Rollover according to Volvo

Why rollover protection:

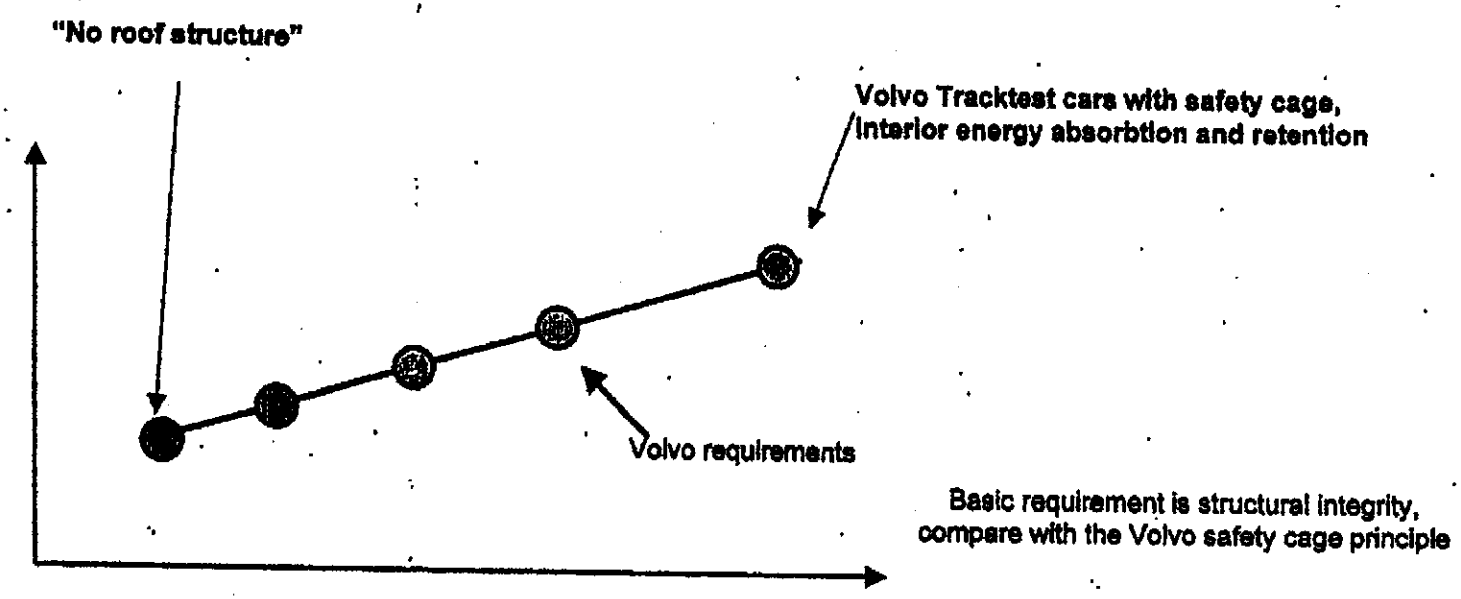
- Field performance.
- Future ratings.
- Communication.

Rollover - field accident feedback

Roof indentation, static and dynamic

Reducing injury risks related to compression/impact

Two scenarios:



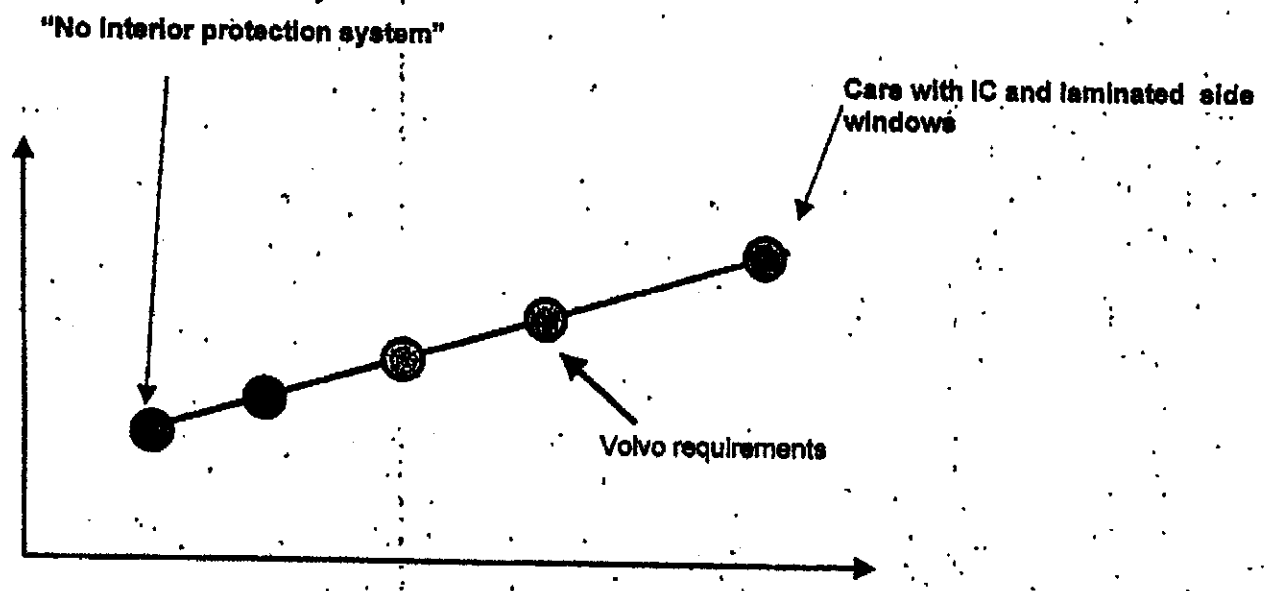
VOLVO

Rollover - field accident feedback

Occupant retension

Reducing injury risks related to partial or total ejection

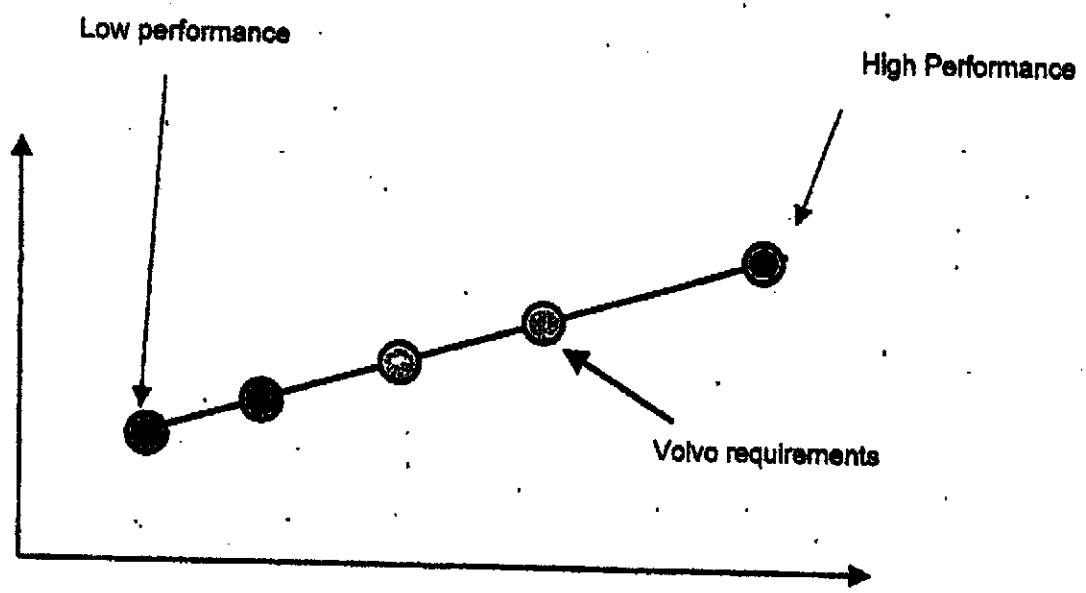
Two scenarios:



VOLVO

Rollover - total performance

The sum of structural integrity, occuppant retention,interior energy absorbtion and ejection prevention



VCC4 9827

VOLVO

Rollover system mechanisms

Field performance:

Rollover protection success factors to address the whole problem:

- No contact between roof and occupant:
  - Limited structural deformations
  - Occupant retention
- Ejection prevention
- Friendly interior

Rollover package:
Rollover prevention.
Rollover protection:

- Strong roof structure
- Rollover sensor
- IC for all occupants (incl. 3rd row)
- Lap belt pretensioner front seats
- Interior panels

Rollover P28

Communication:

Rollover as a package is one of the most important features to communicate with P28.
The package includes interior protection systems (dynamic such as IC, pretensioners etc. and static such as good panel design) and strong roof structure with limited intrusion into the occupant compartment.
The protection of the occupant and how this protection is percieved is the most important part in the communication.

Volvo has to be able to show dynamically, on film, how the protection systems and the structure work together to protect the occupant. The protection systems and the structure must be percieved as good after impact so deformed cars can be shown externally. This is very important for trustworthy communication.

There is also risk that external organizations will test the P28 in rollover (to verify what Volvo communicates or in some special program)

Conclusion for communication:
→ no contact between head and roof dynamic during rollover

→ no local deformations of the structure, the structure has to show integrity (deformation pattern according to a consistent failure mode and has more to give.)

→ interior looking good, still covering structure, no failures and sharp/stiff edges.

All these requirements has to be met.

Rollover design guide

Focus on: No contact between head and roof dynamic during rollover to address injuries to spine, head.
System analysis gives:

- Initial distance between head and roof
- Occupant retention.
- Roof indentation.

Rollover

Roof indentation, static and dynamic.

SUMMARY:

Field and communication are the main drivers for decreased roof deformation:
- Decrease deformation significantly to decrease the injury risk.
- The rollover feature package and performance is one of the most important features for P28. Communication has to be made showing on film how the systems and structure work together to be trustworthy.

Rating and legal requirements:
- No legal requirements foreseen.
- No rating foreseen.
  However, external institutions will most probably want to test the performance (e.g. IIHS).

Competitors:
- No competitor is judged to have roof strength as high as P28. The competitors have to low levels to be interesting to compare with - to just be better than them is not enough for field and communication.

Conclusion:
- No contact between head and roof dynamic during rollover
- No local deformations of the structure, the structure has to show that it has been deformed according to plan and has more to give.
- Interior looking good, still covering structure, no failures and sharp/stiff edges.

Rollover

Roof indentation, static and dynamic.

Field:

Global deformations:

The field field performance does not show a clear connection between statisk roof strength and injury risk. However, deformation and injury risk does. Bigger deformation give higher injury risk.

By logical reasoning the deformation in real life accidents should decrease if the energy absorption significantly increased and hence the injury risk should be reduced.

As implicated above the decrease of the injury risk is not to quantifiable.
Accident data indicate that below a certain amount of deformation the injury risk is steadily low and above it increases linearily.
Some variation in deformation is not critical for field performance.

Local deformation and interior:

The interior behaviour, covering structure, no failures and sharp/stiff edges, is of great importance for occupant injury risk. Also local deformations giving local impact locations shall be avoided.

Conclusion:

There should be no contact between occupant and structure during the rollover sequence to minimize impact and crush injuries. This is a prerequisit for good real life safety. Limited deformation is a prerequisit for the protection systems to do their job. The z-deformation is critical, y-deformation is not so critical for injuries.

Statistics:

SUV:s and similar vehicles are more prone to roll, approx 5 times as prone (in general) as Volvo S80 like cars.
The injury risk: for belted occupants the injury risk for Volvo like cars is higher than for SUV:s for MAIS2+ and for unbelted MAIS3+. Unbelted higher risk for SUV:s for MAIS1-2.
(More information available at VSC/TAK).

CENTER FOR AUTO SAFETY

1825 Connecticut Avenue, NW Suite 330 Washington, DC 20009-1160 (202) 328-7700

December 14, 2006

Docket Management System
United States Department of Transportation
400 7th Street, S.W. PL-401
Washington, DC 20590

SENT VIA ELECTRONIC SUBMISSION

Re: Docket No. NHTSA-2005-22143

To Whom It May Concern:

The Center for Auto Safety submits the attached report, "Rollover According to Volvo," to Docket No. NHTSA-2005-22143. By letter dated July 3, 2006, Volvo requested confidential treatment for this report, although it admitted that the report had been produced unprotected in a lawsuit. On August 29, 2006, Mr. Otto Matheke, Senior Attorney in NHTSA's Office of Chief Counsel, determined that the report was no longer entitled to confidential treatment, and provided Volvo with twenty days to request reconsideration of his decision. Volvo did not respond with a request for reconsideration, and the report is no longer subject to confidentiality, as explained by Mr. Matheke in the attached FOIA response dated November 6, 2006. CAS therefore requests that this report be placed in the record.

Sincerely,

/S/

Michael Brooks
Staff Attorney

Attachments:

(1) Rollover According to Volvo
(2) July 3, 2006 Volvo Letter to NHTSA requesting confidential treatment
(3) August 29, 2006 NHTSA Letter to Volvo denying confidential treatment
(4) November 6, 2006 FOIA response to CAS from NHTSA

VOLVO

Volvo Cars of North America, LLC

July 3, 2006

Mr. Anthony M. Cooke, Esq.
Chief Counsel
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Cooke:

Subject: May 25, 2006 Request Under 49 CFR Part 512 for Confidential Treatment of Information

In a May 25, 2006 letter, Volvo Car Corporation (Volvo) requested confidential treatment of portions of a submission to NHTSA's docket 22143 concerning FMVSS 216 rulemaking by Ms. Paula Lawlor and Mr. Todd Tracy that contained confidential business information. A copy of that letter is attached.

In that letter, Volvo stated that "[e]ach of the documents has been provided outside Volvo as a result of satisfying legal obligations under state or federal rules of civil procedure and only subject to protective orders." That statement continues to be correct concerning the production of the documents by Volvo. However, Volvo has just recently learned that one of the documents, Rollover According to Volvo, was previously made available as part of a large collection of documents by Ford Motor Company in satisfying its obligations under state and federal rules of civil procedure without a protective order.

The potential that these documents may be required to be produced pursuant to court rules was specifically mentioned in Volvo's May 25, 2006 Certificate In Support of Request For Confidentiality, and it does not change the confidential nature of Rollover According to Volvo. Volvo feels it is important to share this information with you, because we believe the agency should make its confidentiality determination based on all of the available information.

Please direct all notices to William Shapiro, P.E., Volvo Cars North America, 7 Volvo Drive, Building 2, P.O. Box 913, Rockleigh, NJ, 07647. Mr. Shapiro can be reached at (201) 767-4772, or via email at wshapiro@volvocars.com.

Respectfully,

William Shapiro, PE (By Direction JMS)

William Shapiro, P.E.
Manager, Regulations & Compliance

Attachment

Volvo Cars of North America, LLC
Volvo Drive
Rockleigh, NJ 07647

Telephone
201-768-7300

http://www.volvocars.us

VOLVO

Volvo Cars of North America, Inc.

May 25, 2006

Mr. Stephen Wood, Esq.
Chief Counsel
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Wood:

Subject: Request Under 49 CFR Part 512 for Confidential Treatment of Information

Volvo Car Corporation (Volvo) recently learned that a submission to the NHTSA's docket 22143 concerning FMVSS 216 rulemaking on May 8, 2006 by Ms. Paula Lawlor and Mr. Todd Tracy contained confidential business information that should be treated confidentially by the agency. Specifically, pages 13 and 14 of the submission contain excerpts from Volvo's confidential business records that have been produced by Volvo in litigation subject to protective order. The confidential portions of the submission have been circled in attachment A.

Volvo respectfully requests confidentiality for those circled portions of pages 13-14 pursuant to 49 CFR § 512.15, 5 U.S.C. § 552(b)(4), and 49 U.S.C. § 30167. We firmly believe that the release of this confidential information would compromise Volvo's position and make public Volvo proprietary information that could cause substantial competitive harm.

Volvo documents of the types listed are maintained under a record keeping system intended to control dissemination of this material within Volvo, and to assure that the material is not disseminated outside of Volvo, except as described in the attached certification, which is made pursuant to 49 CFR Part 512.4(b). Each of the documents has been provided outside Volvo as a result of satisfying legal obligations under state or federal rules of civil procedures and only subject to protective orders. Volvo and Ford Motor Company on behalf of Volvo have taken immediate steps to remedy protective orders violations when we have identified them. Volvo and Ford have taken such steps with regard to the parties who made this submission.

Specifically, the circled portions of the attached document contain the following types of confidential information:

1. Rollover According to Volvo – This document contains Volvo's internal engineering standards and marketing strategies reflecting the results of engineering tests and marketing analyses conducted by Volvo in the design and development of the XC-90.
2. FKB P28 – The FKB contains Volvo's design and testing standards for the XC-90. It is the fundamental criteria for all performance, testing, and engineering standards for the XC-90.

Volvo Drive
Rockleigh, NJ 07647

Telephone
201-768-7300

http://www.volvocars.com

3. Test Report No. 262279 – This is a test report reflecting the performance of the XC-90, Volvo's criteria for the test, and Volvo's evaluation of the test.
4. Rollover Performance P28 – This document is an engineering presentation containing Volvo's test data and analyses of the XC-90 and other Volvo models.

Information concerning or revealing Volvo's design criteria, marketing strategies and testing programs, including test requests, methodologies, specifications, results and analyses could be used by competitors to improve their own products and processes without the need to invest the substantial resources invested by Volvo and, therefore, require confidential treatment.

Considering the foregoing, Volvo requests that the confidential information be treated within the meaning of confidential business information pursuant to 5 USC 552(b)(4) and Section 112(e) of the National Traffic and Motor Vehicle Safety Act of 1966 as amended and implemented in 49 CFR Part 512. Volvo requests that these documents be given confidential treatment by the agency for a period of ten years. Earlier disclosure of these documents would result in substantial competitive harm.

In the event that the agency concludes that all or part of the submitted information is not to be given confidential treatment, Volvo asks the agency to provide reasonable notice of not less than ten working days prior to any contemplated disclosure in order that Volvo may pursue such legal remedies as it may choose. Please direct all notices to William Shapiro, P.E., Volvo Cars North America, 7 Volvo Drive, Building 2, P.O. Box 913, Rockleigh, NJ, 07647. Mr. Shapiro can be reached at (201) 767-4772, or via email at wshapiro@volvocars.com.

Respectfully,

William Shapiro, P.E.
Manager, Regulations & Compliance

Attachment

AUG 29 2006

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. William Shapiro, P.E.
Volvo Cars of North America, Inc.
7 Volvo Drive, Building 2
P.O. Box 913
Rockleigh, NJ 07647

Re: Confidentiality Determination/Docket No. NHTSA-2005-22143, Item No. 203 (Rollover According to Volvo)

Dear Mr. Shapiro:

This responds to your July 3, 2006 letter regarding confidential treatment for information submitted by Paula Lawlor and Todd Tracy to the above docket. The pertinent information is from a document you identify as "Rollover According to Volvo". In a previous request for confidentiality, you described this document as consisting of internal engineering standards and marketing strategies reflecting engineering test results and marketing analyses conducted in developing the Volvo XC-90 vehicle. You previously sought confidential treatment for this information for ten (10) years. The agency granted your request in a June 27, 2006 letter based in part on the fact that the information had been disclosed in violation of a court protective order.

You now explain that Volvo has recently learned that the above document was produced by Ford Motor Company (Ford) without a protective order. Nonetheless, you assert that the confidential nature of the information has not changed and note that Volvo previously addressed the possibility that this document could be disclosed to satisfy its legal obligations. You assert that this document remains entitled to confidential treatment.

I have decided to modify the agency's prior determination.

The agency initially granted confidential treatment to this document on the understanding that any disclosure was unauthorized and violated a court protective order. You have explained that with respect to this particular document has been released by Ford in the course of litigation. As this document was properly disclosed by Ford, our previous analysis no longer applies.

The appropriate standard of review is that of *Niagara Mohawk Power v. Dep't of Energy*, 169 F.3d 16 (D.C. Cir. 1999). Under that test, information that has already been disclosed is no longer entitled to confidential treatment under Exemption 4 of the Freedom of Information Act (FOIA), 5 U.S.C. § 552(b)(4)

The disclosure and availability of this document belies any finding that its dissemination was improper. Its public availability negates Volvo's prior assertions of competitive harm. Accordingly, the agency will release this information not less than twenty (20) working days from your receipt of this letter. The remaining documents covered by our earlier grant of confidential treatment will continue to be withheld consistent with the terms outlined in our June 27th determination letter.

If you disagree with the partial denial set forth above, you may request reconsideration. If you seek reconsideration, your request must be addressed to NHTSA's Chief Counsel and filed within 20 working days after the receipt of this letter (49 CFR 512.19(a)). Any such request should contain additional justification to fully support your claim for confidential treatment consistent with 49 CFR Part 512 and applicable case law.

Sincerely,

Original Signed By

Otto G. Matheke, III
Senior Attorney

U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

NOV - 6 2006

400 Seventh Street, S.W.
Washington, D.C. 20590

CERTIFIED MAIL—RETURN RECEIPT REQUESTED

Michael Brooks
Center for Auto Safety
1825 Connecticut Avenue, NW, Suite 330
Washington, DC 20009-5708

RE: Freedom of Information Act (FOIA) Appeal

Dear Mr. Brooks:

This responds to your August 2, 2006 letter appealing the agency's June 27, 2006 response to your May 15, 2006 and May 24, 2006 Freedom of Information Act (FOIA) requests.

Initial Request

Your initial requests sought a complete copy of "Deadly by Design," submitted by Paula Lawlor to Docket NHTSA-2005-22143-203 and all documents removed or redacted from Dockets NHTSA-2005-22904, NHTSA-2005-22143 and NHTSA-1999-5572, including related records, such as confidentiality determinations and records related to the process of removing or redacting documents from these dockets.

The agency responded to your two requests on June 27, 2006. The agency withheld portions of the Paula Lawlor report under Exemption 4 of the FOIA because they were subject to a grant of confidentiality to the Ford Motor Company. The agency enclosed a copy of Ford's request for confidential treatment and the agency's confidentiality determination and referred you to the docket for the non-confidential portions of the report.

The agency stated that no documents or portions of documents were withheld from Docket NHTSA-2005-22904. The agency withheld portions of six submissions to Docket NHTSA-2005-22143 under Exemption 4 of the FOIA because they were subject to grants of confidentiality to various parties. The agency enclosed the requests for confidentiality and the agency's confidentiality determinations for each of these submissions. The agency also enclosed 5 electronic mail messages related to Ford's request for confidential treatment for portions of the document submitted by Paula Lawlor (Docket NHTSA-2005-22143-203). The agency withheld materials submitted by Sean Kane and later removed from Docket NHTSA-1999-5572, citing its response to your previous FOIA request for these materials.

Appeal

You appeal on the basis of two arguments. First, you seek "a review of the Lawlor submission, a determination of whether these materials are protected under the agency's confidential business information regulation, and the public release of all materials deemed to fall outside of the regulation's reach."

In support of this argument, you contend that the portions withheld from the Lawlor submission are not subject to protection under Exemption 4 because they have been made public by Volvo "through trade seminars, academic presentations, and by other means." You cite several websites, court decisions (or practices by their clerks' offices), and the Department of Transportation's docket management system as evidence that the redacted portions of the Lawlor submission have been made public. More specifically, you indicate that two Volvo presentations that "serve as a basis for much of the redacted portions" are available at http://www.citizen.org, http://www.autosteel.org, and on the Department's docket management system at http://dmses.dot.gov. You specify that the documents were also available to the public from the Duval County, Florida District Clerk's office from March 1, 2005 to April 1, 2005, "during which period the documents were acquired and reported on by national media." You also claim that these materials have been deemed non-confidential in the case of Marroquin v. Ford and admitted into evidence pending a decision by the Supreme Court of Texas. You assert that the redacted portions have been included in submissions to the Department's docket management system by Paula Lawlor, Sean Kane, and Donald Friedman and the Center for Injury Research. Finally, you argue that the agency reached a different result about the confidentiality of documents in a similar situation in 1993.

Second, you argue that the agency did not conduct a proper search for documents removed from the three dockets identified in your FOIA request. In support of this argument, you identify a July 7, 2005 submission from the Center for Injury Research that "included an attachment of Volvo documents" and state that the attachment has been removed from Docket NHTSA-1999-5572. You claim that NHTSA's FOIA response did not make mention of this removal or provide any "confidentiality related" correspondence addressing this removal.

Agency Decision

Review and Disposition of the Lawlor Submission

I am releasing portions of the Lawlor submission because they are no longer subject to confidentiality. In a July 3, 2006 letter, Volvo informed my office that a document entitled "Rollover According to Volvo," portions of which were included in the Lawlor report, was produced without a protective order by the Ford Motor Company, but continued to assert that the confidential nature of the information remained unchanged. On August 29, 2006, I modified the original confidentiality determination and provided Volvo twenty working days to respond. As that period has elapsed without response, I have enclosed a copy of the materials containing the information subject to release. (At your request, the agency faxed to your office copies of the August 29, 2006 letter on September 29, 2006 and the July 3, 2006 letter, with an attached May 25, 2006 letter, on October 13, 2006.)

I am continuing to withhold other portions of the Paula Lawlor submission because the material remains subject to a proper grant of confidentiality by the agency. I have reviewed the circumstances surrounding the confidentiality determination and your arguments about the release of this material. I conclude that the record does not establish that there has been an authorized public release. Courts have held that an unofficial or unauthorized disclosure of information does not constitute a waiver of a FOIA exemption. See, e.g., Afshar v. Department of State, 702 F.2d 1125, 1133 (D.C. Cir. 1983) (information requested must be made public through an official and documented disclosure); Simmons v. United States Dep't of Justice, 796 F.2d 709, 712 (4th Cir. 1986) (unauthorized disclosure does not constitute waiver); Safeway Stores, Inc. v. FTC, 428 F. Supp. 346, 347-48 (D.D.C. 1977) (finding no waiver where congressional committee leaked report to press).

The information and arguments you provided in your appeal do not establish that this information has been made public in an authorized manner. The two Volvo presentations you identify as evidence that "much if not all" of the information redacted from the Lawlor submission has been released to the public do not, in fact, contain the specific information included in the Lawlor submission. Davis vs. United States, 968 F.2d 1276, 1280 (D.C. Cir. 1992) (finding no waiver where plaintiff failed to show that "exact portions" of records sought are in public domain). Moreover, except as noted above with respect to the portions I am releasing to you, we are unaware of any court that has permitted the release of this information. The agency investigated the release of information by the Duval County, Florida District Clerk's office in the course of responding to your August 1, 2005 FOIA request for documents submitted to Docket NHTSA-1999-5572 by Sean Kane and/or Safety Research & Strategies, Inc. The agency discovered that this information was subject to a protective order in the Florida case of Duncan v. Ford Motor Company, but was mistakenly released by the clerk's office for a period of time. The information is still subject to this protective order. You also note that the material has been deemed non-confidential in the Texas case of Marroquin v. Ford. However, this issue is currently on appeal before the Texas Supreme Court and the information has not been released publicly. Finally, in all instances where this information was included in submissions to the Department's docket management system, the agency removed the material as soon as it became aware of its existence, after verifying that it was information subject to confidentiality. Because this information has not been made public in an authorized manner, I have determined that the redacted portions are still subject to confidential treatment by the agency and I am continuing to withhold this material.

I have reviewed the agency's decision to deny confidential treatment for certain General Motors's (GM) documents in 1993. I am not bound by the facts and circumstances of that decision. As described above, I am continuing to withhold the redacted portions of the Lawlor submission because the information was not released in an authorized manner and is properly subject to confidential treatment by the agency. I conclude that it would not be appropriate for the agency to serve as a conduit for further release under these circumstances.

Adequacy of Search for Documents Removed from the Docket

In a July, 2006 telephone conversation, after your receipt of the initial FOIA response, Mr. Clarence Ditlow inquired about the July 7, 2005 Center for Injury Research submission now referenced in your appeal as missing from the docket. In a follow-up telephone conversation, the agency informed Mr. Ditlow that it had no knowledge of the removal of any attachment and that the attachment did, in fact, appear in the TIF version, but not the PDF version, in Docket NHTSA-2005-5572. (The agency was unable to determine the reason for this discrepancy.) As a result of investigating this query, the agency informed Mr. Ditlow that it was then removing the attachment entirely from the Docket submission because the materials were subject to a grant of confidentiality. Upon review of these facts, I have determined that there is no basis to conclude that agency's search was inadequate.

I am the person responsible for this decision. It is administratively final and has been concurred in by the Office of General Counsel, Department of Transportation. If you wish to seek review of my decision, you may do so in the U.S. District Court for the District of Columbia or in the district where you reside, have your principal place of business, or where the records are located. 5 U.S.C. § 552(a)(4)(B).

Sincerely,

Anthony M. Cooke
Chief Counsel

Enclosures

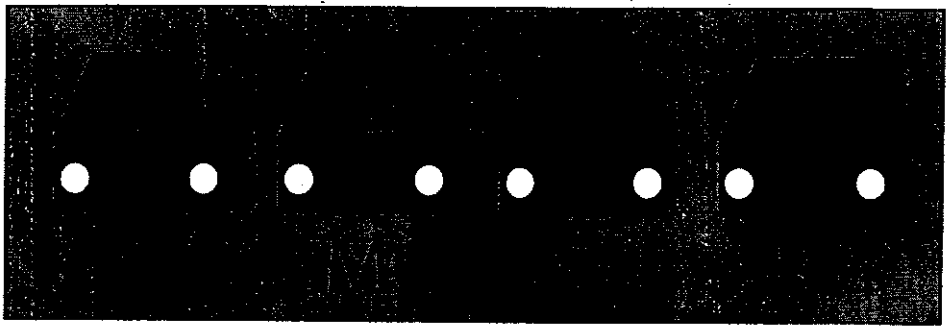
Roof Strength Saves Lives

In October 2001, the NHTSA wrote that ***"agency research analysis demonstrates that limiting the reduction of headroom between the occupant's head and the roof reduces injuries in rollovers. More specifically, this research shows a moderate correlation between post crash headroom and the severity of injury to the head, neck or face resulting from roof contact."*** The NHTSA in August 2005 concluded that its research on roof strength established a link between roof crush and injury.

Volvo's Design Goal — No Contact Between Head And Roof

To demonstrate that roof strength matters and saves lives, one must only evaluate the conduct of Volvo. When Volvo began designing its first SUV (XC90) code named P28, Volvo identified four patterns of roof deformation that occur during a rollover event.

FOUR PATTERNS OF ROOF DEFORMATION THAT OCCUR DURING A ROLLOVER EVENT



Volvo's main design objective when developing its XC90 was the elimination of head impacts in rollover accidents. Volvo achieved its design objective by establishing a performance requirement of no contact between the head and roof.

[redacted] VOLVO

Communication:

Rollover as a package is one of the most important features to communicate with P28
The package includes interior protection systems (dynamic such as IC, pretensioners etc. and static such as good panel design) and strong roof structure with limited intrusion into the occupant compartment.
[redacted]

Volvo has to be able to show dynamically, on film, how the protection systems and the structure work together to protect the occupant. The protection systems and the structure must be perceived as good after impact so deformed cars can be shown externally. This is very important for trustworthy communication.

There is also risk that external organizations will test the P28 in rollover (to verify what Volvo communicates or in some special program)

[redacted]
→ [redacted]
→ [redacted] (deformation pattern according to a consistent failure mode and has more to give.)
→ Interior looking good, still covering structure, no failures and sharp/stiff edges.

All these requirements has to be met.

[(b)(4)]

Volvo's Internal Documents Prove The Relationship Between Roof Crush And Injury

Volvo's internal documents disprove the diving theory as the cause of injury and prove the relationship between roof crush and injury:

- [(b)(4)]
- *"there should be no local deformations of the structure, the structure has to show integrity . . ."*
- *"Field performance does not show a clear connection between static roof strength and injury risk. However, deformation and injury risk does. Bigger deformation gives higher injury risk."*
- *"By logical reasoning the deformation in real life accidents should decrease if the energy absorption significantly increased and hence the injury risk should be reduced."*
- *"there should be no contact between the occupant and the structure during the rollover sequence to minimize impact and crush injuries. This is a prerequisite for good, real life safety. Limited deformation is a prerequisite for the protection systems to do their job."*
- *"dynamic deformation in rollovers should be lower than the space between the head and the roof."*

STRENGTH SAVES LIVES