HSNO. 636779

REPORT NUMBER: 120-MGA-03-003

SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 120
TIRE SELECTION AND RIMS
FOR MOTOR VEHICLES OTHER THAN PASSENGER CARS

Mid Bus Inc.
2003 Mid Bus Guide School Bus
NHTSA No.: C30903

PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

Final Report Date: July 24, 2003

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW, ROOM 6111 (NVS-220)
WASHINGTON, D.C. 20590

Technical Report Documentation Page

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7. Author(s) James Hansen, Project Technician Michael Janovicz, Project Manager		*8. Performing Organization Report No.* 120-MGA-03-003
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-02-D-01057
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Enforcement Office of Vehicle Safety Compliance 400 Seventh St., S.W. Room 6111 (NVS-220) Washington, D.C. 20590		*13. Type of Report and Period Covered* Final Report 6/27/03 – 7/24/03 *14. Sponsoring Agency Code* NVS-220

15. Supplementary Notes

16. Abstract

A test was conducted on a 2003 Mid Bus Guide School Bus, NHTSA No. C30903, in accordance with FMVSS 120, "Tire selection and rims for motor vehicles other than passenger cars," and TP-120-03. The vehicle was weighed in the unloaded and fully loaded conditions and its tires. rims, and related information were checked.

Test failures were as follows: NONE

17. Key Words Compliance Testing Safety Engineering FMVSS 120		*18. Distribution Statement* Copies of this report are available from: NHTSA Technical Information Services (TIS) Room 5108 (NPO-230) 400 Seventh Street, S.W. Washington, D.C. 20590 (202) 366-4946	
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Form DOT F1700.7 (8-72)

Prepared by: _____ Date: July 24, 2003
James Hansen. Project Technician

Reviewed by: _____ Date: July 24, 2003
Michael Janovicz, Program Manager

FINAL REPORT ACCEPTED BY OVSC:

_____

9/10/03
Date of Acceptance

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SECTION 1
PURPOSE OF COMPLIANCE TEST

The purpose of this test report is to document the results of tests performed on a MY 2003 Mid Bus Guide School Bus, NHTSA No.: C30903, in accordance with the requirements stated in Federal Motor Vehicle Safety Standard (FMVSS) No. 120, "Tire Selection and Rims for Motor Vehicles other than Passenger Cars."

This standard establishes requirements to ensure that applicable vehicles are equipped with tires of adequate size and load rating and rims of appropriate size and type designation.

SECTION 2

TEST PROCEDURE AND DISCUSSION OF RESULTS

Testing of the 2003 Mid Bus Guide School Bus was conducted at MGA Research Corporation – Wisconsin Operations in accordance with NHTSA TP-120-03, dated April 10, 2000 and MGA-TP-120-03 dated November 20, 2002. The vehicle mounted tires and rims were surveyed to ensure that the rims were suitable for the tires and that the tires inflated to the maximum inflation pressure stated on the tire sidewall were appropriate for the vehicle's certified Gross Axle Weight Ratings (GAWR). The vehicle certification and tire information labeling was surveyed to ensure that the vehicle manufacturer's recommended rims were suitable for the recommended tires, and that the recommended tires inflated to the recommended inflation pressures stated on the labeling were appropriate for the vehicle's certified GAWRs. The vehicle was ballasted and weighed in three different loading conditions to determine if axle or tire overloading could occur. The three loading conditions were:

Condition 1 – Unloaded Vehicle Weight (UVW).

Condition 2 – Vehicle in Condition 1 state plus the addition of ballast to simulate twenty-six passengers (one adult driver and 25 students) .

Condition 3 – Vehicle in Condition 2 state plus the addition of ballast to simulate cargo loading. Target vehicle load is the certified gross weight rating (GVWR).

The vehicle tires appear to meet the load requirements of FMVSS 120. The vehicle rims are suitable for the vehicle tires and contain all required markings. The vehicle labels provide all required information.

Test Lab: MGA Research-Wisconsin Operations **Contract No:** DTNH22-02-D-01057

Vehicle Make/Model: Mid Bus Guide **MY:** 2003

NHTSA No.: C30903 **VIN:** 1GBJG31U431110295 **Vehicle Type:** School Bus

Incomplete Veh. Make/Model: Chevrolet

Designated Seating Capacity: 26, (1 driver, 24 seat positions, 1 wheel chair location)

Dealer Installed Optional Accessories: None Noted

Summary

Requirements	PASS/FAIL
TIRE AND RIM SELECTION (S5.1) Installed tires and rims are suitable for vehicle	**PASS**
Rim Marking (S5.2) Rims contain all required markings of proper dimensions	**PASS**
LABEL INFORMATION (S5.3) Vehicle has proper certification/tire information label. Label tires at recommended inflation pressure and rims are suitable for vehicle.	**PASS**
Weight Distribution (49 CFR 567 Certification) Vehicle loaded with occupants and cargo does not exceed GVWR	**PASS**
Results: Test data indicates compliance with FMVSS 120	**PASS**

SECTION 3
COMPLIANCE TEST DATA

FMVSS 120 – DATA SHEET 1
GENERAL TIRE AND RIM DATA

Test Vehicle:	**2003 Mid Bus Guide School Bus**	NHTSA No.:	**C30903**
Test Lab:	**MGA Research-Wisconsin Operations**	Test Date:	**6/27/03**

GENERAL DATA

Tire Type: (Passenger car or other)	Light Truck
Are the tire and rim sizes the same for all axles, including the spare?	YES
Does the tire size fitted to the axles appear on the Certification or Tire label? (If NO, describe)	YES
Number of axles	2
Dual tires on rear axle(s)	YES

TIRE DATA FROM SIDEWALL

	RIGHT FRONT	SPARE
Manufacturer	Uniroyal	
Brand	Laredo	
Tire Size	LT225/75R16	
Maximum Tire Load Rating (KG)	1,060-Single 975-Dual	
De-rated Tire Load Rating (KG)	N/A	
Maximum Inflation Pressure (KPA)	450	
Tire has DOT symbol (Yes/No)	Yes	
DOT serial number	DOT M31L JH3U 2902	

MOUNTED TIRE VS. AXLE RATING COMPARSION
(AT SIDEWALL MAXIMUM INFLATION PRESSURE)

	FRONT AXLE	REAR AXLE
A. GAWR (KG) from certification label	1951	3901
B. (No. of tires) x (tire load rating (KG) from above table)	2120	3900
C. Is "B" equal to or greater than "A"? (Yes/No)	Yes	Yes*

* The rear GAWR, listed in kg, exceeds the tire load rating for this axle by one kilogram. However, when listed in pounds, the GAWR and tire load ratings are equal. The sum of tire load ratings for this axle is 8,600 lbs. The GAWR is 8,600 lbs. Because this is clearly a unit conversion issue, this is not considered a failure.

FMVSS 120 – DATA SHEET 1...continued
GENERAL TIRE AND RIM DATA

Test Vehicle:	**2003 Mid Bus Guide School Bus**	NHTSA No.:	**C30903**
Test Lab:	**MGA Research-Wisconsin Operations**	Test Date:	**6/27/03**

RIM MARKINGS

	RIGHT FRONT	SPARE
Source of published dimensions (letter designation)	T	[redacted]
Rim Size	16 X 6.5 J	
Does rim contain DOT symbol? (Yes/No)	Yes	
Manufacturer's name, symbol or trademark (copy format)	GM	
Date of manufacture or symbol	07 24 02	
Do items A-C appear on weather side of rim? (Yes/No)	Yes	
Letter height (not less than 3mm)	Yes – 5 mm	
Lettering (impressed or embossed)	Impressed	
Are all rim markings legible? (Yes/No)	Yes	
Do all markings comply with requirements? (Yes/No)	Yes	
Rims are suitable for tires on vehicles? (Yes/No)	Yes	

RIM MEASUREMENTS

	RIGHT FRONT	SPARE
Rim width	165 mm (6.5")	[redacted]
Rim diameter	407 mm (16")	
Rim measurements same as rim markings? (Yes/No)	Yes	

RESULTS	PASS/FAIL
TIRE AND RIM SELECTION (S5.1) Installed tires and rims are suitable for vehicle	**PASS**
Rim Marking (S5.2) Rims contain all required markings of proper dimensions	**PASS**

Remarks: **NONE**

Tested By: [signature]

Approved By: [signature]

Date: June 27, 2003

FMVSS 120 - DATA SHEET 2
CERTIFICATION AND TIRE LABEL INFORMATION

Test Vehicle: **2003 Mid Bus Guide School Bus** NHTSA No.: **C30903**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **6/27/03**

LABEL INFORMATION

Label Design (Combined Certification and Tire Label):	No - Separate
Label Design (Separate Tire Information Label):	Yes - Separate
Label in English? (Yes/No)	Yes
Block capital letter and numbers are not less than 2.4 mm in height (yes/no):	Yes
Label is permanently affixed; describe method of affixing (rivets, glue, etc.)	Adhesive Backed
Does label text color contrast with background? (yes/no)	Yes
Location of Certification Label	Above Drivers Seat
Location of Tire Information Label	Driver Door Jam

TIRE AND RIM DATA FROM LABEL (FOR EACH GAWR/GVWR)

GVWR: 5,443 KG	FRONT AXLE	REAR AXLE
Tire Size	LT225/75R16	LT225/75R16
Rim Size	16 X 6.5	16 X 6.5
Recommended inflation pressure (KPa)	450	450
Are labeled rims suitable for labeled tires (Yes/No)[1]	Yes	Yes
Referenced load rating at label recommended inflation pressure (KG)[1]	1,060	975

[1] Referenced source for tire/rim match and load rating data: 2003 Tire and Rim Assoc.

CERTIFICATION/TIRE LABEL MAXIMUM CAPACITY COMPARSION

GVWR: 5,443 KG	FRONT AXLE	REAR AXLE
A.GAWR (kg) FROM CERTIFICATION LABEL	(C) 1,951	(D) 3,901
B.(No. of tires) x (Tire load rating (KG))	2,120	3,900
Is "B" equal or greater than "A"? (Yes/No)	Yes	Yes*
Is (C) plus (D) equal to or greater than GVWR? (Yes/No)	Yes	

*See note on Data Sheet 1

RESULTS	PASS/FAIL
LABEL INFORMATION (S5.3) Vehicle has proper certification/tire information label. Label tires at recommended inflation pressure and rims are suitable for vehicle.	**PASS**

Tested By: _____ proved By: _____

Date: June 27, 2003

FMVSS 120 - DATA SHEET 3
WEIGHT DISTRIBUTION

Test Vehicle: **2003 Mid Bus Guide School Bus** NHTSA No.: **C30903**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **6/27/03**

Fluid Levels				
Fuel:				FULL
Coolant:				FULL
Other Fluids: Washer fluid, brake fluid, etc.				FULL
Tire Pressures				
Tire	Left Front	Right Front	Left Rear	Right Rear
Tire Pressure (KPa)	450	450	450	450
Occupant and Cargo Loads				
Total Occupant Load (kg): [# of designated seating positions x 68 KG per adult or 54 KG per student]				1,486 (1-driver, 25-students, 1 Wheel Chair – 68 kg)
Manufacturer's Rated Cargo Load (kg): [If not stated on vehicle or provided in owner's manual leave blank]				N/A
Certified GVWR - Measured UVW - Total Occupant Load = Rated Cargo Load 5,443 KG – 3,638 KG - 1,486 KG = 319 KG (must be positive)				
Describe Placement of Cargo:	Center of aisle Fore to Aft distribution			

Weight Distribution

ITEM	Tire or Vehicle Rating* (KG)	CONDITION 1 UVW (KG)		CONDITION 2 Cond. 1 + occupants (KG)		CONDITION 3 Cond. 2 + cargo (KG)	
		Measured	Overload	Measured	Overload	Measured	Overload
Left Front Tire	1,060	802	NO	968	NO	974	NO
Right Front Tire	1,060	754	NO	860	NO	876	NO
Front Axle	1,951	1,556	NO	1,828	NO	1,850	NO
Left Rear Tire	1,950	1,032	NO	1,716	NO	1,834	NO
Right Rear Tire	1,950	1,050	NO	1,626	NO	1,758	NO
Rear Axle	3,901	2,082	NO	3,342	NO	3,592	NO
Total Vehicle	5,443	3,638*	NO	5,170*	NO	5,442	NO

*See remarks on next page

FMVSS 120 – DATA SHEET 3...continued
WEIGHT DISTRIBUTION

Test Vehicle:	**2003 Mid Bus Guide School Bus**	NHTSA No.:	**C30903**
Test Lab:	**MGA Research-Wisconsin Operations**	Test Date:	**6/27/03**

RESULTS	PASS/FAIL
Weight Distribution (49 CFR 567 Certification) Vehicle loaded with occupants and cargo does not exceed GVWR	**PASS**

Remarks:

Due to damage to the vehicle seats and mounting positions during previous testing, the seats were removed and 22.7 kg was installed in each seat mounting position to simulate the weight of each seat.

In addition, 54 kilograms that was installed in the wheelchair position to simulate a student and 68 kilograms was installed to simulate a wheelchair per COTR instructions.

Tested By: _____

Approved By: _____

Date: June 23, 2003

SECTION 4
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SECTION 4

INSTRUMENTATION AND EQUIPMENT LIST

Test Vehicle: **2003 Mid Bus Guide School Bus** NHTSA No.: **C30903**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **6/27/03**

	Digital Caliper	Vehicle Scale	Ballast Scale	Tire Pressure Gauge	Inclinometer	Laser Level	Tape Measure
Make	Mitutoyo	GSE	Toledo	Dill	Digital Protractor	Laser Tool	Stanley
Model	721	Pro-Weigh 84	2191	N/A	Pro 360	MX Laser	Powerlock
Serial # (s)	0004174	212091/212092	542749	MGA-06133	Comp lab	6692	SN149
Range	0-150 mm	0 to 20,000 lb	0-1800 lb.	0-130 psi	0-360deg.	N/A	0-5 m
Accuracy	.01 mm	0.25% static	1 lb.	1 psi	0.1 deg.	N/A	1 mm
Cal. Date	10/18/02	6/9/03	2/28/03	10/16/02	5/20/03	N/A	5/30/03
Cal. Due Date	10/18/03	12/9/03	8/28/03	10/16/03	11/20/03	N/a	11/30/03

Test Vehicle:	**2003 Mid Bus Guide School Bus**	NHTSA No.:	**C30903**
Test Lab:	**MGA Research-Wisconsin Operations**	Test Date:	**6/27/03**

SCALE CALIBRATION SHEET

CALIBRATION SERVICE RECORD

UNITED SCALE & ENGINEERING CORPORATION

16725 W. Victor Road, New Berlin, Wisconsin 53151-4132, 262-785-1733 • 800-236-1733, FAX 262-785-0764
1322 Russell Court, Green Bay, Wisconsin 54313-8999, 920-434-2737 • 800-236-2737, FAX 920-434-8605
Bobson Scales & Systems, Inc. Division of United Scale & Engineering Corp. 1019 Jonathon Dr., Madison, WI 53713-2229, 608-278-1114 • 800-747-4474 • FAX 608-278-111

Parameter Tested	Actual As Found	Deviation	Final Reading
1000	1000	0	1000
5000	5000	0	5000
10000	10000	0	10000
20000	20000	0	20000
2 1000	1000	0	1000
5000	5000	0	5000
10000	10000	0	10000
20000	20000	0	20000

Shift Test

CORNER	LOAD	ERROR	FINAL READING
1			
2			
3	5000	0	5000
4	5000	0	5000

Were actual values within tolerance? ☑ Yes ☐ No
Was device adjusted? ☐ Yes ☑ No
Were final values within tolerance? ☑ Yes ☐ No

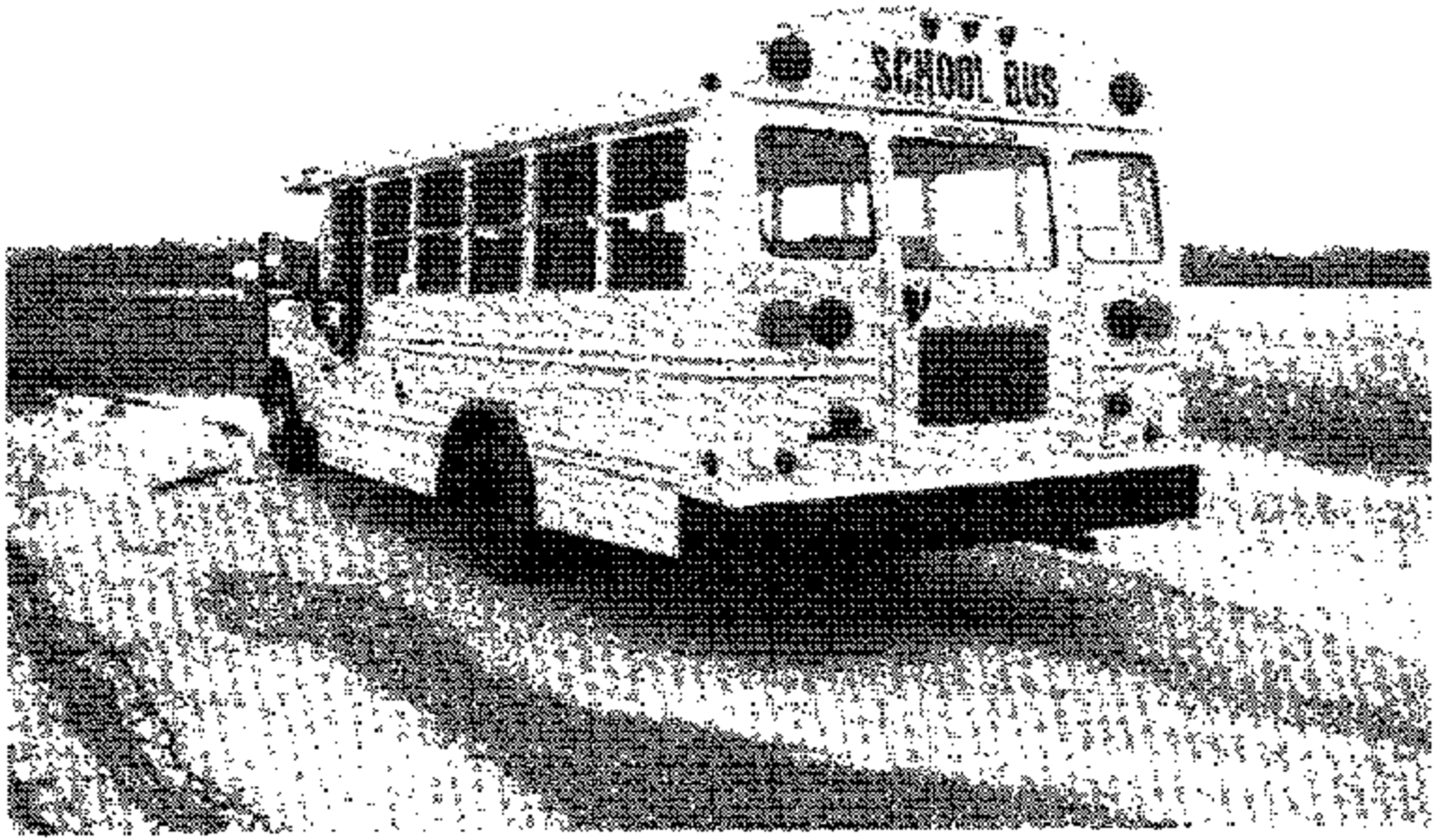
LABEL USED: ☑ Calibration / Tested ☐ Limited Calibration ☐ DO NOT USE - Out of Calibration | Invoiced: ☑ Yes ☐ No

United Scale's Operational Procedure ... is followed for device calibration. TEST WEIGHT STANDARDS USED (Traceable to NIST & ANSI/NCSL Z540-1-1994):

UNCERTAINTY MEASUREMENT:
COMMENTS:
TESTED BY: (Technician) DATE: 6-5-03

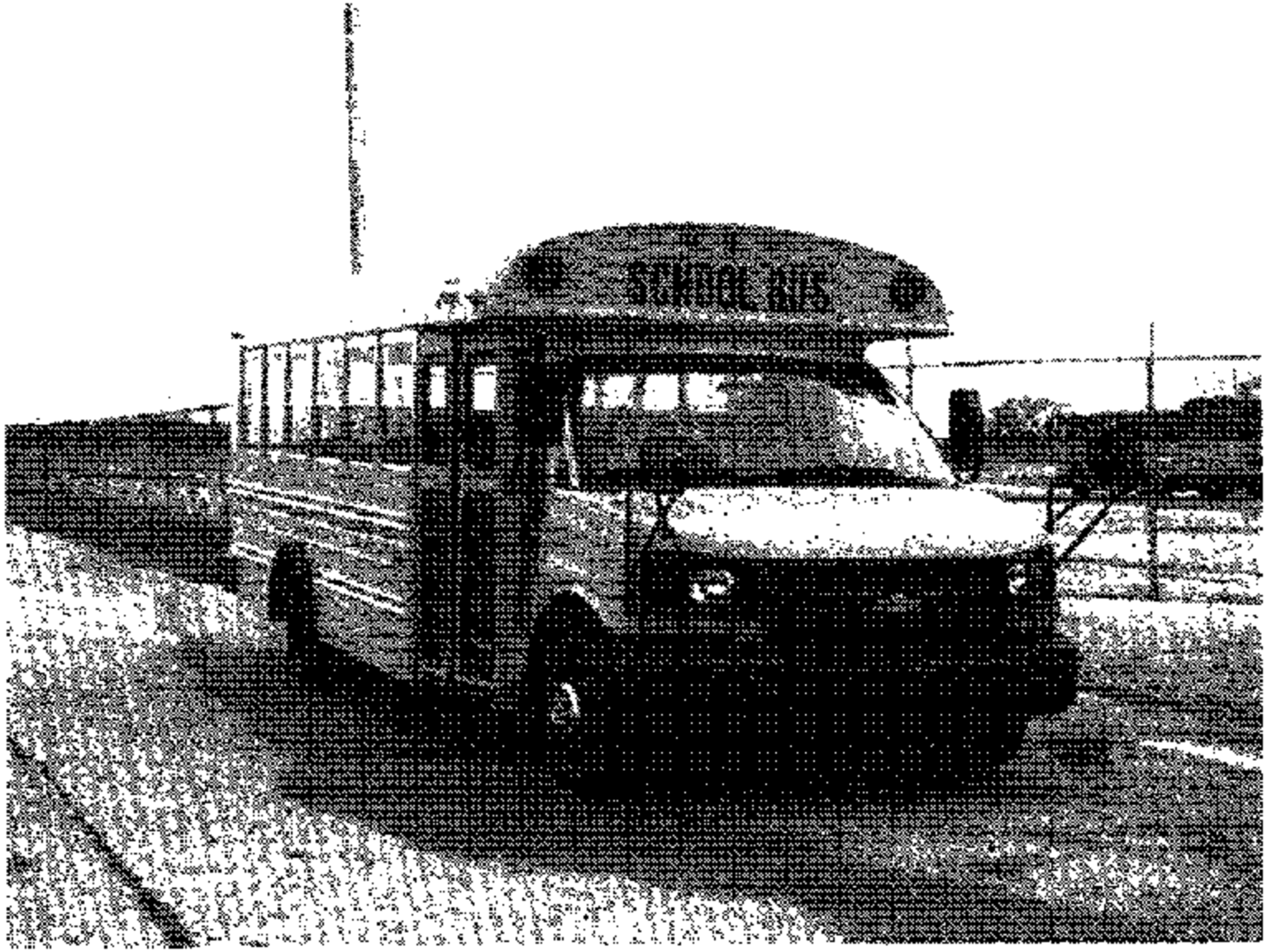
SECTION 5
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS



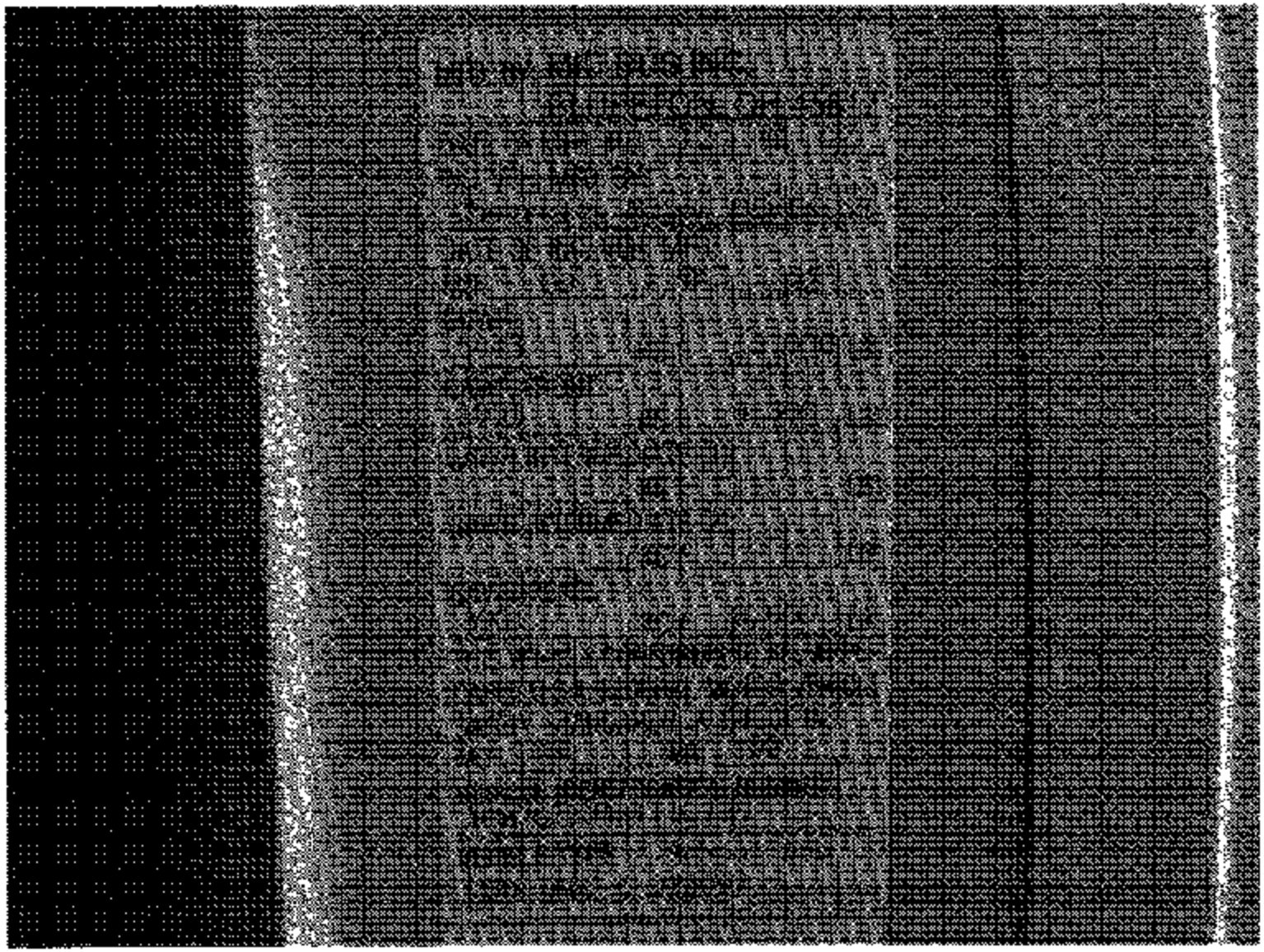
Three-Quarter Rear View of Left Side of Test Vehicle

Test Vehicle: **2003 Mid Bus Guide School Bus**
Procedure: **FMVSS 120** NHTSA No.: **C30803**



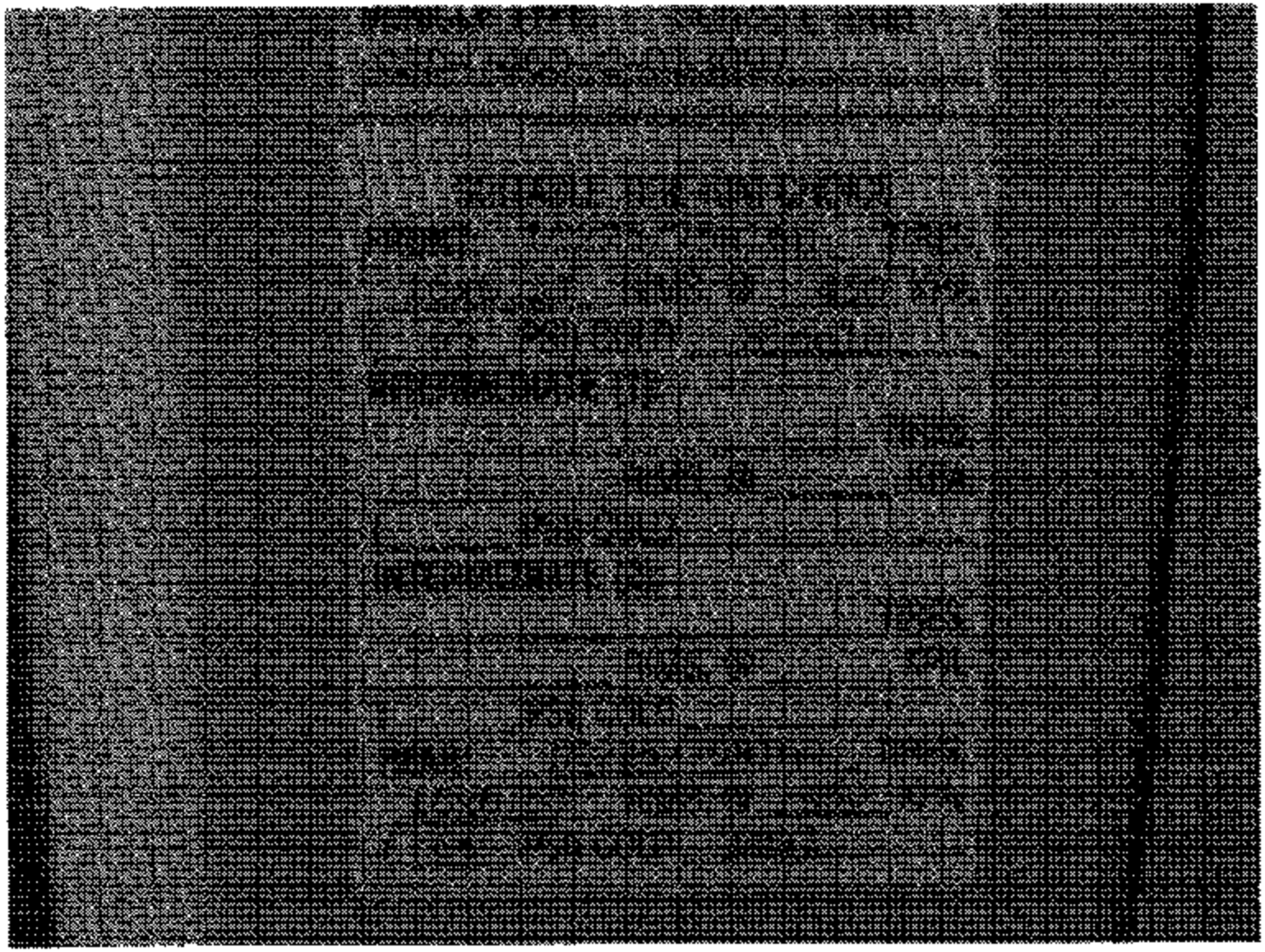
Three-Quarter Frontal View from Right Side of Vehicle

Test Vehicle: **2003 Mid Bus Guide School Bus**
Procedure: **FMVSS 120** NHTSA No.: **C30903**



Vehicle Certification Label

Test Vehicle: **2003 Mid Bus Guide School Bus**
Procedure: **FMVSS 120** NHTSA No.: **C30903**

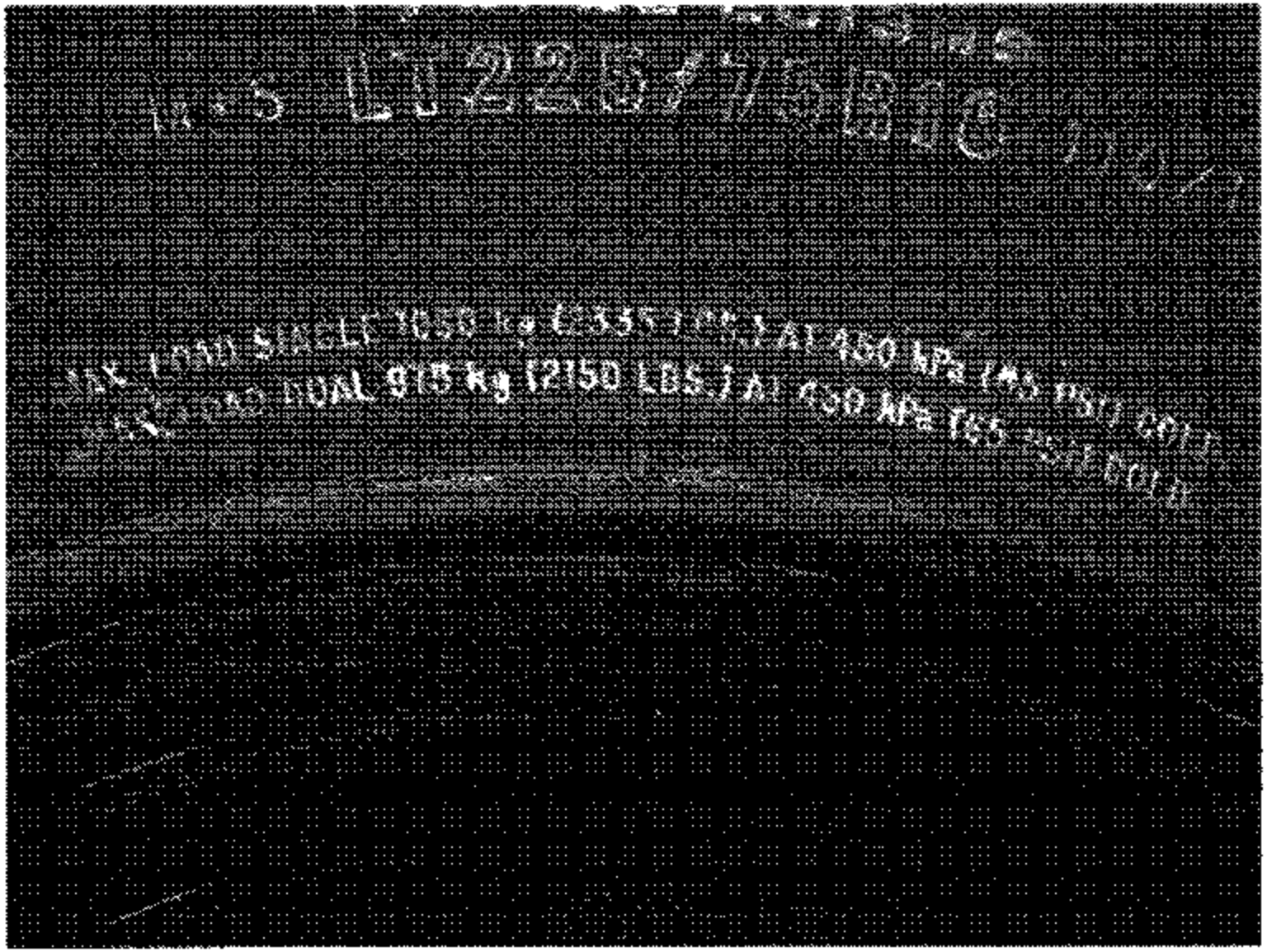


Tire Information Label

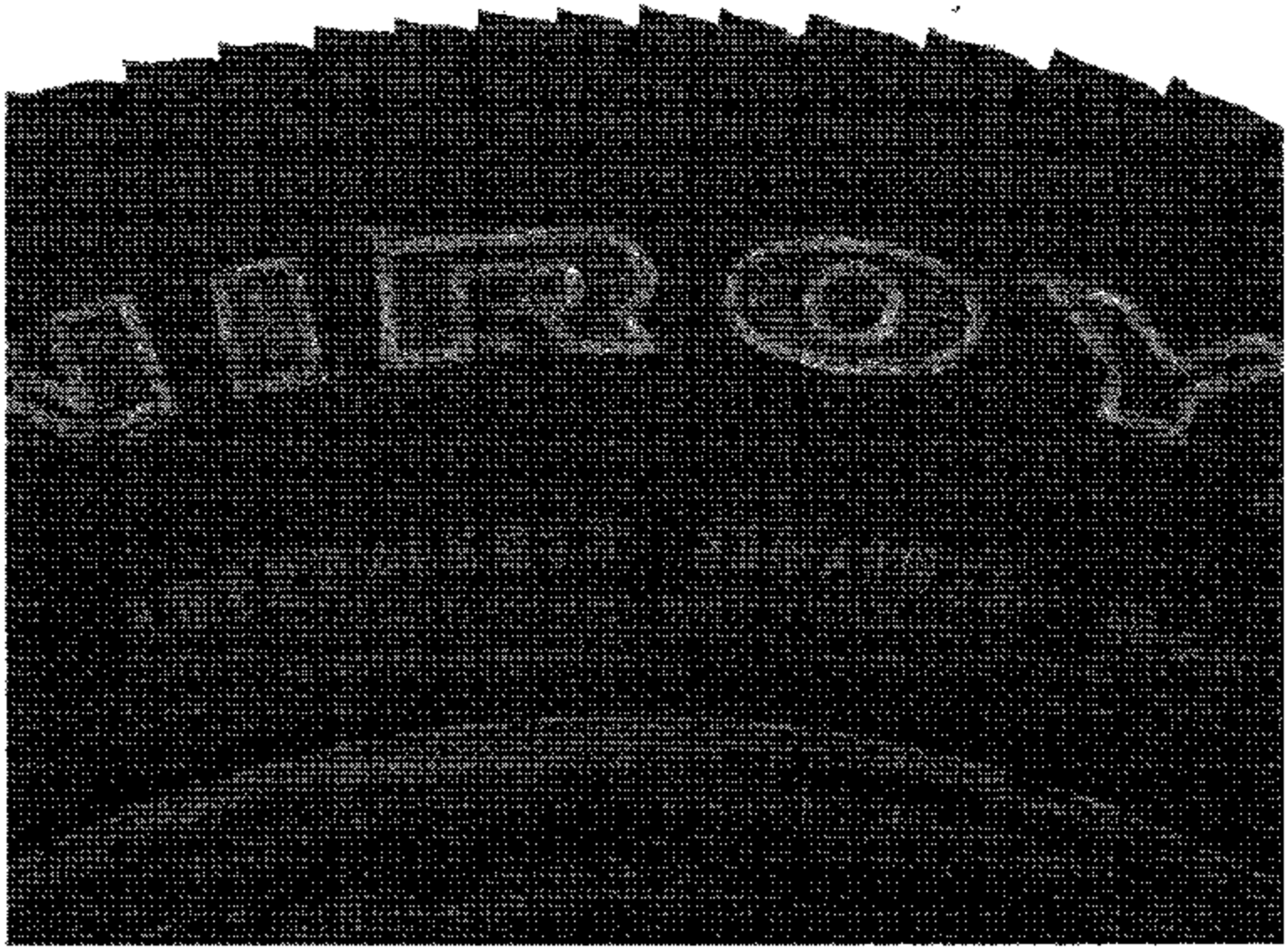
Right Front Tire Manufacture:

Right Front Tire Model

Right Front Tire DOT Serial Number



Right Front Tire Load Ratings

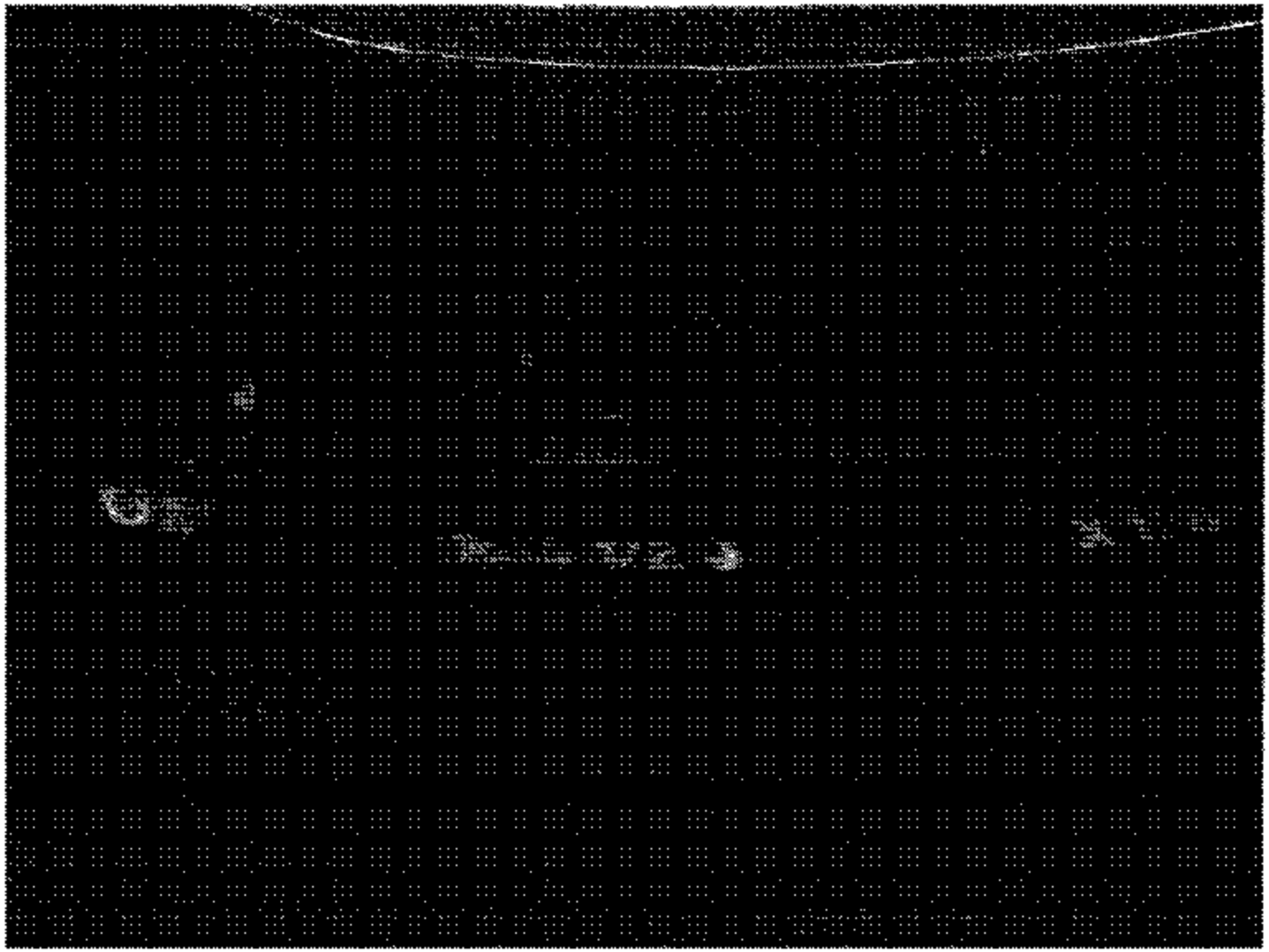


Right Front Tire Size Designation

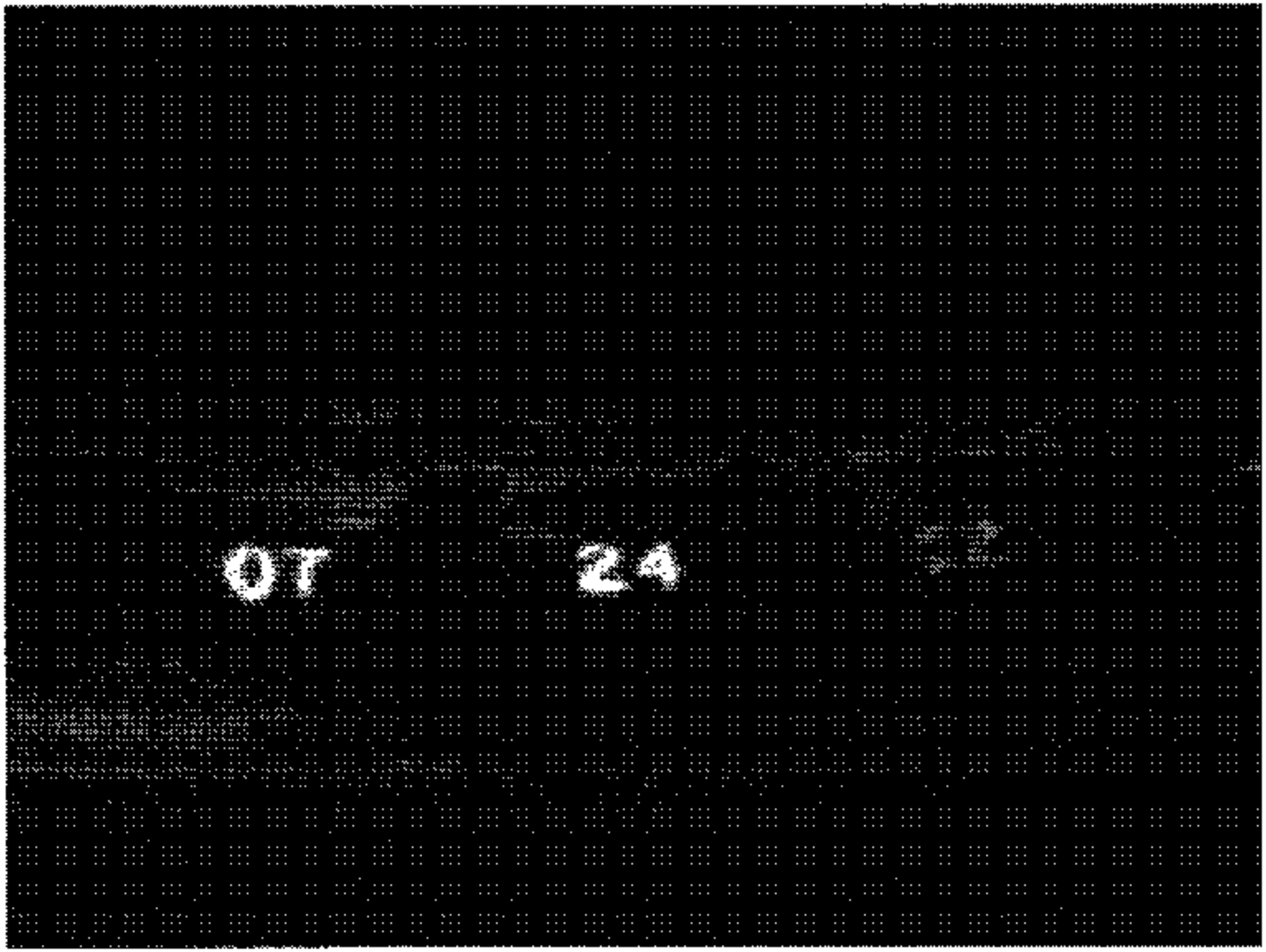
Test Vehicle: **2003 Mid Bus Guide School Bus**
Procedure: **FMVSS 120** NHTSA No. **C30903**

Right Front Rim DOT and Source of Published Information

Test Vehicle: 2003 Mid Bus Guide School Bus
Procedure: FMVSS 120 NHTSA No.: C30903



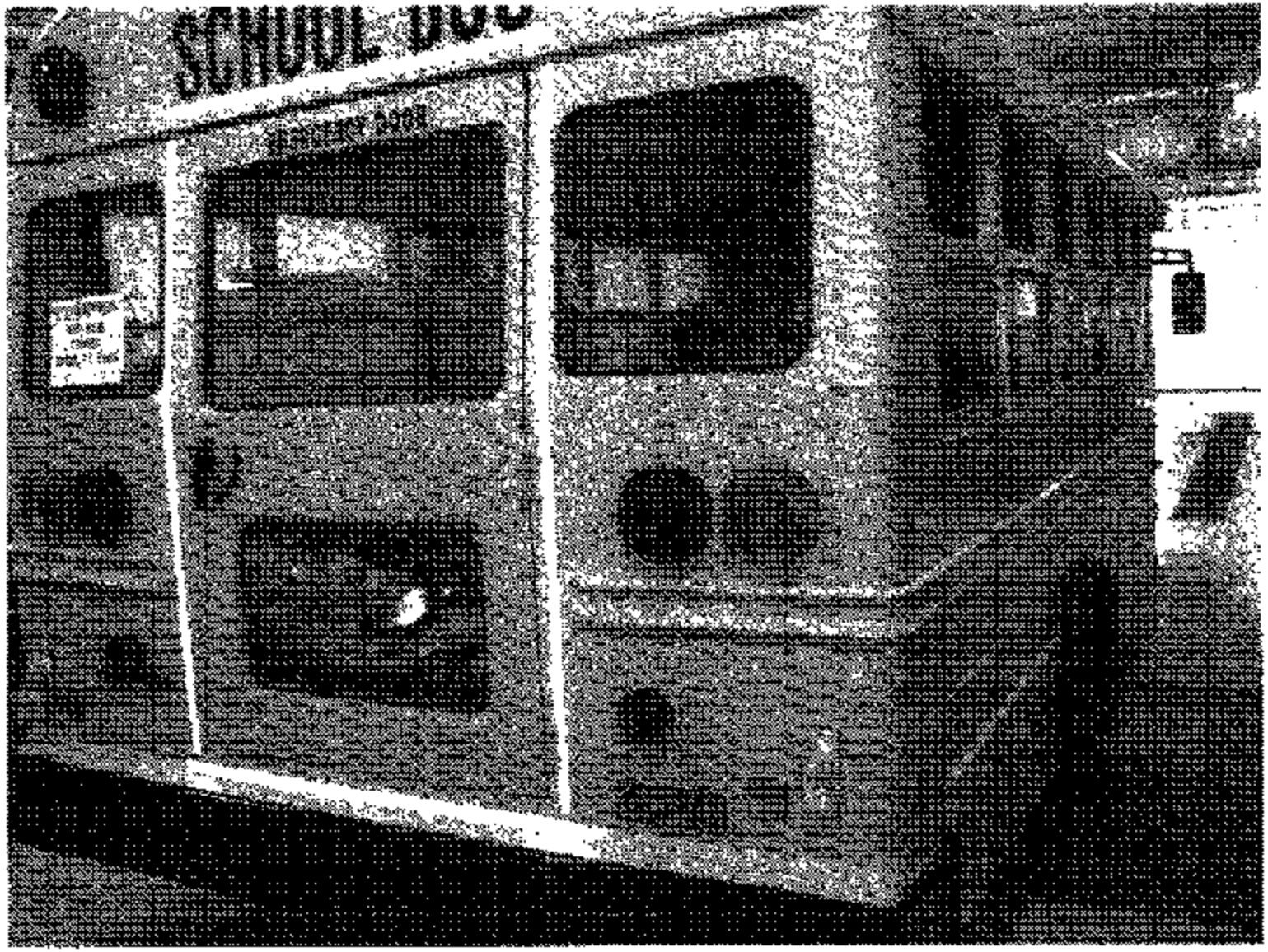
Right Front Rim Size



Right Front Rim Date of Manufacture Markings

Test Vehicle: **2003 Mid Bus Guide School Bus**
Procedure: **FMVSS 120** NHTSA No.: **C30003**

Vehicle on Scales Taking Measurement of Front Axle Loads



Vehicle on Scales Taking Measurement of Rear Axle Loads

Test Vehicle: **2003 Mid Bus Guide School Bus**
Procedure: **FMVSS 120** NHTSA No.: **C30903**

Simulated Occupant Loading

Test Vehicle: 2003 Mid Bus Guide School Bus
Procedure: FMVSS 120 NHTSA No.: C30903

Simulated Occupant and Cargo Loading