Tire Pressure Monitoring System (TPMS)  
FMVSS No. 138

SAE Government / Industry Meeting  
Washington, DC  
May 13, 2003

Joseph P. Scott  
Office of Crash Avoidance Standards  
202/366-8525
Introduction

- Provide an update of the Tire Pressure Monitoring System (TPMS) rulemaking in the Office of Crash Avoidance Standards, NHTSA

- Three main areas of discussion:
  1) TPMS Phase I – Final Rule
  2) TPMS Petitions for Reconsideration
  3) TPMS Phase II – Final Rule
Tire Pressure Monitoring System
Tire Pressure Monitoring System (TPMS) Rulemaking

- TPMS Rulemaking was mandated by the Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act of 2000, Section 13
Underinflated Tires
Pictures of Underinflated Tires: Background

- A car and a mounted tire (on driver’s side, front) with an initial cold inflation pressure of 32 psi
- The tire pressure was decreased in 10% increments from 100% to 10% (or, from 32.0 psi to 3.2 psi)
Pictures of Underinflated Tires: Inflation Increments

- 100% = 32.0 psi
- 90% = 28.8 psi
- 80% = 25.6 psi
- 70% = 22.4 psi
- 60% = 19.2 psi
- 50% = 16.0 psi
- 40% = 12.8 psi
- 30% = 9.6 psi
- 20% = 6.4 psi
- 10% = 3.2 psi
100% Inflation
90% Inflation
80% Inflation
70% Inflation
60% Inflation
50% Inflation
40% Inflation
30% Inflation
20% Inflation
10% Inflation
100% vs. 40%!
Conclusions From Pictures

- Difficult to visually determine level of under-inflation
- Highlights the need for TPMS
- 70% (activation level for TPMS) looks like 100%
Summary of FMVSS No. 138

- Final Rule - Phase I has a compliance date of November 1, 2003
- Final Rule Phase I is applicable to 2-axle, 4-wheel motor vehicles under 10,000 lbs GVWR
- Does not apply to:
  - Vehicles with dual wheels on an axle
  - Trailers
  - Motorcycles
Final Rule - Phase I:

- Requires the TPMS telltale, mounted in the vehicle’s instrument panel, to be illuminated within 10 minutes after the inflation pressure falls below the acceptable level.

- Permits the use of the following:
  
  a) Direct systems
  b) Indirect systems

- Performance options allowed:
  1) 4 tires @ 25% underinflation
  2) 1 tire @ 30% underinflation
Summary of FMVSS No.138 - Continued

Final Rule – Phase II:

- Conduct TPMS effectiveness survey (Direct/Indirect TPMS vs. without TPMS)
- Based on survey results, determine whether TPMS Phase I requirements should be revised
- Publish Final Rule - Phase II by March 2005
- Effective date for Final Rule - Phase II is November 1, 2006
Petitions for Reconsideration of TPMS Final Rule

- Petitions for Reconsideration are filed with the agency when an organization or individual disagrees with contents of a final rule.
- The agency received 13 Petitions in response to FMVSS No. 138, final rule from automobile manufacturers, manufacturers’ suppliers, tire manufacturers, and TPMS developers.
Major Concerns Expressed in TPMS Petitions

- Two Major Issues:
  1) Compliance Testing with Replacement Tires
  2) Compliance Testing to Detect Low Tire Pressure
Compliance Testing With Replacement Tires

- **Final Rule text:** A vehicle will be tested for TPMS compliance with any tire of a size recommended for the vehicle by the manufacturer.

- **Issue:** For some vehicles, there are potentially several hundred tires that are candidates for TPMS compliance testing.
Compliance Testing to Detect Low Tire Pressure

- **Final Rule Text:** After deflation of tire(s) to a level that should illuminate the TPMS telltale, the vehicle is driven at any speed between 50 km/h (31.1 mph) and 100 km/h (62.2 mph). The telltale must illuminate not more than 10 minutes after the vehicle reaches a speed of 50 km/h (31.1 mph).

- **Issue:** According to petitioners, the final rule does not provide sufficient details about the vehicle driving conditions during compliance testing for TPMS telltale illumination.
Summary: Next Steps

- NHTSA will provide, in the Federal Register, a response to the TPMS “Petitions for Reconsideration” by late Summer 2003
- TPMS Field Survey and Analysis to be completed by March 2004
- Phase II - Final Rule:
  - Publish by March 2005
  - Effective Date: November 1, 2006