REPORT NUMBER: 131SB-MGA-2011-001

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 131SB SCHOOL BUS PEDESTRIAN SAFETY DEVICES

2011 STARCRAFT QUEST SCHOOL BUS
NHTSA NO.: CB0902

PREPARED BY:
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BURLINGTON, WI 53105

TEST DATE: FEBRUARY 14, 2011

FINAL REPORT DATE: FEBRUARY 17, 2011

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NVS-220
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Prepared by: _____ Date: February 17, 2011
Eric Peschman, Project Engineer

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FINAL REPORT ACCEPTED BY:

_____

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Date of Acceptance

Technical Report Documentation Page

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4. Title and Subtitle Final Report of FMVSS 131 Compliance Testing of 2011 Starcraft Quest School Bus NHTSA No.: CB0902		*5. Report Date* February 17, 2011 *6. Performing Organization Code* MGA	
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9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-08-D-00075	
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15. Supplementary Notes			
16. Abstract Compliance tests were conducted on the subject, 2011 Starcraft Quest School Bus, NHTSA No.: CB0902, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-131SB-01 for the determination of FMVSS 131 compliance. Test failures identified were as follows: None			
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SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted by MGA Research Corporation-Wisconsin Operations on a 2011 Starcraft Quest School Bus, NHTSA No.: CB0902, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-131SB-01 to determine compliance to the requirements of Federal Motor Vehicle Safety Standard (FMVSS) 131, "School Bus Pedestrian Safety Devices."

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-08-D-00075.

SECTION 2
TEST DATA SUMMARY

Based on the tests performed, the 2011 Starcraft Quest School Bus, NHTSA No.: CB0902, appears to meet all of the requirements of FMVSS 131SB. See Test Summary Data Sheets on the following pages.

FMVSS 131SB – SCHOOL BUS PEDESTRIAN SAFETY DEVICES

VEHICLE INFORMATION AND TEST SUMMARY

Test Vehicle: **2011 Starcraft Quest School Bus** NHTSA No.: **CB0902**
Test Lab: **MGA Research Corporation** Test Date: **02/14/11**

VIN	1GB3G3BG2B1112157	Chassis Cab	Yes
No. of Stop Signal Arms	1	Rear Engine	No
Pass. Capacity (driver included)	29	Tire Size (on bus)	LT225/75R16E
Stop Signal Arm Manufacturer	Transpec Worldwide		

DATA FROM CERTIFICATION LABEL

Final Stage Manufacturer	Starcraft	Date of Mfg.	11/10
Incomplete Vehicle Manufacturer	Chevrolet	Date of Mfg.	10/10
GVWR (kg)	5,579	GAWR Front (kg)	1,950
		GAWR Rear (kg)	3,901

TEST SUMMARY

	PASS/FAIL or N/A
Dimensional Requirements (S5.1)	**PASS**
Surface Content and Labeling (S5.2)	**PASS**
Conspicuity Requirements (S5.3)	**PASS**
Location and Position Requirements (S5.4)	**PASS**
Arm Operation Requirements (S5.5)	**PASS**

Note: The 2011 Starcraft Quest School Bus was only equipped with one stop signal arm.

SECTION 3
COMPLIANCE TEST DATA

FMVSS 131SB – DATA SHEET 1

DIMENSIONS OF STOP SIGNAL ARM (S5.1)

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

"Regular octagon" with diameter of at least 450 mm (point to point).

	Forward Signal Arm (mm)
Diameter 1	495
Diameter 2	493
Diameter 3	493
Diameter 4	494
Range (max. – min.)	2

Requirements	Yes, No, N/A
Are all octagon diameter values ≥ 450 mm?	Yes
Is range of octagon diameter values ≤ 12 mm?	Yes
Are all octagon chord dimensions equal within 6 mm?	Yes

Test Results		PASS/FAIL
S5.1	Dimensions of Stop Signal Arm	**PASS**

Recorded By: 

Approved By: 

Date: February 14, 2011

FMVSS 131SB – DATA SHEET 2

SURFACE CONTENT AND LABELING (S5.2)

Test Vehicle: **2011 Starcraft Quest School Bus** NHTSA No.: **CB0902**
Test Lab: **MGA Research Corporation** Test Date: **02/14/11**

Requirements	Forward Signal Arm	
	Front Side	Aft Side
Color RED except for border & legend (Yes/No)	Yes	Yes
Color of border is WHITE (Yes/No)	Yes	Yes
Color of word “STOP” is WHITE (Yes/No)	Yes	Yes
Word “STOP” is in upper case letters (Yes/No)	Yes	Yes
Width of border (≥ 12 mm)	13.5 mm	15.0 mm
Percent of border obscured by mounting brackets, clips, or bolts, or other components (≤ 15%)	0%	0%
Height of letters (≥ 150 mm)	156.0 mm	156.0 mm
Stroke width of letters (≥ 20 mm)	26.7 mm	26.5 mm

Test Results		PASS/FAIL
S5.2	Surface content and labeling	**PASS**

Recorded By: 

Approved By:  Date: February 14, 2011

FMVSS 131SB – DATA SHEET 3

CONSPICUITY (S5.3)

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

The Stop Signal Arm shall comply with either S5.3.1 or S5.3.2, or both.

REFLECTORIZED MATERIAL (S5.3.1)

Requirements	Forward Signal Arm	
	Front Side	Aft Side
Entire surface of stop signal arm reflectorized except for mounting brackets, clips, bolts, or other necessary components. Front side of rearmost stop signal arm must not be reflectorized. (Yes/No)	Yes	Yes
Percent of entire surface obscured by mounting brackets, clips, bolts or other components necessary for mechanical or electrical operation. (7.5% max. each side)	0%	0%

FMVSS 131SB – DATA SHEET 3

CONSPICUITY (S5.3)

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

OPTIONAL ILLUMINATED LETTERING (S5.3.1.1)

	Stop Signal Arm
Item	Forward
Does the stop sign(s) have illuminated lettering? If optional illuminated lettering is installed, the following requirements apply in addition to reflectorized surface. (Yes/No)	No

Requirements		Forward Signal Arm	
		Front Side	Aft Side
Only Red lamps used (Yes/No)		N/A	N/A
Red lamps form the complete shape of each letter of the legend. (Yes/No)		N/A	N/A
Red lamps centered within stroke of each letter (Yes/No) or Red lamps outline each letter in immediately surrounding area (Yes/No)		N/A	N/A
The shape of each letter remains constant (Yes/No)		N/A	N/A
Net stroke width ≥ 15 mm (stroke width minus lamp width)	"S"	N/A	N/A
	"T"	N/A	N/A
	"O"	N/A	N/A
	"P"	N/A	N/A
Lamps on each side of the signal arm flash (60-120 flashes/min.)		N/A	N/A
Lamps current "on" time of 30% to 75% of the total flash cycle		N/A	N/A
Total current "on" time for the two terminals shall be between 90-110% of the total flash cycle.		N/A	N/A
If Xenon short-arc lamps – "off" time before each flash of at least 50% of the total flash cycle.		N/A	N/A

FMVSS 131SB – DATA SHEET 3

CONSPICUITY (S5.3)

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

RED FLASHING LAMPS (S5.3.2)

Requirements	Forward Signal Arm	
	Front Side	Aft Side
Are the Red Lamps centered on the vertical centerline? (At least 2, enter quantity)	Yes – 2	Yes – 2
Is one lamp at extreme top and another at extreme bottom? (Yes/No)	Yes	Yes
Do the lamps on each side of the signal arm flash alternately? (60-120 flashes/min.) (Yes/No)	Yes – 72	Yes – 72
Lamps current "on" time of 30% to 75% of the total flash cycle. (Yes/No)	Yes – 50%	Yes – 50%
Total current "on" time for two terminals shall be between 90 and 110% of the total flash cycle. (Yes/No)	Yes	Yes
If Xenon short-arc lamps-"off" time before each flash of at least 50% of total flash cycle. (Yes/No)	N/A	N/A
Is there a symbol "DOT" on each lamp lens? (Yes/No) (Not Required)	Yes	Yes
Additional markings on lamp lenses	Transpec SAE-1-95 DOT	Transpec SAE-1-95 DOT

MARKINGS ON THE FLASHER

Make	In Power LLC	Serial No.	LOT – 1004121403
Model	SBF90	Date of Mfg.	N/A

Test Results		PASS/FAIL or N/A
S5.3.1	Reflectorized Material	**PASS**
S5.3.1.1	Optional Illuminated Lettering	N/A
S5.3.2	Red Flashing Lamps	**PASS**

Recorded By: _____

Approved By: _____ Date: February 14, 2011

FMVSS 131SB – DATA SHEET 4

STOP SIGNAL ARM INSTALLATION (S5.4)

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

Dimensions and angles measured with Signal Arm in the extended position.

Requirements	Stop Signal Arm
	Forward
Signal arm perpendicular to side of bus (Measure angle between vertical plane of side of bus and vertical plane of the signal arm.) 90 ± 5°	93.5°
Top edge of signal arm parallel to horizontal plane (Measure angle between vertical plane of side of bus and the top edge of the signal arm.) 90 ± 5°	89.7°
Top edge of signal arm not more than 152.4 mm from a horizontal plane tangent to lower edge of frame of passenger window immediately behind the driver's window:	
Measure top corner closest to the school bus to the bottom edge of the window.	8 mm
Measure top corner furthest from school bus to the bottom edge of the window.	9 mm
Vertical centerline of signal arm not less than 228.6 mm away from side of bus	382 mm
Stop signal arm(s) installed on left side of bus (Yes, No, or Not Applicable)	Yes

Test Results		PASS/FAIL or N/A
S5.4	Stop Signal Arm Installation	**PASS**

Recorded By: _____

Approved By: _____ Date: February 14, 2011

FMVSS 131SB – DATA SHEET 5

STOP SIGNAL ARM OPERATION (S5.5)

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

Stop Signal Arm(s) shall be automatically extended, at a minimum, whenever the red signal lamps on the bus required by FMVSS 108 are activated; except that a manual override device may be installed that prevents automatic extension.

Requirements	Stop Signal Arm
	Forward
Signal Arm(s) automatically extended when red lights are activated and override device is not activated. (Yes, No, or Not Applicable)	N/A
If a MANUAL OVERRIDE DEVICE is installed, enter applicable data below:	
Mechanism for activating the override device is within reach of the school bus driver (Yes/No)	N/A
While the override device is activated; there is a continuous or intermittent signal audible to the driver unless equipped with optional cut-off timing device (Measure duration ≥ 10 min.) (Yes/No)	N/A
If audible signal is equipped with optional cut-off timing device, it sounds for at least 60 seconds while the manual override is activated. (Measure 3 times, duration ≥ 60 sec.)	N/A
If audible signal is equipped with optional cut-off timing device, iIt automatically recycles every time the service entry door is opened while the engine is running and the manual override is engaged. (Recycle 3 times, Yes/No each cycle)	N/A

Describe location and mode of operation of the manual override control, if installed:

Test Results		PASS/FAIL or N/A
S5.5	Stop Signal Arm Operation	N/A

Recorded By: 

Approved By: 

Date: February 14, 2011

SECTION 4

INSTRUMENTATION AND EQUIPMENT LIST

Test Vehicle: **2011 Starcraft Quest School Bus** NHTSA No.: **CB0902**
Test Lab: **MGA Research Corporation** Test Date: **02/14/11**

Identify the instruments used during this test and record their make, model, serial number, range, accuracy, and calibration date.

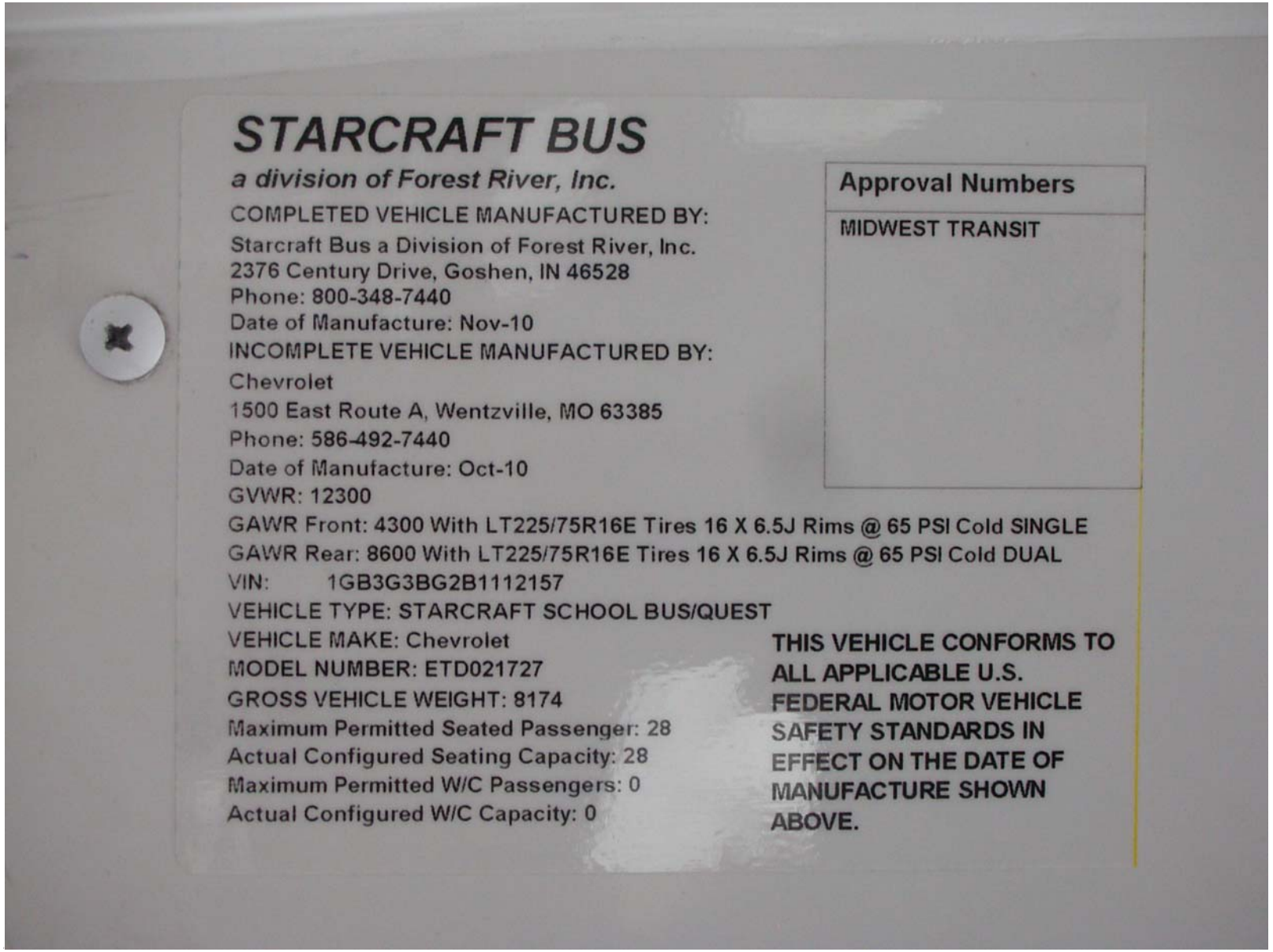
	Digital Caliper	Inclinometer	Tape Measure
Make	Mitutoyo	Digital Protractor	Stanley
Model	CD 6” CS	Pro 360	Powerlock 3M
Serial No.	07416506	002	573
Range	0 to 150 mm	0 to 360 degrees	0 to 8 m
Accuracy	0.01 mm	0.1 degree	1 mm
Cal. Date	12/28/10	Daily	12/06/10
Cal. Due	06/28/11	N/A	06/06/11

SECTION 5
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

3/4 Frontal View from Left Side of Vehicle with Stop Signal Arm



Vehicle Certification Label

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

Manufacturer Information Label

Front Close Up View of Stop Signal Arm

Back Close Up View of Stop Signal Arm

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

Close Up View of System Controls

Test Vehicle:	**2011 Starcraft Quest School Bus**	NHTSA No.:	**CB0902**
Test Lab:	**MGA Research Corporation**	Test Date:	**02/14/11**

Switch Console Relative to the Driver Seating Position

Flasher Unit