

REPORT NUMBER: 120-MGA-05-002

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

**Les Entreprises Michel Corball Inc.
2004 Corball 30 Passenger School Bus
NHTSA No. C40902**

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



Final Report Date: July 19, 2005

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW, ROOM 6115 (NVS-224)
WASHINGTON, D.C. 20590**

Technical Report Documentation Page

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16. Abstract A test was conducted on a 2004 Corbell 30 passenger School Bus, NHTSA No. C40902, 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					
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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 MY2004 Corbell 30 Passenger School Bus, NHTSA No.: C40902, 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 2004 Corbell 30 Passenger School Bus, NHTSA No. C40802 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 Thirty-one passengers (one adult driver and thirty 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 mounted tires inflated to the inflation pressure labeled on the tire sidewall have a load rating appropriate to carry the maximum loads as required by FMVSS No. 120. The vehicle rims are suitable for the vehicle tires and contain the required markings.

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

Test Lab: MGA Research-Wisconsin Operations **Contract No:** DTNH22-02-D-01067

Vehicle Make/Model: Corbell / 30 Passenger **MY:** 2005

NHTSA No.: C40902 **VIN:** 1FDXE45P14HA89660 **Vehicle Type:** School Bus

Incomplete Veh. Make/Model: Ford

Designated Seating Capacity: 31. (1 driver, 30 passengers)

Dealer Installed Optional Accessories: None Noted

Summary

Requirements	PASS/FAIL
TIRE AND RIM SELECTION (S6.1) Installed tires and rims are suitable for vehicle	PASS
Rim Marking (S6.2) Rims contain all required markings of proper dimensions	PASS
LABEL INFORMATION (S6.3) 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: **2004 Corbell 30 Passenger School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40902**
Test Date: **8/3/06**

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	Michelin	
Brand	LYX M/S	
Tire Size	LT225/75R16	
Maximum Tire Load Rating (KG)	1215-Single 1120-Dual	
De-rated Tire Load Rating (KG)	N/A	
Maximum Inflation Pressure (KPA)	550	
Tire has DOT symbol (Yes/No)	Yes	
DOT serial number	DOT B3JH FBXX 0904	

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

	FRONT AXLE	REAR AXLE
A. GAWR (KG) from certification label	2067	4266
B. (No. of tires) x (tire load rating (KG) from above table)	2430	4480
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: **2004 Corbell 30 Passenger School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40902**
 Test Date: **6/3/05**

RIM MARKINGS

	RIGHT FRONT	SPARE
Source of published dimensions (letter designation)	T	
Rim Size	16 x 6	
Does rim contain DOT symbol? (Yes/No)	Yes	
Manufacturer's name, symbol or trademark (copy format)	Accuride	
Date of manufacture or symbol	05 19 04	
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	152 mm (6")	
Rim diameter	406 mm (16")	
Rim measurements same as rim markings? (Yes/No)	Yes	

RESULTS	PASS/FAIL
TIRE AND RIM SELECTION (§5.1) Installed tires and rims are suitable for vehicle	PASS
Rim Marking (§5.2) Rims contain all required markings of proper dimensions	PASS

Remarks: **NONE**

Tested By: *Jh. Quill* Approved By: *[Signature]*
 Date: June 3, 2005

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

Test Vehicle: **2004 Corbell 30 Passenger School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40902**
Test Date: **6/3/05**

LABEL INFORMATION

Label Design (Combined Certification and Tire Label):	Yes
Label Design (Separate Tire Information Label):	N/A
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.)	glue
Does label text color contrast with background? (yes/no)	Yes
Location of Label(s) on the vehicle:	Above Driver's Visor

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

GVWR: 6373 KG	FRONT AXLE	REAR AXLE
Tire Size	LT225/75R16	LT225/75R16
Rim Size	16 x 6	16 x 6
Recommended inflation pressure (KPa)	448	550
Are labeled rims suitable for labeled tires (Yes/No) ¹	Yes	Yes
Referenced load rating at label recommended inflation pressure (KG) ¹	1080	1120

¹ Referenced source for tire/rim match and load rating data: 2005 Tire and Rim Assoc.

CERTIFICATION/TIRE LABEL MAXIMUM CAPACITY COMPARISON

GVWR: 6373 KG	FRONT AXLE	REAR AXLE
A.GAWR (kg) FROM CERTIFICATION LABEL	(C) 2086	(D) 4286
B.(No. of tires) x (Tire load rating (KG))	2120	4480
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 (85.3) Vehicle has proper certification/tire information label. Label tires at recommended inflation pressure and rims are suitable for vehicle.	PASS

Tested By: *J. Alb* Approved By: *[Signature]*
Date: June 3, 2005

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

Test Vehicle: **2004 Corbell 30 Passenger School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40902**
Test Date: **6/3/05**

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)	450	450	550	550
Occupant and Cargo Loads				
Total Occupant Load (kg): [# of designated seating positions x 68 KG per adult or 54 KG per student]			1688 (1-driver, 30-students)	
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 6373 KG - 4308 KG - 1688 KG = 377 KG (must be positive)				
Describe Placement of Cargo:		Center of axle 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	1080	810	NO	838	NO	852	NO
Right Front Tire	1080	868	NO	838	NO	870	NO
Front Axle	2088	1688	NO	1722	NO	1722	NO
Left Rear Tire	2240	1304	NO	2102	NO	2306	YES**
Right Rear Tire	2240	1394	NO	2134	NO	2318	YES**
Rear Axle	4288	2642	NO	4236	NO	4624	YES**
Total Vehicle	6373	4308	NO	5858	NO	6348	NO

* - Vehicle and axle weight ratings (GVWR & GAWR) are located on the vehicle certification label plate. Vehicle tire load ratings are based upon the inflation pressure specified on the certification label plate for each respective axle, as determined from the appropriate tire manufacturer's specification table.

** - 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 that none of the tire, axle, or vehicle ratings were exceeded.

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

Test Vehicle: **2004 Corbell 30 Passenger School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40902**
Test Date: **6/3/05**

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

Remarks:

Tested By: *J. Webb* Approved By: *[Signature]*
Date: June 3, 2005

**SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: 2004 Corbell 30 Passenger School Bus
Test Lab: MGA Research-Wisconsin Operations

NHTSA No.: C40902
Test Date: 8/3/05

	Digital Caliper	Vehicle Scale	Tape Measure
Make	Mitutoyo	GSE	Stanley
Model	CD-5" C8	Pro-Weigh 84	Powerlock
Serial # (s)	0441288	212091/212092	SN182
Range	0-150mm	0 to 20,000 lb	0-8:m
Accuracy	.01mm	0.25% static	1 mm
Cal. Date	4/1/05	1/10/05	5/31/05
Cal. Due Date	10/1/05	8/10/05	11/31/05

**SECTION 4...continued
INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: **2004 Corbell 30 Passenger School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40802**
 Test Date: **6/3/05**

SCALE CALIBRATION SHEET

Calibrated

REPORT OF SCALE CALIBRATION

Operating Under NHTSA Approval: 49 CFR Part 563.10, 563.11, 563.12, 563.13, 563.14, 563.15, 563.16, 563.17, 563.18, 563.19, 563.20, 563.21, 563.22, 563.23, 563.24, 563.25, 563.26, 563.27, 563.28, 563.29, 563.30, 563.31, 563.32, 563.33, 563.34, 563.35, 563.36, 563.37, 563.38, 563.39, 563.40, 563.41, 563.42, 563.43, 563.44, 563.45, 563.46, 563.47, 563.48, 563.49, 563.50, 563.51, 563.52, 563.53, 563.54, 563.55, 563.56, 563.57, 563.58, 563.59, 563.60, 563.61, 563.62, 563.63, 563.64, 563.65, 563.66, 563.67, 563.68, 563.69, 563.70, 563.71, 563.72, 563.73, 563.74, 563.75, 563.76, 563.77, 563.78, 563.79, 563.80, 563.81, 563.82, 563.83, 563.84, 563.85, 563.86, 563.87, 563.88, 563.89, 563.90, 563.91, 563.92, 563.93, 563.94, 563.95, 563.96, 563.97, 563.98, 563.99, 564.00

TYPE: **SCALE** MAKE: **...** MODEL: **...** SERIAL: **...**
 MANUFACTURER: **...** DATE OF MANUFACTURE: **...** DATE OF TEST: **...**
 LOCATION: **...** TESTER: **...** APPROVED BY: **...**

This instrument is used for the following purposes:
 Calibration of scales

ACCURACY: **...**
 PRECISION: **...**
 REPEATABILITY: **...**

TEST POINT	As found			As test			Tolerance	
	Minimum	Maximum	Range	Minimum	Maximum	Range	Upper	Lower
DESCRIPTION
DESCRIPTION
DESCRIPTION
DESCRIPTION
DESCRIPTION
DESCRIPTION
DESCRIPTION
DESCRIPTION

This instrument is used for the following purposes:
 Calibration of scales

Tested by: **...** Date: **...**

The serial number of this report is: **...** This report is for the following instrument: **...**
 This report, page (**...**) of (**...**) was completed on: **...** by: **...**

Next scheduled Full Calibration is due: **...** Date of this Calibration: **...**

Revision - 0 Contact Information: **...** Reference: **...**

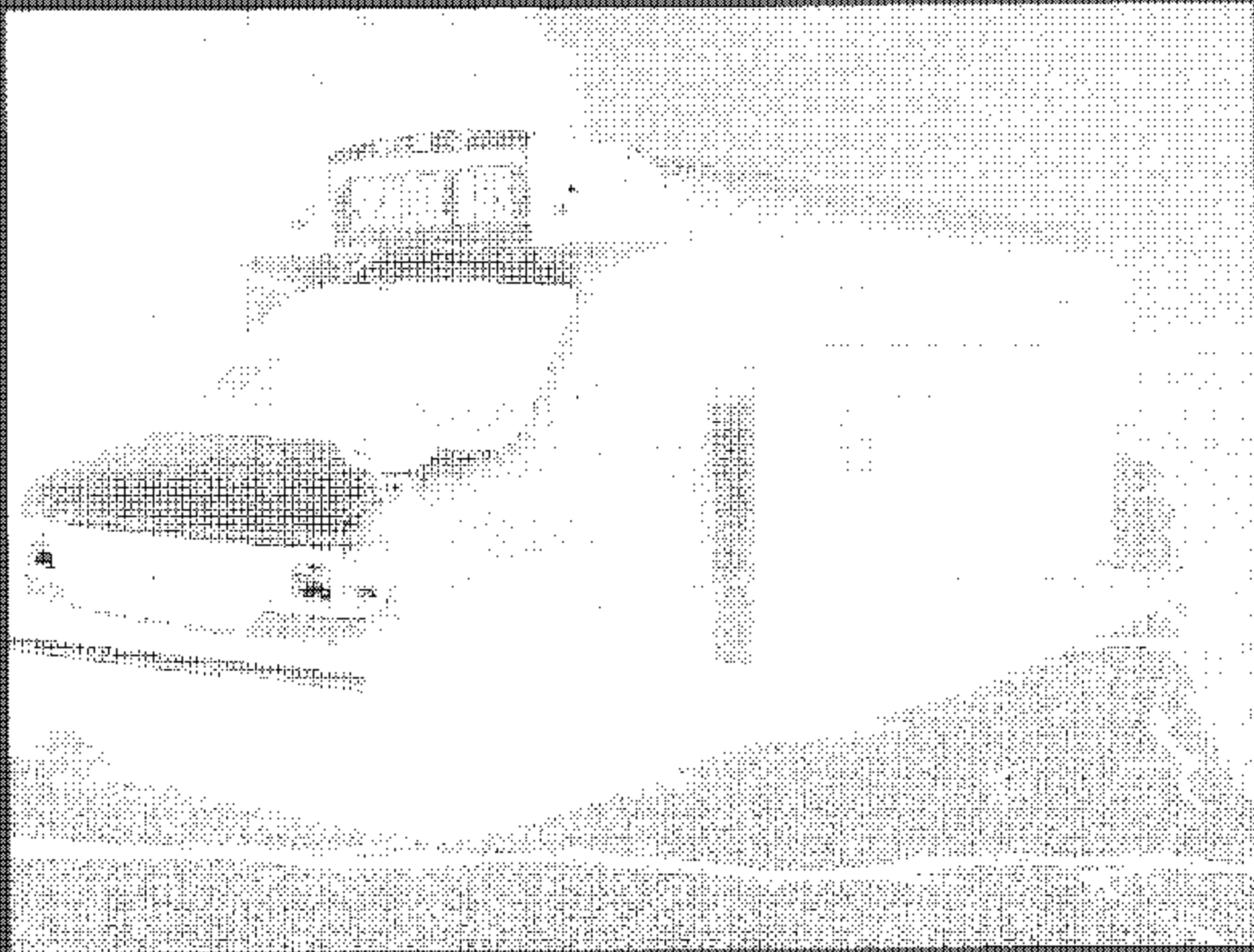
SECTION 5
PHOTOGRAPHS

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Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

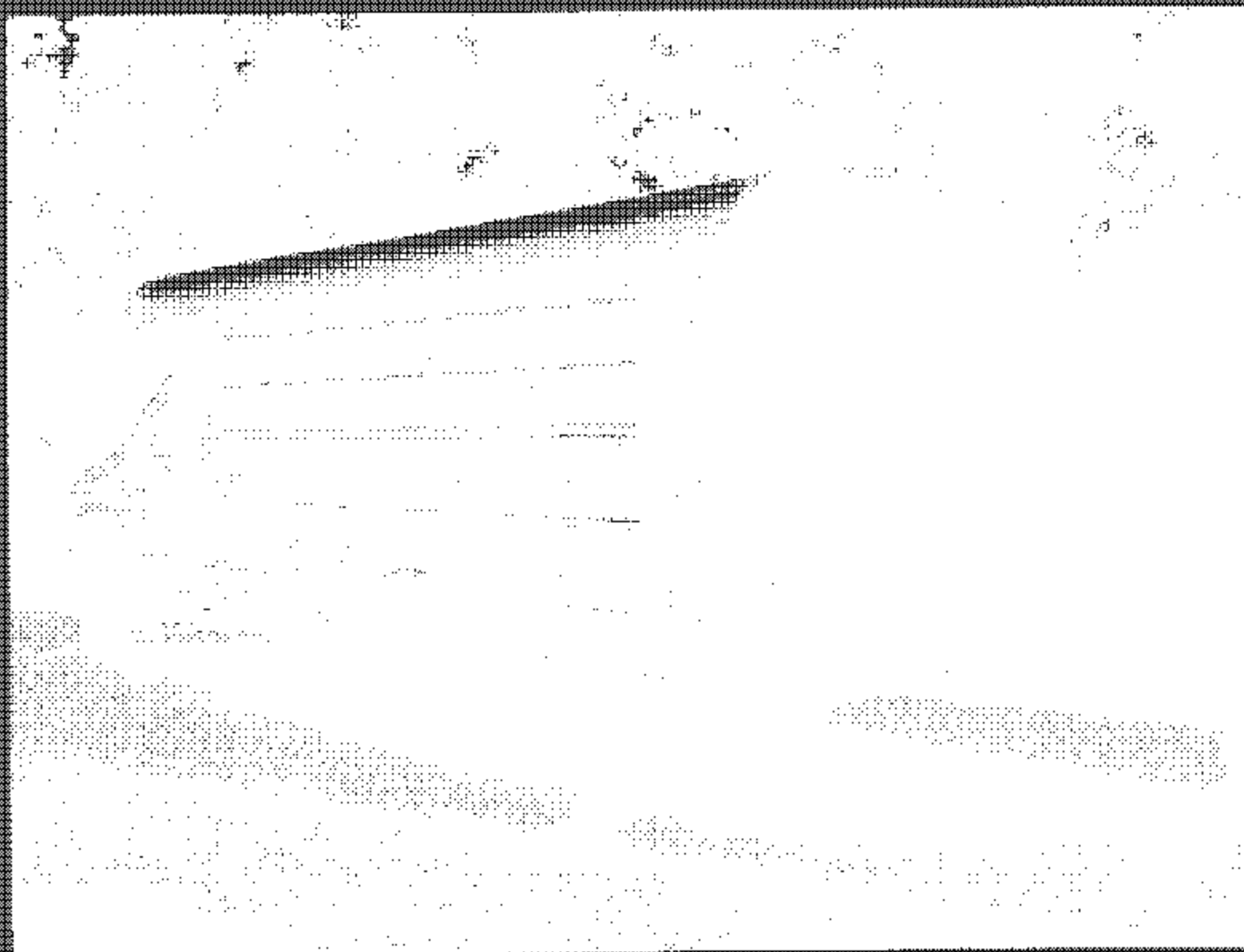
NHTSA No. C40902



Three-Quarter Frontal View of Left Side of Test Vehicle

Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

NHTSA No: C40902

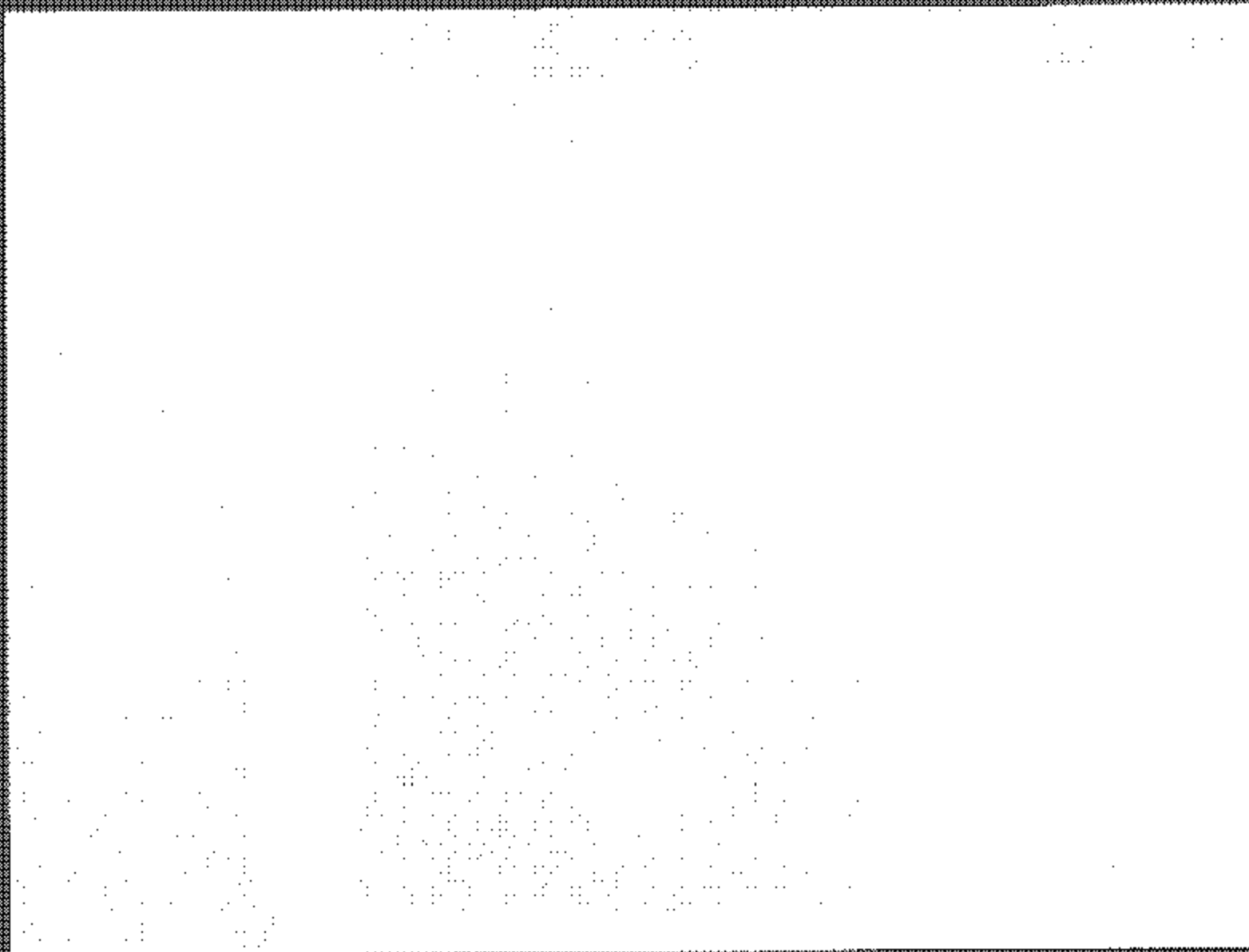


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Three-Quarter Rear View from Left Side of Vehicle

Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

NHTSA No. C46902



Vehicle Certification

Test Vehicle: 2004 Corbett 36 Passenger School Bus
Procedure: FMVSS 120

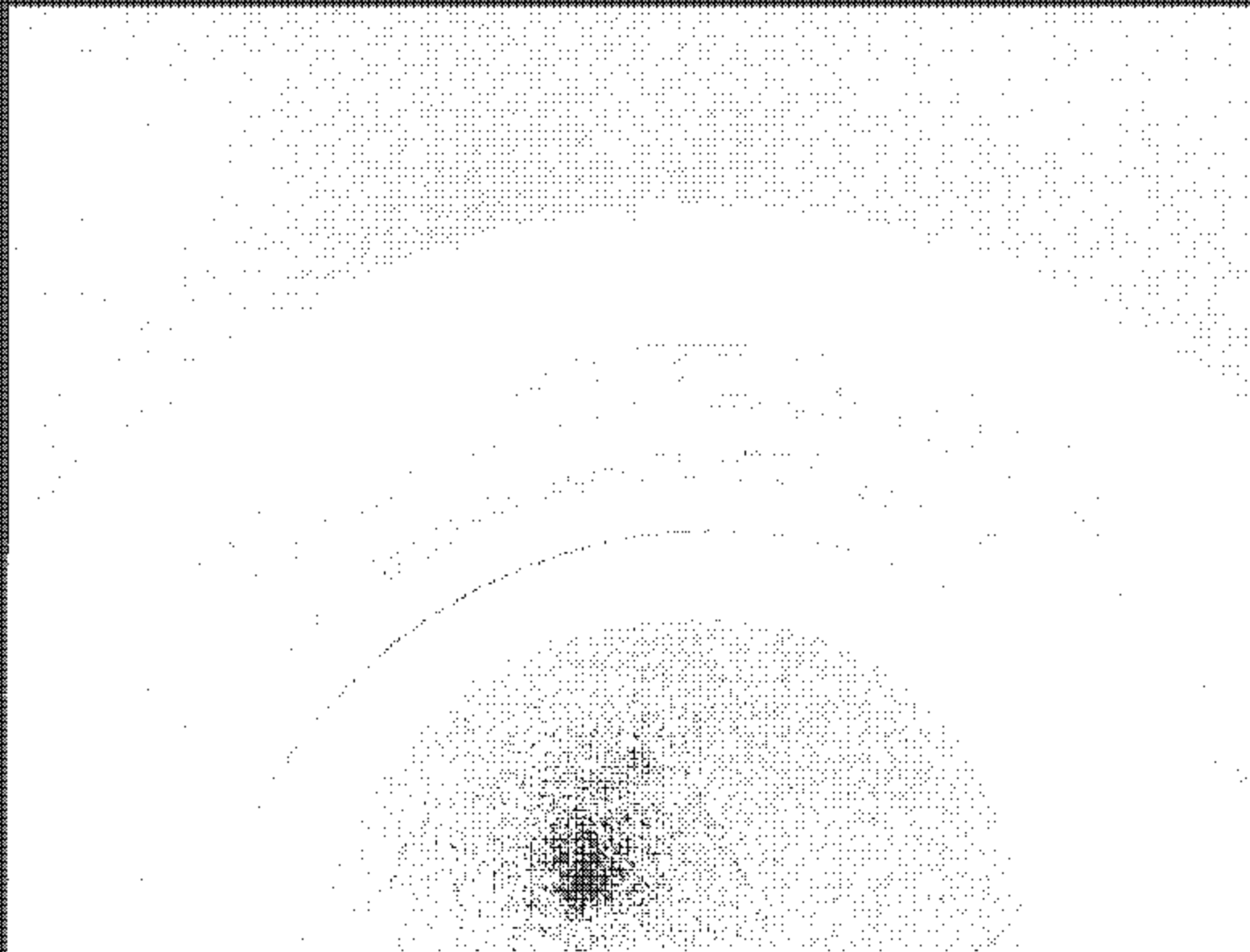
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Tire Information Label

Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

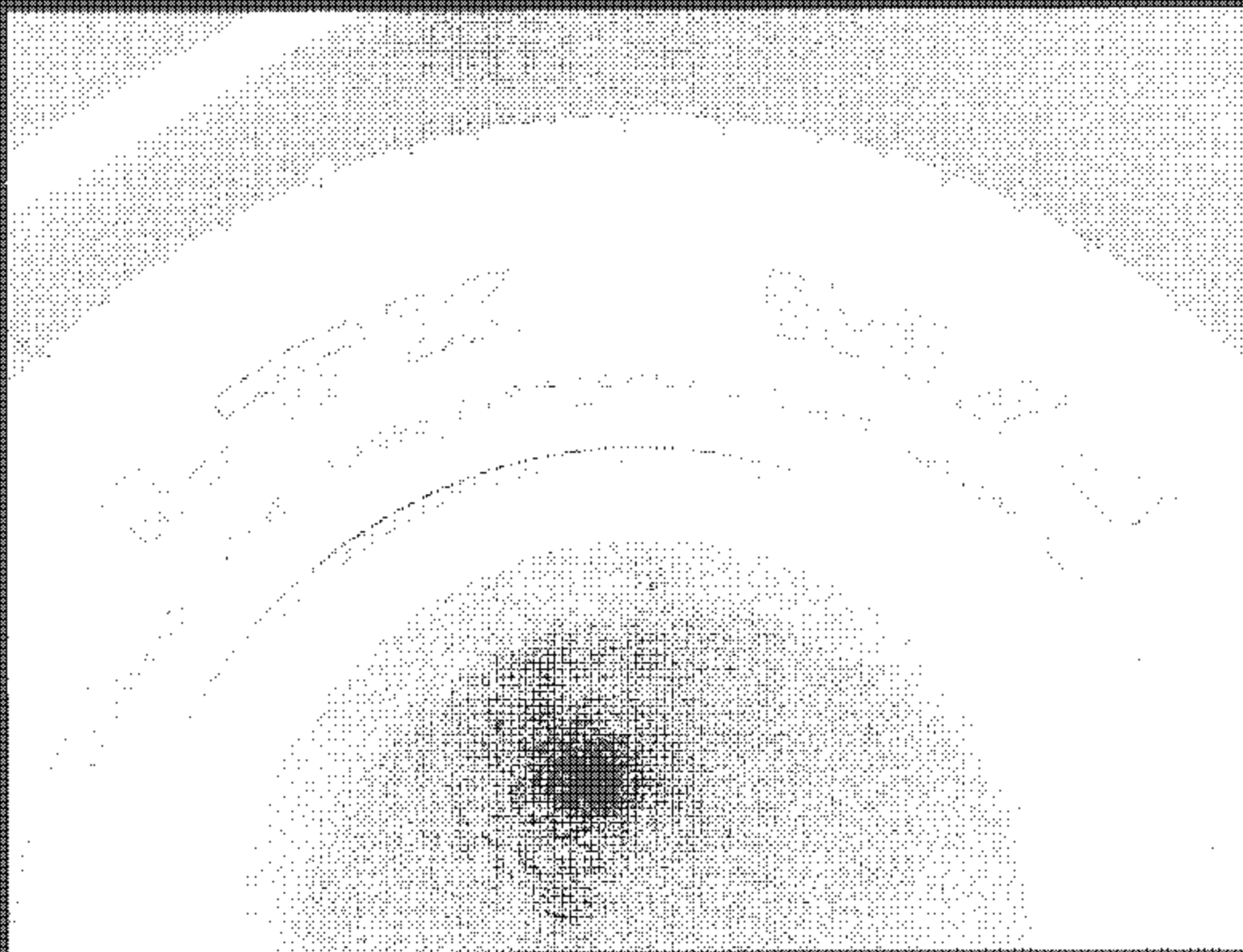
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Right Front Tire Manufacturer

Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

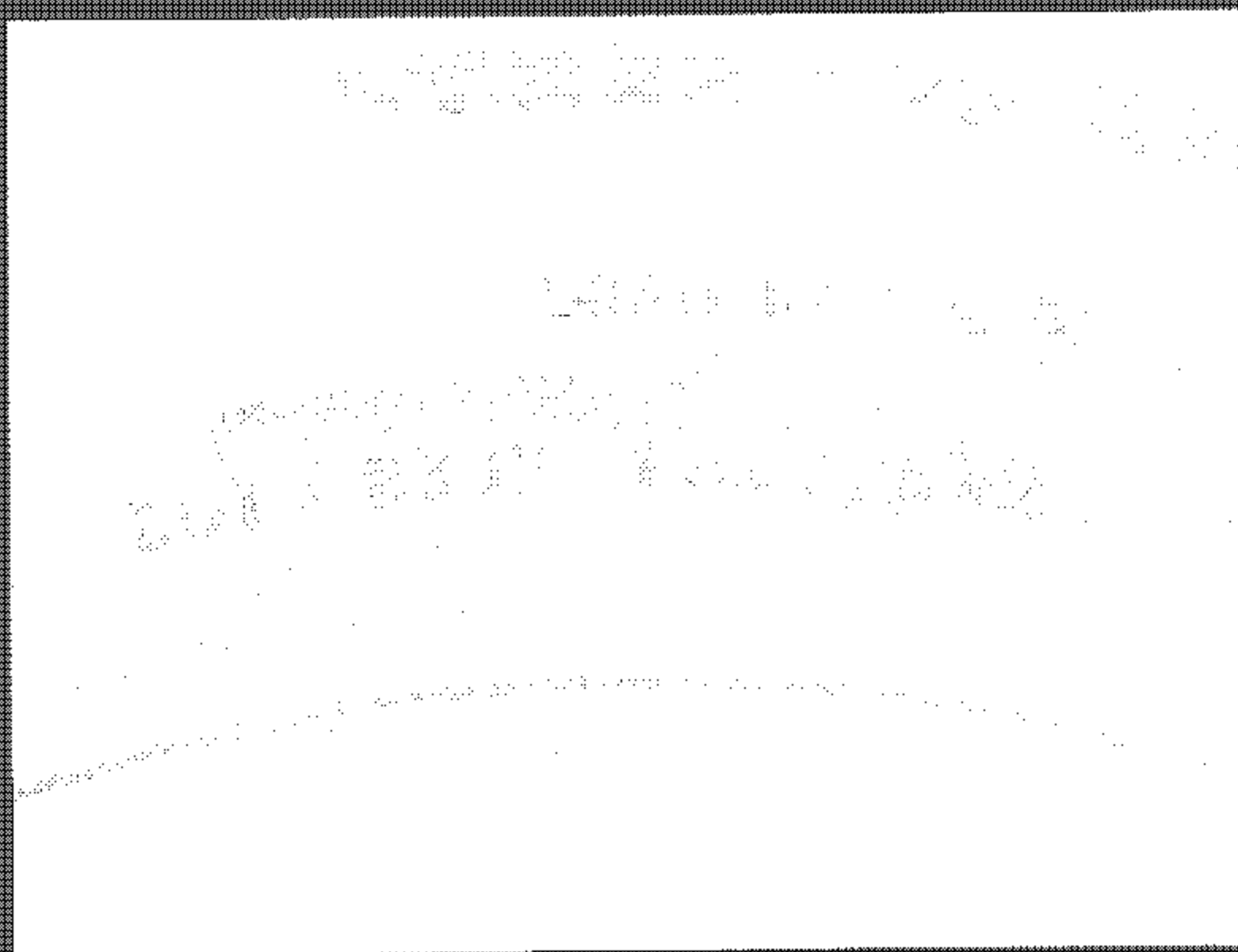
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Right Front Tire Model Number

Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

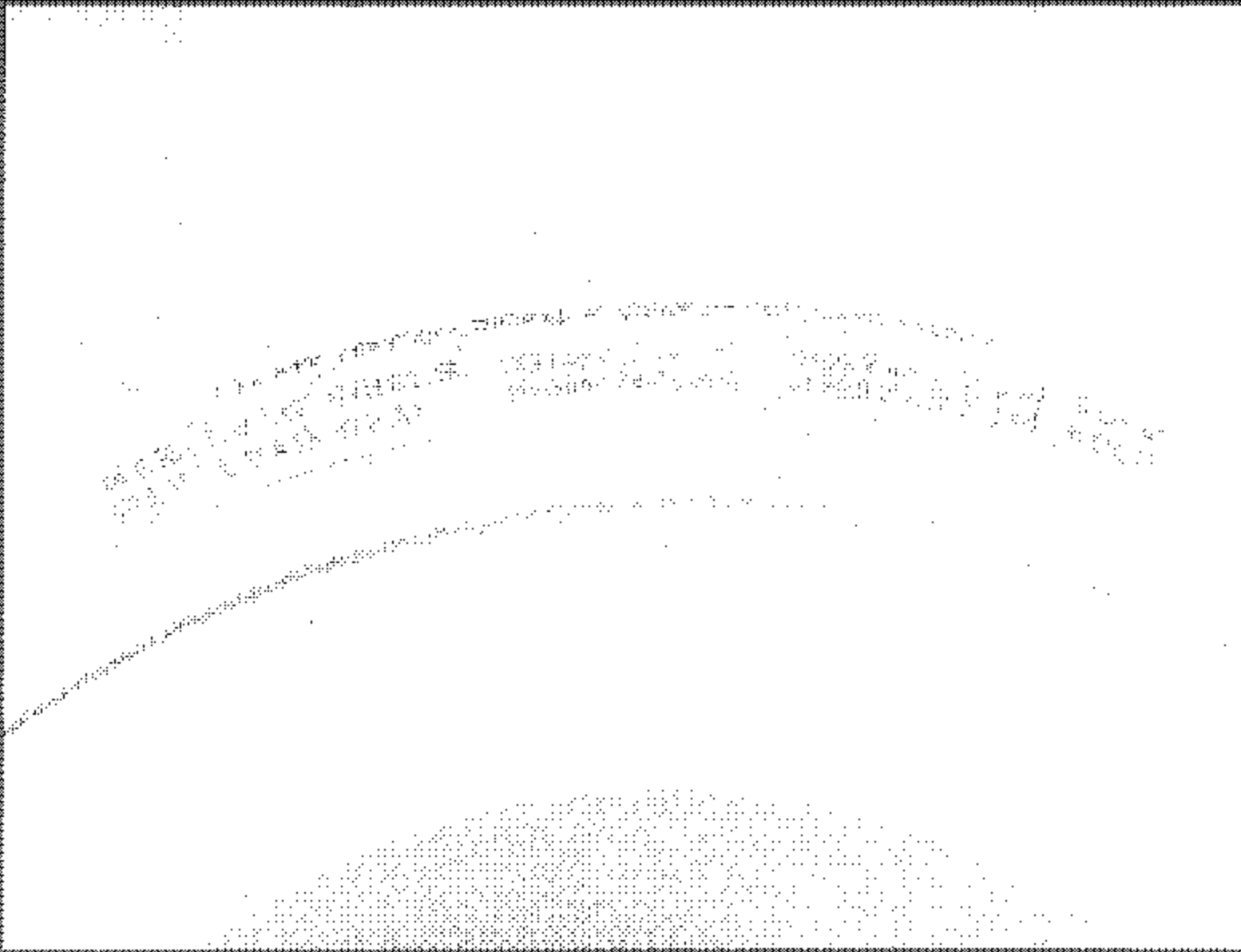
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Right Front Tire DOT Serial Number

Test Vehicle: 2004 Corball 30 Passenger School Bus
Procedure: FMVSS 120

NHTSA No.: C40002

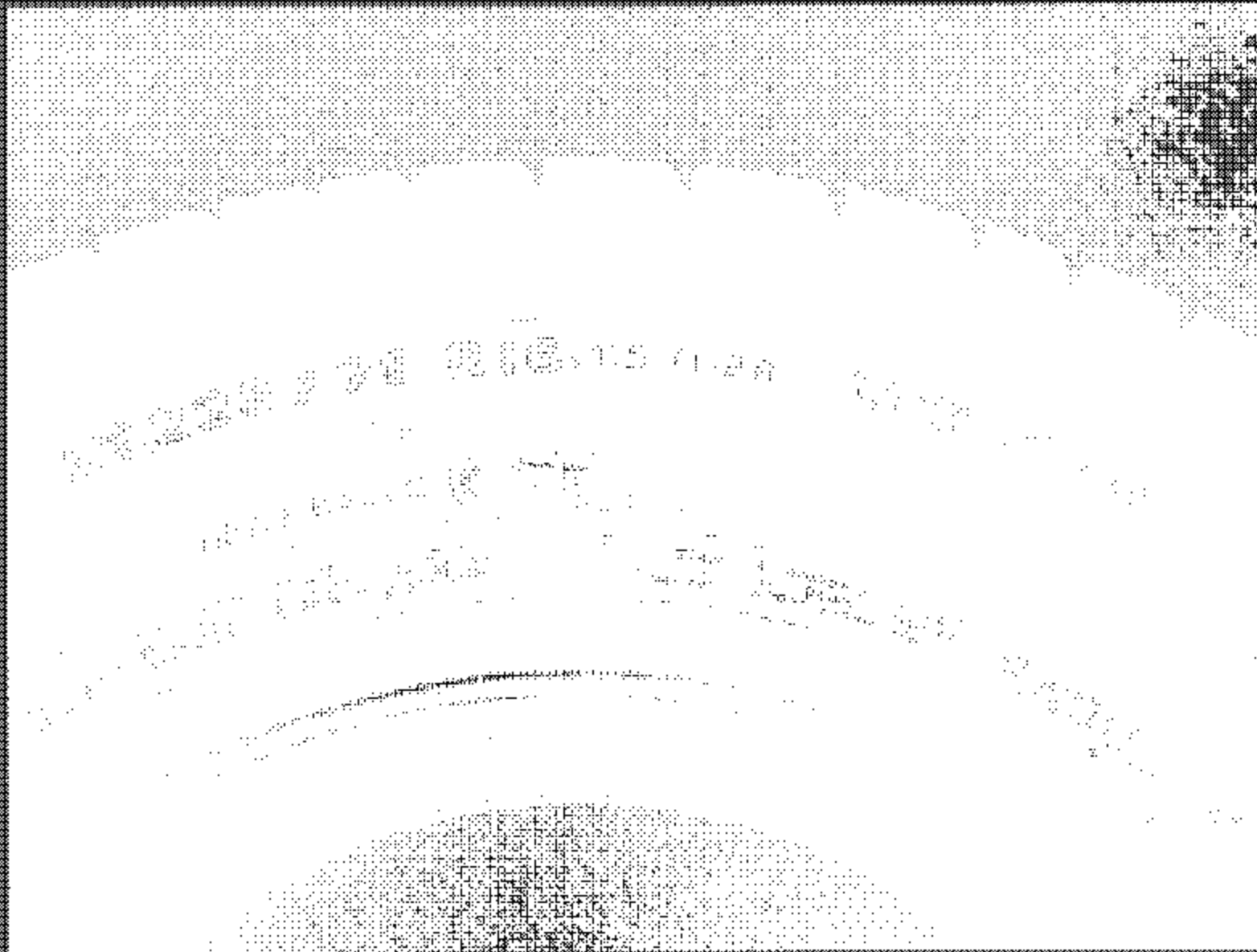


Right Front Tire Load Ratings

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Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

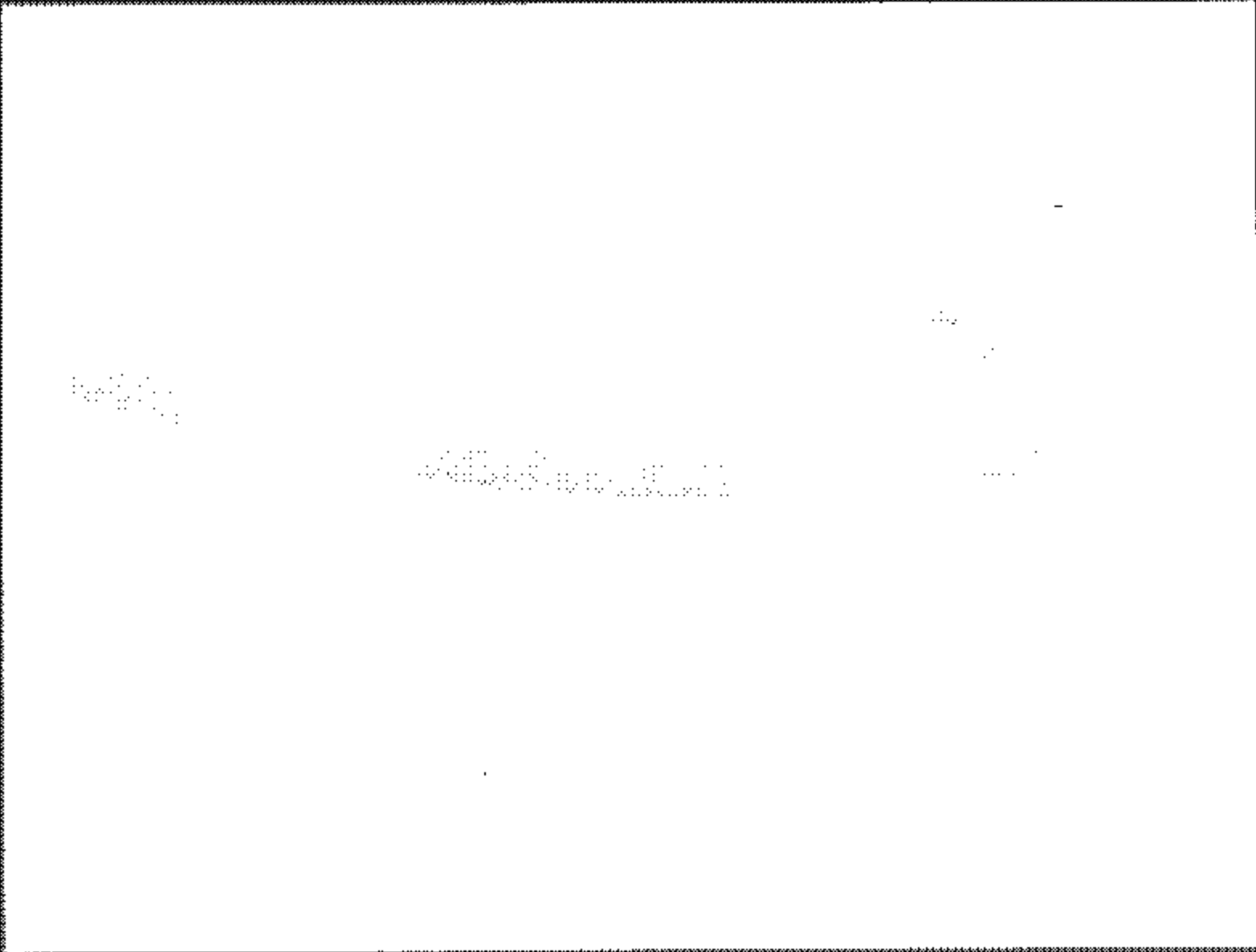
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Right Front Tire Size Designation

Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

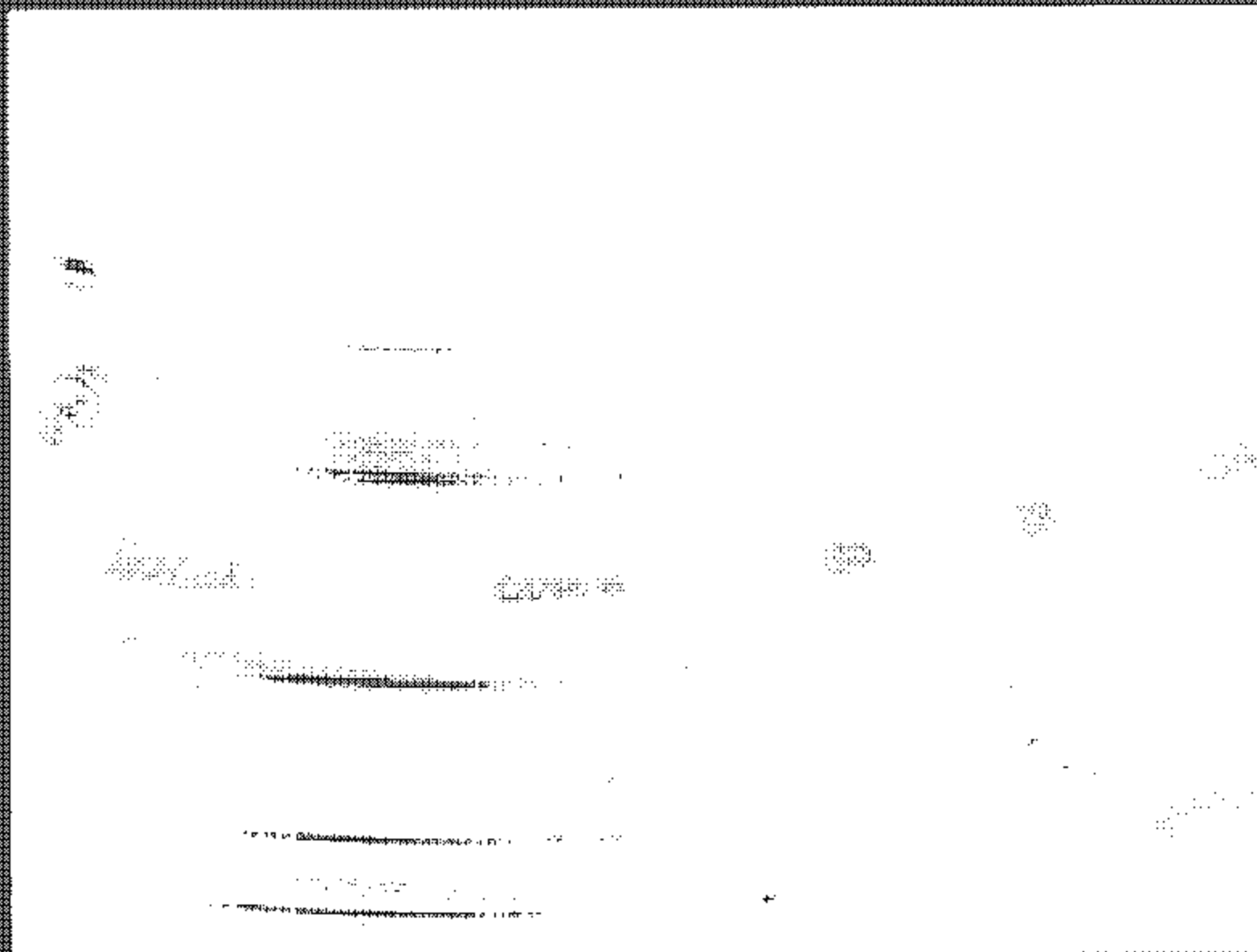
NHTSA No: C40802



Right Front Rim Manufacturer

Test Vehicle: 2004 Corbett 30 Passenger School Bus
Procedure: FMVSS 120

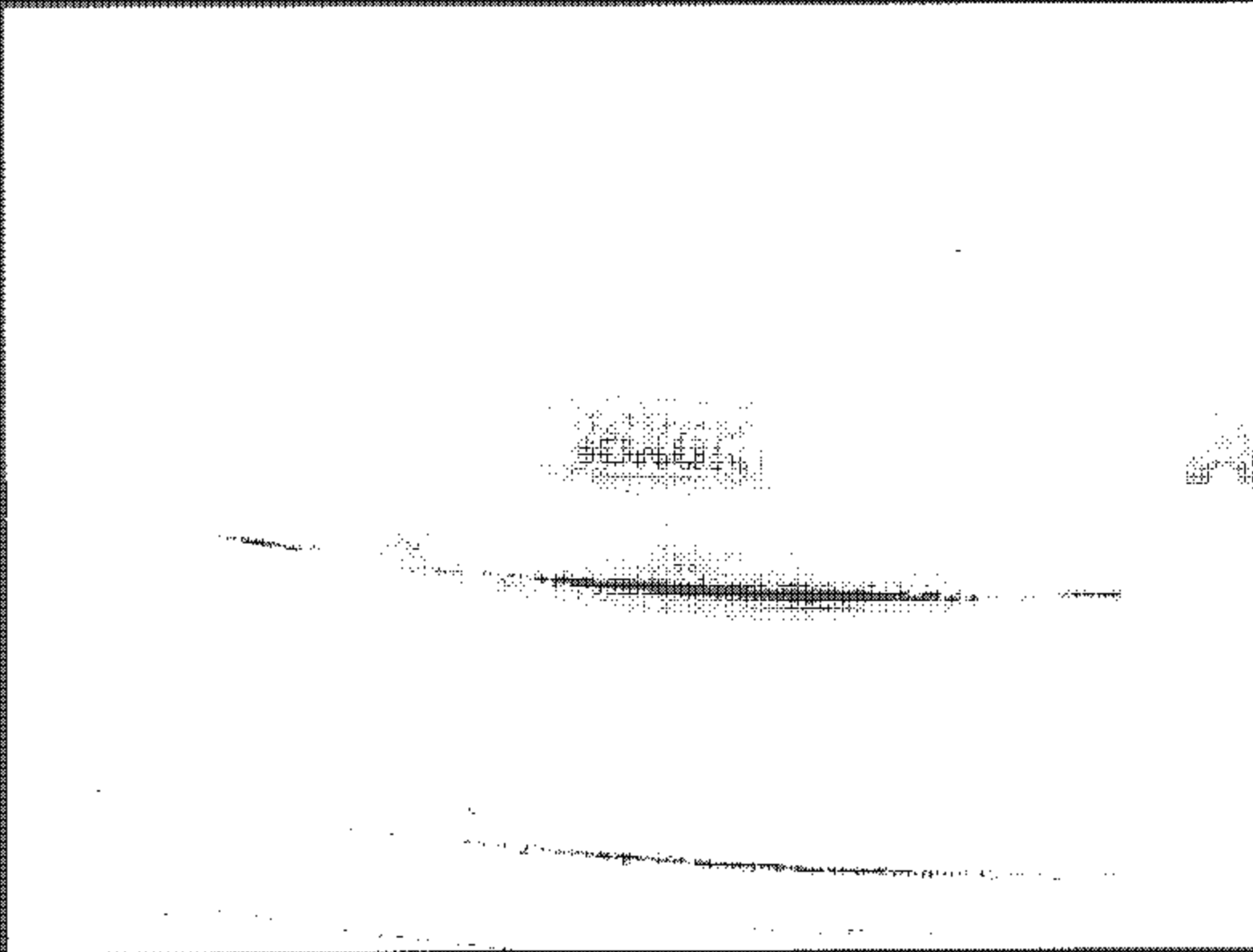
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Right Front Rim DOT, and Source of Published Information, and Date of Manufacture Markings

Test Vehicle: 2004 Corbell 30 Passenger School Bus
Procedure: FMVSS 120

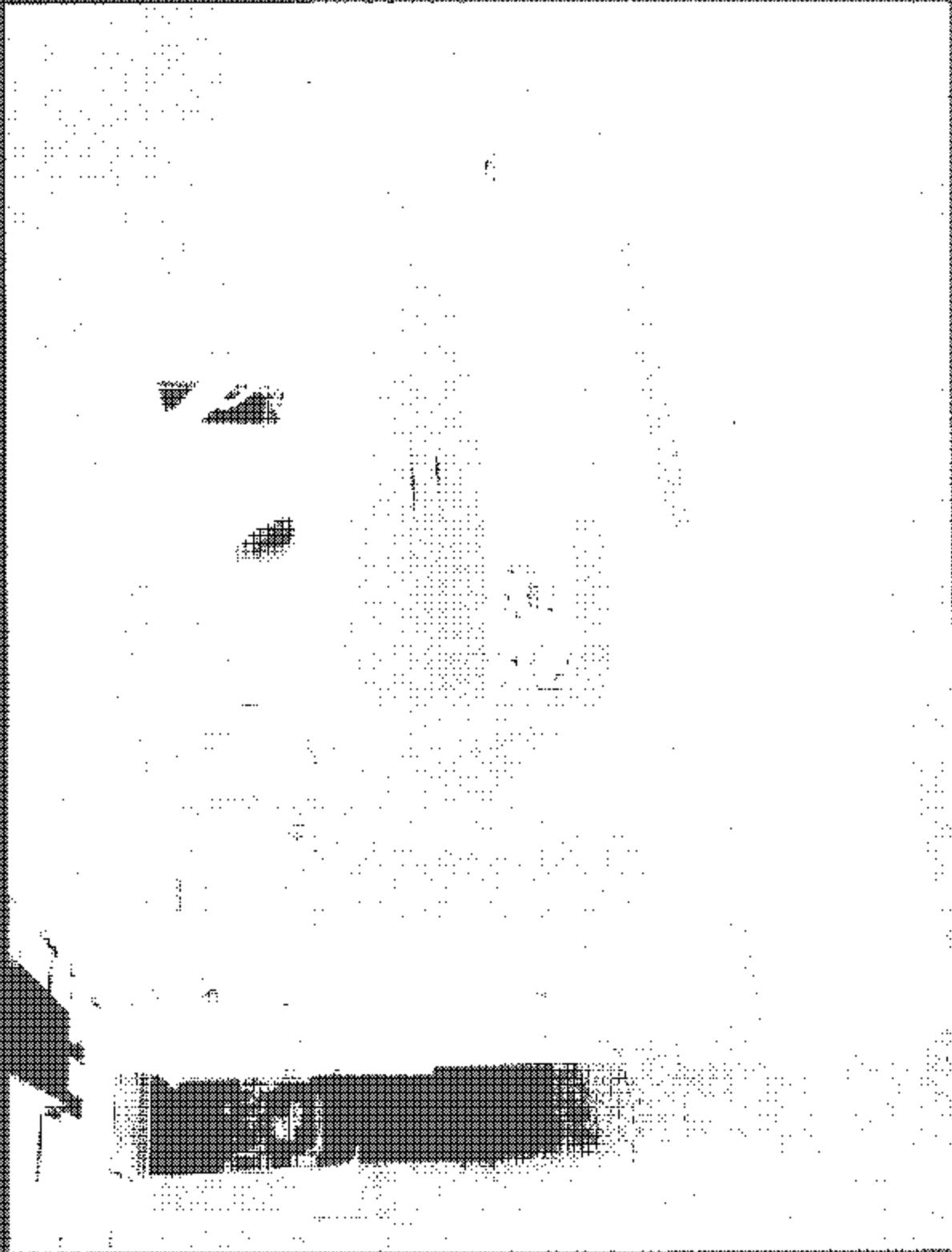
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Right Front Rim Size

Test Vehicle: 2004 Coxwell 30 Passenger School Bus
Procedure: FMVSS 120

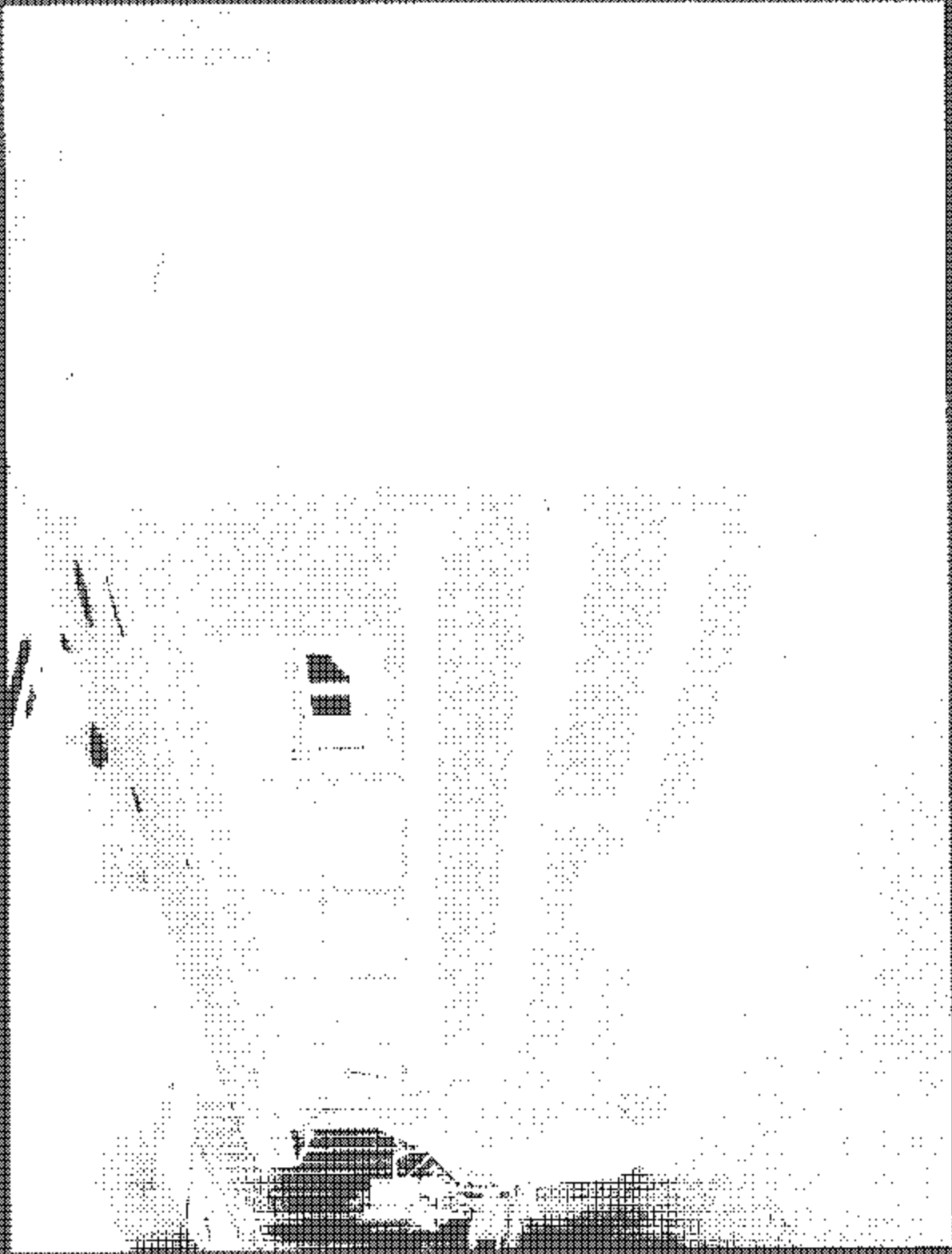
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Vehicle on Scales Doing Measurement of Front Axle Loads

Test Vehicle: 2004 Chevrolet 50 Passenger School Bus
Procedure: FMVSS 120

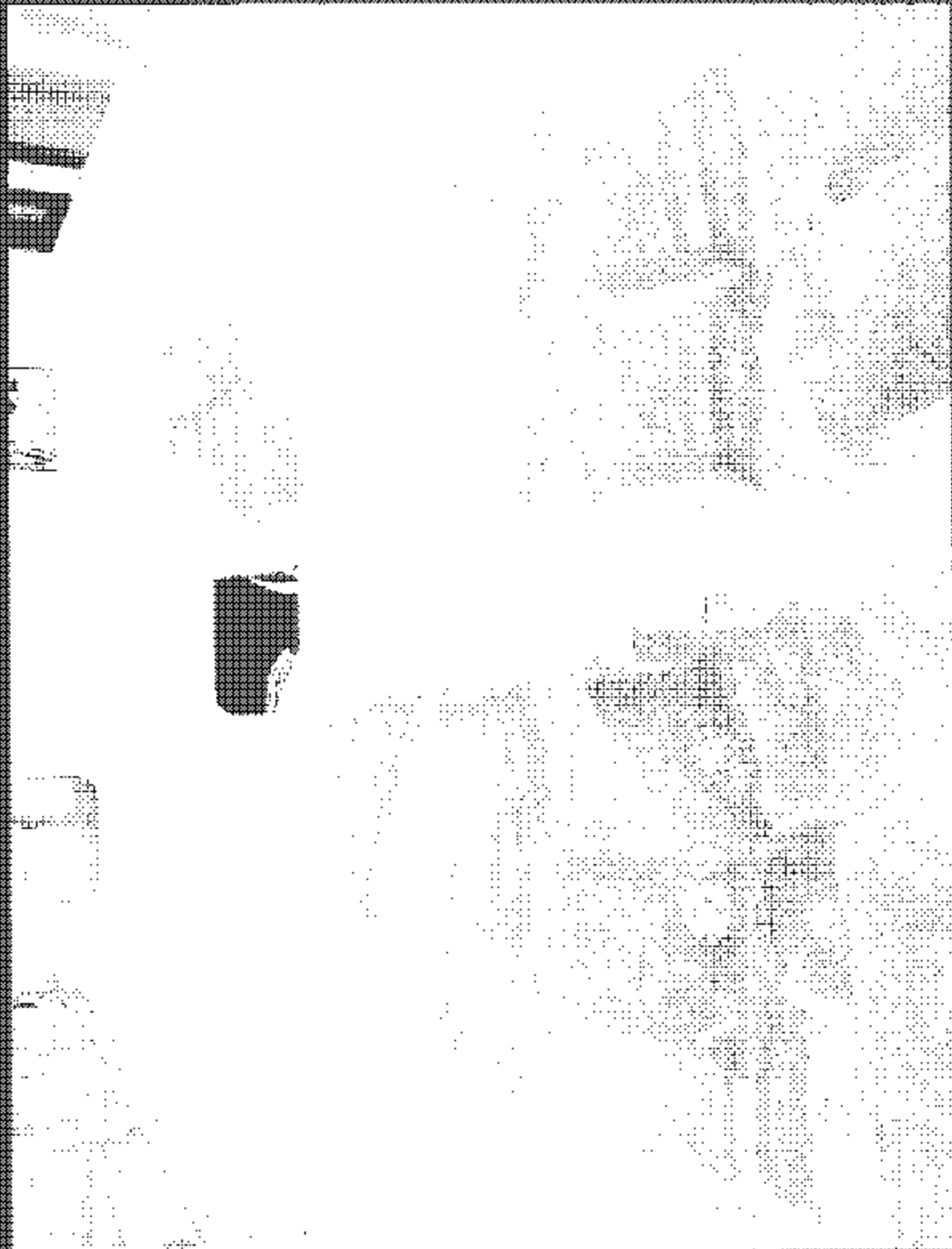
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Vehicle on Scales Doing Measurement of Rear Axle Load

Test Vehicle: 2004 Corolla 20 Passenger School Bus
Procedure: FMVSS 128

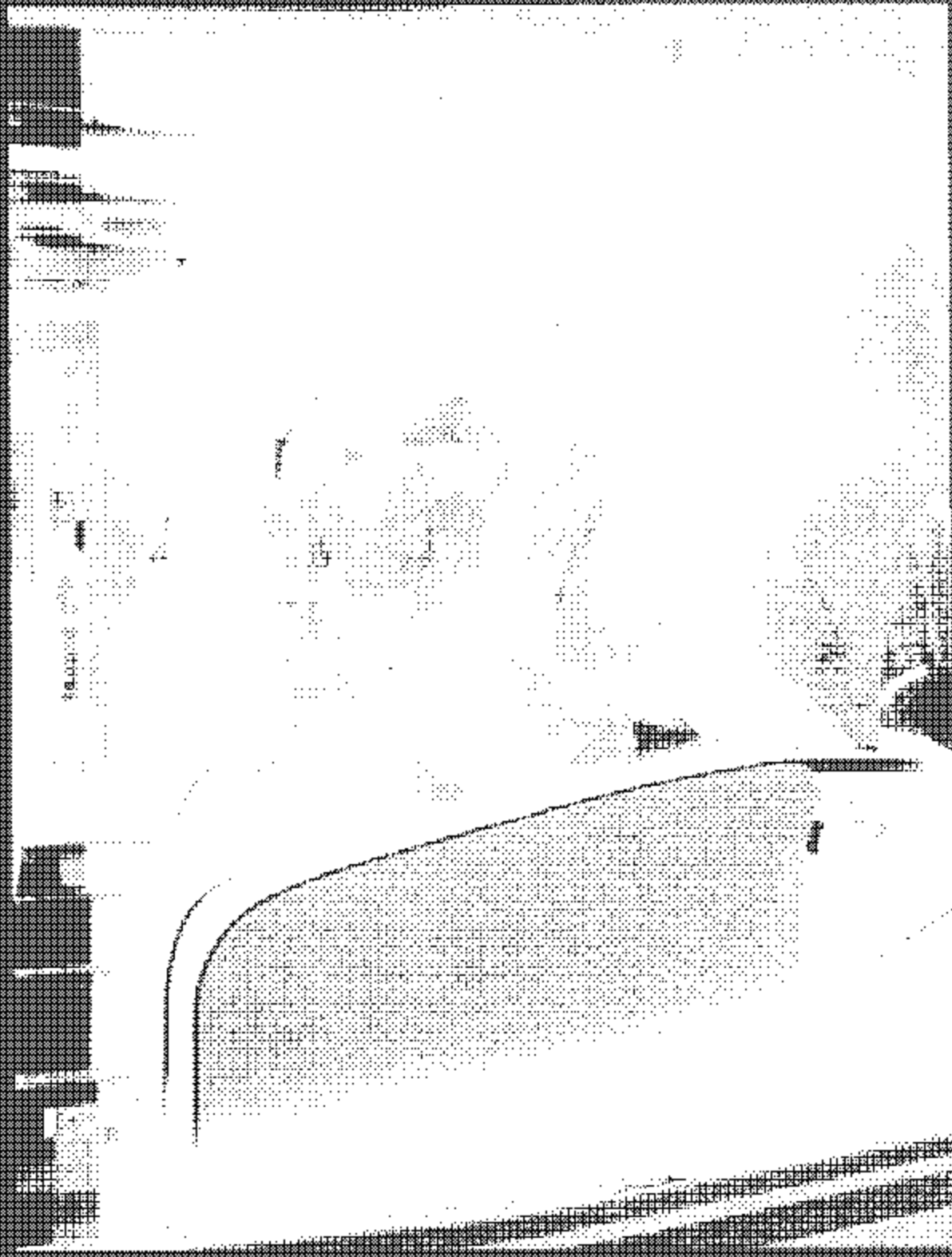
NHTSA No.: C40902



Simulated Occupant Loading

Test Vehicle: 2004 Corolla 50 Passenger School Bus
Procedure: FMVSS 120

NHTSA No.: C-408102



Simulated Cargo Loading