BULLETIN

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Dated: May 26, 2015

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ENCOURAGING REPORT ON NFPA 1911: STANDARD FOR THE INSPECTION, MAINTENANCE, TESTING, AND RETIREMENT OF IN-SERVICE AUTOMOTIVE FIRE APPARATUS. ThIS Standard provides minimum requirements for establishing an inspection, maintenance, and testing program for in-service fire apparatus, including guidelines for fire apparatus refurbishment and retirement. Most notably, or infamously, this standard required that, **"tires shall be replaced at least every seven (7) years or more frequently…"**

Recently, the NFPA commissioned a study on this specific requirement of NFPA 1911. The report was prepared by the Fire Protection Research Foundation, a subsidiary of the NFPA. The results are in and are extremely encouraging.

The report commences by noting that the seven year tire replacement schedule "lacks supporting scientific documentation," a point that was raised at its inception. The report goes on to conclude, sensibly, that tire wear and tear are a more reliable source of information regarding the serviceable life of a tire. In fact, it concludes that "accurately predicting the actual serviceable life of any specific tire based on simple calendar age is not possible."

The report goes on to suggest that actual measurable standards be used to determine tire wear and safety. They recommend that tires be routinely checked for correct pressure and signs of wear. They recommend that tires be rotated according to their manufacturers' directions. In other words, they recommend that we do exactly what we had been doing for years before the NFPA decided that it knew better.

One note of caution is called for. The report is not an amendment to the standard. It contains reasonable and sensible recommendations, but that is all they are. The next step is to get the NFPA to amend the 1911 standard accordingly. At present, this standard is in the NFPA's "Revision Cycle" for Fall 2016. This means that we should see a first draft of the new standard by September 2015 and we can hope for a substantive change by late 2016 or early 2017. I will attempt to develop more information on the subject when I am at the NFPA Annual Meeting in Chicago in June.

A copy of the Executive Summary of this report is attached. A copy of the full report is available online at the NFPA's website: nfpa.org.

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Executive Summary

The Technical Committee on Fire Department Apparatus has required that **"tires shall be replaced at least every seven (7) years or more frequently…"** This requirement lacks supporting scientific documentation. The goal of this project is to determine if there is evidence that supports a mandatory seven (7) years tire replacement schedule for Fire Department Apparatus. Additionally, this project aims to develop guidance for Fire Departments regarding the maintenance and replacement of apparatus tires, providing recommendations for future revisions of this requirement in NFPA 1911.

The above mentioned objectives are carried out through the following specific tasks:

1) **Task 1: Review of Literature and Data Collection.** A comprehensive review of the literature and available data to determine if the seven year replacement requirement is supported by any existing research.

2) **Task 2: Identification of Tire Aging Issues.** A comprehensive analysis on the factors affecting the tire aging process. One commonly held belief is that tire failures are mainly due to poor maintenance or extreme condition. However, tire aging is a distinctly different phenomenon from the maintenance and inflation issues. Aging is affected by the heat generated in tires and the degradation that occurs due to the chemical reaction within the rubber components due to oxidation.

3) **Task 3: Identification of Tire Maintenance issues.** Identification of the factors which could result in tire failures or decreasing the tire lifetime. Comprehensive research with a primary focus on how to maintain the fire apparatus tire at the highest state of readiness within the years of service, and how to extend the tire lifetime through proper maintenance methods.

4) **Task 4: Tire Lifetime Assessment Technology.** Introduction of the existing technologies that can be used to test the tire usage and condition stage and how these technologies can be used to evaluate the fire apparatus tire condition which usually have a low mileage.

5) **Task 5: Final Report.**
From the present research, it is found that no literature convincingly supports a seven year tire replacement criteria. Further, it is realized that the wear and tear of the tire are due more importance while considering a tire replacement. As mentioned in the rubber manufacturer's association statement, since service and storage conditions vary widely, accurately predicting the actual serviceable life of any specific tire based on simple calendar age is not possible. A tire should be removed from service for multiple reasons: tread wear to minimum tread depth, tire damage like cuts, cracks, bulges etc., improper inflation pressure and storage conditions. A specific inspection and maintenance of fire apparatus tire is recommended.