RECREATIONAL
OFF-HIGHWAY
VEHICLE
ASSOCIATION

November 27, 2013

Via E-Mail
Caroleene Paul
Mechanical Engineer
Division of Mechanical Engineering
Directorate for Engineering Sciences
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

Re: ANSI/ROHVA Standard

Dear Ms. Paul:

Thank you for your August 29, 2013 letter setting forth CPSC staff's suggested additional requirements and changes to ANSI/ROHVA 1-2011.

After careful consideration, ROHVA and its members have decided to initiate maintenance on the standard pursuant to the ANSI process to address suggestions made in your August 29, 2013 letter. As you will see in the attached documents, in some cases, we plan to adopt CPSC staff's suggestions in their entirety. In other areas, we plan to adopt some of the suggestions. Finally, we plan not to adopt one suggestion due to our belief that doing so would be unnecessarily design-restrictive, including by potentially precluding the ability of manufacturers to optimize vehicle design for its intended use, in addition to the absence of a correlation between the proposed metric and the occurrence of rollover incidents.

Appendix A to this letter contains summaries of the eight issue areas raised by CPSC staff, the treatment of those issues in ANSI/ROHVA 1-2011, CPSC staff's suggestions, and ROHVA's responses to those suggestions. Appendix B contains the new, changed and stricken text that ROHVA plans to adopt in response to the suggestions set forth in your August 29, 2013 letter.

Once you have an opportunity to review and consider the attachments, we would like to meet with CPSC staff and SEA, Ltd. to discuss them. In this regard, at your earliest convenience, please provide possible dates in December 2013 or January 2014 for a meeting in Bethesda.

Thank you in advance for your consideration.

Very truly yours,

Paul C Vit

Paul C. Vitrano
Executive Vice President & General Counsel

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APPENDIX A
ROHVA SUMMARY RESPONSE TO 08-29-13 CPSC STAFF SUGGESTIONS

ISSUE	ANSI/ROHVA 1-2011	CPSC SUGGESTION	ROHVA SUMMARY RESPONSE
1. Definition	Recreational Off-highway Vehicle (ROV). A motorized off-highway vehicle designed to travel on four or more tires, **intended by the manufacturer primarily for recreational use by one or more persons** and having the following characteristics: • A steering wheel for steering control • **Non-straddle seating** • Maximum speed capability greater than 30 MPH (48 km/h) • **Gross Vehicle Weight Rating (GVWR) no greater than 1700 kg (3750 lbs)** • **Less than 2030 mm (80 in) in overall width, exclusive of accessories** • **Engine displacement equal to or less than 1,000cc (61ci)** • **Identification by means of a 17 character PIN or VIN**	Recreational Off-Highway Vehicle (ROV). A motorized vehicle designed for off-highway use with the following features: four or more wheels with **pneumatic** tires; **side-by-side seating** for two or more occupants; **automotive-type controls for steering, throttle, and braking; rollover protective structure (ROPS); seat restraint**; and maximum speed capability greater than 30 mph.	Update definition as follows: Recreational Off-highway Vehicle (ROV). A motorized off-highway vehicle designed to travel on four or more tires, intended by the manufacturer ~~**primarily**~~ for recreational use by one or more persons and having the following characteristics: • A steering wheel for steering control • **Foot controls for throttle and service brake** • Non-straddle seating • Maximum speed capability greater than 30 MPH (48 km/h) • Gross Vehicle Weight Rating (GVWR) no greater than 1700 kg (3750 lbs) • Less than 2030 mm (80 in) in overall width, exclusive of accessories • Engine displacement equal to or less than 1,000cc (61ci) • Identification by means of a 17 character PIN or VIN

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2. "Single-Hand Single-Operation Barrier"	N/A	**Single-Hand Single-Operation Barrier. An occupant restraint component or assembly that is attached or actuated using a single operation with a single hand. As an example, a door may be opened using a single hand. A net system that requires the user to operate multiple attachment points to enter or exit the vehicle is not a single-hand single-operation barrier.**	Added as defined term.
3. Dynamic Stability	**RRR with pass/fail of no TWL below 0.6 g (plus other ways to pass)**	**30 MPH J-Turn with pass/fail of 0.70 g at TWL**	Change dynamic stability test to 30 MPH J-turn with steering wheel input of 110 degrees (at 500 degrees/sec) with pass/fail of whether TWL occurs.
4. Hang Tag	N/A	**Rollover Resistance scale/graphic**	Add hang tag with General Warning label and other select messages.
5. Vehicle Handling	N/A	**J266 (100 ft radius) with pass/fail of understeer at 0.10 g to 0.50 g**	No action because there is no sound data/rationale for CPSC proposal; new dynamic lateral stability test is sufficient and also accounts for handling characteristics (i.e. J-turn maneuver is more demanding for oversteer vehicles).

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ISSUE	ANSI/ROHVA 1-2011	CPSC SUGGESTION	ROHVA SUMMARY RESPONSE
6. Seat Belt Reminder	**8 second light**	**Speed-limiting interlock for driver seat and front passenger seat with pass/fail of 15 MPH or less if front occupant not buckled**	Change "Seat Belt Reminder" provision to provide manufacturer option to include either (1) driver's seat belt interlock; or (2) FMVSS 208-type audible alert.
7. ORS Zone 2	Construction method (163 lbf against passive barrier at R/R2 **for 5 seconds**, no deflection of more than 1 in) or **Performance method (tilt table to 45 degrees, no dummy excursion beyond 5 in of vehicle width)**	Construction method (163 lbf against passive barrier **or single-hand single operation barrier or structure** at R/R2 **for 10 seconds**, no deflection of more than 1 in); **probe specifications**	Change Construction method generally as proposed by CPSC staff, clarify that combination of multiple barriers/structures may meet the standard and change to permit 2 in of deflection. Delete Performance method as proposed by CPSC staff.
8. ORS Zone 3	Construction method (50 lbf against permanent barrier at centroid of barrier area **for 5 seconds**, no permanent barrier or fastener damage) or **Performance method (affix dummy hands to handhold, tilt table to 45 degrees, no dummy hand/arm excursion beyond 7 in of vehicle width)**	Construction method (50 lbf against permanent barrier at centroid of barrier area **for 10 seconds**, no permanent barrier or fastener damage)	Maintain Construction method with change proposed by CPSC staff. Maintain Performance method, but change to permit 5 in of hand/arm excursion when vehicle tilted to 90 degrees.

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[Deleted text in ~~**bold**~~ or otherwise noted.]
[New/additional text (other than headings) in **bold**.]

3. Definitions

Recreational Off-highway Vehicle (ROV). A motorized off-highway vehicle designed to travel on four or more tires, intended by the manufacturer ~~**primarily**~~ for recreational use by one or more persons and having the following characteristics:

- A steering wheel for steering control
- **Foot controls for throttle and service brake**
- Non-straddle seating
- Maximum speed capability greater than 30 MPH (48 km/h)
- Gross Vehicle Weight Rating (GVWR) no greater than 1700 kg (3750 lbs)
- Less than 2030 mm (80 in) in overall width, exclusive of accessories
- Engine displacement equal to or less than 1,000cc (61cubic inch)
- Identification by means of a 17 character PIN or VIN

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single-hand single-operation barrier. An occupant restraint component or assembly that is attached or actuated using a single operation with a single hand.

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4.17 Hang Tag. Every ROV shall be offered for sale with a hang tag that provides general warning information and instructions for the consumer. The hang tag shall be attached to the ROV and may only be removed by the first purchaser. Lost or damaged hang tags should be replaced.

4.17.1 Size. Every hang tag shall be at least 15.24 cm (6 inches) tall by 10.16 cm (4 inches) wide.

4.17.2 Content. Every hang tag shall contain the content as listed in 4.16.4.5.1 and:

4.17.2.1 The statement – "Training courses to teach ROV driving are available. For information contact your dealer."
4.17.2.2 The statement – "Check with your dealer to find out about state or local laws regarding ROV operation."
4.17.2.3 The statement – "This hang tag is not to be removed before sale."

4.17.3 Attachment. Every hang tag shall be attached to the ROV in such a manner as to be conspicuous and removable only with deliberate effort.

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[Delete current Section 8.3]

8.3 Dynamic Stability

8.3.1 Test Surface.

8.3.1.1 Test-Surface Preparation. Surface used for dynamic testing shall be constructed of asphalt or concrete having a friction coefficient of at least 0. 8 ± 0.05 when measured in accordance with ASTM E1337 or another scientifically valid method that produces repeatable results comparable to ASTM E1337. The slope of this surface shall be no greater than 1 degree (1.7 %).

8.3.1.2 Test-Surface Condition. The surface area used for dynamic testing shall be dry and kept free of debris and substances that may affect test results during vehicle testing.

8.3.2 Test Vehicle Configuration

a) The vehicle shall be tested in the curb weight plus 195 kg (430 lb), distributed to simulate an operator and one passenger, as defined in 8.1.1.2, except as noted in 8.3.2(b).

b) Outriggers (if used), instrumentation, and the operator weight shall subtract from and shall not exceed the 195 kg (430 lb) weight described in 8.3.2(a).

c) The 195 kg (430 lb) weight consisting of the operator, instrumentation, outriggers, and ballast shall be located in the front seating area, distributed symmetrically from left to right and as close to the operator and passenger locations as possible.

d) Outrigger system weight shall not exceed 70 kg (165 lb), shall be attached longitudinally between the front and rear tires of the vehicle as close to the vehicle center of gravity as possible, and shall be symmetric about the vehicle centerline.

e) The vehicle shall be tested in the most open driveline configuration. If the vehicle controls allow the differential lock and four-wheel drive to be disengaged, the vehicle shall be tested with these features disengaged.

f) The tires shall be inflated to the manufacturer's recommended tire pressure for the test weight. Tires used for the test shall have at least half the tread depth of a new tire.

g) If the vehicle contains adjustable suspension components (e.g., spring preload, etc.), adjust them to the setting as recommended in the Owner's/Operator's Manual for the test weight.

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8.3.3 Test Course

a) Vehicle shall be tested on a test surface as defined in 8.3.1.

b) Test track ambient temperature shall be greater than 0°C (32°F).

c) Wind velocity shall not exceed 18 km/h (11.2 mph) in any direction during the test.

8.3.4 Required Tools, Instrumentation or Other Devices

a) Outrigger system as defined in 8.3.2(d), if used.

b) Weights for adjusting the occupant weight.

c) A vehicle speed measurement system.

d) A means to measure steering wheel input rate in degrees/seconds.

8.3.5 Test Procedure

a) The tires should be warmed up according to the vehicle manufacturer's recommendation prior to performing the test. The warm-up procedure should be performed according to the manufacturer's recommendation.

b) The test speed shall be 48 +1.6/ -0 km/h (30 +1.0/ -0 mph).

c) Steering wheel input shall be 110 degrees. A steering stop may be installed to assist the test operator in meeting this requirement.

d) Accelerate the vehicle in a straight line to a speed of 51.5-56.3 kph (32-35 mph) and release the throttle.

e) With the vehicle at the test speed specified in 8.8.5(b), apply the steering wheel input of 110 degrees at rate of 500 degrees per second and maintain that turn angle for 3 seconds. A passing test with a steering wheel input faster than 500 degrees per second, or greater than 110 degrees, is allowed.

f) Outriggers shall not touch during the course of the test. If the outriggers touch during the course of the test, they shall be raised and the test repeated.

g) Perform the test in an alternating pattern so that no two coincident tests are done in the same direction.

8.3.6 Performance Requirements. A total of ten (10) test runs are required, consisting of five (5) test runs to the left and five (5) test runs to the right. The vehicle shall pass the dynamic test if at least eight (8) of the total ten (10) test runs results in no two-wheel lift on all tires on the inside of the turn above the test

surface by at least 50 mm (2 in).

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11.2 Seat Belt Reminder. ~~Manufacturers shall provide a lighted seat-belt use reminder. That reminder shall remain active for at least eight (8) seconds after the ROV ignition/power switch is moved from the "OFF" to the "ON" position, unless the ignition/power switch is moved back to the "OFF" position within eight seconds. The light shall be visible to the seated operator and may either be continuously lighted or flash while active.~~ Manufacturers shall provide a seat belt use reminder system as follows:

11.2.1. System shall be activated when

(a) the vehicle's ignition switch is placed in the "on" or "start" position;

(b) the vehicle is placed in a forward drive mode; and

(c) the driver's seat belt is not in use, as determined, at the option of the manufacturer, either by

(i) the belt latch mechanism not being fastened; or

(ii) the belt not being extended at least 4 inches from its stowed position.

11.2.2. Once the system is activated, and until the driver's seat belt is in use, the system shall, at the discretion of the manufacturer, either:

(a) emit a continuous or repeating audible signal and illuminate a continuous or flashing warning light visible to the driver; or

(b) limit the maximum speed capability of the vehicle and provide visible feedback to the driver that vehicle speed is limited until the driver's seat belt is buckled.

11.2.3. The seat belt use reminder shall satisfy 11.2.2(b) if it meets the Maximum Speed-Limited Capability as follows:

11.2.3.1 Test Condition. Test conditions shall be as follows:

(1) ROV test weight shall be the vehicle curb weight with the test operator only. If the test operator weighs less than 98 kg (215 lb), then the difference in weight shall be added to the vehicle to reflect an operator weight of 98 kg (215 lb).

(2) Tires shall be inflated to the pressures recommended by the ROV manufacturer for the vehicle test weight.

(3) The test surface shall be clean, dry, smooth asphalt or concrete of less than a 1 degree (1.7%) grade.

(4) The driver's seat belt of the OEM vehicle shall not be buckled and shall be fully retracted; however, the driver shall be restrained by a redundant restraint system for test safety purposes.

11.2.3.2 Test Procedure. Measure the maximum speed capability of the ROV under the Test Condition specified in 11.2.3.1 using a radar gun or equivalent method. The test operator shall accelerate the ROV until maximum speed is reached, and shall maintain maximum speed for at least 15 m (50 ft). Speed measurement shall be made when the ROV has reached a stabilized maximum speed. A maximum speed capability test shall consist of a minimum of two measurement test runs conducted over the same track, one each in opposite directions. If more than two measurement runs are made there shall be an equal number of runs in each direction. The maximum speed capability of the ROV shall be the arithmetic average (mean) of the measurements made. A reasonable number of preliminary runs may be made prior to conducting a recorded test.

11.2.3.3 Maximum Speed-Limited Capability Requirement. The maximum speed capability of a vehicle when the driver's seat belt is not in use, as defined in 11.2.1(c), shall be 24.14 km/h (15 mph) or less.

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11.3.1.2 Zone 2 – Shoulder/Hip. ~~The retention requirements for Zone 2 shall be met by either method (A) or method (B) below at the discretion of the vehicle manufacturer.~~

~~(A) Construction-Based Method.~~

Retention requirements for Zone 2 shall be met by **~~a~~ one or more** passive barriers or structures **or single-hand single-operation barriers** represented by the dashed lines in Figure 7 meeting the performance requirements of 11.3.2.2(A). Such **~~a~~** barrier**(s) or structure(s)** shall encompass point R when viewed from the side of the vehicle as shown. All measurements for the point shall be taken with respect to the base of the seatback. The base of the seatback lies on the surface of the seat base along the centerline of the seating position and is measured without simulated occupant weight on the seat. Point R is located 432 mm (17 inches) along the seat back above the base of the seatback. The point is 152 mm (6 inches) forward of and perpendicular to the seatback surface as shown in the figure. For an adjustable seat Point R is determined with the seat adjusted to the rear-most position. Point R_2 applies to an adjustable seat and is located in the same manner as Point R except that the seat is located in the forward-most position.

~~(B) Performance-Based Method. Retention requirements for Zone 2 shall be met using devices or vehicle features meeting the performance requirements of 11.3.2.2(B).~~

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11.3.2.2 Zone 2 – Shoulder/Hip. ~~**Restraint devices for Zone 2 shall meet the performance requirements of either (A) or (B) depending upon the method selected by vehicle manufacturer in 11.3.1.2.**~~

~~**(A) A barrier**~~

Barriers and structures for Zone 2 shall be capable of withstanding a horizontal, outward side force of 725 N (163 lbf), applied **for 10 seconds** at points R and R_2 and any point in between and shall be tested at points R for a fixed seat and R_2 for an adjustable seat. There shall be no deflection greater than ~~**25**~~ **50** mm (~~**1**~~ **2** in) **outside of the vehicle width** upon application and removal of the force. **The two planes determining the vehicle width of an ROV are shown in Figure 10 and are defined by the widest hard points on the ROV.**

~~**(B) A device or vehicle feature for Zone 2 shall keep the torso of the test dummy within the zone adjacent to the occupant compartment as defined below when tested as defined below. This retention performance is required for any outboard seating position on the vehicle.**~~

~~**Test Procedure. A fiftieth (50th) percentile Hybrid III crash-test dummy (78 kg/172 lbs) shall be used.**~~

~~**1. The test vehicle shall be placed on a horizontal tilt table.**~~

~~**2. The test vehicle shall be tethered to the tilt table.**~~

~~**3. The test dummy shall be placed in the seating position in the test vehicle with the seat in its as-delivered position, and the seat belt fastened.**~~

~~**4. The test dummy shall be positioned in an upright and centered posture.**~~

~~**5. The tilt table shall be slowly tilted until the test vehicle chassis reaches a roll angle of at least 45 degrees (100%).**~~

~~**6. The torso of the test dummy shall not extend more than 127 mm (5 in) outside of vehicle width. The two planes determining the vehicle width of an ROV are shown in Figure 10. These planes are vertical when the ROV is horizontal, but tilt with the chassis of the ROV as it is rotated on the tilt table.**~~

~~**7. Test shall be conducted twice, once to the operator's side and once to the passenger's side with the test dummy seated in the downhill outboard position(s).**~~

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11.3.2.3 Zone 3– Arm/Hand. Restraint devices for Zone 3 shall meet the performance requirements of either (A) or (B) depending upon the method selected by

vehicle manufacturer in 11.3.1.3.

(A) Barriers for Zone 3 shall be capable of withstanding a horizontal, outward side force of 222 N (50 lbf), applied **for 10 seconds** at the centroid of the barrier area. No permanent barrier or fastener damage shall be observed as a result of this load application. Barriers in Zone 3 shall have no opening which permits passage of a 76-mm (3-inch) diameter cylinder perpendicular to the barrier surface.

(B) A device or vehicle feature for Zone 3 shall keep the Arm/Hands of the test dummy within the zone adjacent to the occupant compartment as defined below when tested as defined below. This retention performance is required for any outboard seating position on the vehicle.

Test Procedure.

A fiftieth (50th) percentile Hybrid III crash-test dummy (78 kg/172 lbs) shall be used.

1. The test vehicle shall be placed on a horizontal tilt table.
2. The test vehicle shall be tethered to the tilt table.
3. The test dummy shall be placed in the seating position in the test vehicle with the seat in its as-delivered position, and the seat belt fastened.
4. The test dummy shall be positioned in an upright and centered posture.
5. The test dummy's hands shall be affixed to the appropriate handholds, and the test dummy's joints set, to simulate the occupant's grip appropriate to the handholds in use.
6. The tilt table shall be slowly tilted from horizontal or slowly tilted until the test vehicle chassis reaches a roll angle of at least **45 90** degrees ~~**(100%)**~~.
7. No part of the hands and arms of the test dummy shall extend more than ~~**178**~~ **127** mm (~~**7**~~ **5** in) outside of vehicle width. The two planes determining the vehicle width of an ROV are shown in Figure 10 **and are defined by the widest hard points on the ROV**. These planes **are parallel the ROV X_V axis (from SAE J670) and** are vertical when the ROV is horizontal, but tilt with the chassis of the ROV as it is rotated on the tilt table.
8. Test shall be conducted twice, once to the operator's side and once to the passenger's side with the test dummy seated in the downhill outboard position(s).

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[Delete current Figures 16 and 17]