B. Review Schedule

In conjunction with our section 610 reviews, we will be performing plain language reviews over a ten-year period on a schedule consistent with the section 610 review schedule. We will review §§ 571.101 through 571.110 and 571.135 to determine if these regulations can be reorganized and/or rewritten to make them easier to read, understand, and use. We encourage interested persons to submit draft regulatory language that clearly and simply communicates regulatory requirements, and other recommendations, such as for putting information in tables that may make the regulations easier to use.

Comments

How Do I Prepare and Submit Comments?

Your comments must be written and in English. To ensure that your comments are correctly filed in the Docket, please include the docket number of this document in your comments.

Your comments must not be more than 15 pages long. (49 CFR 553.21.) We established this limit to encourage you to write your primary comments in a concise fashion. However, you may attach necessary additional documents to your comments. There is no limit on the length of the attachments.

Please submit two copies of your comments, including the attachments, to Docket Management at the address given above under **ADDRESSES.**

Comments may also be submitted to the docket electronically by logging onto the Docket Management System website at http://dms.dot.gov. Click on ‘‘Help & Information’’ or ‘‘Help/Info’’ to obtain instructions for filing your comments electronically.

How Can I Be Sure That My Comments Were Received?

If you wish Docket Management to notify you upon its receipt of your comments, enclose a self-addressed, stamped postcard in the envelope containing your comments. Upon receiving your comments, Docket Management will return the postcard by mail.

How Do I Submit Confidential Business Information?

If you wish to submit any information under a claim of confidentiality, you should submit three copies of your complete submission, including the information you claim to be confidential business information, to the Chief Counsel, NHTSA, at the address given above under **FOR FURTHER INFORMATION CONTACT.** In addition, you should submit two copies, from which you have deleted the claimed confidential business information, to Docket Management at the address given above under **ADDRESSES.** When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in our confidential business information regulation. (49 CFR part 512.)

Will the Agency Consider Late Comments?

We will consider all comments that Docket Management receives before the close of business on the comment closing date indicated above under **DATES**. To the extent possible, we will also consider comments that Docket Management receives after that date.

How Can I Read the Comments Submitted by Other People?

You may read the comments received by Docket Management at the address given above under **ADDRESSES.** The hours of the Docket are indicated above in the same location.

You may also see the comments on the Internet. To read the comments on the Internet, take the following steps:

(1) Go to the Docket Management System (DMS) Web page of the Department of Transportation (http://dms.dot.gov/).

(2) On that page, click on ‘‘search.’’

(3) On the next page (http://dms.dot.gov/search/), type in the four-digit docket number shown at the beginning of this document. Example: If the docket number were ‘‘NHTSA–1998–1234,’’ you would type ‘‘1234.’’ After typing the docket number, click on ‘‘search.’’

(4) On the next page, which contains docket summary information for the docket you selected, click on the desired comments. You may download the comments. However, since the comments are imaged documents, instead of word processing documents, the ‘‘pdf’’ versions of the documents are word searchable.

Please note that even after the comment closing date, we will continue to file relevant information in the Docket as it becomes available. Further, some people may submit late comments. Accordingly, we recommend that you periodically check the Docket for new material.

William H. Walsh,

Associate Administrator for Plans and Policy.

[FR Doc. 01–16684 Filed 7–2–01; 8:45 am]

BILLING CODE 4910–59–P

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 575

[Docket No. NHTSA–2001–9663]

Consumer Information Regulations; Federal Motor Vehicle Safety Standards; Rollover Resistance

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Request for comments.

SUMMARY: This notice announces NHTSA’s plans to evaluate a number of driving maneuver tests for rollover resistance in accordance with the requirements of the TREAD Act. The agency will develop a dynamic test on rollovers of light motor vehicles for a consumer information program, and seeks comments on the subject of dynamic rollover testing and our approach to developing meaningful consumer information.

DATES: *Comment Date:* Comments must be received by August 17, 2001.

ADDRESSES: All comments should refer to Docket No. NHTSA–2001–9663 and be submitted to: Docket Management, Room PL–401, 400 Seventh Street, SW, Washington, D.C. 20590. Docket hours are 10 a.m. to 5 p.m. Monday through Friday.

For public comments and other information related to previous notices on this subject, please refer to DOT Docket Nos. NHTSA–2000–6859 and 8298 also available on the web at *http://dms.gov/search*, and NHTSA Docket No. 91–68; Notice 3, NHTSA Docket, Room 5111, 400 Seventh Street, SW, Washington, DC 20590. The NHTSA Docket hours are from 9:30 am to 4 pm Monday through Friday.

FOR FURTHER INFORMATION CONTACT: For technical questions you may contact Patrick Boyd, NPS–23, Office of Safety Performance Standards, National Highway Traffic Safety Administration, 400 Seventh Street, SW, Washington, DC 20590. Mr. Boyd can be reached by phone at (202) 366–6346 or by facsimile at (202) 493–2739.

SUPPLEMENTARY INFORMATION:

I. Safety Problem.

I. Safety Problem

Rollover crashes are complex events that reflect the interaction of driver, road, vehicle, and environmental factors. We can describe the relationship between these factors and the risk of rollover using information from the agency's crash data programs. We limit our discussion here to light vehicles, which consist of (1) passenger cars and (2) multipurpose passenger vehicles and trucks under 4,536 kilograms (10,000 pounds) gross vehicle weight rating.[1]

According to the 1999 Fatality Analysis Reporting System (FARS), 10,140 people were killed as occupants in light vehicle rollover crashes, including 8,345 killed in single-vehicle rollover crashes. Eighty percent of the people who died in single-vehicle rollover crashes were not using a seat belt, and 64 percent were partially or completely ejected from the vehicle (including 53 percent who were completely ejected). FARS shows that 55 percent of light vehicle occupant fatalities in single-vehicle crashes involved a rollover event. The proportion differs greatly by vehicle type: 46 percent of passenger car occupant fatalities in single-vehicle crashes involved a rollover event, compared to 63 percent for pickup trucks, 60 percent for vans, and 78 percent for sport utility vehicles (SUVs).

Using data from the 1995–1999 National Automotive Sampling System (NASS) Crashworthiness Data System (CDC), we estimate that 253,000 light vehicles were towed from a police-reported rollover crash each year (on average), and that 27,000 occupants of these vehicles were seriously injured (defined as an Abbreviated Injury Scale (AIS) rating of at least AIS 3).[2] Of these 253,000 light vehicle rollover crashes, 205,000 were the result of a single vehicle crash. (The present rollover resistance ratings estimate the risk of rollover if a vehicle is involved in a single vehicle crash.) Sixty-five percent of those people who suffered a serious injury in single-vehicle tow-away rollover crashes were not using a safety belt, and 50 percent were partially or completely ejected (including 41 percent who were completely ejected). Estimates from NASS-CDC indicate that 81 percent of tow-away rollovers occurred in single-vehicle crashes, and that 87 percent (178,000) of the single-vehicle rollover crashes occurred after the vehicle left the roadway. An audit of 1992–96 NASS-CDC data showed that about 95 percent of rollovers in single vehicle crashes were tripped by mechanisms such as curbs, soft soil, pot holes, guard rails, and wheel rims digging into the pavement, rather than by tire/road interface friction as in the case of untripped rollover events.

According to the 1995–1999 NASS-General Estimates System (GES) data, 57,000 occupants annually received injuries rated as K or A on the police KABCO injury scale in rollover crashes. (The police KABCO scale calls ''A'' injuries ''incapacitating,'' but their actual severity depends on local reporting practice. An ''incapacitating'' injury may mean that the injury was visible to the reporting officer or that the officer called for medical assistance. A ''K'' injury is fatal.) The data indicate that 205,000 single-vehicle rollover crashes resulted in 46,000 K or A injuries. Fifty-four percent of those with K or A injury in single-vehicle rollover crashes were not using a seat belt, and 20 percent were partially or completely ejected from the vehicle (including 18 percent who were completely ejected). Estimates from NASS-GES indicate that 16 percent of light vehicles in police-reported single-vehicle crashes rolled over. The estimated risk of rollover differs by light vehicle type: 13 percent of cars and 14 percent of vans in police-reported single-vehicle crashes rolled over, compared to 24 percent of pickup trucks and 32 percent of SUVs. The percent of all police reported crashes for each vehicle type that resulted in rollover was 1.6 percent for cars, 2.0 percent for vans, 3.7 percent for pickup trucks and 5.1 percent for SUVs as estimated by NASS-GES.

II. Background

In a June 1, 2000 notice (65 FR 34998), NHTSA announced its intention to include consumer information ratings for rollover resistance of passenger cars and light trucks in its New Car Assessment Program (NCAP). NCAP has provided comparative consumer information on vehicle performance in frontal and side impact crashes for many years. About 22 percent of passenger car occupants killed in crashes are killed in rollover crashes, as compared with more than 70 percent killed in frontal and side crashes combined. In the case of light trucks, however, about as many occupants are killed in rollover crashes as in frontal and side crashes combined. NHTSA proposed a rating system based on the Static Stability Factor (SSF) which is the ratio of one half the track width to the center of gravity height.

SSF was chosen over vehicle maneuver tests because it represents the first order factors that determine vehicle rollover resistance in the 95 percent of rollovers that are tripped. Driving maneuver tests represent on-road untripped rollover crashes which are about 5 percent of the total. Other reasons for selecting the SSF measure are: driving maneuver test results are greatly influenced by SSF; the SSF is highly correlated with actual crash statistics; it can be measured accurately and explained to consumers; and changes in vehicle design to improve SSF are unlikely to degrade other safety attributes.

The industry comments to the June 2000 notice were that SSF was too simple because it did not include the effects of suspension deflections, tire traction and electronic stability control (ESC) and that the influence of vehicle factors on rollover risk was so slight that vehicles should not be rated for rollover resistance. In the conference report dated October 23, 2000 of the FY2001 DOT Appropriation Act, Congress permitted NHTSA to move forward with the rollover rating proposal and directed the agency to fund a National Academy of Sciences' study on vehicle rollover ratings. The study topics are ''whether the static stability factor is a scientifically valid measurement that presents practical, useful information to the public including a comparison of the static stability factor test versus a test with rollover metrics based on dynamic driving conditions that may induce rollover events.''

The Consumers Union (CU) commented to the June 2000 notice that although SSF is a useful predictor of tripped rollover, it should be used in

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[1] For brevity, we use the term ''light trucks'' in this document to refer to vans, minivans, sport utility vehicles (SUVs) and pickup trucks, under 4,536 kilograms (10,000 pounds) gross vehicle weight rating. NHTSA has also used the term ''LTVs'' to refer to the same vehicles.

[2] A broken hip is an example of an AIS 3 injury.

conjunction with a dynamic stability test using vehicle maneuvers to better predict the risk of untripped rollovers. CU also believes that NHTSA underestimated the incidence of on-road untripped rollover by relying upon 1992–1996 data.

Section 12 of the ''Transportation Recall, Enhancement, Accountability and Documentation (TREAD) Act of November 2000'' reflects CU's concern. It directs the Secretary to ''develop a dynamic test on rollovers by motor vehicles for a consumer information program; and carry out a program conducting such tests. As the Secretary develops a [rollover] test, the Secretary shall conduct a rulemaking to determine how best to disseminate test results to the public.'' The rulemaking and test program must be carried out by November 1, 2002. This notice is part of NHTSA's work to satisfy the requirements of Section 12 of the TREAD Act.

NHTSA responded to these and other technical comments to the June 2000 notice in a January 12, 2001 notice (66 FR 3388) and announced the agency's decision to use the SSF as a measure, along with publishing the initial rollover resistance ratings. As of April 2001, the agency has added the rollover resistance ratings of 104 vehicles to the frontal and side crash ratings given by NCAP (see *www.nhtsa.dot.gov/hot/rollover/* for ratings, vehicle details and explanatory information).

NHTSA awarded a grant to the National Academy of Sciences for its study of vehicle rollover ratings on December 15, 2000 and its first public meeting on the subject took place on April 11 and 12, 2001. A second open meeting will allow for consideration of alternatives to SSF for rating vehicles, and presentations on consumer information and risk communication. At a closed meeting the NAS committee will finalize its draft report. The study will conclude with the required report to Congress.

III. Preparatory Activity

In response to the TREAD Act, NHTSA met with the Alliance of Automobile Manufacturers, Nissan, Toyota, Ford, Consumers Union (CU), Automotive Testing, Inc. (an independent test lab), MTS Systems Corp., the University of Michigan Transportation Research Institute (UMTRI), Daimler-Chrysler, BMW, Volkswagen and Volvo to gather information on possible approaches for dynamic rollover tests. These parties made specific suggestions about approaches to dynamic testing of vehicle rollover resistance. In addition, recent NHTSA research summarized in the report entitled ''An Experimental Examination of Selected Maneuvers That May Induce On-Road Untripped, Light Vehicle Rollover—Phase II of NHTSA's 1997–1998 Vehicle Rollover Research Program''[3] is relevant to the development of a dynamic rollover test suitable for inclusion in our consumer information program.

This notice identifies a variety of dynamic rollover tests that we have chosen to evaluate in our research program and what we believe to be their potential advantages and disadvantages. It also discusses other possible approaches we considered but decided not to pursue. Table 1 summarizes the advantages and disadvantages we anticipate for the various approaches prior to research which will increase our understanding. We invite public comment on our decisions, on our observations and on the general subject of rollover resistance testing for consumer information.

Track testing using the maneuvers discussed in this notice began in April 2001 at NHTSA's Vehicle Research and Test Center in East Liberty, Ohio. We intend to publish a second notice in early 2002 presenting a tentative dynamic rollover test procedure chosen on the basis of this research and the comments to today's notice. We will review the comments to today's notice expeditiously and may revise the test development research based on the comments. A final notice responding to the comments to the second notice, presenting the final dynamic rollover test procedure, and containing an initial set of rollover resistance ratings will be published in October 2002.

The test vehicles chosen for the evaluation of potential maneuver tests are the 2001 Ford Escape (without electronic stability control (ESC[4])), the 2001 Chevrolet Blazer (without ESC), the 2001 Toyota 4Runner (with and without ESC enabled) and the 1999 Mercedes ML–320 (with and without ESC enabled). They represent the significant range of static stability factors that characterize today's SUVs. They also include two ESC systems with possible differences in operation. The vehicles will be tested in a base load configuration with driver, instruments and outriggers, in a second configuration with a roof load to reduce SSF by .05, and in other load configurations intended to influence handling. The loads will be positioned so as to change one coordinate of the c.g. location without influencing the other two. For example, in the second load configuration, about 200 pounds will be secured to the roof in a position that maintains the fore-aft and side-to-side location of the c.g. but raises it enough to cause a reduction of 0.05 in the SSF (while also increasing the vehicle's mass moments of inertia).

The test vehicles will be equipped with special wheel force sensors at each wheel during some of the evaluation of potential maneuver tests. They will provide better information for our evaluation of how these vehicles react to different characteristics of the candidate test maneuvers. Wheel force measurements will determine absolutely when two wheel lift occurs. Also, they will allow us to measure the degree of load transfer during runs that do not cause wheel lift, a capability not possible in our previous research. The sensors also can reveal possible interactions between vertical and lateral wheel forces that maneuvers may produce in some vehicles.

IV. Difficulties Common to Various Dynamic Rollover Tests Using Driving Maneuvers

We considered some methods of dynamic testing for rollover resistance that did not use driving maneuvers, but decided to concentrate our research on driving maneuver tests for the reasons discussed in Section VII. However, driving maneuver tests share some significant difficulties in comparison to laboratory tests. Since they directly represent a deadly type of crash, the safety of test drivers will always be a concern, even though drivers will be belted and outriggers will be used in most circumstances. Outriggers are the usual means of minimizing the chance of an actual rollover crash during a test, but they also introduce problems. If an outrigger digs into the pavement, it can cause the vehicle to ''pole vault'' resulting in an even worse rollover crash. The weight of the outrigger(s) may change the vehicle's c.g. location and will increase its mass moments of inertia, placing restraints on the natural desire to overdesign the outriggers for safety. The mounting of the outrigger can also influence vehicle handling by changing its structural stiffness. We will choose outriggers designed to the best contemporary practices and evaluate their effect on maneuver test results.

Maneuver tests are expensive. Besides the labor involved in performing the maneuvers and interpreting the results,

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[3] Available at http://www-nrd.nhtsa.dot.gov/vrtc/ca/rollover.htm.

[4] ESC is a safety system that can apply the brake at one or more wheels automatically to keep the yaw rate of the vehicle proportional to its speed and lateral acceleration. For example, braking the outside front wheel can correct the heading of a vehicle beginning to oversteer (spin out).

the test methods require that each test vehicle be custom fitted with costly precision instruments, onboard computers, probably an array of special steering and braking controls, and possibly telemetry. The wheel force transducers included in these developmental tests are not expected to be necessary for routine tests in a consumer information program, but there may be a need for less intrusive means of load transfer monitoring. Frequent tire changes, adding to cost and labor, are necessary in maneuver tests because tire shoulder wear can significantly influence force generation. Part of this research will define the need for tire changes in the selected maneuver in routine consumer information testing. Finally, damage to the vehicles as a result of the tests or the installation of equipment is a cost factor.

The use of driving maneuver tests to rate rollover resistance presents some questions beyond test methodology, danger and expense. A high statistical correlation based on a large sample of police reports of rollover crashes was possible for the present ratings based on SSF because SSF is a good predictor of tripped rollovers, in particular, and the preponderance of rollovers in state crash reports are tripped. As part of NHTSA' s dynamic maneuver test program in 1997 and 1998, we tried to correlate the performance of the test vehicles on various maneuvers to their rates of on-road untripped rollover crashes. We found that it is not possible to obtain sufficient data, even on high volume vehicles, to determine a correlation between maneuver test outcome and untripped rollover involvement. The only data base we are aware of that contains data identifying untripped rollover crashes is NHTSA's NASS–CDS. However, only about 4300 crashes of all types (frontal, side, rear and rollover) are researched in depth each year for inclusion in this data base and only about ten of those cases are untripped rollovers.[5] The NASS–CDS data base is usually used with weighting factors for different types of crashes to represent national trends. However, the number of observations is too small to support make/model correlations between maneuver test results and real-world untripped rollover rates.

Some of the 17 states in NHTSA's State Data System (SDS) data base[6] attempt to distinguish between on-road and off-road rollover crashes. While it seems inviting to use on-road rollover as a surrogate for untripped rollover, this is not strictly accurate. Most on-road rollovers occur when the vehicle is tripped by road surface irregularities or the wheel rim digging into the pavement.[7] Also, police may code a rollover crash as ''on-road'' because the vehicle was found at rest on the roadway. The designation ''on-road'' does not necessarily mean that the roll initiation occurred on the roadway.

The correlation, by make/model, of performance in a maneuver test to the rate of *all* rollovers would be highly dependent on the degree to which good performance in the driving maneuver test is the result of low c.g. height, large track width and other factors which also increase resistance to tripped rollovers. Optimization of tire properties and ESC operation for a particular maneuver test would likely decrease this level of correlation over time if effective ways of improving test performance are developed that do not improve the tripped rollover resistance of vehicles. Therefore, it is unlikely that the choice of any particular maneuver test or tests can be justified on the basis of the correlation of the test results to real-world rollover rates. This situation makes the resemblance of the chosen maneuver test or tests to documented crash scenarios even more important.

Ratings based on driving maneuvers may be complex and hard to communicate to the public because the usual rollover criterion of two wheel lift can be at odds with the handling capability of the vehicle. In a path following maneuver, the test is terminated when the vehicle can no longer follow the path. For example, consider a vehicle that cannot negotiate the path beyond 38 mph, but it departs the path before it achieves two wheel lift. Consider a second vehicle that can follow the path at 45 mph but lifts the inside tires three inches off the pavement. Which vehicle should be rated higher? Departing the roadway, as the first vehicle would seem likely to do more often than the second vehicle, can expose a vehicle to a high risk of tripped rollover.

ESC was originally designed to keep the vehicle headed in the direction desired by the driver rather than to plow-out (understeer) or to spin-out (oversteer) in a limit cornering situation by using one or more brakes to help turn the vehicle to the correct heading. ESC cannot increase the maximum traction, and consequently prevent a vehicle from leaving the road, if the vehicle is going too fast. ESC may help drivers regain control rather than overreact in situations like an abrupt ''road-edge recovery'' where there is sufficient traction to recover. In this way, ESC has the potential to reduce the number of single vehicle crashes that turn into tripped rollovers. However, ESC can be programmed to work in many other ways. In one way, it can apply the brakes automatically to slow the vehicle at a selected value of lateral acceleration or at a similar criterion. While this is a plausible safety strategy, it has the potential to overwhelm the other aspects of vehicle behavior measured in a maneuver test. In most maneuver tests, the vehicle is steered through the maneuver while coasting because any attempt to keep a steady throttle position tends to make the tests less repeatable. Even in a short maneuver, the vehicle scrubs off some speed. For example, a vehicle entering a short maneuver coasting at 50 mph is likely to exit at 45 mph or less. However, with braking intervention programed into the ESC, a vehicle could easily slow to 25 mph during the test. While both vehicles would be rated on their entry speed, the ESC vehicle may be going much slower at the critical part of the maneuver. It is possible that maneuver tests could simply result in segregating vehicles with automatic brake intervention from those without it. Automatic brake intervention may produce some safety benefits. NHTSA believes, however, that the vast majority of drivers also apply the brakes in difficult situations, regardless of whether the vehicle has automatic brake intervention. Thus, a maneuver test conducted while coasting could reward this type of ESC design excessively. NHTSA expects that most drivers would brake during similar maneuvers, and that automatic brake intervention would make less difference in real driving than during tests in which drivers are not permitted to brake.

Important environmental conditions also will influence the results of any driving maneuver test for rollover ratings. The pavement friction of even a dedicated test area does not remain constant. There is a cycle of polishing and weathering during periods of use and disuse, and a possible temperature effect on pavement friction. The usual method of determining pavement friction is a locked wheel braking test conducted at a constant 40 mph using

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[5] 1998–1999 NASS–CDS annual averages.

[6] A collection of data from the police accident reports (PARs) of 17 participating states. This data is limited to what was recorded by the responding officer(s) at the time of the crash.

[7] ''Analysis of Untripped Rollovers''; Calspan Corporation for American Automobile Manufacturer's Association and Association of International Automobile Manufacturers; May 15, 1998, and ''NASS Rollover Study Evaluation Report''; NHTSA National Center for Statistics and Analysis; August 1998.

a ‘‘skid trailer’’ with a water nozzle to wet the surface immediately ahead of the skidding tire. The pavement friction coefficient generated by this test is called the ‘‘skid number’’. General Motors has reported that moderate differences in skid number, even when measured without pavement wetting, do not correspond well to differences in lateral force generated by vehicles on different pavements. Our planned test program includes hot weather and cold weather testing as well as tests conducted on different surfaces at three to date undetermined test facilities. The result we hope for is a definition of a minimum friction level for a valid test as tracked by tests using a control vehicle.

Not every vehicle is tested each year in the new car assessment program. The results for vehicles without substantial changes tested in previous years are carried over to represent vehicles of the current model year. The test results, and the resulting rollover ratings, from the previous year might not be comparable to the new year’s results if there were significant differences in pavement friction.

V. Path-Following Driving Maneuver Tests

The driving maneuver tests for rollover resistance that have received the most publicity over the years are the ‘‘emergency double lane change’’ of Consumer Reports magazine and the European ‘‘moose test.’’ The first test was the basis of criticism by Consumer Reports that the 1988 Suzuki Samurai and the 1996 Isuzu Trooper were ‘‘not acceptable.’’ The ‘‘moose test’’ was used by a European auto magazine to demonstrate that the 1998 Mercedes-Benz A Class minicar could experience on-road untripped rollover in a similar maneuver. We classify both tests as path following tests to distinguish them from another type of maneuver tests in which explicit steering inputs are required without reference to the path they cause the vehicle to take. We will evaluate both the CU double lane change (CU is the publisher of Consumer Reports) and a version of the moose test recommended by Daimler-Chrysler. We will also evaluate the use of mathematical path correction and an automated steering controller[8] to improve these driving maneuver tests.

A. CU Double Lane Change

The CU double lane change short course (figure 1) was developed in order to replicate an unintentional rollover experienced by a Consumer Reports staff member driving a Suzuki Samurai. It consists of a 70-foot-long, 8-foot-wide entrance lane that is centered in a 12-foot-wide first (right) lane, a 50-foot-long area to make the first lane change (to the left), a set of gate cones at this 50-foot mark that are 12 feet apart (with the right cone three feet into the left lane), a 60-foot-long area to make the second lane change back to the right lane, and a 12-foot-wide exit lane. The test driver steers the vehicle through the course at successively higher entry speeds until the vehicle either plows out, spins out, or tips up. The vehicle is coasting through the maneuver. The driver does not apply the brakes, and driver releases the throttle 35 feet into the 70 foot entrance lane.

An advantage of the CU double lane change is its face validity, that is, drivers can imagine a situation in which they may try to make a similar maneuver. However, NHTSA believes that there are good arguments that simply braking without steering or braking and steering with an ABS equipped vehicle are better strategies to avoid the hypothetical object in the road that is the basis of the CU test. In addition, it is hard to find actual crashes that resemble the test. Nevertheless, driving through a tight double lane change without wheel lift is probably a good representation of what the public expects of a personal vehicle.

An important part of the double lane change is the immediate steering reversal necessary to get back in the right lane after steering sharply into the left lane to avoid the hypothetical object in the roadway. This steering reversal allows the energy stored in the suspension springs during the left steer and the roll momentum of the sprung mass when that energy is released at the steering reversal to add to the load transfer caused by the sharp right steer. The dynamics of the steering reversal are not included in SSF, Tilt Table Ratio, or even the J-turn maneuver (see 65 FR 34998 for details about these rollover resistance metrics). So this aspect of the double lane change better represents the dynamics that may result in an untripped rollover.

However, if the only criterion for success in a double lane change maneuver is whether or not two-wheel lift can be made to occur, any vehicle will pass such a test if equipped with tires of sufficiently low traction or with chassis tuning that produces the same effect. In this case, the vehicle will simply run off the desired path at a speed and lateral acceleration too low to produce two-wheel lift. On the other hand, an inherent advantage of path-following maneuvers like the double lane change is that the maximum speed through the maneuver can be used as part of the vehicle score to reward good handling and avoid creating a rollover resistance rating with incentives for reduced handling and braking performance. Like all the driving maneuvers we are considering, the CU double lane change also has the advantage of displaying the operation of electronic stability control systems.

The foremost disadvantage of the CU double lane change is that differences in driving style can strongly influence the test results. The time history of the steering wheel angle may vary considerably for runs of the same vehicle at the same speed (figure 2). Tests in which the driver starts the steering movements earlier seem to produce a moderately smaller initial left steer and a much smaller amount of right steer after passing through the offset gate. The steering reversal (from maximum left steer to maximum right steer) can vary significantly at the same test speed, and the runs with a greater steering reversal appear more likely to produce two-wheel lift. For example, during CU tests of the Isuzu Trooper, one driver ran the course at 37.5 mph with a left steer of 183 degrees followed by a right steer of 216 degrees (399 degree steering reversal) and did not knock down the course boundary cones or experience two-wheel lift. Another driver ran the same course at 37.5 mph using an initial left steer of 191 degrees followed by a right steer of 388 degrees (579 degree steering reversal) and experienced two-wheel lift.

Another potential disadvantage of the double lane change maneuver is the possibility that the course layout may cause the steering reversal and roll momentum effect to be more critical for some vehicles than for others. The course originally used by Consumer Reports had the offset gate forcing the lane change positioned 60 feet from the end of the entrance lane and also 60 feet from beginning of the exit lane. When the publication tried to replicate its staff member’s rollover crash of a Suzuki Samurai, it found that shortening the distance from the end of the entrance lane to the offset gate by 10 feet and moving the offset gate three feet further to the left made two wheel lift of the Samurai more likely. This suggests that tuning of the course to the vehicle may be necessary to create a worst case condition and that a course tuned to one vehicle may not be the worst case for another vehicle to which it is compared.

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[8] The automated steering controller was referred to as a ‘‘Programmable Steering Machine’’ in our June 1, 2000 notice (65 FR 34998).

B. VDA Double Lane Change

The VDA Double Lane Change is a variant of the ‘‘moose test’’ used by a Scandinavian automotive magazine. It was developed by the German Alliance of Automotive Industry (VDA) to minimize the influence of driving style on the original moose test for use as an industry standard rollover and handling test procedure. As a double lane change maneuver, it is identical in concept to the CU test, and it is useful to contrast the two maneuvers.

The method VDA used to minimize driver influence was to reduce the lane and gate widths and tie these parameters to the width of the test vehicle. Using the VDA course (figure 3) for a 70 inch wide vehicle (typical of the most popular SUVs and mid-sized cars) the widths of the entrance lane, offset gate, and exit lane are 7.25 feet, 9.12 feet and 9.9 feet, respectively, compared with 8 feet, 12 feet and 12 feet for the same components of the CU double lane change course. The distance from the end of the entrance lane to the beginning of the offset gate is 44.3 feet rather than 50 feet for the CU test, and the distance from the end of the offset gate to the beginning of the exit lane is only 41 feet, compared to 60 feet for the CU test. There is also a difference in the amount of offset of the left lane gate. In the CU test, the inside of the gate is offset 5 feet to the left of the inside of the entrance lane and 3 feet to the left of the exit lane (because the exit lane is 4 feet wider than the entrance lane). In the VDA test, the left edges of the entrance and exit lanes are in line, and right edge of the offset gate is 3.3 feet to the left.

The fundamental difference between the CU and VDA courses is that while the vehicle has to pass through a gate comprised of two cones marking a 12 foot left lane width in the CU test, it has to traverse a 36-foot-long by 9.12-foot-wide left lane in the VDA test before turning right to re-enter the right lane. The VDA test is more like a single lane change to the left immediately followed by a second single lane change to the right and does not have as sharp a steering reversal as the CU double lane change test. In both tests, the vehicle begins to coast about 35 feet before the end of the entrance lane.

The VDA double lane change shares with the CU test the advantage of face validity, but the VDA test would appear to be less subject to variability in driving style. It also uses a rating criteria that implicitly rewards good handling. It is scored by the maximum entry speed of the vehicle’s clean runs along with a notation of the limiting event: understeer, oversteer or two-wheel lift. Like all the other maneuver tests we are considering, it has the advantage of displaying the operation of ESC systems, but the entry speed criteria may disproportionately favor ESC systems with simple brake intervention.

Efforts to reduce driver variability may also introduce problems. The least serious problem is that narrow lanes may make the course so hard to follow that imprecise driving rather than actual oversteer or understeer may cause collisions with the course marking cones. Daimler-Chrysler reports that expert drivers can negotiate the course at about 4 mph faster than average drivers. It is unclear whether this is due to expert steering strategy optimizing the vehicle path for lower peak lateral acceleration even within the reduced boundaries or simply to better ability to judge cone position and control vehicle position. If this problem exists, simply allowing the driver more tries at a given speed may be all that is necessary to determine whether vehicle handling is really the limiting factor.

The more serious potential problem is the use of a 36 foot long left lane, rather than just a gate to drive around. It potentially removes the roll momentum effect associated with the sharp steering reversals. While this effect increases the variability of CU test results due to differences in driving style, it also reveals rollover propensities that would not likely show up in a test like the J-turn.

Assuming that the VDA double lane change does not suppress the potential effects of unfavorable roll momentum, it also shares the question of steering reversal timing with the CU test. Namely, does the course layout present a worst case timing in which roll momentum reinforces the side to side load transfer at peak lateral acceleration for some vehicles but not for others?

C. Open-Loop Pseudo-Double Lane Change

In its 1997–1998 rollover research, NHTSA made use of an automated steering controller to achieve highly repeatable J-turn and fish hook maneuvers. As discussed above, the potential problems of double lane change tests are the lack of repeatability caused by variations in driving style and the possibility that a course producing worst case roll momentum for one vehicle may not do so for the next vehicle. We will attempt to solve these problems by using the steering controller in a non-path following maneuver approximating a double lane change.

The idea is to use steering rates and magnitudes typical of driver-controlled CU tests, but to use the automated controller for repeatability. Separate circular path tests of each vehicle would be done to relate lateral acceleration to steering angle in the linear range. This information would be used to tailor the steering angles for the pseudo-double lane change to the steering ratio and wheelbase of each test vehicle. The steering controller would also tailor the course for the worst case roll momentum for each vehicle. Body roll rate feedback would be used to time the first steering reversal left to right and also the second steering reversal right to straight ahead.

This is not a maneuver established in literature or in practice. It is little more than a concept now. Its potential drawback is that the maneuver may stray too far from an actual double lane change to retain any face validity. Also, it is unclear if the advantage of a simple speed and limit circumstance score would remain applicable to a double lane change performed in this manner.

D. Path-Corrected Limit Lane Change

From a vehicle manufacturer’s prospective, the double lane change maneuver is a good test to evaluate a vehicle’s limit handling behavior, because it is a realistic maneuver and it allows engineers to simultaneously evaluate the three main behaviors that affect limit handling safety (responsiveness, lateral stability and rollover resistance). However, lane changes are driver-dependent (meaning vehicle performance is heavily influenced by how the driver drives the vehicle) and their rating scales are usually subjective (meaning based on driver expert evaluation rather than on measured data). To solve this problem, Ford Motor Company has developed Path-Corrected Limit Lane Change (PCLLC). It is claimed to be a driver-independent, objective way to run limit handling lane changes. First, vehicles are run through a series of maneuvers much like the CU double lane change except that a range of course lengths and degrees of lane offsets are used to measure their responses to steering inputs in a range of frequencies. The data is then normalized mathematically to show how each of those vehicles would have performed had they followed precisely the same paths in the lane change. This is what ‘‘Path-Correction’’ means, and this normalization reduces the driver influence in the maneuver.

PCLLC is a proprietary technique, and the details have not been reported publicly by Ford. Ford is allowing

NHTSA to evaluate this technique under a confidentiality agreement. NHTSA will run Ford's specified suite of vehicle characterization tests using its own vehicles and test track with Ford's assistance in instrumenting the vehicles for the measurements required for the mathematical path corrections. Ford will explain the theory of the mathematical corrections to NHTSA, and perform the corrections on NHTSA's vehicle test data in a confidential report. If NHTSA decides to propose this technique as the best way of accomplishing the dynamic rollover tests required by the TREAD Act, it expects that Ford will release it from the confidentiality agreement so that the test procedure can be proposed in detail in our next notice early in 2002.

We view PCLLC as a mathematical technique which allows the construction of ''perfect test runs'' for an objective comparison of vehicles from a suite of similar test runs which expose each vehicle to a range of speeds, steering frequencies, rates and amplitudes. It looks like a good approach to overcoming the disadvantages discussed earlier for the more conventional driver controlled lane change maneuver tests. Driving style variability would clearly be eliminated, and it appears that this technique can construct a number of standard paths to examine the question of how many courses are necessary for a fair evaluation of the roll momentum effect for vehicles with different properties.

NHTSA has envisioned that PCLLC could be used as a way of producing the equivalent of a CU double lane change test with every vehicle following exactly the same geometric path up to the point that it either has two-wheel lift or can no longer maintain the prescribed path as a result of limit understeer or oversteer. Under this idea, the rating criteria could be speed and the limiting circumstance (plow, spin or two wheel lift) as with the Daimler-Chrysler recommendation, with the possibility of greater rating complexity if more than one test course were required.

However, it is not clear whether the PCLLC technique can be used this way and whether this would be the best way to use it. Ford is looking at many different vehicle handling metrics and cited three examples. *Responsiveness* could be represented by a delay time from steering input to yaw response evaluated on a path corrected to the same time history of yaw angle for each vehicle. *Lateral stability* could be characterized by rear tire slip angle on a path corrected to equal lateral acceleration for each vehicle. *Untripped rollover resistance* could be characterized by the degree of side to side load transfer evaluated on a path representing the maximum lateral acceleration capacity of the vehicle (considering such factors as practical limits on steering angle and rate and limit oversteer). Since the vehicle characterization runs are performed with ESC operating, the results should reflect its influence in the same way as other driving maneuver tests.

VI. Open Loop Fishhook Maneuvers—Defined Steering Tests

The fishhook maneuver was originally developed by Toyota Motor Corporation as a maneuver with a strong roll momentum effect and a simple steering regime that would be fairly repeatable by test drivers. The maneuver requires the driver to steer as quickly as possible 270 degrees of steering wheel angle, and then to steer 870 degrees in the opposite direction as quickly as possible (figure 4). At less than limit speed runs, the vehicle's path resembles a fishhook shape (figure 5), but the actual path is immaterial to the scoring. The maneuver is repeated in each direction of initial steering and at increasing speed until two-wheel lift or loss of control occurs, or until preset maximum speed for test driver safety is reached. Toyota also added pulse braking[9] to make the maneuver more likely to induce two-wheel lift if the vehicle under test would not lift wheels without braking. The lateral acceleration at two-wheel lift (LAR) is Toyota's figure of merit for this maneuver.

NHTSA's 1997–98 research program made use of two variations on the Toyota ''fishhook'' maneuver theme. Since these tests are described by the steering input without regard for different paths taken by different vehicles, they are considered ''open-loop''. They were also perfect candidates for NHTSA's goal of using an automated steering controller for precise repeatability for maximum objectivity. NHTSA's tests did not use pulse braking because we were concerned that pulse braking tests were not merely a more stringent level of the basic fishhook, but a test of different vehicle dynamics. In one version, the steering rate was set at 750 degrees per second for all vehicles and the dwell time[10] between steering reversals was ''tuned'' for each vehicle to resemble half a sine wave at what we thought was the roll natural frequency of each vehicle. In the other variation, we attempted to represent a road edge recovery maneuver by setting the initial steer angle to 7.5 degrees of the road wheels (to represent the front tire slip angle possible when a vehicle mounts a four inch pavement height above the road shoulder), using a constant 0.5 second dwell time and a more moderate steering rate of 500 steering wheel degrees per second. The first maneuver was generally more severe than the second. It was configured to represent a steering frequency of 0.5 Hz, which was the roll natural frequency assumed for most vehicles because our attempts at measuring roll natural frequency were thwarted by vehicle suspension damping. However, some of the vehicles responded with greater load transfer to the seemingly gentler ''road-edge recovery'' fishhook which used a different steering frequency. This suggests the possible importance of roll momentum timing.

Open loop fishhook maneuver tests are like the mirror image of the double lane change tests because their principle advantages and disadvantages are reversed. Aided by a steering controller, driving style differences are absolutely eliminated. These maneuvers also present the best possibility for tuning the maneuver to the roll characteristics of each test vehicle, thereby eliminating the suspicion that the steering frequency of a fixed double lane change makes the test inherently more stringent for some vehicles than others. However, the fishhook maneuver has much less face validity than the double lane change maneuver. Even the ''road edge recovery'' version of the fishhook does not look, to a ordinary driver, like a maneuver he or she would ever be called upon to make.

There is another disadvantage to open loop tests. Because the vehicle path does not matter, two-wheel lift can be prevented simply by using tires of sufficiently low traction or chassis tuning that produces the same effect. Unless an open loop test is accompanied by other tests of specific handling properties, it could have the perverse effect of encouraging manufacturers to sacrifice handling and braking to make superficial refinements to improve a rollover rating. Also, improvements in a rollover rating gained by special original equipment tire properties may be negated when the tires are replaced later in the life of the vehicle.

NHTSA will evaluate three types of fishhook maneuvers. In one maneuver the counter steer will be limited to about 500 to 600 degrees, rather than

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[9] Pulse braking is a short hard brake application that creates a transient increase in lateral acceleration upon release.

[10] Dwell time is the short time internval of less than one second between the initial steering angle (shown as negative angle in Figure 4) and larger steering movement in the reverse direction.

870, because the large countersteer is thought to scrub off so much speed that it reduces the severity of the maneuver. Also, instead of a fixed 270 degree initial steer, a steering wheel angle derived from the steering angle causing a fixed lateral acceleration, in the linear range, will be chosen to put vehicles with differences in steering gear ratio and wheelbase on an equal footing. A fixed steering rate of 720 degrees per second and a fixed time from the beginning of steering to its return to zero angle during countersteer will be used.

In the second fishhook, the timing of the steering reversal will be based on roll rate feedback. The worse case roll momentum effect is expected when the start of the steering reversal coincides with the instant of maximum roll angle resulting from the first steer. We expect to use an approximate zero reading of a roll rate sensor to indicate maximum roll angle and trigger the countersteer by the automatic steering controller.

The third variation will use a counter steer timing technique suggested by Nissan (figure 6). In this method, the first part of the fishhook is studied separately prior to the fishhook test maneuvers in order to define the worst case dwell time. This is done by running a step steer maneuver (the same as a J turn) at the same steering rate and maximum angle as the first steering movement of the fishhook. The roll rate is measured to determine the time of the maximum roll angle of the second oscillation. Nissan believes that the most severe fishhook for each vehicle is the one in which the lateral acceleration zero crossing during countersteering in the fishhook occurs at the second oscillation peak time as measured in the J turn maneuver. The dwell time from initial steer to countersteer would be adjusted accordingly. The theoretical basis for Nissan's observation on fishhook severity is not obvious. Nissan's belief is based on experimental studies during which dwell time was varied. Its technique appears to produce a countersteer timing similar to that produced by roll rate feedback.

As mentioned above, fishhook tests contain no inherent disincentives for rollover resistance strategies that sacrifice handling. NHTSA is considering adding some objective measure of handling ability to any fishhook test used for consumer information. We are considering a steering response time test possibly based on a J-turn (step steer) and a maximum lateral acceleration test based on either a constant steer input with slowly increasing speed regime or a constant speed with slowly increasing steer regime. We are concerned, however, that even this limited NHTSA definition of handling may produce undesirable trade-offs of less measurable aspects of vehicle handling when manufacturers design to the test. We are particularly interested in comments on how likely it is that vehicle manufacturers would make such trade-offs to ''beat'' the test.

VII. Dynamic Tests Other Than Driving Maneuvers

NHTSA also considered two dynamic tests that did not involve driving maneuvers, namely the centrifuge test and driving maneuver simulation using computational models. Both of these tests have the major benefit of being independent of pavement friction, whereas the problem of pavement friction variation is perhaps the most vexing issue common to all the driving maneuver tests discussed above. However, we decided not to include these tests in our research plan under TREAD for the reasons explained below.

A. Centrifuge Test

The test device for the centrifuge test is similar in concept to a merry-go-round. A person seated at the edge of the merry-go-round feels a lateral force pushing him or her away from the spinning surface that increases with the rotational speed of the merry-go-round. The centrifuge device test (figure 7) consists of an arm attached to a powered vertical shaft. At the end of the arm is a horizontal platform upon which the test vehicle is parked. As the vertical shaft rotates, the parked vehicle is subjected to a lateral acceleration that can be precisely controlled and measured. The basic measurement is the lateral acceleration at which the parked vehicle experiences two-wheel lift. The outside tires are restrained by a low curb so the measurement is independent of surface friction, and the vehicle is tethered to prevent excessive wheel lift. This test method was suggested by the University of Michigan Transportation Research Institute (UMTRI) both in comments to our notice about the present rollover resistance ratings and more recently in the context of the TREAD Act. The test method is directed primarily at tripped rollover, which UMTRI noted accounts for all but a small percentage of rollovers.

The centrifuge test has many advantages. It can produce measurements which are accurate, repeatable and economical in labor costs. It includes the effects of tire and suspension deflections, and its measurements would be expected to correlate well with the actual rollover rates of vehicles, because those statistics are largely driven by tripped rollovers. The centrifuge test is arguably more accurate than SSF in evaluating tripped rollover resistance because it evaluates the outward c.g. movement as a result of suspension and tire deflections. Its basic measurement of a vehicle, lateral acceleration at two-wheel lift, is roughly 15 percent less than the vehicle's SSF with about a +/−5 percent range to cover extremes in roll stiffness.

Despite these advantages, we did not choose to investigate the centrifuge test under the TREAD Act. Improvements in centrifuge test performance can be made by suspension changes that degrade handling. The best performance in the centrifuge test (and in the closely related but less accurate tilt table test) occurs when the front and rear inside tires lift from the platform at the same time. The tuning of the relative front/rear suspension roll stiffness to accomplish this will cause the vehicle to oversteer more than most manufacturers would otherwise desire. We do not want to tempt manufacturers to make this kind of trade-off. Further, we understood the intention behind TREAD to be that NHTSA should give the American public information on performance in a driving maneuver that would evaluate the performance of new technologies like ESC. The centrifuge test would not do so.

B. Driving Maneuver Simulation

Computational models that simulate test maneuvers are used by vehicle manufacturers to assess handling and rollover performance of vehicle designs prior to building prototypes, and to evaluate the effect of suspension changes in prototypes and production vehicles. They present a potential solution to the safety, repeatability and pavement surface variability of real driving maneuver tests. Unfortunately, simulations now also carry enough disadvantages to disqualify their use for rollover resistance ratings. The various models used by different manufacturers produce different results, especially in simulating limit maneuvers. There is no agreement among manufacturers on a single model sufficient for this purpose. The time and cost of measuring the vehicle properties necessary for a limit maneuver model exceed that of running a real driving maneuver test. Validation testing of a model is necessary and greatly resembles the real tests the model hoped to avoid. Testing of the operation of ESC is problematic because the algorithms are often proprietary at the supplier level and not well known by the vehicle manufacturers. Given these difficulties, NHTSA has concluded that it is extremely unlikely they could be resolved in time for us to use computer modeling for the information we must provide to the American public beginning in November 2002.

VIII. Solicitation of Comments

NHTSA solicits general and specific comments on the subject of the development of a dynamic test for vehicle rollover resistance. We also wish to bring the following specific questions to the attention of commenters:

1. NHTSA has decided to devote its available time and resources under the TREAD Act to develop a dynamic test for rollover based on driving maneuver tests. Is this the best approach to satisfy the intent of Congress in the time allotted? Are there additional maneuvers that NHTSA should be evaluating? Which maneuver or combination of maneuvers do you believe is the best for rollover rating? Are these other approaches well enough developed and validated that they could be implemented 18 months from now?
2. How should NHTSA address the problem of long term and short term variations in pavement friction in conducting comparative driving maneuver tests of vehicle rollover resistance for a continuing program of consumer information?
3. Some ESC systems presently have two functions. One is yaw stability which uses one or more brakes to keep the vehicle headed in the right direction in a limit maneuver, and the other is simple brake intervention in excess of the braking required for yaw stability. It is expected that the presence of a brake intervention function in ESC will have a large effect on the rating of vehicles because the average speed through a given test maneuver for vehicles having this function will be much less than for vehicles without it (even if equipped with ESC for yaw stability) under the usual test protocols of coasting through maneuvers and using the entry speed as the test speed. Is the value given to the brake intervention function of ESC as opposed to the yaw stability function by potential rollover rating tests commensurate with its safety value to consumers? Please provide all the data and reasoning that support your view. Should NHTSA measure the vehicle speed at the completion of the maneuver as well as vehicle speed at entry?
4. If open-loop (defined steering input) maneuvers are used to determine whether a vehicle is susceptible to two wheel lift as a result of severe steering actions, superficial changes that reduce tire traction or otherwise reduce vehicle handling (but prevent wheel lift) would be rewarded the same as more fundamental or costly improvements. The same is true of closed loop (path following) maneuvers that use wheel lift as the sole criterion. Should measures of vehicle handling be reported so that consumers can be aware of possible trade-offs. What indicators of vehicles handling would be appropriate to measure and how should this consumer information be reported?
5. What criteria should NHTSA use to select the best vehicle maneuver test for rollover resistance? Should the maneuver that has the greatest chance of producing two wheel lift in susceptible vehicles be chosen regardless of its resemblance to driving situations? Is it more important that the maneuver resemble an emergency maneuver that consumers can visualize? How important is objectivity and repeatability?

IX. Rulemaking Analyses and Notices

Executive Order 12866

This request for comment was not reviewed under Executive Order 12866 (Regulatory Planning and Review). Agency actions to develop tests for NHTSA's New Car Assessment Program are not rulemaking actions because the program does not impose requirements on any party.

X. Submission of Comments

A. How Can I Influence NHTSA's Thinking on This Document?

In developing this document, we tried to address the concerns of all our stakeholders. Your comments will help us improve this notice. We invite you to provide different views on options we propose, new approaches we have not considered, new data, how this document may affect you, or other relevant information. We welcome your views on all aspects of this document, but request comments on specific issues throughout this document. Your comments will be most effective if you follow the suggestions below:

- Explain your views and reasoning as clearly as possible.
- Provide solid technical and cost data to support your views.
- If you estimate potential costs, explain how you arrived at the estimate.
- Tell us which parts of this document you support, as well as those with which you disagree.
- Provide specific examples to illustrate your concerns.
- Offer specific alternatives.
- Refer your comments to specific sections of this document.
- Be sure to include the name, date, and docket number with your comments.

B. How Do I Prepare and Submit Comments?

Your comments must be written and in English. To ensure that your comments are correctly filed in the Docket, please include the docket number of this document in your comments.

Your comments must not be more than 15 pages long. (49 CFR 553.21). We established this limit to encourage you to write your primary comments in a concise fashion. However, you may attach necessary additional documents to your comments. There is no limit on the length of the attachments.

Please submit two copies of your comments, including the attachments, to Docket Management at the address given above under **ADDRESSES**.

Comments may also be submitted to the docket electronically by logging onto the Dockets Management System website at http://dms.dot.gov. Click on ''Help & Information'' or ''Help/Info'' to obtain instructions for filing the document electronically.

C. How Can I Be Sure That My Comments Were Received?

If you wish Docket Management to notify you upon its receipt of your comments, enclose a self-addressed, stamped postcard in the envelope containing your comments. Upon receiving your comments, Docket Management will return the postcard by mail.

D. How Do I Submit Confidential Business Information?

If you wish to submit any information under a claim of confidentiality, you should submit three copies of your complete submission, including the information you claim to be confidential business information, to the Chief Counsel, NHTSA, at the address given above under **FOR FURTHER INFORMATION CONTACT**. In addition, you should submit two copies, from which you have deleted the claimed confidential business information, to Docket Management. When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in our confidential business information regulation. (49 CFR Part 512.)

E. Will the Agency Consider Late Comments?

We will consider all comments that Docket Management receives before the close of business on the comment closing date indicated above under **DATES.** To the extent possible, we will also consider comments that Docket Management receives after that date. However, late comments will not likely be able to influence our testing program. We encourage commenters to respond as soon as possible since the testing described in this notice is already underway. If Docket Management receives a comment too late for us to consider it in completing our test program developing a proposal on dynamic rollover performance, we will consider that comment as an informal suggestion for future enhancements to our rollover program.

F. How Can I Read the Comments Submitted by Other People?

You may read the comments received by Docket Management at the address given above under **ADDRESSES**. The hours of the Docket are indicated above in the same location.

You may also see the comments on the Internet. To read the comments on the Internet, take the following steps:

(1) Go to the Docket Management System (DMS) Web page of the Department of Transportation (http://dms.dot.gov/).

(2) On that page, click on ''search.''

(3) On the next page (*http://dms.dot.gov/search/*), type in the four-digit docket number shown at the beginning of this document. Example: If the docket number were ''NHTSA–1998–1234,'' you would type ''1234.'' After typing the docket number, click on ''search.''

(4) On the next page, which contains docket summary information for the docket you selected, click on the desired comments. You may download the comments. Although the comments are imaged documents, instead of word processing documents, the ''pdf'' versions of the documents are word searchable.

Please note that even after the comment closing date, we will continue to file relevant information in the Docket as it becomes available. Further, some people may submit late comments. Accordingly, we recommend that you periodically check the Docket for new material.

G. Plain Language

Executive Order 12866 requires each agency to write all rules in plain language. Application of the principles of plain language includes consideration of the following questions:

- Have we organized the material to suit the public's needs?
- Are the requirements in the rule clearly stated?
- Does the rule contain technical language or jargon that is not clear?
- Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand?
- Would more (but shorter) sections be better?
- Could we improve clarity by adding tables, lists, or diagrams?
- What else could we do to make the rule easier to understand?

If you have any responses to these questions, please include them in your comments on this document.

Issued on June 27, 2001.

Stephen R. Kratzke,

Associate Administrator for Safety Performance Standards.

Table 1.—Summary of Anticipated Advantages and Disadvantages for Possible Dynamic Rollover Tests

Note: The extent to which many of these anticipated attributes are realized will not be known until the completion of the resesarch project.

1. Path Following Driving Maneuver Tests

A. CU Double Lane Change

Anticipated advantages: Familiar to the public, represents a real maneuver, considers roll momentum, use of speed as criteria implicitly rewards good handling, demonstrates action of ESC.

Anticipated disadvantages: Poor repeatability due to large driver influence, use of wheel lift as main criterion invites trade-offs in tire traction, may operate at a worst case suspension frequency for some vehicles but not others.

B. VDA/ISO/Moose Test

Anticipated advantages: Like CU but with less room for driver variability through tight cone placement, represents a real maneuver, use of speed as criteria implicitly rewards good handling, demonstrates action of ESC.

Anticipated disadvantages: Driver influence is reported to be still on the order of 4 mph, tight lane widths may test driver ability as much a vehicle handling, more like 2 back to back single lane changes—may not include roll momentum, may operate at a worst case suspension frequency for some vehicles but not others (course adjustments for wheelbase mentioned).

C. Open Loop Pseudo-Double Lane Change (Concept for Automating the CU to the Extent Possible Using a Automated Steering Controller)

Anticipated advantages: Eliminates repeatability issues due to driver influences, attempts to represent a real maneuver, considers roll momentum, may use roll feedback to find worst case steering timing for each vehicle, use of speed as criteria implicitly rewards good handling? demonstrates action of ESC.

Anticipated disadvantages: Exists only as a concept—may prove to be entirely impractical, use of wheel lift as main criterion invites trade-offs in tire traction, failure to replicate a realistic path would devalue face validity and speed criterion, may be difficult to develop with available resources.

D. Ford Path Corrected Limit Lane Change

Anticipated advantages: Objective and repeatable, can it ''perfect'' the double lane change? considers roll momentum, demonstrates action of ESC.

Anticipated disadvantages: Suggested criteria requires handling definition and still may reward poor tire traction as it currently operates, rollover resistance is rated on different paths for different vehicles.

2. Open Loop (Defined Steering) Fishhook Maneuver Tests (With Several Steering Timing Ideas To Be Evaluated)

Anticipated advantages: Performed by automated steering controller for maximum objectivity and repeatability, considers roll momentum and seeks worst case for every vehicle, demonstrates action of ESC.

Anticipated disadvantages: Lacks face validity of lane change maneuvers, actual paths may differ widely between vehicles, needs separate handling criteria because poor tire traction is otherwise rewarded.

3. Dynamic Tests Other Than Driving Maneuvers—Not Planned for Evaluation

A. Centrifuge

Advantages: A ''perfection'' of the well known tilt table, expandable to test performance at road perturbations, accounts for suspension and tire deflections (unlike SSF), can represent tripped rollover (like SSF), accurate, repeatable and relatively cheap measurements.

Disadvantages: Suspension optimization for centrifuge test score can degrade handling (unlike SSF), not be perceived as ''dynamic enough'' for TREAD requirements, does not demonstrate action of ESC.

B. Mathematic Simulation

Advantages: Objective and repeatable, solves pavement friction issues, any maneuver is possible.

Disadvantages: Cost of vehicle characterization even greater than for maneuver tests, ESC algorithms proprietary and possibly not known to vehicle mfgr., no universally accepted mathematic model.

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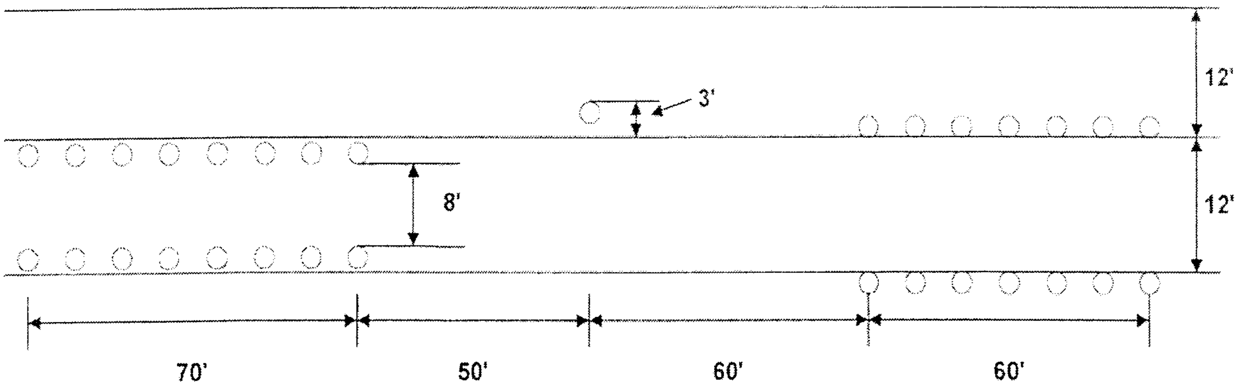

Fig. 1: CU Short Course

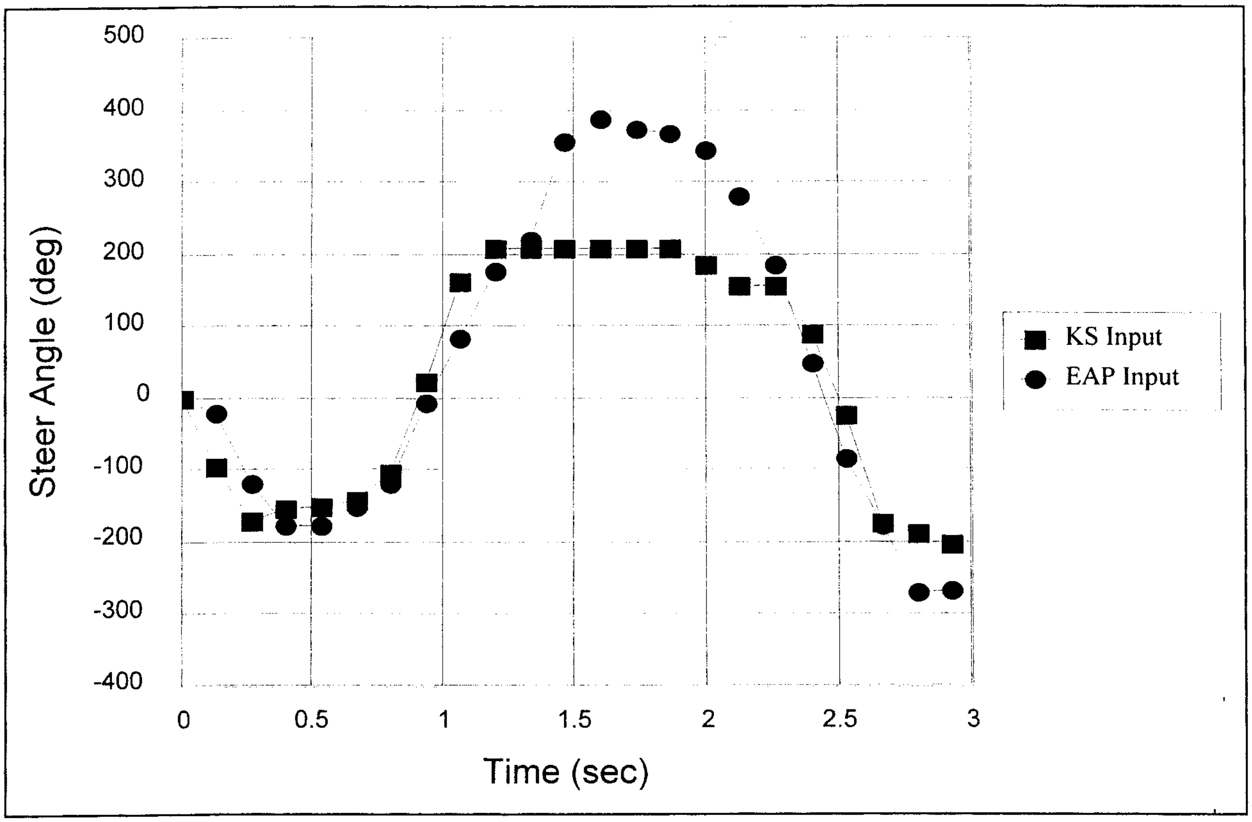

Fig. 2: Steering Profiles for Clean Run by Driver 'KS' and High Tip-Up by Driver 'EAP'

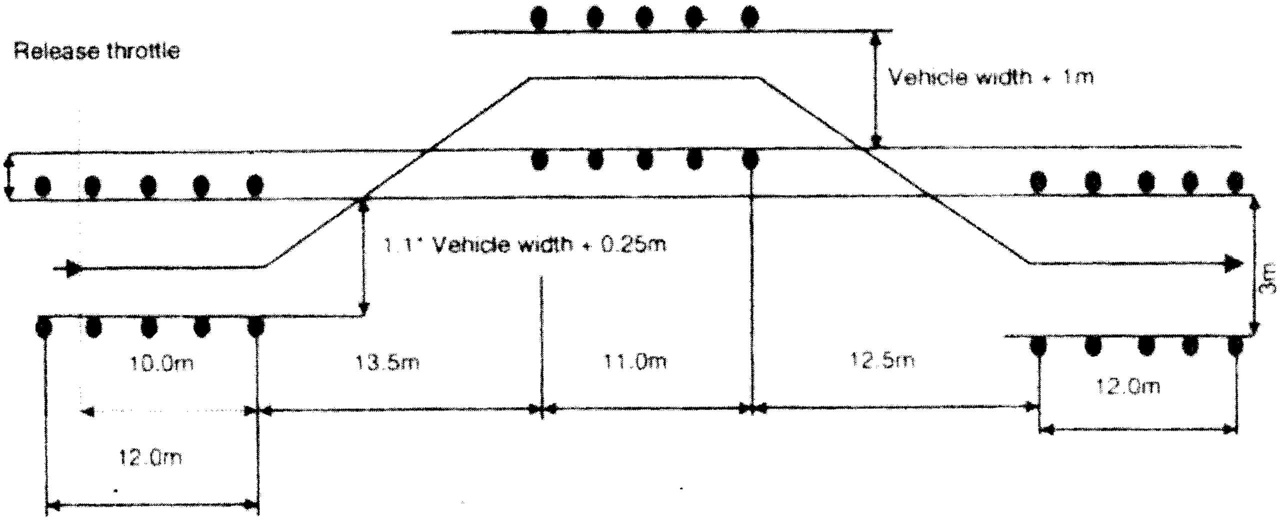

Fig. 3: VDA "Moose" Test Course

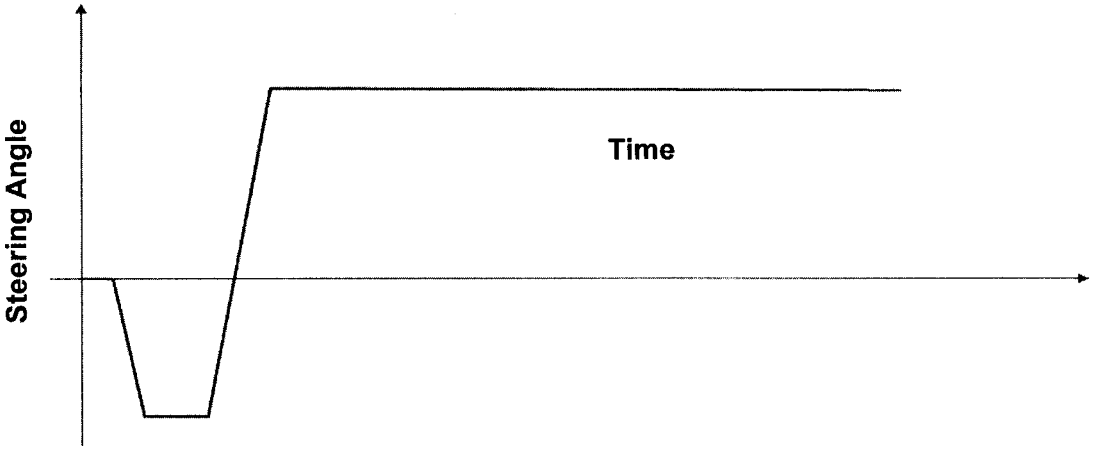

Fig. 4: Defined Steering Input for Basic Fishhook Maneuver

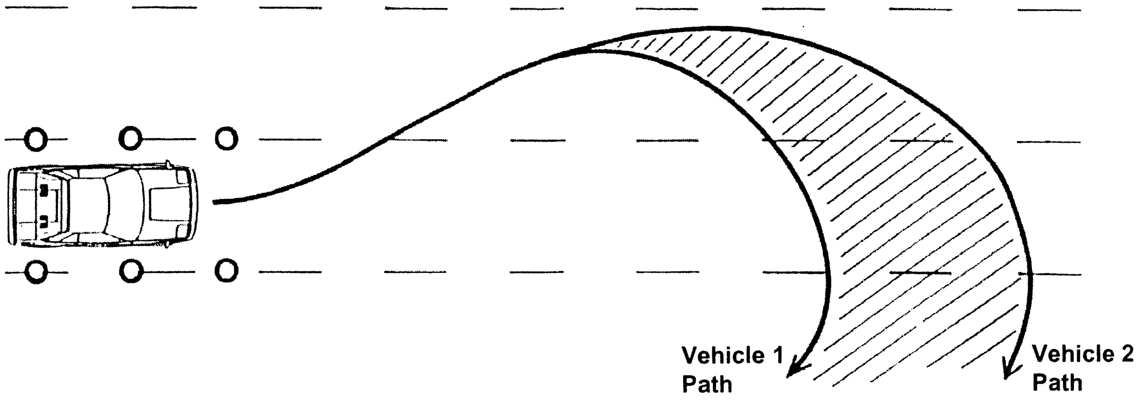

Fig. 5: Path of a Fishhook Maneuver

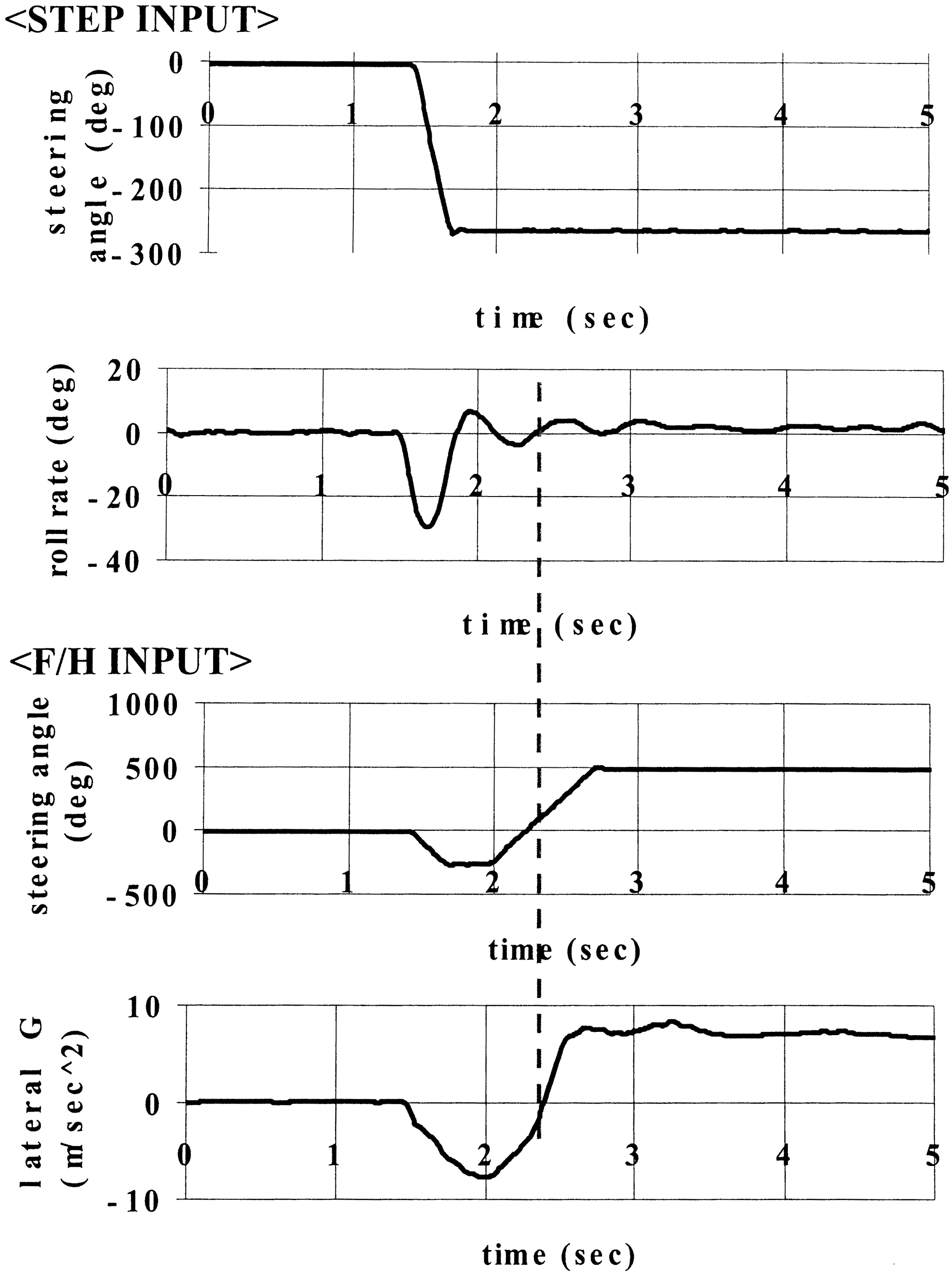

Fig. 6: Nissan Method of Timing Fishhook for Greatest Severity

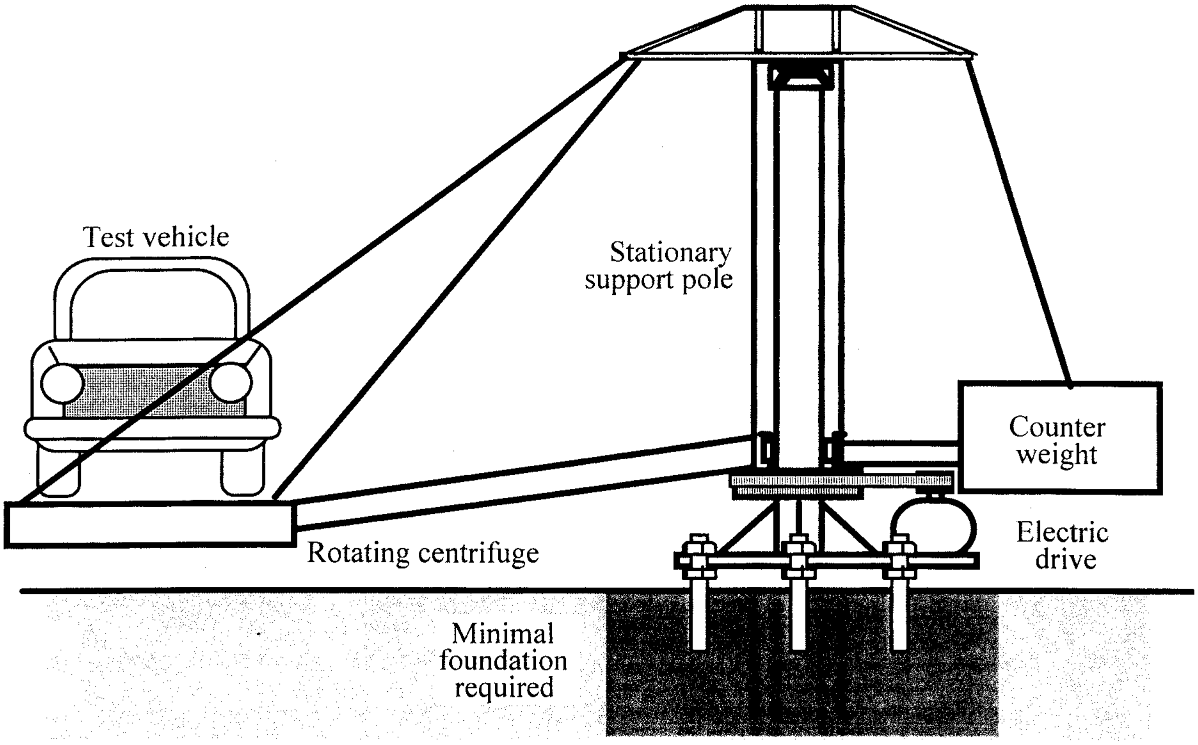

Fig. 7: Centrifuge Test Device for the Measurement of Rollover Threshold

[FR Doc. 01–16659 Filed 7–2–01; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 32

RIN 1018–AG58

2001–2002 Refuge-Specific Hunting and Sport Fishing Regulations

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Fish and Wildlife Service (we or the Service) proposes to add seven national wildlife refuges (refuges) to the list of areas open for hunting and/or sport fishing, along with pertinent refuge-specific regulations for such activities; and amend certain regulations on other refuges that pertain to migratory game bird hunting, upland game hunting, big game hunting, and sport fishing for 2001–2002.

DATES: You should submit comments on or before August 2, 2001.

ADDRESSES: Submit written comments to Acting Chief, Division of Conservation Planning and Policy, National Wildlife Refuge System, U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, Room 670, Arlington, VA 22203. See **SUPPLEMENTARY INFORMATION** for information on electronic submission.

FOR FURTHER INFORMATION CONTACT: Leslie A. Marler, (703) 358–2397; Fax (703) 358–2248.

SUPPLEMENTARY INFORMATION: The National Wildlife Refuge System Administration Act of 1966 (NWRSAA) closes national wildlife refuges to all uses until opened. The Secretary of the Interior (Secretary) may open refuge areas to any use, including hunting and/or fishing, upon a determination that such uses are compatible with the purposes of the refuge. The action also must be in accordance with provisions of all laws applicable to the areas, developed in coordination with the appropriate State wildlife agency(ies), must be consistent with the principles of sound fish and wildlife management and administration, and must be otherwise in the public interest. These requirements ensure that we maintain the biological integrity, diversity, and environmental health of the National Wildlife Refuge System (System) for the benefit of present and future generations of Americans.

We review refuge hunting and fishing programs annually to determine whether to include additional refuges or whether individual refuge regulations governing existing programs need modifications, deletions, or additions made to them. Changing environmental conditions, State and Federal regulations, and other factors affecting fish and wildlife populations and habitat may warrant modifications to refuge-specific regulations to ensure the continued compatibility of hunting and fishing programs and that these programs will not materially interfere with or detract from the fulfillment of the System's mission or the purposes of the refuge.

You may find provisions governing hunting and fishing on national wildlife refuges in Title 50 of the Code of Federal Regulations in part 32. We regulate hunting and fishing on refuges to:

- Ensure compatibility with the purpose(s) of the refuge;
- Properly manage the fish and wildlife resource;
- Protect other refuge values;
- Ensure refuge visitor safety; and
- Provide opportunities for high-quality recreational and educational experiences.