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

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Originally Issued: May 26, 2010

Reply to: Jeff Clark  
Test Monitoring Center  
6555 Penn Avenue  
Pittsburgh, PA 15206  
412-365-1032  
[jac@astmtmc.cmu.edu](mailto:jac@astmtmc.cmu.edu)

## Unapproved Minutes of the May 26, 2010 Cummins Test Surveillance Panel Meeting San Antonio, TX

The meeting was called to order at 8:00 am by Chairman Jim Moritz. The attendance is show in **Attachment 1**.

### Meeting Minutes

The minutes of previous meetings were approved without objection (Clark, Johnson).

### TMC Report

The TMC Report was given by Jeff Clark (**Attachment 2**). Jeff also showed OFDP plots provided by the test labs (**Attachment 3**). Discussion of the reference test results on the new oil filter and crosshead batches resulted in the following motions:

**Motion** (Matasic, Richards): Use only 2010 oil filters for all ISM testing; 2009 filters are prohibited. The motion passed 10-0-1.

**Motion** (Richards, Kennedy): Use only Batch D crossheads for all ISM testing. The motion passed 9-0-2.

### IAS Merit Proposal

Steve Kennedy presented a proposal on the IAS merit calculation (**Attachment 4**).

1. Maintain “Hard Fail” at 49 mg.
2. Adjust “Full Merit” point to account for 19.1 mg CF
3. Reposition “Anchor” to maintain relative spacing to the “Hard Fail” and “Full Merit” point.

After discussion, a **motion** (Shank, Kennedy) was made to accept Option 3 in Steve’s proposal. Following the motion, there was a very long discussion. During the discussion, Jim Rutherford showed the impact of several possible IAS merit system changes; some of these are shown in **Attachment 5**. At the conclusion of the discussion an **amendment was offered to the motion to change the merit system minimum for IAS from 16 to 23. This amendment was agreed to by the original motioners. The motion passed 3-0-8.** The Cummins SP understands that not changes to the test method would be issued via Information Letter until the HD Class Panel agrees to this recommendation.

### Review of CWL Correction Factor

The question was raised as to whether or not the current CWL CF of +1.3 is still appropriate with the new crosshead batch (n = 4 tests). After discussion, a **motion** (Whitacre, Matasic) was made to change the correction factor for CWL to +2.5 for tests run on the new crossheads, effective with all tests starting on or after 5/26/10. The motion failed on a vote 2-2-6.

### Five Year Test Life

No issues are anticipated regarding maintaining the Cummins tests for a five-year life.

### Oil Filter Adapters

Zack Bishop of TEI has obtained through salvage a total of 4 of the oil filter adapters.

### PC-9 Fuel

Tom Wingfield indicated that CheveronPhillips should be able to provide fuel for at least five years.

### CPD Report

TEI’s report from Zack Bishop is shown in **Attachment 6**.

### LTMS Version 2

Bi-weekly conference calls will be held to firm up the details of LTMS v2 for the ISM and ISB, culminating with a face-to-face meeting in August. The punch list of items was reviewed as follows:

- Review default proposal to accept or modify the default template
- Decide on reference entity: Lab, stand, engine, etc.
- Lab  $z_i$  Level 2 limits by parameter (to be determined from real units)
- Determine if a parameter uses  $e_i$ ,  $z_i$ , or both

Jim Moritz and Mark Cooper will work to coordinate Cummins and Mack conference calls on LTMS v2.


The meeting adjourned at 3:05 p.m.

## **Attachment 1**

**Cummins SP Meeting May 26, 2010  
Attendance**

<b><u>Name</u></b>	<b><u>Company</u></b>	<b><u>Email</u></b>	<b><u>Phone</u></b>
Jeff Clark	TMC		
Jim Rutherford	ChevronOronite		
Scott Richards	SwRI		
Greg Shank	Volvo/Mack		
Bob Campbell	Afton		
Mike Alessi	ExxonMobil		
Barbie Green	Chevron Phillips	<a href="mailto:nugenbr@cpchem.com">nugenbr@cpchem.com</a>	806-275-5761
Joel Moreno	Haltermann Products	<a href="mailto:jamoreno@haltermann.com">jamoreno@haltermann.com</a>	832-376-2243
Tom Wingfield	Chevron Phillips	<a href="mailto:wingftm@cpchem.com">wingftm@cpchem.com</a>	281.257.3732
Jim Matasic	Lubrizol		
Chris Castanien	Lubrizol		
Mark Cooper	ChevronOronite		
Jim Gutzwiller	Infineum		
Doyle Boese	Infineum		
Andy Ritchie	Infineum		
Ryan Johnson	SwRI		
Zack Bishop	TEI		
Philippe Saad	Cummins		
Shawn Whitacre	Cummins		
Steve Kennedy	ExxonMobil		
Jim Moritz	Intertek		
Brad Carter	Intertek		

## **Attachment 2**



**Test Monitoring Center**  
<http://astmtmc.cmu.edu>


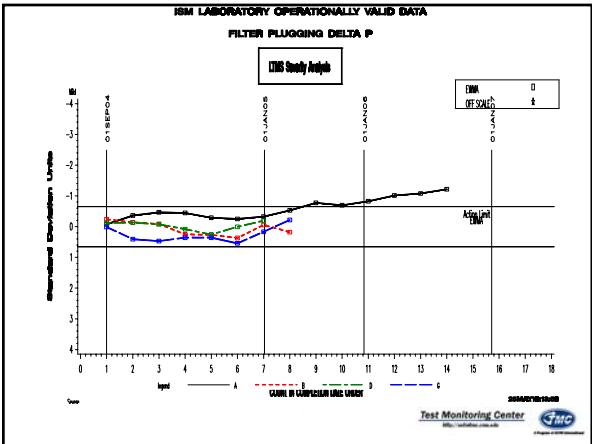
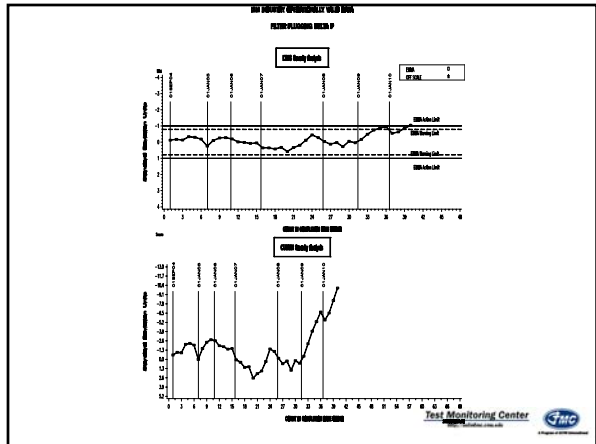
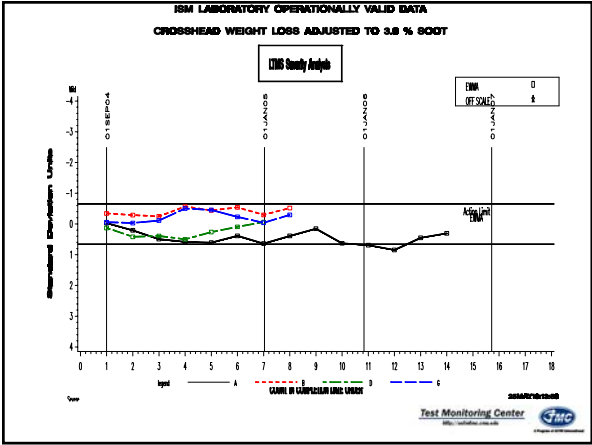
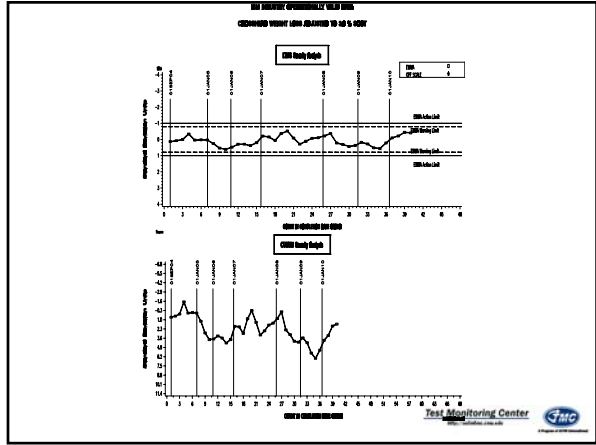
**Test Monitoring Center Report  
to the  
Cummins Test  
Surveillance Panel**

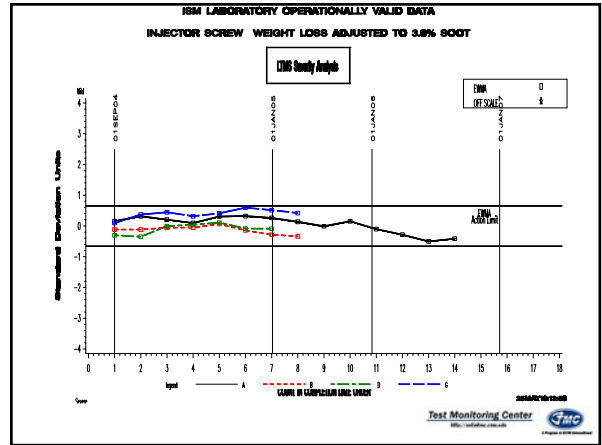
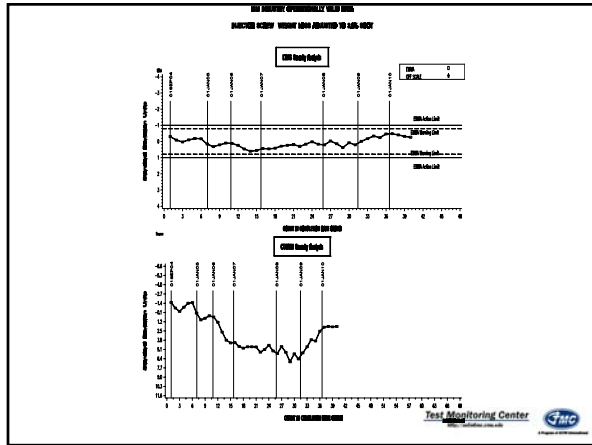
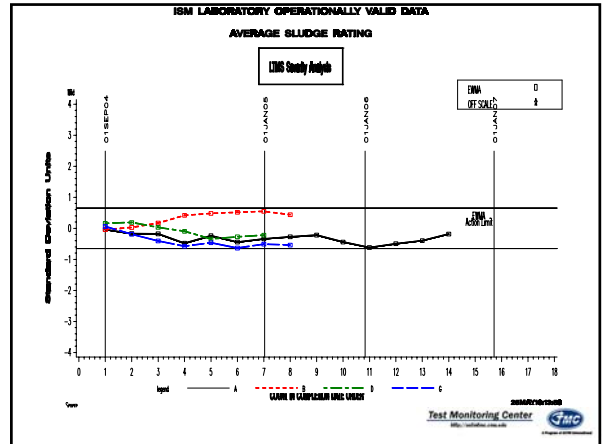
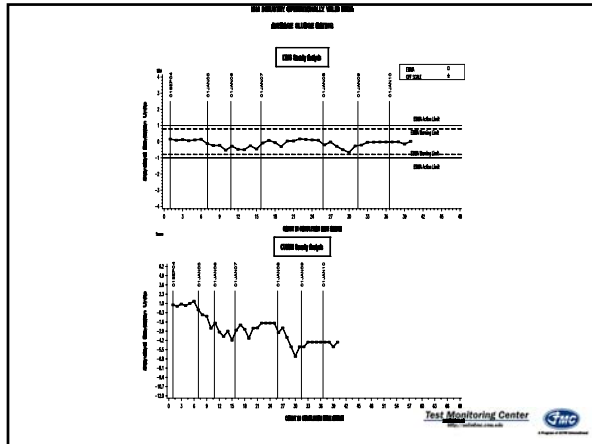
**May 2010  
San Antonio, TX**

## ISM Reference Oil Testing Summary

- Test Activity
  - Four tests on
    - New oil filters
    - New crosshead
    - Four labs, four stands
    - All passed calibration requirements

5/26/2010 2



Lab	Stand	TestKey	EOT Date	Val	Avg. Soot	CWL	FFD	ASR	IAS
D	1	47644	20040801	AC	39	5.7	9.0	9.2	19.4
A	1	50224	20040803	AC	40	4.6	10.0	9.0	35.5
D	1	51798	20040805	AC	39	4.4	12.0	9.1	33.9
B	1	52996	20041002	AC	41	2.4	7.0	9.0	20.9
D	1	52997	20041006	AC	40	7.0	11.0	9.1	26.2
B	1	54195	20041219	AC	37	4.7	13.0	9.1	28.2
A	1	54204	20041226	AC	38	4.9	27.0	8.8	48.4
A	1	55228	20050709	AC	39	6.4	6.0	8.9	36.7
A	2	55976	20050716	AC	43	7.1	8.0	9.0	24.4
A	3	55971	20050730	AC	44	6.1	10.0	8.7	27.6
B	1	56789	20050131	AC	41	5.7	11.0	9.1	26.4
D	1	56968	20050409	AC	40	4.7	14.0	8.8	32.3
A	1	56969	20050402	AC	39	6.7	11.0	8.9	28.1
A	1	56718	20050601	AC	38	8.3	12.0	9.1	36.9
B	1	56719	20050606	AC	40	4.6	10.0	8.8	26.5
B	1	56572	20070228	DC	44	2.7	20.0	9.2	24.1
D	1	56573	20070311	AC	38	6.4	12.0	9.1	26.2
D	1	56574	20070429	AC	41	6.6	14.0	9.3	27.1
A	1	56566	20070504	DC	45	2.4	10.0	8.8	22.4
C	1	61862	20070915	AC	44	3.7	20.0	9.2	24.6
C	1	64071	20070705	AC	44	7.6	8.0	9.0	24.7
D	1	63706	20070810	AC	39	7.8	10.0	9.1	23.7
A	3	64076	20070816	AC	42	4.0	7.0	9.0	27.4
A	2	64078	20070826	AC	42	3.9	6.0	9.0	28.1
D	1	63288	20070906	AC	39	4.7	13.0	9.0	34.0
D	1	63228	20060209	AC	40	4.1	16.0	8.8	21.6
B	1	62504	20080324	AC	42	3.7	15.0	9.1	23.9
A	2	65721	20080812	DC	3.7	8.9	10.0	8.8	34.1
G	1	64411	20081013	AC	40	6.1	18.0	8.8	37.1
A	2	65200	20081026	AC	43	6.5	7.0	8.8	23.1
D	1	63707	20081114	AC	39	5.3	13.0	9.2	33.6
D	1	65132	20080303	AC	43	4.2	8.0	9.0	24.6
B	1	63999	20080916	AC	43	6.1	6.0	9.1	24.7
A	1	65021	20080419	AC	46	7.3	6.0	9.0	23.8
G	1	65048	20080723	AC	41	6.2	7.0	9.0	30.6
A	2	70662	20090607	AC	48	3.4	7.0	9.0	21.6
B	1	70334	20100403	AC	43	3.9	17.0	8.9	28.3
D	1	65133	20100404	AC	41	4.1	8.0	8.8	28.9
D	1	71866	20100408	AC	41	3.1	6.0	8.9	28.3
A	2	73564	20100410	AC	42	6.7	6.0	9.1	28.3

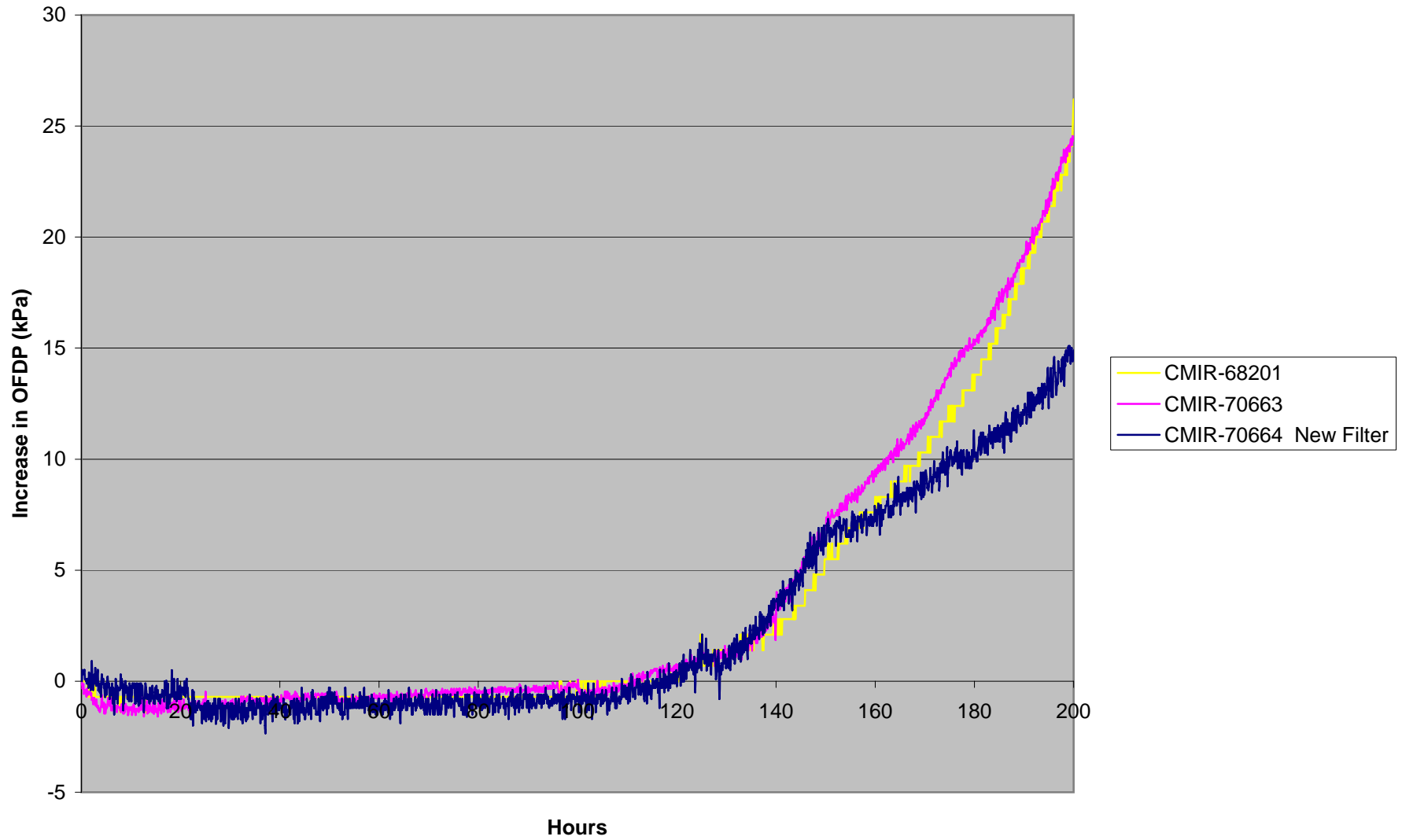
Test Monitoring Center





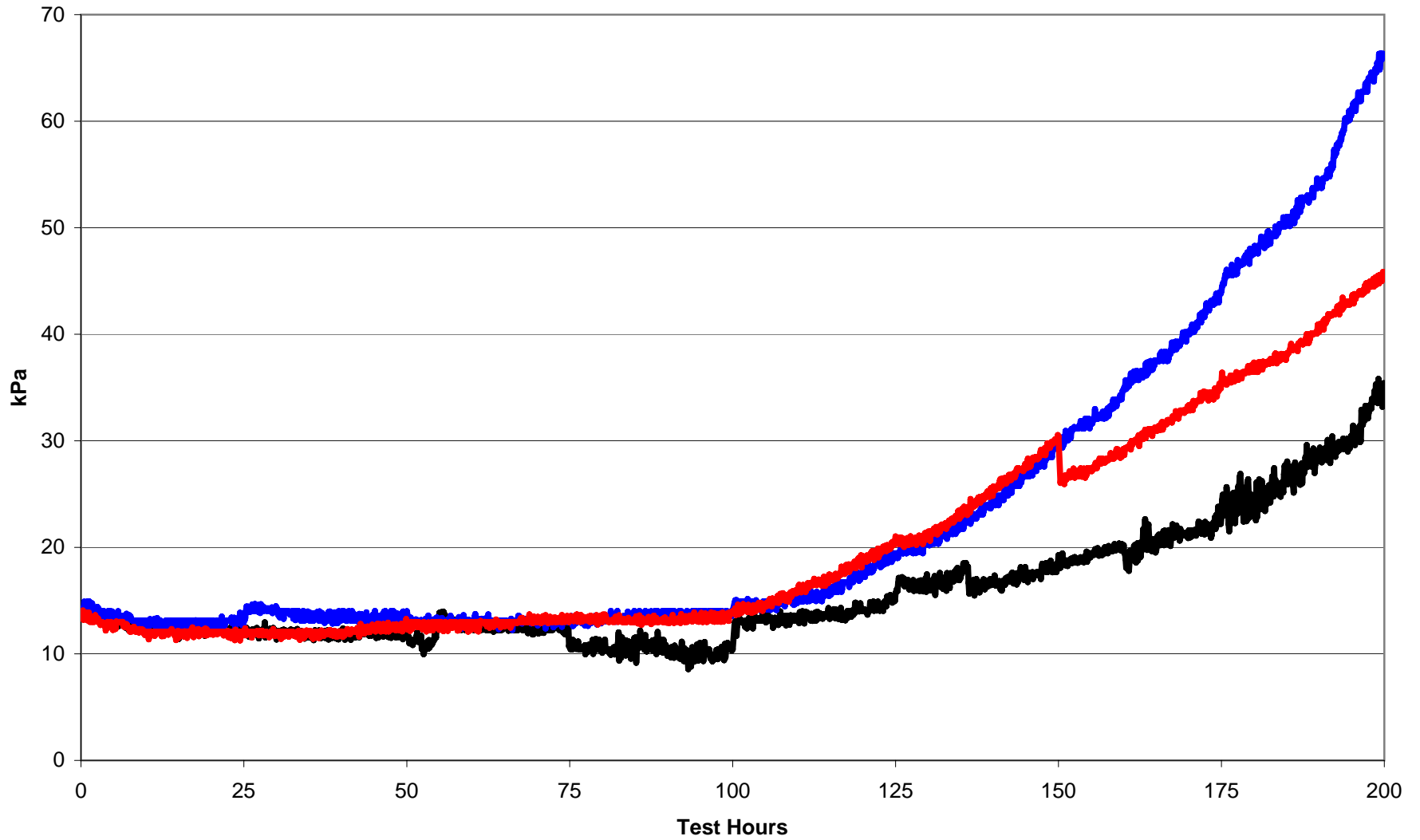
## **Attachment 3**

# Lab A



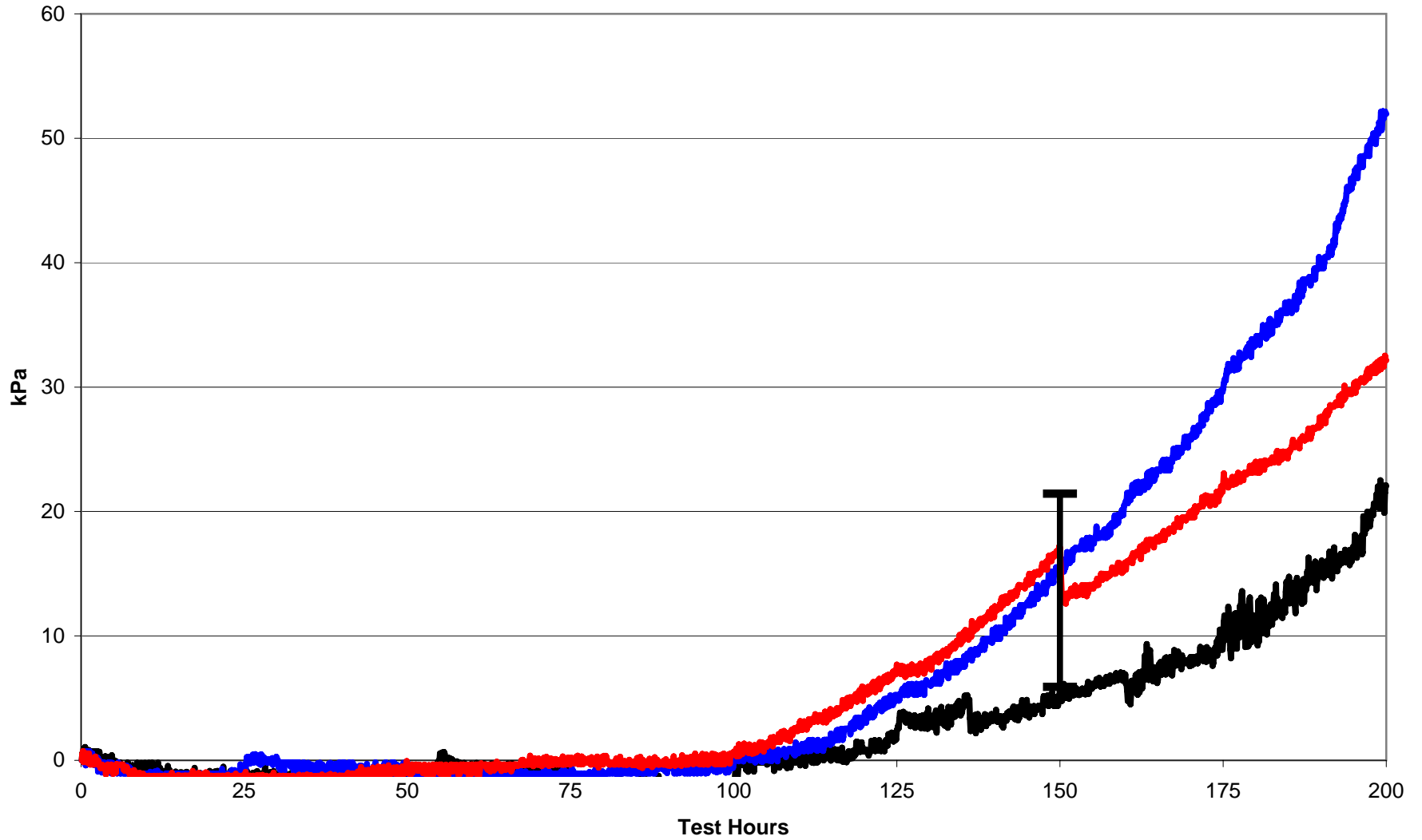
### Lab B Raw Filter Plugging

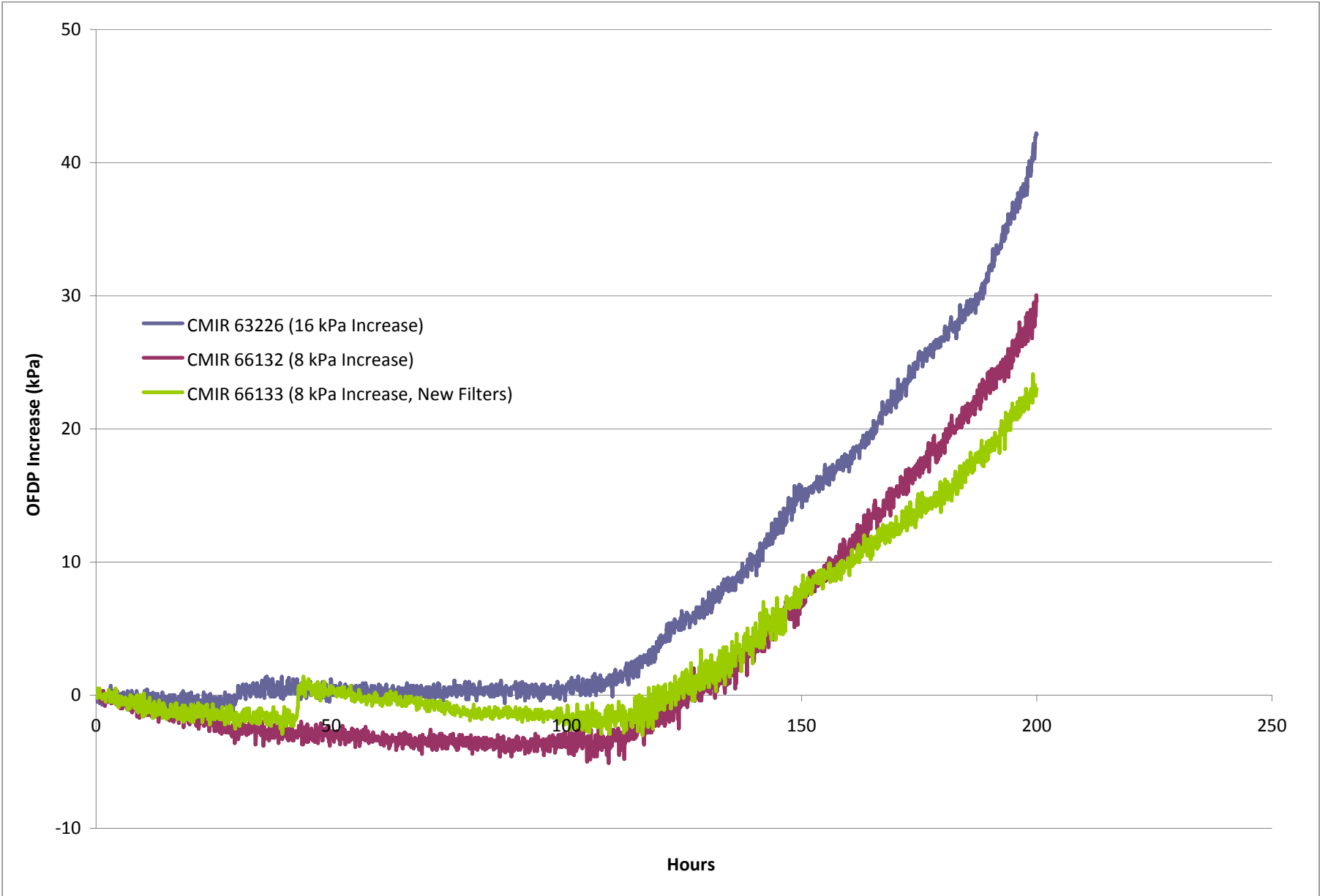
— CMIR: 62999 — CMIR: 62504 — CMIR: 70336



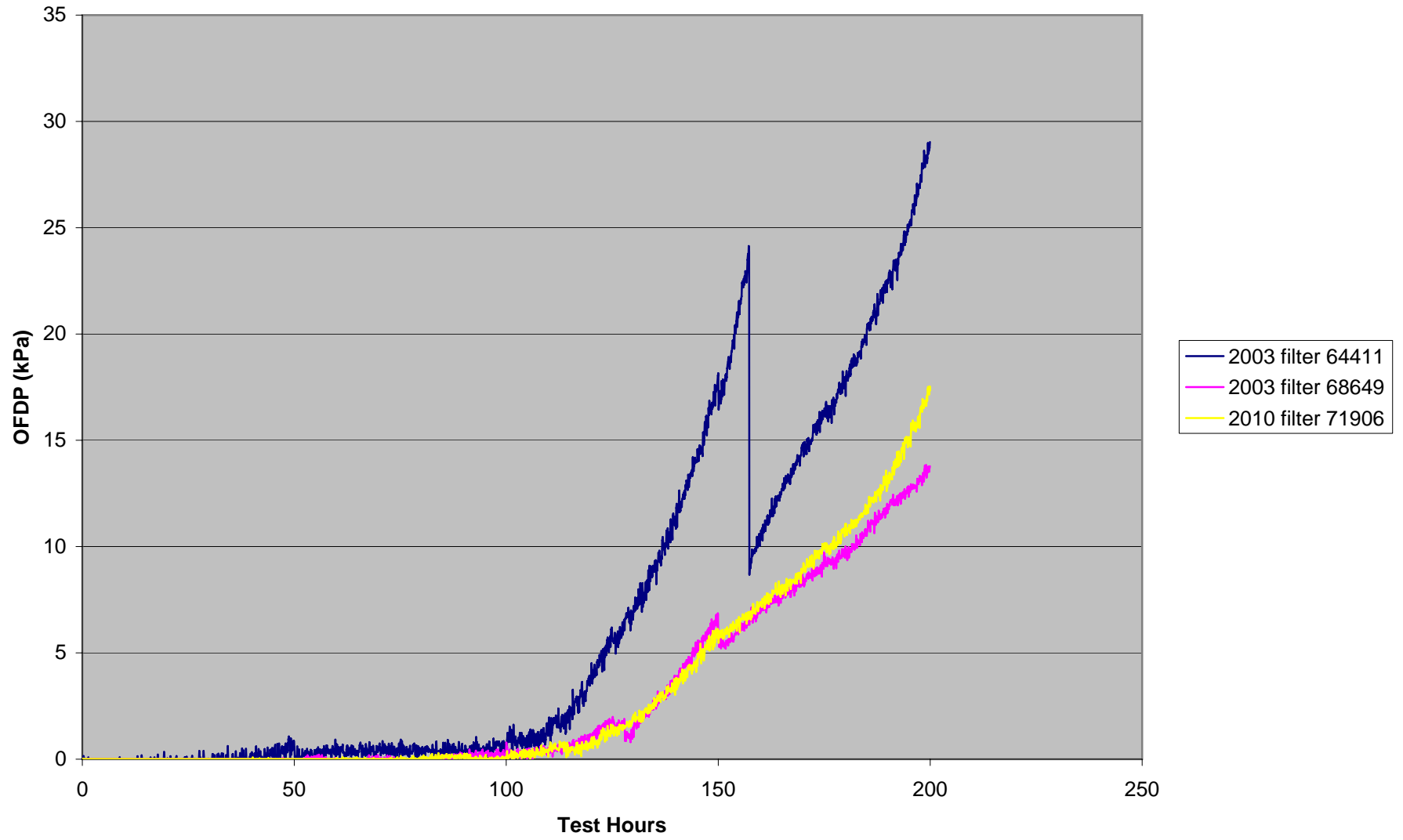
### Lab B ISM OFPD

CMIR: 62999 CMIR: 62504 CMIR: 70336 Target





# Lab G



## **Attachment 4**

**Cummins SP Meeting**  
**ISM IAS Merit Calculation Proposal**  
**May 26, 2010**

Steve Kennedy (ExxonMobil)

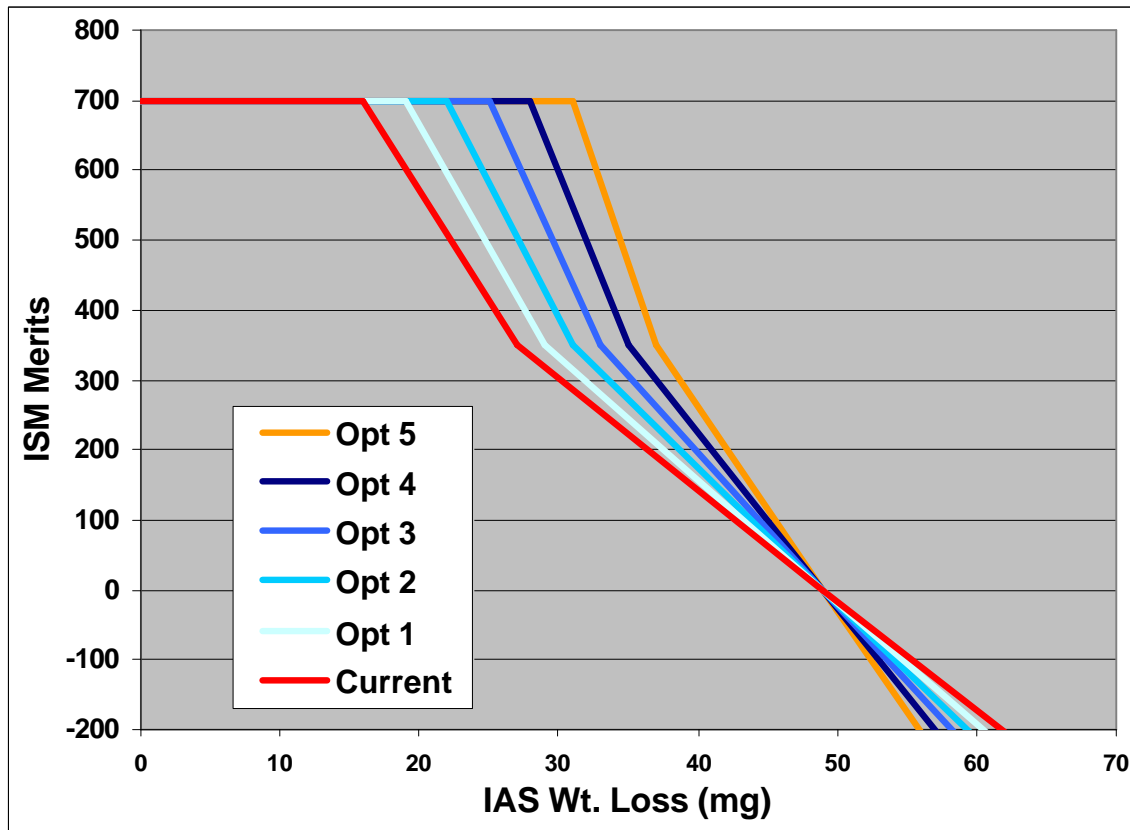


# Summary of the Issue

- **CWL & IAS correction factors implemented for tests completed after June 28, 2007 significantly changed the performance needed to qualify candidate oils**
  - **Most significant impact was on merits**
    - Original 1.7 mg CWL CF brings potential 425 merit reduction
    - Current 19.1 mg IAS CF causes up to 479 merit drop
  - **CWL CF updated by SP in March (restores 100 merits); to be reviewed following reference testing with new crossheads**
  - **CF for IAS does not seem to affect P/F rates for this single parameter, but “unbalanced” merit calculation contributes to reduction in overall pass rate**
  
- **Revised IAS merit calculation being suggested to address this issue; proposal basis:**
  1. **Maintain “Hard Fail” at 49 mg**
  2. **Adjust “Full Merit” point to account for 19.1 mg CF**
  3. **Reposition “Anchor” to maintain relative spacing to the “Hard Fail” and “Full Merit” points**
  - **Multiple options using this approach can be considered**

# IAS Merit Calculation

Calculation Values		Current	Alternate Options				
			1	2	3	4	5
Full Merit	700	16	19	22	25	28	31
Anchor	350	27	29	31	33	35	37
Hard Limit	0	49	49	49	49	49	49



# Alternate IAS Merit Calculations

- Table shows the merit impact for implementing the IAS CF on candidate tests

- Calculates merits using five sets of alternate “Full Merit” and Anchor values

- Recommendation:  
*Adopt Option 4*

- Proposal based on the level of wear performance needed to generate full merits with a strong candidate; Option 4 requires <9 mg IAS before applying the CF

	Current		Alternate Options				
	pre CF	w/CF	1	2	3	4	5
Full Merit	700	16	19	22	25	28	31
Anchor	350	27	29	31	33	35	37
Hard Limit	0	49	49	49	49	49	49
IAS, mg	0	19.1	19.1	19.1	19.1	19.1	19.1
Merit	700	601	697	700	700	700	700
Merit Change	-	-99	-4	0	0	0	0
IAS, mg	4	23.1	23.1	23.1	23.1	23.1	23.1
Merit	700	474	557	657	700	700	700
Merit Change	-	-226	-144	-43	0	0	0
IAS, mg	7	26.1	26.1	26.1	26.1	26.1	26.1
Merit	700	379	452	541	652	700	700
Merit Change	-	-321	-249	-159	-48	0	0
IAS, mg	10	29.1	29.1	29.1	29.1	29.1	29.1
Merit	700	317	348	424	521	645	700
Merit Change	-	-383	-352	-276	-179	-55	0
IAS, mg	13	32.1	32.1	32.1	32.1	32.1	32.1
Merit	700	269	296	329	389	495	636
Merit Change	-	-431	-404	-371	-311	-205	-64
IAS, mg	16	35.1	35.1	35.1	35.1	35.1	35.1
Merit	700	221	243	270	304	348	461
Merit Change	-	-479	-457	-430	-396	-353	-239
IAS, mg	19	38.1	38.1	38.1	38.1	38.1	38.1
Merit	605	173	191	212	238	273	318
Merit Change	-	-431	-414	-393	-366	-332	-287
IAS, mg	22	41.1	41.1	41.1	41.1	41.1	41.1
Merit	509	126	138	154	173	198	230
Merit Change	-	-383	-371	-355	-336	-312	-279
IAS, mg	25	44.1	44.1	44.1	44.1	44.1	44.1
Merit	414	78	86	95	107	123	143
Merit Change	-	-336	-328	-318	-306	-291	-271
IAS, mg	28	47.1	47.1	47.1	47.1	47.1	47.1
Merit	334	30	33	37	42	48	55
Merit Change	-	-304	-301	-297	-293	-287	-279
IAS, mg	31	50.1	50.1	50.1	50.1	50.1	50.1
Merit	286	-18	-19	-21	-24	-28	-32
Merit Change	-	-304	-306	-308	-310	-314	-318

## **Attachment 5**



Oronite

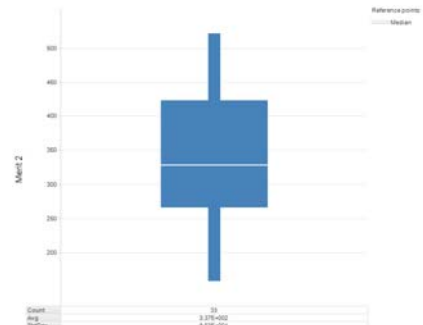
### Cummins ISM IAS Merit Calculation

Jim Rutherford  
May 26, 2010

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### Current Merit – Corrected References

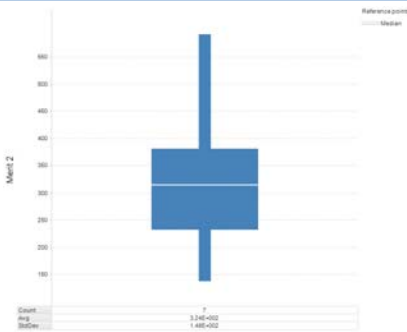


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### Current Merit – Uncorrected (Target) References

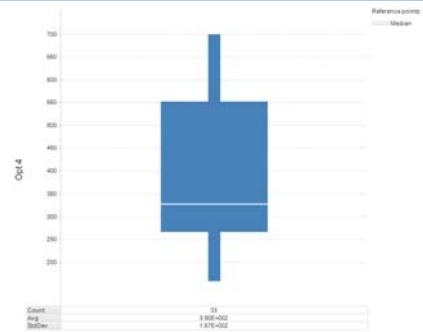


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### Option 4 – Corrected References

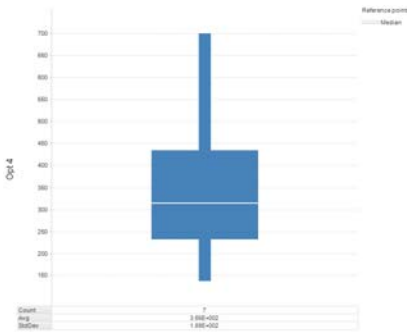


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### Option 4 – Uncorrected (Target) References

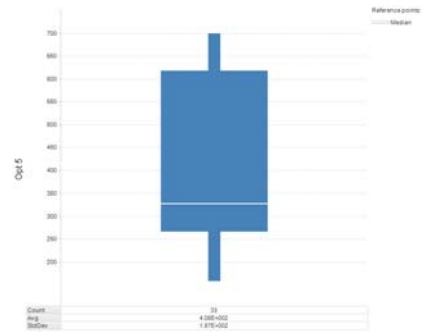


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### Option 5 – Corrected References

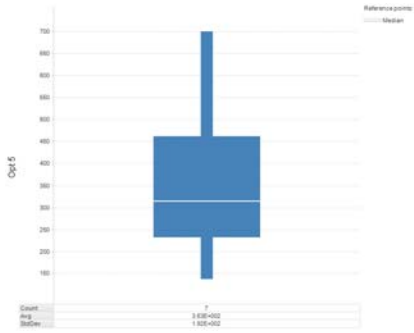


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## Option 5 – Uncorrected (Target) References



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TESTKEY	LAB	LTMSDATE	Date	VAL	CHART	IND	ENKIT	Merits pre I	Merits w/CF	ACWL	ACWLCF	CWL	Merit (pr)	Merit (DB)	SAIAS	SAIASCF	IAS	Merit 1	Merit 2	Opt 1	Opt 2	Opt 3	Opt 4	Opt 5
47644	D	20040901	9/1/2004	AC	Y	830-2	ISM-012	1442	1442	5.7	0	5.7	350	350	19.4	0	19.4	592	592	686	700	700	700	700
50224	A	20040903	9/3/2004	AC	Y	830-2	ISM-010	1215	1215	4.6	0	4.6	625	625	35.5	0	35.5	215	215	236	263	295	215	215
51799	G	20040905	9/5/2004	AC	Y	830-2	ISM-013	1300	1300	4.4	0	4.4	675	675	33.3	0	33.3	250	250	275	305	343	250	250
52996	B	20041002	10/2/2004	AC	Y	830-2	ISM-016	1535	1535	2.4	0	2.4	700	700	25.9	0	25.9	385	385	459	548	661	446	478
52997	D	20041126	11/26/2004	AC	Y	830-2	ISM-025	800	800	7	0	7	25	25	26.2	0	26.2	375	375	448	537	648	420	443
54195	B	20041219	12/19/2004	AC	Y	830-2	ISM-026	1265	1265	4.7	0	4.7	600	600	29.2	0	29.2	315	315	347	420	516	315	315
54204	G	20041226	12/26/2004	AC	Y	830-2	ISM-031	537	537	4.9	0	4.9	550	550	40.4	0	40.4	137	137	151	167	188	137	137
50226	A	20050709	7/9/2005	AC	Y	830-2	ISM-073	1224	771	6.4	0	6.4	175	175	17.6	19.1	36.7	649	196	215	239	269	196	196
55570	A	20050716	7/16/2005	AC	Y	830-2	ISM-069	1125	753	7.1	0	7.1	0	0	9.3	19.1	28.4	700	328	371	451	551	328	328
55571	A	20050730	7/30/2005	AC	Y	830-2	ISM-070	1175	815	6.1	0	6.1	250	250	8.5	19.1	27.6	700	340	399	482	586	340	340
52791	B	20060131	1/31/2006	AC	Y	830-2	ISM-099	1800	1244	3.5	1.7	5.2	700	475	7.3	19.1	26.4	700	369	441	529	639	403	420
55568	G	20060409	4/9/2006	AC	Y	830-2	ISM-143	1575	1041	3	1.7	4.7	700	600	13.2	19.1	32.3	700	266	292	325	381	266	266
54189	D	20060502	5/2/2006	AC	Y	830-2	ISM-083	1573	808	4	1.7	5.7	700	350	20	19.1	39.1	573	158	173	193	217	158	158
56718	A	20060612	6/12/2006	AC	Y	830-2	ISM-150	1643	768	4.6	1.7	6.3	625	200	17.8	19.1	36.9	643	193	212	235	265	193	193
56719	A	20060806	8/6/2006	AC	Y	830-2	ISM-162	1675	1226	2.9	1.7	4.6	700	625	9.4	19.1	28.5	700	326	368	447	547	326	326
55572	B	20070228	2/28/2007	OC	Y	830-2	ISM-131	1625	1367	1	1.7	2.7	700	700	5	19.1	24.1	700	442	522	618	700	604	688
55573	B	20070311	3/11/2007	AC	Y	830-2	ISM-132	1775	1099	3.7	1.7	5.4	700	425	11.1	19.1	30.2	700	299	329	381	473	299	299
55574	D	20070429	4/29/2007	AC	Y	830-2	ISM-220	1475	698	4.9	1.7	6.6	550	125	8	19.1	27.1	700	348	417	502	608	348	348
55569	G	20070509	5/9/2007	OC	Y	830-2	ISM-217	1675	1471	0.7	1.7	2.4	700	700	3.3	19.1	22.4	700	496	581	684	700	700	700
61892	C	20070615	6/15/2007	AC	Y	830-2	ISM-201	1625	1351	2	1.7	3.7	700	700	5.5	19.1	24.6	700	426	504	599	700	560	630
54577	A	20070705	7/5/2007	AC	Y	830-2	ISM-205	1425	723	5.9	1.7	7.6	300	-125	5.6	19.1	24.7	700	423	501	595	700	551	618
63706	C	20070810	8/10/2007	AC	Y	830-2	ISM-146	1375	493	6.1	1.7	7.8	250	-175	14.6	19.1	33.7	700	243	268	298	335	243	243
54576	A	20070816	8/16/2007	AC	Y	830-2	ISM-177	1850	1494	2.5	1.7	4.2	700	700	8.3	19.1	27.4	700	344	406	490	595	344	344
54578	A	20070826	8/26/2007	AC	Y	830-2	ISM-239	1850	1529	2.2	1.7	3.9	700	700	7	19.1	26.1	700	379	452	541	652	429	455
63288	G	20070906	9/6/2007	AC	Y	830-2	ISM-237	1700	1139	3	1.7	4.7	700	600	14.9	19.1	34	700	239	263	292	328	239	239
63226	D	20080203	2/3/2008	AC	Y	830-2	ISM-267	1525	1102	2.4	1.7	4.1	700	700	12.5	19.1	31.6	700	277	305	338	411	277	277
62504	B	20080324	3/24/2008	AC	Y	830-2	ISM-229	1700	1449	2	1.7	3.7	700	700	4.8	19.1	23.9	700	449	529	626	700	621	700
56721	A	20080912	9/12/2008	OC	Y	830-2	ISM-298	950	62	7.2	1.7	8.9	-25	-450	15	19.1	34.1	700	237	261	290	326	237	237
64411	G	20081013	10/13/2008	AC	Y	830-2	ISM-301	1386	514	4.4	1.7	6.1	675	250	18	19.1	37.1	636	189	208	231	260	189	189
68200	A	20081025	10/25/2008	AC	Y	830-2	ISM-300	1625	974	4.8	1.7	6.5	575	150	4	19.1	23.1	700	474	557	657	700	691	700
63707	C	20081114	11/14/2008	AC	Y	830-2	ISM-275	1800	1095	3.6	1.7	5.3	700	450	14.5	19.1	33.6	700	245	270	299	337	245	245
66132	D	20090303	3/3/2009	AC	Y	830-2	ISM-292	1825	1551	2.5	1.7	4.2	700	700	5.5	19.1	24.6	700	426	504	599	700	560	630
62999	B	20090316	3/16/2009	AC	Y	830-2	ISM-297	1875	1173	4.4	1.7	6.1	675	250	5.6	19.1	24.7	700	423	501	595	700	551	618
68201	A	20090419	4/19/2009	AC	Y	830-2	ISM-299	1525	852	5.6	1.7	7.3	375	-50	4.7	19.1	23.8	700	452	532	630	700	630	700
68649	G	20090723	7/23/2009	AC	Y	830-2	ISM-360	1800	968	4.5	1.7	6.2	650	225	11.5	19.1	30.6	700	293	322	366	455	293	293
70663	A	20090807	8/7/2009	AC	Y	830-2	ISM-351	1850	1672	1.7	1.7	3.4	700	700	2.5	19.1	21.6	700	522	609	700	700	700	700
70336	B	20100503	5/3/2010	AC	Y	830-2	ISM-404								7.2	19.1	26.3	700	372	445	533	643	411	432
66133	D	20100505	5/5/2010	AC	Y	830-2	ISM-423								9.8	19.1	28.9	700	320	354	432	529	320	320
71906	G	20100508	5/8/2010	AC	Y	830-2	ISM-427								10.7	19.1	29.8	700	305	336	397	490	305	305
70664	A	20100510	5/10/2010	AC	Y	830-2	ISM-393								10.1	19.1	29.2	700	315	347	420	516	315	315
																			337				390	408
																			96				167	187
																			33				33	33

tests that were not corrected	324	324	372	420	479	355	363
tests corrected after the fact; most CJ-4 testing done here without CF	682	322	371	437	510	363	376
post CF reference tests	697	346	398	466	539	408	428
all data	627	335	385	449	519	384	400

values for merit calculations	700	16	16	19	22	25	23	24
	350	27	27	29	31	33	27	27
	0	49	49	49	49	49	49	49

- Merit 1 merits for uncorrected IAS
- Merit 2 merits for final IAS (with 19.1 CF when applicable)
- Opt 1 revised merits for final IAS (with 19.1 CF when applicable)
- Opt 2
- Opt 3
- Opt 4
- Opt 5

## **Attachment 6**





**CPD Report  
Cummins Surveillance Panel  
May 26, 2010**

**ISM and ISB Hardware Update**

- ISM Test Kits
- ISB Test Kits
- ISM and ISB Lifetime Hardware Supply



**CPD Report  
Cummins Surveillance Panel  
May 26, 2010**

**ISM Wire Mesh Oil Filter (2010 Batch)**

- A lifetime batch of ISM Wire Mesh Test Oil Filters (901 Media) was manufactured and has replaced the 2009 batch of wire mesh filters.
- The new batch of filters has a Red label with “901 Media” lettered on it. The old batch of wire mesh filters had a Blue label and did not have any filter media designation on the label. All kits starting with kit number 425 will have the 901 Media Wire Mesh filters in them. TEI has also supplied labs with the new 901 Media test oil filters for kits issued prior to #425 that labs had in their inventories.



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**ISM Crossheads (Batch “D”)**

- A lifetime batch of ISM Crossheads was produced and approved for use during the 2<sup>nd</sup> quarter of 2010.
- All ISM test kits starting with kit number 425 contain the new batch “D” crossheads. TEI has also supplied labs with the new batch “D” crossheads for kits issued prior to #425 that labs had in their inventories.



**CPD Report  
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**ISM Engine Oil Filter Housing**

- TEI now has an ample supply of the old style ISM engine oil filter housing. Several housings were located at a diesel engine salvage depot in San Antonio, Texas. The housings were thoroughly cleaned and are now in “like new” condition. We would like to thank Intertek for providing their part cleaning facility and personnel in getting these housings reconditioned.



**CPD Report  
Cummins Surveillance Panel  
May 26, 2010**

**ISB Camshaft (Batch “F”)**

- A new batch of ISB camshafts was manufactured during the 1<sup>st</sup> quarter of 2010.
- Same manufacturer as previous batch of ISB cams.
- Cam measurements are within manufacturing tolerances.
- Batch “F” cams have been issued in ISB kits beginning with kit number 389.



**CPD Report  
Cummins Surveillance Panel  
May 26, 2010**

**ISM and ISB Lifetime Hardware Supply**

- Cummins has been reviewing current TEI inventory levels of all kit hardware.
- TEI will provide Cummins with any assistance required to assure continuation of the ISM and ISB test through 2015.