U.S. Department of Transportation

National Highway Traffic Safety Administration

ODI RESUME

OFFICE OF DEFECTS INVESTIGATION

NHTSA

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Investigation: DP 17-001
Prompted by: Defect Petition
Date Opened: 03/07/2017 **Date Closed:** 12/01/2018
Investigator: Bruce York-B **Reviewer:** Bruce York-B
Approver: Stephen Ridella
Subject: Michelin XZU-3 305/85/R22.5Tire Failures

MANUFACTURER & PRODUCT INFORMATION

Manufacturer: Michelin North America, Inc.
Products: 2015 XZU-3 Michelin 305/85/R22.5 Tires
Population: 17,487

Problem Description: The XZU-3 305/85/R22.5 tire used in transit bus service may fail similar to those recalled in 2012 (12T-009)

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	1	0	1
Crashes/Fires:	0	0	0
Injury Incidents:	0	0	0
Fatality Incidents:	0	0	0
Other*:	1	Confidential	Confidential

***Description of Other:** Defect Petition and Field Reports

ACTION / SUMMARY INFORMATION

Action: Petition is denied, close DP.

Summary:

See attached evaluation report

Nate Seymour
Safety Defects Engineer

NEF-106ns
DP17-001

BASIS:

Paul Koleber, from Intercity Transit petitioned the National Highway Traffic Safety Administration (NHTSA) by letter dated July 14, 2016, requesting that a defect investigation be conducted concerning motor vehicle safety in Michelin Model XZU-3, size 305/85/R22.5 Load Range J transit bus tires. The facts described in this report are based on the Office of Defect Investigations' (ODI) assessment of the information provided by the petitioner and information gathered by ODI from relevant sources.

The petitioner alleged that a defect exists involving the design of tires used in commercial bus operations which have resulted in rapid air loss. The petitioner claimed that failures identical to those described in recall 12T-009 have happened on the subject post recall tires. The petitioner stated that failures occurred on steer and drive wheel positions of both new and retread tires. The petitioner hired a forensics lab to perform scientific failure analysis of failed tires. The lab concluded the tires were of similar design and construction to those in recall 12T-009 and that the failures were caused by corrosion induced degradation of the ply strands.

DESCRIPTION OF TIRE:

The subject tires are Michelin XZU-3, size 305/85/R22.5 Load Range J transit bus tires. They are designed to be used in all wheel positions for urban operations involving frequent stopping and starting. The tread pattern is non-directional and designed for efficient traction on wet and slippery surfaces through Michelin's patented Matrix Siping technology. The tires have a robust casing and bead design to allow for retreading. The sidewalls are extra thick to resist curb scrub and include scrub depth indicators to aid inspection of the tires to help extend casing life.

OWNER REPORTS:

The Office of Defects Investigation received two (2) complaints related to Michelin XZU-3 transit bus tires. The first Vehicle Owner's Questionnaire (VOQ) was received in April 2012, the same month that voluntary recall 12T-009 was received from Michelin. A second VOQ was received in April 2017, one month after DP17-001 was opened to assess failures on Michelin XZU-3 transit bus tires. Both reports were submitted by transit fleets. Neither VOQ alleged any crashes, injuries or fatalities.

ANALYSIS:

On March 23, 2017, ODI sent Michelin an Information Request letter asking for information related to the subject tires. Michelin's response was received May 5, 2017, where design and application data were presented. ODI's assessment of that data follows.

Michelin reported a tire population (2012-2014 production) of 17,487 subject tires. The subject tire was discontinued in 2014, upon the introduction of the X InCity Z 305/85R22.5 LRJ tire, which offers increased scrub resistance. The initial tread life of the subject tire is expected to range from 60,000 to 100,000 miles. The casing life is expected to range from two (2) to four (4) years, with one (1) to three (3) retread applications. Therefore, a limited number of subject tires are believed to still be in service.

When asked how Michelin determined the recall population for 12T-009, Michelin stated that the bead design of the recalled tires had undergone a design change. A reduction in the number of strands was determined to be the cause of failures associated with recall 12T-009. Once the defect was identified, Michelin reinstated the original bead design specification, which marked the endpoint of the recall population. The scope of the recalled tires included tires manufactured from the date of the bead design change through the date when the design was changed back to the original specification.

The tires identified by the petitioner were produced after the bead design was corrected.

Michelin queried its databases and found no complaints and one claim for property damage on tires manufactured after the 12T-009 recall scope. Michelin denied this claim based on the following. Michelin evaluated twelve (12) tires from the fleet. All had been retread one time, but not at a Michelin Retread Technologies (MRT) approved facility. Michelin's analysis of the tires revealed operational or maintenance failures in ten (10) of the twelve (12) tires. These tires had high levels of moisture and damage or evidence of damage repair adjacent to the rupture. The combination of these conditions allow for corrosion to develop in the belt package, which leads to failure. The other two (2) could not be determined. ODI queried its database and found one (1) Vehicle Owner Questionnaire (VOQ) related to the subject population, which was received after the investigation was opened. In March 2017, Michelin visited the fleet that submitted the VOQ, and analyzed its tires. Similar to the property damage claim above, an MRT was not used. Nor was an air dryer for tire inflation. This leaves in question the integrity of the casings and moisture content which is detrimental to tire life. Michelin submitted to ODI, inspection documentation. Reports of the tires showed signs of overloading. Personnel interviews supported these findings as the fleet followed the vehicle manufacturer's recommended inflation pressure, which is known to be inadequate for true operational loads on the specific vehicles operated by the fleet.

MRT facilities utilize inspection equipment not available to out of network retread facilities. The use of Grazing Light Inspection, X-ray, and Casing Integrity Analyzer (CIA) minimize the risk of tire failure after retreading. MRT facilities also utilize approved processes to repair tire damage prior to retreading to prevent moisture from entering the belt package.

The Altoona Bus Study, Michelin's weight study of fleet buses, and ODI's weight study are all in agreement. Each independently found that the Gillig Low Floor 40' transit bus as used by the petitioner and other fleets would be overloaded with a foreseeable load. And, the greatest overloading would occur at the left rear wheel-end. ODI went further to assess the average passenger weight. ODI found that the 150-pound weight specified in the Code of Federal

Regulations (CFR), 49 C.F.R. Part 567.4(g)(3) and Subtitle B-Chapter VI Part 665 Subpart A is not representative of today's population. The 150-pound value was established in 1971 based on data derived from the National Health Examination Survey from 1960-1962. A more recent value from the National Center for Health Statistics determined the average male and female weight to be 195 and 165 respectively. In both cases, the study participants were not truck/bus drivers or transit passengers. ODI notes that a luggage allowance for each passenger is necessary given the vehicle usage. ODI also surveyed heavy vehicle manufacturers to learn what design weight they use for the driver. Responses ranged from 150 to 312 pounds depending on market. The Federal Transit Authority (FTA) initiated a Notice of Proposed Rulemaking (NPRM) action in 2011, to increase the average passenger weight and standing passenger floor space square footage, but this rule was never enacted.

As required by 49 CFR Part 567, the vehicle manufacturer is responsible for the data on the vehicle certification label. The manufacturer will set the tire pressure based on the anticipated axle load. The anticipated loads will drive the selection of components to meet the owner's specifications.

Michelin released a Technical Bulletin in November 2015, recommending 120 psi be used in all subject tires. Michelin met with Gillig in January 2016, and recommended the use of 315/80R22.5 tires mounted on 9" rims and an inflation pressure of 130 psi to provide sufficient load-carrying capacity to support actual loads. Gillig who produced the petitioner's buses elected not to adapt this action.

CONCLUSION: Based on the available information and previous agency experience, ODI believes the tires manufactured after those identified in recall 12T-009 failed as a result of overloading by the fleets operating the buses. In our view, a defects investigation is unlikely to result in a finding that a defect related to motor vehicle safety exists, or a NHTSA order for the notification and remedy of a safety related defect as alleged, at the conclusion of the requested investigation. Therefore, given a thorough analysis of the potential for finding a safety related defect in the vehicle, and in view of NHTSA's enforcement priorities and its previous investigations into this issue, the petition is denied. This action does not constitute a finding by NHTSA that a safety related defect does not exist. The Agency will take further action if warranted by future circumstances.

RECOMMENDATION: Deny the petition.

CONCUR:

Bruce York, Chief
Defects & Assessment Division