

ETA-NAC006

Revision 2

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Receipt Inspection

Prepared by

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TABLE OF CONTENTS

1.0	Objectives	3
2.0	Purpose	3
3.0	Documentation	3
4.0	Initial Conditions and Prerequisites	3
5.0	Verification Requirements	4
6.0	Glossary	7
7.0	References	8

Appendices

Appendix A - Vehicle Supplier Submittal Review Check List	9
Appendix B - Vehicle Receipt Check List	11

1.0 Objective

This procedure identifies a common protocol for the collection of verification data for each vehicle delivered to Electric Transportation Applications for testing. These activities shall be completed in conjunction with procedure ETA-NTP011, "Receipt Inspection Procedure," and prior to commencement of testing activities performed in accordance with procedures prepared by Electric Transportation Applications.

2.0 Purpose

This procedure identifies the verification (should) parameters that shall be recorded prior to Performance Testing of any Neighborhood Electric Vehicle provided to Electric Transportation Applications. Additional verification requirements are addressed in Procedure ETA-NTP011, "Receipt Inspections," which shall be completed concurrent with and subsequent to this procedure.

3.0 Documentation

Documentation addressed by this procedure shall be consistent, easy to understand, easy to read and readily reproducible. This documentation shall contain enough information to "stand alone"; that is, be self-contained to the extent that all individuals qualified to review it could be reasonably expected to reach a common conclusion, without the need to review additional documentation. Storage and retention of records shall be completed as described in Procedure ETA-NAC001, "Control, Close-out and Storage of Documentation."

4.0 Prerequisites

- 4.1 Individuals assigned to verify completion of this procedure shall be conversant with the Technical Guidelines against which the vehicle is being inspected, the basic technologies involved, and familiar with the design configuration documentation as provided by the manufacturer of the vehicle being inspected.
- 4.2 Individuals assigned to complete this activity shall have received the appropriate training in accordance with ETA-NAC005, "Training and Certification of Personnel Utilizing ETA Procedures."

- 4.3 Prior to commencing activities controlled by this procedure a meeting of the involved personnel shall be held to discuss, at a minimum, the following:
 - 4.3.1 Data required;
 - 4.3.2 Data available;
 - 4.3.2 Data sources;
 - 4.3.4 Contingencies
 - 4.3.5 Methods to ensure safety
- 4.4 The verification of data may be completed at any time prior to the need for information being evidenced (e.g., the battery charging information is not needed until it becomes necessary to charge a vehicle's battery).
- 4.5 All documentation required to complete the activities addressed by this or other procedures shall be completed, approved and issued prior to commencing the testing it addresses. In no case shall any document be used for official testing or data collection prior to its' effective date.

5.0 Verification Requirements

This procedure shall be completed for each vehicle which is scheduled to be received for testing by Electric Transportation Applications. The vehicle must be present to obtain some of the required information (curb weight, vehicle heights, ground clearance, etc.). However, a significant amount of information concerning the vehicle may be obtained from data provided by the vehicle supplier (NEV America Vehicle Technical Specification Appendices A and B). As such, this procedure may be implemented upon receipt of the vehicle supplier information, but shall not be completed prior to actual inspection of the vehicle.

- 5.1 Review the Supplier documentation. (NEV America Vehicle Technical Specification Appendices A and B) completed and provided by the vehicle supplier for the following:
 - 5.1.1 All blanks have been filled in.
 - 5.1.2 All data and submittals required have been provided.
 - 5.1.3 For blanks which have either no entry or an "N/A" (or similar notation), note the specific entry which is incomplete and the reason the entry is incomplete (if known).
 - 5.1.4 The Program Manager or the Test Manager shall be notified of any missing data. They shall notify the vehicle supplier of which data are missing, and request their assistance in obtaining it. All requests for data from vehicle supplier shall be made in writing,

through the Program/Project Manager. At a minimum, all information required by a "shall" statement in the NEV America Vehicle Technical Specification shall be obtained from the vehicle supplier.

- 5.2 Upon receipt of the vehicle, the following information and should requirements shall verified by inspection of the vehicle and compared with the information provided by the vehicle supplier (NEV America Vehicle Technical Specification Appendices A and B). Such verification shall be noted in Appendix A and any discrepancies noted. If discrepancies are significant to test conduct, a Non-Conformance Report (ETA-NAC002 Appendix B) shall be issued and the discrepancy resolved with the vehicle supplier.

- 5.2.1 Vehicle Year, Make and Model
- 5.2.2 Vehicle manufacturer
- 5.2.3 Number of seating positions
- 5.2.4 Charger manufacturer
- 5.2.5 Motor manufacturer
- 5.2.6 Controller manufacturer
- 5.2.7 Vehicle is a conversion to electric
- 5.2.8 Brake type on front and rear wheels
- 5.2.9 The tire supplied is standard or optional equipment
- 5.2.10 The tire manufacturer
- 5.2.11 The tire model, size and load rating
- 5.2.12 Vehicle exterior color
- 5.2.13 Vehicle interior color
- 5.2.14 Transmission is single speed, multi-speed automatic or continuously variable
- 5.2.15 Battery pack voltage
- 5.2.16 Number of modules in the battery pack
- 5.2.17 Battery pack weight
- 5.2.18 Information shown on vehicle identification placard matches the vehicle as supplied and matches the information provided by the vehicle supplier
- 5.2.19 Vehicle batteries comply with requirements of NEC 625 and UL-2202 for charging in enclosed spaces
- 5.2.20 Maximum DOD and method for its determination is provided in the vehicle Owner's Manual

- 5.2.21 Low voltage connectors comply with the requirements of applicable SAE Standards
 - 5.2.22 Turn signals are provided as standard or optional equipment and are self-canceling
 - 5.2.23 Vehicle is equipped with a fast charge connection
 - 5.2.24 Service and parts manuals include details on the design and operation of vehicle systems, as well as a list of additional or special maintenance tools required
 - 5.2.25 Vehicle supplier should offer a training program for the purchaser's maintenance personnel covering vehicle safety and proper operation and maintenance of vehicles.
- 5.3 Upon receipt of the vehicle, complete the Vehicle Receipt Checklist (Appendix B) by recording the required information. Measurements shall be taken and calculations made as required to complete the Vehicle Receipt Checklist. When complete, the Vehicle Receipt Checklist shall be compared with the information provided by the vehicle supplier (NEV America Vehicle Technical Specification Appendices A and B) and any discrepancies noted. If discrepancies are significant to test conduct, a Non-Conformance Report (ETA-NAC002 Appendix B) shall be issued and the discrepancy resolved with the vehicle supplier.
- 5.4 Take receiving pictures of the vehicle as required by Appendix B
- 5.5 Review information provided by the vehicle supplier and the vehicle as supplied to confirm compliance with SAE-J1766, SAE-J1797 and 49 CFR 571.305 for battery and electrolyte containment.
- 5.6 Conduct testing to verify the following "should" requirements of the NEV America Vehicle Technical Specification not verified by specific Performance Test Procedures (ETA-NTPXXX). Record the results of these tests in Appendix B. These tests may require installation of instrumentation. Testing with installed instruments may be delayed and conducted under a separate Test Procedures.
- 5.6.1 Using a 5-inch cubic go/no-go block, with the vehicle loaded to GVWR and standing on a flat surface, when the block is in contact with the flat surface and passed beneath the sprung portions of the vehicle, the block does not contact any of the sprung portions of the vehicle.
 - 5.6.2 Disconnect the main propulsion battery from the auxiliary battery. Turn on the emergency flashers, and verify that they operate for at least one hour. This will verify loss of the main battery pack and a failure of the DC/DC converter.

- 5.6.3 Verify that the State of Charge indicator is accurate to $\pm 10\%$ of full scale. This verification data shall be obtained from Section 5.2 and Appendix D of ETA-NTP004.
- 5.6.4 Verify that the speedometer is accurate to $\pm 5\%$ at 20 mph. This verification data can be obtained from Section 5.2 of ETA-NTP004.
- 5.6.5 Verify that acceleration from 0-20 mph is 6.0 seconds or less when operated with a payload of 332 pounds, and starting with the battery at 50% state of charge. This data can be obtained from Section 5.1 and Appendix A of ETA-NTP002.
- 5.6.6 Verify that the vehicle is capable of energizing and charging after being out of service and off charge for 16 days, beginning at 100% state of charge, with no operator action, at ambient temperature from 40°F to 120°F. This verification data can be obtained from section 5.3 of ETA-NTP008.

6.0 Glossary

- 6.1 Battery Ampere-Hour Capacity - The capacity of a battery in ampere-hours determined as a function of the total distance traveled by the vehicle during performance of the 25 mph Constant Speed Range Test portion of ETA-NTP004.
- 6.2 Depth of Discharge (DOD) - The quantified percentage of discharge of a battery, in terms of ampere-hours, kilowatt-hours or miles, expressed as a percentage of the total battery capacity in similar units.
- 6.3 Effective Date - The date, after which a procedure has been reviewed and approved, that the procedure can be utilized in the field for official testing.
- 6.4 Program Manager - As used in this procedure, the individual within Electric Transportation Applications responsible for oversight of the NEV America Performance Test Program. [Subcontract organizations may have similarly titled individuals, but they are not addressed by this procedure.]
- 6.5 Shall - Items which require adherence without deviation. Shall statements identify binding requirements. A go, no-go criterion.
- 6.6 Should - Items which require adherence if at all possible. Should statements identify preferred conditions.
- 6.7 State of Charge (SOC) - For this testing, the SOC of a battery is defined as the expected residual battery capacity, expressed in amperes-hours or watt-hours or miles, as a percentage of the total available. The 100% SOC basis (available ampere-hours, kilowatt hours or miles) is

determined by the actual discharge capability of the main propulsion battery when discharged to the requirements of the 25 mph Constant Speed Range Test portion of procedure ETA-NTP004.

- 6.8 Test Director - The individual within Electric Transportation Applications responsible for all testing activities associated with the NEV America Performance Test Program.
- 6.9 Test Engineer - The individual(s) assigned responsibility for the conduct of any given test. [Each contractor/subcontractor should have at least one individual filling this position. If so, they shall be responsible for adhering to the requirements of this procedure.]
- 6.10 Test Manager - The individual within Electric Transportation Applications responsible for the implementation of the test program for any given vehicle(s) being evaluated to the requirements of the NEV America Performance Test Program. [Subcontract organizations may have similarly titled individuals, but they are not addressed by this procedure.]

7.0 References

- 7.1 NEV America Technical Requirements
- 7.2 ETA-NAC001, "Control, Close-out and Storage of Documentation."
- 7.3 ETA-NAC004, "Procedure for the Review of Test Results."
- 7.4 ETA-NAC005, "Training and Certification of Personnel Utilizing ETA Procedures."
- 7.5 ETA-NAC007, "Control of Measuring and Test Equipment"
- 7.6 ETA-NTP004, "Electric Vehicle Constant Speed Range Test"
- 7.7 ETA-NTP011, "Receipt Inspection Procedure"
- 7.8 ETA-NTP008, "Battery Charging"

APPENDIX-A
Vehicle Supplier Review Check List
(Page 1 of 2)

Vehicle Number: _____

AC006 Ref:	T/S Ref:	Parameter:	Initials:	Date:
5.2.1	---	Vehicle Make		
5.2.1	---	Vehicle Model:		
5.2.1	---	Vehicle Year:		
5.2.2	---	Vehicle Manufacture:		
5.2.3	3.1	Number of seating positions:		
5.2.4	---	Charger manufacturer		
5.2.5	---	Motor manufacturer		
5.2.6	---	Controller manufacturer		
5.2.7	3.2	Vehicle is a conversion to electric		
5.2.8	---	Brake type on front and rear wheels		
5.2.9	2.6	Tire supplied is standard or optional equipment		
5.2.10	2.6	Tire manufacturer		
5.2.11	2.6	Tire model, size and load rating		
5.2.12	---	Vehicle exterior color		
5.2.13	---	Vehicle Interior Color		
5.2.14	4.1	Transmission type		
5.2.15	---	Battery pack voltage		
5.2.16	---	Number of battery modules in pack		
5.2.17	6.4	Battery Pack Weight:		
5.2.18	6.2	Compliance with requirements of NEC 625 and UL-2202		
5.2.19	---	ID placard matches vehicle and supplier information		
5.2.20	6.3	Maximum DOD and method for determination in Owner's Manual		
5.2.21	7.7	Low voltage connectors meet applicable SAE Standard		
5.2.22	7.5	Turn signals are provide		
5.2.23	8.3	Fast charge connection provided		

APPENDIX-B Vehicle Receipt Check List (Page 1 of 3)

Vehicle Number: _____

Date Received:		Odometer (miles):	
Vehicle Year:	Vehicle Make:	Vehicle Model:	
Vehicle Body Style:		Vehicle Color:	
Vehicle Identification Number:		Date of Manufacture:	
GVWR:	Front GAWR:	Rear GAWR:	
RESTRAINT SYSTEM DESCRIPTION			
Driver:	C.F. Pass:	R.F. Pass:	
L.R. Pass:	C.R. Pass:	R.R. Pass:	
VEHICLE CONDITION AND INSTALLED OPTIONS			
Air Conditioning	Power Steering	Power Brakes	Power Windows
Power Door Locks	Cruise Control	Spare Tire	Front Wheel Drive
Telescoping Wheel	Tilt Wheel	Front Disk Brakes	Rear Disk Brakes
Power Seats	4 Wheel Drive	Anti-Lock Brakes	Regenerative Braking
Additional Significant Options / Accessories:			
Significant Body Damage / Corrosion: _____			
VEHICLE WEIGHTS AS RECEIVED (w/MAX. FLUIDS)			
Left Front (lbs):	Right Front (lbs):	Total Front (lbs):	Percent Front:
Left Rear (lbs):	Right Rear (lbs):	Total Rear (lbs):	Percent Rear:
		Total Weight (lbs):	
VEHICLE ATTITUDE MEASUREMENTS AS RECEIVED (CURB w/MAX. FLUIDS)			
Left Front (in):	at	Right Front (in):	at
Left Rear (in):	at	Right Rear (in):	at
VEHICLE WEIGHTS WITH PAYLOAD (RECEIVED CURB + 332 POUNDS)			
Left Front (lbs):	Right Front (lbs):	Total Front (lbs):	Percent Front:
Left Rear (lbs):	Right Rear (lbs):	Total Rear (lbs):	Percent Rear:
		Total Weight (lbs):	
VEHICLE ATTITUDE MEASUREMENTS WITH PAYLOAD (RECEIVED CURB + 332 POUNDS)			
Left Front (in):	at	Right Front (in):	at
Left Rear (in):	at	Right Rear (in):	at
VEHICLE WEIGHTS WITH MAXIMUM PAYLOAD (GVWR)			
Left Front (lbs):	Right Front (lbs):	Total Front (lbs):	Percent Front:
Left Rear (lbs):	Right Rear (lbs):	Total Rear (lbs):	Percent Rear:
		Total Weight (lbs):	
VEHICLE ATTITUDE MEASUREMENTS WITH MAXIMUM PAYLOAD (GVWR)			
Left Front (in):	at	Right Front (in):	at
Left Rear (in):	at	Right Rear (in):	at
Using a 5-inch cubic go/no-go block, with the vehicle loaded to GVWR and standing on a flat surface, when the block is in contact with the flat surface and passed beneath the sprung portions of the vehicle, the block does not contact the sprung portions of the vehicle.			
ACCEPTABLE		UNACCEPTABLE	

APPENDIX-B
Vehicle Receipt Check List
(Page 2 of 3)

INSTALLED TIRES			
Tire Manufacture:		DOT Rated <input type="checkbox"/> Yes <input type="checkbox"/> No	
Tire Size:		Sidewall Inflation Pressure:	
<input type="checkbox"/> Standard Equipment	<input type="checkbox"/> Optional Equipment	Load Rating:	
VEHICLE EXTERIOR DIMENSIONS			
Overall Length (in.):	Overall Width (in.):	Overall Height (in.):	
Wheelbase (in.):	Front Track (in.):	Rear Track (in.):	
Rear Overhang (in.):	Other:		
TRACTION BATTERY			
Battery Manufacture:			
Battery Type:		Battery Model:	
Nominal Pack Voltage:	Maximum Pack Voltage:	Minimum Pack Voltage:	
Number of Modules:	Connection Scheme:	Series	Parallel Series-Parallel
VEHICLE RECEIVING PHOTOGRAPHS			
Eight-Point Walk-Around:			
Front	Rear	Right Profile	Left Profile
Right Front	Right Rear Quarter	Left Front	Left Rear Quarter
Additional Misc:			
Dashboard Instrument Cluster	VIN	Tire Placard	
Console Instrument Cluster	FMVSS Certification Label	Battery Container	
Controller	Drive System Components	Battery Charger (On-Board)	
Battery Charger (Off Board)	Charger Connection	Misc. Placards	
Misc. Labels	Misc.()	Misc.()	
Misc.()	Misc.()	Misc.()	
MISCELLANEOUS			
Bed Space or Volume Encroachment: <input type="checkbox"/> Yes <input type="checkbox"/> No			
Trunk Space or Volume Encroachment: <input type="checkbox"/> Yes <input type="checkbox"/> No			
Disconnect the main propulsion battery from the auxiliary battery. Turn on the emergency flashers, and verify that they operate for at least one hour. This will verify loss of the main battery pack and a failure of the DC/DC converter. ACCEPTABLE_____ UNACCEPTABLE_____ N/A_____			
Verify that the State of Charge indicator is accurate to $\pm 10\%$ of full scale ACCEPTABLE_____ UNACCEPTABLE_____ N/A_____			
Verify that the speedometer is accurate to $\pm 5\%$ at 20 mph ACCEPTABLE_____ UNACCEPTABLE_____ N/A_____			
Verify that the vehicle is capable of energizing and charging after being out of service, off charge for 16 days ACCEPTABLE_____ UNACCEPTABLE_____ N/A_____			

