

2009 SAE Government/Industry Meeting

NHTSA's Rollover Data Special Study (RODSS) Methodology

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RODSS Overview

- **Rollover Data Special Study (RODSS)**
- **Agency wanted additional data on rollover crashes**
- **Some crashes available but not captured in other data systems (NASS, SCI, CIREN)**
- **Some crashes may have detailed data available**
- **Determine:**
 - ◆ **Could we get the data**
 - ◆ **Usefulness of the data (good data vs. minimal data)**
 - ◆ **Standardize data for NHTSA research needs**
- **RODSS was the inaugural project – a different approach than other data systems**

RODSS Overview

- **Queried FARS and GES for potential cases**
- **FARS was only database that had reconstruction data available**
- **We learned that the information (detailed reports and photos) resided at the individual police jurisdictions – no central location for each State**
- **Utilized our crash reconstruction expertise in SCI**

- Utilized 2005-2008 FARS database
- PARS provided by FARS
 - ◆ **Case Selection Criteria:**
 - Rollover
 - Late model year vehicles (last four model years)
 - Electronic Stability Control as standard equipment in vehicles
 - **VIN decoder program to help identify vehicles**
 - Images available
 - Side curtain air bag

- **Feasibility Study began in the Spring of 2007**
- **Detailed data obtained on ~ 300 cases**
 - ◆ **Currently completing data collection and coding**

Overview of Process

RODSS Pursued / Active Cases

- **Phase I**

- ◆ **Total number of FARS PARS identified for years 2005 to early 2007** **325**

- ◆ **Total number of active cases with usable images, with and without reconstruction reports** **~200**

- **Phase 2**

- ◆ **Total number of FARS PARS identified for years 2007 to 2008** **188**

- ◆ **Anticipated number of cases with usable images, with and without reconstruction reports** **~100**

RODSS Data Collection Process

- **Determined the investigating agency from the Police Accident Report (PAR)**
- **Contact the investigating agency to obtain:**
 - ◆ **Police pictures/images of crash (35 mm, slides, film rolls, paper copies, digital CD)**
 - ◆ **Detailed PAR's and reconstruction reports**
- **Await receipt of requested data**

Police Reconstruction Reports

- **Conducted a thorough review of the crash and schematics to determine:**
 - ◆ **Vehicle pre-crash circumstances (trajectories, driver actions, avoidance)**
 - ◆ **Crash dynamics**
 - ◆ **Estimated speeds using software applications and hand calculations**
 - ◆ **If interview data provided further clues or clarifications**

RODSS Data Coding Process

- **Reviewed all paper reports**
- **Reviewed all print and digital images**
- **Reconstructed the events based on the evidence**
- **Prepared a detailed narrative summary**
- **Data entered into tracking database**

Reasons for Dropped Cases

- **No images supplied with police data**
- **Inadequate or unusable images**
 - ◆ **Dark / nighttime images**
 - ◆ **Scene images without vehicle images**
 - ◆ **Images of undercarriage only**
- **This case was previously selected as a NASS case**
- **Medium / heavy truck rolled - not a light vehicle (Volvo)**
- **Non-cooperative police departments**

Case Example

Case Example

- **Case Vehicle – 2005
Toyota Highlander SUV**
- **ESC – Standard**
- **Inflatable Curtains –
optional, not equipped
on this vehicle**
- **Side Impact Air Bags –
Optional, not equipped**
- **Intersection crash
w/rollover**



Other Vehicle – 2003 Dodge Ram Quad-Cab



Case Example

- **Toyota struck on right side,
02RYEW3**
- **Side impact crash induced a CW rotation across intersection**
- **Left side leading rollover**
- **Toyota completed four quarter turns**



Case Example

- **Based on the available evidence and the rapid CW rotation, Rollover Initiation was classified as a Turn Over**



Case Example

**Toyota Roof Crush
Vertical – Est. at 5”
Lateral - Est. at 2”**



Case Example

- **Advantage of digital images – ability to zoom for detail**



Case Example

Toyota

- **Driver – Belted 66-year old female, not injured**
- **Right Front Passenger – Belted 92-year old female, fatal (body area not specified)**
- **Unknown if partially ejected during rollover**
- **RF glazing disintegrated**



What's Next?

- **Complete Phase II data collection**
- **Complete Phase II crash analysis and data entry**
- **Report**
 - ◆ **Document this RODSS process**
 - ◆ **Lessons learned (future applicability)**
 - ◆ **Analyze data**