122-TRC-07-001

SAFETY COMPLIANCE TESTING FOR FMVSS 122
Motorcycle Brake Systems

KTMMEX.S.A.DE.C.V./China
2007 Tank Urban Racer, Motorcycle
NHTSA No. C71200

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

Final Report Completed: December 3, 2007

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 _____

Approval Date: 12/13/07

Final Report Acceptance By OVSC:

_____

Contract Technical Manager, Office of Vehicle Safety Compliance

12/14/07

Acceptance Date

1. REPORT NUMBER: 122-TRC-07-001	2. GOVERNMENT ACCESSION NO.:	3. RECIPIENTS CATALOG NO.:	
4. TITLE AND SUBTITLE: Final report of FMVSS 122 Compliance Testing of a 2007 Tank Urban Racer, Motorcycle, NHTSA No. C71200		5. REPORT DATE: December 3, 2007 6. PERFORMING ORGANIZATION CODE: TRC 20060110/7222	
7. AUTHOR(S): Project Manager: ALAN IDA Project Engineer: RANDALL A. LANDES		8. PERFORMING ORGANIZATION REPORT NO.: TRC-DOT-122-001	
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: 8/27/07 to 11/15/07 14. SPONSORING AGENCY CODE: NVS-221	
15. SUPPLEMENTARY NOTES:			
16. ABSTRACT: Compliance tests were conducted on the subject 2007 Tank Urban Racer, 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: None			
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: 51	22. PRICE:

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1.0 INTRODUCTION

Tests were conducted on a 2007 Tank Urban Racer, Motorcycle, manufactured by KTMMEX.S.A.DE.C.V./China, (imported by Tank Sports Inc., El Monte, CA) 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.

All stops were performed manually.

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

7.5-Mile Test Track
Burnish Test
Fade and Recovery Test
Reburnish Test

Skid Pad
Instrumentation Check Test
Maximum Speed Test
First Effectiveness Test
Partial Service Brake System Test
Second Effectiveness Test
Final Effectiveness Test

Vehicle Dynamics Area
Water Fade and Recovery Test

Average PFC during the test period was 1.00 (Skid Pad); 0.99 (Test Track) and 1.00 (VDA) utilizing the ASTM E1337 w/E1336 tire method.

This vehicle met the requirements of FMVSS 122.

DATA SHEET 1 (1 of 2)

VEHICLE INFORMATION

VEHICLE:	2007 Tank Urban Racer	DATE:	08/27/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi		
ODOMETER START:	16 mi.	ODOMETER FINISH:	574 mi.		

Date of Manufacture: May 2007

General Description:

Manufacturer	**KTMMEX.S.A.DE.C.V./China Imported by: Tank Sports Inc. (El Monte, CA)**
Make & Model	**Tank, TK150T-7A**
VIN	**3CG3D7D4073700074**
Engine Type	**Gasoline, 4-Stroke, Single Piston, Air Cooled**
Engine Displacement	**9.2 in.^{3} (150 cm$^{3)}$**
Fuel Delivery	**Carburetor**
Transmission	**CVT**
Final Drive	**Internal/enclosed**
Wheelbase	**54.6 in.**

Tires:

	Front	Rear
Manufacturer	**Duro**	**Duro**
Type	**Nylon belted bias**	**Nylon belted bias**
Size	**130/60 – 13, 55J**	**130/60 – 13, 55J**
DOT Number	**DOT 6W 2406**	**DOT 6W 2506**
Pressure (cold)	**28 psi**	**32 psi**
Rim Label Information	**J13XMT3.50 DOT**	**J13XMT3.50 DOT**

Weights:

	Front		Rear		Total
	Mass (lb.)	**% of Total**	**Mass (lb.)**	**% of Total**	**Mass (lb.)**
Test Rider					**171**
Curb Weight (UVW)	**98.5**	**37.5**	**164.5**	**62.5**	**263**
Test Weight (UVW + rider + instrumentation)	**176.0**	**38.0**	**287.5**	**62.0**	**463.5**
GVWR (label)					**583**
GAWR (label)	**233.0**	**40.0 (calc'd)**	**350.0**	**60.0 (calc'd)**	**264.5**

FMVSS 122 - DATA SHEET 1 (2 of 2)

Brakes:

	Front	Rear
Actuation Method: mechanical, hydraulic, electric	**Hydraulic**	**Hydraulic**
System Type: Individual control, Combined Brake System, Split-Service	**Individual Control**	**Individual Control**
Control	**Hand Lever**	**Hand Lever**
Caliper Type	**Floating**	**Floating**
Number of Calipers	**1**	**1**
No. of Caliper Pistons	**1**	**2**
Caliper Piston Diameters	**1.333 in.**	**0.979 in.**
Rotor –Type/Number	**Unvented, Drilled Steel / 1**	**Unvented, Drilled Steel / 1**
Rotor Diameter	**8.656 in.**	**7.090 in.**
Rotor Thickness/Min. Allowable Thickness	**0.162 in.**	**0.175 in.**
Swept Area	**30.92 in.^{2}**	**22.34 in.^{2}**
Brake Pad Identification Numbers	**SL-F311**	**SL-308**

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

VEH.: 2007 Tank Urban Racer VEH. NHTSA NO.: C71200; 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	30.1	174.6	173.4	13.0	15.6	10	NA
Speed Determination	54.8 avg.						NA
1st Effectiveness Test @ 30 mi/h (Service Brake System)	30.4	51.58	50.4	30.6	32.0	6	P
1st Effectiveness Test @ 50 mi/h (Service Brake System)	48.6	138.9	147.3	33.8	26.3	6	P
1st Effectiveness Test @ 30 mi/h (Partial) Right Hand Lever Only	29.8	51.05	51.7	<55*	N/A	6	P
1st Effectiveness Test @ 30.0 mi/h (Partial) Left Hand Lever Only	29.6	90.78	93.2	N/A	<55*	6	P
1st Effectiveness Test @ 50 mi/h (Partial) Right Hand Lever Only	50.1	149.86	149.1	<55*	N/A	6	P
1st Effectiveness Test @ 50 mi/h (Partial) Left Hand Only	50.1	200.3	199.8	N/A	40.2	6	P
Burnish Procedure	30.0					200	NA
2nd Effectiveness Test@ 30 mi/h (Service brake System)	28.6	36.09	39.7	<55*	<55*	6	P
2nd Effectiveness Test@ 50 mi/h (Service brake System)	49.07	116.46	120.9	<55*	25.4	6	P
2nd Effectiveness Test@ 80 mi/h (Service brake System)	NA	NA	NA	NA	NA	NA	NA
2nd Effectiveness Test@ XXX mi/h (Service brake System)	NA	NA	NA	NA	NA	NA	NA
Fade and Recovery (Baseline)	29.7 avg.	98.8 avg.	101 avg.	10.5	10.1	3	P
Fade and Recovery (Fade Test)	49.7 avg.	185.6 av.	187.7 av.	18.4 avg.	15.9 avg.	11**	P
Fade and Recovery (Recovery- 5th stop)	29.4	86.40	89.9	11.3	11.4	5	P
Reburnish Procedure	30.0					35	P
Final Effect. Test @ 30 mi/h (Service Brake System)	28.9	38.69	41.7	35.1	20.8	7	P

* **Driver's visual observation – DAS did not acquire channel(s).**
****During Fade portion, driver encountered traffic that delayed the test during Fade Stop #9, therefore, the driver performed one extra stop to compensate.**

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 @ 50 mi/h (Service Brake System)	48.2	103.62	111.5	38.2	15.5	6	P
Final Effect. Test @ 80 mi/h (Service brake System)	NA	NA	NA	NA	NA	NA	NA
Final Effect. Test @ XXX mi/h (Service brake System)	NA	NA	NA	NA	NA	NA	NA
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #1 @ 48.3 km/h	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #1 @ 96.6 km/h	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #2 @ 48.3 km/h	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #2 @ 96.6 km/h	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parking Brake Test –**3-wheeled** motorcycles only	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Recovery (Baseline – Average Maximum Forces)	29.6	89.9 avg.	92.4 avg.	13.3	10.4	3	P
Water Recovery (Recovery – 5th Stop)	29.4	89.0	90.8	8.4	9.4	5	P
Final Inspection (Durability)							P
Equipment Requirements							P

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

VEHICLE:	2007 Tank Urban Racer	DATE:	09/19/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	76
ODOMETER START:	41 mi.	ODOMETER FINISH:	57 mi.	WIND VELOCITY (MPH):	12

REQUIREMENTS: Check instrumentation by making not more than 10 stops from 30 mi/h at a deceleration of not more than 10 ft./s/s, 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/s)		Wheel Lockup	Stay In Lane
		Front	**Rear**			**Max**	**Avg**	**Max**	**Avg**	**Max**	**Avg**		
1	30.2	92	167	183.8	181.4	7.0	3.4	5.1	2.0	7.7	5.4	No	Yes
2	30.1	105	151	173.4	173.4	13.0	6.9	15.6	5.3	7.0	3.4	No	Yes
3	29.8	120	150	161.4	161.4	6.9	4.6	8.2	3.1	7.6	5.3	No	Yes
4	29.9	112	147	165.1	165.1	6.8	3.0	11.1	5.2	6.7	4.9	No	Yes
5	29.9	112	143	165.6	165.6	6.4	3.4	13.2	6.3	7.5	5.7	No	Yes
6	NA	113	151	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	30.2	120	140	204.3	204.3	6.2	5.3	5.3	3.2	5.6	3.7	No	Yes
8	30.0	121	144	188.5	188.5	7.5	9.2	9.2	4.3	5.8	4.5	No	Yes
9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No	Yes
10	30.0	133	145	193.0	193.0	7.6	4.9	7.1	3.0	6.4	4.5	No	Yes

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data. Runs #6 & #9 were bad runs.

DRIVER: Alan Ida

RECORDED BY: Alan Ida **DATE: 9-19-07**

APPROVED BY: R, Landes

DATA SHEET 4

VEHICLE:	2007 Tank Urban Racer	DATE:	09/19/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	80
ODOMETER START:	60 mi.	ODOMETER FINISH:	65 mi.	WIND VELOCITY (MPH):	6

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	South	54.6
Run No. 2	South*	54.9

Average = 54.7 mi/h

*Test vehicle engine would not perform maximally in the North direction – reason unknown.
In the South direction, the engine performed normally. Therefore, only South runs were utilized to determine maximum speed.

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.

DRIVER: Alan Ida

RECORDED BY: Alan Ida DATE: 9-19-07

APPROVED BY: R, Landes

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

VEHICLE:	2007 Tank Urban Racer	DATE:	09/20/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	75
ODOMETER START:	68 mi.	ODOMETER FINISH:	65 mi.	WIND VELOCITY (MPH):	2

TEST CONDITIONS:

Test Speed	30 mi/h	50 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.	150 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	Both Hand Levers	Both Hand Levers

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	30.0	148	147	57.6	57.4	35.4	28.9	19.8	11.9	19.9	16.4	NO	YES
2	30.2	144	138	54.1	53.4	34.7	28.7	29.7	17.2	22.3	18.2	NO	YES
3	29.8	150	137	54.0	54.8	30.4	22.0	29.5	23.8	21.5	17.5	NO	YES
4	30.0	148	148	53.3	53.5	32.8	23.4	34.3	26.6	22.7	18.2	NO	YES
5	30.3	141	149	54.6	53.5	34.0	27.1	31.1	24.9	22.7	17.7	NO	YES
6	30.4	150	140	51.6	50.4	30.6	19.7	32.0	21.9	23.0	18.5	NO	YES

50 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	50.0	150	141	148.9	148.7	35.4	28.2	39.1	29.2	28.5	20.9	NO	YES
2	50.1	148	150	165.3	164.8	35.4	14.2	32.9	16.7	23.4	15.7	NO	YES
3	49.6	145	150	150.8	153.4	32.0	23.2	26.9	18.1	20.9	16.6	NO	YES
4	50.2	150	148	153.4	152.2	23.3	14.9	33.5	19.7	22.6	17.7	NO	YES
5	48.6	146	149	138.9	147.3	33.8	25.5	26.3	17.0	23.7	19.1	NO	YES
6	49.8	150	146	153.5	155.0	35.2	26.6	25.7	18.0	24.7	19.2	NO	YES

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.
DRIVER: Alan Ida
RECORDED BY: Alan Ida DATE: 9-20-07
APPROVED BY: R, Landes

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

VEHICLE:	2007 Tank Urban Racer	DATE:	09/20/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	82
ODOMETER START:	98 mi.	ODOMETER FINISH:	118 mi.	WIND VELOCITY (MPH):	5

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

TEST CONDITIONS: Subsystem 1

Test Speed	30 mi/h	50 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.	337 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 Levers**	**Hand Levers**

TEST CONDITIONS: Subsystem 2

Test Speed	30 mi/h	50 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.	337 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 Levers**	**Hand Levers**

30 mi/h DATA — **Brake Subsystem 1**, Describe: Front Only (Right 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	30.2	148		64.8	64.0	*NA	*NA			18.9	15.1	NO	YES
2	29.8	150		51.0	51.7	*NA	*NA			20.2	16.1	NO	YES
3	30.1	150		58.2	57.8	*NA	*NA			18.1	14.8	NO	YES
4	30.2	150		62.5	61.9	*NA	*NA			19.2	15.4	NO	YES
5	29.7	150		51.1	52.1	*NA	*NA			20.2	17.1	NO	YES
6	29.9	150		59.0	59.4	*NA	*NA			19.3	15.1	NO	YES

*The driver observed that the lever force did not visually exceed 55 lb. The data system did not acquire data for this parameter.

FMVSS 122 - DATA SHEET 6 (2 of 2)

50 mi/h DATA —— **Brake Subsystem 1**, Describe: Front Only (Right 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	49.8	147		169.3	170.6	*NA	*NA			19.9	16.0	NO	YES
2	50.1	150		166.2	165.5	*NA	*NA			21.4	17.2	NO	YES
3	50.1	150		165.4	164.7	*NA	*NA			21.0	16.9	NO	YES
4	50.1	150		171.5	170.7	*NA	*NA			22.8	17.0	NO	YES
5	50.0	150		160.4	160.2	*NA	*NA			23.4	18.0	NO	YES
6	50.1	150		149.9	149.1	*NA	*NA			23.5	18.9	NO	YES

30 mi/h DATA — **Brake Subsystem 2**, Describe: Rear Only (Left 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	30.3		150	95.2	93.6			*NA	*NA	14.7	11.0	NO	YES
2	30.2		150	97.1	95.8			*NA	*NA	14.1	10.4	NO	YES
3	30.0		150	95.4	95.1			*NA	*NA	13.1	10.8	NO	YES
4	30.0		150	113.2	133.4			*NA	*NA	12.1	9.0	NO	YES
5	29.6		150	90.8	93.2			*NA	*NA	15.0	11.4	NO	YES
6	29.9		150	96.9	97.7			*NA	*NA	14.7	10.6	NO	YES

50 mi/h DATA —— **Brake Subsystem 2**, Describe: Rear Only (Left 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	49.8		150	270.5	272.8			*NA	*NA	15.0	11.0	NO	YES
2	49.9		150	227.7	228.5			*NA	*NA	15.4	12.0	NO	YES
3	50.2		150	241.0	239.1			*NA	*NA	15.1	12.1	NO	YES
4	49.8		150	221.5	223.6			*NA	*NA	16.3	12.5	NO	YES
5	49.4		150	200.4	205.4			*NA	*NA	14.7	11.5	NO	YES
6	50.1		150	200.3	199.8			*NA	*NA	15.0	12.7	NO	YES

*The driver observed that the lever force did not visually exceed 55 lbs. The data system did not acquire data for this parameter. Standards Engineer informed – instructed TRC Inc. to continue.

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.

DRIVER: Alan Ida

RECORDED BY: Alan Ida **DATE: 9-20-07**

APPROVED BY: R, Landes

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

VEHICLE:	2007 Tank Urban Racer	DATE:	10/11/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	49
ODOMETER START:	117 mi.	ODOMETER FINISH:	409 mi.	WIND VELOCITY (MPH):	11

TEST CONDITIONS:

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	200
Deceleration Rate	12 ft/s/s
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	Both Hand Levers

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	30	204.6	98.1			*NA		*NA		*NA	*NA	NO	YES
25	30	103.3	163.6			*NA		*NA		*NA	*NA	NO	YES
50	30	92.7	189.0			*NA		*NA		*NA	*NA	NO	YES
75	30	105.6	181.8			*NA		*NA		*NA	*NA	NO	YES
100	30	87.6	167.4			*NA		*NA		*NA	*NA	NO	YES
125	30	107.8	158.4			*NA		*NA		*NA	*NA	NO	YES
150	30	88.2	172.2			*NA		*NA		*NA	*NA	NO	YES
175	30	100.4	163.8			*NA		*NA		*NA	*NA	NO	YES
200	30	108.5	158.2			*NA		*NA		*NA	*NA	NO	YES

Note: No lever forces data available. Driver visually confirmed forces did not exceed 55 lbs.

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.
DRIVER: Alan Ida and Emmanouil Aruhas
RECORDED BY: Alan Ida DATE: 10-10/11-07
APPROVED BY: R, Landes

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

VEHICLE:	2007 Tank Urban Racer	DATE:	10/12/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	51
ODOMETER START:	414 mi.	ODOMETER FINISH:	427 mi.	WIND VELOCITY (MPH):	9

TEST CONDITIONS:

Test Speed	30 mi/h	50 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.	128 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 Levers**	**Hand Levers**

TEST CONDITIONS:

Test Speed	80 mi/h	XXX 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.	XXX 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 Levers**	**Hand Levers**

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	29.5	134	130	46.9	48.4	NA	NA	NA	7.5	24.0	24.0	NO	YES
2	29.2	130	130	46.9	49.8	27.5	23.2	23.2	12.2	25.0	25.0	NO	YES
3	29.4	139	130	44.2	45.9	34.8	24.7	24.7	12.1	27.8	27.8	NO	YES
4	29.2	142	133	41.9	44.1	NA	NA	NA	16.7	28.5	28.5	NO	YES
5	28.6	136	140	36.1	39.7	NA	NA	NA	11.4	29.6	29.6	NO	YES
6	29.4	143	145	40.5	42.2	NA	NA	NA	15.2	27.4	27.4	NO	YES

FMVSS 122 - DATA SHEET 8 (2 of 2)

50 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	49.5	142	134	127.5	130.1	*NA	*NA	26.8	17.2	26.5	22.3	NO	YES
2	49.0	136	134	117.1	121.9	*NA	*NA	26.2	11.2	26.2	22.2	NO	YES
3	49.0	149	140	125.0	130.2	*NA	*NA	24.2	14.0	28.9	22.9	NO	YES
4	49.0	139	141	124.3	129.5	*NA	*NA	24.1	14.0	28.9	22.9	NO	YES
5	49.1	150	145	116.5	120.9	*NA	*NA	25.4	14.5	29.5	24.0	NO	YES
6	49.1	150	144	117.8	122.4	*NA	*NA	25.6	12.7	27.6	23.4	NO	YES

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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOP SPEED XXX 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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

*The driver observed that the lever force did not visually exceed 55 lbs. The data system did not acquire data for this parameter. Standards Engineer informed – instructed TRC Inc. to continue.
Relative to this vehicle's observed maximum speed, the 80 mi/h and Top Speed tests are not applicable.

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.
DRIVER: Alan Ida
RECORDED BY: Alan Ida DATE: 10-12-07
APPROVED BY: R, Landes

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

VEHICLE:	2007 Tank Urban Racer	DATE:	10/15/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	61
ODOMETER START:	427 mi.	ODOMETER FINISH:	459 mi.	WIND VELOCITY (MPH):	13

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/s
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No
Brakes Utilized	Hand Levers

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	29.5	135	138	104.8	108.1	10.6	6.1	10.8	4.6	11.3	9.5	No	Yes
2	29.8	135	134	100.8	102.3	11.1	8.3	7.6	4.1	12.6	10.6	No	Yes
3	29.7	136	134	90.8	92.8	9.9	8.3	11.9	5.9	1.4	10.6	No	Yes
Average Max. Actuation Forces (to be used in computing 5th recovery stop actuation force limits)						10.5		10.1					

TEST CONDITIONS: Fade

Test Speed	50 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	Both Hand Levers

DATA SHEET 9 (2 of 3)

50 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	49.7	148	137	193.6	196.0	15.2	10.7	11.0	7.0	17.9	15.1	No	Yes
2	49.6	161	169	186.4	189.4	17.0	12.8	13.9	9.1	17.1	14.1	No	Yes
3	49.4	197	212	171.1	175.3	17.2	13.9	14.6	10.1	18.6	16.0	No	Yes
4	50.2	216	222	175.7	174.3	22.3	17.1	20.6	9.7	19.4	15.9	No	Yes
5	49.9	255	279	201.8	202.3	19.8	14.6	19.6	13.2	16.1	13.2	No	Yes
6	50.0	266	297	204.0	203.6	21.1	13.0	20.5	12.6	20.5	13.8	No	Yes
7	49.9	260	289	191.7	192.4	20.3	14.2	19.8	13.8	17.5	14.9	No	Yes
8	50.1	245	286	185.4	184.7	16.7	12.3	16.1	10.2	18.0	14.0	No	Yes
9	49.7	221	NA	192.1	194.9	19.0	14.0	11.3	7.5	18.4	15.4	No	Yes
10	49.4	187	238	165.9	169.9	15.2	NA	15.6	10.1	18.9	16.3	No	Yes
***11**	48.9	197	239	174.5	182.7	18.1	12.9	12.0	7.8	18.5	15.3	No	Yes

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 mi/s/s
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	Both Hand Levers

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 (10.5 lbs.) minus 10 lbs.	Upper Limit – Average Max. Force (10.5 lbs.) Plus 20 lbs.	Lower Limit – Average Max. Force (10.1 lbs.) minus 10 lbs.	Upper Limit – Average Max. Force (10.1 lbs.) Plus 20 lbs.
0.5	30.5	0.1	30.1

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	29.9	159	197	118.1	118.6	11.3	8.3	7.8	5.4	13.4	9.5	No	Yes
2	30.4	146	184	98.6	95.8	9.4	7.5	8.2	6.0	14.4	10.7	No	Yes
3	30.0	158	199	98.4	98.7	10.7	8.0	10.1	7.5	15.1	11.3	No	Yes
4	30.0	163	205	97.4	97.2	12.0	9.6	10.6	7.6	14.9	10.9	No	Yes
5	29.4	180	225	86.4	89.9	11.3	8.8	11.4	6.3	14.0	11.2	No	Yes

*Regarding Fade Stop #11, during Fade Stop #9, traffic was encountered that caused a delay and a longer interval between Fade Stops #9 and #10. Therefore, the driver performed an extra fade stop to compensate.

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.
DRIVER: Alan Ida
RECORDED BY: Alan Ida DATE: 10-15-07
APPROVED BY: R, Landes

FMVSS 122 - DATA SHEET 10

REBURNISH PROCEDURE (S7.7)

VEHICLE:	2007 Tank Urban Racer	DATE:	10/15/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	74
ODOMETER START:	461 mi.	ODOMETER FINISH:	522 mi.	WIND VELOCITY (MPH):	12

TEST CONDITIONS:

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	35
Deceleration Rate	12 ft./s/s
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	Both Hand Levers

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	29.5	137	158			10.3		7.9		14.9		No	Yes
5	29.6	123	167			13.5		10.1		16.5		No	Yes
10	30.0	136	166			12.6		9.9		15.5		No	Yes
15	29.3	133	173			8.2		15.9		16.4		No	Yes
20	29.4	123	168			*NA		11.6		15.0		No	Yes
25	29.7	138	159			*NA		12.4		16.2		No	Yes
30	29.9	133	192			*NA		11.4		15.3		No	Yes
35	29.3	117	165			*NA		11.9		15.2		No	Yes

*The driver observed that the lever force did not visually exceed 55 lbs. The data system did not acquire data for this parameter.

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.

DRIVER: Alan Ida

RECORDED BY: Alan Ida **DATE: 10-15-07**

APPROVED BY: R, Landes

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

VEHICLE:	2007 Tank Urban Racer	DATE:	10/15/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	60
ODOMETER START:	546 mi.	ODOMETER FINISH:	567 mi.	WIND VELOCITY (MPH):	2

TEST CONDITIONS:

Test Speed	30 mi/h	50 mi/h	80 mi/h	NA
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.	128 ft.	345 ft.	TBD
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 and Hand	Hand and Hand	Hand and Hand	Hand and Hand

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	29.1	133	138	42.9	45.8	30.8	21.3	20.2	13.1	26.9	21.5	NO	YES
2	29.6	135	150	48.1	49.4	30.8	23.5	17.3	11.0	26.6	20.5	NO	YES
3	29.3	142	150	43.0	45.0	32.7	24.2	22.8	16.5	27.2	21.7	NO	YES
4	29.5	147	150	41.9	43.3	35.0	27.2	21.2	11.7	27.2	22.0	NO	YES
5	29.2	146	150	40.1	42.3	39.2	29.5	19.2	10.5	26.9	21.8	NO	YES
6	28.9	150	147	38.7	41.7	35.1	26.9	20.8	6.6	26.0	21.1	NO	YES
7	29.3	150	140	43.3	45.5	26.5	23.0	14.2	9.1	24.8	20.1	NO	YES

DATA SHEET 11 (2 of 2)

50 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	48.3	150	144	108.7	116.5	29.8	22.8	24.5	11.5	28.7	24.4	NO	YES
2	49.1	150	142	166.0	120.5	36.1	26.6	16.2	9.5	22.5	23.8	NO	YES
3	49.2	150	140	130.5	135.0	29.6	20.0	17.8	8.5	26.3	22.1	NO	YES
4	48.8	150	143	118.0	124.1	42.8	NA	17.3	10.6	26.1	22.2	NO	YES
5	48.3	150	140	107.2	115.1	41.5	29.5	21.4	11.5	27.7	23.4	NO	YES
6	48.2	150	144	103.6	111.5	38.2	28.6	15.5	8.6	28.9	23.9	NO	YES

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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

XXX 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		
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Relative to this vehicle's observed maximum speed, the 80 mi/h and Top Speed tests are not applicable.
Data Sheets 12 and 13 are not applicable to this vehicle type and are therefore, not included.
REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.
DRIVER: Alan Ida
RECORDED BY: Alan Ida DATE: 10-17-07
APPROVED BY: R, Landes

FMVSS 122 - DATA SHEET 14 (1 of 2)

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

VEHICLE:	2007 Tank Urban Racer	DATE:	10/17/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	70
ODOMETER START:	569 mi.	ODOMETER FINISH:	572 mi.	WIND VELOCITY (MPH):	10

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/s
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No
Brakes Utilized	Both Hand Levers

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	29.7	147	150	91.7	9.35	14.4	11.6	9.5	6.1	13.5	10.3	NO	YES
2	29.1	150	136	84.3	89.6	11.7	9.9	11.0	6.4	13.2	10.9	NO	YES
3	29.9	150	140	93.6	94.0	13.8	10.7	10.7	6.2	12.9	10.6	NO	YES
Average Max. Actuation Forces (to be used in computing 5th recovery stop actuation force limits)						13.3		10.4					

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 14 (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/s
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	Both Hand Levers

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 13.3 lbs. minus 10 lsb.	Upper Limit – Average Max. Force 13.3 lbs. Plus 20 ls.	Lower Limit – Average Max. Force 10.4 lbs. minus 10 lbs.	Upper Limit – Average Max. Force 10.4 lbs. Plus 20 lbs.
3.3 lbs.	33.3 lbs.	0.4 lbs.	30.4 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	29.6	63	67	94.0	96.4	15.2	11.5	9.7	6.7	13.7	11.3	NO	YES
2	29.8	70	75	81.1	82.2	13.3	10.4	11.5	5.7	14.8	12.8	NO	YES
3	29.7	88	99	72.8	74.3	10.7	7.7	12.6	6.6	15.9	13.8	NO	YES
4	29.6	95	107	82.7	85.1	11.7	8.2	8.6	5.0	12.8	11.2	NO	YES
5	29.4	115	142	89.0	90.8	8.4	5.6	9.4	5.9	12.6	10.9	NO	YES

REMARKS: IBTs Observed Visually. Remainder of data derived from recorded data.
DRIVER: Alan Ida
RECORDED BY: Alan Ida DATE: 10-17-07
APPROVED BY: R, Landes

FMVSS 122 - DATA SHEET 15

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

VEHICLE:	2007 Tank Urban Racer	DATE:	10/29/07	NHTSA NUMBER:	C71200
TIRE PRESSURE (FRONT):	28 psi	TIRE PRESSURE (REAR):	32 psi	AMBIENT TEMP. °F:	NA
ODOMETER START:	NA	ODOMETER FINISH:	NA	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	P
Inspect the brake linings for detachment from the shoe or pad.	P
Inspect the wheel cylinder, master cylinder, brake hoses and axle seals for fluid or lubricant leakage	P

REMARKS: None.
RECORDED BY: A. Ida DATE: 10-29-07
APPROVED BY: R. Landes

FMVSS 122 –DATA SHEET 16 (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
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	
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?	X	
	Recommended brake fluid type: ____DOT 3 or 4____		

(Continued on next page)

DATA SHEET 16 (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?	N/A	
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?	N/A	
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?	X 	 X

REMARKS: **None.**

RECORDED BY: **A. Ida** **DATE:** **11-14-07**

APPROVED BY: **R. Landes**

DATA SHEET 17

CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS

BRAKE		LINING		
LOCATION	**TYPE**	**DESCRIPTION**	**MINIMUM THICKNESS**	**THICKNESS TO FULLY WORN (1) in.****
Front Brake	Drum	Leading	Pretest 0.162 IN.	0.40
		Primary	Post Test NA*	
		Inboard - X	Δ	
	Disc - X	Trailing	Pretest 0.162 in	0.40
		Secondary	Post Test 0.154 in.	
		Outboard - X	Δ 0.008 in.	
LINING CLEARANCE:	Diametral (2) - NA	Inboard - 0 in.	Outboard - 0 in.	
WHEEL CYLINDER DIAMETER (3) - NA		CALIPER PISTON DIAMETER (3) - 1.333 in. (X1 piston)		
SHOE CAGE DIAMETER (4) NA ; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: NA				
Rear Brake	Drum	Leading	Pretest 0.236 in.	0.40
		Primary	Post Test NA*	
		Inboard - X	Δ	
	Disc - X	Trailing	Pretest 0.236 in.	0.40
		Secondary	Post Test 0.229 in.	
		Outboard - X	Δ 0.007 in.	
LINING CLEARANCE:	Diametral (2) – NA	Inboard – 0 in.	Outboard – 0 in.	
WHEEL CYLINDER DIAMETER (3) - NA		CALIPER PISTON DIAMETER (3) – 0.979 in. (X2 pistons)		
SHOE CAGE DIAMETER (4) - NA		CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: NA		
SUBSYSTEM 1 CONSISTS OF:	F - X			
SUBSYSTEM 2 CONSISTS OF:	R - X			
(1) MFRS RECOMMENDATIONS – None. REAR - TOP OF RIVET HEADS - NA FRONT - 1/32 INCH - NA				
(2) DRUM BRAKES, MEASURED AT HORIZONTAL CENTERLINE - NA				
(3) MFRS DATA - NA				
(4) RESET POSITION - NA				

Comments: No manufacturer's data available.
*Pre-test lining thickness not measured. By visual inspection, Inboard and Outboard thickness appeared to be approximately the same. Outboard pre-test thickness measurements used in calculations.
**Per Standard's Engineer, utilized 1 mm (0.40 in.) as default.
See Appendix A for calculations.

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:

Front Calipers: One single-piston, single sided calipers with 1.333 in. piston. The caliper piston is served by the front master cylinder.

Rear Caliper: Single two-piston, single sided caliper with 0.979 in. pistons. The caliper pistons are served by the rear master cylinder.

Front Master Cylinder: Hand lever with integral reservoir. Serves one piston of front system. Reservoir capacity is 16.0 mL*.

Rear Master Cylinder: Hand lever with integral reservoir. Serves two pistons of rear caliper. Reservoir capacity is 14.5 mL**.

DISC BRAKES

VOLUME REQUIREMENT CALCULATION:

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

: V_v = Volume required per wheel

Δt = Change in thickness (average)

i = inboard

o = Outboard

D = Caliper cylinder diameter

FRONT REQUIREMENTS:

$\Delta t = 0.122$ in.

D = 1.333 in.

$V_{Front} = (\Delta t_i + \Delta t_{ic} + \Delta t_o + \Delta t_{oc}) \times [\Pi (D^2)]/4$ x number of pistons served x 1.5 requirement

$= (0.122 + 0 + 0.122 + 0) \times [\Pi (1.333^2)]/4$ x 1(piston)

$= 0.3405 \text{ in}^3$ X 16.39 = 5.58 mL x 1.5 = 8.4 mL*

REAR REQUIREMENTS:

$\Delta t = 0.196$ in.

D = 0.979 in.

$V_{Rear} = (\Delta t_i + \Delta t_{ic} + \Delta t_o + \Delta t_{oc}) \times [\Pi (D^2)]/4$ x number of front pistons served x 1.5 requirement

$= (0.196 + 0 + 0.196 + 0) \times [\Pi (0.979^2)]/4$(x 2 pistons)

$= 0.2951 \text{ in.}^3$ X 16.39 = 4.84 mL x 2(pistons) = 9.67 mL x 1.5 = 14.5 mL**

APPENDIX B

INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

VEHICLE: 2007 Tank Urban Racer **NHTSA NO: C71200** **Date: 09/18/07**

INSTRUMENT	IDENTIFICATION/SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System – VBOX 3	DAS-030525	05-31-06	12-15-07
Computer – Toshiba Tecra 8200 Laptop	43587	N/A	N/A
Software – Racelogic VBOX Tools	V02.09, Build 0004	N/A	N/A
*Hand Lever Force Transducer(s) 2 – Vishay Micromeasurement, 350 Ohm, ¼ in.	NA - Custom	Per Test	Per Test
*Hand Lever Force Amplification – Honeywell	1149944	Per Test	Per Test
Pedal Force Transducer – Not Applicable	NA	Per Test	Per Test
Accelerometer – Ammco U-Tube (Visual)	DEC-1	08-14-07	08-14-08
Accelerometer – Setra 1-141A (15g)	849724	Per Test	Per Test
Accelerometer – GPS based within VBOX3	DAS-030525	05-31-06	12-15-07
Fifth Wheel – GPS based within VBOX3	DAS-030525	05-31-06	12-15-07
Wind Velocity/Direction Gauge – Davis Model 6410	070321N03	03-21-07	03-21-08
Ambient Temperature Gauge – Davis Model 6150C	070321N01	03-21-07	03-21-08
Brake Thermocouple Meter – Omega HH502	TC-00000143	08-18-07	08-18-08
Tire Pressure Gauge – WIKA	AG-101	08-07-07	11-07-07
Vehicle Weight – Toledo/Mettler Scales JAGXTREME 3000, (Bldg. 70)	SN 5225831-5JC	08-14-07	11-14-07

QUALITY ASSURANCE_____

Comments: *Left and Right Hand Levers only. No brake pedals for this vehicle.

APPENDIX C

TEST VEHICLE PHOTOGRAPHS

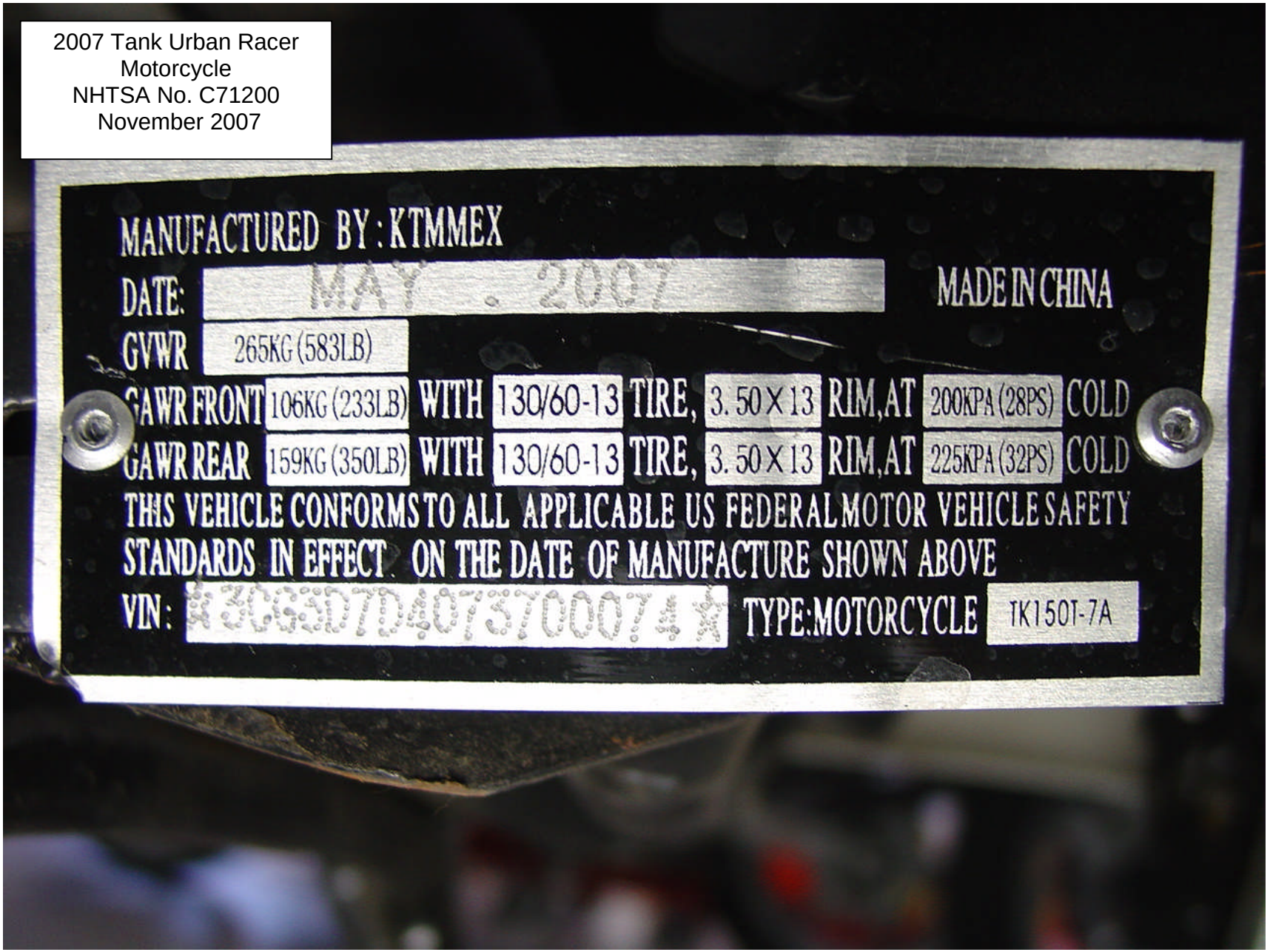
2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007

Left Front 3/4 View

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007

Right Rear 3/4 View

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007



Vehicle Certification Label

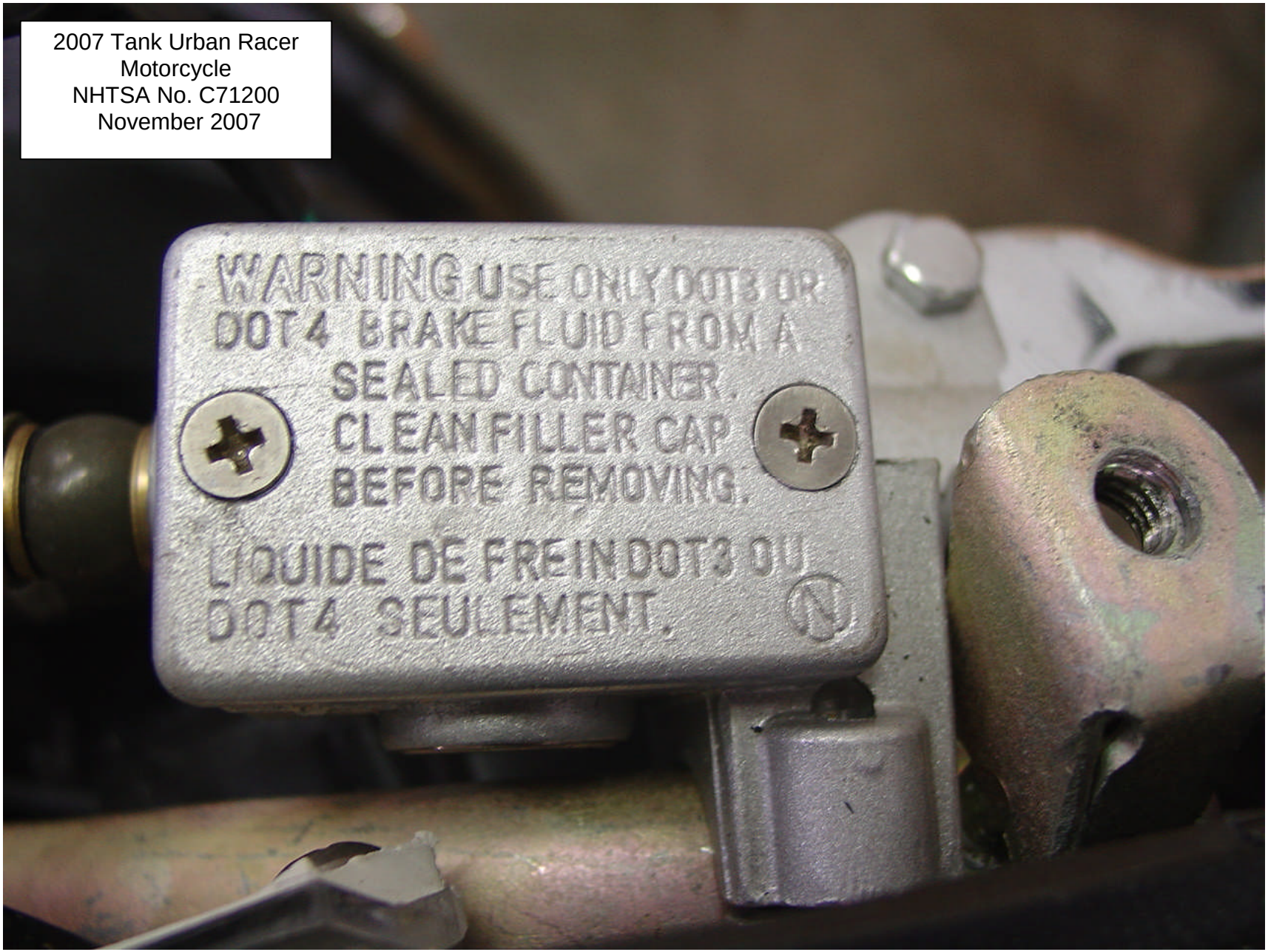
2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007

FMVSS 120 Wheel (Front & Rear) Information Label

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007

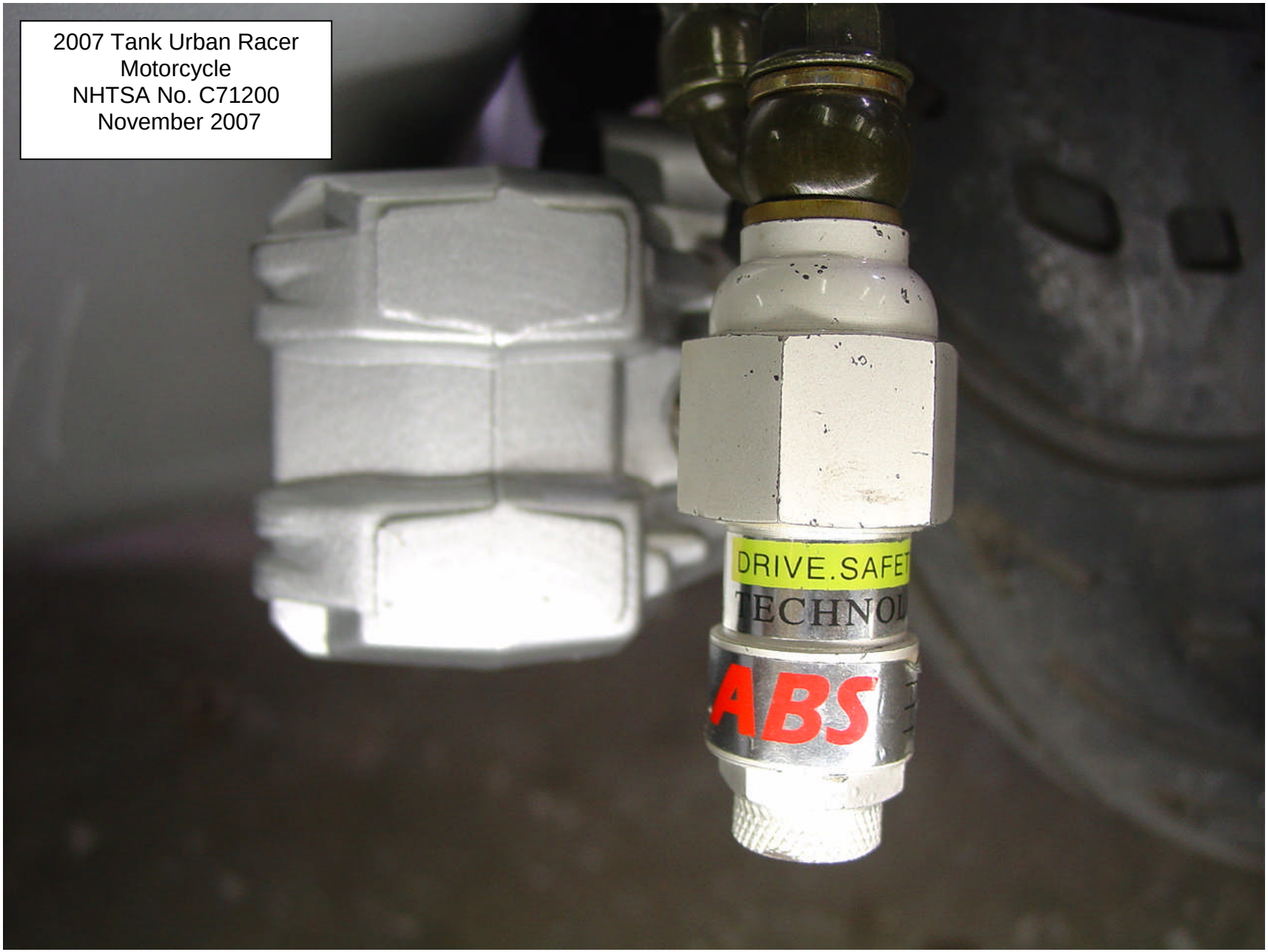
FMVSS 120 Tire (Front & Rear) Information Label

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007



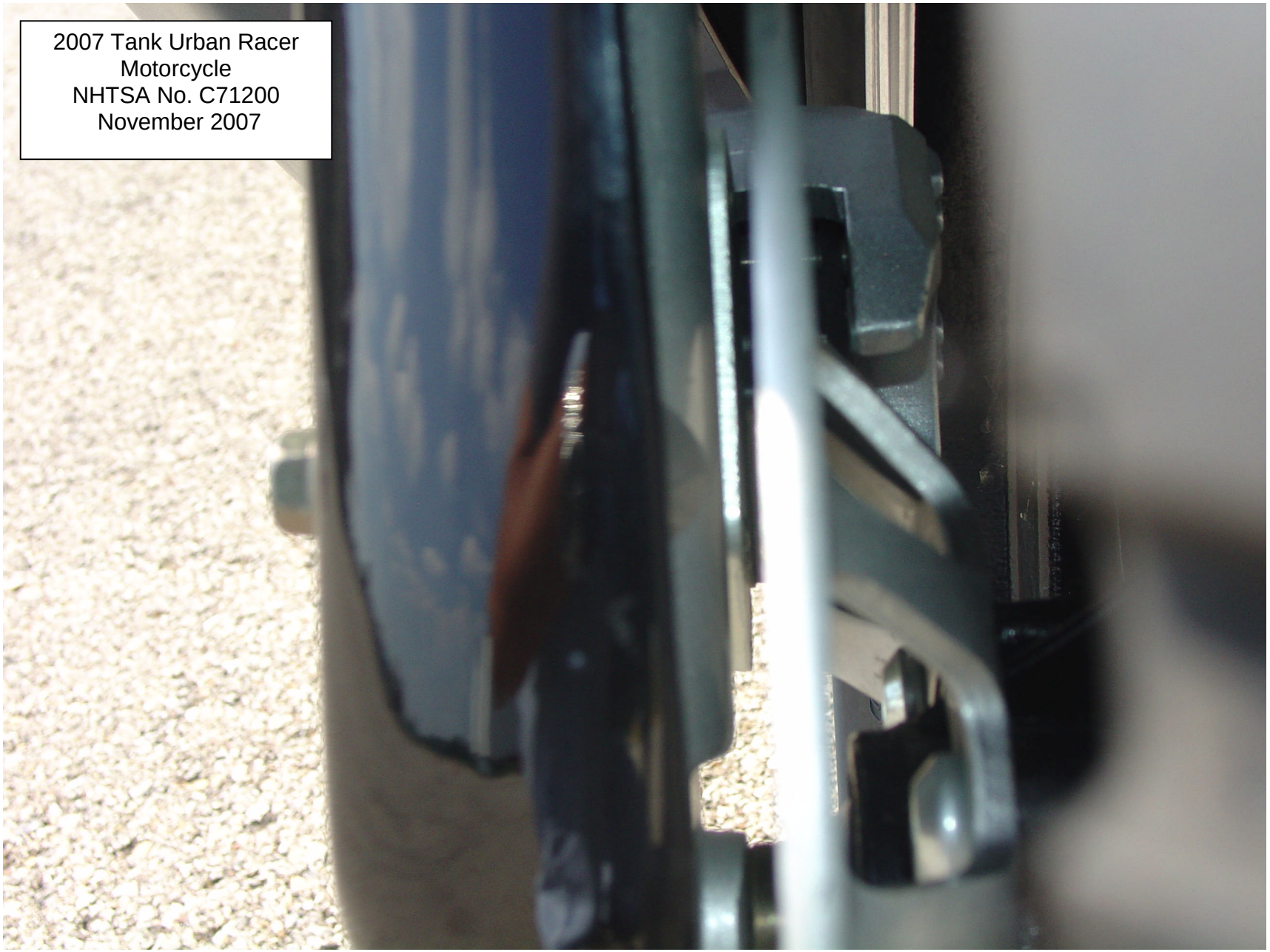
Master Cylinder Warning Label (Reservoir Cover) Typical (Front & Rear)

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007



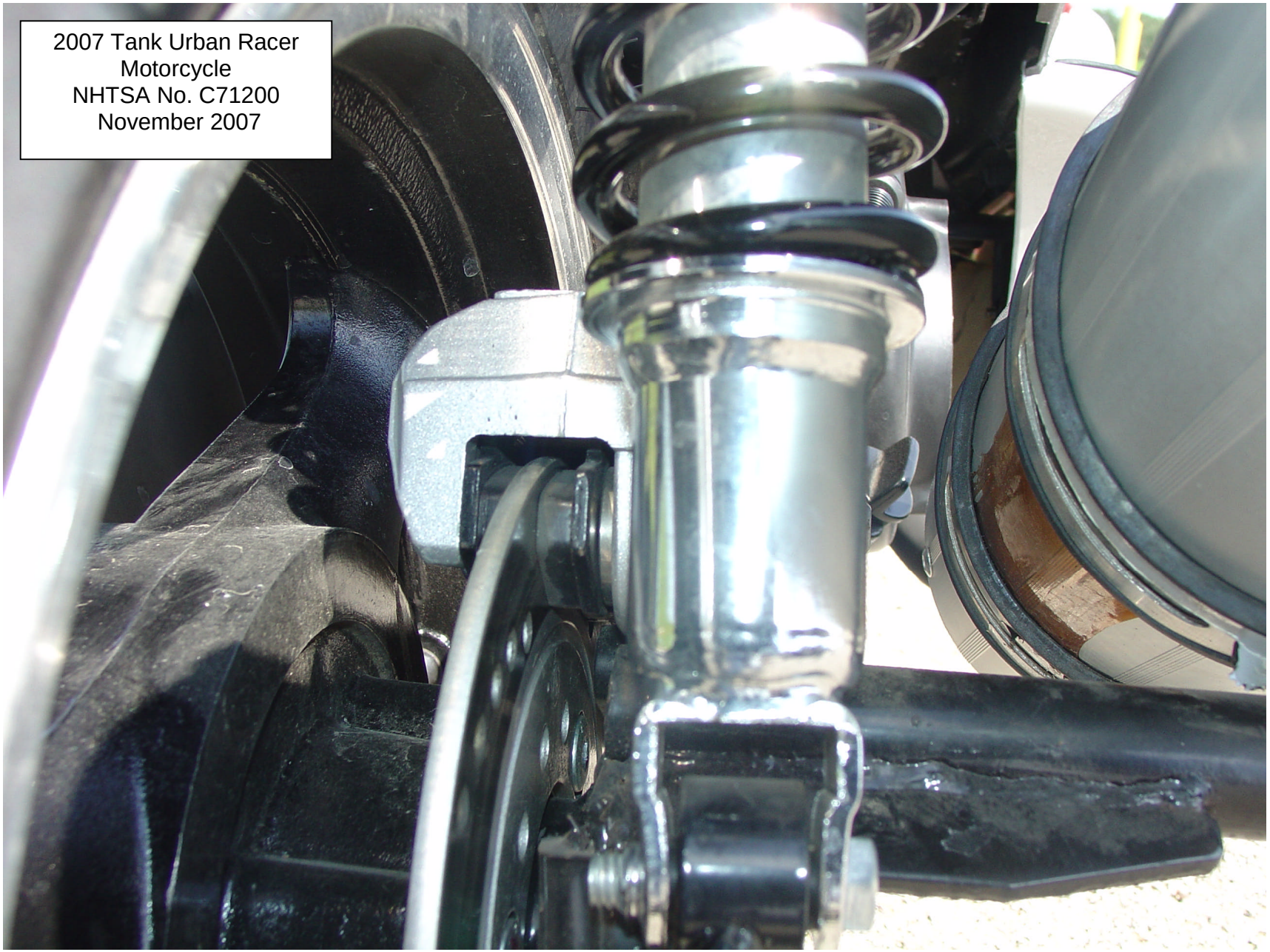
Front Brake Component Labeled as ABS

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007



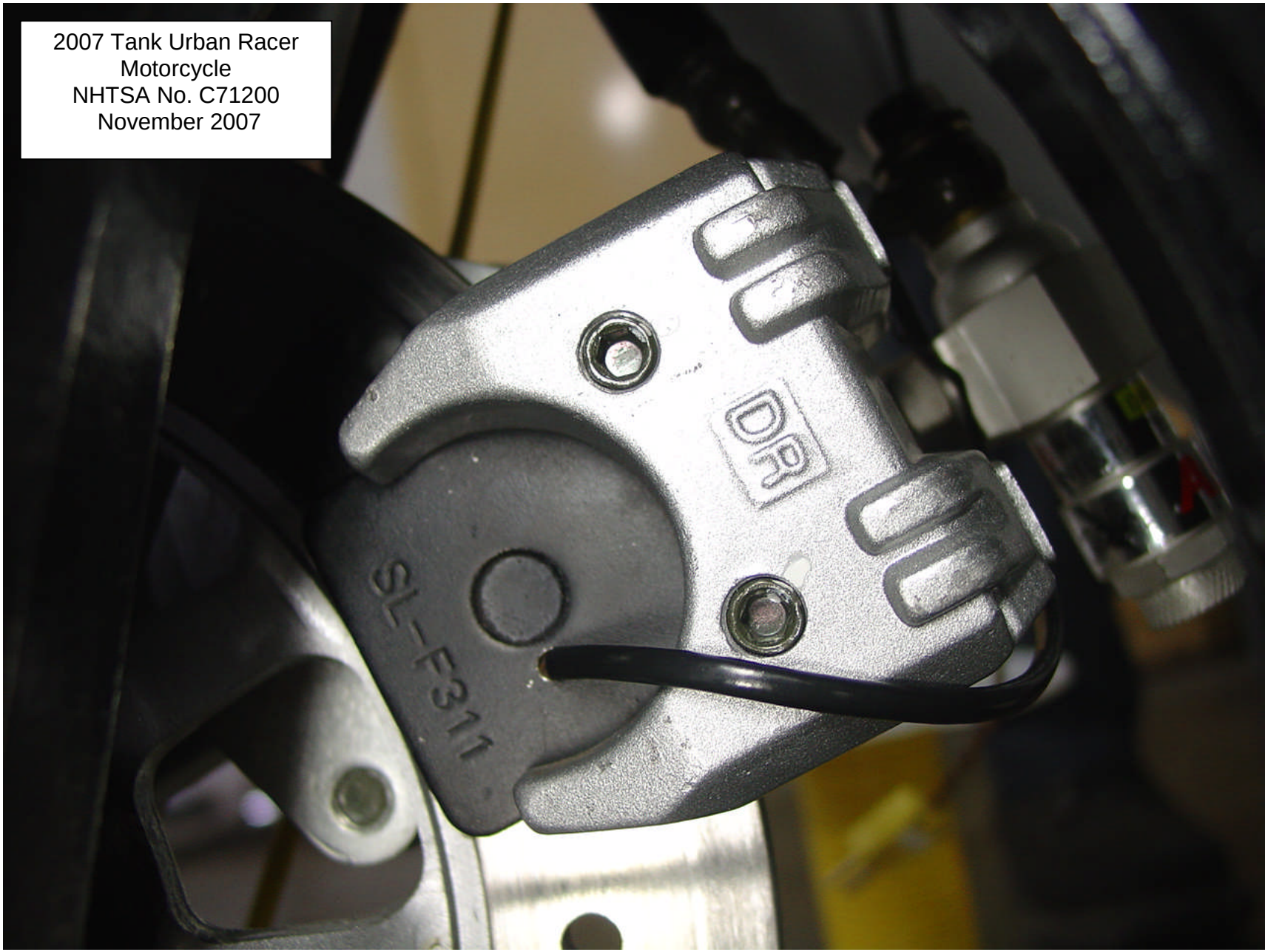
Visual Inspection of Front Brake Lining Thickness Provision

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007



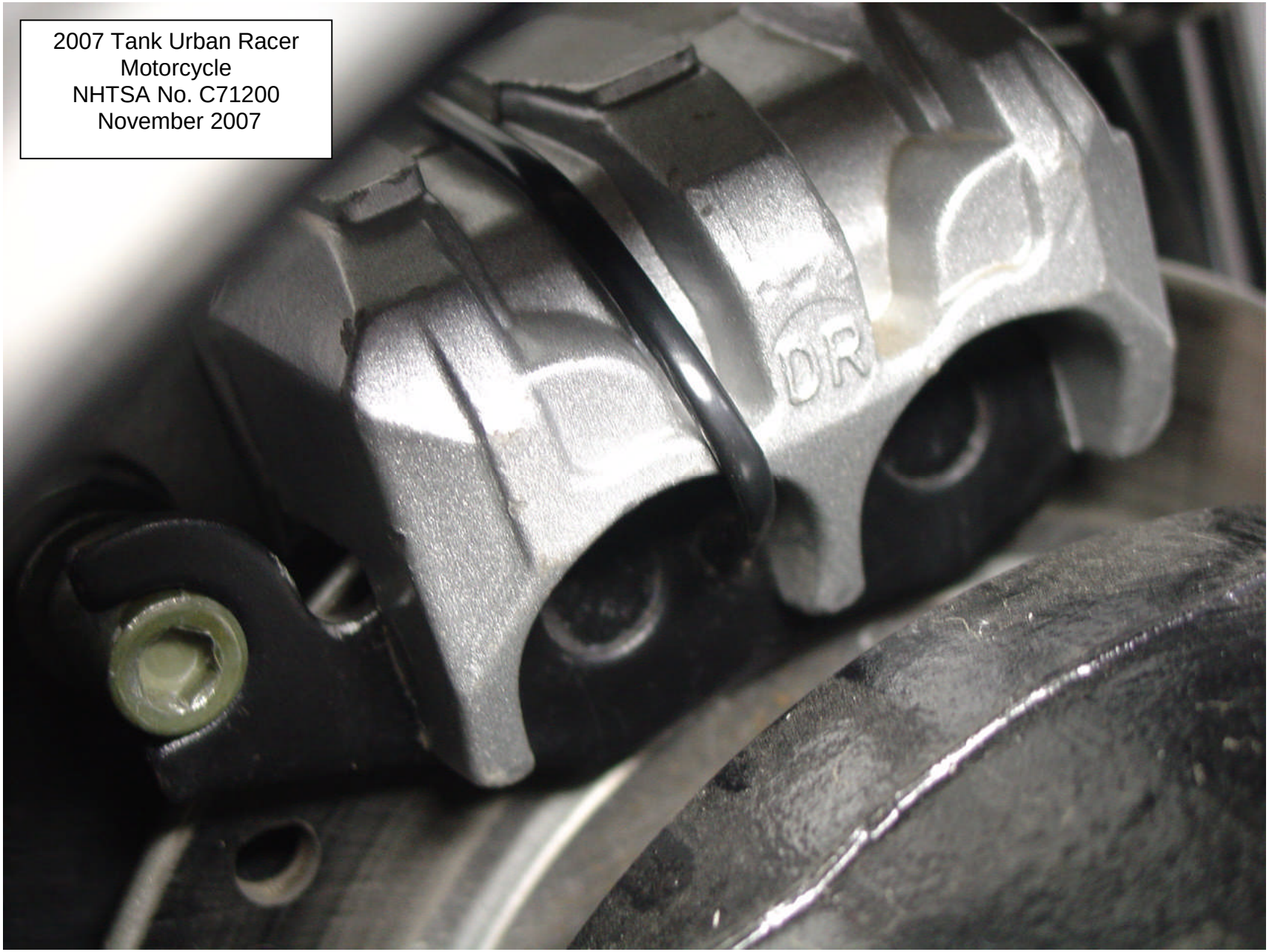
Visual Inspection of Rear Brake Lining Thickness Provision

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007



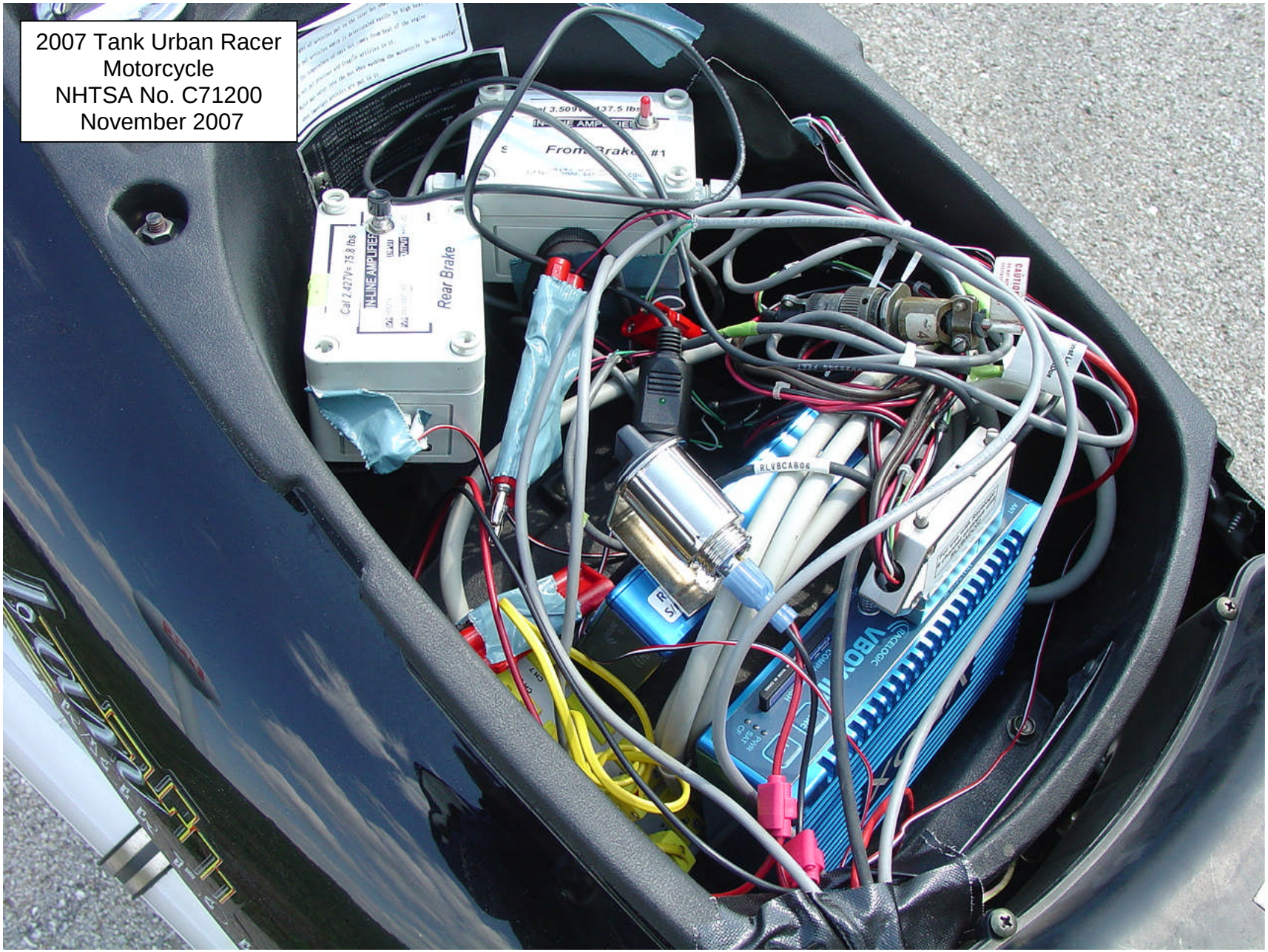
Front Brake Thermocouple Installation

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007



Rear Brake Thermocouple Installation

Instrumentation Installed on Vehicle

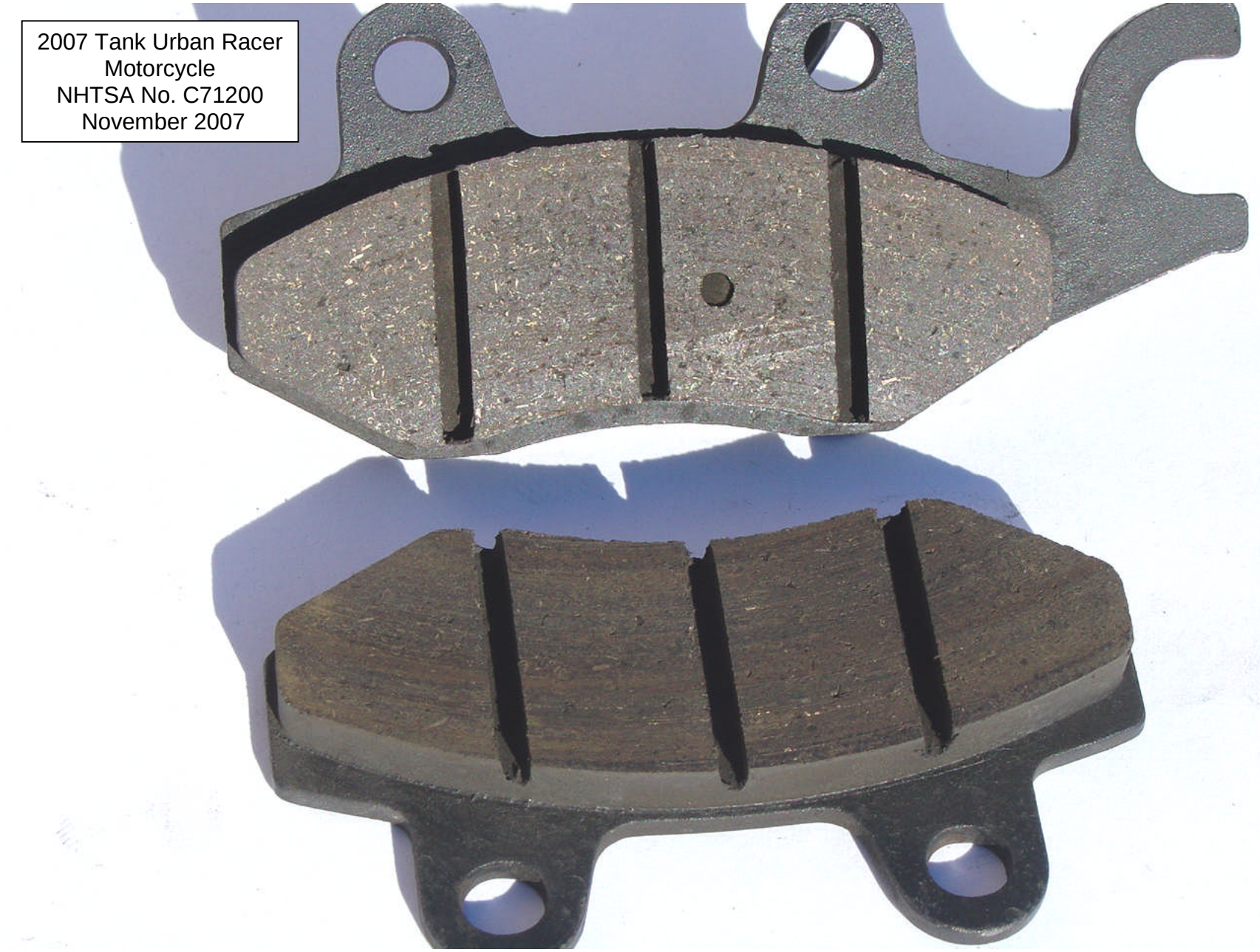


Instrumentation Installed in Vehicle

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007

Condition, Front Brake Linings – Post Test

2007 Tank Urban Racer
Motorcycle
NHTSA No. C71200
November 2007



Condition, Front Brake Linings – Post Test

APPENDIX D

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

Throughout this test, the laboratory experienced difficulties with the digital acquisition system. Some tests, the driver observed the data displays, but the data was not recorded.

TRC SKID PAD

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

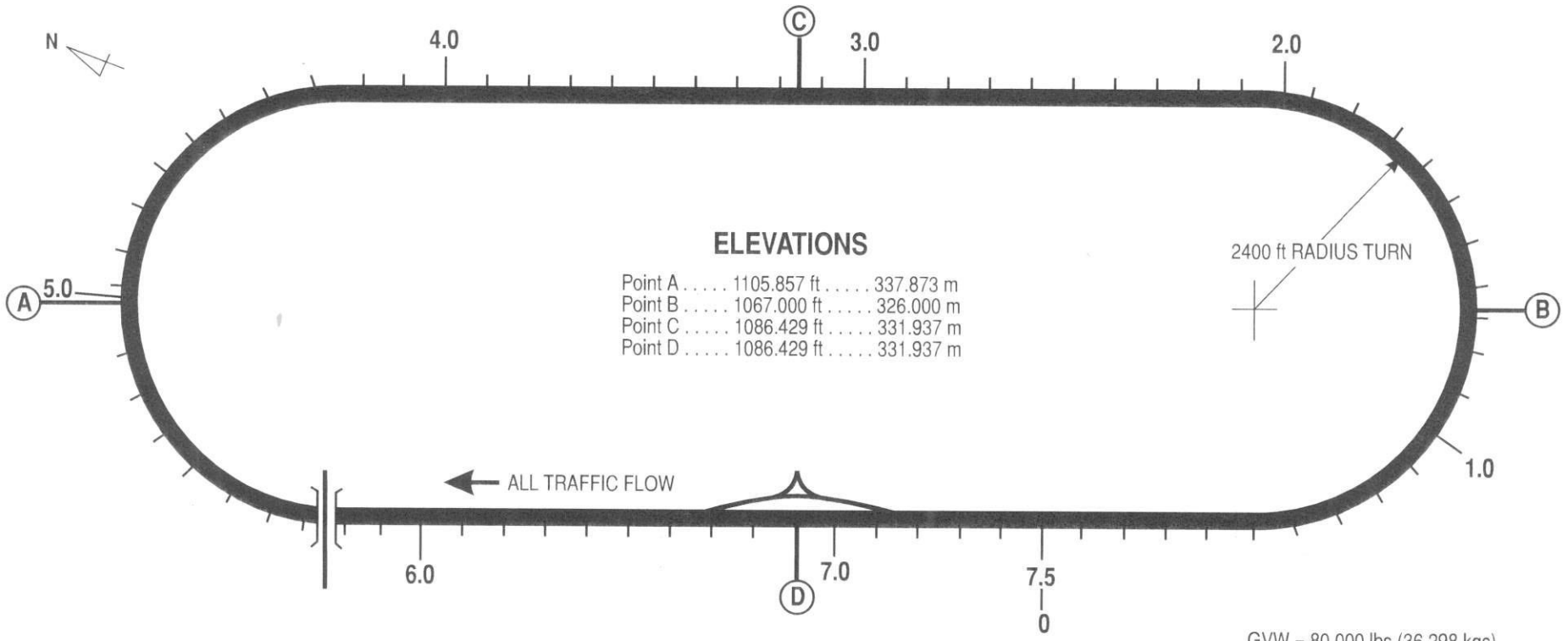
The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. They will accommodate speeds of 45 mph with zero side force and 60 mph with .5 g's lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

A test area of 210,000 square feet is situated in the center of the skid pad containing several test pads with varying surface textures. Skid numbers in this area range from 30 (wet) to 80 (dry).

The skid pad is paved with Portland cement. 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 vehicle top speed determination.

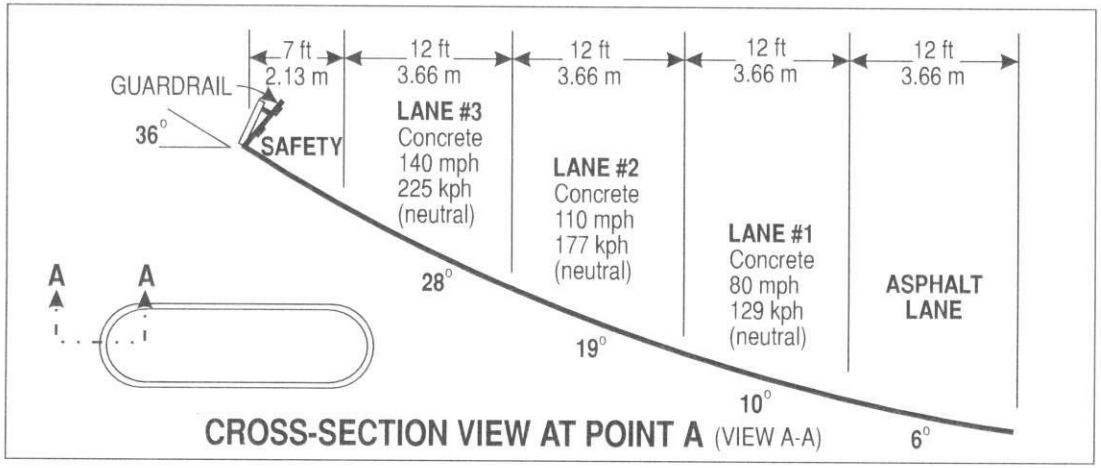
The subject test vehicle was rear wheel anti lock equipped. Rather than rapidly and fully applying the service brake control, the driver modulated the service brake control as necessary to control/prevent front wheel lock.



ELEVATIONS

Point A . . . . . 1105.857 ft . . . . . 337.873 m
Point B . . . . . 1067.000 ft . . . . . 326.000 m
Point C . . . . . 1086.429 ft . . . . . 331.937 m
Point D . . . . . 1086.429 ft . . . . . 331.937 m

GVW = 80,000 lbs (36,298 kgs)



CROSS-SECTION VIEW AT POINT A (VIEW A-A)

DISTANCES

Lane 3 . . . . . 7.539 mi . . . . . 12.133 km
Lane 2 . . . . . 7.521 mi . . . . . 12.104 km
Lane 1 . . . . . 7.507 mi . . . . . 12.081 km

Point A to Point B . . . . . 3.333 mi . . . . . 5.364 km
Point C to Point D . . . . . .947 mi . . . . . 1.524 km

NOT TO SCALE

7.5-MILE TEST TRACK

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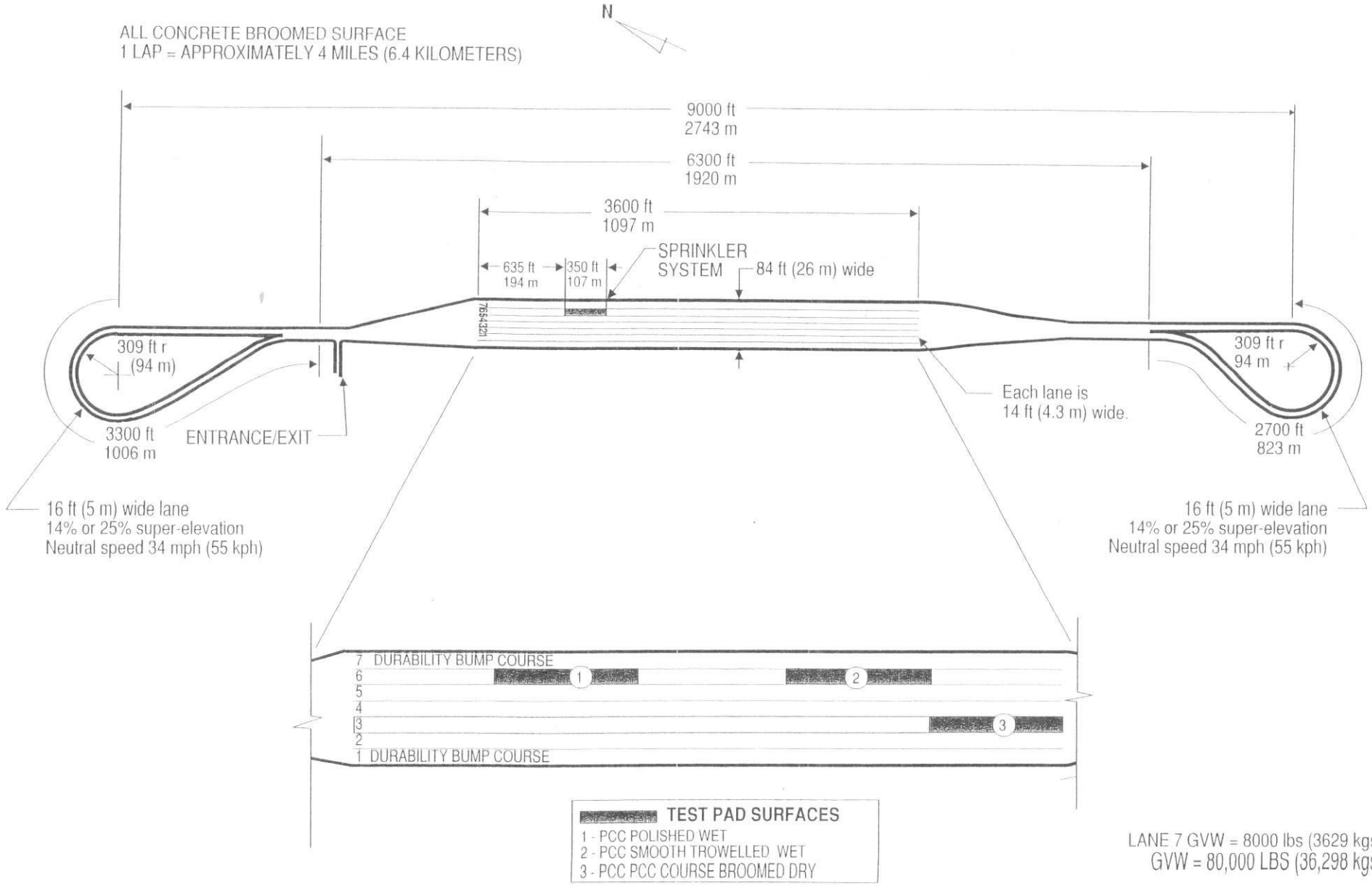
F-10 0605



NOTE: BUMP COURSES PARALLEL THE PERIMETERS OF LANES 1 AND 7.

Not to scale
All dimensions are approximate

SKID PAD

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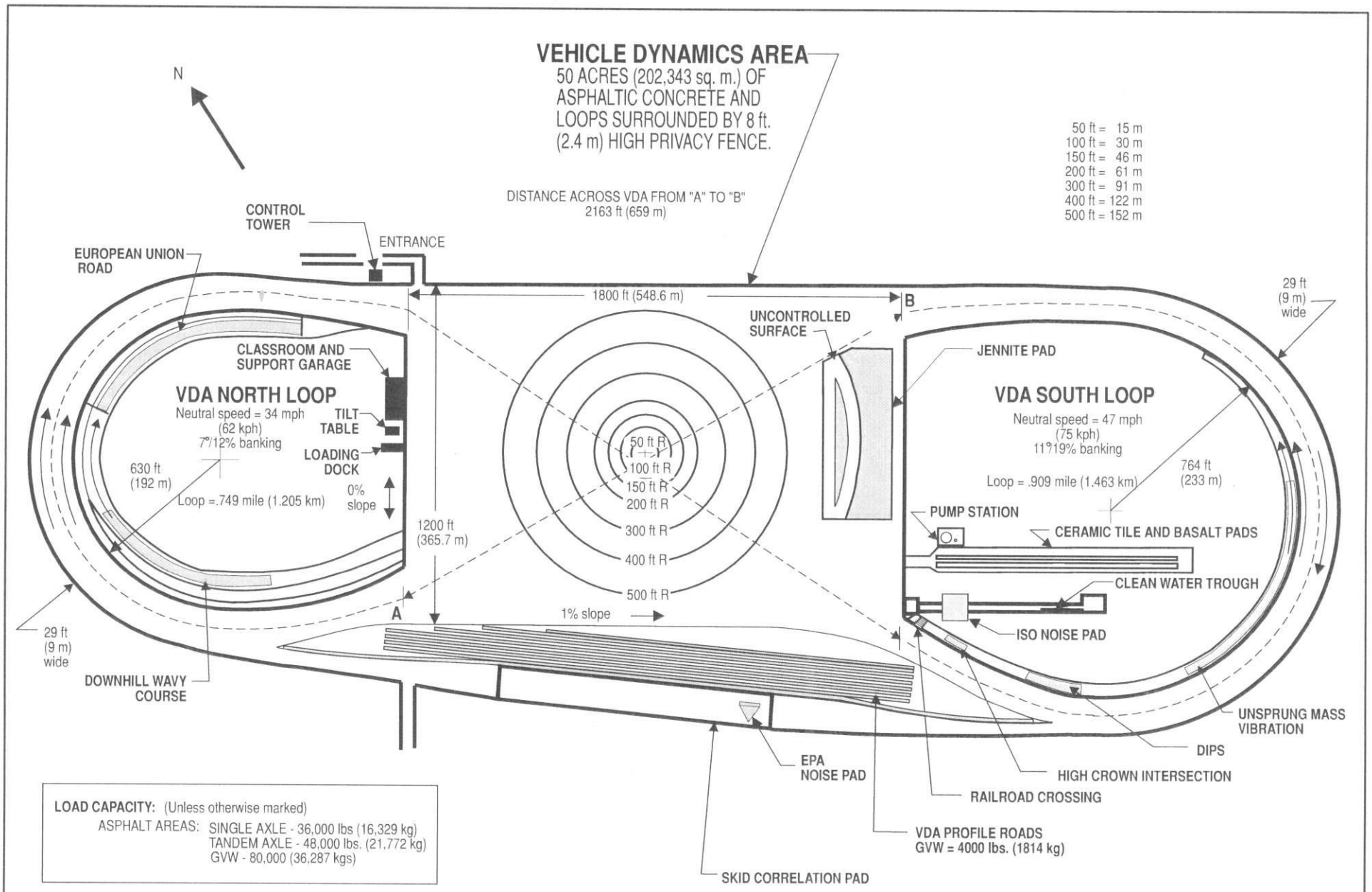

VEHICLE DYNAMICS AREA

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APPENDIX E

NOTICE OF POSSIBLE NON-COMPLIANCE

This vehicle (C71200) met the requirements of the FMVSS 122 standard.