122-TRC-11-001

SAFETY COMPLIANCE TESTING FOR FMVSS 122
Motorcycle Brake Systems

Wildfire Motors
2009 Wildfire WF 650-C Motorcycle
NHTSA No. C91200

TRANSPORTATION RESEARCH CENTER INC.
10820 State Route 347
East Liberty, Ohio 43319

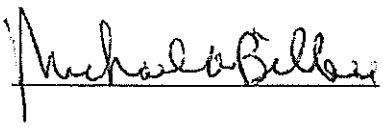
Final Report Completed: August 18, 2011

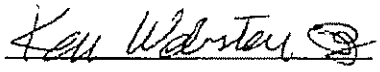
FINAL REPORT

Prepared Under Contract No.: DTNH22-06-C-00033

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
1200 New Jersey Avenue, S.E.
West Building, 4th Floor
OVSC (NVS-221)
Washington, DC 20590

Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-06-C-00033.

Prepared By 

Approved By 

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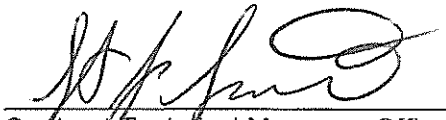
Final Report Acceptance By OVSC:



Contract Technical Manager, Office of Vehicle Safety Compliance

9/14/11

Acceptance Date

1. REPORT NUMBER: 122-TRC-11-002	2. GOVERNMENT ACCESSION NO.:	3. RECIPIENTS CATALOG NO.:	
4. TITLE AND SUBTITLE: Final report of FMVSS 122 Compliance Testing of a 2009 Wildfire WF 650-C, Motorcycle, NHTSA No. C91200		5. REPORT DATE: August 18, 2011	
		6. PERFORMING ORGANIZATION CODE: TRC 20060110 /9221	
7. AUTHOR(S): Project Manager: ALAN IDA Project Engineer: MICHAEL BILBEE		8. PERFORMING ORGANIZATION REPORT NO.: TRC-DOT-122-013	
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319		10. WORK UNIT NUMBER:	
		11. CONTRACT OR GRANT NO.: DTNH22-06-C-00033	
12. SPONSORING AGENCY NAME AND ADDRESS: U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-221) 1200 New Jersey Avenue S.E. West Wing 4th Floor Washington, DC 20590		13. TYPE OF REPORT AND PERIOD COVERED: Final test report Tested: 8/27/09 to 12/14/09, 9/28/10 to 9/30/10	
		14. SPONSORING AGENCY CODE: NVS-221	
15. SUPPLEMENTARY NOTES:			
16. ABSTRACT: Compliance tests were conducted on the subject 2009 Wildfire WF 650-C, Motorcycle, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-122-02 for the determination of FMVSS 122 compliance. Test failures identified were as follows: • Curb Weight exceeds GVWR • Exceeded stopping distance requirement for First Effectiveness at both 30 mph and 45 mph. (S5.2) • Brake system uses common reservoir for both front and rear brakes. (S5.1.2.1) • No brake fluid warning statement. (S5.1.2.1) • No failure indicator lamp. (S5.1.3.1) Note: Testing was terminated following failure to meet first effectiveness testing.			
17. KEY WORDS: Compliance Testing Safety Engineering FMVSS 122		18. DISTRIBUTION STATEMENT: Copies of this report are available from: NHTSA Technical Information Services NPO-411 1200 New Jersey Ave, S.E. Washington, DC 20590 Email: tis@nhtsa.dot.gov FAX: 202-493-2833	
19. SECURITY CLASSIF. (OF THIS REPORT): Unclassified	20. SECURITY CLASSIF. (OF THIS PAGE). Unclassified	21. NO. OF PAGES: 46	22.

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1.0 INTRODUCTION

Tests were conducted on a 2009 Wildfire WF 650-C Motorcycle, manufactured by Taixing Sandi Motorcycle Co., Ltd. to determine compliance with FMVSS 122 "Motorcycle Brake Systems." All tests were conducted in accordance with the U.S. D.O.T., NHTSA Laboratory Procedure TP 122-02 and/or the corresponding TRC Inc. Test Procedure that was submitted to NHTSA for their approval. The Test Procedure was clearly described in the submitted document and has not been repeated in this report. This vehicle meets the definition of a motorcycle.

All stops were performed manually.

All tests were conducted by TRC Inc. personnel using the following TRC facilities:

Skid Pad
Instrumentation Check
Maximum Speed Test
First Effectiveness Test
Partial Service Brake System Test
Brake Burnish
Second Effectiveness Test
Re-burnish
Final Effectiveness Test

7.5-mile Oval Test Track
Fade and Recovery Test

Vehicle Dynamics Area
Water Recovery Test

Average PFC during the test period was 0.94 (Skid Pad) utilizing the ASTM E1337 w/E1136 tire method.

This vehicle did not meet the requirements of FMVSS 122.

It is noted that after the vehicle failed to meet the stopping distance requirements of the first effectiveness testing, the COTR requested that the testing be discontinued until these initial apparent non-compliances could be investigated.

DATA SHEET 1 (1 of 2)

VEHICLE INFORMATION

VEHICLE:	2009 Wilfire WF 650-C	DATE:	8/27/09	NHTSA NUMBER:	C91200
TIRE PRESSURE (FRONT):	58 psi	TIRE PRESSURE (REAR):	58 psi		
ODOMETER START:	16 mi.	ODOMETER FINISH:	107 mi.		

Date of Manufacture: 12/2008

General Description:

Manufacturer	**Taixing Sandi Motorcycle Co. Ltd.**
Make & Model	**Wildfire WF 650-C**
VIN	**LTDKDVZ179TWF0221**
Engine Type	**Gasoline, 4-Stroke, Two Piston, Liquid Cooled**
Engine Displacement	**39.3 in.^{3} (644 cm^3)**
Fuel Delivery	**Carbureted**
Transmission	**4-speed manual**
Final Drive	**Drive shaft**
Wheelbase	**85.5 in.**

Tires:

	Front	Rear
Manufacturer	**LU HE**	**LU HE**
Type	**LP-26**	**LP-26**
Size	**4.50-12 ULT**	**4.50-12 ULT**
DOT Number	**DOT-AY**	**DOT-AY**
Pressure (cold)	**58 psi**	**58 psi**
Rim Label Information	**12 x 4 DOT**	**12 x 4 DOT**

Weights:

	Front		Rear		Total
	Mass (lb.)	**% of Total**	**Mass (lb.)**	**% of Total**	**Mass (lb.)**
Test Rider					**231.9**
Curb Weight (UVW)	**553.2**	**39**	**878.9**	**61**	**1432.1**
Test Weight (UVW + rider + instrumentation)	**675.0**	**40.6**	**989.0**	**59.4**	**1664.0**
GVWR (label)					**1345**
GAWR (label)	**551.0**	**41.0**	**784.0**	**59.0**	**1345**

Note: Curb weight exceeds certification label GVWR.

FMVSS 122 - DATA SHEET 1 (2 of 2)

Brakes:

	Front	Rear
Actuation Method: mechanical, hydraulic, electric	**Hydraulic**	**Hydraulic**
System Type: Individual control, Split-Service	**Split Service**	**Split Service**
Control	**Foot Pedal**	**Foot Pedal**
Caliper Type	**Drum**	**Drum**
Number of Calipers	**NA**	**NA**
No. of Caliper Pistons	**NA**	**NA**
Caliper Piston Diameters	**NA**	**NA**
Rotor –Type/Number	**NA**	**NA**
Rotor Diameter	**NA**	**NA**
Rotor Thickness/Min. Allowable Thickness	**NA**	**NA**
Swept Area	**NA**	**NA**
Brake Pad Identification Numbers	**None**	**None**

DATA SHEET 2 (1 of 2)
MOTYORCYCLE BRAKE TEST SUMMARY

VEH.: 2009 Wildfire WF 650-C VEH. NHTSA NO.: C91200; LABORATORY: TRC Inc.

TEST SUMMARY	SPEED (mi/h)	STOP. DIST. (ft) Actual	STOP. DIST. (ft) Corrected	FRONT MAX. BRAKE LEVER FORCE (lb.)	REAR MAX. BRAKE LEVER FORCE (lb.)	NUMBER OF TESTS	PASS/ FAIL
Instrumentation Check	30.5	100.8	97.52		67.7	6	N/A
Speed Determination	50.7 (avg.)						N/A
1st Effectiveness Test @ 30 mi/h (Service Brake System)	29.8	64.4	65.3		90	6	F
1st Effectiveness Test @ ~~60~~ 45 mi/h (Service Brake System)	44.7	144.4	146.3		87	2	F*
1st Effectiveness Test @ 30 mi/h (Partial) Hand Lever Only – Front Subsystem							
1st Effectiveness Test @ 30.0 mi/h (Partial) Foot Pedal Only – Rear Subsystem							
1st Effectiveness Test @ 60 mi/h (Partial) Hand Lever Only – Front Subsystem							
1st Effectiveness Test @ 60 mi/h (Partial) Foot Pedal Only – Rear Subsystem							
Burnish Procedure							
2nd Effectiveness Test@ 30 mi/h (Service brake System)							
2nd Effectiveness Test@ 60 mi/h (Service brake System)							
2nd Effectiveness Test@ 80 mi/h (Service brake System)							
2nd Effectiveness Test@ 115 mi/h (Service brake System)							
Fade and Recovery (Baseline)							
Fade and Recovery (Fade Test)							
Fade and Recovery (Recovery- 5th stop)							
Re-burnish Procedure							
Final Effect. Test @ 30 mi/h (Service Brake System)							

*Testing Terminated

DATA SHEET 2 (2 of 2)
MOTORCYCLE BRAKE TEST SUMMARY

TEST SUMMARY	SPEED (mph)	STOP. DIST. (ft) Actual	STOP. DIST. (ft) Corrected	FRONT MAX. BRAKE LEVER FORCE (Pounds)	REAR MAX. BRAKE LEVER FORCE (Pounds)	NUMBER OF TESTS	PASS/ FAIL
Final Effect. Test @ 60 mi/h (Service Brake System)							
Final Effect. Test @ 80 mi/h (Service Brake System)							
Final Effect. Test @ 115 mi/h (Service Brake System)							
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #1 @ 48.3 km/h							
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #1 @ 96.6 km/h							
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #2 @ 48.3 km/h							
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #2 @ 96.6 km/h							
Parking Brake Test –**3-wheeled** motorcycles only							
Wet Recovery (Baseline – Average Maximum Forces)							
Wet Recovery (Recovery – 5th Stop)							
Final Inspection (Durability)							
Equipment Requirements							F

FMVSS 122 - DATA SHEET 3
INSTRUMENTATION CHECK (S7.2)

VEHICLE:	2009 Wildfire WF 650-C	DATE:	12/14/09	NHTSA NUMBER:	C91200
TIRE PRESSURE (FRONT):	58 psi	TIRE PRESSURE (REAR):	58 psi	AMBIENT TEMP. °F:	40
ODOMETER START:	58.0 mi.	ODOMETER FINISH:	71.2 mi	WIND VELOCITY (MPH):	13

REQUIREMENTS: Check instrumentation by making not more than 10 stops from 30 mi/h at a deceleration of not more than 10 ft/s^2, record results, repeat if necessary.

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft/s^2)		Wheel Lockup	Stay In Lane
		Front	**Rear**			**Max**	**Avg**	**Max**	**Avg**	**Max**	**Avg**		
1	29.5	68.4	73	141.0	145.8	NA	NA	59	44	10.7	6.9	No	Yes
2	29.8	87.1	96	112.3	113.8	NA	NA	72	49	12.4	9.3	No	Yes
3	30.2	101	103	124.5	126.2	NA	NA	61	47	12.2	8.8	No	Yes
4	29.9	120	113	105.7	106.4	NA	NA	68	51	12.8	9.8	No	Yes
5	30.3	138	122	105.7	103.6	NA	NA	63	50	12.4	9.4	No	Yes
6	30.5	158	133	100.8	97.5	NA	NA	67.7	49	12.8	9.1	No	Yes

REMARKS: **All brakes controlled by single foot brake**
DRIVER: **Jerry Inman**
RECORDED BY: **Jerry Inman** **DATE:** **12/14/09**
APPROVED BY: **Mike Bilbee**

DATA SHEET 4

VEHICLE:	2009 Wildfire WF 650-C	DATE:	12/14/09	NHTSA NUMBER:	C91200
TIRE PRESSURE (FRONT):	58 psi	TIRE PRESSURE (REAR):	58 psi	AMBIENT TEMP. °F:	40
ODOMETER START:	50.4 mi	ODOMETER FINISH:	52.6 mi	WIND VELOCITY (MPH):	13

MAXIMUM SPEED

MOTORCYCLE MAXIMUM SPEED DETERMINATION — Measure the speed that the motorcycle will attain in a distance of 1 mile from a standing start, but do not exceed 120 mi/h. If the speed is less than 60 mi/h, tests specified to commence at that speed shall be run at the multiple of 5 mi/h that is 4 mi/h to 8 mi/h less than the maximum speed measured.

TEST CONDITIONS:

Test Speed	Maximum speed attainable in 1mi. from a standing start on a level surface.
Initial Brake Temperature (IBT)	N/A
Runs Required	Two runs shall be made in opposite directions.

	DIRECTION	**SPEED (mi/h)**
Run No. 1	Sorth	47.1
Run No. 2	North	54.30

Average = 50.7 mi/h

REMARKS: Top Test Speed = 45 mph
DRIVER: Jerry Inman
RECORDED BY: Jerry Inman **DATE: 12/14/09**
APPROVED BY: Mike Bilbee

FMVSS 122 - DATA SHEET 5
FIRST (PREBURNISHED) EFFECTIVENESS TEST (S7.3.1)

VEHICLE:	2009 Wildfire WF 650-C	DATE:	12/14/09	NHTSA NUMBER:	C91200
TIRE PRESSURE (FRONT):	58 psi	TIRE PRESSURE (REAR):	58 psi	AMBIENT TEMP. °F:	40
ODOMETER START:	58.0 mi	ODOMETER FINISH:	71.2 mi	WIND VELOCITY (MPH):	13

TEST CONDITIONS:

Test Speed	30 mi/h	~~60~~ 45 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	54 ft.	~~216~~ 121 ft.
Maximum Allowable Brake Actuation Forces	~~Hand Lever Force ≤ 55 lb~~. Foot Pedal Force ≤ 90 lb.	~~Hand Lever Force ≤ 55 lb~~. Foot Pedal Force ≤ 90 lb.
Wheel Lockup	No	No
Brakes Utilized	Foot Pedal	Foot Pedal

30 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1	30.1	144	117/132	78.0	77.5	NA	NA	74	65	16.5	13.4	NO	YES
2	30.3	131	108/125	68.8	67.4	NA	NA	79	68	19.1	15.2	NO	YES
3	29.8	130	111/129	64.4	65.3	NA	NA	90	68	18.8	15.7	NO	YES
4	29.8	140	115/132	69.6	70.5	NA	NA	70	64	17.2	14.5	NO	YES
5	30.2	141	117/138	82.0	80.9	NA	NA	69	63	16.3	13.1	NO	YES
6	30.3	146	120/141	68.4	67.5	NA	NA	80	69	19.3	15.1	NO	YES

~~60~~ 45 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1	45.1	139	119/137	168.7	168.0	NA	NA	80	72	17.3	13.7	NO	YES
2	44.7	142	122/142	144.4	146.3	NA	NA	87	69	18.6	15.3	NO	YES
3													
4													
5													
6													

REMARKS: Testing aborted due to poor performance of brake system.
DRIVER: Jerry Inman
RECORDED BY: Jerry Inman **DATE: 12/14/09**
APPROVED BY: Mike Bilbee

FMVSS 122 - DATA SHEET 6 (1 of 2)
PARTIAL (PREBURNISHED) SERVICE BRAKE SYSTEM TEST (7.3.2)

VEHICLE:		DATE:		NHTSA NUMBER:	
TIRE PRESSURE (FRONT):	psi	TIRE PRESSURE (REAR):	psi	AMBIENT TEMP. °F:	
ODOMETER START:	mi	ODOMETER FINISH:	mi	WIND VELOCITY (MPH):	

REQUIREMENTS FOR A MOTORCYCLE WITH TWO INDEPENDENTLY ACTIVATED SERVICE BRAKE SUBSYSTEMS.

TEST CONDITIONS: Subsystem 1

Test Speed	30 mi/h	60 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	121 ft.	484 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No
Brakes Utilized	**Front - Hand Lever**	**Front - Hand Lever**

TEST CONDITIONS: Subsystem 2

Test Speed	30 mi/h	60 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	121 ft.	484 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No
Brakes Utilized	**Rear – Foot Pedal**	**Rear – Foot Pedal**

30 mi/h DATA — **Brake Subsystem 1**, Describe: Front Only (Hand Lever)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													

FMVSS 122 - DATA SHEET 6 (2 of 2)

60 mi/h DATA —— **Brake Subsystem 1**, Describe: Front Only (Hand Lever)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lb.)		Rear Brake Lever Force (lb.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													

30 mi/h DATA — **Brake Subsystem 2**, Describe: Rear Only (Foot Pedal)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lb.)		Rear Brake Lever Force (lb.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													

60 mi/h DATA —— **Brake Subsystem 2**, Describe: Rear Only (Foot Pedal)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													

REMARKS: _____

DRIVER:_____

RECORDED BY:_____ **DATE:**_____

APPROVED BY:_____

FMVSS 122 - DATA SHEET 7
BURNISH PROCEDURE (S7.4)

VEHICLE:		DATE:		NHTSA NUMBER:	
TIRE PRESSURE (FRONT):	psi	TIRE PRESSURE (REAR):	psi	AMBIENT TEMP. °F:	
ODOMETER START:	mi	ODOMETER FINISH:	mi	WIND VELOCITY (MPH):	

TEST CONDITIONS:

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	200
Deceleration Rate	12 ft/s^2
Actuation Forces	Hand Lever and foot pedal force limits do not apply during this procedure.
Cooling Speed	Accelerate at maximum rate to 30 mi/h immediately and maintain that speed until making the next stop
Stop Interval	The braking interval shall be either the distance necessary to reduce the brake temperature to between 130°F and 150°F or 1 mile, whichever comes first.
Post Burnish Adjustments	After burnishing adjust the brakes in accordance with the manufacturer's recommendation.
Wheel Lockup	
Brakes Utilized	Hand Lever and Foot Pedal

BURNISH

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)				Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
25													
50													
75													
100													
125													
150													
175													
200													

REMARKS: _____

DRIVER: _____
RECORDED BY: _____ **DATE:** _____
APPROVED BY: _____

FMVSS 122 - DATA SHEET 8 (1 of 2)
SECOND EFFECTIVENESS TEST (S7.5)

VEHICLE:		DATE:		NHTSA NUMBER:	
TIRE PRESSURE (FRONT):	psi	TIRE PRESSURE (REAR):	psi	AMBIENT TEMP. °F:	
ODOMETER START:	mi	ODOMETER FINISH:	mi	WIND VELOCITY (MPH):	

TEST CONDITIONS:

Test Speed	30 mi/h	60 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	43 ft.	185 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No
Brakes Utilized	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal

TEST CONDITIONS:

Test Speed	80 mi/h	115 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	345 ft.	791 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No
Brakes Utilized	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal

30 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													

FMVSS 122 - DATA SHEET 8 (2 of 2)

60 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													

80 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lb.)		Rear Brake Lever Force (lb.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													

TOP SPEED 115 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													

REMARKS:

DRIVER:_____
RECORDED BY:_____ **DATE:**_____
APPROVED BY:_____

FMVSS 122 - DATA SHEET 9 (1 of 3)
FADE AND RECOVERY TEST (S7.6)

VEHICLE:		DATE:		NHTSA NUMBER:	
TIRE PRESSURE (FRONT):	psi	TIRE PRESSURE (REAR):	psi	AMBIENT TEMP. °F:	
ODOMETER START:	mi	ODOMETER FINISH:	mi	WIND VELOCITY (MPH):	

TEST CONDITIONS: Baseline

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	3
Deceleration Rate	10 to 11 ft/s^2
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

30 mi/h DATA — Fade and Recovery Baseline Data (S7.6.1)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
Average Max. Actuation Forces (to be used in computing 5th recovery stop actuation force limits)													

TEST CONDITIONS: Fade

Test Speed	60 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
IBT – Subsequent Stops	Temps. Occurring at distance intervals.
Number of Stops	10
Deceleration Rate	14 – 17 ft/s/s
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Stop Interval	2112 ft.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

DATA SHEET 9 (2 of 3)

60 mi/h DATA — Fade Stops (S7.6.2)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													

TEST CONDITIONS: Recovery

Test Speed	30 mi/h
First Stop Initial Brake Temperature (IBT)	Temperature achieved at completion of fade stop procedure
IBT – Subsequent Stops	Temps. Occurring at distance intervals.
Number of Stops	5
Deceleration Rate	10 to 11 ft/s^2
Maximum Allowable Brake Actuation Forces for Stops 1 through 4	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Maximum Allowable Brake Actuation Forces for Stop 5	See Recovery Stop Actuation Force Limit computation Table Below
Stop Interval	1 mile
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

REQUIREMENT: for the fifth recovery stop shall be within plus 20 pounds and minus 10 pounds of the baseline check average force, but not less than 0 pounds.

5th Recovery Stop Actuation Force Limit Computations (S5.4.3)			
Service Brake 1 (Front Brake)		Service Brake 2 (Rear Brake)	
Lower Limit – Average Max. Force (5.4 lbs.) minus 10 lbs.	Upper Limit – Average Max. Force (5.4 lbs.) Plus 20 lbs.	Lower Limit – Average Max. Force (8.8 lbs.) minus 10 lbs.	Upper Limit – Average Max. Force (8.8 lbs.) Plus 20 lbs.

DATA SHEET 9 (3 of 3)

30 mi/h Recovery Stop Data (S7.6.3) —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													

REMARKS:

DRIVER:_____
RECORDED BY:_____ **DATE:**_____
APPROVED BY:_____

FMVSS 122 - DATA SHEET 10

REBURNISH PROCEDURE (S7.7)

VEHICLE:		DATE:		NHTSA NUMBER:	
TIRE PRESSURE (FRONT):	psi	TIRE PRESSURE (REAR):	psi	AMBIENT TEMP. °F:	
ODOMETER START:	mi	ODOMETER FINISH:	mi	WIND VELOCITY (MPH):	5

TEST CONDITIONS:

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	35
Deceleration Rate	12 ft./s^2
Actuation Forces	Hand Lever and foot pedal force limits do not apply during this procedure.
Cooling Speed	Accelerate at maximum rate to 30 mph immediately and maintain that speed until making the next stop
Stop Interval	The braking interval shall be either the distance necessary to reduce the brake temperature to between 130°F and 150°F or 1 mile, whichever comes first.
Post Burnish Adjustments	After burnishing adjust the brakes in accordance with the manufacturer's recommendation.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)				Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (fpsps)		Wheel Lockup	Stay In Lane
		Front	Rear			Max		Max		Max			
1													
5													
10													
15													
20													
25													
30													
35													

REMARKS: _____

DRIVER: _____

RECORDED BY: _____ DATE: _____

APPROVED BY: _____

FMVSS 122 - DATA SHEET 11 (1 of 2)
FINAL EFFECTIVENESS TEST (S7.8.1)

VEHICLE:		DATE:		NHTSA NUMBER:	
TIRE PRESSURE (FRONT):	psi	TIRE PRESSURE (REAR):	psi	AMBIENT TEMP. °F:	
ODOMETER START:	mi	ODOMETER FINISH:	mi	WIND VELOCITY (MPH):	

TEST CONDITIONS:

Test Speed	30 mi/h	60 mi/h	80 mi/h	115 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F	130°F to 150°F	130°F to 150°F
Runs Required	6	6	4	4
Maximum Stop Distance Allowed	43 ft.	185 ft.	345 ft.	791 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No	No	No
Brakes Utilized	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal

30 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													

DATA SHEET 11 (2 of 2)

60 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													
6													

80 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													

HIGH SPEED 115 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													

REMARKS: _____

DRIVER: _____

RECORDED BY: _____ **DATE:** _____

APPROVED BY: _____

FMVSS 122 - DATA SHEET 12 (1 of 2)

WATER FADE AND RECOVERY TEST (S7.10.1) & (S7.10.2)

VEHICLE:		DATE:		NHTSA NUMBER:	
TIRE PRESSURE (FRONT):	psi	TIRE PRESSURE (REAR):	psi	AMBIENT TEMP. °F:	
ODOMETER START:	mi	ODOMETER FINISH:	mi	WIND VELOCITY (MPH):	

TEST CONDITIONS: Baseline Stops

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	3
Deceleration Rate	10 to 11 ft./s^2
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

30 mi/h DATA — Baseline Data (S7.10.1)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
Average Max. Actuation Forces (to be used in computing 5th recovery stop actuation force limits)													

Immerse rear brake in water fully released for 2 minutes followed by immersion of the front brake in water fully released for 2 minutes.

Immediately after completion of the wetting, accelerate to initial test speed without applying the brakes. Upon reaching the initial test speed, immediately conduct the wet brake recovery stops.

DATA SHEET 12 (2 of 2)

TEST CONDITIONS: Wet Brake Recovery Stops

Test Speed	30 mi/h
First Stop Initial Brake Temperature (IBT)	Temperature achieved at completion of brake wetting.
IBT – Subsequent Stops	Temps. Occurring at end of each stop.
Number of Stops	5
Deceleration Rate	10 to 11 ft./s^2
Maximum Allowable Brake Actuation Forces for Stops 1 through 4	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Maximum Allowable Brake Actuation Forces for **Stop 5**	See Recovery Stop Actuation Force Limit computation Table Below
Stop Interval	Distance sufficient to accelerate to initial test speed.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

REQUIREMENT: for the **5th** recovery stop shall be within plus 20 pounds and minus 10 pounds of the baseline check average force, but not less than 0 pounds.

5th Recovery Stop Actuation Force Limit Computations (S5.4.3)			
Service Brake 1 (Front Brake)		Service Brake 2 (Rear Brake)	
Lower Limit – Average Max. Force (4.2 lbs.) minus 10 lbs	Upper Limit – Average Max. Force (4.2 lbs.) Plus 20 lbs.	Lower Limit – Average Max. Force (12.5 lbs.) minus 10 lbs.	Upper Limit – Average Max. Force (12.5 lbs.) Plus 20 lbs.
lbs.	lbs.	lbs.	lbs.

30 mi/h Recovery Stop Data (S10.2) —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1													
2													
3													
4													
5													

REMARKS: _____

DRIVER: _____

RECORDED BY: _____ **DATE:** _____

APPROVED BY: _____

FMVSS 122 - DATA SHEET 13

FINAL INSPECTION – DURABILITY (S5.8/S7.11)

VEHICLE:		DATE:		NHTSA NUMBER:	
TIRE PRESSURE (FRONT):	psi	TIRE PRESSURE (REAR):	psi	AMBIENT TEMP. °F:	NA
ODOMETER START:	mi	ODOMETER FINISH:	mi	WIND VELOCITY (MPH):	NA

Upon completion of all tests, perform the following:

Requirement – brake system disassembled	PASS/FAIL
Inspect the entire brake system for detachment or fracture of any component	NA
Inspect the brake linings for detachment from the shoe or pad.	NA
Inspect the wheel cylinder, master cylinder, brake hoses and axle seals for fluid or lubricant leakage	NA

REMARKS: _____

RECORDED BY: _____ **DATE:** _____

APPROVED BY: _____

FMVSS 122 –DATA SHEET 14 (1 of 2)

FINAL INSPECTION – EQUIPMENT REQUIREMENTS (S5.1)

BRAKE SYSTEM INSPECTION REQUIREMENTS	TEST VEHICLE COMPLIANCE	DATA	
		YES	NO
S5.1 - Motorcycle shall have either a split service brake system or two independently actuated service brake systems.	Motorcycle has split service brake system?	X	
	Motorcycle has two independently actuated service brake systems?		X
S5.1.1 - Failure of any component in a mechanical service brake system shall not result in a loss of braking ability in the other service brake system on the vehicle.	If vehicle has a mechanical service brake system, would component failure result in loss of braking in other service brake system?	N/A	N/A
S5.1.2 - Leakage failure in hydraulic service brake system shall not result in a loss of braking ability in other service brake system on the vehicle.	If vehicle has hydraulic service brake system, would leakage failure in one service brake system result in a loss of braking ability in other service brake system?		X
S5.1.2.1 - Each master cylinder shall have a separate reservoir for each brake circuit, with each reservoir filler opening having its own cover, seal, and cover retention device. Each reservoir shall have a minimum capacity equivalent to one and one-half times the total fluid displacement resulting when all the wheel cylinders or caliper pistons serviced by the reservoir move from a new lining, fully retracted position to a fully worn, fully applied position. Where adjustment is a factor, the worst condition of adjustment shall be used for this measurement.	Vehicle meets master cylinder reservoir requirements? Attach annotated calculations for each reservoir capacity. (Data Sheet 17 & Appendix A)		X N/A
S5.1.2.2 - Each motorcycle shall have a brake fluid warning statement that reads as follows, in letters at least 2.38 mm high: **Warning: clean filler cap before removing. Use only ---fluid from a sealed container.** (Inserting the recommended type of brake fluid as specified in 49 CFR 571.116, e.g., DOT 3.) The lettering shall be: (A) Permanently affixed, engraved, or embossed (B) Located so as to be visible by direct view, either on or within 4 inches of the brake-fluid reservoir filler plug or cap (C) Of a color that contrasts with its background, if it is not engraved or embossed	Vehicle meets master cylinder warning statement requirements? No Label		X
	Recommended brake fluid type: No Label		

(Continued on next page)

DATA SHEET 14 (2 of 2)

BRAKE SYSTEM INSPECTION REQUIREMENTS	TEST VEHICLE COMPLIANCE	DATA	
		YES	NO
S5.1.3 - (A) Each motorcycle equipped with a **split service brake system** shall have one or more electrically operated service brake system failure indicator lamps that is mounted in front of and in clear view of the driver, and that is activated — (1) In the event of pressure failure in any part of the service brake system, other than a structural failure of either a brake master cylinder body in a split integral body type master cylinder system or a service brake system failure indicator body, before or upon application of not more than 20 lb of pedal force upon the service brake. (2) Without the application of pedal force, when the level of brake fluid in a master cylinder reservoir drops to less than the recommended safe level specified by the manufacturer or to less than one-half the fluid reservoir capacity, whichever is greater. (B) All failure indicator lamps shall be activated when the ignition switch is turned from the "off" to the "on" or to the "start" position. (C) Except for the momentary activation required by S5.1.3.1(b), each indicator lamp once activated, shall remain activated as long as the condition exists, whenever the ignition switch is in the "on" position. An indicator lamp activated when the ignition is turned to the "start" position will be deactivated upon return of the switch to the "on" position unless a failure exists in the service brake system. (D) Each indicator lamp shall have a red lens with the legend "Brake Failure" on or adjacent to it in letters not less than three thirty-seconds of an inch high that shall be legible to the driver in daylight when lighted.	Does vehicle have a brake system failure indicator lamp? Number of brake system failure indicator lamps: ——— Does failure indicator lamp conform to operational and physical requirements?		X
S5.1.4 - Each three-wheeled motorcycle shall be equipped with a parking brake of a friction type with a solely mechanical means to retain engagement.	If a three-wheeled motorcycle, is it equipped with a parking brake?	X	
S5.1.5 - The brake system shall be installed so that the lining thickness of the drum brake shoes may be visually inspected, either directly or by use of a mirror without removing the drums, and so that disc brake friction lining may be visually inspected without removing the pads.	Can the drum brake lining thickness and disc brake lining thickness be inspected without removal of drum or disc brake pads? Is a mirror required?		 N/A

REMARKS: It is noted that the inspection of the vehicle after testing was terminated appeared to indicate that the vehicle did not have the required failure indicator light for split service brakes systems.

RECORDED BY: Jerry Inman DATE: 8-24-11

APPROVED BY: Mike Bilbee

DATA SHEET 15

CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS

BRAKE		LINING		
LOCATION	**TYPE**	**DESCRIPTION**	**MINIMUM THICKNESS**	**THICKNESS TO FULLY WORN (1) in.****
Front Brake	Drum	Leading	Pretest	
		Primary	Post Test	
		Inboard - X	□Δ	
	Disc - X	Trailing	Pretest	
		Secondary	Post Test	
		Outboard - X	□Δ	
LINING CLEARANCE:	Diametral (2) – N/A	Inboard - 0 in.	Outboard - 0 in.	
WHEEL CYLINDER DIAMETER (3) – N/A		CALIPER PISTON DIAMETER (3) - in. (x _ pistons)		
SHOE CAGE DIAMETER (4) N/A ; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: N/A				
Rear Brake	Drum	Leading	Pretest	
		Primary	Post Test	
		Inboard - X	Δ□	
	Disc - X	Trailing	Pretest	
		Secondary	Post Test	
		Outboard - X	□Δ	
LINING CLEARANCE:	Diametral (2) – N/A	Inboard – 0 in.	Outboard – 0 in.	
WHEEL CYLINDER DIAMETER (3) – N/A		CALIPER PISTON DIAMETER (3) – in. (X _ piston)		
SHOE CAGE DIAMETER (4) – N/A		CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: N/A		
SUBSYSTEM 1 CONSISTS OF:	Front -			
SUBSYSTEM 2 CONSISTS OF:	Rear –			
(1) MFRS RECOMMENDATIONS – None. REAR - TOP OF RIVET HEADS - NA FRONT - INCH - NA				
(2) DRUM BRAKES, MEASURED AT HORIZONTAL CENTERLINE - NA				
(3) MFRS DATA - NA				
(4) RESET POSITION - NA				

Comments: No manufacturer's data available.

DATA SHEET 16

VEHICLE ARRIVAL CONDITION REPORT

CONTRACT NO. DTNH22-06-C-0033 DATE: 8/24/11

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2009 Wildfire WF 650-C Motorcycle

MANUFACTURE DATE: 12/2008 NHTSA NO.: C91200

BODY COLOR: Red VIN: LTDKDVZ179TWF0221

ODOMETER READING: 16 mile GVWR: 1345 KG

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: 122

X THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS

X THE VEHICLE HAS BEEN PROPERLY MAINTAINED AND IS IN RUNNING CONDITION

___ THE STORAGE COMPARTMENT CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS

N/A PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE

REMARKS:

Equipment that is no longer on the test vehicle as noted on Vehicle Arrival Condition Report:
None.

Explanation for equipment removal:
N/A

Test Vehicle Condition:

RECORDED BY: Jerry Inman DATE: 8-24-09
APPROVED BY: Mike Bilbee DATE: 8-24-11

DATA SHEET 17

VEHICLE COMPLETION CONDITION REPORT

CONTRACT NO. DTNH22-06-C-0033 DATE: 8/24/11

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2009 Wildfire WF 650-C Motorcycle

MANUFACTURE DATE: 12/2008 NHTSA NO.: C91200

BODY COLOR: Red VIN: LTDKDVZ179TWF0221

ODOMETER READING: 107 miles GVWR: 1345 KG

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: 122

X THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS

X THE VEHICLE HAS BEEN PROPERLY MAINTAINED AND IS IN RUNNING CONDITION

___ THE STORAGE COMPARTMENT CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS

N/A PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE

REMARKS:

Equipment that is no longer on the test vehicle as noted on Vehicle Arrival Condition Report:
None.

Explanation for equipment removal:
N/A

Test Vehicle Condition:

RECORDED BY: Jerry Inman DATE: 8-24-09
APPROVED BY: Mike Bilbee DATE: 8-24-11

APPENDIX A

DETERMINATION OF MASTER CYLINDER MINIMUM VOLUME REQUIREMENTS

The procedure followed for determining the minimum volume requirements is outlined below and used in conjunction with Data Sheet 17.

SYSTEM DESCRIPTIONS:

DISC BRAKES
VOLUME REQUIREMENT CALCULATION:

Volume Required, $V_v = [(\Delta t_i + \Delta t_{ic}) \times [\pi(D^2)]/4] + [(\Delta t_o + \Delta t_{oc}) \times [\pi(D^2)]/4] \times 1.5$, where –

V_v = Volume required per wheel
Δt = Change in thickness (average)
i = Inboard
o = Outboard
c = Clearance
D_1 = Caliper cylinder diameter
D_2 = Caliper cylinder diameter

FRONT REQUIREMENTS:

Δt_i = in.

Δt_o = in.

Δt_{ic} = in.

Δt_{oc} = in.

D_1 = in.
D_2 = in.

V_{Front} = Not performed

APPENDIX A

DETERMINATION OF MASTER CYLINDER MINIMUM VOLUME REQUIREMENTS CONTINUED

REAR REQUIREMENTS:

Δt_i = in.

Δt_o = in.

Δt_{ic} = in.

Δt_{oc} = in.

D = in.

V_{Rear} = Not performed

APPENDIX B

INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

VEHICLE: 2009 Wildfire WF 650-C Motorcycle **NHTSA NO: C91200** **Date: 8/24/11**

INSTRUMENT	IDENTIFICATION/SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System – VBOX 3	030525	3-3-09	3-3-10
Software – Racelogic VBOX Tools	V02.2.15, Build 002	N/A	N/A
Hand Lever Force Transducer – Vishay Micromeasurement, 350 Ohm, ¼ in.	NA	NA	NA
Hand Lever Force Amplification – Sensotec P/N: 060-6827-02	NA	NA	NA
Push / Pull Gauge – Imada Digimatic PS232C	NA	NA	NA
Accelerometer – GPS based within VBOX3	030525	3-3-09	3-3-10
Fifth Wheel – GPS based within VBOX3	030525	3-3-09	3-3-10
Wind Velocity/Direction Gauge – Davis Model 6410	WY-A70406D36D	7-22-09	7-22-10
Ambient Temperature Gauge – Davis Model 6152	050608N02	7-13-09	7-13-10
Brake Thermocouple Meter – VBOX3	030525	3-3-09	3-3-10
Tire Pressure Gauge – Moroso	89562	12-2-09	3-2-10
Vehicle Weight – Toledo/Mettler Scales JAGXTREME 3000, (Bldg. 70)	SN 5225831-5JC	11-2-09	2-2-10

QUALITY ASSURANCE Mike Bilbee

Comments:

APPENDIX C

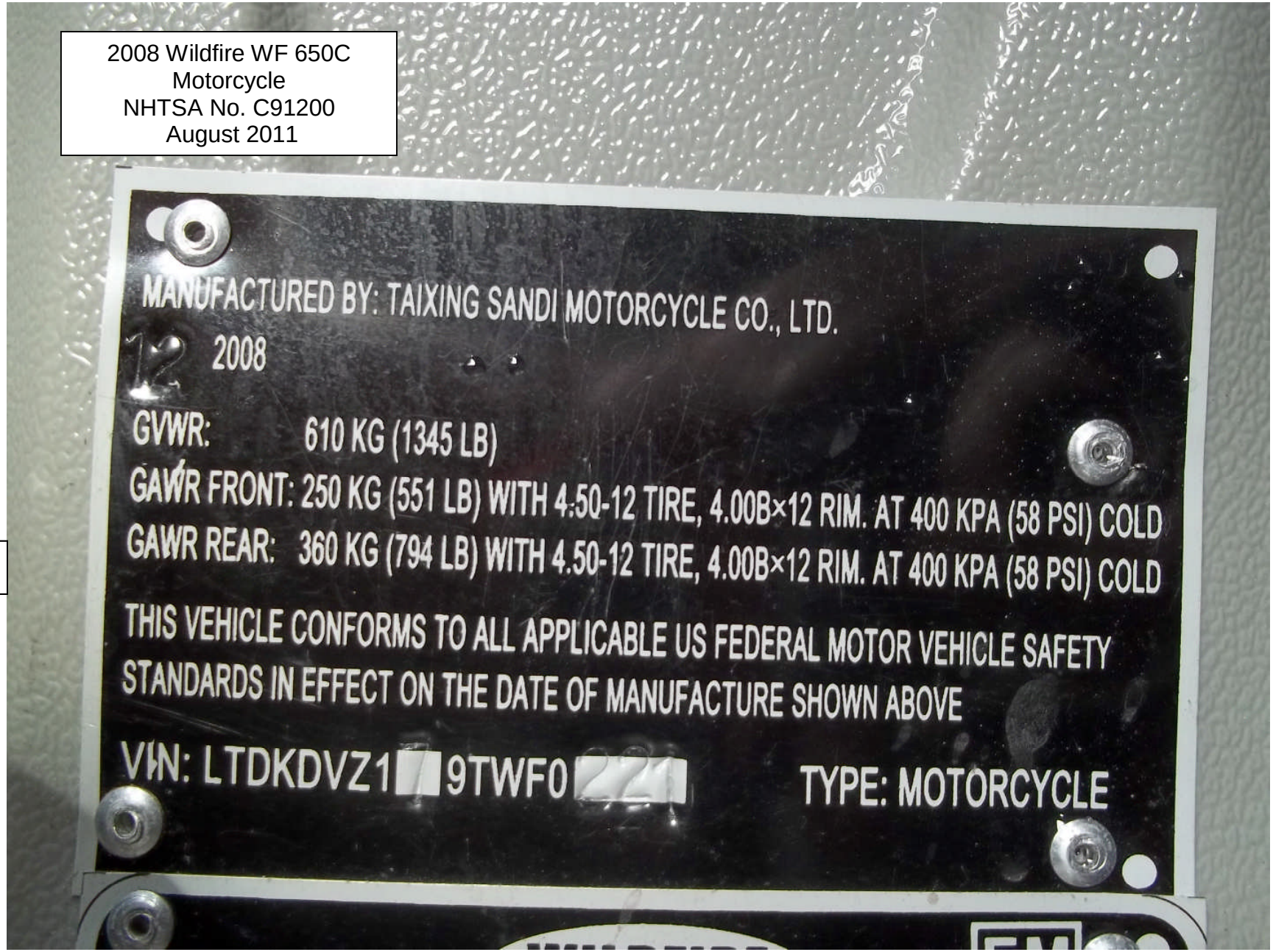
TEST VEHICLE PHOTOGRAPHS

2008 Wildfire WF 650C
Motorcycle
NHTSA No. C91200
August 2011

Left Front 3/4 View

Right Rear 3/4 View

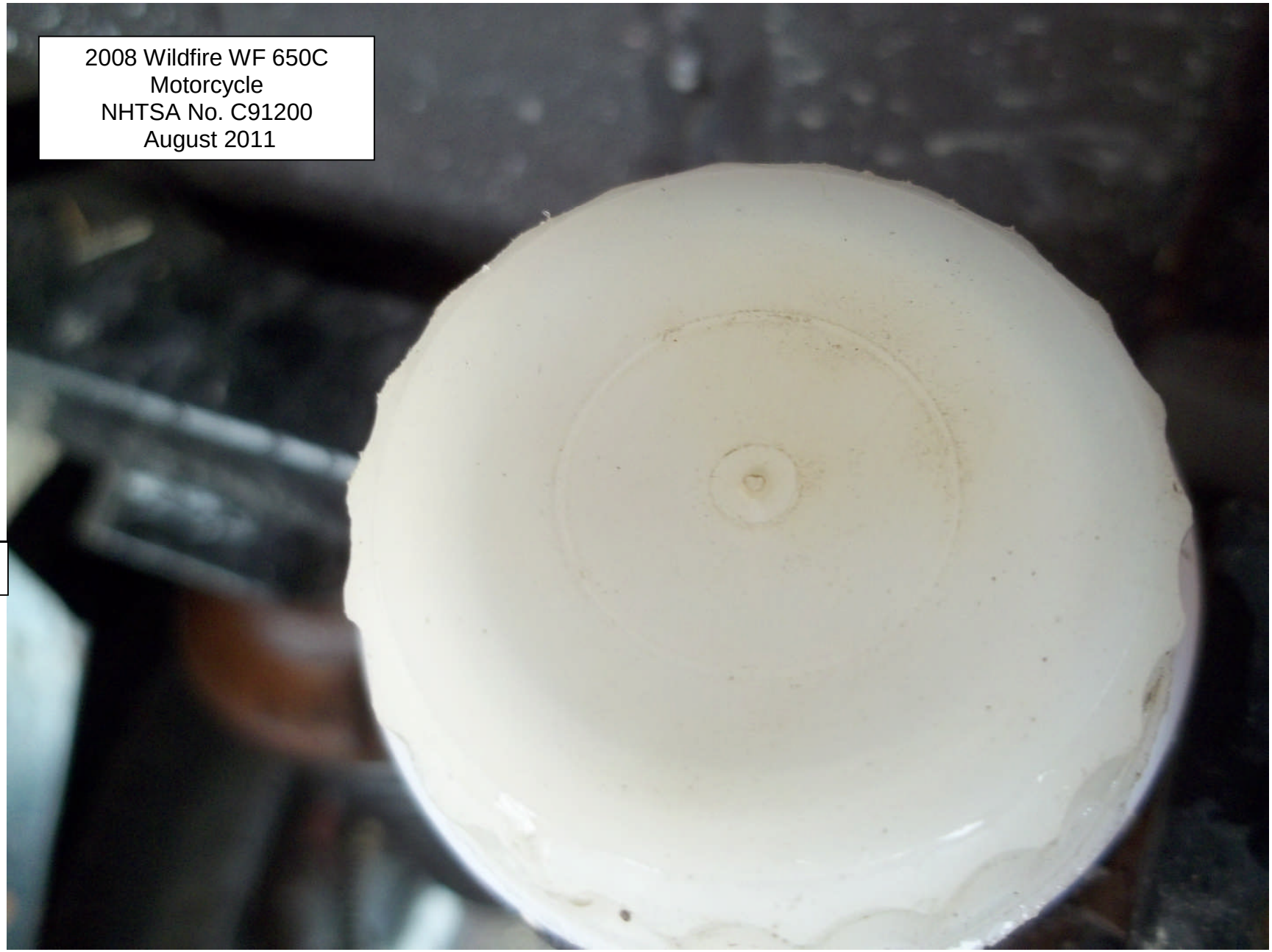
2008 Wildfire WF 650C
Motorcycle
NHTSA No. C91200
August 2011



Vehicle Certification and Tire Label

2008 Wildfire WF 650C
Motorcycle
NHTSA No. C91200
August 2011

FMVSS 120 Tire Information Label

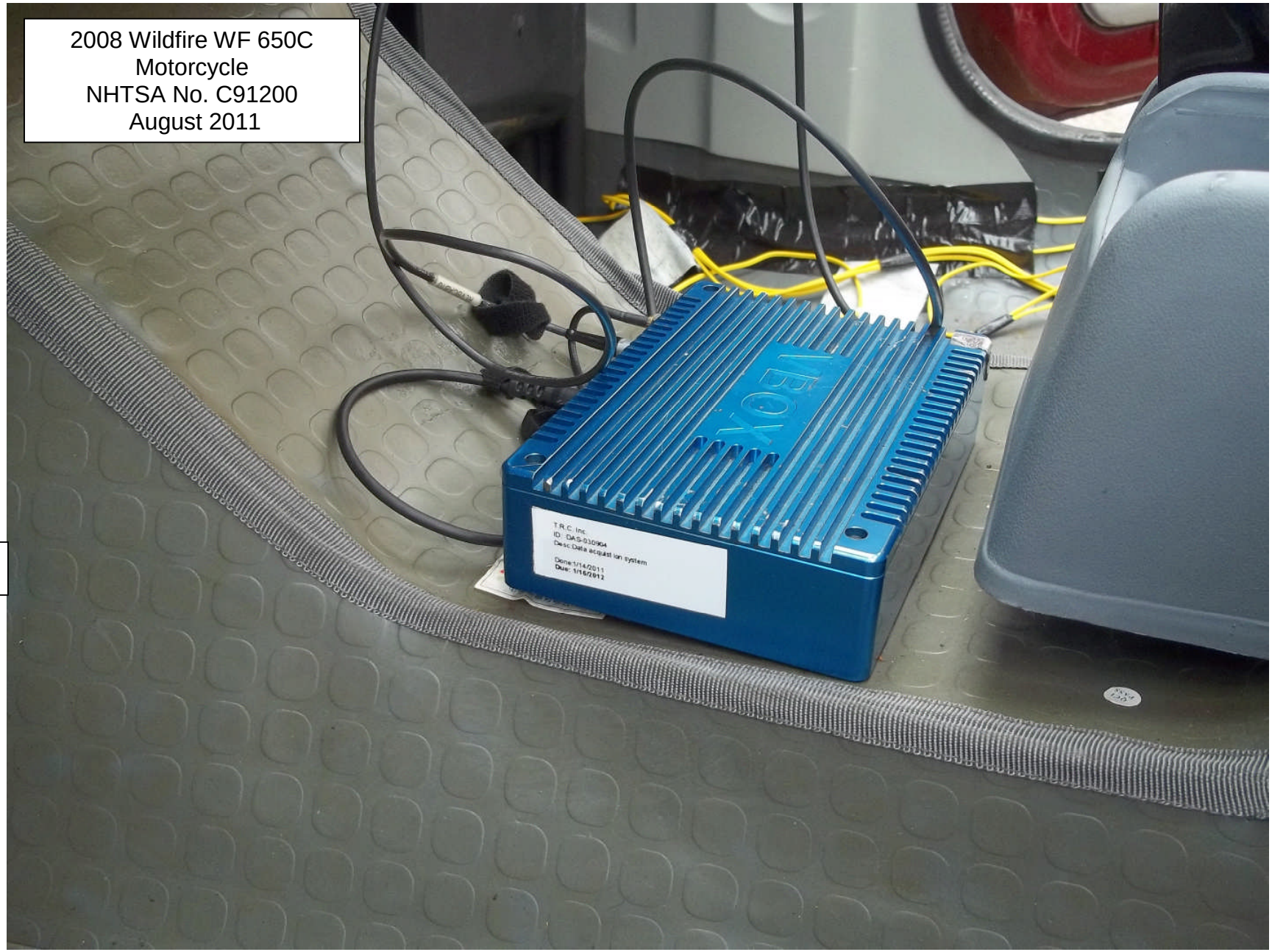


Master Cylinder Warning Label (Reservoir Cap) Not Present

2008 Wildfire WF 650C
Motorcycle
NHTSA No. C91200
August 2011

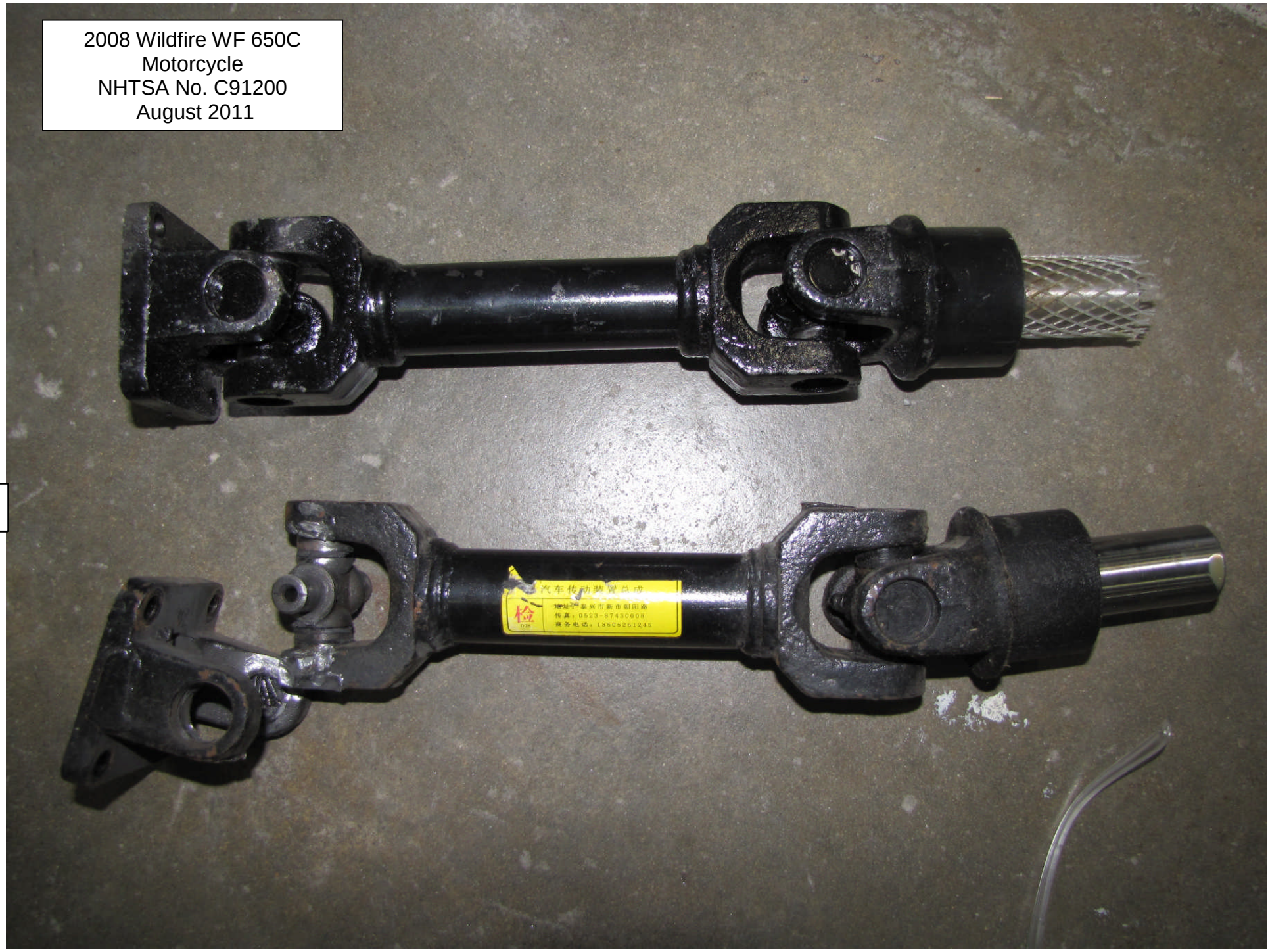
Instrumentation Installed on Vehicle

2008 Wildfire WF 650C
Motorcycle
NHTSA No. C91200
August 2011



Instrumentation Installed on Vehicle

2008 Wildfire WF 650C
Motorcycle
NHTSA No. C91200
August 2011



39

Failed Driveshaft after 91 miles

APPENDIX D

CONTRACTOR'S COMMENTS
PROCEDURE MODIFICATION (IF APPLICABLE)
TEST FACILITY

CONTRACTOR'S COMMENTS

The test vehicle had several issues as documented below:

- Curb Weight exceeds GVWR
- Exceeded stopping distance requirement for First Effectiveness at both 30 mph and 45 mph. (S5.2). Testing was terminated per COTR.
- Brake system uses common reservoir for both front and rear brakes. (S5.1.2.1)
- Master cylinder cap does not have required labeling. (S5.1.2.2)
- Driveshaft failed at 91 miles even though only a minimal amount of testing was completed.
- No failure indicator light. (S5.1.3.1)

After testing was terminated, Wildfire representatives along with NHTSA personnel, convened at TRC on 9/28/10 to investigate the apparent non-compliances. Wildfire indicated that the brakes needed to be adjusted and bled which would then rectify the stopping distance issue. The NHTSA COTR permitted Wildfire personnel to adjust the brakes and perform the brake bleed. In the process of retesting the Wildfire adjusted vehicle, the driveshaft failed (91 miles) requiring replacement. Again on 9/30/10, TRC Inc., with the Wildfire inspected and adjusted vehicle, conducted additional 30 and 45 mph first effectiveness tests. The results and typical data traces for this testing follows and reveals the vehicle still unable to meet stopping distance requirements.

Testing at TRC on 9/30/2010 on Wildfire 650C with new driveshaft.

							Pedal Force	
Stop #	Target Speed	Initial Speed	Actual Stopping Distance	Corrected Stopping Distance	Required Stopping Distance	Percentage Exceeded Requirement	Max	Average
1	30	30.65	64	61.3	54.0	13.5%	89	75
2	30	30.72	65	62.0	54.0	14.8%	88	75
			Range =	1.1%				

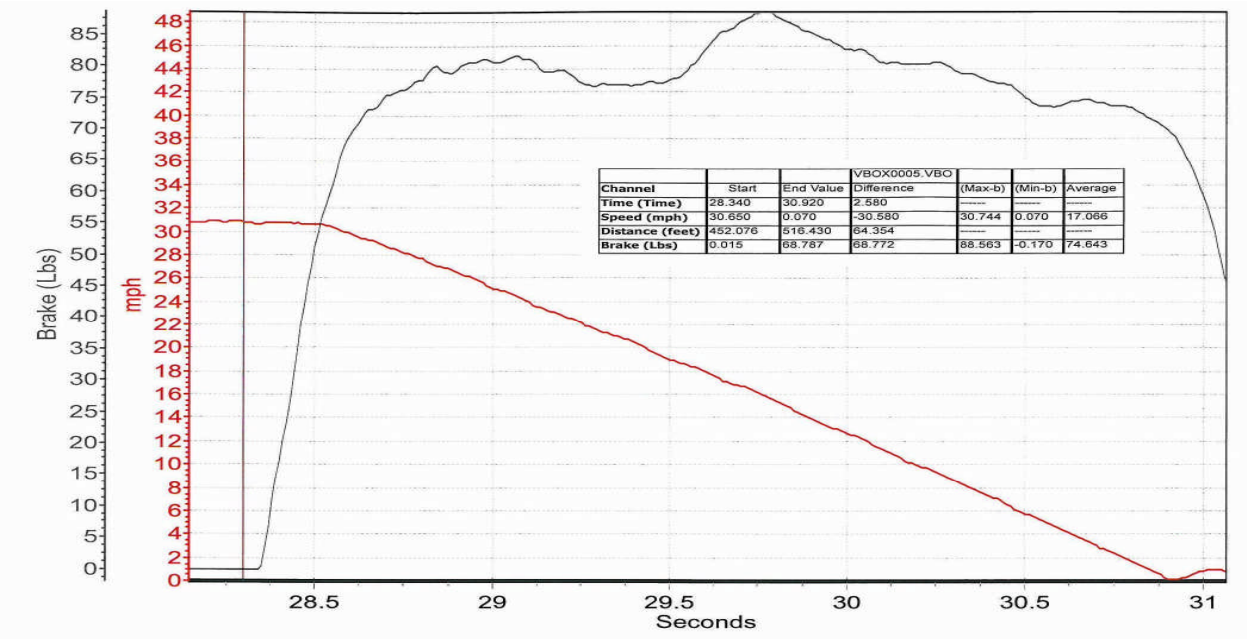
							Pedal Force	
Stop #		Initial Speed	Actual Stopping Distance	Corrected Stopping Distance	Required Stopping Distance	Percentage Exceeded Requirement	Max	Average
1	45	45.73	145	140.4	121.0	16.0%	87	79
2	45	45.65	187	181.7	121.0	50.2%	77	66
			Range =	22.7%				

Excessive pedal force greater than the allowed 90 lbs. was applied in an effort to reduce stopping distance.

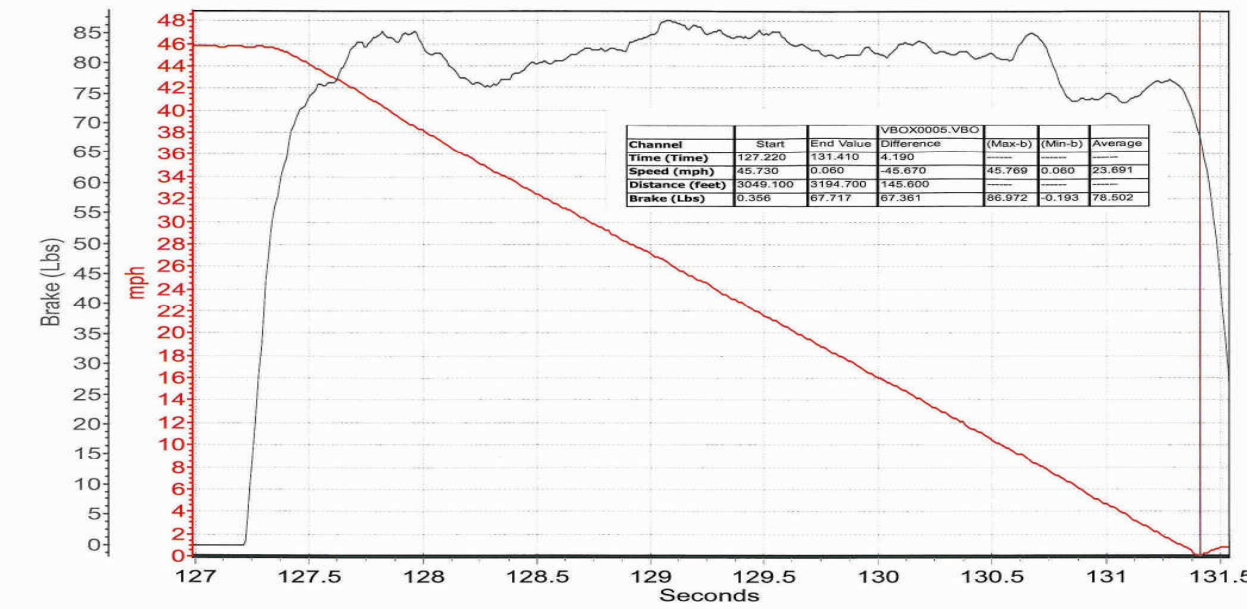
Stop #		Initial Speed	Actual Stopping Distance	Corrected Stopping Distance	Required Stopping Distance	Percentage Exceeded Requirement	Pedal Force Max	Pedal Force Average
1	30	30.8	59	56.0	54.0	3.7%	**104**	78
2	30	30.72	61	58.2	54.0	7.7%	**107**	73
3	30	30.4	57	55.5	54.0	2.8%	**94**	73
4	30	30.36	57	55.7	54.0	3.1%	**98**	73
			Range =	4.6%				

Note: Even with the Maximum Pedal Force applied in excess of the 90 lbs allowed, the required stopping distance could not be met.

Below are typical charts of 30 mph and 45 mph stops after Wildfire adjusted and bled the brakes:



30 mph Stop


Brake (Lbs)
mph
Seconds
127
127.5
128
128.5
129
129.5
130
130.5
131
131.5
VBOX0005.VBO
Channel | Start | End Value | Difference | (Max-b) | (Min-b) | Average
Time (Time) | 127.220 | 131.410 | 4.190 | ------ | ------ | ------
Speed (mph) | 45.730 | 0.060 | -45.670 | 45.769 | 0.060 | 23.691
Distance (feet) | 3049.100 | 3194.700 | 145.600 | ------ | ------ | ------
Brake (Lbs) | 0.356 | 67.717 | 67.361 | 86.972 | -0.193 | 78.502

45 mph Stop

TRC SKID PAD

The Skid Pad is a test facility which is utilized primarily for the evaluation of tire and brake systems.

The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. The loops can accommodate speeds of 45 mph with zero side force and 60 mph with 0.5g lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

The Skid Pad is constructed of Portland cement and contains a constant grade of 0.5%. The load capacity of the skid pad is 36,000 pounds maximum single axle weight and 48,000 pounds maximum tandem axle weight.

Varying surface textures in the main test area are ideal for testing tire and/or brake system performance on different surfaces as characterized by "skid numbers." The skid pad is also used for acceleration studies, aerodynamics, rolling resistance, noise testing, and top speed determination.

APPENDIX E

NOTICE OF POSSIBLE NON-COMPLIANCE

LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS NO.: 122 TEST DATE: 12/14/09

LABORATORY: TRC Inc.

CONTRACT NO.: DTNH22-06-C-00033 ; DELV. ORDER NO.: Mod 4

LABORATORY PROJECT ENGINEER'S NAME: Mike Bilbee

TEST VEH. MAKE/MODEL: Wildfire WF-650C

VEHICLE NHTSA NO.: C91200; VIN: LTDKDVZ179TWF0221

VEHICLE MODEL YEAR: 2009; BUILD DATE: 12/2008

TEST FAILURE DESCRIPTION:

- Curb Weight exceeds GVWR
- Exceeded stopping distance requirement for First Effectiveness at both 30 mph and 45 mph. (S5.2)
- Brake system uses common reservoir for both front and rear brakes. (S5.1.2.1)
- No brake fluid warning statement. (S5.1.2.1)
- No failure indicator lamp. (S5.1.3.1)

Note: Last three items were identified after the testing was terminated and did not appear in the original failure notice to NHTSA.

S122 REQUIREMENT, PARAGRAPH ___ :

NOTIFICATION TO NHTSA (COTR):

DATE: 12/14/2009 BY: Michael Bilbee

REMARKS:

Testing was terminated following failure to meet first effectiveness testing.