Memorandum

U.S. Department
of Transportation

National Highway
Traffic Safety
Administration

Subject:	Envoy/Bravada Stalling General Motors ride and drive evaluation	Date:	June 22, 2004
From:	Cynthia Glass CAG Office of Defects Investigation	Reply to Attn of:	NVS-212 cag
To:	File for EA03-007		

The memo dated May 17, 2004, along with its attachments, were held until the closing resume was written. That is why the memo is dated 1 month before it was actually uploaded into the repository.

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Administration**

Subject:	Envoy/Bravada Stalling General Motors ride and drive evaluation	Date:	May 17, 2004
From:	Cynthia Glass Office of Defects Investigation	Reply to Attn of:	NVS-212 cag
To:	File for EA03-007		

At the request of General Motors, on May 17, 2004, Tom Cooper, Jeff Quandt, Jennifer Timian, Cheryl Tuotso and I visited the General Motors Milford Proving Grounds for a ride and drive evaluation of stalling in the 2002 Envoy, 2004 Saab and 2004 Malibu. GM presented the attached presentation of their analysis of stalling in the 3 vehicles.

GENERAL MOTORS NORTH AMERICA
Structure & Safety Integration

May 19, 2004

Jeffrey L. Quandt, Chief
Vehicle Control Division
Office of Defects Investigation
NHTSA Safety Assurance
Room #5326
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Quandt:

I am enclosing, per our discussion during your visit this past Monday, a CD that contains the stall video we reviewed and a hardcopy of our presentation material.

As a reminder, our work on the video and NHTSA's visit to the GM Milford Proving Grounds on May 17, 2004, were intended to introduce the subject of engine stalls and provide a demonstration, along with other pertinent engineering information, relevant to our discussion on engine stalls and their characterization as a safety defect. There are questions from your visit and perhaps new ones since, that can be answered in short order, if you believe they will help further our discussion on the subject. Please let me know if there is anything we may do to this end.

Thanks again for the courtesy of your visit.

Sincerely,

Gay Kent
Director, Product Investigations

Product Investigations
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NHTSA VISIT – GM MPG

ENGINE STALL & LOSS OF ASSIST DEMONSTRATION

May 17, 2004

AGENDA

TIME	TOPIC	PRESENTER
5 min	Introductions	K. Schultz
10 min	Purpose	K. Schultz
30 min	Stall Data and Video Review	W. Kauffman
10 min	Driving Instructions	W. Kauffman
2 hrs	Driving Demonstrations	ALL
15 min	BREAK	ALL
30 min	Electric Power Steering System Overview	K. Gannon D. Juarez
15 min	Conclusions / Next Steps	ALL

PURPOSE OF VISIT

The Primary Purpose For NHTSA Visit Is:

- To establish through demonstration and data that an engine stall is not, per se, a safety defect
- In their design process, General Motors validates that its steering and braking systems, without assist:
  - Meet GM internal specifications for system performance, taking into account human factors
  - Meet external specifications (e.g. EC for steering, FMVSS for brakes) for performance
  - Ensure vehicle controllability through non-assisted steering and braking by the vast majority of our customers

DRIVING DEMONSTRATION

- Purpose: *To demonstrate vehicle controllability of SAAB 9-3, GMC Envoy, and Chevrolet Malibu on various road courses with engine stall and/or loss of assist*
- Test Protocol
  - Tested at General Motors Milford Proving Ground
  - 5th% Female Driver (aware of stall testing)
  - Course consisted of :
    - 141' Slalom (7 cones) with 40' Braking Area run @ 35mph
    - LH & RH Curbed Turns (per MDOT Geometric Design Guide) run @ 15mph
    - 2 Lane State Highway
  - Test Data Included: (with and without assist/stall)
    - Steering Wheel Torque
    - Steering Wheel Angle
    - Brake Pedal Force
    - Vehicle Speed
- Identify Test Vehicles
  - 2002 GMC Envoy
  - 2004 SAAB 9-3
  - 2004 Chevrolet Malibu

DRIVING DEMONSTRATION – RESULTS & CONCLUSIONS

- 5th% female able to maneuver all vehicles through all test protocols under engine stalls and/or lack of brake and steering assist
- Maximum recorded efforts:

With Assist/Engine Running

	Steering Wheel Torque			ft-lbf	Brake Pedal Effort			lbf
Course	Slalom	Cruise	LH Turn	RH Turn	Slalom	Cruise	LH Turn	RH Turn
SAAB	2.5	2.2	3.2	3.7	29	21	22	16
Malibu	3.2	3.0	2.5	3.4	46	35	28	35
Envoy	2.8	2.3	3.1	3.1	46	24	15	18

With Stall/Lack of Assist

	Steering Wheel Torque			ft-lbf	Brake Pedal Effort			lbf
Course	Slalom	Cruise	LH Turn	RH Turn	Slalom	Cruise	LH Turn	RH Turn
SAAB	9.7	6.6	17.9	19.0	25	22	20	18
Malibu	11.5	5.6	19.1	21.6	52	36	32	35
Envoy	14.2	8.0	24.1	25.6	112	26	16	17

- Note: Maximum Measured Torque for 5% Female = 31.0 ft-lbf