

REPORT NUMBER: 120-MGA-03-004

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

**Liberty Bus Inc.
2003 Liberty Freedom School Bus
NHTSA No.: C30901**

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




Final Report Date: September 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**

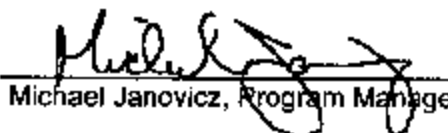
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Prepared by:


John Roberts, Project Technician

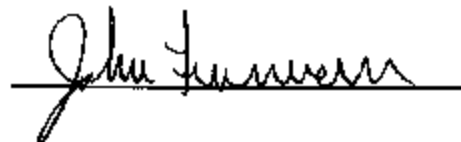
Date: September 24, 2003

Reviewed by:


Michael Janovicz, Program Manager

Date: September 24, 2003

FINAL REPORT ACCEPTED BY OVSC:



9/30/03
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Technical Report Documentation Page

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16. Abstract A test was conducted on a 2003 Liberty Freedom School Bus, NHTSA No. C30901, 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: (1) The rim information on the Tire and Rim label did not contain the proper diameter and width information as specified by FMVSS 120.					
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) 386-4946	
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TABLE OF CONTENTS

<u>Section</u>		<u>Page No</u>
1	Purpose of Compliance Test	1
2	Test Procedure and Discussion of Results	2
3	Compliance Test Data	4
	Data Sheet 1- General Tire and Rim Data	5
	Data Sheet 2 – Certification and Tire Label Information	7
	Data Sheet 3 –Weight Distribution	8
4	Test Equipment List and Calibration Information	10
5	Photographs	13
6	Notice of Test Failure	30

SECTION 1
PURPOSE OF COMPLIANCE TEST

The purpose of this test report is to document the results of tests performed on a MY 2003 Liberty Freedom School Bus, NHTSA No.: C30901, 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 Liberty Freedom 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 seventeen occupants (one adult driver and 16 passengers) .
- Condition 3 – Vehicle in Condition 2 state plus the addition of ballast to simulate cargo loading. Target vehicle load was the certified gross vehicle 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 except the recommended rim size which is labeled incorrectly.

* The seats had been removed in a previous test; ballast was added to compensate for the seats throughout the testing.

SECTION 2...continued
TEST PROCEDURE AND DISCUSSION OF RESULTS

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

Vehicle Make/Model: Liberty Freedom **MY:** 2003

NHTSA No.: C30901 **VIN:** 1GBHG39U831110237 **Vehicle Type:** School Bus

Incomplete Veh. Make/Model: GMC

Designated Seating Capacity: 17 (1 driver, 16 passengers)

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.	FAIL (See remarks)
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

REMARKS: The rim size information on the Tire and Rim label does not contain the proper diameter and width dimensions. Refer to Section 6, Laboratory Notice of Test Failure.

**SECTION 3
COMPLIANCE TEST DATA**

**FMVSS 120 - DATA SHEET 1
GENERAL TIRE AND RIM DATA**

Test Vehicle: **2003 Liberty Freedom School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
 Test Date: **8/20/03**

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)	NO

TIRE DATA FROM SIDEWALL

	RIGHT FRONT	SPARE
Manufacturer	Bridgestone	
Brand	V-Steel RIB 265	
Tire Size	LT245/75R16	
Maximum Tire Load Rating (KG)	1,380-Single	
Maximum Inflation Pressure (KPA)	550	
Tire has DOT symbol (Yes/No)	Yes	
DOT serial number	DOT 7X11 65V 3002	

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

	FRONT AXLE	REAR AXLE
A. GAWR (KG) from certification label	1951	2760
B. (No. of tires) x (tire load rating (KG) from above table)	2760	2760
C. Is "B" equal to or greater than "A"? (Yes/No)	Yes	Yes

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

Test Vehicle: **2003 Liberty Freedom School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
 Test Date: **8/20/03**

RIM MARKINGS

	RIGHT FRONT	SPARE
Source of published dimensions (letter designation)	T	
Rim Size	16 X 6.5 J	
Does rim contain DOT symbol? (Yes/No)	Yes	
Manufacturer's name, symbol or trademark (copy format)	TZB	
Date of manufacture or symbol	09-07-02	
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 – per 2003 TRA Book	

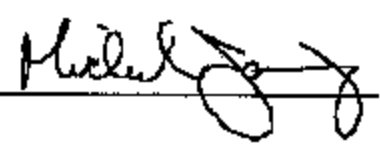
RIM MEASUREMENTS

	RIGHT FRONT	SPARE
Rim width	165 mm (6.5")	
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: 

Approved By: 

Date: August 20, 2003

**FMVSS 120 - DATA SHEET 2
CERTIFICATION AND TIRE LABEL INFORMATION**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **8/20/03**

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	Driver Door Jam
Location of Tire Information Label	Driver Door Jam

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

GVWR: 4,355 KG	FRONT AXLE	REAR AXLE
Tire Size	LT245/75R16	LT245/75R16
Rim Size	16.5 K	16.5 K
Recommended inflation pressure (KPa)	340	550
Are labeled rims suitable for labeled tires (Yes/No)	No (see remarks)	No (see remarks)
Referenced load rating at label recommended inflation pressure (KG)	980	1,380


CERTIFICATION/TIRE LABEL MAXIMUM CAPACITY COMPARISON

GVWR: 4,355 KG	FRONT AXLE	REAR AXLE
A. GAWR (kg) FROM CERTIFICATION LABEL	(C) 1,951	(D) 2,760
B. (No. of tires) x (Tire load rating (KG))	1,960	2,760
Is "B" equal or greater than "A"? (Yes/No)	Yes	Yes
Is (C) plus (D) equal to or greater than GVWR? (Yes/No)	Yes	

RESULTS	PASS/FAIL
LABEL INFORMATION (§5.3) Vehicle has proper certification/tire information label. Label tires at recommended inflation pressure and rims are suitable for vehicle.	FAIL

Remarks: Refer to Section 6, Laboratory Notice of Test Failure.

Tested By: 

Approved By: 

Date: August 20, 2003

**FMVSS 120 - DATA SHEET 3
WEIGHT DISTRIBUTION**

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **8/20/03**

Fluid Levels				
Fuel:			FULL	
Coolant:			FULL	
Other Fluids: <u>Washer fluid, brake fluid, etc.</u>			FULL	
Tire Pressures				
Tire	Left Front	Right Front	Left Rear	Right Rear
Tire Pressure (KPa)	340	340	550	550
Occupant and Cargo Loads				
Total Occupant Load (kg): [# of designated seating positions x 68 KG per adult or 54 KG per student]			932 kg (1-driver, 16 passengers)	
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 <u>4,355 KG</u> - <u>3,058 KG</u> - <u>932 KG</u> = <u>365 KG</u> (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	980	826	NO	952	NO	986	See remarks
Right Front Tire	980	780	NO	876	NO	912	NO
Front Axle	1,951	1,606	NO	1,828	NO	1,898	NO
Left Rear Tire	1,380	724	NO	1,100	NO	1,254	NO
Right Rear Tire	1,380	728	NO	1,074	NO	1,222	NO
Rear Axle	2,760	1,452	NO	2,174	NO	2,476	NO
Total Vehicle	4,355	3,058 ⁽¹⁾	NO	4,002	NO	4,374	See remarks

⁽¹⁾ Due to damage to the vehicle seats and mounting positions during previous testing, the seats were removed and 19.5 kg was installed in each seat mounting position to simulate the weight of each seat.

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

Test Vehicle: 2003 Liberty Freedom School Bus
Test Lab: MGA Research-Wisconsin Operations

NHTSA No.: C30901
Test Date: 8/20/03

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

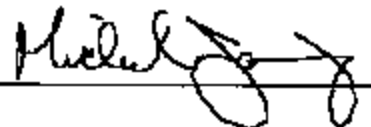
Remarks:

For condition 3, the target total vehicle load was the vehicle's GVWR. The amount and placement of the cargo ballast was arbitrary. The total cargo ballast load could have been reduced and redistributed to ensure none of the tire, axle, or vehicle ratings were exceeded.

Tested By:



Approved By:



Date: August 20, 2003

SECTION 4
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

Test Vehicle: **2003 Liberty Freedom School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
Test Date: **8/20/03**

	Digital Calliper	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

SECTION 4...continued
INSTRUMENTATION AND EQUIPMENT LIST

Test Vehicle: **2003 Liberty Freedom School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30901**
 Test Date: **8/20/03**

SCALE CALIBRATION SHEET

**CALIBRATION
 SERVICE
 RECORD**



- 16725 W. Victor Road
 New Berlin, Wisconsin 53151-4132
 262-785-1734 • 800-236-1733
 FAX 262-785-9754
- 1322 Ruesen Court
 Green Bay, Wisconsin 54313-8999
 920-434-2737 • 800-236-2737
 FAX 920-434-9605
- Johnson Scales & Systems, Inc.
 Division of United Scale & Engineering Corp.
 1019 Jonathan Dr., Madison, WI 53719-3223
 608-270-1114 • 800-747-4474 • FAX 608-270-1114

Page 1 of 1

WEIGH NO. <u>465</u>		SERIAL NO. <u>004504</u>		DATE OF SERVICE	
DATE: <u>6-9-03</u>	MANUFACTURER: <u>GSE</u>	MODEL: <u>2516</u>	TELEPHONE:	CAL. LOCATION: <u>Upper Site</u>	
NEXT DUE: <u>12-03</u>	CAPACITY & RESOLUTION: <u>20000 x 5.16</u>		CUSTOMER: <u>MGA 22</u>		
PREP: <u>GMC</u>	CALIBRATION REASON: <input checked="" type="checkbox"/> Scheduled <input checked="" type="checkbox"/> Change <input type="checkbox"/> Other		ORDER NO.:		
LOCATION: <u>Upper Site</u>			DESCRIPTION: <u>Dual Floor Scales</u>		

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	0	1000
5000	5000	0	5000
10000	10000	0	10000
20000	20000	0	20000

CORNER	LOAD	ERROR	FINAL READING
1	5000 lb	0	5000
2	5000	0	5000
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 Levelled: Yes No

United Scale's Operational Procedure VOP-19-01 is followed for device calibration. TEST WEIGHT STANDARDS USED (if applicable to NIST & ANSI/CSL 2548-1-1991):

BM 1 thru 20

UNCERTAINTY MEASUREMENT: 1800 gr.

COMMENTS: Found (2) scales in service

TESTED BY: (Technician) MA J AB DATE: 6-9-03

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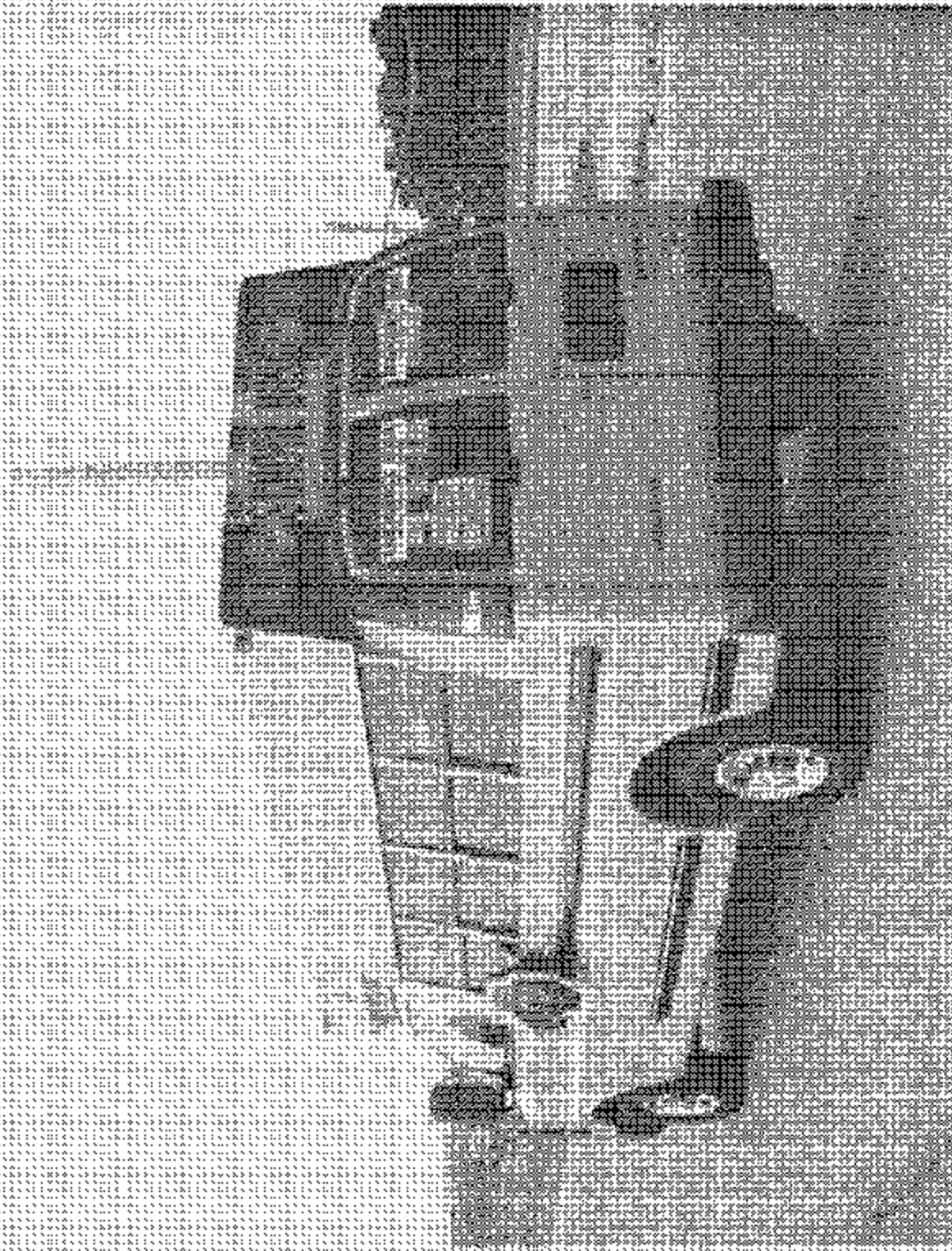
**SECTION 5
PHOTOGRAPHS**

TABLE OF PHOTOGRAPHS

<u>No.</u>		<u>Page No.</u>
1	Three-Quarter Frontal View of Right Side of Test Vehicle	15
2	Three-Quarter Rear View from Left Side of Vehicle	16
3	Vehicle Certification Label	17
4	Tire Information Label	18
5	Right Front Tire Manufacturer	19
6	Right Front Tire Model	20
7	Right Front Tire DOT Serial Number	21
8	Right Front Tire Load Ratings	22
9	Right Front Tire Size Designation	23
10	Right Front Rim DOT, Source of Published Information, Rim Size, and Date of Manufacturer Markings	24
11	Vehicle on Scales Taking Measurement of Front Axle Loads	25
12	Vehicle on Scales Taking Measurement of Rear Axle Loads	26
13	Simulated Occupant Loading	27
14	Simulated Occupant and Cargo Loading	28
15	Right Front Rim Manufacture Markings	29

Test Vehicle: 2005 Liberty Freedom Edition 4x4
PlusLife™ FMYSS 120

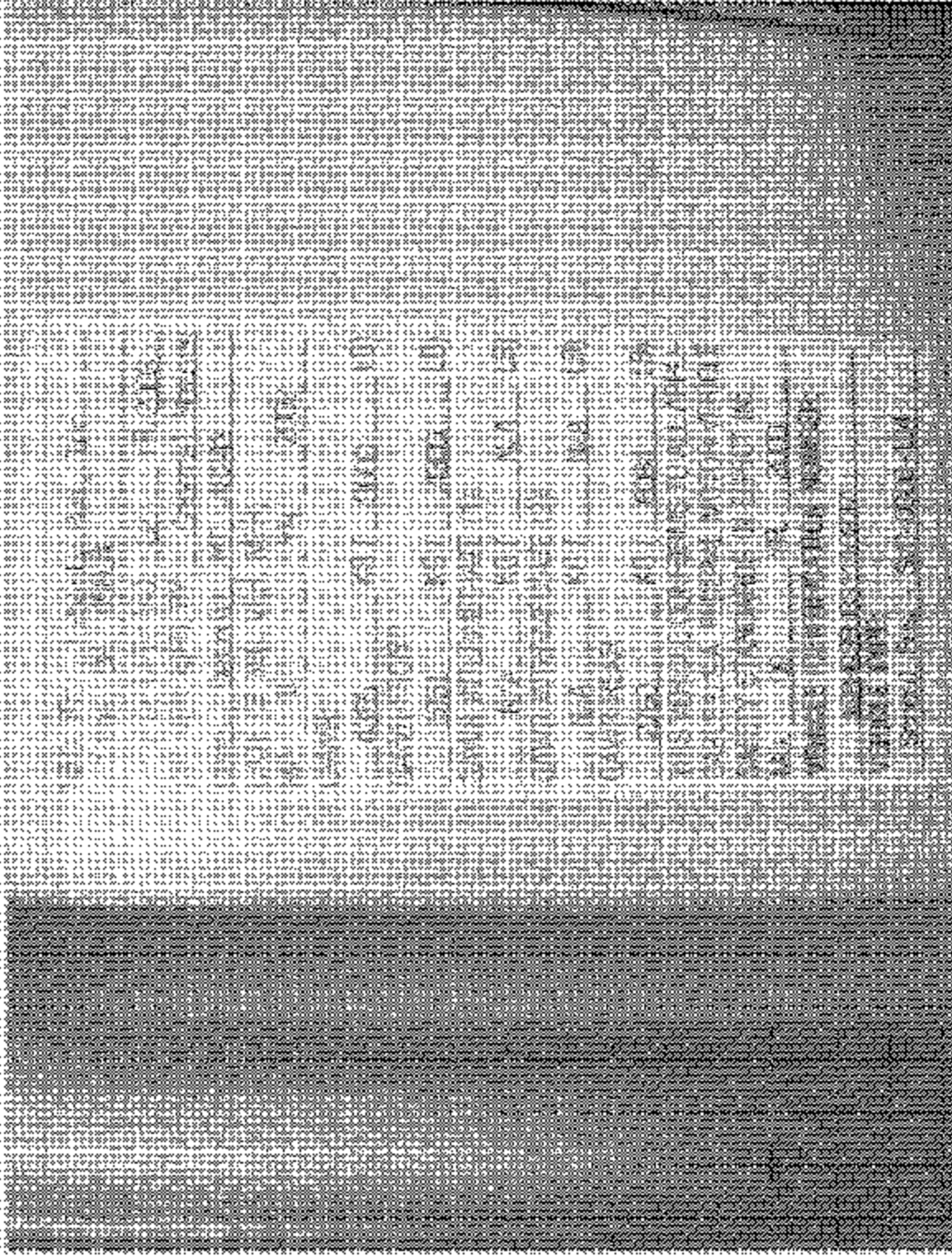
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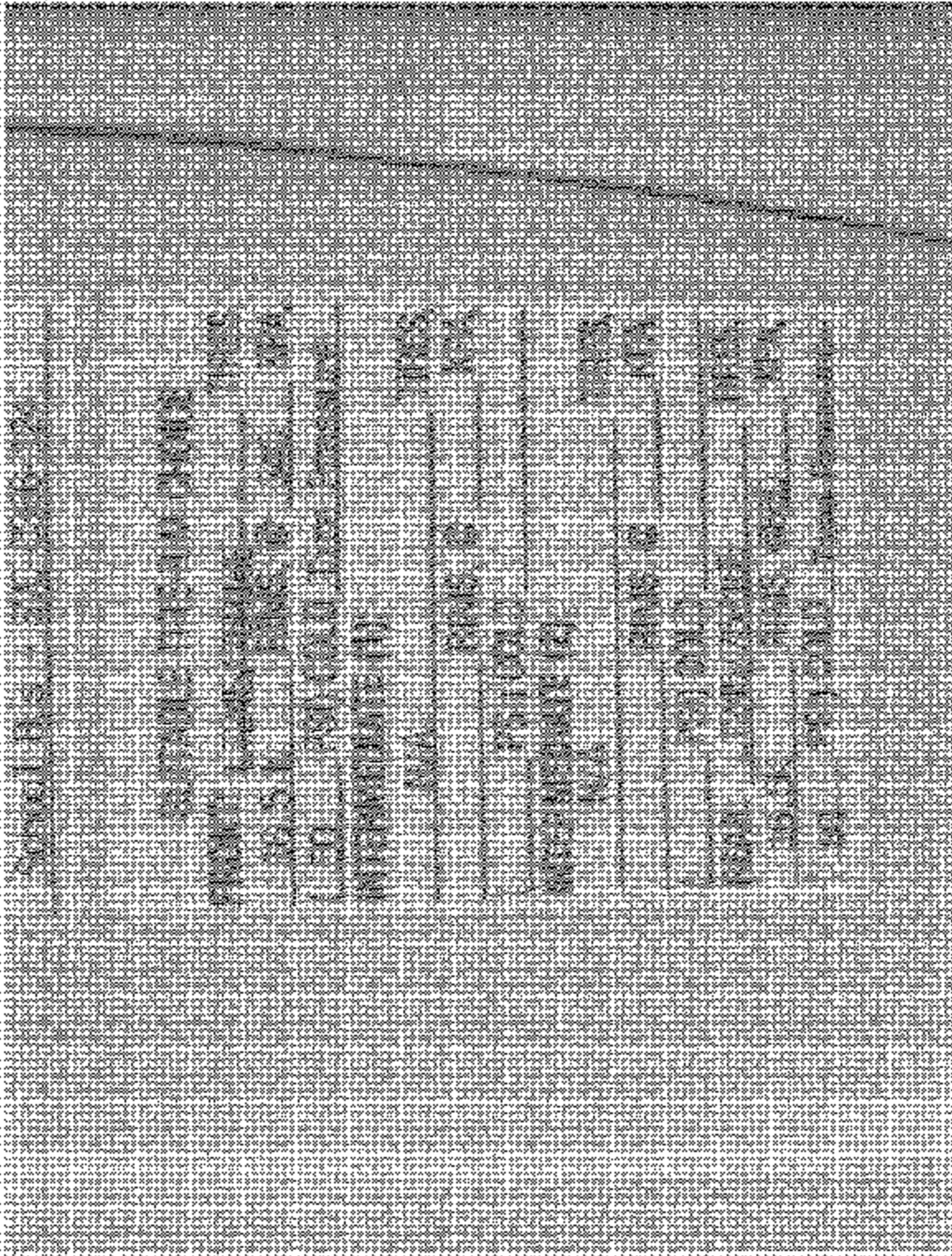
MSRP includes destination charge. Tax, license, and dealer fees extra.

Tell Xerox 2003 Liberty Freedom School Bus
Picture # FAV55 X20

NAISM No. C50994



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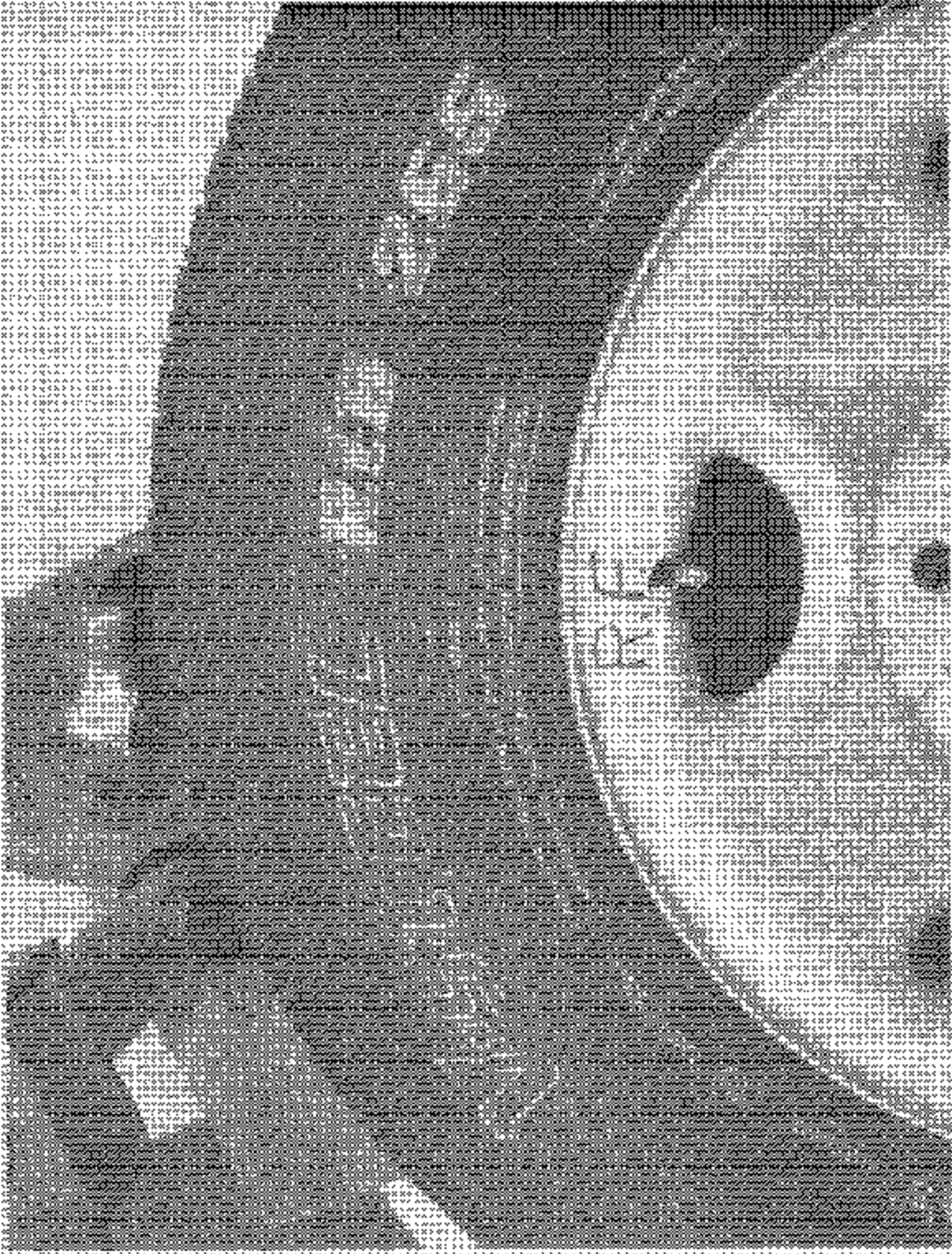
West Virginia 2013 Liberty Freedom School Bus
Program

Number: FM195 X20
KMTSM No: 050994



1996 Volvo
2002 Liberty Freedom School Bus
Structure
F4193 X 30

NHTSA NJ 008991



P. 03 100 100 100

East Windsor 2603 Liberty Freedom School Bus
Project # 11/15/84

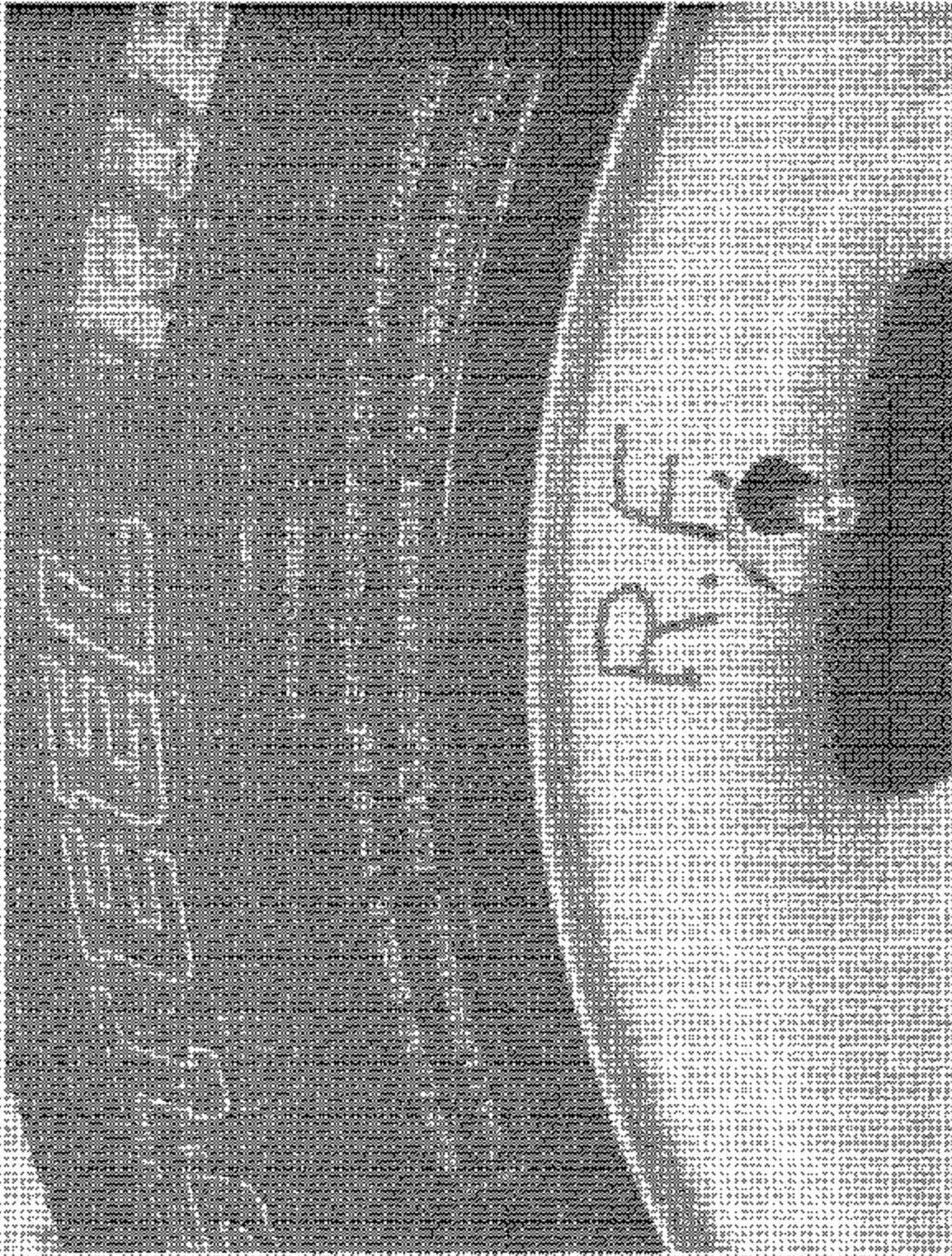
M/S. No. 026001



RIGHT TO LIFE EDUCATION

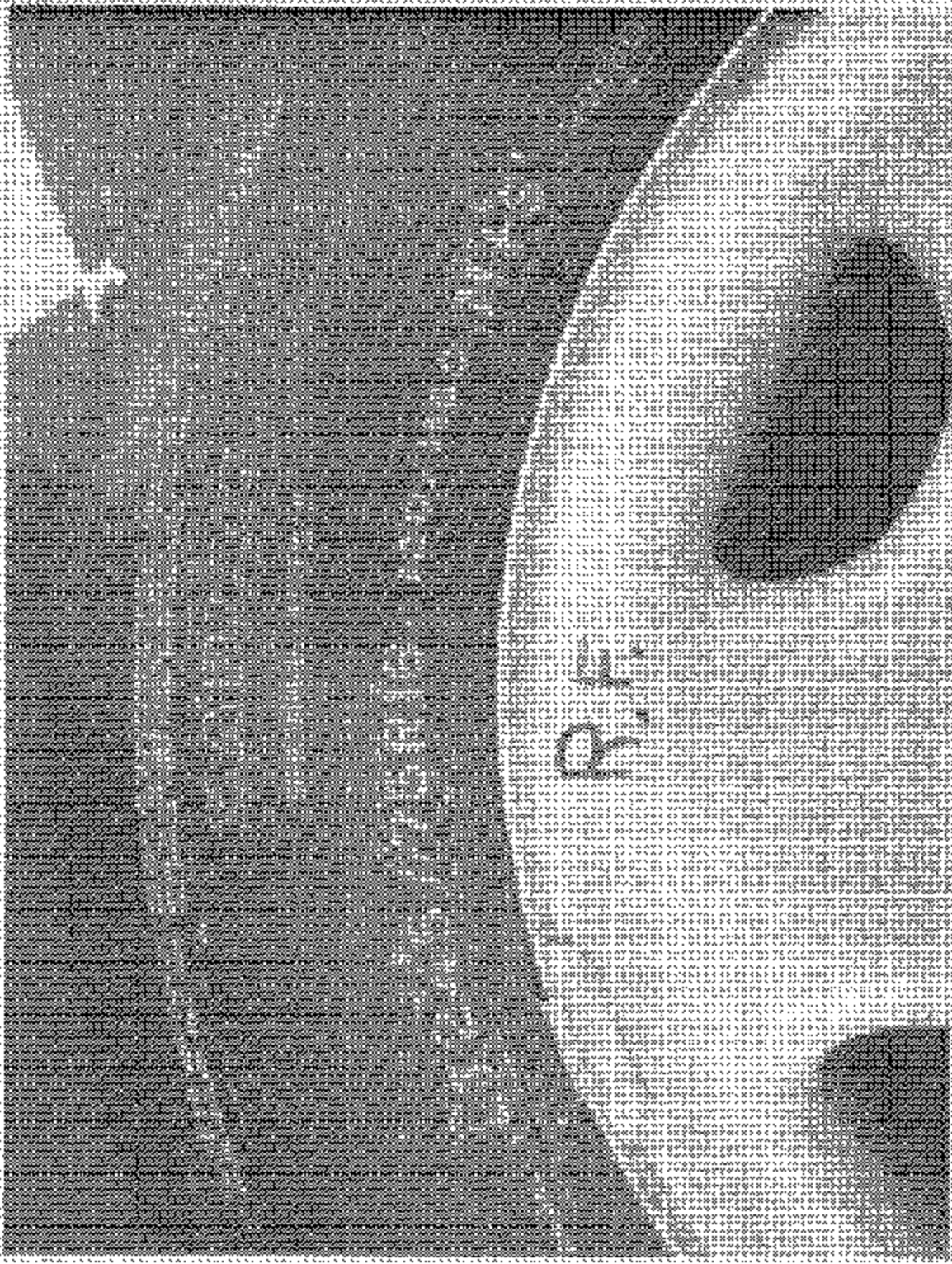
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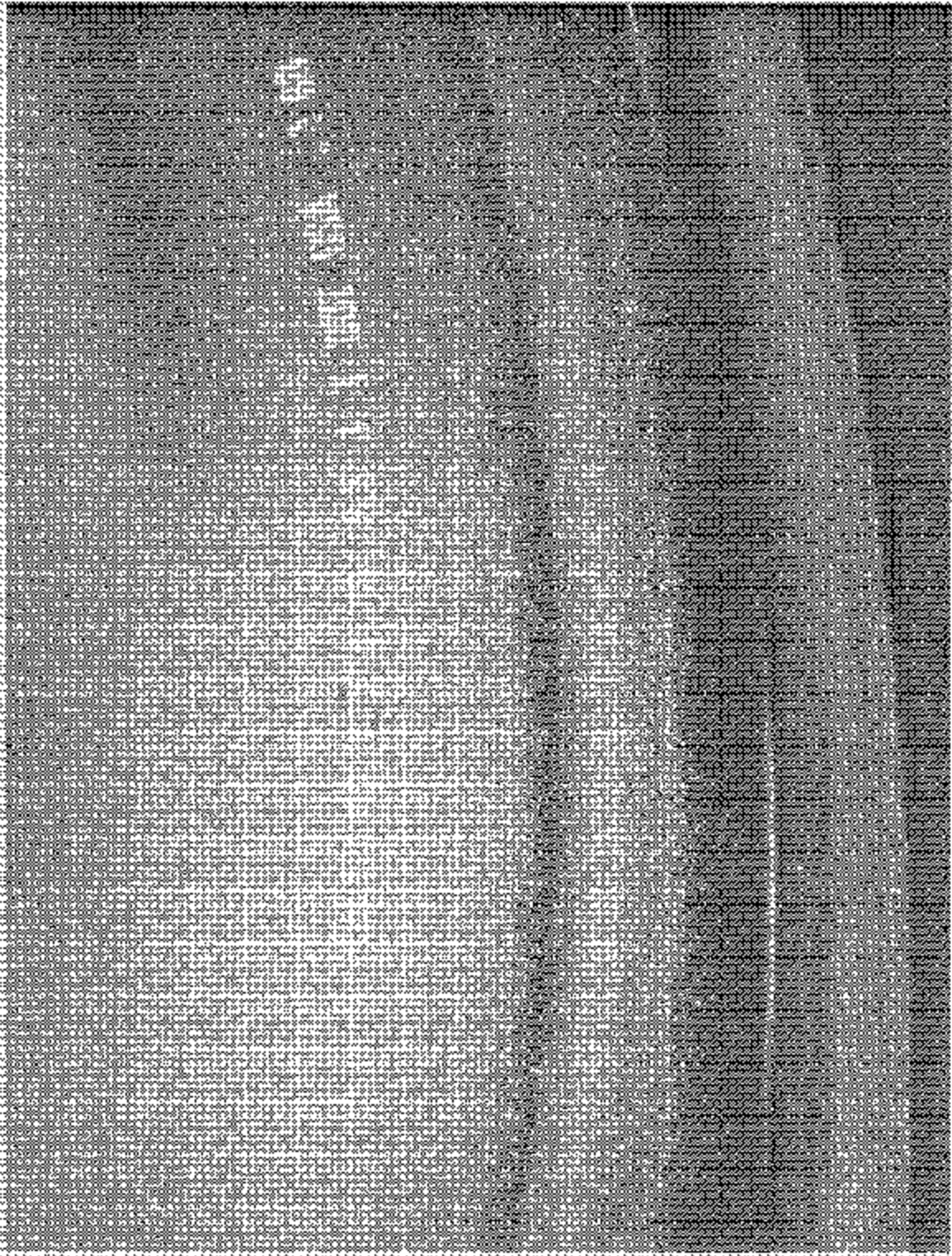
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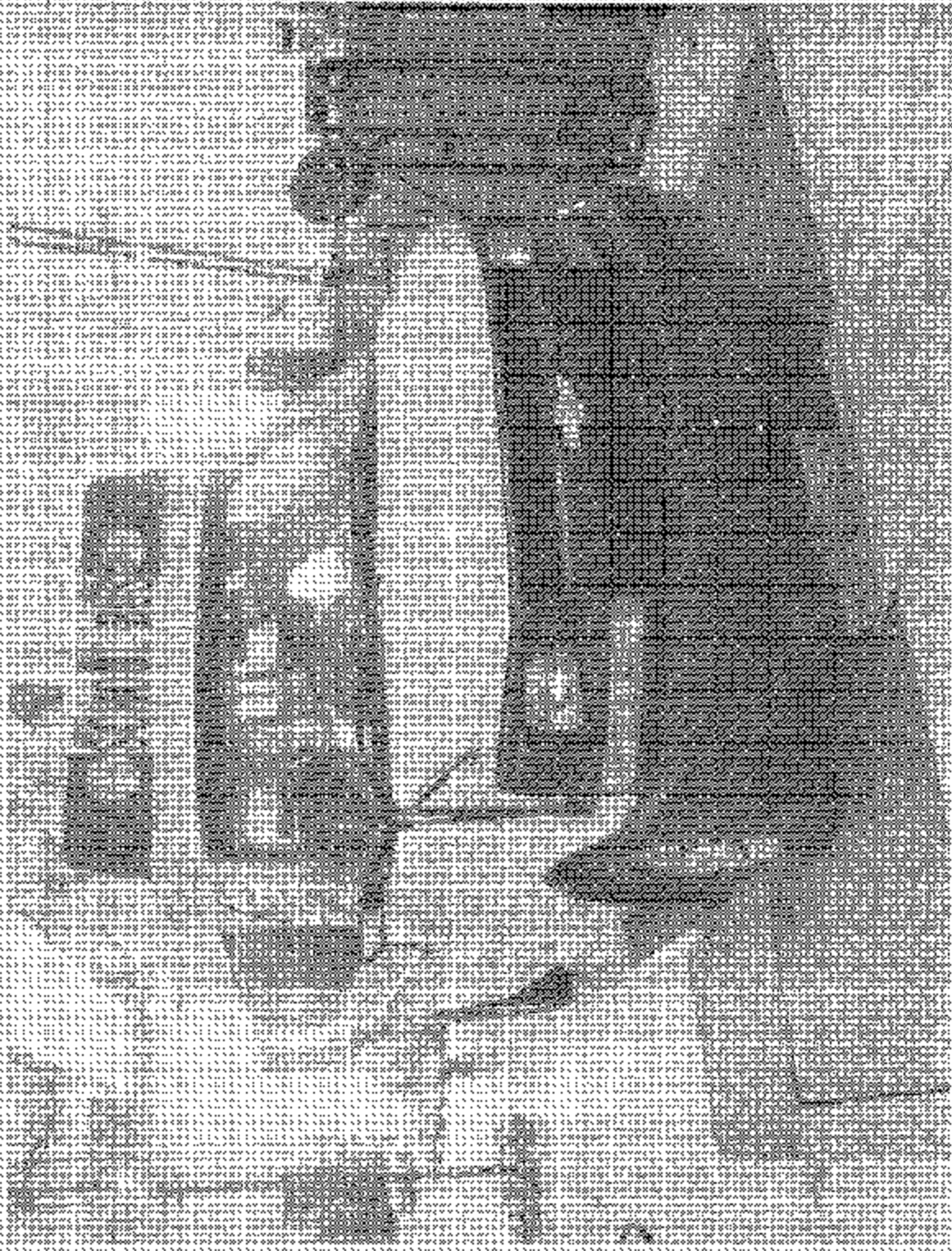
Year/Date: 2002 Liberty Freedom School Bus
Procedure: FHVSS-126

NAFSA No: 250080



First Vehicle: 2005 Liberty Freedom School Bus
VIN: 19UUA81H55A000130

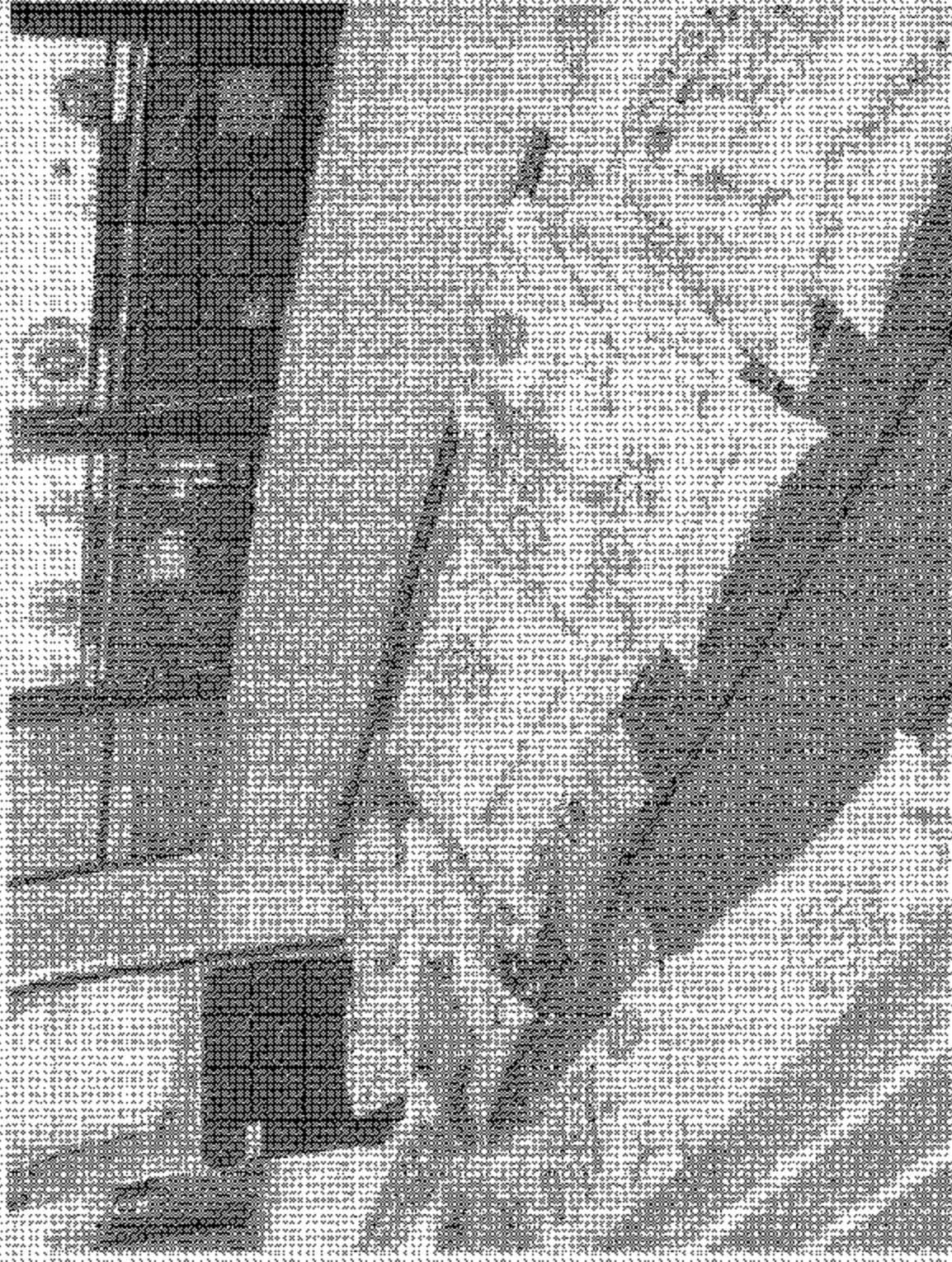
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Test Vehicle: 2010 Liberty Freedom School Bus

Procedure: FMVSS 120

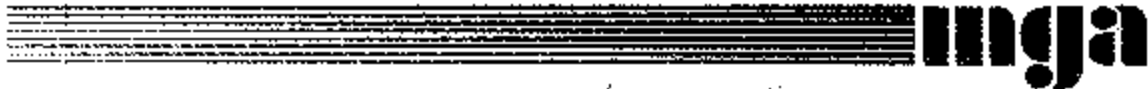
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Statue of George Washington





mga research corporation

SECTION 6

LABORATORY NOTICE OF TEST FAILURE TO OVSC

Test Procedure:	FMVSS 120	Test Date:	August 26, 2003
Test Vehicle:	2003 Liberty Freedom	Test Lab:	MGA Research Corp.
NHTSA No.:	C30901	Project Engineer:	Michael Janovicz
Contract No.:	DTNH22-02-R-01057	Delivery Order No.:	Contract
MFR.:	Liberty	VIN:	1GBHG39U831110237
Build Date:	2/03		

TEST FAILURE DESCRIPTION

The vehicle tire and rim information label states a suitable rim choice for the front and rear rims as 16.5K. This label should state the rim size designation which is defined by FMVSS 120 as the rim diameter and width. The rim size on the vehicle is 16" diameter and 6.5" wide. In this case, it appears that the label should read 16 x 6.5 K.

FMVSS REQUIREMENTS DESCRIPTION

Paragraph S.5.3: Label Information: "Each vehicle shall show the information specified in S.5.3.1 (Tires) and S.5.3.2 (Rims). Paragraph S.5.3.2 "The size designation and, if applicable, the type designation of rims appropriate for those tires."

Remarks: No remarks.

Notification to NHTSA (COTR): Amanda Prescott

Date: September 5, 2003

By: 