Test Report

Michelin Aerodynamic Mud Flaps (28-Ft Double Trailers)

MESILLA VALLEY TRANSPORTATION SOLUTIONS
CERTIFIED
Fuel Economy Experts

MVT SOLUTIONS CERTIFIED™ FUEL ECONOMY TEST

June 2022

MICHELIN

Aerodynamic Mud Flaps

4.20	0.32	3.60%
gal/1000 miles	MPG	Percent

1.0: INTRODUCTION

Mesilla Valley Transportation Solutions ("MVTS" or "MVT Solutions") certifies the fuel savings described in this report. **Note:** this report was designed for carriers and providing information relevant to their needs. Therefore, the format varies from traditional fuel economy and technical reports. The Report Summary provides the reader a quick synopsis of the fuel savings. Following the Summary is the body of the report and further details on the subjects. This fuel economy test was performed using MVTS proprietary fuel economy test methods. These test methods were developed from race car engineering and advanced vehicle test methods, which the Mesilla Valley Transportation ("fleet" or "MVT") has relied on since 2012 to identify substantial fuel savings. The MVTS methods provide highly accurate and reliable answers on real-world fuel savings in comparison to other test methods, which enables carriers to make the best decisions for their company. Contact MVTS with any questions regarding the product or test. As part of an MVTS Certified™ test, MVTS supports product inquiries, which we encourage carriers to utilize.

Contact MVTS with any questions regarding the test.

Note: blue text indicates a link to the topic. Click to follow. Alt + ← returns the reader to the initial location.

2.0: TEST SUMMARY

Michelin Aerodynamic Mud Flaps showed savings of 4.20 (3.60%) gal/1000 miles. Although these fuel savings are significant, they are not unexpected; 2021 testing on 28-ft double trailer configurations showed fuel savings of 2.92 gal/1000 miles (2.51%). Mud flaps were installed in all eight (8) positions.

Testing was conducted on a 9-mile test track at 65 mph, 75,000 lbs. Gross Vehicle Weight (GVW). Trailer skirts were installed during testing. Test results can be found below in Table 1.

Table 1: Results Summary

Product	Fuel Economy Improvement		
	Gal/1000 miles	MPG	Percent
Michelin Aerodynamic Mud Flaps	**4.20**	0.32	3.60%

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3.0: TEST PROCEDURE

The two (2) vehicles ran simultaneously at 65 mph on the 9-mile circle track near Pecos, Texas. The vehicles were 1-minute apart, avoiding any aerodynamic influence on either vehicle during testing. The vehicles were termed “Compare Vehicle” and “Test Vehicle”. The Compare Vehicle remained unchanged throughout testing; it was used solely for comparison. The Test Vehicle had modifications made during the test (*i.e.* Michelin Aerodynamic Mud Flaps installed).

The test procedure may appear similar to the SAE J1321 method traditionally used in the trucking industry; however, the MVTS methods are a much more advanced and precise form of on-road and track testing. The vehicles are equipped with sensors and data recording systems that collect data on fuel consumption, aerodynamics, rolling resistance, driver behavior and many other variables that affect fuel consumption. The data is analyzed using MVTS proprietary methods, which provide very accurate answers on fuel savings. Additionally, the test results can be scientifically translated to a carrier’s real-world daily operations and long-term savings, which is a feature unique to these methods. Overall, the MVTS test methods are a much more advanced and reliable tool for predicting fuel savings than the trucking industry has used previously.

3.1: TEST VEHICLES

Test vehicles were 2022 Freightliner Cascadia Single Axle Day Cabs (SADC) with Cummins X15 15-Liter engines. Trailers were 28-ft dry van trailers. Gross Vehicle Weight (GVW) was approximately 75,000 lbs. GVW was greater than normal MVTS Certified tests at the request of the fleet providing the vehicles. GVW does not affect the fuel savings in units of gal/1000 miles. The Compare vehicle remained unchanged throughout all tests. The Test vehicle configuration was changed between test runs. Trucks and trailers used dual tires. Tire pressures were set at 100 psi in the morning, prior to incurring any effect of daytime heat. Vehicle info can be found in the Appendix.

Figure 1: “Compare” Vehicle with Trailer Skirts

Figure 2: Tractor Trailer Gap

Figure 3: “Test” Vehicle with Michelin Lite Skirts and Aerodynamic Mud Flaps

Test runs were conducted in the order as shown in Table 2.

Table 2: Test Run Sequence

Run #	Test Name/Description	Start of Run	End of Run
1	Michelin Energy Guard Lite Solution	3:55 PM	5:34 PM
2	Michelin Aerodynamic Mud Flaps	6:59 PM	8:38 PM

3.2: Run 1: MEG Lite Full Solution

Run 1 began with the Michelin Energy Guard Lite skirts also known as the "Full Solution" (Figure 4). MEG Lite skirt dimensions were 132 inches in length and 27 inches in height. Michelin Aerodynamic Mud Flaps were 27 inches in height and 24 inches in width for dual tires.

Figure 4: Michelin Energy Guard (MEG) Lite Installed with Skirts and Aerodynamic Mud Flaps

Figure 5: MEG Lite Skirts

Figure 6: Michelin Aerodynamic Mud Flaps, Tractor

Figure 7: Michelin Aerodynamic Mud Flaps, Dolly

Figure 8: Michelin Aerodynamic Mud Flaps, Trailer

3.3: Run 2: Solid Mud Flaps

Run 2 consisted of removing the Michelin Aerodynamic Mud Flaps and replacing them with solid mud flaps (Figure 9 and Figure 10). Comparing Run 2 and 1 quantified the fuel savings of the Michelin Aerodynamic Mud Flaps.

Figure 9: MEG Lite Skirts, Solid Mud Flaps

Figure 10: Solid Mud Flaps

4.0: VEHICLE FUEL ECONOMY TEST EQUIPMENT

MVT Solutions fuel economy testing utilizes a data acquisition system and sensors specifically for this testing. This style of testing is derived from race car engineering where reliable sensor data is critical to understanding vehicle modifications.

MVTS test sensors include:

- Data acquisition system (records sensor data)
- Fuel flow meter (accurate to 0.2%)
- Fuel temperature sensor
- Tire temperature sensor (infrared, mounted on left-front drive tire)
- Ground/road temperature sensor (infrared, mounted ahead of left-front drive tire)
- Wind speed air pressure sensor (truck hood)
- Wind direction sensor (truck hood)
- Ambient air temperature sensor (truck hood)
- Ambient air pressure sensor (truck cab)
- High Precision GPS (latitude, longitude, altitude, time)

Click this link to see a video of MVTS sensors and testing: How We Test

Figure 11: Aerodynamic Sensors

Figure 12: Data Acquisition System

Figure 13: Fuel Flow Meter

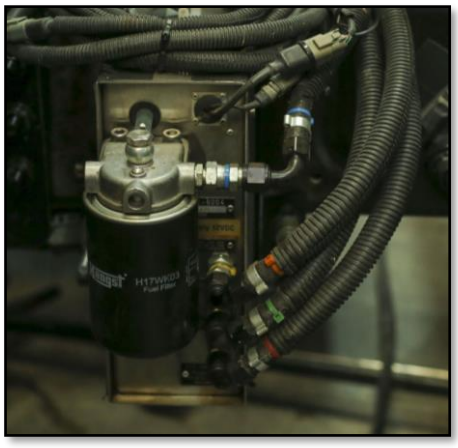


Figure 14: Tire Temp. Sensor

5.0: TEST RESULTS

Michelin Aerodynamic Mud Flaps showed savings of 4.20 gal/1000 miles (3.60%) when trailer skirts were installed. MVTS does not believe the results are specific to the Michelin trailer skirt.

During 2021 testing with different 28-ft double trailers, the Michelin Aerodynamic Mud Flaps saved 2.92 gal/1000 miles (2.51%). Both tests illustrate significant savings.

Table 3: Test Results with Accuracy

Product	Fuel Economy Improvement		
	Gal/1000 miles	MPG	Percent
Michelin Aerodynamic Mud Flaps	**4.20**	0.32	3.60%
Accuracy	+/- 0.52	+/- 0.04	+/- 0.45%

Figure 15: Test Results (gal/1000 miles)

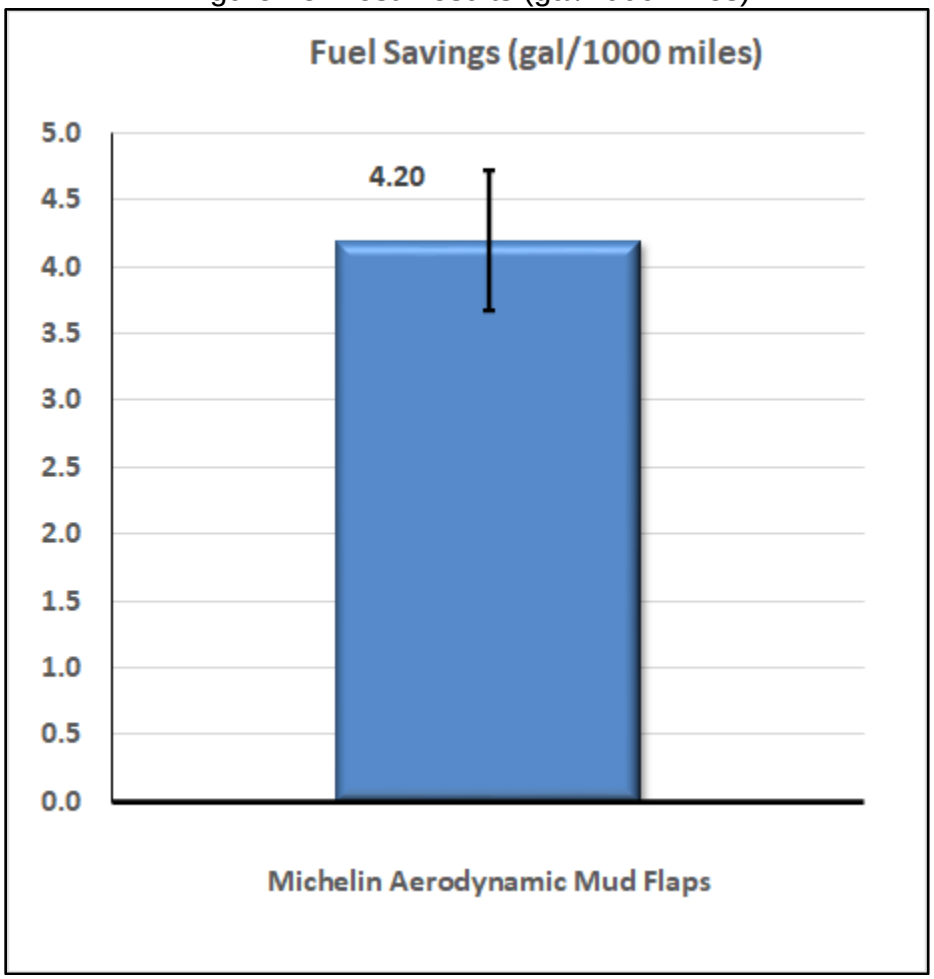
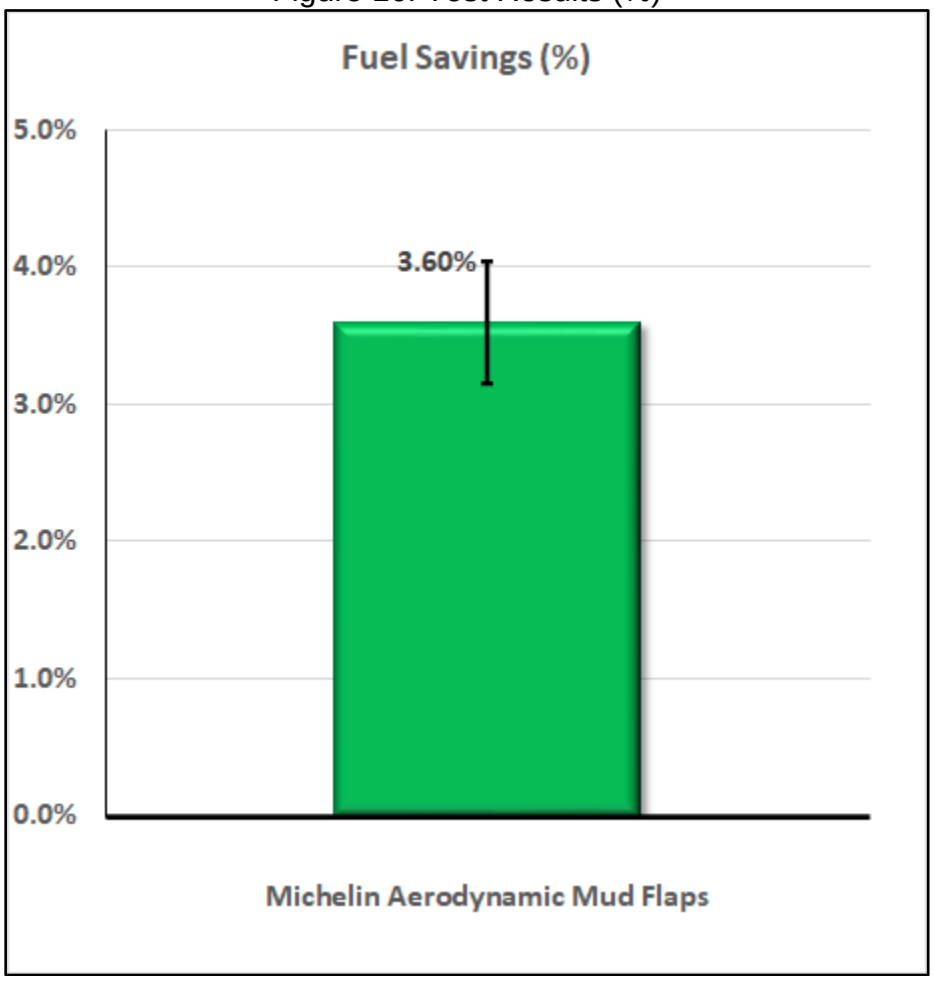


Figure 16: Test Results (%)



5.1: MEASUREMENT ACCURACY AND MARGIN OF ERROR

The accuracy of fuel economy measurements is critical in determining the trustworthiness of test results. Historically, this has been a major difficulty in the trucking industry with fuel economy testing, which has led to confusion and misleading results. The MVTS test methods overcome this issue by achieving better accuracy, which is one of the ways it provides more reliable test results.

Accuracy for all the tests was calculated using a 95% confidence interval, a common standard for testing measurement. 95% confidence interval indicates that if the test were repeated 100 times, values would fall within the range in 95 out of the 100 tests (*i.e.* the reader would be 95% confident the value would be within that range).

Accuracy (*i.e.* 'margin of error') is shown in multiple locations; tables of 'Test Results with Accuracy' and also as 'error bars' in the bar graphs. The error bars are the small solid lines at the end of each bar.

Test accuracy for the Michelin Aerodynamic Mud Flaps was +/- 0.52 gal/1000 miles (Table 3) and represented only a small portion of the magnitude of the fuel savings as shown by the Error Bar in Figure 15. Accuracy in percent values will not be discussed individually since it is linearly related to gal/1000 miles and follows a very similar pattern and conclusions.

5.2: UNITS OF MEASUREMENT

The reader may not be familiar with units of gal/1000 miles (gallons per 1000 miles) since it is not traditionally used in the trucking industry. The following paragraphs briefly explain the reasons for these units and how they help carriers better calculate fuel savings.

Units of gal/1000 miles more reliably calculate fuel savings when compared to other units such as miles-per-gallon (MPG) and percent (%). Those units are prone to error from changing variables such as vehicle baseline fuel economy, load, driver behavior, and duty cycle. For example, gal/1000 miles values are not affected by load for an aerodynamic product. Any empty Class-8 unit at 34,000 lbs. will save the same fuel in gal/1000 miles as one loaded to 80,000 lbs. However, when viewed in percent (%) or MPG the values change with load. This causes a carrier to experience varied results in real-world operation and difficulty predicting the financial benefits of the product unless units of gal/1000 miles are used.

Units of gal/1000 miles are the most reliable units of measurement for aerodynamic fuel savings due to their scientific and mathematical relationship to fuel consumption. Further detail is beyond the scope of this report and the reader is encouraged to contact MVT Solutions if more information is desired.

5.3: WEATHER CONDITIONS SUMMARY

Ambient temperature during testing ranged from 95°F to 105°F with winds ranging from 0-6 mph.

Weather data was acquired from a local Weather Underground weather station and complete data can be found in the Appendix.

The reader should be aware that MVTS methods include instantaneous and constant weather data acquisition on each vehicle, and this testing has minimal dependency on external weather data collection. MVTS test data accounts for changes in wind, temperature, and other pertinent variables instantaneously.

6.0: SAVINGS CALCULATIONS

Below is a brief outline of how to use the test results to calculate savings. For more detail or assistance contact MVT Solutions.

6.1: FUEL SAVINGS CALCULATIONS

Fuel savings resulting from this test can be calculated as follows:

$$Fuel\ Savings\ (gal/year) = (Test\ result)\ x\ \frac{(Thousands\ of\ miles\ travelled\ per\ year)}{1000}$$

Test result must be in units of gal/1000 miles (*i.e.* not percent or MPG)

Example: Full Michelin Aerodynamic Mud Flaps with fuel savings of 4.20 gal/1000 miles and 125,000 miles travelled annually:

$$Fuel\ Savings = (4.20\ gal/1000\ miles)x\ \frac{(125{,}000\ miles/year)}{1000} = 525\ gal/year$$

Therefore, the Michelin Aerodynamic Mud Flaps when installed on a double 28-ft dry van trailer configuration would save 525 gallons of fuel per year for this vehicle travelling 125,000 miles.

6.2: FINANCIAL SAVINGS CALCULATIONS

Financial calculations can be made by multiplying the fuel saved by the fuel price:

$$Savings\ (\$/year) = (Fuel\ Savings)\ x\ (Price\ of\ fuel)$$

Example: Using the example above and U.S. average retail price of diesel fuel in 2021, $3.287[1] /gal

$Savings\ (\$/year) = \left(525\ \frac{gal}{year}\right)\ x\ \left(\frac{\$3.287}{gal}\right) = \$1{,}725\ /year$ in fuel savings

Therefore, the Michelin Aerodynamic Mud Flaps when installed on a double 28-ft dry van trailer configuration would save $1,725 per year in fuel for the vehicle travelling 125,000 miles.

[1] Source: https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMD_EPD2DXL0_PTE_NUS_DPG&f=W

6.3: TECHNOLOGY PAYBACK AND RETURN-ON-INVESTMENT

Buyers of fuel economy technologies are highly interested in saving money. For a technology supplier to be successful, their technology must save their potential customers money and many fleets consider the number of months required for the technology to pay for itself as a buying qualification, which is referred to as 'payback' in trucking or sometimes ROI.

$$Payback\ (months) = \frac{(Product\ cost)}{(Savings\ (\$/year)}\ x\ (12\ months/year)$$

Example @$30 per mud flap, the total Product Cost is $420 per power unit when pulling double trailers and a 4:1 total trailer to tractor ratio: **Note**: The Product Cost is fictitious and used only for example purposes. Contact a Michelin sales representative or trailer OEM for pricing.

$$Payback\ (months) = \frac{(\$420)}{(\$1{,}725\ /year)}\ x\ \left(12\frac{months}{year}\right) = 2.9\ months$$

Therefore, with a Product Cost of $420 per trailer and 4:1 trailer ratio, Michelin Aerodynamic Mud Flaps when installed on a double 28-ft dry van trailer configuration would pay for itself (*i.e.* payback or ROI) in 2.9 months.

6.4: TECHNOLOGY PROFIT

Since saving money is the end goal, calculating profit is another important factor. **Note**: these calculations will consider fuel and purchase price only and not maintenance.

$$Profit\ (\$) = (Savings) - (Cost)$$

Example @$30 per mud flap, total Product Cost of $420, and a 4:1 trailer ratio: Using annual values from above and a 10 year trailer life.

$$Profit\ (\$) = (\$1{,}725) - \frac{(\$420)}{10\ year}$$ = $1,683 saved per year, per power unit.

If this were translated to a 1000-truck fleet, the profits would be $1.683 million annually.

Therefore, the Michelin Aerodynamic Mud Flaps when installed on a double 28-ft dry van trailer configuration would add $1,683 in profit per tractor when travelling 125,000 miles per year. For a fleet of 1,000 power units, this would equate to $1.683 million in profit.

6.5: CO_2 Reduction Calculations

Carbon Dioxide (CO_2) is directly related to diesel fuel consumption in the amount of 10,180[2] grams CO_2 per gallon of diesel consumed (0.01018 metric tons CO_2 per gallon of diesel). Therefore, the same value applies to the amount of fuel saved and correlates to a reduction in CO_2.

$$CO_2\ Reduction\ (metric\ tons) = (Fuel\ Savings)\ x\ (0.01018\ metric\ tons)$$

Where:

- Fuel Savings must be measured in gallons
- 0.01018 metric tons is the amount of CO_2 resulting from one gallon of diesel fuel

Example: Using the values from 6.1: a fuel savings of 525 gallons per year.

$$CO_2\ Reduction\ (metric\ tons) = (525)\ x\ (0.01018\ metric\ tons)$$ = 5.3 metric tons CO_2

Therefore, the Michelin Aerodynamic Mud Flaps would save 5.3 metric tons of CO_2 per year for this vehicle travelling 125,000 miles.

[2] https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references

7.0: CONCLUSION

The Michelin Aerodynamic Mud Flaps showed fuel savings of 4.20 gal/1000 miles (3.60%), which was higher than the 2.92 gal/1000 miles experienced during the 2021 test with 28-ft double trailers.

In terms of profit, the Michelin Aerodynamic Mud Flaps on the tractor and double 28-ft dry van trailers would add $1,683 annually per tractor with a Return-On-Investment of 2.9 months using the example product cost from section (6.3:). CO_2 reduction was 5.3 metric tons saved annually. These values correlate to the fleet operating two (2) sets of double trailers per tractor (*i.e.* 4:1 trailer to tractor ratio), in which the tractor travels 125,000 miles annually.

Testing results show that the Michelin Aerodynamic Mud Flaps are an effective fuel saving technology that would interest any fleet in terms of fuel savings, profit, and CO_2 reduction.

8.0: APPENDIX

8.1: TEST VEHICLE DETAILS

Figure 17: Vehicle Info, Modified (Test) Vehicle

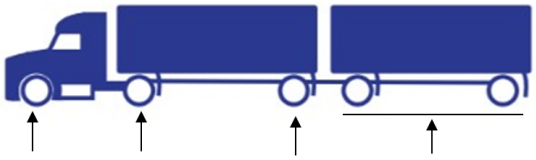
Date	June 6, 2022				
Company	N/A				
Location	Pecos, Texas				
Test Route	Pecos 9-mile Test Track				
TRUCK ID:	**Veh. A, 2513071**				
Brand	Freightliner				
Date of Manufacture	04/2022				
Model	Day Cab SA, PT126042S T				
Engine	Cummins X15				
VIN	1FUBHKFG9PLUC1522				
Mileage (miles):	10,534				
Transmission	EATON FAOM-15810C FULLER (10-Speed Manual)				
Rear Gear	3.36:1				
Fuel Load	Full				
Fuel Type & Batch	No. 2 Diesel				
Axle Weights	10,460	17,220	14,780	31,940	
Total weight	74,400				
					
TRAILER ID:	**A, 283964**				
Model	Wabash				
VIN	1JJV281D4NL330575				
Date of Manufacture	10/2021				
Model	D Van, TRA/REM VAN DVDBHPC				
Size	28-ft				
Cab to Trailer Gap	47 inches				
Aero Trailer Gap	36 inches				
Add-ons	Michelin Lite trailer skirts				
28-ft double trailer configuration					
TRAILER ID:	**A, 283500**				
Model	Wabash				
VIN	1JJV281D6NL330111				
Date of Manufacture	08/2021				
Model	Dry Van, TRA/REM VAN DVDBHPC				
Size	28-ft				
Trailer to Trailer Gap	47 inches				
Add-ons	Michelin Lite trailer skirts				
28-ft double trailer configuration					

Figure 18: Trailer Info, Modified (Test) Vehicle

			Truck	**Veh. A, 2513071**		
LF			**Front Axle Tires**			RF
Michelin X Line Energy Z			Type			Michelin X Line Energy Z
11R22.5			Size			11R22.5
19/32			Tread Depth (inches)			19/32
100			Pressure (psi)			100
Steel			Wheel Type			Steel
LF-Outer Drive	LF-Inner Drive		**Drive Axle Tires**		RF-Inner Drive	RF-Outer Drive
Michelin X Multi Energy D	Michelin X Multi Energy D		Type		Michelin X Multi Energy D	Michelin X Multi Energy D
11R22.5	11R22.5		Size		11R22.5	11R22.5
24/32	23/32		Tread Depth (inches)		23/32	24/32
100	100		Pressure (psi)		100	100
Steel	Steel		Wheel Type		Steel	Steel
			Trailer	**A, 283964**		
LR-Outer Trailer	LR-Inner Trailer		**Tandem Rear**		RR-Inner Trailer	RR-Outer Trailer
Michelin X Line Energy T	Michelin X Line Energy T		Type		Michelin X Line Energy T	Michelin X Line Energy T
11R22.5	11R22.5		Size		11R22.5	11R22.5
11/32	11/32		Tread Depth (inches)		11/32	11/32
100	100		Pressure (psi)		100	100
Steel	Steel		Wheel Type		Steel	Steel
			Trailer	**A, 283500**		
LF Dolly			**Tandem Front**		RF Dolly	
Michelin X One Multi Energy T			Type		Michelin X One Multi Energy T	
455/55R22.5			Size		445/50R22.5	
16/32			Tread Depth (inches)		16/32	
100			Pressure (psi)		100	
Steel			Wheel Type		Steel	
LR-Outer Trailer	LR-Inner Trailer		**Tandem Rear**		RR-Inner Trailer	RR-Outer Trailer
Michelin X Line Energy T	Michelin X Line Energy T		Type		Michelin X Line Energy T	Michelin X Line Energy T
11R22.5	11R22.5		Size		11R22.5	11R22.5
11/32	11/32		Tread Depth (inches)		10/32	10/32
100	100		Pressure (psi)		100	100
Steel	Steel		Wheel Type		Steel	Steel

8.2: COMPARE VEHICLE DETAILS

Figure 19: Vehicle Info, Compare Vehicle

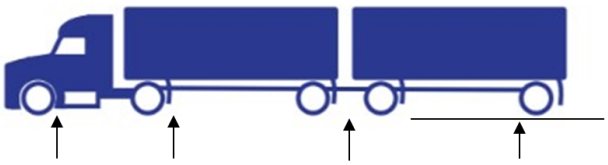
Date	June 6, 2022				
Company	N/A				
Location	Pecos, Texas				
Test Route	Pecos 9-mile Test Track				
TRUCK ID:	**Veh. B, 2153069**				
Brand	Freightliner				
Date of Manufacture	04/2022				
Model	Day Cab SA, PT126042S T				
Engine	Cummins X15				
VIN	1FUBHKFG5PLUC1520				
Mileage (miles):	7,708				
Transmission	EATON FAOM-15810C FULLER (10-Speed Manual)				
Rear Gear	3.36:1				
Fuel Load	Full				
Fuel Type & Batch	No. 2 Diesel				
Axle Weights	10,400	17,500	14,620	32,120	
Total weight	74,640				
					
TRAILER ID:	**B, 284122**				
Model	Wabash				
VIN	1JJV281D7NL330733				
Date of Manufacture	11/2021				
Model	Dry Van, TRA/REM VAN DVDBHPC				
Size	28-ft				
Cab to Trailer Gap	47 inches				
Aero Trailer Gap	36 inches				
Add-ons	OEM trailer skirts				
28-ft double trailer configuration					
TRAILER ID:	**B, 282834**				
Model	Wabash				
VIN	1JJV281D7NL331526				
Date of Manufacture	07/2021				
Model	Dry Van, TRA/REM VAN DVDBHPC				
Size	28-ft				
Trailer to Trailer Gap	47 inches				
Add-ons	OEM trailer skirts				
28-ft double trailer configuration					

Figure 20: Trailer Info, Compare Vehicle

			Truck	Veh. B, 2153069		
LF			**Front Axle Tires**			RF
Michelin X Line Energy Z			Type			Michelin X Line Energy Z
11R22.5			Size			11R22.5
19/32			Tread Depth (inches)			19/32
100			Pressure (psi)			100
Steel			Wheel Type			Steel
LF-Outer Drive	LF-Inner Drive		**Drive Axle Tires**		RF-Inner Drive	RF-Outer Drive
Michelin X Multi Energy D	Michelin X Multi Energy D		Type		Michelin X Multi Energy D	Michelin X Multi Energy D
11R22.5	11R22.5		Size		11R22.5	11R22.5
24/32	24/32		Tread Depth (inches)		24/32	24/32
100	100		Pressure (psi)		100	100
Steel	Steel		Wheel Type		Steel	Steel
			Trailer	B, 284122		
LR-Outer Trailer	LR-Inner Trailer		**Tandem Rear**		RR-Inner Trailer	RR-Outer Trailer
Michelin X Line Energy T	Michelin X Line Energy T		Type		Michelin X Line Energy T	Michelin X Line Energy T
11R22.5	11R22.5		Size		11R22.5	11R22.5
11/32	11/32		Tread Depth (inches)		11/32	11/32
100	100		Pressure (psi)		100	100
Steel	Steel		Wheel Type		Steel	Steel
			Trailer	B, 282834		
LF Dolly			**Tandem Front**		RF Dolly	
Michelin X One Multi Energy T			Type		Michelin X One Multi Energy T	
455/55R22.5			Size		445/50R22.5	
14/32			Tread Depth (inches)		13/32	
100			Pressure (psi)		100	
Steel			Wheel Type		Steel	
LR-Outer Trailer	LR-Inner Trailer		**Tandem Rear**		RR-Inner Trailer	RR-Outer Trailer
Michelin X Line Energy T	Michelin X Line Energy T		Type		Michelin X Line Energy T	Michelin X Line Energy T
11R22.5	11R22.5		Size		11R22.5	11R22.5
10/32	10/32		Tread Depth (inches)		10/32	10/32
100	100		Pressure (psi)		100	100
Steel	Steel		Wheel Type		Steel	Steel

8.3: TEST ROUTE

Pecos, Texas 9-mile circle track. Clockwise direction, middle lane (of 3).

Figure 21: Pecos Test Track

8.4: WEATHER CONDITIONS

Darkened rows pertain to testing period.

Table 4: Weather Data, June 6, 2022

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Condition
12:15 AM	76 °F	28 °F	16%	SSW	6 mph	0 mph	27.00 in	0.0 in	Fair
1:15 AM	74 °F	28 °F	18%	SSW	8 mph	0 mph	26.99 in	0.0 in	Fair
2:15 AM	72 °F	29 °F	20%	SW	9 mph	0 mph	26.98 in	0.0 in	Fair
3:15 AM	73 °F	30 °F	20%	SW	8 mph	0 mph	26.97 in	0.0 in	Fair
4:15 AM	69 °F	28 °F	22%	SSW	8 mph	0 mph	26.97 in	0.0 in	Fair
5:15 AM	69 °F	29 °F	22%	CALM	0 mph	0 mph	26.98 in	0.0 in	Fair
6:15 AM	67 °F	26 °F	21%	SW	7 mph	0 mph	27.00 in	0.0 in	Fair
7:15 AM	68 °F	27 °F	22%	NE	5 mph	0 mph	27.03 in	0.0 in	Fair
8:15 AM	76 °F	28 °F	17%	WNW	3 mph	0 mph	27.05 in	0.0 in	Fair
9:15 AM	88 °F	27 °F	11%	W	12 mph	0 mph	27.06 in	0.0 in	Fair
10:15 AM	95 °F	28 °F	9%	WNW	12 mph	0 mph	27.06 in	0.0 in	Fair
11:15 AM	98 °F	29 °F	9%	NW	13 mph	25 mph	27.06 in	0.0 in	Fair
12:15 PM	99 °F	30 °F	9%	WNW	14 mph	0 mph	27.06 in	0.0 in	Fair
1:15 PM	102 °F	31 °F	9%	NW	8 mph	0 mph	27.06 in	0.0 in	Fair
2:15 PM	103 °F	31 °F	8%	SSW	6 mph	0 mph	27.04 in	0.0 in	Fair
3:15 PM	103 °F	30 °F	8%	NNE	6 mph	0 mph	27.02 in	0.0 in	Fair
4:15 PM	105 °F	31 °F	8%	N	6 mph	17 mph	27.00 in	0.0 in	Fair
5:15 PM	105 °F	31 °F	8%	WNW	3 mph	0 mph	26.99 in	0.0 in	Fair
6:15 PM	104 °F	31 °F	8%	N	5 mph	0 mph	26.97 in	0.0 in	Fair
7:15 PM	104 °F	31 °F	8%	E	5 mph	0 mph	26.97 in	0.0 in	Fair
8:15 PM	103 °F	30 °F	8%	CALM	0 mph	0 mph	26.97 in	0.0 in	Fair
9:15 PM	95 °F	30 °F	10%	E	6 mph	0 mph	26.98 in	0.0 in	Fair
10:15 PM	88 °F	28 °F	11%	ESE	6 mph	0 mph	27.00 in	0.0 in	Fair
11:15 PM	86 °F	28 °F	13%	SSW	9 mph	17 mph	27.02 in	0.0 in	Fair
12:10 AM	69 °F	38 °F	32 %	S	5 mph	0 mph	27.32 in	0.0 in	Fair
1:10 AM	64 °F	38 °F	38 %	CALM	0 mph	0 mph	27.32 in	0.0 in	Fair
2:10 AM	62 °F	37 °F	41 %	S	5 mph	0 mph	27.32 in	0.0 in	Fair
3:10 AM	61 °F	39 °F	44 %	CALM	0 mph	0 mph	27.34 in	0.0 in	Fair
4:10 AM	61 °F	39 °F	44 %	NE	5 mph	0 mph	27.34 in	0.0 in	Fair
5:10 AM	59 °F	39 °F	47 %	E	5 mph	0 mph	27.33 in	0.0 in	Fair

Source: https://www.wunderground.com/history/daily/us/tx/pecos/KPEQ/date/2022-6-6

8.5: PRODUCT DETAILS

- Michelin Aerodynamic Solutions
  One Parkway South, Greenville, SC 29615 USA
  https://www.michelintruck.com/services-and-programs/aerodynamic-solutions/

8.6: TEST PERSONNEL (ON-SITE)

8.6a: MVT SOLUTIONS ENGINEERING

- Daryl Bear, Lead Engineer & COO
- Jacob Schwartz, Test Engineer
- Jonathan Ruppert, Test Engineer
- Amber Schwartz, Office Manager, Photography
- Garrett Patton, Shop Technician

8.6b: MVT SOLUTIONS DRIVERS & TECHNICIANS

- Allan Dahringer, Director of Maintenance
- Carlos Aragon, Recovery Driver
- Jack Burchell, Driver

8.6c: MICHELIN

- Parker Baxter, Product Development Manager
- Jeff Morris, Senior Strategic Account Manager
- Eddie Jessie, Business Manager

8.7: MVT SOLUTIONS CONTACT INFO

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