

## SEQUENCE IIIF REDEVELOPMENT PROGRAM OXIDATION DISCRIMINATION OILS

Oil Code	Supplier	Oil Quality	SAE Viscosity Grade	Base Oil Group	Sequence IIIE Performance				Field Data	Sequence IIIF (Precision Matrix Configuration)				Expected IIIF Performance	
					% Viscosity Increase	Hr to 375%	Avg Wear	Max Wear		% Viscosity Increase	Hr to 100%	Avg Wear	Max Wear	Viscosity Increase	Wear
GPS1	A	GF-3	5W-30	II+	85	73	26	99	Low Vis Inc, Wear in Ext Drain Taxi Testing	65 <sup>(2)</sup>	--	Low	Low	Pass	Pass
GPS2	A	GF-3	10W-30	I	--	--	--	--	--	80 <sup>(2)</sup>	--	4	12	Pass	Pass
GPS3	A	GF-3	10W-30	II+	--	--	--	--	--	--	--	--	--	Pass	Pass
GPS4	B	SF	5W-30	II/II+	Fail <sup>(3)</sup>	--	Pass	Pass	--	98	--	11	15	Fail	Pass
GPS5	B	<GF-2	5W-30	II/II+	32,000	--	11	51	--	46	--	3	6	Fail	Pass
GPS6	B	GF-3	5W-30	II/II+	14	--	4	5	Good Perf in Extended Drain Mixed Driving	Pass	--	--	--	Pass	Pass
GPS7	C	PC-9/SL	15W-40	I/II	B/L Fail <sup>(3)</sup> <sup>(6)</sup>	--	--	--	--	--	--	--	--	B/L Fail	Pass
GPS8	C	PC-9/SL	15W-40	I/II	74	77.9	5.2	9	Running in several fleets.	--	--	--	--	Pass	Pass
GPS9	C	GF-3	5W-30	II+	B/L Fail <sup>(3)</sup> <sup>(7)</sup>	--	--	--	--	--	--	--	--	B/L Fail	Pass
GPS10	C	GF-3	5W-30	II+	Robust Pass <sup>(3)</sup>	--	--	--	See Note 5	62	--	96 <sup>(4)</sup>	1066	Pass	Pass
GPS11	D	GF-2	5W-30	I	125 <sup>(1)</sup>	--	Pass	Pass	Low Vis Inc, Wear in Ext Drain Taxi Testing	785	--	Pass	Pass	Pass	Pass
GPS12	D	GF-2	5W-30	II	94	76.4	13	25	Low Vis Inc, Wear in Ext Drain Taxi Testing	--	--	--	--	Pass	Pass

<sup>(1)</sup> 80 to TVTM in 5 tests with same DI and different base oils

<sup>(2)</sup> Earlier version of IIIF test supplemental AO.

<sup>(3)</sup> Predicted performance based on fundamental formulation expertise supplemental AO.

<sup>(4)</sup> Single-point wear

<sup>(5)</sup> Similar formulation styles tested in NYC taxis.

<sup>(6)</sup> Same formulation as GPS8, with reduced amount of

<sup>(7)</sup> Same formulation as GPS10, with reduced amount of

## **Additional Notes on Sequence IIIF Redevelopment Program Oil Matrix**

1. This matrix of oils has been designed to address oxidation discrimination only. Additional oils will be used to address wear discrimination.
2. Oils GPS2 and GPS3 have the same DI package as GPS1, but are blended as 10W-30 oils in Group I and Group II stocks, respectively.
3. Oils GPS4, GPS5, and GPS6 use the same dispersant, detergent and ZDP with different levels of ashless antioxidant increasing from GPS4 (SF level) to GPS5 (sub GF-2 level) to GPS6 (GF-3 prototype level).
4. Expected IIIF Performance (last 2 columns) reflects expectation expressed by supplier of oil, and may or may not be a consensus view.

Mike McMillan  
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