Chronology Relating to the Involvement of Jeep CJ-5 and Other Utility Vehicles in Rollover Crashes

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JULY 1971

In work done for the U.S. Postal Service, Rice and Brayman report on a series of tests of an American Motors DJ-5 postal Jeep to obtain data on its performance and handling characteristics. One of the conclusions of the evaluation is that the relatively low lateral force required to roll the vehicle over compared to passenger cars "is judged to be a potential safety problem with this vehicle." (Reference 1)

SEPTEMBER 1971

The National Highway Traffic Safety Administration (NHTSA) Office of Defects Investigation concludes that the Department of Defense should not sell the M-151 (1/4 ton jeep) to the general public because of its unsafe handling characteristics, in particular its propensity to roll over. (Reference 2)

APRIL 1973

NHTSA issues an advanced notice of proposed motor vehicle safety standard for rollover resistance. In this notice NHTSA states that it is considering issuing "a safety standard that would specify minimum performance requirements for the resistance of vehicles to rollover in simulations of extreme driving conditions encountered in attempting to avoid accidents." NHTSA indicates that it is considering the use of automatic vehicle controllers to obtain objective and repeatable tests. (Reference 3)

JUNE 1978

NHTSA releases a final report by Rice, et al., summarizing a research program undertaken to "obtain a better understanding of the physics of rollover." The objectives of this program were to quantitatively characterize the nature of vehicle rollovers, and to derive valid and repeatable rollover maneuvers suitable for compliance and certification purposes. A large number of the tests in this program were performed with an automatic vehicle controller steering the vehicles. The vehicles involved in the program were six passenger cars and one pickup truck; no utility vehicles were tested.

One of the principle conclusions of this research was that for the six passenger cars and one pickup truck tested, "untripped rollover, even on high skid-resistance surfaces, is difficult to predict and accomplish." (Reference 4)

OCTOBER 1979

NHTSA is petitioned by a California resident, whose 15-year-old son was killed in an off-road rollover in a Jeep CJ-5, to conduct a defect investigation into the safety and stability of the Jeep CJ-5 both on and off the highway. In response to this petition, NHTSA requests information from American Motors concerning the stability of Jeep CJ-5 and CJ-7 vehicles. (Reference 5)

DECEMBER 1979

Jeep Corporation responds to the NHTSA request. The response states that the Jeep Corporation has never performed any studies concerning the stability of the Jeep CJ vehicles. Furthermore, the response maintained that "Our field experience confirms that when driven properly these vehicles provide safe transportation both off and on the road." (Reference 6)

FEBRUARY 1980

NHTSA denies the petition for a defect investigation and states its analysis--which was based almost entirely on the response from AMC--"indicates that most instances of instability resulting in rollovers occur in circumstances in which the limits of the vehicle are exceeded." (Reference 7)

FEBRUARY 1980

The Highway Safety Research Institute (HSRI) of the University of Michigan completes the report by Snyder, et al., summarizing the on-road crash experience of utility vehicles. The principal conclusion of this report is that utility vehicles experience a rollover rate 5 to 11 1/2 times more than passenger cars and that among a group of popular utility vehicles, the Jeep CJ-5 has the least resistance to rollover. This work was funded by a research grant from the Insurance Institute for Highway Safety (IIHS).

Public release of the report is delayed by HSRI and IIHS at the request of the Jeep Corporation, which claims that the report is "riddled with the misuse of our trademark Jeep and unfounded conclusions about various aspects of utility vehicle performance." (Reference 8)

APRIL 1980

Release of the HSRI report is again postponed at the request of attorneys for the Jeep Corporation and the University of Michigan, pending conclusion of "negotiations" between those two organizations.

MAY 1980

With the agreement of the principle investigator, the HSRI report is released and summarized in Status Report. (Reference 9)

MAY 1980

The Director of HSRI--Dr. Robert L. Hess--responds to a request from the Jeep Corporation to comment on the Jeep Corporation's "assertions that there are technical deficiencies in the report." In this letter, Hess describes the research project as being one of "modest size and was directed at gaining a preliminary insight of the on-road crash experience, safety, and stability of utility vehicles." He also points out, however, that his comments are "not meant to change the content, conclusions, or recommendations of the report." (Attachment 1)

SUMMER AND FALL 1980

Under the technical direction of IIHS personnel, Dynamic Science, Inc. conducts a series of vehicle handling tests of the Jeep CJ-5 and the Chevrolet Chevette. In all of the Jeep CJ-5 tests and most of the Chevette tests the vehicles were driven by an automatic controller to ensure repeatable tests and also to avoid possible hazards to test drivers.

Over 200 individual tests were conducted to determine the handling and stability characteristics of the Jeep CJ-5. Most handling tests of the Jeep CJ-5 were at speeds well below those at which rollover was anticipated. Eight tests were conducted in which the Jeep CJ-5 rolled over--three J-turn and five obstacle avoidance maneuvers. Three of these tests were with new unmodified Jeep CJ-5s--including the two tests witnessed by "60 Minutes" staff--and five of the rollover tests were with Jeep CJ-5s that had been modified; in three tests, optional anti-sway bars were added, and in two tests anti-sway bars were removed.

The Chevrolet Chevette--also driven by the automatic controller---completed the maneuvers that produced rollovers of the Jeep CJ-5 at the same and higher speeds with no rollovers or loss of control. (Reference 10)

OCTOBER 1980

The Highway Loss Data Institute (HLDI) releases its first report on the frequencies of insurance claims for injuries to occupants of 1977-79 model year vans, pickup trucks, and utility vehicles.

The injury claim frequency for the Jeep CJ-5 "was higher than any other vehicle in this report and was also higher than all but two of the passenger cars for the same model years." The results for the Jeep CJ-5 "for claims exceeding $250 was the highest injury frequency result in this claim size category ever reported by HLDI. (Reference 11)

NOVEMBER 1980

The Motor Vehicle Manufacturer Association's (MVMA) Light Truck Accident Panel publishes comments on the February HSRI report. This report states that "careful analysis of the report leads to the conclusion that it lacks scientific exactitude and objectivity." The members of the Light Truck Accident Panel are not identified. [The chairman of MVMA at this time was Gerald C. Myers, Chairman of the Board for American Motors Corporation (AMC).] (Reference 12)

DECEMBER 1980

The San Francisco Chronicle publishes a series of articles concerning lawsuits against the Jeep Corporation involving the rollbar on the Jeep and also the tendency of the vehicle to roll over. Out of court settlements in California of more than $2 million were reported for two young men who were paralyzed in separate crashes, and a $2.2 million jury verdict against Jeep in Ohio. One of these articles also reports that "The Federal Trade Commission, concerned that Jeep advertising may induce owners to drive Jeeps beyond the vehicles' capabilities, has been gathering information for nearly a year from attorneys who have sued Jeep and from the Washington-based Center for Auto Safety, a consumer group that gathers safety-related data." (Reference 13)

DECEMBER 1980

The CBS show, "60 Minutes," televises a report on the handling characteristics of the Jeep CJ-5. This presentation highlights IIHS-sponsored handling tests conducted by Dynamic Science, Inc., in which rollovers occurred at a speed as low as 22 mph. In addition, the show also includes footage of tests conducted by the Jeep Corporation to

rebut the IIHS-sponsored tests. Although rollovers did not occur in the Jeep Corporation tests, in some of the maneuvers the wheels of the Jeep CJ-5 left the ground, indicating the vehicle was very close to rolling over.

DECEMBER 1980

IIHS publishes a special issue of Status Report, devoted to articles documenting the serious problem of on-road rollovers of the Jeep CJ-5. This issue of Status Report includes information on: the results from the Dynamic Science, Inc. handling tests of the Jeep CJ-5; preliminary findings from a study being carried out jointly by IIHS and the Highway Safety Research Center (HSRC) of the University of North Carolina, examining the crash experience of popular utility vehicles and pickup trucks in Maryland and North Carolina; the national fatal crash experience of such vehicles obtained from the NHTSA Fatal Accident Reporting System (FARS); and information on 37 court cases involving Jeep CJ models.

The preliminary results obtained in the HSRC/IIHS study showed that the Jeep CJ-5 was much more frequently involved in single vehicle rollover crashes than other popular utility vehicles in both Maryland and North Carolina. The fatality experience for the Jeep CJ-5 showed that in 1978 and 1979 it had more crashes with at least one occupant fatality for each 10,000 vehicles registered than motorcycles. (Reference 14)

FEBRUARY 1981

In articles in the Detroit Free Press it is reported that AMC "has paid more than $9 million in out-of-court settlements since 1973 in cases involving persons killed or injured when Jeep CJs overturned." (Reference 15)

FEBRUARY 1981

In a deposition related to lawsuits against American Motors Corporation concerning rollovers of the Jeep CJ-5, Gerald C. Myers, Chairman of the Board of AMC, in response to a question about the avoidance maneuvering capability of a Jeep CJ-5 in an emergency states, "There are instances, and I think they are commonly demonstrated, where normal passenger cars would lose control in the sense that they would slide out and be outside the control of the driver where a CJ-5 would not, and I consider a CJ-5, therefore, to be in many instances, if not most, more safe or safer than passenger cars under those kinds of circumstances."

When asked if he had received any tests or had any tests been brought to his attention either by AMC or Jeep Corporation relative to the susceptibility of the CJ-5 to roll over during an avoidance maneuver, Mr. Myers states, "No, we have not until recently, and we are performing a few things at the moment."

When asked if he knew of any study made by Jeep Corporation or AMC to determine the rollover rate of utility vehicles compared with passenger cars, he responds, "No, I do not. Such tests are unnecessary. We know what the vehicles are capable of." When asked if he ever felt the need to request any such study, he replies, "Absolutely not. We know that we have a safe vehicle and we know it is safer than many other vehicles on the road and has attributes which are strong and which are appealing and we see no need to perform such tests."

In response to questioning concerning factors that would cause one vehicle to be more susceptible to rollover than another vheicle, Mr. Myers replied, "I am trying to get you to understand that the important subject is control and not rollover. It makes no difference whether a vehicle has rolled over or whether a vehicle has lost--a person has lost control of the vehicle as to the consequences of that event. So answering your question specifically, which has to do with loss of control--well, I assume now are you asking me: Do you have loss of control in a rollover--I will answer your question as: Yes, but that is not the only instance in which there is loss of control.

"For example, a Chevrolet Chevette going around maybe the same turn that another vehicle would go around, instead of rolling over would slide out and the vehicle could probably get involved in an untoward accident or crash. It's just a matter of which way the vehicle gets into trouble at probably some comparable speed." (Reference 16)

In the same series of depositions, Lawrence H. Hyde, President of AM-General, a subsidiary of the American Motors Corporation and a member of the Board of Jeep Corporation, in response to questions concerning the "60 Minutes" show on the Jeep CJ-5, states that the way the Dynamic Science, Inc. tests were shown "was outrageously dishonest," and that Dynamic Science tests were a "fraud." (Reference 17)

In the same series of depositions, George McCord, the test driver in the American Motors tests, performed with intention of rebutting the Dynamic Science, Inc. tests that were shown on "60 Minutes," states that he was not aware that the wheels of the CJ-5 had ever left the ground. (Reference 18)

MARCH 1981

Erie Insurance Group sends to its policyholders a document entitled, "Driving A Jeep Could Be Hazardous to Your Health." This document was based on the IIHS tests and data analyses concerning the Jeep CJ-5. (Attachment 2)

MARCH 1981

A report prepared by Milliken and Rice for the Legal Department of American Motors Corporation criticizes the procedures used in the tests at Dynamic Science, Inc. The authors claim that the rollovers obtained in this test "reflect unrealistic human-driver actions for the intended maneuvers." They also claim that the lateral forces which could cause a Jeep CJ-5 to roll over are "comparable to or better than most other vehicles on the highway."

The authors apparently chose to ignore tests reported by Rice himself in 1978 which showed much higher forces being experienced by passenger cars in similar maneuvers without rollover. In addition, they apparently also chose to ignore the fact that Rice himself concluded in 1971 that the DJ-5 postal Jeep had a "potential safety problem" because of the relatively low force required to roll it over--a force very similar to that required to roll over the Jeep CJ-5.

The authors also claim that the forces necessary to roll over a Jeep CJ-5 were much higher than those to which drivers were willing to subject themselves. The authors ignore the fact that these latter results were obtained in passenger cars with relatively soft suspensions, which permitted substantial amounts of body roll (leaning to one side without the wheels leaving the ground) compared to the Jeep CJ-5, and that body roll substantially limits the extent to which drivers will maneuver a vehicle. Further, they compare the forces required to roll over the Jeep CJ-5 with the average forces experienced by a group of drivers, ignoring the fact that some individual drivers generated forces in the passenger car tests that were comparable to those that would produce rollover in a Jeep CJ-5. (Reference 19)

APRIL 1981

Forrest A. Hainline, Vice President and General Counsel for American Motors Corporation, writes to Erie Insurance Group, demanding that distribution of the Erie document be ceased immediately and that Erie "publish a retraction of the statements in it, and that you send such retraction to all policyholders and other persons who have received a copy." Mr. Hainline also states that "...failure to do so will magnify our damages and your liability." (The Erie Insurance Group apparently did not respond to these threats.) (Attachment 3)

MAY 1981

At the Governor's Safety Conference in Wyoming, James A. Tolley, Vice President of Public Relations of AMC, states that the Jeep CJ-5s rolled over in the Dynamic Science, Inc. tests because the mechanical steering device spun the wheel "much faster than you could ever do it, or any human could do it, then holding the wheel at that cramped angle for an unusually long period of time without ever backing up the steering wheel." (This allegation is incorrect because the steering wheel inputs were based on results obtained with actual drivers in tests simulating emergency conditions conducted for General Motors.) (Reference 20)

Mr. Tolley also states, with respect to the HSRI report, that IIHS "withdrew funding for the project before the project was completed, and the Institute went ahead and published the report anyway." In fact, IIHS funded several cost overruns on the HSRI grant and the report was published by HSRI, not by IIHS. (Reference 21)

SUMMER 1981

Nationwide Insurance sends copies of the special Jeep CJ-5 Status Report to its regional offices for distribution to its policyholders owning Jeep CJ-5 vehicles.

JULY 1981

Milliken and Rice publish the results of a series of handling tests of the 1981 model Jeep CJ-5 conducted for the Legal Department of AMC. In these handling tests, one rollover and over 50 wheel lift-offs occurred (in the latter tests the vehicle was prevented from rollovers by outriggers that had been added to the vehicle). These tests, in effect, confirmed the IIHS tests which showed that the Jeep CJ-5 could easily be induced to roll over. Despite the ease with which rollovers or potential rollovers could be produced with this vehicle, Milliken and Rice conclude that the 1981 Jeep CJ-5 "provided an operating envelope that is adequate for safe use in both normal and emergency on-road operation," again apparently ignoring the fact that some years earlier Rice had concluded that similar performance limits for the DJ-5 postal Jeep represented a "potential safety problem" for that vehicle. (Reference 22)

JULY 1981

NHTSA is petitioned to initiate an investigation to determine whether the rollover of CJ-5 Jeep vehicles constitutes a defect which could result in a safety recall campaign.(Reference 23)

AUGUST 1981

As part of its evaluation of the July petition, NHTSA requests the Jeep Corporation to provide it with "Jeep's analysis of the CJ-5 Jeep vehicle stability testing that Dynamic Science, Incorporated, performed on behalf of the Insurance Institute for Highway Safety." (Reference 24)

SEPTEMBER 1981

HLDI publishes its second report on the injury claim frequency results for vans, pickup trucks and utility vehicles. This reports, "The Jeep CJ-5 had by far the worst results; its overall claim frequency was 122 percent worse than the all-vehicle average and the frequencies rose to three times the average for claims with medical costs exceeding $1,000. The frequency of claims exceeding $250, $500, and $1,000 for the Jeep CJ-5 were all higher than those for any other vehicle in this report and were also higher than those for any of the passenger cars reported for the same model years." (Reference 25)

SEPTEMBER 1981

The joint study by HSRC/IIHS comparing the crash experience of utility vehicles, pickup trucks and passenger cars is released. This report concludes "In virtually every category of comparison--crash involvement rates (particularly single vehicle), serious (A+K) driver injuries, rate of overturn, serious driver injuries in rollover crashes, serious injuries for belted and unbelted drivers--the Jeep CJ-5 had the least favorable results of the various vehicles studied." [A and K are the police codes for serious and fatal injuries.] In addition, "...an examination of the possible effects of driver age on rollover rates was conducted. It was found that any age effect was at most marginal in either Maryland or North Carolina." (Reference 26)

OCTOBER 1981

AMC forwards to IIHS its critiques of the HSRI report and the Dynamic Science, Inc. tests prior to meeting with the IIHS staff.

Members of the IIHS staff meet with four representatives from AMC and the Jeep Corporation. There is a discussion of the HSRI report and the tests at Dynamic Science, Inc. The basic position taken by the representatives of AMC and Jeep Corporation is that none of the work had effectively eliminated the driver effect and that the high frequency of rollovers involving the Jeep CJ-5 could not be attributed to the vehicle but instead to driver misuse of the vehicle.