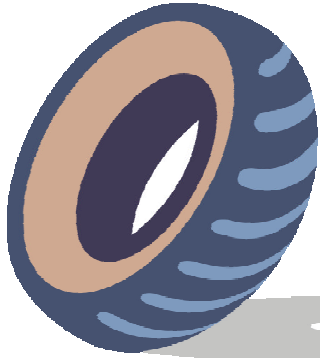


TIRE STANDARD UPGRADE FOR LIGHT VEHICLES

Joseph P. Scott
Office of Crash Avoidance Standards

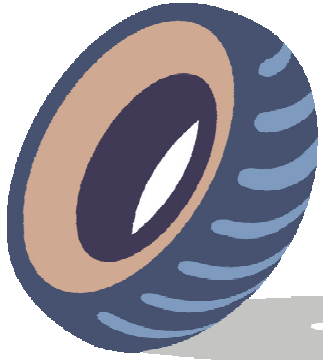
National Highway Traffic Safety
Administration

2001 SAE Government/Industry Meeting
May 14, 2001



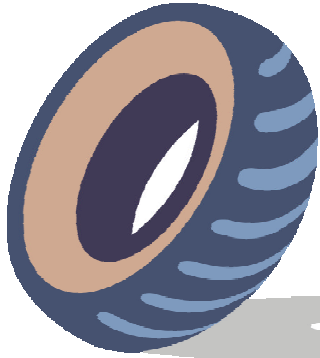
TREAD ACT

- HR 5164 signed into law on November 1, 2000
- Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act
- Three Sections of the TREAD Act relate to tire performance issues



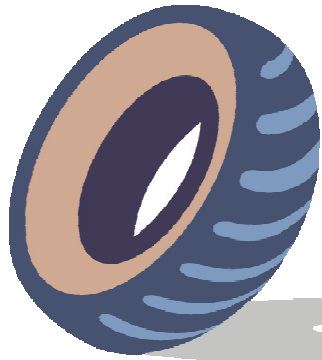
SECTION 10 – ENDURANCE AND RESISTANCE STANDARDS FOR TIRES

- Revise and Update tire standards: FMVSS Nos. 109 and 119
- Rulemaking must be completed by June 1, 2002



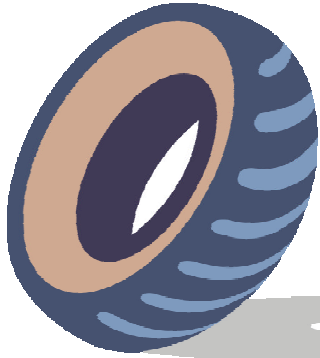
SECTION 11 – IMPROVED TIRE INFORMATION

- Tire Labeling
 - Improve labeling for consumers to easily identify tires involved in a recall
 - Initiate rulemaking within 30 days
 - Complete rulemaking by June 1, 2002
- Inflation Levels and Load Limits
 - Consumer information on tire load limits
 - Consumer information on maintaining proper tire inflation levels
 - No statutory deadlines established



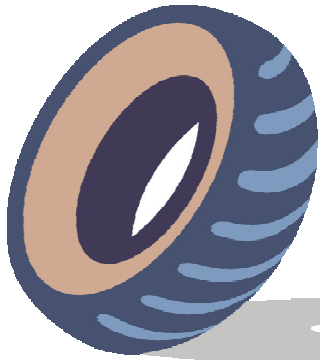
SECTION 13 - TIRE PRESSURE WARNING

- Require a warning system in the vehicle to indicate when the tire is significantly under-inflated
- Complete rulemaking by November 1, 2001
- Requirement must become effective 2 years after completion of rulemaking



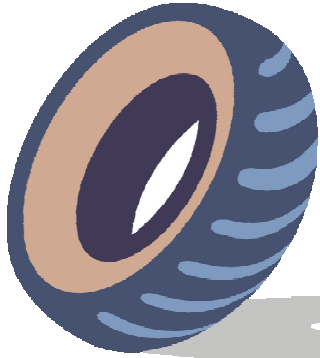
NHTSA TIRE TESTING

- Purpose: To develop a new tire standard that focuses on high speed and endurance.
- Phase One Tests: 12 brands of different sizes and speed ratings.
- Shearography analysis: before and after testing
- Compare with baseline FMVSS 109 and the GTS-2000 proposal



9 P-METRIC TIRES TESTED

- | | | |
|----------------------------|------------|------|
| • Bridgestone Potenza RE92 | P205/60R15 | 90H |
| • Pirelli P4000 | P205/65R15 | 94H |
| • Michelin Energy MXV4 | P205/65R15 | 92H |
| • Hankook Optimo Plus II | P205/65R15 | 92H |
| • Dunlop D65 Touring | P205/70R14 | 93T |
| • BFS Futura 2000 ATD | P205/75R14 | 95S |
| • Firestone Wilderness AT | P255/70R16 | 109S |
| • Cooper National XT 5000 | P225/60R16 | 97S |
| • Firestone ATX | P235/75R15 | 105S |



3 LT TIRES TESTED

- Michelin XPC 4x4

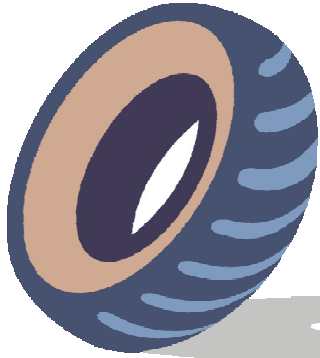
235/70R16 105H; Load Range C

- Goodyear Wrangler AT/S

235/75R15; Load Range C

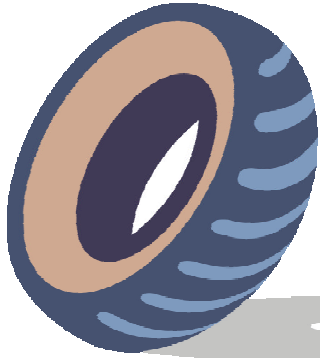
- Yokohama Geolander H/T

225/75R16 110S; Load Range D



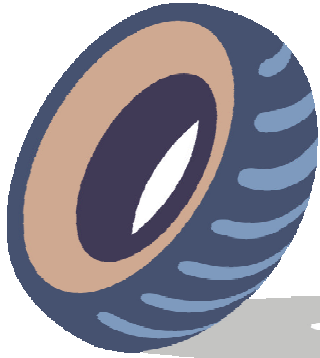
SUMMARY OF ENDURANCE TEST MATRIX

- Baseline Endurance Test
- Similar to GTS-2000 proposal
 - Test Speed (km/h): 80
 - Inflation Pressure (kPa): 180
 - Load (%): 100, 110, 115
 - Duration (hours): 4, 6, 24
 - Ambient Temperature (°C): 38



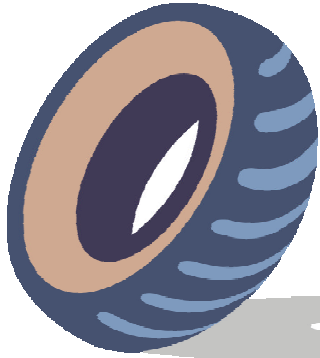
AGENCY'S ENDURANCE TEST

- Endurance Test Parameters
 - Test Speed (km/h): 120, 140
 - Inflation Pressure (kPa): 160, 200
 - Load (%): 100, 115, 125
 - Duration (hours): 8, 10, 32
 - Ambient (°C): 38



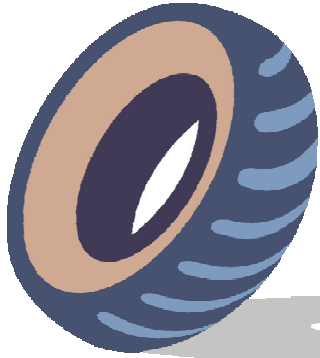
SUMMARY OF HIGH SPEED TEST MATRIX

- Baseline High Speed Test
- FMVSS 109 for LT tires
- P-Metric tested to GTS-2000 proposal, except for speed at final step
 - Load (%): 80
 - Inflation Pressure (kPa): 260(S), 280(T,H)
 - Test Speed (km/h): ITS, +10, +20, +30
 - Duration (minutes): 10, 10, 10, 20
 - Ambient Temperature (°C): 25



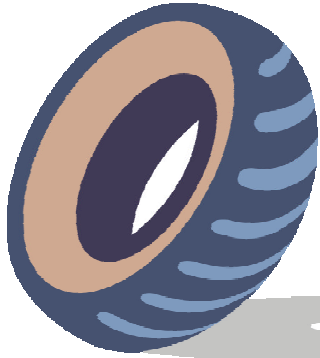
AGENCY'S HIGH SPEED TEST

- High Speed Test Parameters
 - Load (%): 80, 90, 100
 - Inflation Pressure (kPa): 180, 210, 240
 - Test Speed (km/h): ITS, +10, +20, +30
 - Duration (minutes): 10, 20, 30
 - Ambient (°C): 38



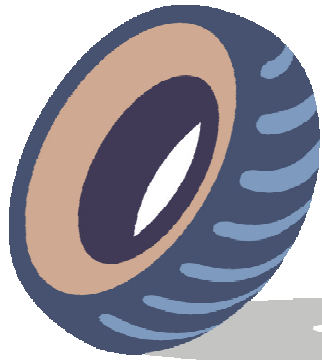
SUMMARY OF ENDURANCE TESTS

- Agency plans to place test results in the public docket when NPRM is published.
- All tires completed baseline Endurance test
- As expected, more failures occurred at higher speed and at lower inflation pressure
- Next Step: Publish NPRM for Tire Standard



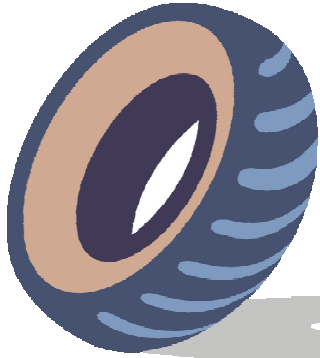
SUMMARY OF HIGH SPEED TESTS

- All tires completed baseline High Speed test (GTS-2000 proposal)
- As expected, more failures occurred at combination of high load, low inflation and long duration
- Failures included tread separation, belt separation, sidewall blowout, chunking
- A second phase of tire testing is underway.



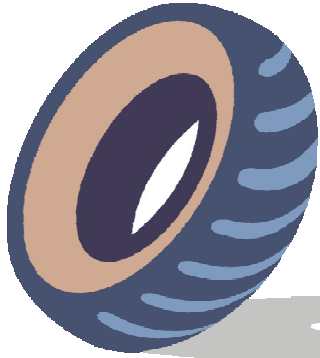
POSSIBLE TIRE PERFORMANCE PROPOSALS

- A single Light Vehicle Tire Standard for vehicles up to a specified GVWR
- High Speed Test
- Endurance Test
- Bead Unseating Test
- Road Hazard Impact Test
- Accelerated Aging Test
- Shearography Analysis



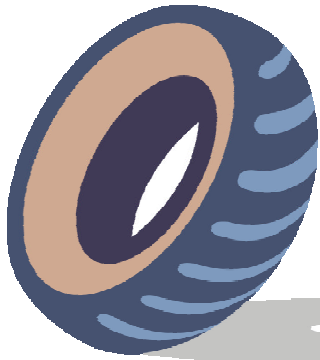
POSSIBLE TIRE LABELING PROPOSALS

- Updated Labeling requirements—
ANPRM issued on December 1, 2000
- Modified Tire Identification Number
- More consumer-friendly Load Limits/Load Index and Maximum Inflation Pressure
- Conducting nationwide focus groups
- Next Step: Publish Tire Labeling NPRM



TPMS RULEMAKING

- Considering a new stand-alone TPMS FMVSS
- Defining “significantly under-inflated”—aware of issues relating to disagreement in industry
- Evaluating candidate indicators to driver—ISO telltale symbols
- Considering TPMS requirement for heavy vehicles
- Next Step: Publish TPMS NPRM



SUMMARY

- Three NPRMs to be published
 - Tire Performance Standard
 - Tire Labeling and Consumer Information
 - Tire Pressure Monitoring System (TPMS)
- TPMS—Final Rule: November 1, 2001
- New Tire Standard and Tire Labeling—Final Rules:
June 2002