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FUELS AND LUBRICANTS RESEARCH DIVISION

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August 15, 2014

Efficient Fuel Solutions, LLC
Attn: Mr. Anupam Rajvanshi
350 Nails Crossing Road
Caddo, OK 74729-0557

Via e-mail: arajvanshi@fuelspec.com

Subject: Letter Report for Southwest Research Institute® Project No. 08.19628.44.001, entitled, *"Results of Fuel Analyses"*

Dear Mr. Rajvanshi:

We received a sample of FuelSpec® 114-05 (EFS Batch No. 112-833) for addition to non-additized diesel fuel and subsequent testing per Table 1 of ASTM Standard Specification, D975. We performed the requested analyses on diesel fuel with and without your additive. The additive treat rate was 1 part additive to 3,480 parts fuel. The test results are given in Table 2.

Table 1. Sample Legend

SwRI Sample ID	Description	Table
CL14-6618	ULSD, Tank-152	2
CL14-6622	Diesel Fuel Blend: 4000mL of CL14-6618 & 1.05mL of CL14-6562	2

We appreciate the opportunity to perform this testing for you. If you have any questions, please do not hesitate to contact me at (210) 522-3185 or by e-mail at swestbrook@swri.org.

Prepared by:

Steven R. Westbrook, Staff Scientist
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Approved by:

Scott A. Hutzler, Manager
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SRW/rs
Attachment

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Table 2. Test Results

Test	Method	Units	SwRI Sample ID CL14-6618 Results	SwRI Sample ID CL14-6622 Results	Specification D975 Table 1 Limits	
					min	max
Flash Point (Pensky Martin)	D93	°C	57.5	59.5	52	
Water and Sediment	D2709	vol %	<0.005	<0.005		
Distillation	D86					
IBP		°C	176.8	177.7		
5%		°C	196.3	197.3		
10%		°C	203.6	203.7		
15%		°C	211.3	210.4		
20%		°C	217.5	216.9		
30%		°C	230.0	230.3		
40%		°C	242.5	242.8		
50%		°C	254.7	255.1		
60%		°C	267.4	267.7		
70%		°C	280.3	280.5		
80%		°C	295.9	295.9		
90%		°C	317.0	317.0	282	336
95%		°C	334.7	334.9		
FBP		°C	341.9	342.2		
Residue		%	1.5	1.4		
Loss		%	1.1	1.0		
T50-T10		°C	51.1	51.4		
T90-T10		°C	113.4	113.3		
Kinematic Viscosity	D445					
40°C		cSt	2.28	2.29	1.9	4.1
Ash Content	D482	mass %	<0.001	<0.001		0.01
Total Sulfur Content	D5453	ppm	9.8	9.6		15
Sulfur Content	D2622	ppm	11.0	10.3		0.05
Copper Strip Corrosion	D130					
Test Duration		hrs	3.0	3.0	3	
Test Temperature		°C	50	50	50	50
Rating		-	1A	1A		3
Cetane Number	D613	-	54.5	53.7	40/40/30	
Calculated Cetane Index	D976	-	55.4	55.5	40	
Aromatic Content	D1319					
Aromatics		vol %	19.7	18.3		35
Olefins		vol %	1.5	2		
Saturates		vol %	78.8	79.7		
Cloud Point	D2500	°C	-11	-12		
Cold Filter Plugging Point	D6371	°C	-15	-14		
Ramsbottom Carbon Residue (10% btms)	D524	wt %	0.05	0.06		0.35
Lubricity (HFRR)	D6079	µm	0.51	0.51		520
Electrical Conductivity	D2624					
Electrical Conductivity		pS/m	51	118	25	
Temperature		°C	21	20		
Density (15°C)	D4052	g/mL	0.8183	0.8183		