

Overview of Engine Lubricant Tests in API 'C' Categories

Mark Cooper
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Jun 2010 Status - API 'C' Category Engine Lubricant Tests

Test	Active	Fuel	CJ-4	CI-4 Plus	CI-4	CH-4	Issues / Remarks
Cat 1K	Y	0.4% S			X	X	Mild severity - 60 days to resolve or unavailable Introducing final batch parts Injector pumps unavailable? Insufficient engines available w/ critical hardware
Cat 1N	Y	PC-9	X				
Cat 1P	Y	PC-9				X	
Cat 1R	Y	PC-9			X		
Cat C13	Y	ULSD	X				
Cummins M11 HST	N					X	
Cummins M11 EGR	N				X		
Cummins ISM	Y	PC-9	X		M11 EGR alt.	M11 HST alt.	
Cummins ISB	Y	ULSD	X				
Mack T-8 / T-8E	Y	PC-9					
Mack T-11	Y	PC-9	X	X			
Mack T-9	N					X	
Mack T-10	N				X		
Mack T-12	Y	ULSD	X		T-10 alt.	T-9 alt.	
Mack T-10A	Y	PC-9			X		
Mack T-12A	Y	ULSD	X		T-10A alt.		
RFWT	Y	PC-9	X		X	X	
EOAT	Y	PC-9	X		X	X	
Sequence IIIIF/G	Y		X		X	X	

Dec 2010 Status - API 'C' Category Engine Lubricant Tests

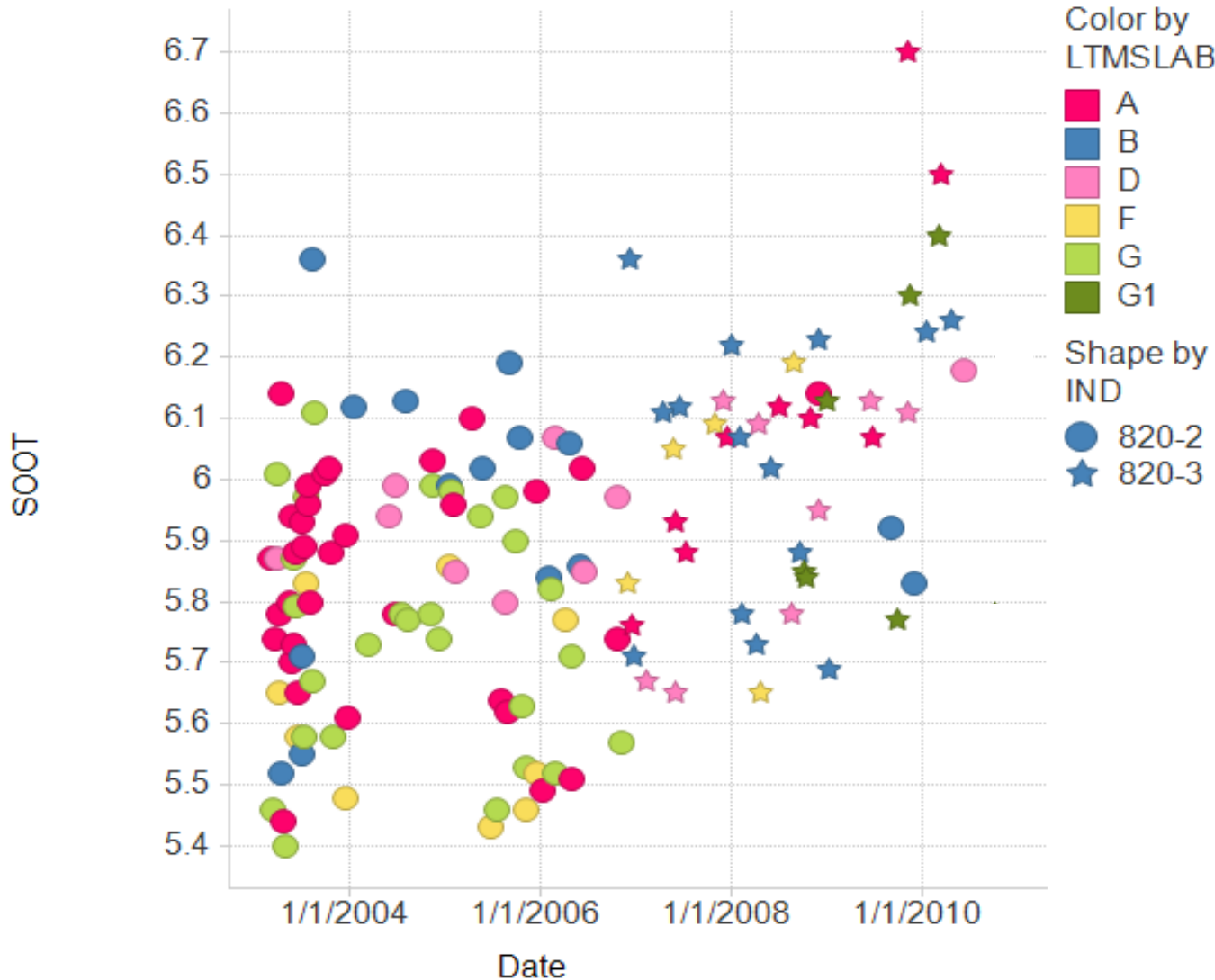
Test	Active	Fuel	CJ-4	CI-4 Plus	CI-4	CH-4	Issues / Remarks
Cat 1K	Y	0.4% S			X	X	Liner and oil ring availability, extensions Liner availability
Cat 1N	Y	PC-9	X				
Cat 1P	Y	PC-9				X	
Cat 1R	Y	PC-9			X		
Cat C13	Y	ULSD	X				
Cummins M11 HST	N					X	
Cummins M11 EGR	N				X		
Cummins ISM	Y	PC-9	X		M11 EGR alt.	M11 HST alt.	
Cummins ISB	Y	ULSD	X				
Mack T-8 / T-8E	Y	PC-9					
Mack T-11	Y	PC-9 HS	X	X			Improved severity - modified fuel
Mack T-9	N					X	
Mack T-10	N				X		
Mack T-12	Y	ULSD	X		T-10 alt.	T-9 alt.	Short-term unavailability? (rod bearings), extensions
Mack T-10A	Y	PC-9			X		
Mack T-12A	Y	ULSD	X		T-10A alt.		
RFWT	Y	PC-9	X		X	X	Remanufactured injector pumps available
EOAT	Y	PC-9	X		X	X	2 additional engines available w/ critical hardware
Sequence IIIIF/G	Y		X		X	X	

Dec 2010 Status - API 'C' Category Engine Lubricant Tests

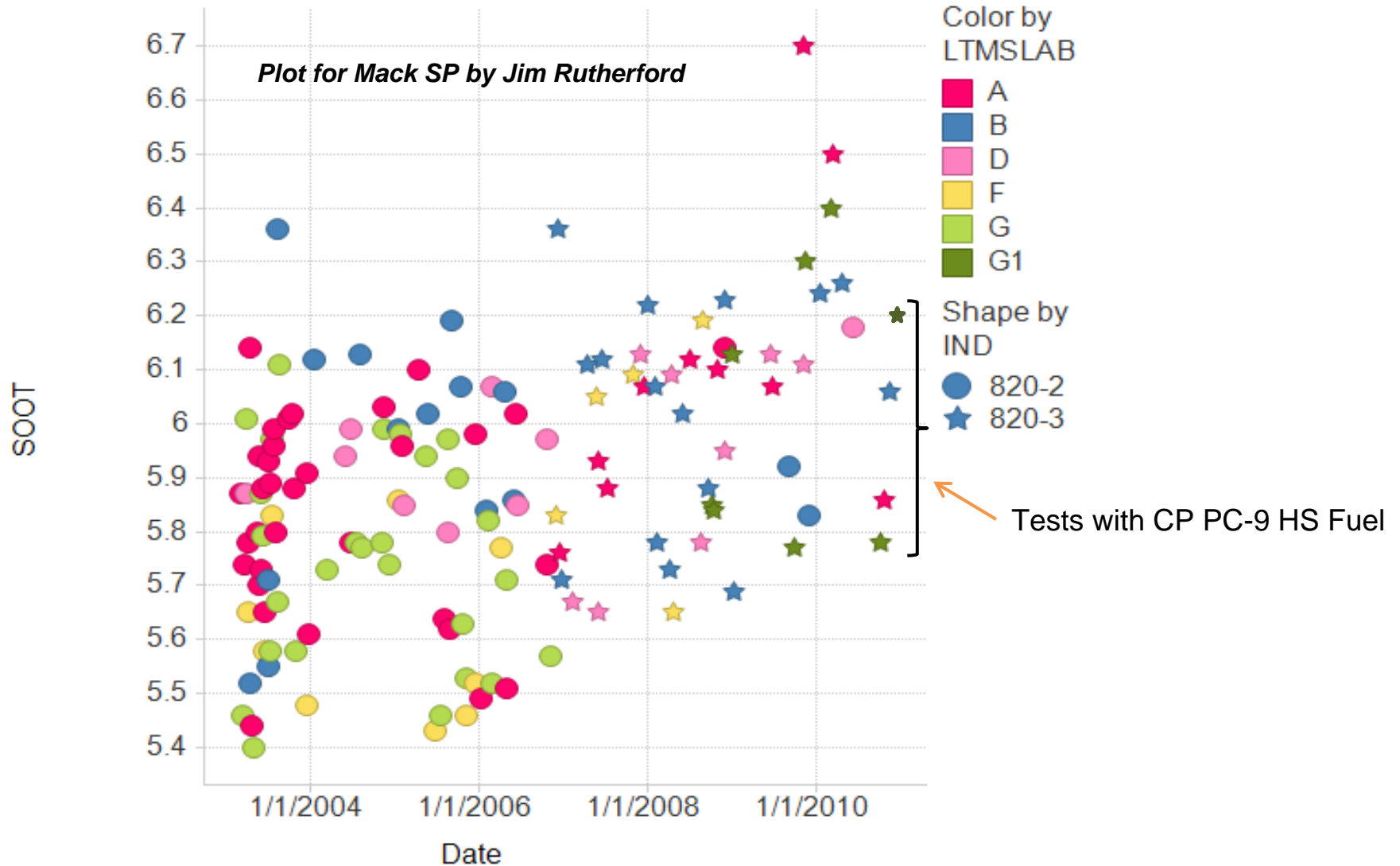
Test	Active	Fuel	CJ-4	CI-4 Plus	CI-4	CH-4	Issues / Remarks
Cat 1K	Y	0.4% S			X	X	Liner and oil ring availability, extensions Liner availability
Cat 1N	Y	PC-9	X				
Cat 1P	Y	PC-9				X	
Cat 1R	Y	PC-9			X		
Cat C13	Y	ULSD	X				
Cummins M11 HST	N					X	
Cummins M11 EGR	N				X		
Cummins ISM	Y	PC-9	X		M11 EGR alt.	M11 HST alt.	
Cummins ISB	Y	ULSD	X				
Mack T-8 / T-8E	Y	PC-9					
Mack T-11	Y	PC-9 HS	X	X			Improved severity - modified fuel
Mack T-9	N					X	
Mack T-10	N				X		
Mack T-12	Y	ULSD	X		T-10 alt.	T-9 alt.	Short-term unavailability? (rod bearings), extensions
Mack T-10A	Y	PC-9			X		
Mack T-12A	Y	ULSD	X		T-10A alt.		
RFWT	Y	PC-9	X		X	X	Remanufactured injector pumps available
EOAT	Y	PC-9	X		X	X	2 additional engines available w/ critical hardware
Sequence III/F/G	Y		X		X	X	

Letter on status of Mack T-11 and T-12 - December 2010

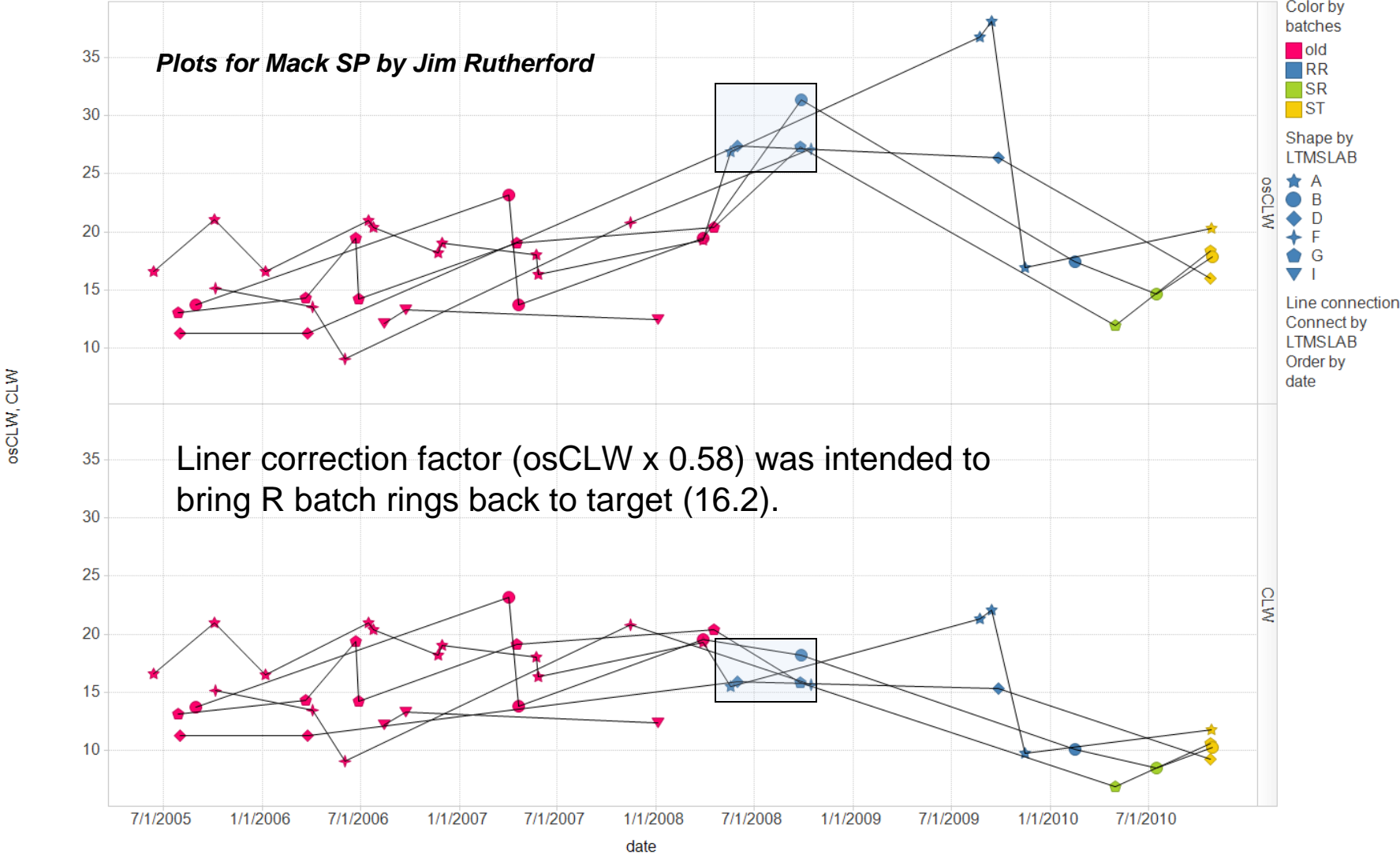
Mack T-11 Soot at 12 cSt Viscosity Increase



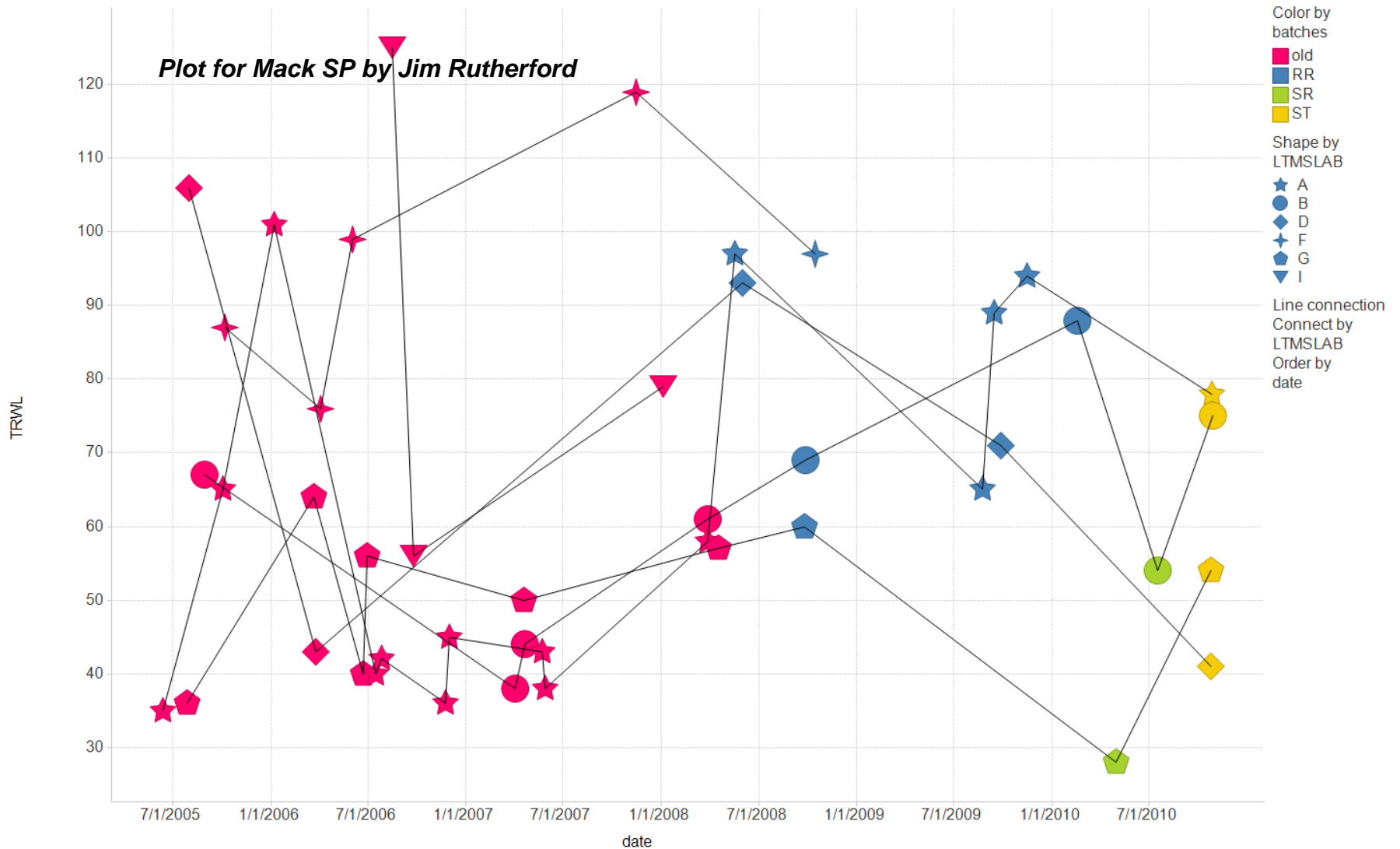
Mack T-11 Soot at 12 cSt Viscosity Increase



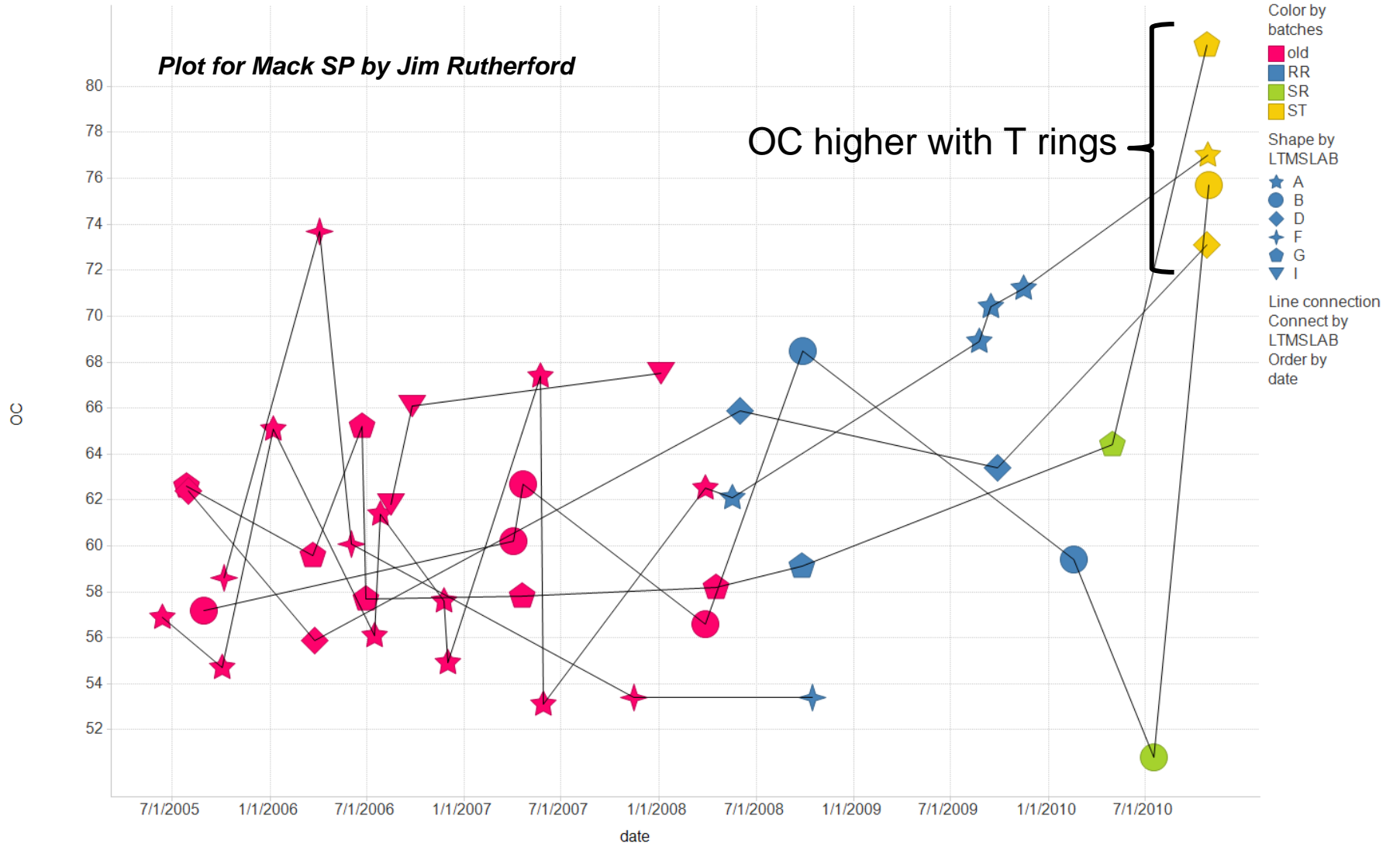
Mack T-12 Liner Wear



Mack T-12 Ring Wear



Mack T-12 Oil Consumption



'C' Category Test Availability Summary

Test	Availability through 2015	Availability beyond 2015	Notes
Cat 1K	No issues	Possibly	Oil pump and coolant heat exchanger
Cat 1N	No issues	Possibly	Oil pump and coolant heat exchanger
Cat 1P	No issues	No issues	CH-4 life?
Cat 1R	No issues	No issues	Liner issues.
Cat C13	No issues	Probably	Production engine for some time
Cummins ISM	No issues	Probably	Production engine for some time
Cummins ISB	No issues	Probably	Production engine for some time
EOAT	Probably	?	
Mack T-8E	No issues	Possibly	Depends on usage rate until 2015
Mack T-11	No issues	Possibly	Depends on usage rate until 2015
Mack T-12	No issues	Possibly	Depends on usage rate until 2015
RFWT	No issues	Possibly	
Seq III	No issues	?	Not projected past 2015 – GF5