UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

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Memorandum

January 9, 2017

TO: The Commission
Todd Stevenson, Secretary

THROUGH: Mary T. Boyle , General Counsel
Patricia H. Adkins, Executive Director

FROM: George A. Borlase, Assistant Executive Director
Office of Hazard Identification and Reduction
Caroleene Paul, Project Manager
Directorate for Engineering Sciences

SUBJECT: Comparison of Notice of Proposed Rulemaking and Voluntary Standards for Recreational Off-Highway Vehicles

On December 21, 2016, Commissioner Robert Adler requested that EXHR staff prepare a chart for the decisional meeting on the recreational off-highway vehicle (ROV) package that briefly lists the specific proposals contained in the November 19, 2014 notice of proposed rulemaking (NPR) published by the Commission (79 FR 68964) and compares them to the analogous proposals in the two American National Standards Institute (ANSI) voluntary standards from the Recreational Off-Highway Vehicle Association (ROHVA) and the Outdoor Power Equipment Institute (OPEI). ROHVA developed ANSI/ROHVA 1 *American National Standard for Recreational Off-Highway Vehicles* for recreation-oriented ROVs and the latest revision, ANSI/ROHVA 1-2016, was published in May 2016. OPEI developed ANSI/OPEI B71.9 *American National Standard for Multipurpose Off-Highway Utility Vehicles* for utility-oriented ROVs, and the latest revision, ANSI/OPEI B71.9-2016, was published in August 2016. This memorandum is intended to supplement and not replicate or replace the November 22, 2016 briefing package.

In the following table, CPSC staff provides a comparison of the proposed requirements in the NPR with the industry voluntary standard requirements that address vehicle stability, handling, and occupant protection. As noted in the briefing package provided to the Commission on November 22, 2016, while staff does not believe that all requirements of the revised voluntary standards individually provide an equivalent level of protection as those proposed in the NPR, staff believes the current voluntary standards will adequately address the risk of ROV rollover and occupant ejection. Table 1 summarizes the following:

- *Vehicle Stability*. The NPR and the voluntary standards each include provisions for the use of a hangtag to provide stability information at the point of purchase. The NPR proposed a hangtag that displays the threshold rollover lateral acceleration as measured by a 30 mph J-turn test. The voluntary standards provide a hangtag that indicates the tilt table angle achieved before two-wheel lift. Details of staff's evaluation of the tilt table hangtag are provided in Section II.B of the November 22 briefing package.

- *Vehicle Handling*. The NPR and the voluntary standards each include provisions to limit the steering gradient of the vehicle to avoid divergent instability (a condition that can cause loss of control of the vehicle). The NPR proposed using a constant-radius test to measure the understeer gradient of a vehicle and set limits to ensure understeer response of the vehicle. The voluntary standards use a constant steer-angle test to measure the yaw rate of a vehicle and set limits that prevent divergent instability response in a vehicle. Details of the staff's evaluation of the constant steer angle test are provided in Section II.C of the November 22 briefing package.

- *Occupant Protection*. The NPR and the voluntary standards each include provisions to increase seat belt use in ROVs. The NPR proposed requiring a seat belt reminder, limitation of the vehicle's speed to 15 mph, that is tied to the seat belt status of all front occupants in an ROV. The voluntary standards require a seat belt reminder, limitation of the vehicle's speed to 15 mph, that is tied to only the driver's seat belt status because studies show that passengers tend to follow the lead of the driver. Details of the staff's evaluation of occupant protection requirements in the standards are provided in Section II.D of the November 22 briefing package.

Table 1. Comparison of NPR and Voluntary Standards for ROVs.

Topic		NPR Safety Standard for ROVs (79 FR 68964)	Voluntary Standards (VS)		Adequacy of VS Requirements
			ANSI/ROHVA 1-2016	ANSI/OPEI B71.9-2016	
Lateral Stability	Minimum level of rollover resistance	Minimum threshold lateral acceleration (Ay) of 0.70 g as measured by 30 mph, J-turn Test. (two person loading, lateral acceleration expressed as multiple of free-fall gravity (g), which is equal to 9.81 m/s^2)	Minimum tilt table angle (TTA) of 33 degrees as measured by tilt table test. (two person loading)		Based on tilt table tests of ROVs, staff believes that requirement for TTA of 33 degrees is very low and easy to achieve; and should be considered a baseline minimum. It's more important to provide information on TTA at two-wheel lift of the ROV.
	Hangtag providing rollover resistance information	4 inch by 6 inch hangtag that provides value of Ay for that model vehicle.	4 inch by 6 inch hangtag that provides TTA at two-wheel lift (TWL) for that model vehicle.		Staff believes displaying TTA at TWL will increase stability by providing competitive incentive for manufacturers to increase rollover resistance.
Vehicle Handling	Understeer performance of the ROV	Positive understeer gradient (understeer handling) from 0.10 g to 0.50 g as measured in constant radius test.	Yaw Rate Ratio (R) of 4.5 or less in each turning direction as measured by constant steer angle test.		Based on yaw rate tests of ROVs, staff believes R value below 4.5 eliminates vehicles that exhibit divergent instability. Staff also believes manufacturers will design below 3.5 to ensure reproducibility because vehicles exhibiting understeer result in consistent low R values. Staff believes this will reduce rollover incidents caused by divergent instability.
Occupant Protection	Limited maximum speed when front seat belts unbuckled	Maximum speed of 15 mph or less if any occupied front seat belt not buckled.	Maximum speed of 15 mph or less if driver seat belt not buckled.		Staff believes seat belt reminder tied to vehicle speed will increase seat belt use and reduce deaths and injuries. Westat study supports rationale that driver seat belt use will increase passenger seat belt use.
	Minimum level of passive shoulder protection	Structure must not deflect more than 1 inch when 163 lbf applied at point R (17 inch above seat and 6 inch from seat back). Rectangular probe 11 in. by 3.5 in.	Structure must not deflect more than 4 inch when 163 lbf applied at point R (17 inch above seat and 6 inch from seat back). Circular probe 3 in. diameter.		Based on tests that show VS probe test eliminates ROVs with poor occupant protection performance, staff believes VS requirements will increase occupant protection and reduce deaths and injuries associated with rollover.