

CADILLAC SRX ULTRAVIEW SUNROOF INVESTIGATION (GM681A / EA06-001)



Closed Position



Partially Open



Open Position



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NHTSA Visit
September 14, 2006

EA06-001 Cadillac SRX Sunroof Investigation

NHTSA Meeting September 14, 2006

- Agenda
 - Introduction: GM Assessment
 - Field Data
 - Weibull Analysis
 - EA06-001 PIR Peer IR Data Analysis
 - Injury Potential
 - NHTSA Sunroof Investigations and Recalls
 - GM Summary
 - Discussion

EA06-001 Cadillac SRX Sunroof Investigation

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- GM's assessment:
 1. SRX: No design, manufacturing or assembly defect exists.
 2. Alleged Condition: Observed safety consequences are minor and the actual safety risk is very low.

EA06-001 Investigation Overview

- SRX field incident summary thru 08-10-2006 (Moveable Roof Panel):
 - 8 NHTSA VOQs alleging sunroof shattered while driving
 - no crashes, 3 injury incidents, 10 minor injuries
 - 23 GM reports / 11 Warranty Claims / 4 Others = 38 cases total
 - no crashes, 7 minor injury incidents, 15 minor injuries
 - MY2004-06 incident rate currently at 0.8 IPTV (average exposure 18 months)
- All data indicates that the incidents of fracture are caused by random environmental impacts (e.g. stone impact)
 - Fragments obtained from field return parts indicate glass fracture caused by impact
 - Bethesda, MD sunroof currently under evaluation
 - Occurrences are random – there is no defect trend
 - Slope of Weibull curve developed from field data near 1.0

EA06-001 Investigation Overview

- Weibull analyses and field data indicate a low rate and random occurrence
- Field data continues to trend with Weibull predictions

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EA06-001PIR – Peer Vehicle Information Request



EA06-001PIR Peer IR Information

- Obtained information for 18 models (including SRX)
 - 11 models available in MY2004
- Majority of models (15 / 18) reported incidents of glass fracture
- Three models with no reports or warranty for glass fracture (Lexus RX330, BMW 325xi and Subaru Forester)
 - Low volume on Lexus (515 vehicles)
 - Low volume & exposure on BMW (1,891 vehicles, new MY2006)
- Few reports of injury (11 / 416)
- No reports alleging crash

EA06-001PIR Peer IR Information

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EA06-001PIR Peer IR Information – *GM ADJUSTED*

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Glazing Selection and Impact Resistance

- Tempered glass is widely used in sunroofs due to its
 1. Strength
 2. Low injury potential
- The following chart provides typical Modulus of Rupture (MOR) values, a measure of mechanical strength, for several glazing constructions:

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Sunroof Glass Fracture & Injury Potential - Summary

- Alleged injuries to date include minor skin abrasion or laceration and minor eye irritation
 - GM search indicates NHTSA has not received an owner complaint alleging a serious eye injury, such as a severe laceration or globe rupture. *(Data since 1982 – Searched 12/05)*
- Fracture of the SRX Ultraview sunroof panel is highly unlikely to result in serious injury
 - “Whiskers” and “nuggets” produced in the fracture of tempered glass are low in mass and velocity
 - Risk of serious skin or eye injury is associated with higher energy impacts
- SRX reports, GM’s safety assessment and historical NHTSA data all indicate the safety risk is low.

Historian Info - NHTSA Investigations and Recalls

- Since 1982, NHTSA has opened 6 Investigations related to safety concerns over sunroof assemblies
- 10 Safety recalls have been conducted for concerns over safety of sunroofs
 - Majority of safety recalls relate to sunroof detachment (7)
 - Remaining (3) recalls relate to sunroof fracture
 - Except for recent Toyota recall of Scion tC wind deflector, other recalls conducted to remedy a manufacturing or assembly defect (e.g. improper tempering, assembly of hardware)

Frequency Comparison: Historian Info & EA06-001PIR



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Frequency Comparison: EA06-001 & 04V483

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GM Summary:

- No design, manufacturing or assembly defect exists
 - SRX Ultraview sunroof design is consistent with industry sunroof designs
- Likelihood of crash or serious injury is extremely low
- The SRX incident rate is low
 - Occurrences are random - there is no defect trend
 - SRX Ultraview sunroof field performance is not vastly different from other peer vehicles

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Discussion