, 2010  
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These are unapproved minutes of the 11.16.2010 Sequence VI Surveillance Panel conference call.

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The meeting was called to order at 10:04 AM by Chairman Charlie Leverett.

### **Agenda**

- 1.) Roll Call, No membership changes. See Attachment 1 for attendance.**
- 2.) Approval of minutes** from November 2<sup>nd</sup> 2010 conference call.

**MOTION:** [Charlie Leverett, Ron Romano, second] Approve minutes.

**Approval unanimous.**

**NOTE: Meeting minutes for 05.13.2010 show a date of 05.13.2009.**

### 3.) Action Items:

3.1 Form a task force to develop a recommendation to the surveillance panel for adopting LTMS 2nd Edition to the Sequence VID. Task force to report to surveillance panel within six weeks of May 13<sup>th</sup> meeting. **There will be a face to face meeting in January in San Antonio.**

3.2 OHT to report VID engine usage and expected depletion date at all surveillance panel meetings. **Completed and will be on-going.**

3.3 Sid Clark to inquire with GM if information they may release GM's opinions on oil consumption and if this may be shared with the surveillance panel. **Here is the report from Bruce Matthews of GM:**

VID Engine 15D (V090990192) Teardown Analysis Aug.-Sep., 2010

#### Visual Observations

- Bores: Heavy flowering and varnishing of the bores
- Heavy carbon build up on the 2nd ring land of all pistons
- Above average varnishing on all piston pins
- Heavy peening in all exhaust seats and evidence of leaking on one exhaust valve

#### Further Analysis of Bores

- Roundness of bores were measured and found to be acceptable
- Bore surface finish measured and found to be normal
- Flowering appears to be visual and not a physical phenomena

#### Conclusion

Low compression on one cylinder due to a leaking exhaust valve  
Reason for high oil consumption unknown

### 4.) New Business:

4.1 Determine if we want to drop one of the current oils

- Determine the usage rates for all remaining oils

**MOTION: [Guy Stubbs, Robert Stockwell, second] Use the same three existing reference oils for new engine introduction, then define usage rates for all reference oils.**

**0 for, 9 against, 4 waive. Motion fails.**

- There was discussion on whether 4 reference oils were too many and what their level of assignment should be.

**MOTION: [Dave Glaenzer, Mark Sutherland, second] Assign 542, 541 and 1010 in that order for new engine reference acceptance. All later reference testing would be 540, 542 and 1010 assigned randomly at a 33.3% frequency.**

- 10 for, 0 against, 2 waive. **Motion passes.**
- This motion must wait two weeks to be implemented for LTMS review. Effective date would be 12.01.2010 with the TMC report.

#### 4.2 VID Engine Rebuild Task Force – Update

- Dan Worcester is the Task Force Chair and has begun an assembly manual using the GM cam gear replacement procedure as a baseline.
- This will be sent to lab engineers and any others interested in serving on this Task Force.

### 5.) Old Business:

5.1 Are there any Engine failures to report? **None.**

5.2 Time Constants – Below is the latest update (10/25/10)

**NOTE: Oil gallery temperature was a copy error and corrected value is shown below in red [the same as the other temperature minimums].**

Revised	min	max
Speed	0.1	1.3
Torque	0.2	1.1
Oil Gallery Temperature	<b>1.3</b>	4.5
Coolant Inlet Temperature	1.3	4.3
Exhaust Back Pressure	0.3	2.5
Intake Air Temperature	1.3	4.4
Fuel to Fuel Rail Temperature	1.3	4.7

This will be tabled until George Szappanos can attend the discussion.

5.3 MAP data where do we stand?

**Discussion:** the requirement to include MAP traces was **effective May 13, 2010** as stated in Information letter 10-2 Seq. 4 which read:

*11.5.5 Provide ramp traces to the TMC for review prior to the assignment of the initial reference oil at (1, 75 and 149) h. When it is necessary to extend break-in beyond 150 h, provide a ramp trace taken prior to termination of break-in by 1 h. Record speed, MAP and load at a minimum of 1 s intervals.*

**Further Discussion:** this was an issue when there were capacity limits for VID testing. Those may no longer exist. Also there was variation in MAP between labs. Section 10.1.1.5 does not allow an engine to be removed to run a break in engine unless that engine is referenced again. This may need further review. See Attachment 2 from TMC for MAP data for labs.

**ACTION:** Charlie Leverett will contact George Szappanos to see if this needs further discussion.

**6.) Next Meeting**

January 2011 to discuss LTMS v2 at the call of the Chairman

**7.) Adjournment**

**MOTION: [Charlie Leverett, Rich Grundza, second] Adjourn meeting.  
Approved unanimous. Meeting adjourned at 11:00 AM.**

## ASTM SEQUENCE VI SURVEILLANCE PANEL

Name	Address	Phone/Fax/Email	Attendance
Bowden, Jason Voting Member ✓	OH Technologies, Inc. P.O. Box 5039 Mentor, OH 44061-5039	Phone: 440-354-7007 Fax: 440-354-7080 dhbowden@ohotech.com	M-1 M-2 W A
Bruce Matthews Voting Member ✓	GM Powertrain Engine Oil Group Mail Code: 483-730-472 823 Joslyn Rd	Pontiac, MI 48340: 248-830-9197 bruce.matthews@gm.com	N A
Andy Ritchie Voting Member ✓	Infineum 1900 East Linden Ave. Linden, NJ 07036-0735	Phone: 908-474- Fax: 908-474-3637	N A
Ron Romano Voting Member ✓	Ford Motor Company 21500 Oakwood Blvd POEE Bldg Rm DR 167 MD 44 Dearborn, MI 48121-2053	Phone: 313-845-4068 rromano@ford.com	N A
Leverett, Charlie Voting Member ✓	Intertek Automotive Research 5404 Bandera Road San Antonio, TX 78238	Phone: 210-647-9422 Fax: 210-523-4607 charlie.leverett@intertek.com	
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## **VID MAP Study**

**November 16, 2010**

- During the November 2, 2010 conference call, a question was asked about the status MAP data during VID engine Break in.
- At the 11/18/09 Meeting, it was agreed to include MAP data for break in plots. As data was reported, inclusion of MAP data was subject to interpretation. One lab provided MAP plots on the same graph as speed and torque

- Another lab provided a plot of MAP values over the whole test, while a third lab provided a separate file with the MAP values for the same times as the speed and torque plot. Labs have been requested to provide MAP plots, similar to speed and torque and for the most part this is being complied with.
- At the May 13, 2010 SP meeting the panel agreed to this format and Information letter 10-2 “proceduralized” this requirement. Further MAP investigations were “tabled”



- Since 1/1/2010, 32 engines have contributed data to the LTMS. A 33rd engine has been included from an engine that has begun the calibration process. Please note that many of these engines (14) had run break in prior to the requirement to include MAP results was specified (11/18/09) or mandated (5/13/10). These data are tabulated below.

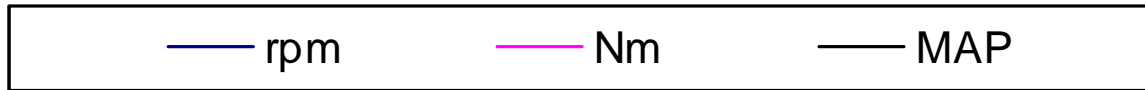
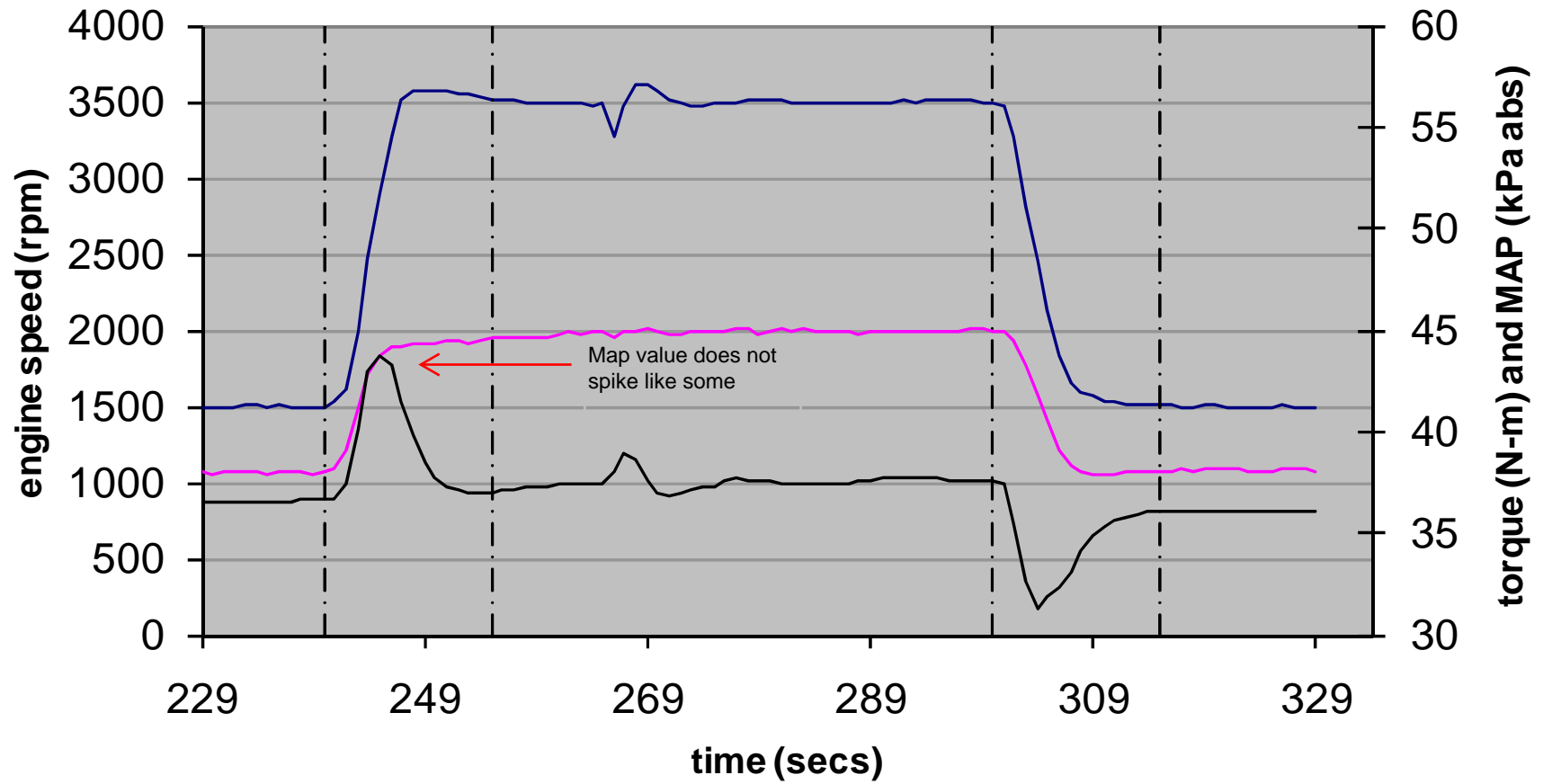
Lab Engine	accel hr 1	decel hr 1	accel hr 75	decel hr 75	accel hr 149	decel hr 149	
D 22D		68	27	67	26	70	25.6
D 21D		56.3	27.4	56	26.6	56	27.2
E 8C		41	28	41	28	41	28
G 11D	1						
A 4D		57.5	31.5	56	29.5	56	30
G 14D	1						
A 18D		54	29	53.5	28	52.5	27.5
A 5D		56.5	31.5	55.5	30	55.5	30
B 7C		44	32	44	31.5	43	31
B 10D	2	38.4	32	38.3	32	38.4	32.04
D 2D	3	53.1	28.6	53.8	26.8		
A 19D		74	31.5	70	30	74	30.5
A 17D		54	28.5	54	28	52.5	26
A 15D		54.3	29.5	54.3	28.5	56	30
A 18C		54	30	53.8	29	53.8	29
A 16D		53.5	27	55.5	29	54	28
A 7D		54	29	57	29	57	29
A 6D		54	30	54.5	29.5	53.5	28.5

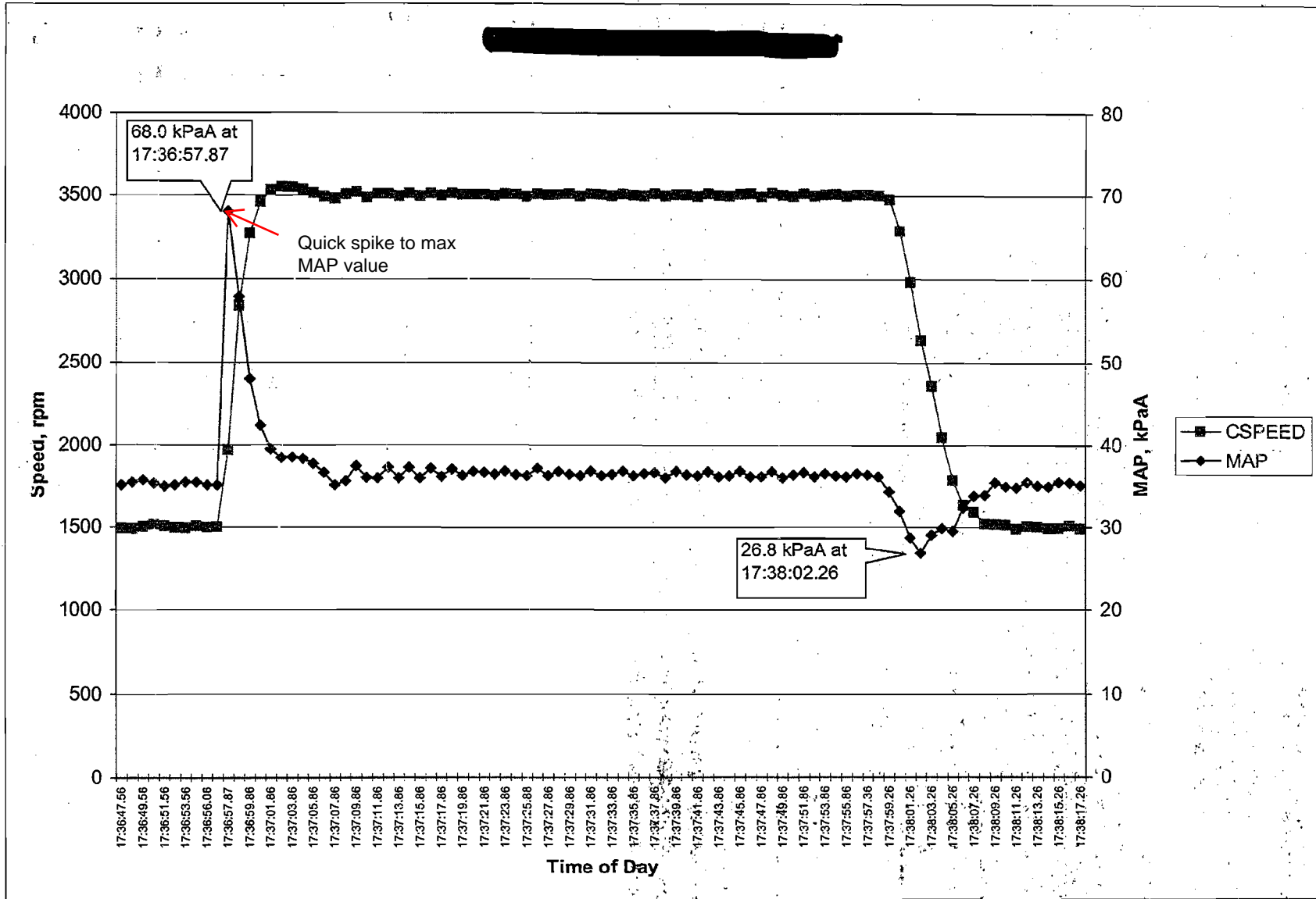
- 1 MAP not plotted with speed and load, plot is for entire break in
- 2 MAP not plotted, values from spreadsheet
- 3 Problems during Break in cause 149 h data to be lost

- The ultimate goal of this exercise was to develop a specification which would allow break in with a different dyno. MAP does not appear to be as well behaved or as consistent as originally believed. While review of the data suggest  $55 \pm 5$  might be in order for accel and  $30 \pm 5$  for decel, not all engines will fall in the accel limits.
- Labs A and D both have results way above this limit on accel, and yet they calibrated. Lab B and E are below this value and B has calibrated these engines

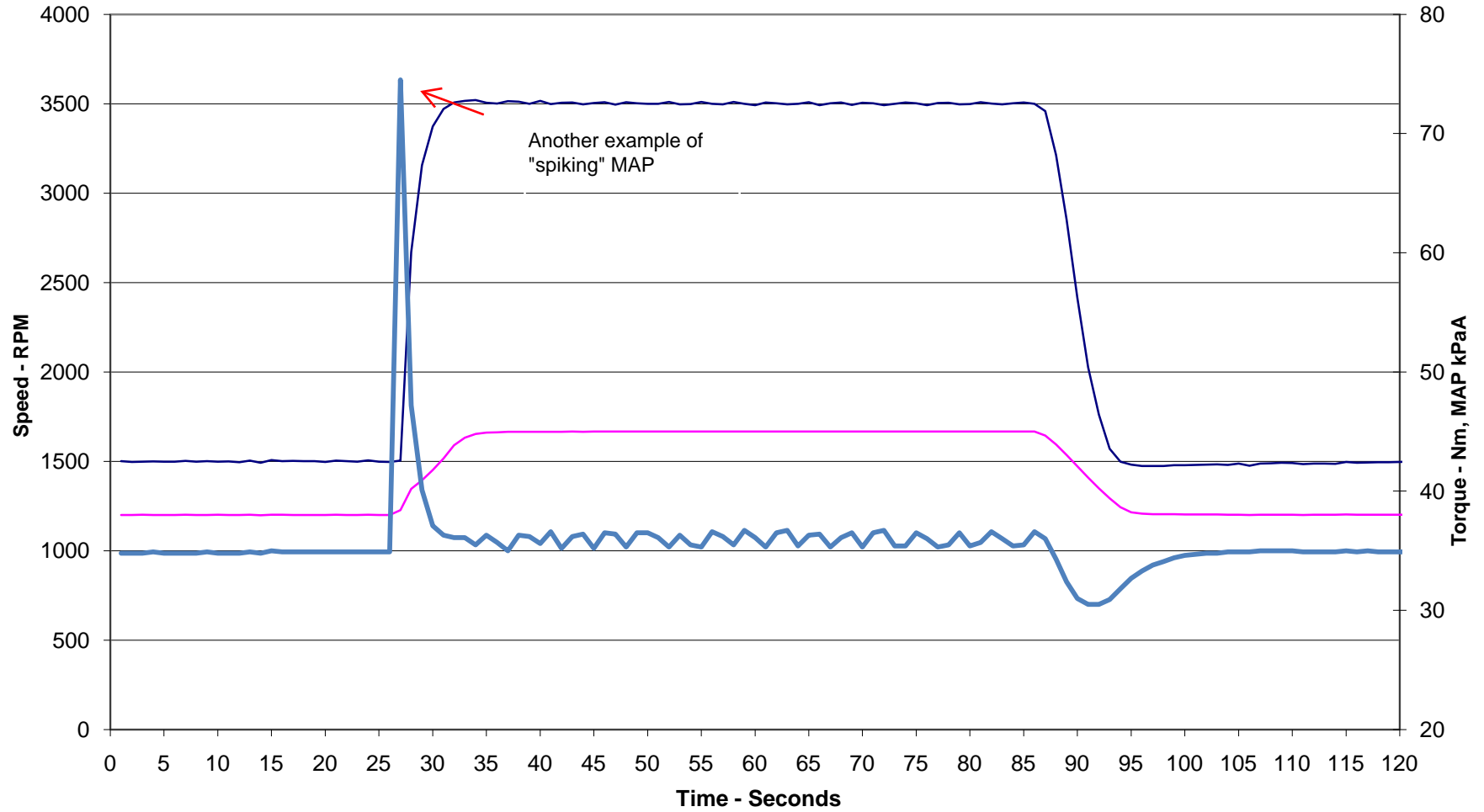
- If a specification is chosen, what actions will be taken for those engines which don't meet it, i.e. Abandon, run more break in until it complies, nothing?
- Additionally, not all traces appear alike. Max/min MAP appears different (profile), in that some break ins have a quick spike, while others are much longer. Sample traces included below.

Test hr --> 0

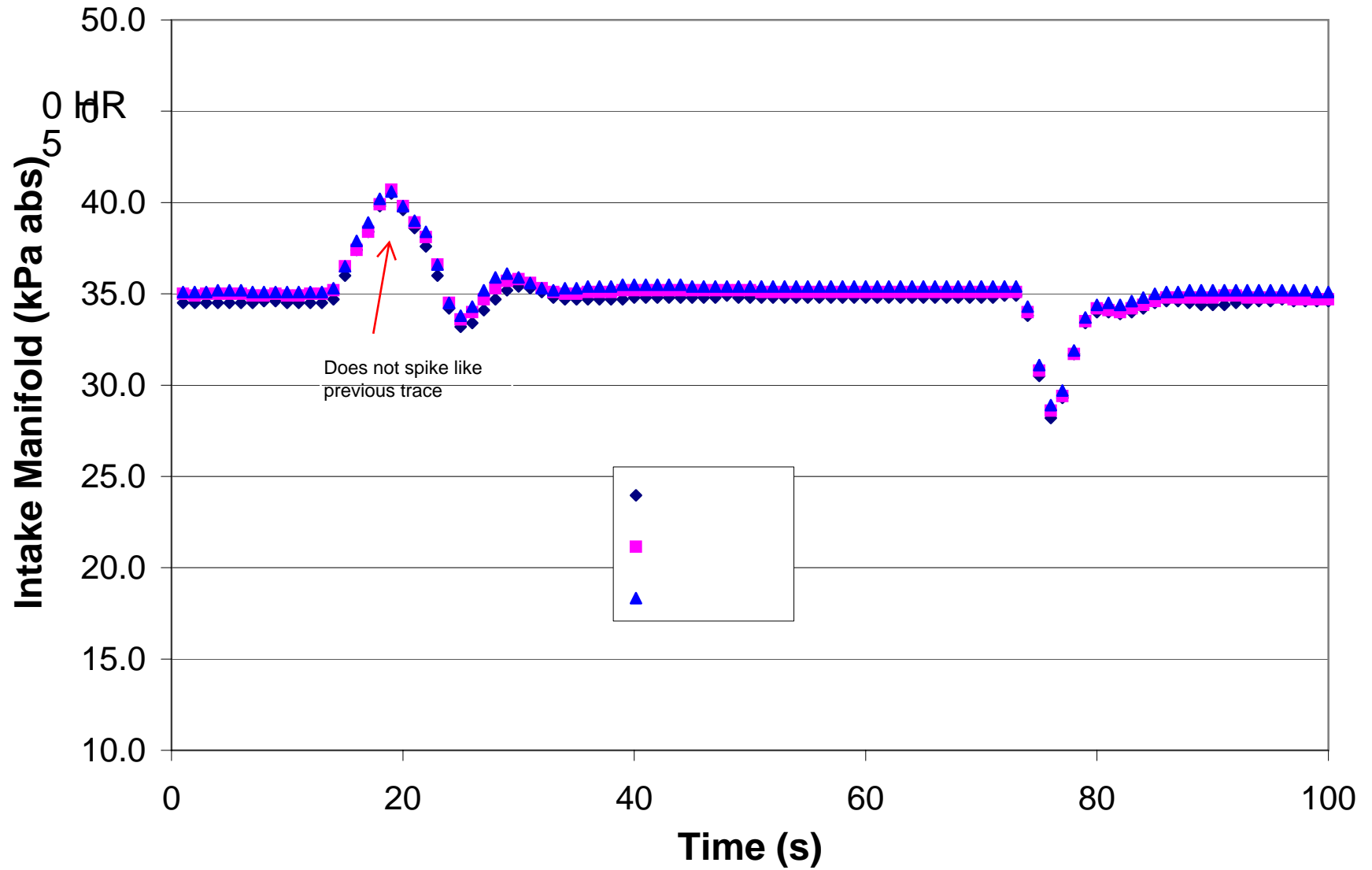




Ramp Trace 149 hr



# Manifold Air Pressure





- More data is probably needed just to set a map specification and differences in MAP need to be better understood.
- Differences in trace profile also need to be understood.



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