

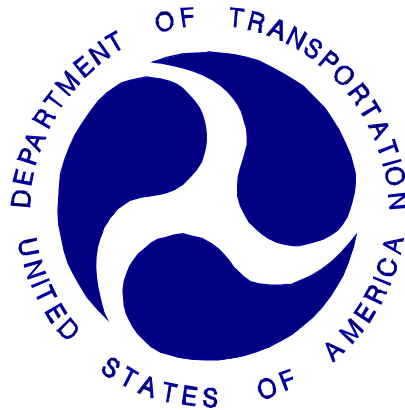
REPORT NUMBER: NCAP305I-CAL-12-024

NEW CAR ASSESSMENT PROGRAM (NCAP)
FMVSS No. 305 Indicant Test

Honda Motor Co., LTD
2012 Honda CR-Z 3DR Base
Two-Door Coupe

NHTSA No: MC5319

CALSPAN
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225



March 26, 2012

FINAL REPORT

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Rulemaking
Mail Code: NVS-111
1200 New Jersey Avenue, SE
Room W43-410
Washington, DC 20590

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-06-D-00024. This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufactures' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: _____
Vanessa Walsh, Test Engineer

Approved By: _____
David J. Travale, Technical Director
Transportation Operations

Approval Date: _____

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. NCAP305I-CAL-12-024	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of Indicant FMVSS 305 Frontal Impact Testing of a 2012 Honda CR-Z 3DR Base Two-Door Coupe NHTSA No.: MC5319		5. Report Date March 26, 2012	
		6. Performing Organization Code CAL	
7. Author(s) Vanessa Walsh, Test Engineer David J. Travale, Technical Director		8. Performing Organization Report No. CAL-DOT-2012-024	
		9. Performing Organization Name and Address Calspan Corporation 4455 Genesee Street Buffalo, New York 14225	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards, Mail Code NVS-111 1200 New Jersey Avenue, SE, Room W43-410 Washington, D.C. 20590		10. Work Unit No.	
		11. Contract or Grant No. DTNH22-06-D-00024	
15. Supplementary Notes		13. Type of Report and Period Covered Final Report, January 27 - March 26, 2012	
		14. Sponsoring Agency Code NVS-111	
16. Abstract An FMVSS No.305 Indicant test, in conjunction with an NCAP Frontal barrier impact test was conducted on the subject 2012 Honda CR-Z 3DR Base Two-Door Coupe in accordance with the specifications of the applicable Office of Crashworthiness Standards Test Procedures for the generation of consumer information for the New Car Assessment Program (NCAP). No test failures were reported			
17. Key Words New Car Assessment Program FMVSS 305 Indicant		18. Distribution Statement <u>Copies of this report are available from:</u> National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Avenue, SE (Room E12-100) Washington, D.C. 20590 Email: tis@nhtsa.dot.gov Telephone No. (202) 366-4946	
19. Security Classification of Report UNCLASSIFIED	20. Security Classification of Page UNCLASSIFIED	21. No. of Pages 38	22. Price

TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	TEST PURPOSE AND PROCEDURE	1-1
2	SUMMARY OF TEST RESULTS	2-1
3	DATA SHEETS	3-1
	Data Sheet 1 - Test Vehicle Specifications	3-2
	Data Sheet 2 – Pre-Test Data	3-4
	Data Sheet 3 - Pre-Impact Electrical Isolation Measurements & Calculations	3-5
	Data Sheet 4 – Post-Impact Data	3-7
	Data Sheet 5 – Static Rollover Data	3-9
APPENDIX		
A	PHOTOGRAPHS	A-1

SECTION 1 TEST PURPOSE AND PROCEDURE

An FMVSS No.305 Indicant test, in conjunction with an NCAP frontal barrier impact test was conducted on the subject 2012 Honda CR-Z 3DR Base Two-Door Coupe.

The Indicant test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Test Procedure, dated January 31, 2012 to determine compliance to the requirements of Federal Motor Vehicle Safety Standard (FMVSS) No. 305, "Electric-Powered Vehicles: Electrolyte spillage and electrical shock protection" for the purpose of providing consumer information.

This FMVSS No.305 Indicant test is part of the FY 2012 New Car Assessment Program Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-06-D-00024.

SECTION 2 SUMMARY OF TEST RESULTS

A frontal barrier impact test was performed by Calspan Corporation on a 2012 Honda CR-Z 3DR Base Two Door Hybrid Coupe on January 13, 2012. Electric isolation measurements were taken immediately post-impact and observations were made relating to electrolyte spillage and battery retention. A static rollover was subsequently performed on the subject vehicle and electrical isolation measurements were taken at each stage of the rollover.

Based on the test results, the 2012 Honda CR-Z 3DR Base Two Door Hybrid Coupe appears to meet the requirements for electrolyte spillage, electrical isolation, and battery retention during FMVSS No.305 Indicant testing.

Data sheets, along with pre-test and post-test photographs of the test vehicle, are included in this report to document the test.

**SECTION 3
DATA SHEETS**

**DATA SHEET 1
TEST VEHICLE SPECIFICATIONS**

TEST VEHICLE INFORMATION:

Year/Make/Model/Body 2012 Honda CR-Z 3DR Base Two Door Coupe
NHTSA Number: MC5319
Odometer Reading: 130.4 km / 81 mi
Color: Blue

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufacturer: Honda Motor
Date of Manufacturer: 10/2011
VIN:: JHMZF1D47CS000870
GVWR: 1480 kg.

ELECTRIC VEHICLE PROPULSION SYSTEM:

Type of Electric Vehicle (Electric/Gas-Electric Hybrid/Fuel Cell-Electric Hybrid):
Gas-Electric Hybrid
Propulsion Battery Type: Ni-MH
Nominal Voltage: 100.8 DC V
Is this Vehicle equipped with an Automatic Propulsion Battery Disconnect? No
Physical Location of Automatic Propulsion Battery Disconnect, if applicable: Trunk
Auxiliary Battery Type: 12 V Acid Battery

PROPULSION BATTERY SYSTEM DATA (COTR SUPPLIED):

Electrolyte Fluid Type: KOH (mixture of + NaOH and LiOH)
Electrolyte Fluid Specific Gravity: 1.29(@25 deg C)
Electrolyte Fluid Kinematic Viscosity: 1.8 centistokes
Electrolyte Fluid Color Clear
Propulsion Battery Coolant Type, Color and Specific Gravity (if applicable):
Air cooled

Location of Battery Modules:

- Inside Passenger Compartment:
 Outside Passenger Compartment:

DATA SHEET 3
PRE-IMPACT ELECTRICAL ISOLATION MEASUREMENTS & CALCULATIONS

Vehicle: Honda CR-Z 3DR Base Two Door Coupe

NHTSA No.: MC5319

VOLTMETER INFORMATION:

The voltmeter used in this test shall measure DC values and have an internal impedance of at least 10 M Ω

NOTE: An oscilloscope meeting the above requirements may need to be used to adequately measure voltage in some vehicles.

Make: Fluke Model: 87 S/N: 400492

Internal Impedance Value: 10 M Ω

Resolution: 111.9 V

Last Calibration Date: 10/20/2011

PROPULSION BATTERY VOLTAGE:

The measurement shall be made with the propulsion battery connected to the vehicle propulsion system, and the vehicle in the "ready-to-drive" (propulsion motor(s) activated) position.

NOTE: If the voltage measurement is not at the voltage or within the normal operating voltage range specified by the manufacturer, the battery must be charged.

Vb = 111.9 V

ELECTRICAL ISOLATION MEASUREMENTS:

PROPULSION BATTERY TO VEHICLE CHASSIS

Vehicle chassis point(s) will be determined and supplied to the Contractor by the COTR.

V1 = 0.05 V

V2 = 0.04 V

PROPULSION BATTERY TO VEHICLE CHASSIS ACROSS RESISTOR

The known resistance Ro (in Ohms) Should be approximately 500 times the nominal operating voltage of the vehicle (in volts) per SAE J1766.

Ro = 49800 Ω

V₁' = 0 V Pre-Impact

V₂' = 0 V Pre-Impact

**DATA SHEET 4
POST-IMPACT DATA**

Vehicle: Honda CR-Z 3DR Base Two Door Coupe

NHTSA No.: MC5319

VOLTMETER INFORMATION:

The voltmeter used in this test shall measure DC values and have an internal impedance of at least 10 M Ω

NOTE: An oscilloscope meeting the above requirements may need to be used to adequately measure voltage in some vehicles.

Make: Fluke Model: 87 S/N: 400492

Internal Impedance Value: 10 MΩ
Nominal Propulsion Battery Voltage (Vb): 111.9 V

ELECTRICAL ISOLATION MEASUREMENTS:

Record V1, V2, V1', V2' voltage measurements **immediately after the impacted vehicle comes to rest.**

V1 =	<u>0.015</u>	V	Post-Impact	Time:	<u>2</u>	minutes	<u>0</u>	s
V2 =	<u>0.035</u>	V	Post-Impact	Time:	<u>2</u>	minutes	<u>0</u>	s
V1' =	<u>0</u>	V	Post-Impact	Time:	<u>2</u>	minutes	<u>0</u>	s
V2' =	<u>0</u>	V	Post-Impact	Time:	<u>2</u>	minutes	<u>0</u>	s

Attach the complete data acquisition to the Final Test Report

ELECTRICAL ISOLATION CALCULATIONS:

NOTE: If measured voltage is zero and results in a division by zero, record "Zero Volts." This "zero Voltage" condition is considered as being compliant.

$R_{i1} = R_o * (1 + V_2/V_1) * [(V_1 - V_1')/V_1']$
 $R_{i1} =$ 44730 Ω Pre-Impact Time: 2 Minutes 0 s

$R_{i2} = R_o * (1 + V_1/V_2) * [(V_2 - V_2')/V_2']$
 $R_{i2} =$ 44708 Ω Pre-Impact Time: 2 Minutes 0 s

$R_i =$ Lesser value of R_{i1} and R_{i2}
 $R_i =$ 44708 Ω Time: 2 Minutes 0 s

$R_i/V_b =$ Electrical Isolation Value/ Nominal Battery Voltage
 $R_i/V_b =$ 399535 Ω Time: 2 Minutes 0 s

DATA SHEET 4 (Continued)
POST-IMPACT DATA

Vehicle: Honda CR-Z 3DR Base Two Door Coupe

NHTSA No.: MC5319

NOTE: The minimum Electrical Isolation Value is 500 Ω/V

Is the measured Electrical Isolation Value \geq 500 Ω/V ?

YES NO (Fail)

PROPULSION BATTERY SYSTEM COMPONENTS

Describe any Propulsion Battery Module movement within the passenger compartment
[supply photographs as appropriate]:

none

Has the Propulsion Battery Module moved within the occupant compartment?

YES (Fail) NO

Describe any intrusion of an outside Propulsion Battery Component into the occupant
compartment. [Supply photographs as appropriate]:

none

Has an outside Propulsion Battery Component intruded into the passenger compartment?

YES (Fail) NO

Is the Propulsion Battery Electrolyte Spillage visible in the passenger compartment?

YES (Fail) NO

RECORDED BY

Vanessa Walsh

DATE: 1/17/12

APPROVED BY

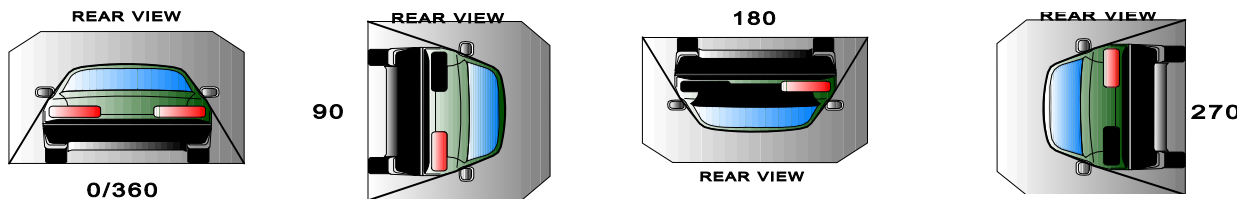
David Travale

DATE: 2/20/2012

**DATA SHEET 5
STATIC ROLLOVER TEST DATA**

Vehicle: Honda CR-Z 3DR Base 2-Door Coupe

NHTSA No. MC5319



I. DETERMINATION OF PROPULSION BATTERY ELECTROLYTE COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
	minutes	seconds	minutes	seconds	minutes	seconds	minutes	seconds	minutes	seconds	minutes	seconds
0° - 90°	1	11	5	6	6	11	7	11	6	11	7	11
90° - 180°	1	2	5	6	6	2	7	6	6	2	7	6
180°-270°	1	2	5	6	6	2	7	6	6	2	7	6
270°-360°	1	11	5	6	6	11	7	6	6	11	7	11

II. ACTUAL TEST VEHICLE PROPULSION BATTERY ELECTROLYTE SPILLAGE :

Rollover Stage	Propulsion Battery Electrolyte Spillage (L)	Spillage Location
0-90°	0	
90-180°	0	
180-270°	0	
270-360°	0	

Total Spillage: 0 L

Is the total spillage of Propulsion Battery electrolyte greater than 5.0 liters?

YES (Fail) NO

Is Propulsion Battery electrolyte spillage visible in the passenger compartment?

YES (Fail) NO

RECORDED BY
APPROVED BY

Vanessa Walsh
David Travale

DATE: 1/17/12
DATE: 2/20/2012

DATA SHEET 5 (CONTINUED)
STATIC ROLLOVER TEST DATA

Vehicle: Honda CR-Z 3DR Base 2-Door Coupe

NHTSA No. MC5319

VOLTMETER INFORMATION:

The voltmeter used in this test shall measure DC values and have an internal impedance of at least 10 M Ω

NOTE: An oscilloscope meeting the above requirements may need to be used to adequately measure voltage in some vehicles.

Make:	<u>Fluke</u>	Model:	<u>87</u>	S/N	<u>400492</u>
	Internal Resistance Value (R_0)		<u>10</u>	M Ω	
	Normal Propulsion Battery Voltage		<u>111.9</u>	V	

V1 =	<u>0.03</u>	V @ 90°	Time:	<u>6</u>	minutes	<u>11</u>	s
V1 =	<u>0.04</u>	V @ 180°	Time:	<u>6</u>	minutes	<u>11</u>	s
V1 =	<u>0.02</u>	V @ 270°	Time:	<u>6</u>	minutes	<u>11</u>	s
V1 =	<u>0.02</u>	V @ 360°	Time:	<u>6</u>	minutes	<u>11</u>	s
V2 =	<u>0.03</u>	V @ 90°	Time:	<u>6</u>	minutes	<u>2</u>	s
V2 =	<u>0.03</u>	V @ 180°	Time:	<u>6</u>	minutes	<u>2</u>	s
V2 =	<u>0.04</u>	V @ 270°	Time:	<u>6</u>	minutes	<u>2</u>	s
V2 =	<u>0.03</u>	V @ 360°	Time:	<u>6</u>	minutes	<u>2</u>	s
V ₁ ' =	<u>0</u>	V @ 90°	Time:	<u>6</u>	minutes	<u>2</u>	s
V ₁ ' =	<u>0</u>	V @ 180°	Time:	<u>6</u>	minutes	<u>2</u>	s
V ₁ ' =	<u>0</u>	V @ 270°	Time:	<u>6</u>	minutes	<u>2</u>	s
V ₁ ' =	<u>0</u>	V @ 360°	Time:	<u>6</u>	minutes	<u>2</u>	s
V ₂ ' =	<u>0</u>	V @ 90°	Time:	<u>6</u>	minutes	<u>11</u>	s
V ₂ ' =	<u>0</u>	V @ 180°	Time:	<u>6</u>	minutes	<u>11</u>	s
V ₂ ' =	<u>0</u>	V @ 270°	Time:	<u>6</u>	minutes	<u>11</u>	s
V ₂ ' =	<u>0</u>	V @ 360°	Time:	<u>6</u>	minutes	<u>11</u>	s

Attach the complete data acquisition to the Final Test Report

DATA SHEET 5 (CONTINUED)
STATIC ROLLOVER TEST DATA

Vehicle: Honda CR-Z 3DR Base 2-Door Coupe

NHTSA No. MC5319

ELECTRICAL ISOLATION CALCULATIONS:

NOTE: If measured voltage is zero and results in a division by zero, record "Zero Volts". This "zero voltage" condition is considered as being complaint.

$$Ri1 = R_o * (1 + V_2/V_1) * [(V_1 - V_1')/V_1']$$

$$Ri1 = \underline{29780} \ \Omega \ @ \ 90^\circ$$

Time: 6 minutes 11 s

$$Ri1 = \underline{34773} \ \Omega \ @ \ 180^\circ$$

Time: 6 minutes 11 s

$$Ri1 = \underline{29731} \ \Omega \ @ \ 270^\circ$$

Time: 6 minutes 11 s

$$Ri1 = \underline{24776} \ \Omega \ @ \ 360^\circ$$

Time: 6 minutes 11 s

$$Ri2 = R_o * (1 + V_1/V_2) * [(V_2 - V_2')/V_2']$$

$$Ri2 = \underline{29780} \ \Omega \ @ \ 90^\circ$$

Time: 6 minutes 2 s

$$Ri2 = \underline{34744} \ \Omega \ @ \ 180^\circ$$

Time: 6 minutes 2 s

$$Ri2 = \underline{29805} \ \Omega \ @ \ 270^\circ$$

Time: 6 minutes 2 s

$$Ri2 = \underline{24817} \ \Omega \ @ \ 360^\circ$$

Time: 6 minutes 2 s

Ri = The lesser of Ri1 and Ri2

$$Ri = \underline{29780} \ \Omega \ @ \ 90^\circ$$

Time: 6 minutes 2 s

$$Ri = \underline{34744} \ \Omega \ @ \ 180^\circ$$

Time: 6 minutes 2 s

$$Ri = \underline{29731} \ \Omega \ @ \ 270^\circ$$

Time: 6 minutes 2 s

$$Ri = \underline{24776} \ \Omega \ @ \ 360^\circ$$

Time: 6 minutes 2 s

Ri/Vb = Electrical Isolation Value / Nominal Battery Voltage

$$Ri/Vb = \underline{266134} \ \Omega/V \ @ \ 90^\circ$$

Time: 6 minutes 11 s

$$Ri/Vb = \underline{310490} \ \Omega/V \ @ \ 180^\circ$$

Time: 6 minutes 11 s

$$Ri/Vb = \underline{265689} \ \Omega/V \ @ \ 270^\circ$$

Time: 6 minutes 11 s

$$Ri/Vb = \underline{221408} \ \Omega/V \ @ \ 360^\circ$$

Time: 6 minutes 11 s

NOTE: The minimum Electrical Isolation Value is 500 Ω/V.

Is the measured Electrical Isolation Value ≥ 500 Ω/V? YES NO (Fail)

Comments:

RECORDED BY
APPROVED BY

Vanessa Walsh

David Travale

DATE: 1/17/12

DATE: 2/20/2012

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

<u>Figure</u>	<u>Photograph Title</u>	<u>Page</u>
Figure A- 1	Auxiliary Power Module Warning Label	A- 3
Figure A- 2	Power Inverter Warning Label	A- 3
Figure A- 3	First Responder Warning Label	A- 4
Figure A- 4	First Responder Warning Label Location	A- 4
Figure A- 5	Other Vehicle Label(s) Related to Electrical Propulsion System	A- 5
Figure A- 6	Manual High Voltage Service Disconnect in Place	A- 5
Figure A- 7	Manual High Voltage Service Disconnect Removed (Show Plug)	A- 6
Figure A- 8	Manual High Voltage Service Disconnect Removed (Show Location where removed)	A- 6
Figure A- 9	Pre-Impact View of Propulsion Battery	A- 7
Figure A- 10	Post-Impact Front View of Propulsion Battery	A- 7
Figure A- 11	Post-Impact Rear View of Propulsion Battery <i>(if any part of it is visible)</i>	A- 8
Figure A- 12	Pre-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery	A- 8
Figure A- 13	Post-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery	A- 9
Figure A- 14	Pre-Impact View of Propulsion Battery Module(s)	A- 9
Figure A- 15	Post-Impact View of Propulsion Battery Module(s)	A- 10
Figure A- 16	Pre-Impact View of Electric Propulsion Drive	A- 10
Figure A- 17	Post-Impact View of Electric Propulsion Drive	A- 11
Figure A- 18	Pre-Impact View of High Voltage Interconnect(s)	A- 11
Figure A- 19	Pre-Impact View Propulsion Battery Venting System(s)	A- 12
Figure A- 20	Pre-Impact View of Other Visible Electric Propulsion Components	A- 12
Figure A- 21	Pre-Impact View of Ground Lead Attached	A- 13
Figure A- 22	Pre-Impact View of High Voltage Leads Attached	A- 13
Figure A- 23	Pre-Impact Close-Up View of High Voltage Leads Attached	A- 14
Figure A- 24	Pre-Impact View of Installed Test Interface Port	A- 14
Figure A- 25	Post-Impact View of Installed Test Interface Port	A- 15
Figure A- 26	Pre-Impact View of Other Test Devices	A- 15
Figure A- 27	Post-Impact View of Other Test Devices	A- 16
Figure A- 28	FMVSS No. 305 Static Rollover at 90°	A- 16
Figure A- 29	FMVSS No. 305 Static Rollover at 180°	A- 17
Figure A- 30	FMVSS No. 305 Static Rollover at 270°	A- 17
Figure A- 31	FMVSS No. 305 Static Rollover at 360°	A- 18
Figure A- 32	Pre-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion	A- 18
Figure A- 33	Post-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion	A- 19
Figure A- 34	Post-Impact Propulsion Battery System Mounting and/or Intrusion Failure(s)	A- 19
Figure A- 35	Post-Impact View of Battery Component Intrusion <i>(if applicable)</i>	A- 20
Figure A- 36	Post-Impact View of Battery Module Movement or Retention Loss <i>(if applicable)</i>	A- 20
Figure A- 37	Post-Impact View of Propulsion Battery Electrolyte Spillage Location <i>(if applicable)</i>	A- 21
Figure A- 38	Post-Test View of Propulsion Battery Electrolyte Spillage Location <i>(if applicable)</i>	A- 21



Figure A-1: Auxiliary Power Module Warning Label

Photo Not Available

Figure A-2: Power Inverter Warning Label

Photo Not Available

Figure A-3: First Responder Warning Label

Photo Not Available

Figure A-4: First Responder Warning Label Location



Figure A-5: Other Vehicle Label(s) Related to Electrical Propulsion System

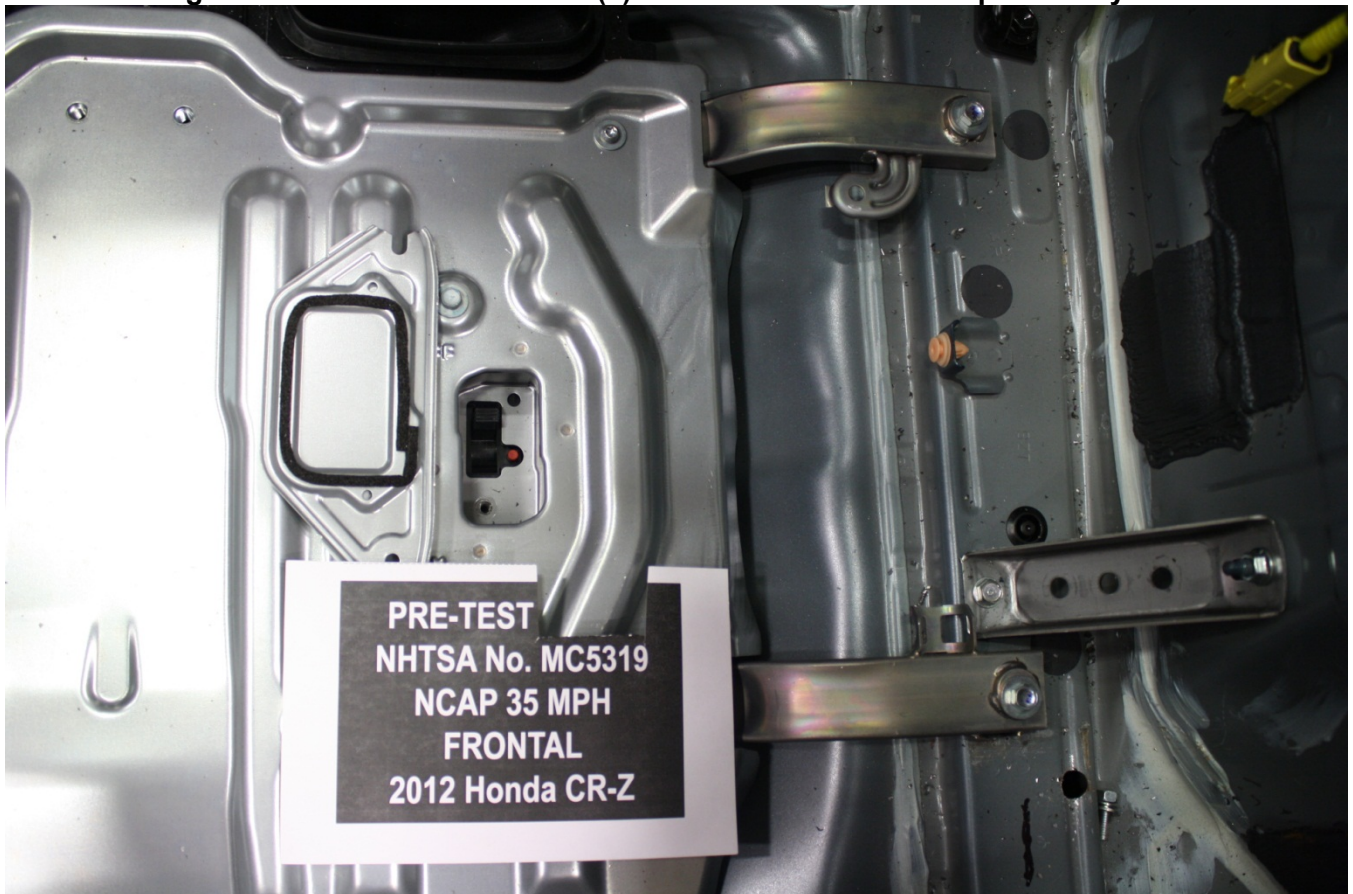


Figure A-6: Manual High Voltage Service Disconnect in Place

Photo Not Available

Figure A-7: Manual High Voltage Service Disconnect Removed (Show Plug)

Photo Not Available

Figure A-8: Manual High Voltage Service Disconnect Removed (Show Location)

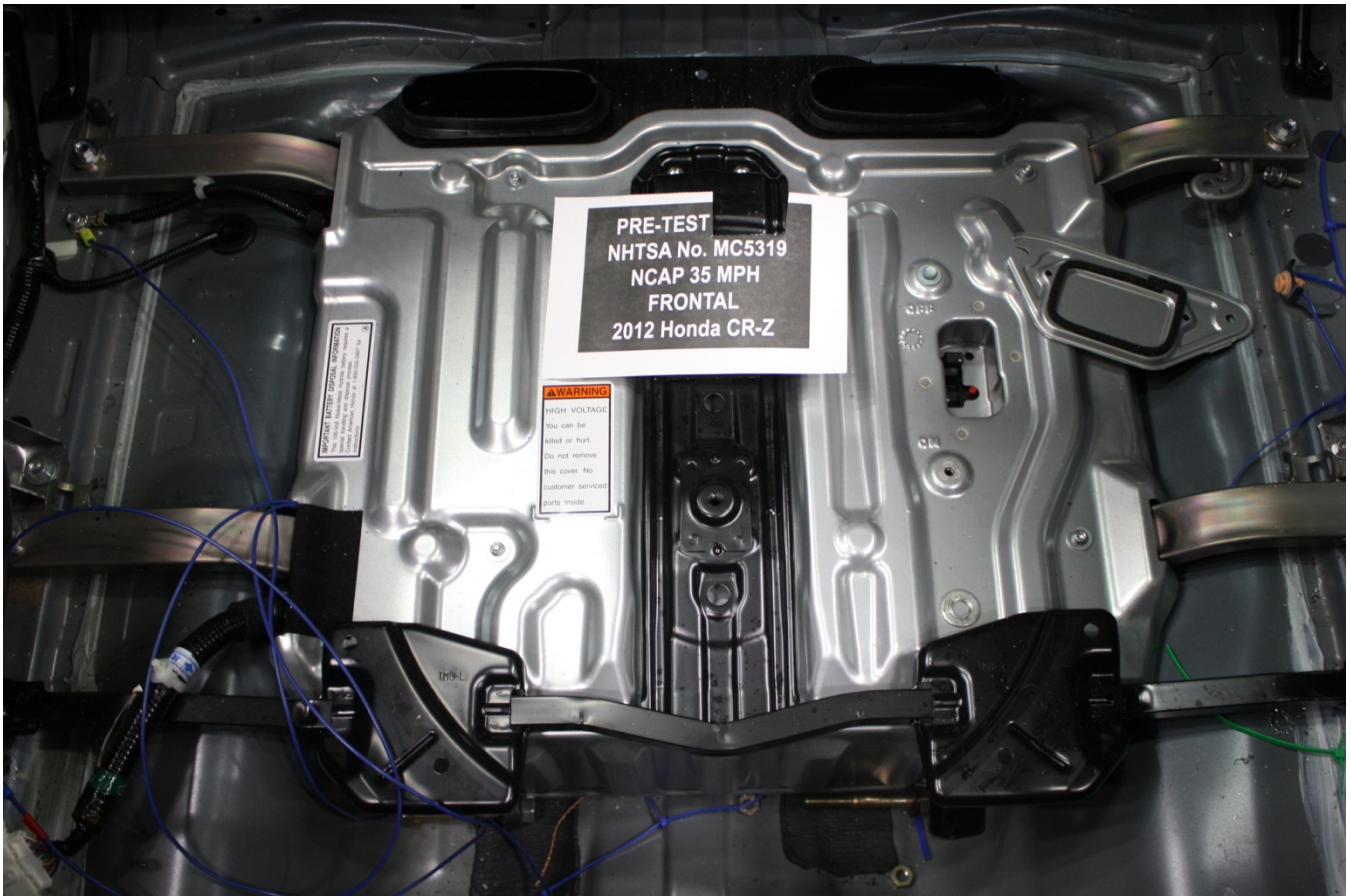


Figure A-9: Pre-Impact View of Propulsion Battery

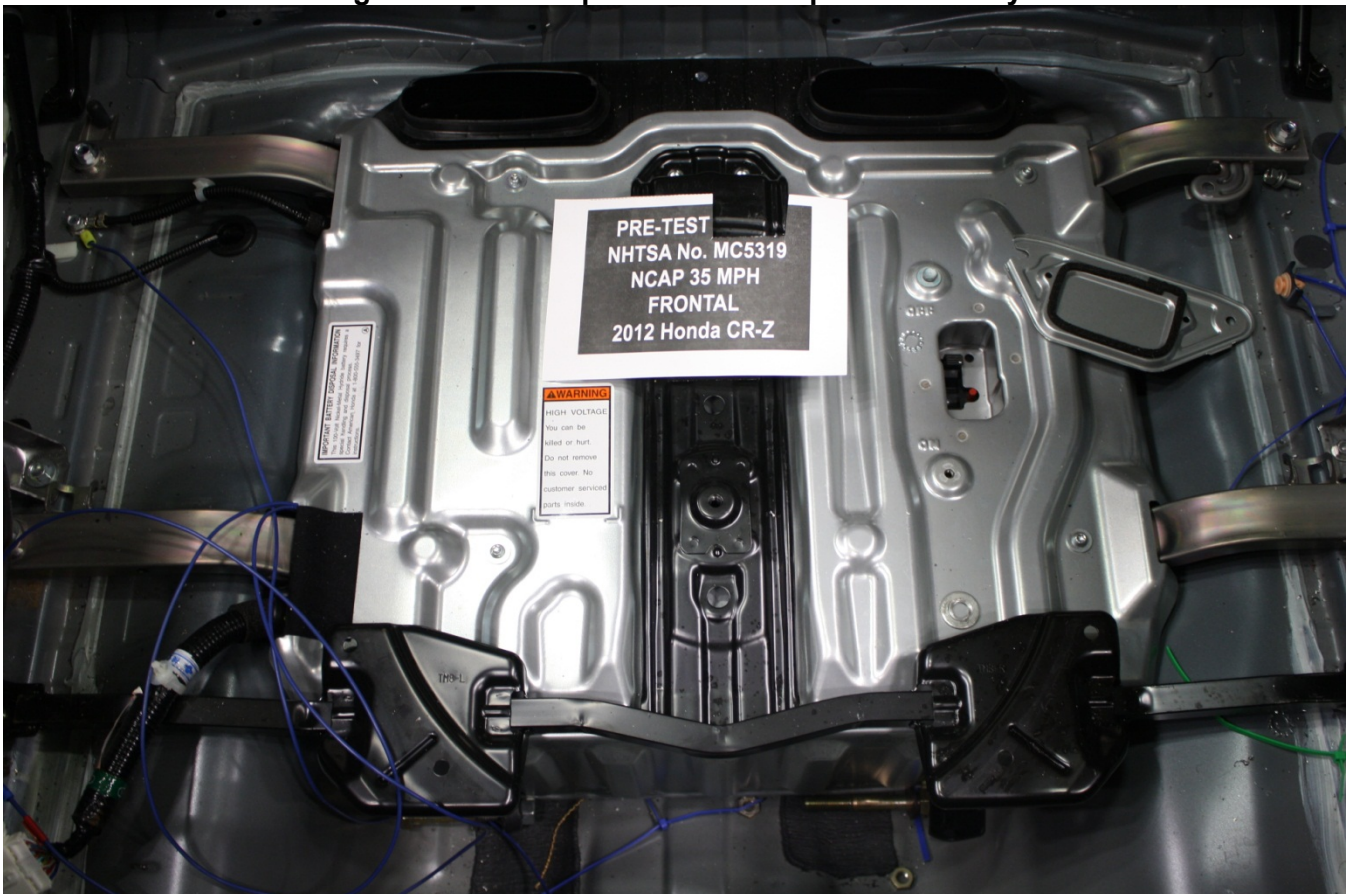


Figure A-10: Post-Impact View of Propulsion Battery

Photo Not Available

Figure A-11: Post-Impact Rear View of Propulsion Battery *(if any part of it is visible)*

Photo Not Available

Figure A-12: Pre-Impact View of Battery Box(s) or Container(s)

Photo Not Available

Figure A-13: Post-Impact View of Battery Box(s) or Container(s)

Photo Not Available

Figure A-14: Pre-Impact View of Propulsion Battery Module(s)



Figure A-15: Post-Impact View of Propulsion Battery Module(s)

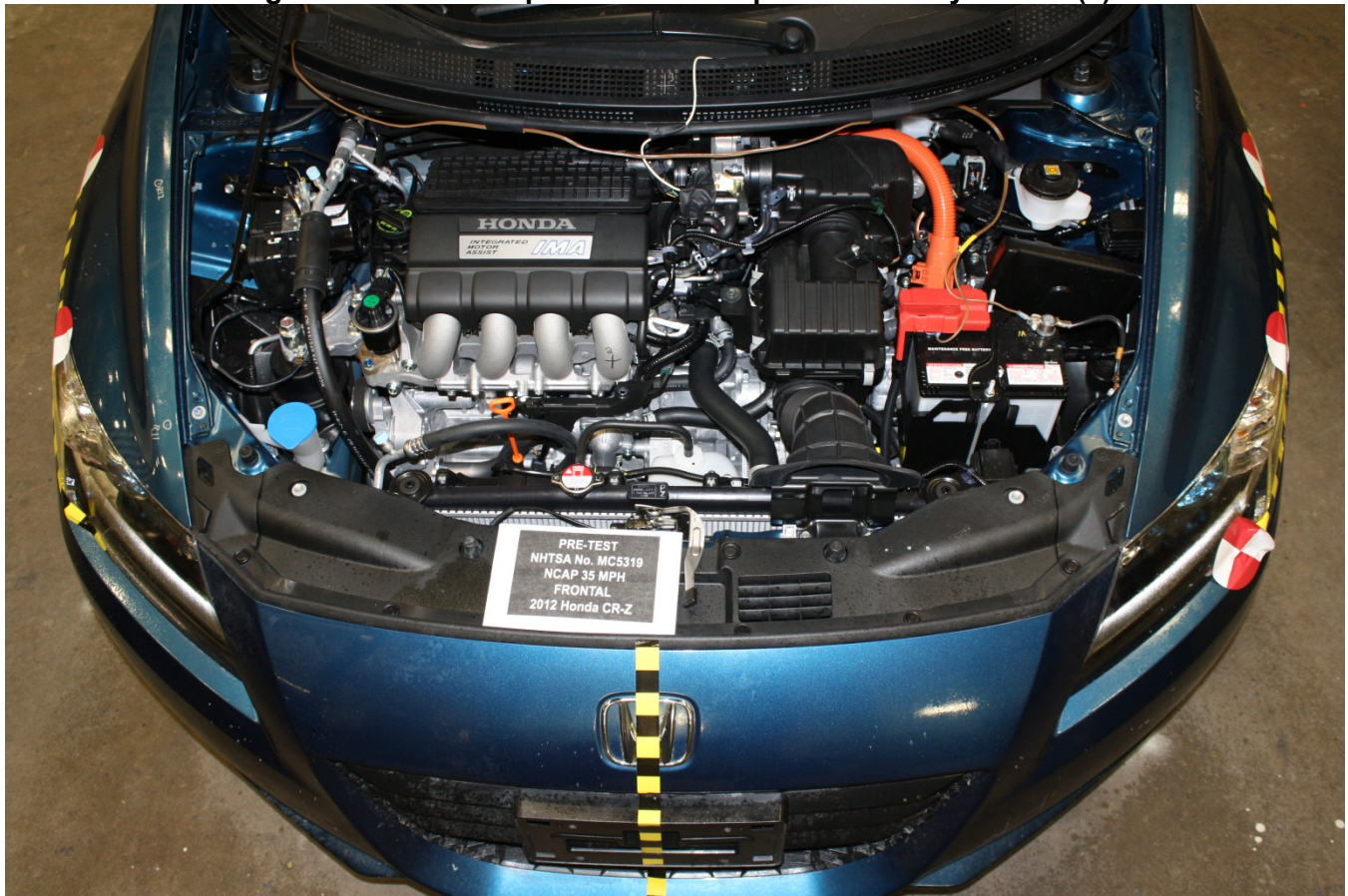


Figure A-16: Pre-Impact View of Electric Propulsion Drive



Figure A-17: Post-Impact View of Electric Propulsion Drive



Figure A-18: Pre-Impact View of High Voltage Interconnect(s)

Photo Not Available

Figure A-19: Pre-Impact View Propulsion Battery Venting System(s)

Photo Not Available

Figure A-20: Pre-Impact View of Other Visible Electric Propulsion Components



Figure A-21: Pre-Impact View of Ground Lead Attached



Figure A-22: Pre-Impact View of High Voltage Leads Attached



Figure A-23: Pre-Impact Close-Up View of High Voltage Leads Attached

Photo Not Available

Figure A-24: Pre-Impact View of Installed Test Interface Port

Photo Not Available

Figure A-25: Post-Impact View of Installed Test Interface Port

Photo Not Available

Figure A-26: Pre-Impact View of Other Test Devices

Photo Not Available

Figure A-27: Post-Impact View of Other Test Devices

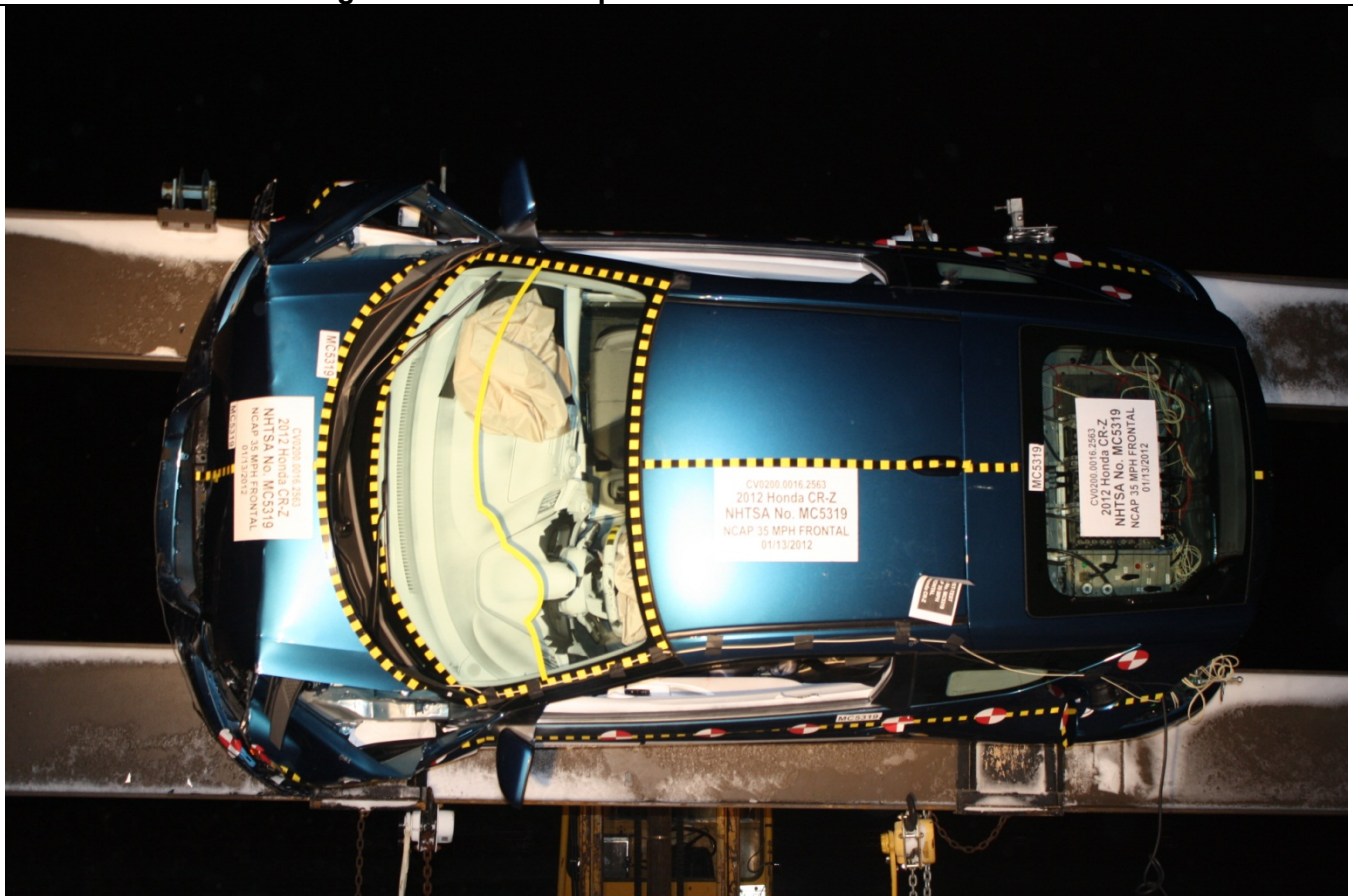


Figure A-28: FMVSS No. 305 Static Rollover at 90°

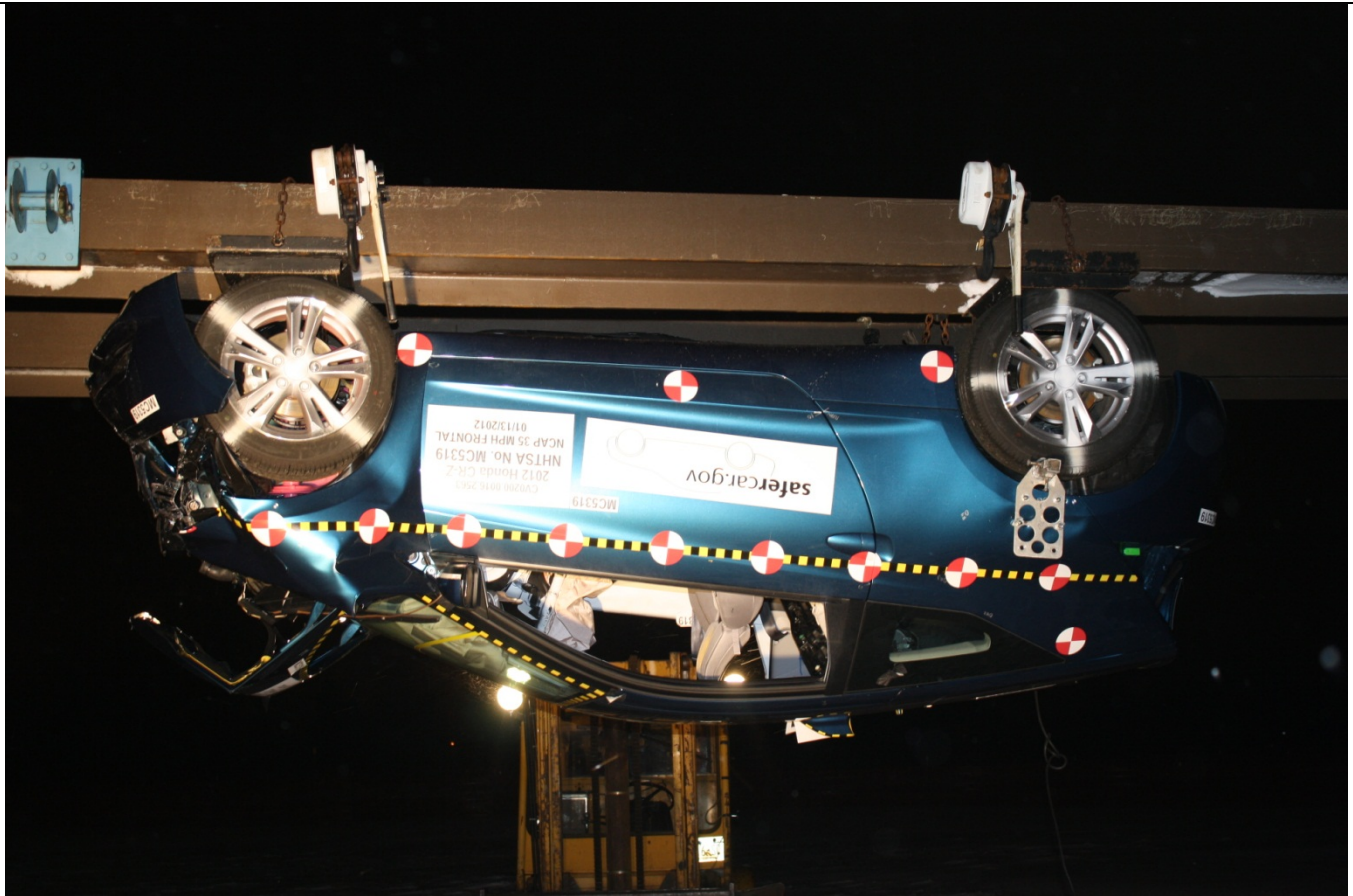


Figure A-29: FMVSS No. 305 Static Rollover at 180°



Figure A-30: FMVSS No. 305 Static Rollover at 270°



Figure A-31: FMVSS No. 305 Static Rollover at 360°

Photo Not Available

Figure A-32: Pre-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery

Photo Not Available

Figure A-33: Post-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery

Photo Not Available

Figure A-34: Post-Impact Propulsion Battery System Mounting and/or Intrusion Failure(s)

Photo Not Available

Figure A-35: Post-Impact View of Battery Component Intrusion

Photo Not Available

Figure A-36: Post-Impact View of Battery Module Movement or Retention Loss

Photo Not Available

Figure A-37: Post-Impact View of Propulsion Battery Electrolyte Spillage Location

Photo Not Available

Figure A-38: Post-Test View of Propulsion Battery Electrolyte Spillage