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June 18, 2015

Erik Pritchard
Recreational Off-Highway Vehicle Association
2 Jenner
Suite 150
Irvine, CA 92618-3806

Re: Docket No. CPSC-2009-0087; Notice of Proposed Rulemaking. Safety Standards for Recreational Off-Highway Vehicles (ROV)

Dear Mr. Pritchard:

Pursuant to the Consumer Product Safety Act (CPSA), the Consumer Product Safety Commission (CPSC) issued a Notice of Proposed Rulemaking (NPR) intended to mitigate Recreational Off-Highway Vehicles (ROV) incidents that fall under certain types of rollover scenarios. 16 CFR Part 1422: Safety Standards for Recreational Off-Highway Vehicles; Proposed Rule, 79 Fed. Reg. 68964 (Nov. 19, 2014). The Commission's proposed rule includes: lateral stability and vehicle handling requirements that specify a minimum level of rollover resistance for ROVs and require that ROVs exhibit sublimit understeer characteristics, and occupant retention requirements that would limit the maximum speed of an ROV to no more than 15 miles per hour (mph) unless the seat belts of both the driver and front passenger were worn. The CPSC staff collected incident data for the Commission's study based on information reported to the Commission through various sources.[1]

The CPSC reviewed and analyzed 428 ROV incidents that occurred between January 1, 2003 and December 31, 2011 to identify hazard characteristics. The CPSC received these 428 ROV incidents from the Injury and Potential Injury Incident (IPII) and In-Depth Investigation (INDP) databases. CPSC also preliminarily reviewed an additional 122 incidents that occurred between January 1, 2012 through April 5, 2013.

1. JP Research conducted a study to evaluate those ROV incidents from 2003-2011 that the CPSC examined and coded as "rolled sideways" to identify the fraction of these incidents that might involve the specific rollover scenarios the CPSC identifies as the basis for the proposed dynamic lateral stability and vehicle handling provisions, since

[1] "The reports are not a complete set of all incidents that have occurred, nor do they constitute a statistical sample representing all ROV-related incidents with at least one death or injury resulting." 79 Fed. Reg. at 68965.

it is in this subset of incidents that CPSC believes these proposed requirements would have mitigated the rollover. JP Research also reviewed the 122 more recent ROV incidents, and then conducted a similar evaluation of those it coded as "rolled sideways" using the CPSC's variables. Importantly, JP Research takes no position on whether the CPSC's proposed dynamic lateral stability and vehicle handling requirements would actually reduce side rollovers in this fraction of incidents or provide any other actual safety benefits. In fact, other reported factors in the side rollover incidents, including clear warned-against operator behaviors, suggest that the vehicle-focused requirements in the NPR's handling and stability provisions would *not* have any significant real-world effect on outcomes.

CONCLUSIONS

1. The JP Research analysis of the 289 ROV incidents from the original 2003-2011 data set coded by the CPSC as "rolled sideways" shows that only a small fraction of these incidents (12%) involved the rollover scenarios the CPSC identifies as being addressed by the NPR, and there was not enough information to make such a determination for most (65%) of the incidents.

2. About half of the fatal rolled sideways incidents (41%) involved rollover scenarios different from those identified in the NPR. Only a similarly small fraction (12%) of these incidents involve rollover scenarios identified by the CPSC. There was not enough information to make such determination for the rest of the fatal rolled sideways incidents.

3. The 2012 Hazard Analysis identifies warned-against behaviors, such as underage drivers, alcohol consumption and failure to wear seat belts, as being prevalent factors in the ROV incidents. These factors are particularly prevalent in the small percentage of fatal incidents that appear to involve the rollover scenarios that the NPR addresses.

4. Only a small fraction (9%) of the severe injury rolled sideways incidents involve rollover scenarios identified by the CPSC. There was not enough information to make such a determination for the rest of the severe injury rolled sideways incidents.

5. Data quality is important for any proper statistical analysis. A significant portion of the rollover incident and injury data used by the CPSC was reported by one plaintiff law firm. In fact, 60% of the severe injury rolled sideways incidents in the CPSC data set were reported by this plaintiff law firm. Incidents reported by a plaintiff law firm are only from consumers who have specifically sought to assert a claim or lawsuit against a manufacturer for alleged problems. Obviously, a database like this does not (and cannot) constitute a statistically representative sample due to selection bias. The frequency of reporting is influenced by the extent of the potential gain that each individual seeks to obtain by submitting a claim or filing a lawsuit. The CPSC's extensive reliance on such biased data renders its conclusions invalid and unsupported.

6. An even smaller fraction of the 47 ROV incidents from 2012-2013 that were coded as "rolled sideways" (9% vs. 12%) were classified by JP Research as involving rollover scenarios the NPR is intended to prevent.

7. Contrary to the CPSC staff's assertion in the Briefing Package, the data on ROV hazard patterns are not consistent between 2003 to 2011 and 2012 to 2013. For 2003-2011, the CPSC reported that 68% of reported ROV incidents involved rolling sideways, and that more than half of these lateral rollovers occurred while making a turn. In the newer data set of 122 incidents that occurred in 2012-13, JP Research coded only 39% of the incidents as involving rolling sideways. In addition, less than half of these lateral rollovers occurred while making a turn. This shows a substantial change in ROV hazard patterns in reported incidents that occurred in 2012-2013 as compared to the incident data from 2003-2011 upon which the NPR is based. In particular, the share of reported ROV incidents that involve lateral rollover appears to have declined by as much as 43%, and less than half of these more recent rollovers occurred while making a turn.

8. The CPSC also reported that in 428 ROV incident reports from 2003-2011,where seat belt status was known, 75% of riders injured or killed in ROV incidents were not wearing their seat belts. 79 Fed. Reg. at 68966. Further, it found that 86% of ROV-related fatalities involved ejection from the vehicle, and that where seat belt use was known for fatally injured riders who were ejected, 91% were unbelted. Id. This indicates that riding unbelted is in fact the predominant hazard scenario for both ROV-related fatalities and injuries. In addition to reducing other warned against behaviors, increasing seat belt use thus appears to represent the most effective approach for reducing such fatalities and injuries (even where rollovers do occur).

Based on the ROV incidents compiled by the CPSC, one cannot estimate the potential effectiveness of the NPR's dynamic lateral stability and vehicle handling requirements in preventing ROV rollover incidents or injuries. As noted, other reported factors in these incidents suggest such requirements would not have any significant real-world impact.

DATA SOURCES

Out of the 428 ROV incidents from 2003-2011 that were analyzed by the CPSC, JP Research received 396 incidents from the CPSC in January 2015. JP Research received the additional 32 incidents from the CPSC in March 2015. JP Research also received the 122 more recent ROV incidents that occurred in 2012-2013.

The CPSC incident data included police reports, epidemiology reports, EMS reports, news articles, photographs, and coroner's reports. Based on these materials, the CPSC performed an analysis in 2012 for the 428 incidents from 2003-2011 which identified whether an incident was an overturn, and more specifically a lateral rollover, and if so, whether it occurred during a turn. The data contained information on over 150 variables, coded by the CPSC staff based on their review of each incident. Of these, data on 43 variables were initially redacted. One of the most important redacted variables was whether the incident was an "overturn" -- and more

specifically the vehicle "rolled sideways" -- or not. Unredacted information on the CPSC's coding of these variables was finally provided in March 2015. The CPSC did not perform a similar analysis of the 122 more recent ROV incidents that occurred in 2012-2013.

JP Research performed a comprehensive manual review of all incidents from 2003-2011 data that CPSC coded as "rolled sideways," as well as 47 incidents from 2012-2013 that JP Research coded as "rolled sideways" after conducting an evaluation of each incident using the CPSC's variables. The purpose of this review was to determine the extent to which each incident involved the rollover hazard scenarios the NPR requirements are intended to address.

METHODOLOGY

The NPR advances two proposed requirements to address specific rollover hazards involving ROVs:

1. Dynamic lateral stability requirement (as measured from J-turn test)
2. Steering and vehicle handling requirement (mandating understeer and prohibiting oversteer)

The CPSC expressed the belief that "lateral stability and vehicle handling have the most effect on rollovers during a turn on level terrain because the rollover is caused primarily by lateral acceleration generated by friction during the turn." 79 Fed. Reg. at 68967.

The CPSC proposes a J-turn test in which the vehicle travels on a straight path at a fixed speed of 30 mph before programmable steering rapidly turns the wheel at a specified rate. The steering angle is then incrementally increased until two wheel lift is observed on the subject vehicle and the lateral acceleration required to produce this condition is measured.

The J-turn test is conducted on a flat and paved surface. The CPSC stated that "vehicles with low rollover resistance exhibit untripped rollover on pavement during a J-turn test, and the lateral acceleration can be measured." Id. at 68970. The agency explained further that the proposed dynamic lateral stability requirement "is intended to insure that all ROVs on the market have at least a minimum level of resistance to rollover during turns," as determined by this J-turn test. Id. at 69004.

The vehicle handling requirement the CPSC proposes would require all ROVs to exhibit understeer, and prohibit neutral to oversteer, based on constant radius testing again on a flat and paved surface. The CPSC's NPR suggests that this requirement would eliminate a vehicle characteristic (i.e., oversteer) that can cause a sudden increase in lateral acceleration leading to rollover during a turn on level ground. Id. at 68975. The NPR further explains that the proposed understeer requirement "is intended to reduce the likelihood of a driver losing control of an ROV during a turn, which can lead to vehicle rollover, striking another vehicle, or striking a fixed object." Id. at 69004.

To evaluate the data underlying the NPR's hypothesis that the proposed dynamic lateral stability and vehicle handling requirements would mitigate ROV rollovers, JP Research

performed a manual review of the ROV incidents coded by CPSC as "rolled sideways" to categorize the rollover scenarios into the following classifications:

- No (N): Any scenario where the NPR proposed requirements (sublimit understeer or a minimum lateral acceleration of 0.70 g at two wheel lift in the J turn) would not have an effect on the rollover incident. All non-rollover events and end-over-end rollover events are coded as "No." The "No" category includes incidents with no mention of loss of control, incidents involving vehicle impacts with an object or other vehicle prior to rollover, and incidents involving steep slopes or drops (e.g., falls into ditches, embankments, falls off boulders or ledges, rolling down sand dunes).
    - Example: "The victim was traveling on a trail that was not suitable for the large ATV[2]… The trail was wet and sloping… The victim backed off the trail rolling the ATV multiples times… The length of the slope was estimated 185 feet down at 60 degree angle."
    - Example: "Vehicle #2 collided with the left front of Vehicle #1 causing Vehicle #1 to eject both its unseat belted occupants onto the roadway before overturning onto its left side."

- Possible (P): Any incident which falls within the identified rollover scenarios that the NPR is aimed at addressing and which therefore could at least potentially be mitigated by its proposed requirements. This would include turns on level ground with paved or hard surface and vehicle speed less than 30 mph.
    - Example: "Traveling at a steady speed he estimated about 10 to 15 mph and was not accelerating or decelerating when the tipping began… Incident occurred on a level dirt lot."

- Insufficient Information (I): Not enough information to make a determination on rollover scenario. Typically no mention of turning or events prior to incident.
    - Example: "Injured by tip-over."

- Unknown (U): Incident involves a turning event but information on terrain surface, slope or vehicle speed is unknown.
    - Example: "During the process of turning, the wheels on the passenger side dug deep into the ground."

RESULTS

Of the 428 ROV incidents from 2003-2011 that the CPSC included in its 2012 hazard analysis, 289 incidents (68 %) were coded by the CPSC as "rolled sideways." *See* Attached PowerPoint, Figure 1. CPSC claimed more than half of these rollovers occurred while the vehicle was in a turn. A spreadsheet with JP Research's classification of each of these 289 incidents into the four categories described above ("N", "P", "I", and "U") with respect to a determination whether the incident involved rollover hazard scenarios which the NPR is

[2] Although described as an "ATV," the make and model information indicate that it was in fact an ROV.

intended to address is attached at Appendix B. Figure 2 presents a summary of these classification results. The results are discussed in more detail below.

- Of the 289 rolled sideways incidents, 23% were identified by JP Research as not involving the kind of rollover scenarios addressed in the NPR. In addition, 29% (85) were coded as "Unknown" and 35% (102) were coded as "Insufficient Information." Only a small fraction – 12 % (36) – of rolled sideways scenarios were coded as "Possible" in terms of involving the kind of rollover scenarios on which the NPR focused and thus could even potentially have been mitigated by the proposed vehicle handling and lateral stability requirements (Figure 2). These 36 incidents occurred over a nine-year period. In sum, almost two-thirds of the incidents reviewed by the CPSC did not have enough information to determine if they even involve the kind of rollover scenarios the dynamic lateral stability and vehicle handling requirements in the NPR purport to address.

- Of the 102 rollover incidents with insufficient information, 71 were filed by a law firm, Lieff Cabraser Heimann & Bernstein, LLP (Lieff Cabraser) representing plaintiffs with pending injury claims or lawsuits against ROV manufacturers. Lieff Cabraser filed a total of 72 incidents out of the 289 rolled sideway incidents the CPSC used for their study. The Lieff Cabraser narratives were brief and most of them were emails. *See* Attached PowerPoint, Appendix A. These narratives did not mention any details on events or conditions necessary to understand the rollover scenario. Furthermore, many of the injury incidents filed by Lieff Cabraser did not include medical records or EMS reports to validate the accuracy of injury reporting. Incidents reported by plaintiff law firms are inherently biased and do not constitute a scientific sample of ROV incidents experienced by consumers. A data set with over 25% of the incidents coming from unverifiable, biased, undetailed plaintiff law firm's emails cannot be relied upon for impartial, scientific rulemaking decisions.

There were no fatal incidents reported by Lieff Cabraser, while over half of the severe injuries in the CPSC data were reported by this law firm. Again, alleged incidents reported by plaintiffs' law firms are clearly biased and do not constitute a statistically valid sample of injury experience of ROV users.

Surface Type

The dynamic lateral stability and vehicle handling tests in the NPR are conducted on flat, paved surfaces. However, ROVs are designed for use primarily in off-highway environments. The CPSC asserted that "lateral stability and vehicle handling have the most effect on rollovers during a turn on level terrain because the rollover is caused primarily by lateral acceleration generated by friction during the turn."[3] However, this scenario may not be relatable to many off-highway surfaces. Among other things, off-highway surfaces can have different coefficients of friction, be soft allowing for furrowing, and have uneven surface conditions such as bumps or roots.

[3] 79 Fed. Reg. at 68967.

A review of the CPSC's 289 rolled sideways incidents confirms that rollovers occur over a variety of terrains. Only 12% of rollovers in the CPSC data occurred on pavement. Over 40% were coded by the CPSC as "unknown" surface type (Figure 3).

Fatal and Severe Injury Incidents

The primary purpose of the NPR (as described by the CPSC) is to address the risk of serious injury and fatality to ROV users. Consequently, JP Research examined injury severity data coded by the CPSC.

Of the 289 rolled sideways incidents, 146 were fatal incidents and 67 were severe injury incidents (Figure 4). These incidents were reviewed to identify how many may have involved the kind of rollover scenarios the CPSC identifies and addresses in the NPR.

A summary of the four classifications for the 146 fatal incidents is presented in Figure 5. Of the 146 fatal rolled sideways incidents, 41% were identified by JP Research as not involving the kind of rollover scenarios identified in the NPR. Once again, only a small fraction (12%) of the fatal incidents may apparently have involved such a rollover scenario. There was not enough information to make any meaningful determination for the rest of the ROV incidents coded by the CPSC.

Of the 67 severe injury rolled sideways incidents, 42 were reported by the law firm Lieff Cabraser. Over 80% of the injury incidents did not have enough information to determine if they would fall under the rollover scenarios identified in the NPR (Figure 6). And, again, only a small fraction (9%) of injury incidents appear to fall within such rollover scenarios. This translates into six (6) injuries for the nine-year period the CPSC included in the first set of ROV incident data.

The CPSC's definition of severe injuries included injuries with one or more surgeries with lasting repercussions. This definition is subjective and, in many incidents, there were no medical records to verify the nature of injury by body region and severity. Consequently, the severe injury data used by the CPSC in the 2012 analysis cannot be used to render valid conclusions on potential injury reduction associated with the NPR, either.

Other Factors Involved in the ROV-Related Incidents

The NPR, and to a greater extent, the CPSC staff Analysis of Reported Incidents Involving Deaths or Injuries Associated with Recreational Off-Highway Vehicles (May 2012) indicate the degree to which other factors, such as operator misuse, influenced the 428 ROV incidents. In particular, they note the following;

- 18% of the incidents involved drivers under 16 years of age; 24% of fatal incidents involved drivers under 16
- Of all adult drivers, 38% had consumed alcohol, and 39% had unknown alcohol status

- Of adult drivers involved in fatalities, 46% had consumed alcohol and 26% had unknown alcohol status
- Of occupants injured or killed whose seat belt status was known, 75% were unbelted
- Of fatally injured occupants who were ejected from the vehicle and whose seat belt status was known, 91% were not belted
- Of fatally injured occupants whose helmet status was known, 2% were wearing helmets.

The staff analysis did not report the number of instances or percentages of other relevant operator-related factors such as stunt driving, high-speed operation or collisions with on-highway motor vehicles.

Of the 18 fatal rolled sideways incidents that may have involved the kind of rollover scenarios the CPSC identifies in the NPR, five involve an unbelted underage driver (age ≤ 12) with no helmet, five involve alcohol use of the driver, four involve erratic driving (intentional swerving, stood up in seat, etc.), and four involve all occupants being unbelted with no helmet.

Of the six severe injury rolled sideways incidents that may have involved the kind of rollover scenarios the CPSC identifies in the NPR, two involve all occupants being unbelted with no helmet and one involves swerving to avoid an object in the road. The remaining three incidents do not have sufficient information on driver factors.

Figures 7 and 8 show that of the 47 incidents from 2012-2013 it coded as rolled sideways, 34% were classified by JP Research as not involving the kind of rollover scenarios addressed in the NPR. In addition, 53% (25) were classified as "Unknown" and 4% (2) were classified as "Insufficient Information." Only a small fraction – 9% (4) – of rolled sideways scenarios were coded as "Possible" in terms of involving the kind of rollover scenarios which the NPR addressed. Figures 9 and 10 present comparisons of JP research's classifications of rollover scenarios for all and fatal rolled sideways incidents for the two data sets. A spreadsheet with JP Research's classification of each of these 47 incidents into the four categories described above ("N", "P", "I", and "U") is attached at Appendix C.

Analysis of More Recent Data

The CPSC also collected data on 122 ROV incidents that occurred in 2012-2013. Although a comparable analysis of this data is not presented in either the NPR or the staff hazard analysis, the Briefing Package states that "[s]taff conducted a preliminary review of the additional reported incidents and did not detect a change in the hazard patterns identified." Briefing Package at 12. However, coding of the more recent incident data by JP Research shows that the Commission's prior conclusions as to hazard patterns do not hold true for the more recent incidents. In particular, only 39% of the more recent ROV incidents were coded as "rolled sideways" as compared to the 68% reported for the earlier 428 incidents (Figure 1 vs. Figure 7). This represents a 43% decline in the percentage of ROV incidents coded as "rolled sideways" in the incident data from 2012-2013 as compared to the data from 2003-2011. In addition, while CPSC reported that more than half of the 2003-2011 lateral rollovers occurred

while making a turn, JP Research's evaluation shows that less than half of the more recent 2012-2013 lateral rollovers fall into this category (the spreadsheet attached at Appendix C shows JP Research's coding of 22 of the more recent 47 lateral rollovers as occurring while making a turn). This represents a substantial change in ROV hazard patterns between the two time periods, including a decline of 43% in the share of reported ROV incidents that involve lateral rollovers and a change from a majority to a minority of those rollovers occurring while making a turn.

Based on my analyses of the ROV incidents compiled by the CPSC, I conclude that only a very small fraction of the incidents even involve the kind of rollover scenarios identified in the NPR as being addressed by the proposed lateral stability and vehicle handling requirements; much of the database is non-representative and clearly biased; a significant portion of the reported incidents lack sufficient data to draw any meaningful conclusions; and the data simply cannot be used as a reliable basis to support (much less establish) the potential effectiveness of the dynamic lateral stability and vehicle handling requirements in the NPR in reducing or preventing ROV rollover incidents or associated fatalities and injuries.

In addition, review of the 122 more recent incidents from 2012-2013 shows a substantial change in ROV hazard patterns as compared to the 428 incidents from 2003-2011 upon which the NPR is based. In particular, the more recent incident data from 2012-2013 show a decline by nearly half (i.e. from 68% to 39%) in the share of reported ROV incidents that involve lateral rollover, and that less than half of these more recent sideways rollovers occurred while making a turn.

Finally, the incident data show that riding while not wearing a seat belt is the predominant ROV hazard pattern. Reducing the number of unbelted riders appears to be the most effective approach for reducing ROV-related fatalities and injuries.

Sincerely,

Jeya Padmanaban

REFERENCES

16 CFR Part 1422: Safety Standards for Recreational Off-Highway Vehicles; Proposed Rule, 79 Fed. Reg. 68964 (Nov. 19, 2014).

FIGURES

Figure 1

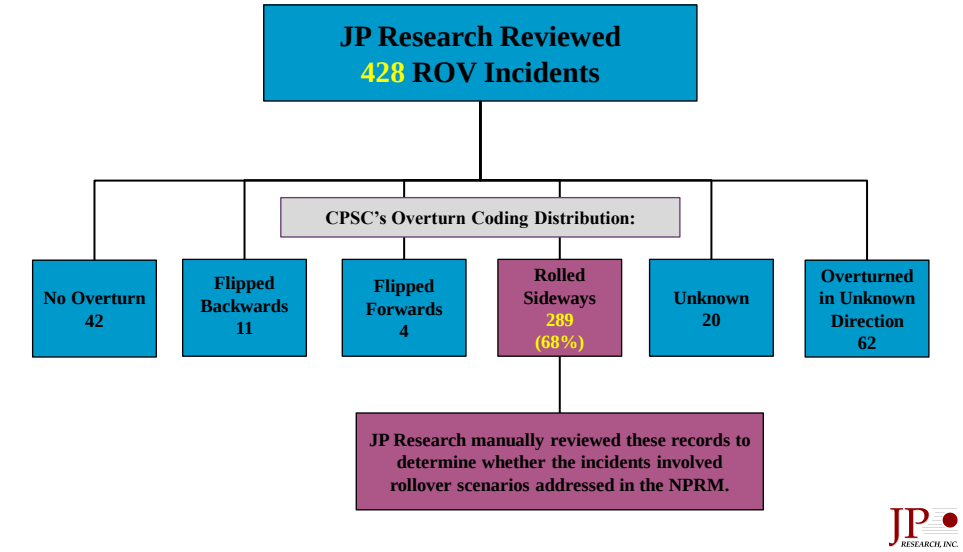
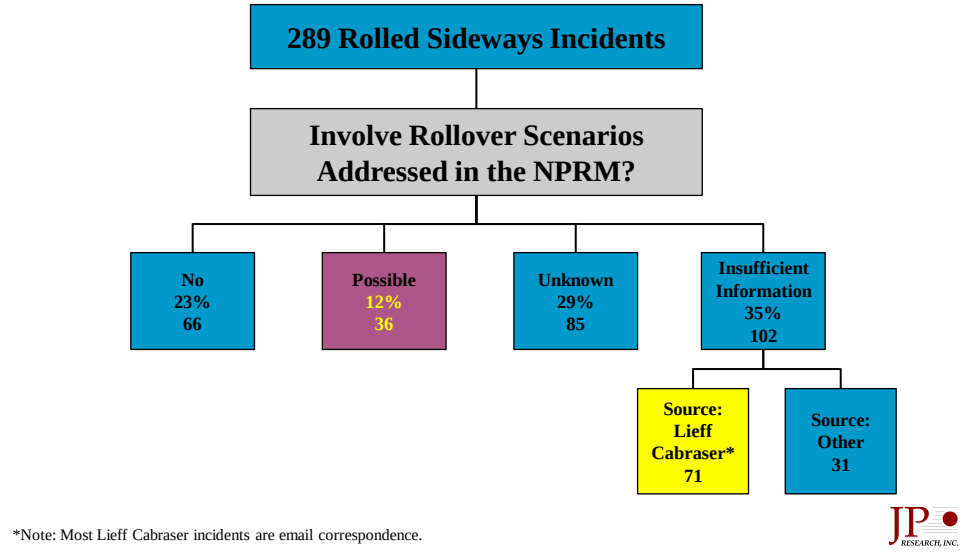
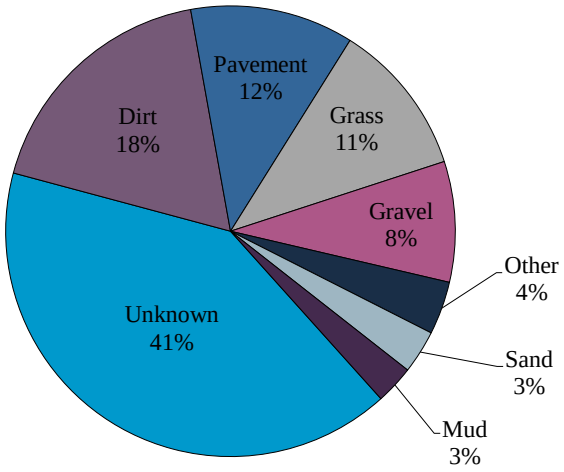


Figure 2



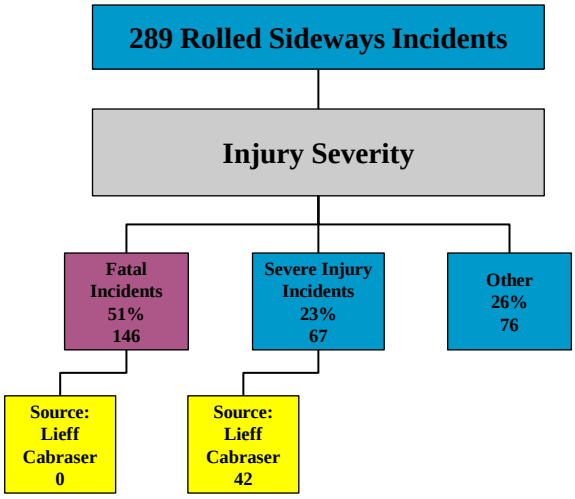
*Note: Most Lieff Cabraser incidents are email correspondence.

Figure 3



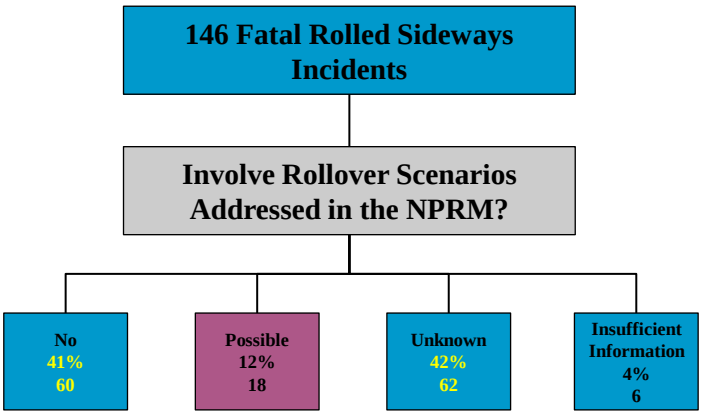
Note: Includes surface terrain of the 289 rolled sideways incidents.

Figure 4



Note: CPSC's definition of "severe injury" includes injuries resulting in one or more surgeries with lasting repercussions.

Figure 5



18 (12%) ROV fatal incidents might involve rollover scenarios addressed in NPRM.

Note: None of the Lieff Cabraser records involve fatal incidents.

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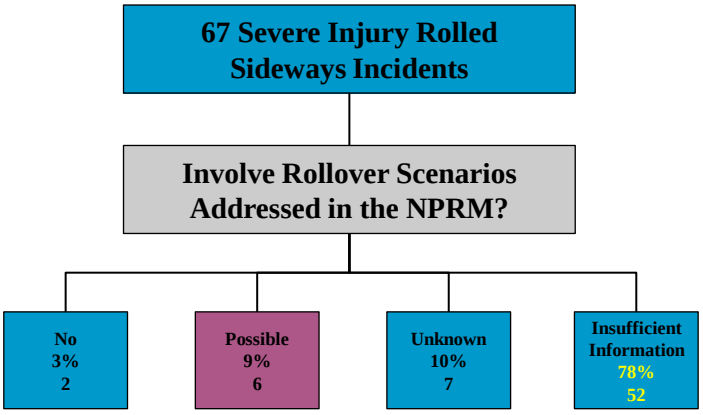
Figure 6



6 (9%) ROV severe injury incidents might involve rollover scenarios addressed in NPRM.

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Figure 7

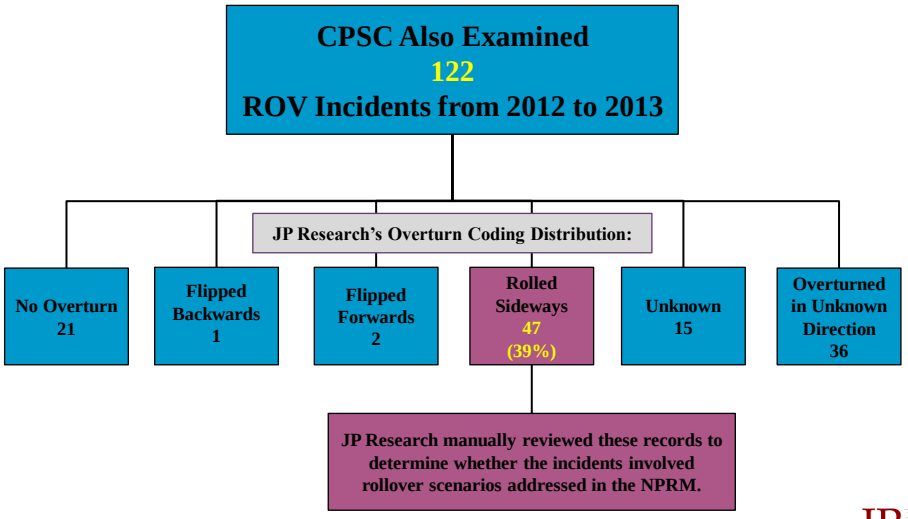


Figure 8

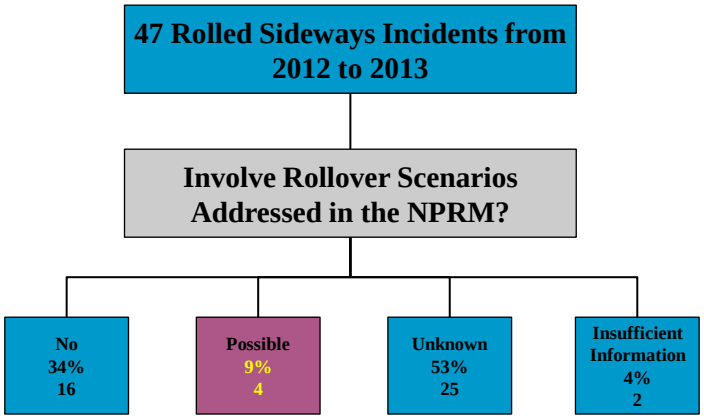
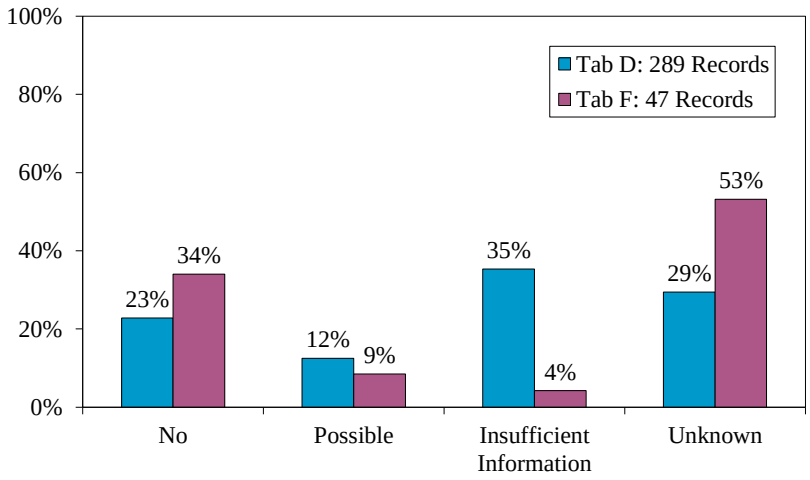
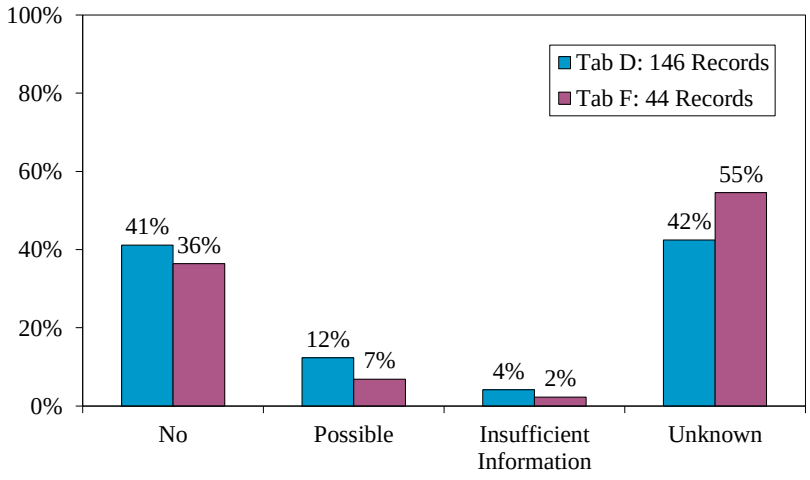


Figure 9



Note: Includes all rolled sideways incidents.

Figure 10



Note: Includes fatal rolled sideways incidents.

APPENDICES

Appendix A: Lieff Cabraser Narratives

- _____, a 46-year-old man from Indiana, was injured by the tipover of a 2006 pre-recalled doorless Rhino whose unpadded rollcage crushed his foot on June 16, 2006. While it has been over a year since his accident, foot is still swollen, he finds it extremely hard to walk, and _____ is in considerable pain.
- _____ is a 37-year-old California husband and father of three whose left foot was crushed by the tip-over of a doorless 2007 Rhino on May 19, 2007. Four months after the tip over, Mr. _____ still struggles to walk, faces financial hardship, and is struggling to find employment because of his injuries
- _____, a 14 year-old Georgia girl, 'was maimed by the tipover of a 2007 pre-recalled doorless Rhino that led to the amputation of her right foot on July 28,2007. The tippy vehicle's unpadded heavy steel rollcage struck and destroyed her foot. She is the daughter of a single mother and they have since lost their insurance as _____ medical bills continue to accrue. _____ is a gifted student who was looking forward to her college-prep classes; however, in order to concentrate on healing, she has been removed from school indefinitely.
- _____, a 17-year-old student from New York, was injured by the tipover of a 2007 pre-recalled doorless Rhino whose unpadded rollcage crushed his left arm on May 28, 2007. _____ shattered both the radius and ulna in his left arm. He is in constant pain and still cannot move his wrist.

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Appendix B: JP Research Coding of the 289 Rolled Sideways Incidents Examined by the CPSC (2003-2011)

Record No.	IDI	Document	JPR Coding
1		I0430306A	I
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3	041026HWE3014	F04A3006A	N
4	050321HCC2549	X0520650A	N
6	050113HNE2021	N0510118A	U
7	051213HCC2181	547012324	I
8	070314HCC3312	506043112	N
9	050531HNE2454	N0560134A	I
10	060630HCC3643	548089432	I
13	090507CCC2610	H0940220A	U
14	050826HCN0828	G0580289A	N
15	060913HCC3877	548110190	N
16		H0840004A	P
17	070221HCC3265	X0710295A	N
23	051207HWE5051	N05C0166A	N
24	080401HCC2523	613005199	U
26	060516HNE0985	N0650374A	N
27	060622HNE1135	N0660495A	U
34	071120HCC3182	608014942	N
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74	090122CCC1367	X0910206A	U
76	070725HNE2609	N0770402A	U
78	090126CCC3268	Y0910244A	I
79		N0790812A	N
80	071010HCC3036	N0780512A	N
81	080811CWE7670	I07C0065A	I
83		I0790333A	I
84	071127HCC3196	N0790327A	U
85	090827CCC3928	I0970928A	U
86	080811CWE7666	N07A0378A	U
87	081106HCC3100	730007114	N
88	080911HCC3891	706096398	N
90	080402HCC1518	737058416	U
93	090126CCC2284	I08B0613A	U
95	080226HCC2453	726071438	N
98		N07C0111A	N
100	090325CWE8131	N0930587A	U
101	081218CCC2191	I08C0328A	U
105	080122HNE3081	N0810429A	U
107	090714HCC3750	806018586	N
113	080917HWE7745	N0890274A	N
114	080505HWE7429	X0910242A	U
115	090508CCC1699	X0950040A	U
118	081106CWE7836	I08B0095A	U
119		N0840342A	I
121	080501HCC2607	N0840363A	U
122	081028CCC3070	N0840459A	N
124	081203HWE7908	N08C0099A	U
125	090108HCC1308	851023018	N
129	090520HCC2635	X0940883A	N
130	080722HCC2818	N0870090A	U
131	080623HNE3523	N0860290A	P
132	090407CCC2512	I0930794A	U
140	090225HCC2408	847033786	P

Record No.	IDI	Document	JPR Coding
141	090408HCC3510	849008704	N
143	080818HWE7697	N0880186A	P
144	080827HWE0001	N0880849A	P
146	090317HCC3426	841020373	N
149	090508CCC3573	I0950188A	I
151	081009HNE3826	N08A0127A	U
152	081014HNE3829	N08A0152A	N
153	081021HWE7803	N08A0288A	U
154	081031HWE7821	N08A0408A	U
157	081030CCC3081	X08A0706A	U
158	081104HNE3883	N08B0023A	U
159	090827HCC3922	806192074	U
168	090903HCC2898	X0970537A	P
171	090424HCC2575	N0930568A	U
174	090507CCC2609	U0944791A	P
175		H0940131A	P
177	090421HNE4376	N0940302A	U
178	090504HWE8215	N0950005A	N
179	090429CCC3546	I0940669A	I
181	090604CCC1763	I0951055A	U
184	090701CCC3707	X0960271A	I
187	090603CEP9030	NEISS	P
188	090710HCC3729	N0960113A	N
189	090521HWE8249	N0950296A	N
191	090526HNE4440	N0950329A	U
193	090528HWE8262	N0950375A	P
195	090608CNE4481	N0960115A	U
196	090828CCC3935	X0980652A	N
197	090828CCC3933	X0980651A	N
200	090903HCC1051	X0970693A	I
201	090630CCC2726	I0960931A	P
202	090805HCC3840	X0970058A	N
206	090715CNE4598	N0970204A	P
207	090722HNE4626	N0970332A	U
209	091001HWE8468	N09A0016A	U
211	090831CCC1009	X0980654A	U
215	090930CCC2937	X0990051A	U
217	090903CCC3944	X0980670A	U

Record No.	IDI	Document	JPR Coding
218	091130CBB3125	X09B0516A	P
219	090910CCC2911	X0990055A	U
220	091019CCC2074	H09A0235A	P
221	090921CCC2919	X0990220A	U
225	091116HNE4836	N09B0128A	U
232	091123HWE8536	N09B0343A	N
234		X1010180A	U
235	091120HCC2157	828006064	U
236	091216CCC2242	N09B0308A	U
238	091216CCC2241	N09B0298A	P
240	100112CCC2302	755021163	U
243	091203HCC3141	U09A6116A	U
245	100127CCC1294	X1010355A	U
246	100326CCC2502	H1030381A	P
247		X1030379A	I
250	100308HNE0196	N1030101A	U
255	100309HWE2003	N1030121A	P
257		X1040420A	U
262	100407CCC2545	X1040047A	P
263	100407CCC3539	X1040046A	N
265		X1060009A	U
266	100505CCC2660	X1050119A	N
268	100413HCC3569	N1030259A	U
270	100526CNE0355	N1050153A	U
272	100602CWE2166	N1060041A	P
273	100608CCC2758	X1060097A	N
275		X1070821A	I
276		X1080056A	I
278	100708CCC3876	X1070083A	U
281		I1090198A	U
282		I1090339A	I
285	100616HCC2784	901022561	U
286	090126CCC2285	Y0910243A	I
287		Y0820449A	I
288		Y0820449D	I
289		Y0820449E	I
290		Y0820449F	I
291		Y0820449G	I

Record No.	IDI	Document	JPR Coding
292		Y0820449H	I
293		Y0820449I	I
294		Y0820449J	I
295		Y0820449K	I
296		Y0820449L	I
297		Y0820449M	I
298		Y0820449N	I
299		Y0820449O	I
300		Y0820449P	I
301		Y0820449Q	I
302		Y0820449R	I
303		Y0820449S	I
304		Y0820449T	I
305		Y0820449U	I
306		Y0820449V	I
307		Y0820449W	I
308		Y0820449X	I
309		Y0820449Y	I
310		Y0820449Z	I
311		Y0820450A	I
312		Y0820450B	I
313		Y0820450C	I
314		Y0820450D	I
315		Y0820450E	I
316		Y0820450G	I
317		Y0820450H	I
318		Y0820450I	I
319		Y0820450J	I
320		Y0820450K	I
321		Y0820450L	I
322		Y0820450M	I
323		Y0820450N	I
324		Y0820450O	I
325		Y0820450P	I
326		Y0820450Q	I
327		Y0820450R	I
328		Y0820450S	I
329		Y0820450T	I

Record No.	IDI	Document	JPR Coding
330		Y0820450U	I
331		Y0820450V	I
332		Y0820450W	I
333		Y0820450X	I
334		Y0820450Y	I
335		Y0820450Z	I
336		Y0820451A	I
337		Y0820451B	I
338		Y0820451C	I
339		Y0820451D	I
340		Y0820451E	I
341		Y0820451F	I
342		Y0820451G	I
343		Y0820451H	I
344		Y0820451I	U
345		Y0820451J	I
346		Y0820451K	I
347		Y0820451L	I
348		Y0820451M	I
349		Y0820451N	I
350		Y0820451O	I
351		Y0820451P	I
352		Y0820451Q	I
353		Y0820451R	I
354		Y0820451S	I
355		Y0820451T	I
356		Y0820451U	I
357		Y0820451V	I
358		Y0820451W	I
359	100824CCC2051	N1080163A	N
363	100824CCC3048	X1080410A	N
364	100811HCC2018	928027167	U
365	100623HCC1877	X1060126A	N
366	100907CCC3099	X1090192A	P
367	100824CCC3047	X1080411A	U
369	100908CCC2106	X1090191A	P
370	100910HCC3105	1040005661	N
371	100928CCC3175	X1090450A	U

Record No.	IDI	Document	JPR Coding
373	100922CCC3145	848150190	U
374	100929HCC3184	948076012	U
375	101006HCC3017	U1098494A	U
376	100825HCC3049	X1080414A	P
378		U10A8568A	P
381		X10A0176C	I
385		I10B0500A	P
390	101201HCC3228	X10C0001A	U
392		X10C0030C	I
394		X10C0030G	I
396		X10C0030J	I
397		X10C0030L	I
398		X10C0030M	I
399		X10C0030Q	I
401		X10C0030S	I
406	101124HCC2152	805015591	U
407		I1110249A	I
408	110112HCC1262	X1110013A	N
410	110124HNE0881	X1110371A	N
413	110308HCC2349	X1130220A	N
415		X1130154B	I
417		X1130154C	U
419	110329HCC3513	748109206	N
422	110222HCC2324	X1120368A	U
423		X1140969A	I
424	110503HCC3683	X1140983A	N
425	110225HWE7009	X1140771A	P
426	110420HCC3655	X1140537A	N
427		X1150118A	U
428	110516CNE0009	X1150571A	N
429	110518HCC2541	X1150415A	U
433		X1150831B	I
434	110531HCC1668	X1150828A	N
435	110518HCC1595	X1150375A	P
437	110315HCC2372	X1130076A	U
438	110622HCC1724	X1160633A	N
440	110323HCC3501	748085951	N
441	110518HCC3738	X1150360A	N

Record No.	IDI	Document	JPR Coding
442	110614HCC3833	X1160380A	N
443	110725CCC2702	I1170122A	P
447	110503HCC1555	X1140982A	U
449		X1170832A	N
451	110506HCC3701	1049010655	N
453	110718HCC2680	X1170135A	N
454		X1180921A	N
455		X1180922A	U
456	110803HCC2783	X1170831A	N
457	110518HCC2540	X1150369A	N
458	110906HWE3023	X1190086A	P
459	110927HCC1071	X1190478A	I
461		X1190408A	N
462	110824HCC2846	X1180789A	N
464	111007HCC3005	X1190951A	P
468	111101HNE1547	X11B0001A	N
471	111011HCC2015	X11A0073A	N
472	111116HCC3140	X11B0584A	U
475	111122HNE0015	X11B0840A	P
476	111129HCC1219	X11B1387A	U
477	111201HCC3189	X11B1302A	N
478	111206HCC1236	X11C0105A	U
481	110315HCC3480	X1130070A	U
482	110302HCC1341	X1121028A	N
483	111208HCC2165	X11B1313B	U

Appendix C: JP Research Coding of the 47 Rolled Sideways Incidents Examined by the CPSC (2012-2013)

Record No.	File Name	JPR Coding	Rolled Sideways While Making a Turn
1002	1002-X1210226A	U	
1003	1003-X1210340A	N	Y
1004	1004-X1210291A	N	
1005	1005-1008022044	N	
1007	1007-X1210645A	N	
1008	1008-1129021540	U	Y
1012	1012-905022670	U	Y
1014	1014-X1230477A	U	Y
1015	1015-X1230476A	U	
1016	1016-X1230670A	N	
1020	1020-X1231274A	N	
1025	1025-X1240931A	U	
1027	1027-X1250151A	U	Y
1028	1028-X1250319A	N	
1029	1029-X1250361A	U	
1032	1032-X1250485A	P	
1033	1033-1048120210	N	
1035	1035-X1240561A	U	Y
1036	1036-X1260105A	U	Y
1038	1038-X1260185A	U	Y
1040	1040-X1260297A	U	Y
1050	1050-I1270508A	P	
1053	1053-X1270460A	U	Y
1054	1054-X1280564A	U	
1055	1055-X1260256A	U	Y
1059	1059-X1290075A	N	
1061	1061-X1290448A	U	Y
1062	1062-X1290466A	N	
1063	1063-X1290458A	U	Y
1065	1065-X1270022A	N	
1066	1066-X1290452A	N	Y
1084	1084-X12B1015A	P	Y
1087	1087-X12B0132A	U	
1090	1090-X1310069A	U	
1091	1091-X12C0741A	U	Y

Record No.	File Name	JPR Coding	Rolled Sideways While Making a Turn
1093	1093-X12C0766A	U	Y
1094	1094-X12C0779A	N	Y
1095	1095-X1310027A	U	Y
1097	1097-X12B1601A	N	
1099	1099-X1310325A	I	
1101	1101-X12C0583A	I	
1102	1102-X12C0763A	U	Y
1103	1103-X1310570A	U	
1109	1109-X12C0773A	P	Y
1110	1110-X1310778I	U	
1111	1111-X12B0407A	N	Y
1113	1113-X12B0592A	N	