Also SP480-18

NBSIR 75-734

Report on an Investigation of the High Speed Hazards of Steel Belted Radial Tires on Police Patrol Cars

Jared J. Collard

Law Enforcement Standards Laboratory
Center for Consumer Product Technology
Institute for Applied Technology
National Bureau of Standards
Washington, D. C. 20234

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Final

Prepared for
National Institute of Law Enforcement and Criminal Justice
Law Enforcement Assistance Administration
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U.S. DEPARTMENT OF COMMERCE, Rogers C.B. Morton, Secretary

NATIONAL BUREAU OF STANDARDS, Ernest Ambler, Acting Director

Preface

The National Institute of Law Enforcement and Criminal Justice (NILECJ), in January 1975, requested the Law Enforcement Standards Laboratory (LESL) to investigate a report that a fatal accident by a trooper of the Alabama Highway Patrol was caused by a failure of a steel belted radial ply tire at high speed. This report contains the findings of the investigation, the conclusions reached, and LESL's recommendations. No actual tire testing was conducted by the National Bureau of Standards during this investigation. The use of brand names in the report in no way implies endorsement or indictment of any particular product by the National Bureau of Standards.

ACKNOWLEDGEMENTS

This report was prepared by the Law Enforcement Standards Laboratory of the National Bureau of Standards under the direction of Jared J. Collard, Acting Manager, Police Vehicles Program, and Jacob J. Diamond, Chief of LESL. The cooperation of the following organizations is gratefully acknowledged: the Law Enforcement Group of the National Association of Fleet Administrators, Inc., the International Association of Chiefs of Police, the Safety Research Laboratory of the National Highway Traffic Safety Administration, and the many cooperating police departments. The preparation of this report was sponsored by the NILECJ Office of Research Programs, Geoffrey M. Alprin, Director; Advanced Technology Division, Joseph T. Kochanski, Director.

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1.0 INTRODUCTION

In the fall of 1974, the Law Enforcement Standards Laboratory (LESL), of the National Bureau of Standards (NBS), began to receive unconfirmed reports of a fatal police accident involving the alleged failure of a steel belted radial tire. In a letter dated December 12, 1974, John M. Grow, Manager of Transportation Services for the California Highway Patrol, expressed his concern in the following manner:

"The recent loss of life in a southern state [happened] because so many people were so uninformed that a vendor sold and the state purchased steel belted radial tires for highway patrol use. Every steel belted radial tested by us has come unglued at about 105 mph to 115 mph. Why not describe what's a high speed tire? Why not test tires and publish the results to law enforcement agencies? We would probably faint if we knew how many policemen engaged in high speed pursuit or response ride on Mickey Mouse tires every hour of every day."

LESL received a request on January 2, 1975, from the National Institute of Law Enforcement and Criminal Justice (NILECJ) to conduct a quick-response investigation of the use of steel belted radial ply (SBR) tires by police. On January 24, 1975, a preliminary memorandum report was submitted to NILECJ. This document constitutes the final report of that investigation.

2.0 THE INVESTIGATION

1. Contact was made with the Department of Public Safety, State of Alabama. A copy of the report of a fatal police accident was obtained and is provided as attachment A.

2. The State of Alabama provided LESL with a copy of a report it had prepared concerning a second fatal police accident, which had occurred in Taylor County, Florida (see attachment B). LESL made telephone contact with the Sheriff's Department of Taylor County to verify the facts.

3. Contact was made with the California Highway Patrol, which has tested several brands of steel belted radial ply tires. Copies of their test results are provided as attachment C.

4. Contact was made with the Florida Highway Patrol concerning the permanent disability of one trooper. A copy of that accident investigation report is provided as attachment D.

5. Contact was made with the Office of Defects Investigation, National Highway Traffic Safety Administration (NHTSA), to discuss elements of the Alabama fatality. The NHTSA Safety Research Laboratory was contacted and supplied information concerning the performance of various tires at high speed (see tables 1a and 1b).

6. A telephone survey of ten police agencies around the country was conducted to determine the extent to which SBRs have been, or are being used or tested, and any problems experienced. This telephone survey was augmented by two larger, more detailed surveys (see 7 and 8, below).

7. The chairman of the Safety Committee of the National Association of Fleet Administrators agreed to survey the law enforcement group for user data. The results of that survey are summarized in table 2.

8. The Highway Safety Division of the International Association of Chiefs of Police was queried for user information and undertook a survey of the fifty State police organizations. A summary of the results obtained is provided in table 3.

9. The four major automobile manufacturers were contacted to ascertain company policy concerning the provision of SBRs as original or optional equipment (see Finding 2, below).

10. Several of the larger U.S. tire companies and two foreign tire companies were contacted concerning the certification and use of SBRs for law enforcement. Table 4 is a summary of attachment E, which consists of letters or announcements from several tire manufacturers listing the tires which the manufacturers have tested and certified for high speed police use. The names of the U.S. companies which manufacture high speed police tires were obtained from the Tire Industry Safety Council. This summary is provided as a convenience to the reader and does not imply endorsement or certification of the products by the National Bureau of Standards.

3.0 FINDINGS

1. The four U.S. tire industry representatives contacted by LESL stated that their companies do not recommend their standard grade SBRs for police pursuit vehicles, but that these SBRs could be, and are being, used satisfactorily on police cars where high speed is not a factor. The statement commonly heard was that U.S. steel belted radial tires "are not certified over 105 mph" (170 km/h)*. One U.S. company reportedly is developing and testing an SBR for 125 mph (200 km/h) certification, however. Several companies are beginning to produce and market Kevlar belted tires as an alternative to SBRs. The companies report that Kevlar tires have been tested and certified up to 125 mph (200 km/h). Several U.S. companies have textile belted radial tires, as well as bias ply and bias belted tires, which they will certify for high speed pursuit. At least two foreign manufacturers have certified certain sizes of SBRs for speeds of 125 mph (200 km/h), or more (see attachment E).

2. The four U.S. automobile manufacturers are not in agreement concerning the use of U.S.-made SBRs for police operations. One company will supply domestic SBRs as optional equipment, when so specified by the ordering police agency. Another company will not supply SBRs unless the local dealer obtains a waiver of responsibility from the ordering agency. The other two manufacturers will not put domestic SBRs on any patrol car purchased with a "police package." (The package consists of heavy duty suspension, brakes, cooling systems, etc.). However, if a patrol car is ordered without the package, SBRs may be provided, since there is no way to distinguish that car from any standard vehicle during the production process.

3. In 1974, one State trooper was killed in Alabama and in Florida, one Deputy Sheriff was killed and two State troopers were injured, one of them permanently disabled, in accidents caused by sudden failures of steel belted radial tires at speeds estimated to be between 100-110 mph (160-175 km/h). The Alabama Highway Patrol experienced approximately 40 other SBR tire failures, which resulted in light-to-moderate damage to some of the vehicles (see attachment A). In all, the surveys reported that five patrol cars have been totally destroyed and 16 damaged, as a result of SBR failures (see tables 2 and 3).

*Standard International metric units appear in parentheses, as a convenience to the reader. Kilometer per hour speeds are rounded to the nearest zero or 5.

4. High speed tire failures begin with small pieces of the tread being thrown off with considerable force. This is known as "chunking," and is usually made known to the experienced driver by the noise of the chunks hitting the undercarriage or the fender walls. Unless speed is gently, but immediately, reduced, these chunks will become larger and larger, and the entire tread and steel belts may peel off (see attachment C). In many cases, enough integrity may be retained by the tire to permit the vehicle to be brought to a gradual halt. In other cases, however, the tire instantly loses air pressure. At high speed, this blow-out may send the car out of control. All of the police departments LESL contacted by telephone were aware that standard-grade SBRs will not perform well at high speed, and are therefore not suitable for most patrol situations. Nevertheless, some departments are continuing to use SBRs and others are planning to switch to them because of the tire's superior treadwear, puncture resistance, and handling characteristics.

5. As can be seen from table 1a, most of the standard grade SBR's tested on a high speed test wheel by the U.S. Department of Transportation (DOT) failed at 100 or 105 mph (160-165 km/h). One SBR failure occurred at 80 mph (130 km/h); another did not fail until 110 mph (175 km/h) had been reached. This variation cannot be explained without additional testing. LESL has not discovered any Government research on this problem as it specifically relates to police tires.

Table 1a also reveals that, in the DOT laboratory tests, the SBRs, on the average, fared no better and no worse than the bias ply, bias belted, and fabric radial tires. For each type of construction, the average speed at which failure occurred was approximately 100 mph (160 km/h). None of the tires tested by DOT were rated by the manufacturers as police special or high speed tires. Table 1b lists the brands and sizes of tires tested by DOT.

6. Radial tires have inherent sidewall weaknesses, regardless of the speeds at which they are driven, and are vulnerable to damage from curbs, stones, and roadway edges. For example, it was reported by one police department that winter chains should not be used on radial tires because of possible damage to the sidewalls. Another police department reported that some car washes are putting up signs warning of possible sidewall damage from the guide rails.

7. Tire failure on the road is affected by several important variables, in addition to the variability in tire construction illustrated by table 1a. These include road surface texture, ambient temperature, age and condition of the tire, inflation pressure, load on the tire, and length of running time at high speed. The fundamental cause of tire failure is heat build-up within the tire, primarily due to the rapid flexing of the tire materials, such as the belts and cords. Of all the above causes for heat build-up, improper tire inflation and high speed are the most important.

4.0 CONCLUSIONS

1. Although some standard grade SBRs may be used safely and effectively by some jurisdictions which do not patrol freeways, or certain densely populated urban areas where extremely high speeds cannot be driven, most standard grade steel belted radial tires are not suitable for county or State police operations, because of the high probability that speeds over 90 mph (145 km/h) may be achieved.

2. The improper use of SBRs is not widespread among the police. As stated above, all of the departments contacted by LESL are aware of the high speed limitations of standard grade SBRs. Some of this knowledge has come from the tire and automobile companies; in other cases, it has been gained by bitter experience. Nevertheless, a sufficient number of police departments are using SBRs, or are planning to use them, to warrent Federal action.

3. More authoritative tire information is needed by police agencies and purchasing departments, free of the biases or advertising claims of tire manufacturers. This information should be based upon actual testing of police tires, under a variety of operating conditions, and serve as a guideline for the proper selection of tires for police use.

4. Table 1a reveals that the problem of high speed tire failures is not limited to radial tires: bias and bias-belted tires will also fail at about the same speeds. The cause of the problem is the improper selection of tires for police operations. High speed driving requires high speed tires, not the standard grade tires commonly ordered by most police departments.

5.0 RECOMMENDATIONS

1. Joint LEAA/NHTSA notices should be issued to all law enforcement agencies, tire companies and dealers, and automobile manufacturers and dealers, informing all parties of the government's concern that standard grade steel belted radial tires are being ordered, sold, and used in situations which may be hazardous.

2. Police agencies should be advised to purchase and use only those tires which the manufacturer has certified to have been tested and approved for police use at speeds up to at least 125 mph (200 km/h). This written certification should be provided to the ordering agency upon delivery of either replacement tires or patrol cars with SBR's as original equipment.

3. Tire companies and their dealers should be cautioned against selling to the police (Federal, State, county or local) any tire that has not passed the company's own high speed certification tests. The test procedures, results, and certifications should be made a standard part of a tire company's bid package.

4. All automobile manufacturers should be urged, or required, to adopt a uniform policy concerning the provision of high speed tires on new police vehicles.

6.0 POSTSCRIPT

This report has dealt with the problems encounted by police using standard grade steel belted radial tires at high speeds. This should not be construed as an indictment of the use of SBR's by the general public, as long as the posted speed limits are observed and the tires receive reasonable care and maintenance. Any tire--bias, bias belted, or radial--will fail when it is abused, which includes driving at speeds beyond the tire's design maximum. Undoubtedly, failures of non-radial tires have also occurred over the years and have caused police injuries and fatalities. While it is impossible to eliminate the occurrence of tire failures, it is possible to reduce them through the use of better performance specifications for tire procurement, as well as improved tire safety and maintenance programs.

Table 1a

Tire Failures by Construction[1]

CONSTRUCTION	SPEED AT FAILURE[2] mph / km/h	80 / 129	85 / 137	90 / 145	95 / 153	100 / 161	105 / 169	110 / 177	115 / 185	120 / 193	DID NOT FAIL	AVERAGE SPEED AT FAILURE	TOTAL NUMBER OF TIRES TESTED
Bias Ply		-	-	1	4	14	5	1	2	-	-	101 mph	27
Bias Belted		-	2	4	6	2	4	1	3	-	2[3]	101 mph (162 km/h)	24
Fabric Radial		-	1	-	4	2	1	3	-	-	-	100 mph (161 km/h)	11
Steel Radial		1	-	1	2	9	10	1	-	-	-	101 mph (162 km/h)	24
													86

[1] This analysis is based upon data provided by the Safety Research Laboratory, U.S. Department of Transportation. Tires were standard grade passenger tires selected from stocks on hand.

[2] DOT TEST PROCEDURE

Break-in at 50 mph (80.5 km/h) for four hours; cool tires to ambient temperature (100°F or 37.8°C); run tires for 30 minutes at 75 mph (120.8 km/h); increase speed in 5 mph (8.1 km/h) increments and run for 30 minutes at each new speed until failure occurs.

[3] Two tires withstood 30 minutes at 120 mph (193 km/h) without failure; the tests were suspended at that point. For averaging purposes, these were assumed to have failed at 125 mph (201 km/h).

Table 1b

Tire Failures by Construction

Tire Brands Tested by the U.S. Department of Transportation

Bias Ply

Dunlop Gold Cup, G78-14
Firestone 500, G75-15
Firestone Delux Champion, F78-14
Goodrich Custom, G78-14
Goodyear Power Cushion 78, G78-14
Kelly Springfield 78, G78-14

Bias Belted

Dunlop Qualifier G/T, G70-14
Firestone 500 steel belted, F78-14
Firestone Sup-R-Belt, H78-15
General Jumbo 700, F70-14
Goodrich Silvertown, G70-14
Goodyear Custom Power Cushion, H78-14
Goodyear Custom W.T., G70-14
Kelly Springfield Super Charger, G70-14

Fabric Radial

Dunlop SP41, 205R14
General Jet RADAN, 205R14
Goodrich 990, FR70-14

Steel Radial

Firestone V-1, GR70-14
Gislavd Veloche 116, 175SR14
Goodrich Lifesaver, GR70-14
Goodyear Custom Steel Guard, GR78-15
Michelin, 205-14
Pirelli Cinturato CN75, 205-14
Sears, 205-14

TABLE 2
SUMMARY OF NATIONAL ASSOCIATION OF FLEET ADMINISTRATORS SURVEY OF STEEL BELTED RADIAL TIRE USE BY POLICE

POLICE AGENCY OR DEPARTMENT	TESTED OR USED SBR's	HOW MANY CARS	HOW LONG IN USE?	ORIGINAL EQUIP. OR REPLACEMENT	INSTANCES AND TYPE OF TIRE FAILURE	EST. MPH SPEED AT TIME OF FAILURE	EST. TIRE PRESSURE	EST. NO. OF MILES ON TIRE	MAKE & SIZE OF TIRE USED	DAMAGE TO VEHICLE	ANY INJURIES OR FATALITIES	USER'S COMMENTS
Arizona Dept. of Public Safety	Yes	25-50	1 1/2 yrs.	Original & replacement	Yes; belt separations & sidewalls	Over 80	32 psi	Various	Goodrich Goodyear & Uniroyal (sizes not provided)	No	No	Mostly separations at high speed; have switched to fabric belted radials
Baltimore County Police Dept.	Yes	12	No answer	Replacement	Yes; belt separations	High	30 psi	Under 10,000	Sears; Michelin 205-15; Dunlop H78-15; BFG HR70-15	No	No	Important to maintain air pressure at 30 psi
Calif. Highway Patrol	Yes	10	Test only	Replacement	Yes, belt separations and chunking	105 up	32 psi	40-50	HR78-15	No	No	All steel belted radials inadequate for pursuit
Georgia Dept. of Public Safety	Yes	2	Test only	Replacement	No	N/A	N/A	N/A	N/A	N/A	N/A	Not perfected enough to include in bidding
Illinois State Police	Yes	10	15-20,000 miles	Original	No	N/A	N/A	N/A	N/A	N/A	N/A	—
Illinois State Toll Highway Authority	Yes	5	40,000	Replacement	No	N/A	N/A	N/A	N/A	N/A	N/A	Sidewalls have cracked or split
Indianapolis, Ind. Police Dept.	Yes	10	No answer	Replacement	No	N/A	N/A	N/A	GR78-15	N/A	N/A	Sidewall damage bad; tread held up well
Kansas Highway Patrol	Yes	6	3 months	Original	Yes, partial belt separation	120	30 psi	8,000	Goodyear HR78-15	Yes	No	2 tires failed in high speed chase
Kansas City, Mo. Police Dept.	Yes	20	6 months	Replacement	Yes; sidewalls	Unknown	32 psi	Average 13,000	Gillette GR78-15 Goodyear GR78-15 Goodrich GR70-15 Michelin XWW205-15 Firestone V-1	No	No	Total of 10 failures
Kentucky State Police	Yes	2	10/1/74	Replacement	No	N/A	N/A	N/A	N/A	N/A	N/A	Testing Pirellis
Louisville, Ky. Police Dept.	Yes	190	2 years	Original and replacement	No	N/A	N/A	N/A	N/A	N/A	N/A	—
Maine State Police	Yes	4	6 months	Replacement	No	N/A	N/A	N/A	N/A	N/A	N/A	—
Miami, Florida Police Dept.	Yes	5	2 months	1 original; 4 replacement	Yes; wire came through sidewalls	Unknown	30-32	15,000	Goodyear GR70-15	No	No	All 20 tires removed approx. 15,000 miles
Nebraska State Patrol	Yes, tested	5	40,000+ miles	Replacement	No	N/A	N/A	N/A	N/A	N/A	N/A	Tests conducted with Michelins, just installed Michelin XVS on 4 units; no results yet
New Jersey State Police	No	—	—	—	—	—	—	—	—	—	—	20% failure with fabric radials, eliminating all radials from use
New Mexico State Police	Yes	5	Life of tire	Replacement	Yes; sidewall cracking	Unknown	26 psi	18,000	LR78-15	No	No	—
New York City Police Dept.	Yes	34	14,000 miles	Replacement	Yes; 21 cut sidewalls; 3 blowouts	Normal cruising	28 psi	Under 7,000	Firestone GR70-15 Goodrich GR70-15 Michelin GR78-15 Goodyear GR78-15	No	No	29 patrolcars, 5 supervisor cars; no problems with supervisor's tires
Oakland County, Mich. Sheriffs Dept.	Yes	30	1 year	Original & replacement	Yes; belt separation	90+	28-32 psi	New	Firestone HR78-15	Yes	No	—
Ontario, Canada Provincial Police	Yes	12	1 year	Original	Yes; belt separations	115	26 psi	150	Goodyear FR78-14	No	No	—
Penn. State Police	Yes, Winter	100	1 season	Replacement	Yes; belt coming off & sidewall bubbles	55	30 psi	30,000	HR70-15	No	No	Now procure only fabric radials
South Carolina Highway Dept.	Yes	50	6 months	Replacement	No	N/A	N/A	N A	(no answer)	N A	N A	Used only on admin. cars
Texas Dept. of Public Safety	Yes	10	30,000 miles	Replacement	Yes, one belt separation	80+	33 psi	12,000	HR78-15	No	No	All vehicles in test were pursuit vehicles
Utah Highway Patrol	Yes	1	9 months	Replacement	Yes; sidewall	55	32 psi	2500	Goodyear HR78-15	No	No	Tire adjusted by dealer

TABLE 3
SUMMARY OF SURVEY BY INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE

State Police Department	Have Used SBR Tires	No. of Vehicles Equipped	No. of High Speed Feilures	Neture of Feilures	Approximate Speed (mph)	Est. Time Speed Meintained	Approx. Tire Pressure et Time of Accident	Est. No. of Miles on Tire(s)	Did Feilures Result in Accidents or Non-eccidents	Did Feilures Result in Fatalities/ Injuries?	Did Feilures Result in Demage to Police Vehicle	Other Property Damage	Brand/Size of Tires	Comments
Alabama	Discontinued use	Did not specify	40	Belt separations, blowouts, sidewall blisters, sidewalls collapsed	75-125	Did not specify	Did not specify	Did not specify	1	1	1 patrol car destroyed	Did not specify	Firestone HR78-15 Firestone HR70-15 Firestone JR70-15 Firestone GR70-15	HR78-15 had 15% failures; HR70-15 had 10% failures; JR70-15 had 2% failures; GR70-15 no failures, but used very little.
Delaware	Only used fabric radials	Did not specify	12	Sidewalls	Did not specify	Did not specify	32 psi	Did not specify	Did not specify	Did not specify	Did not specify	Did not specify	Goodyear HR70-15	Now using B. F. Goodrich Life Saver radials; no failures to report
Florida	Discontinued use	325	207	Belt separations, sidewall blisters	60-120	2 -15 miles	28-32 psi	Various	207	2 injuries	1 patrol car destroyed; 10 cars damaged	None	Firestone HR70-15 Firestone HR78-15 Goodyear HR70-15	-
Florida (Dept. of Criminal Law Enforcement)	Currently using	120	4	Belts and sidewalls	Not specified	Not specified	28-30 psi	10,000	35	None	None	None	Firestone HR78-15	–
Idaho	Currently using	250	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Goodyear HR78-15	Have also used Firestone steel belted, Goodrich, Uniroyal, and Kelly Springfield fabric radial with no trouble.
Iowe	Currently using	410	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Firestone "500" JR78-15	–
Kansas	Discontinued use	6	2	Belt seperations	120	3 minutes	30 psi	8,000	1	None	1 patrol car damaged	None	Goodyear HR78 (rim size not given)	Six vehicles delivered by mistake with steel belted radials. After 2 failures factory replaced with fabric radials
Maine	Discontinued use	4	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Goodyear HR78-15 General HR78-15	Officers advised of potential hazard factor over 80 mph.
Nebraska	Currently using	11	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Michelin H78-15	No difficulties; troopers like them.
New Mexico	Using experi-mentally	10	4	Belt separations	55-100	Unknown	Mfr. recomm.	10,000-29,000	4	No	Minor fondor damage to 2 cars	None	Michelin HR78-15	-
Ontario, Canada	Currently using	12	1	Belt separation	114	Unknown	26 psi	150	4	No	No	None	Goodyear, Firestone, Uniroyal; H, G, F sizes	-
Oregon	Discontinued use	100	Statistics not maintained	Belt separations	Unknown	Unknown	32 psi	"Almost new"	Statistics not maintained	No	No	None	Goodyear HR78-15	In 1974 Goodyear recalled 500 HR78-15 steel belted radials, now using Goodrich HR70-15 fabric belted radials
Rhode Island	Currently using	120	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Firestone HR78-15 Gillotte HR78-15 Dayton HR78-15 (or HR70-15)	
Vermont	Formerly tested	Did not specify	2	Tread disintegrations	Did not specify	Did not specify	Did not specify	Did not specify	1	Minor injuries to driver	1 police car destroyed	Did not specify	Firestone V-1, size not specified	Both failures occurred same hour of day, within one mile of each other. One tire maintained air. Improper inflation may have contributed to failures
West Virginia	Formerly used	10	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Firestone JR78-15 Goodyear JR78-15 Firestone HR78-15 Goodyear JR78-15	Vehicles with steel radials not used for patrol.
Wyoming	Currently using	155	2	Sidewalls	"Patrol speed"	Unknown	30 psi	1 now; 1 with 15,000 miles	None	No	No	None	Goodrich HR78-15 Goodyear HR78-15	Have successfully used police radial tires since 1965

Table 4

Listing of Company-Certified High Speed Police Tires

Company Name	Tire Description	Construction	Tire Size	Company-Certified Speed Rating	
				mph	km/h
Armstrong	Pursuit 70, Bias Ply	Nylon	G70-15	125	200
Dunlop	RS Patrol	Nylon	G, H78-15	125	200
	Elite RS Patrol	Polyester/Kevlar/ Nylon	HR 78-15	125	200
Firestone	Super 125, Bias Ply	Nylon	G, H78-15	125	200
	Super 125, Radial	Polyester/Kevlar	HR78-15	125	200
Goodrich, B. F.	Pursuit Radial	Rayon	GR, HR, JR70-15	125	200
Goodyear	Police Special Bias Ply	Nylon	G, H, J78-15	125	200
	Police Special Polyglass	Polyester/ Fiberglass	G, H, L78-15	125	200
	Police Special Radial	Polyester/ Rayon	DR70-14;GR, HR70-15 HR, JR, LR78-15	125	200
Michelin	Radial	Steel	205 HR14 XVS	130	210
			215 HR15 XVS	130	210
Pirelli	Radial	Steel	215-15 (HR78-15)	130	210
			235-15 (LR78-15)	130	210

STATE OF ALABAMA
DEPARTMENT OF PUBLIC SAFETY
MONTGOMERY, ALABAMA 36102

August 8, 1974

Mr. Carlos Garza
Office of Standards Enforcement
National Highway Traffic Administration
Department of Transportation
#2100 Second Street, S. W.
Washington, D. C. #20590

Dear Mr. Garza:

The Alabama Department of Public Safety has run a survey of the Firestone tires which the troopers have been using for the past seven months and the following facts are noted. There was a total of 19 Firestone tires HR 70 x 15 issued throughout the state with a total of 20 failures. The serial number of these failures was VCU 7 VHU303 with a total of 14 failures. One of these involved an accident in which one of our troopers was killed. The other HR 70s that failed were two (2) with a serial number VCU 7 VHU 293.

The other tire that we've had a good many failures with was the Firestone HR 78. The serial number VDVY FNJ 443 series had nine (9) failures, the VDVY FNJ 373 had five (5) failures, the VDVY FNJ 313 had five (5) failures, VDUY FNR 353 (2) failures, VDVY FNR 383, two (2) failures and several other serial numbers with one failure.

What we consider failures are blowouts, bubbles in tires, blisters and separations.

We are sending the two testing laboratories tires with VCU YHU 303, HR 70, VDVY FNJ 373, HR 78, VDVY FNJ 443, HR 78, VDVY FNG 313, HR 78 and VBU 9 XMV 053, JR 70 numbers. These tires should be shipped to the testing laboratories the latter part of this week.

We hope to have some results from the testing laboratories in the next few weeks.

I trust this is the information you needed. If I can be of further assistance, please give us a call.

Sincerely yours,

W. J. Smith, Lieutenant
Planning and Research Unit

WJS/kh

Department Vehicle 1 Fatality

JUL 1974 **ALABAMA UNIFORM TRAFFIC ACCIDENT REPORT**

SHADED AREAS TO BE USED BY D.P.S. FOR PROCESSING ONLY — SHEET 1 OF 2 SHEETS — 45643

LOCATION & TIME

TYPE	COUNTY CODE NUMBER	TIME	AM/PM	DAY (M T W Th F S Sun 1 2 3 4 5 6 7)	WEEK	MONTH	DAY	YEAR	Original Reportable Investigated Supp. Fatality Injury Property Only
06	180	1:40	PM	4		1	9	5	1

Total No. Vehicles: 1 — Accident Involved (Circle One or More): 1 Overturned In Road, 3 Ran Off Road

(1) Single Motor Vehicle; 4 – Pedestrian; 7 – Two Or More Motor Vehicles; 0 – Fixed Object; 2 – Pedalcycle; (6) Ran Off Road & Overturned; In Roadway Or ____ Ft. From Edge Of Roadway; 6 – Motorcycle; 9 – Other ____

ON STREET, ROAD, OR HIGHWAY	BETWEEN	AND	DIR. FROM	MILE POST NUMBER
I-65	Conecuh Co. # 22	Evergreen City Limit	S	9 9.7 0

STREET OR ROAD CODE				STREET OR ROAD CODE				TYPE MILES N E S W OF
I 0 6 5				0 0 6 8				9 9 0 2

CITY OR TOWN: —

CONTROLLED ACCESS HWY LOCATION (Circle One): (1) Main Road; 2 – Frontage Rd.; 3 – Main Road At Interchange; 4 – Entrance Ramp; 5 – Exit Ramp

N E (S) W of Ground Level; 2 – Bridge

DRIVER

DRIVER'S FULL NAME	STREET OR R.F.D.	CITY & STATE	ZIP	DATE OF BIRTH	SEX	RACE
Julian D. Stuckey	P. O. Box 1905	Dothan, Al.	36301	05 09 38	M	W

DRIVER LICENSE NUMBER	STATE	TYPE (Circle One): (1) Auto; 2 – Reg. Truck; 3 – Motorcycle; 4 – Other Truck; 5 – Learner; 6 – None	LICENSE RESTRICTION(S)	Complied With Yes No
1514366	Al.		None	

OCCUPATION	DRIVER'S TELEPHONE NO.	DRIVER CONDITION (Circle One): (1) No Apparent Defects; 2 – Apparently Asleep; 3 – Fatigued; 4 – Ill; 5 – Unknown; 6 – Physical Defects
State Trooper	792-2171	1

DRIVER SOBRIETY:	DRINKING	DRUGS	TYPE TEST GIVEN	TEST RESULTS (Pos. Neg.)	REFUSED TEST	CONTRIBUTING CIRCUMSTANCE(S)
	Yes (8) Unknown	Yes (5) Unknown	None	4	YES (NO)	22, 23, 37

VEHICLE — UNIT # 1

YEAR	MAKE	BODY	V.I.N.	INSPECTION CERTIFICATE: 1 – Current; 2 – Expired; (3) – None; 4 – Unknown	LICENSE TAG NUMBER	STATE	YEAR
74	Ford	4 D	FAU530141999		S-289	Al.	74

OWNER'S NAME	STREET OR R.F.D.	CITY & STATE	ZIP	SPEED LIMIT	ESTIMATED SPEED
State of Ala. Dept. Public Safety	P.O. Box 1511	Montgomery, Al.	36102	55 MPH	100-110 MPH

TYPE (Circle One): (0) Auto; 02 – Pedalcycle; 03 – Sta.Wagon; 04 – Panel Pickup; 05 – Tr. Tractor; 06 – Other Truck; 07 – Comm. Bus; 08 – School Bus; 09 – Other Bus; 10 – M'cycle; 11 – Farm Mach.; 12 – Other ____

Safety Equip. Used: Yes No

SPECIAL USE (Circle One): 01 – None; 02 – Taxi; 03 – Military; 04 – Ambulance; (05) – Police; 06 – Farm Use; 07 – Wrecker; 08 – Fire Fighting; 09 – Driver Training; 10 – Govt.; 11 – Other ____

ATTACHMENT (Circle One): (1) – None; 2 – Mobile Home; 3 – Semi Trailer; 4 – Utility Trailer; 5 – Farm Trailer; 6 – Trailer With Boat; 7 – Camper Trailer; 8 – Towed Motor Veh.; 9 – Petroleum Tanker; 0 – Other ____

DEFECTS (Circle One or More): 1 – None; 3 – Lights; 5 – Steering; 7 – Turn Signals; 9 – Not Known; 2 – Brakes; 4 – Horn; 6 – Wipers; (8) – Tires; 0 – Other ____

Defect Codes: ____ Contributed To Acc.: 8

DAMAGE SEVERITY: 1 – Slight; 2 – Moderate; (3) – Severe

AREA(S) DAMAGED (Use Codes): 1,2,3,4,5,6,7,8,9,0

APPROXIMATE COST OF REPAIR: $ 4800.00

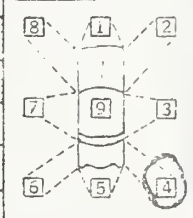
VEHICLES TO NEED AWAY: (YES) NO

VEHICLE TOWED BY WHOM: J & B Motors

TO WHERE: State Trooper Office Evergreen, Al.

TOTAL OCCUPANTS THIS UNIT: 1

CIRCLE POINT OF INITIAL IMPACT



PEDESTRIAN / DRIVER

DRIVER OR PEDESTRIAN'S NAME	STREET OR R.F.D.	CITY & STATE	ZIP	DATE OF BIRTH	SEX	RACE

DRIVER LICENSE NUMBER	STATE	TYPE: 1 – Auto; 2 – Reg. Truck; 3 – Motorcycle; 4 – Other Truck; 5 – Learner; 6 – None	LICENSE RESTRICTION(S)	Complied With Yes No

OCCUPATION	DRIVER OR PED'S PHONE NO.	DRIVER OR PED CONDITION (Circle One): 1 – No Apparent Defects; 2 – Apparently Asleep; 3 – Fatigued; 4 – Ill; 5 – Unknown; 6 – Physical Defect

DRIVER OR PED SOBRIETY:	DRINKING	DRUGS	TYPE TEST GIVEN	TEST RESULTS (Pos. Neg.)	REFUSED TEST	CONTRIBUTING CIRCUMSTANCE(S)
	Yes No Unknown	Yes No Unknown			Yes No	

VEHICLE — UNIT # 2 OR PEDESTRIAN

YEAR	MAKE	BODY	V.I.N.	INSPECTION CERTIFICATE: 1 – Current; 2 – Expired; 3 – None; 4 – Unknown	LICENSE TAG NUMBER	STATE	YEAR

OWNER'S NAME	STREET OR R.F.D.	CITY & STATE	ZIP	SPEED LIMIT	ESTIMATED SPEED
					MPH

TYPE (Circle One): 01 – Auto; 02 – Pedalcycle; 03 – Sta.Wagon; 04 – Panel Pickup; 05 – Tr. Tractor; 06 – Other Truck; 07 – Comm. Bus; 08 – School Bus; 09 – Other Bus; 10 – M'cycle; 11 – Farm Mach.; 12 – Other ____

Safety Equip. Used: Yes No

SPECIAL USE (Circle One): 01 – None; 02 – Taxi; 03 – Military; 04 – Ambulance; 05 – Farm Use; 06 – Police; 07 – Wrecker; 08 – Fire Fighting; 09 – Driver Training; 10 – Govt.; 11 – Other ____

ATTACHMENT (Circle One): 1 – None; 2 – Mobile Home; 3 – Semi Trailer; 4 – Utility Trailer; 5 – Farm Trailer; 6 – Trailer With Boat; 7 – Camper Trailer; 8 – Towed Motor Veh.; 9 – Petroleum Tanker; 0 – Other ____

DEFECTS (Circle One or More): 1 – None; 2 – Brakes; 3 – Lights; 4 – Horn; 5 – Steering; 6 – Wipers; 7 – Turn Signals; 8 – Tires; 9 – Not Known; 0 – Other ____

Defect Codes: ____ Contributed To Acc.: ____

DAMAGE SEVERITY: 1 – Slight; 2 – Moderate; 3 – Severe

AREA(S) DAMAGED (Use Codes): ____

APPROXIMATE COST TO REPAIR: $ ____

VEHICLES TO NEED AWAY: YES NO

VEHICLE TOWED BY WHOM: ____

TO WHERE: ____

TOTAL OCCUPANTS THIS UNIT: ____

CIRCLE POINT OF INITIAL IMPACT

ACTIONS

(Circle One For Each Vehicle)

Driver		Ped.
1 2 3 4 5 6 7 8 9 10 11 12		1 2 3 4 5 6 7 8 9 10 11 12
1 2 3 4 5 6 7 8 9 10 11 12		1 2 3 4 5 6 7 8 9 10 11 12

01 – Proceeding Straight; 02 – Making Right Turn; 03 – Making Left Turn; 04 – Making U Turn; 05 – Backing; 06 – Slowing; 07 – Passing; 08 – Changing Lanes; 09 – Parking; 10 – Starting From Parked; 11 – Entering Traffic Lane; 12 – Leaving Traffic Lane; 13 – Other; 14 – Remain Stopped In Lane; 15 – Remain Parked Illegally

PEDESTRIAN

AGE: 1 – Dark, 2 – Light

CLOTHING: 1 – Dark, 2 – Light

RETRO. REFLECTIVE MATERIALS: 1 – Clothing, 2 – Items, 3 – None

01 – Crossing or Entering Intersection; 02 – Crossing or Entering Other; 03 – Walking in Rdwy. – Against Traffic; 04 – Walking in Rdwy. – With Traffic; 05 – Standing in Roadway; 06 – Getting Off or On Vehicle; 07 – Pushing or Working on Vehicle; 08 – Other Working in Rdwy.; 09 – Playing in Roadway; 10 – Other in Roadway; 11 – Not in Roadway; 12 – OTHER ____

DAMAGE TO PROPERTY OTHER THAN VEHICLE — Name, Object, Show Ownership & Damage: None

Approx. Cost to Repair: $

WIT.

WITNESS FULL NAME	ADDRESS	PHONE NO.	AGE	SEX
A. F. Lee	3266 Windwood Dr. Montgomery, Al.	281-7662	61	M
Jack Edward Gantt	Rt. C Evergreen	578-1187	28	M

CODES

SEATING

1	2	3
4	5	6
7	8	9

M = Motorcycle
B = Pedalcycle
O = Other
U = Unknown
P = Pedestrian

SEAT BELTS

LAP BELT ONLY
N = None Installed
F = Fastened
U = Unfastened
R = Not Reported

LAP & SHOULDER BELT
S = Not Used
J = Lap Belt Only Used
M = Both Belts Used
L = Not Reported

EJECTED

Y = Yes
P = Partially
N = No
U = Unknown

INJURY

K = Killed
A = Visible signs of injury, as bleeding wound or distorted member, or had to be carried from scene.
B = Other visible injury, as bruises, abrasions, swelling, limping, etc.
C = No visible injury but complaint of pain or momentary unconsciousness.

FIRST AID BY

P = Police
A = Amb. Attend
D = Doctor
O = Other
U = Unknown
N = None

VICTIMS

	NAME	ADDRESS	Age	Sex	Veh. No.	Seating	Seat Belts	Ejection	Injury	First Aid By
1	Julian D. Stuckey	P. O. Box 1905 Dothan, Al.36301	36	M	1	1	G	P	K	N
	TAKEN TO: Conecuh Co. Hospital	TAKEN BY: Evergreen Ambulance Co.								
2	NAME	ADDRESS								
	TAKEN TO	TAKEN BY								

DIRECTION OF TRAVEL – VEHICLE 1 – N E (S) W VEHICLE 2 – N E S W | 2.30 MILES N E (S) W. TO Evergreen

NARRATIVE & DIAGRAM

See Diagram on Page # 2

DESCRIBE WHAT HAPPENED (REFER TO VEHICLES BY NUMBER) Vehicle # 1 was traveling South on I- 65 at a high rate of speed.(Approximately 100 to 110 Miles Per Hour) The right rear tire on vehicle # 1 blew out. Vehicle # 1 traveled 600 feet on the pavement after the tire blew out leaving rubber on the pavement from the ruptured tire. At this point the driver lost control and skidded into the grass median. Vehicle # 1 came to rest up side down,after skidding and overturning for 300 feet. The vehicle overturned two and one half times.

ROADWAY & ENVIRONMENT

LIGHT (Circle One)
(1) – DAYLIGHT
2 – DAWN
3 – DUSK
4 – DARKNESS
5 – DARKNESS, RD. LIGHTED

WEATHER (Circle One)
(1) – CLEAR
2 – CLOUDY
3 – RAINING
4 – FOG
5 – SNOWING SLEETING
6 – HAILING

LOCALE (Circle One)
(1) – OPEN COUNTRY
2 – RESIDENTIAL
3 – SHOPG OR BUSINESS
4 – MFG. or INDUSTRIAL
5 – SCHOOL or PLAYG
6 – OTHER

DEFECTS (Circle One or More)
1 – SHOULDERS LOW
2 – SHOULDERS HIGH
3 – HOLES, BUMPS ETC.
4 – LOOSE MATERIAL ON SURFACES
5 – ROAD UNDER CONST.
(6) – NONE
7 – OTHER

CONSTRUCTION (Circle One For Each Vehicle)

1	2
1	1 – ASPHALT
(2)	2 – CONCRETE
3	3 – BRICK
4	4 – DIRT
5	5 – OTHER

CONDITION (Circle One For Each Veh.)

1	2
(1)	1 – DRY
2	2 – WET
3	3 – SNOWY, ICY
4	4 – MUDDY
5	5 – HAZARDOUS MATERIAL

VISION OBSCURED (Circle One For Each Veh.)

1	2	
(01)	01	– NOT OBSCURED
02	02	– RAIN, SNOW, ICE, ETC. ON WINDSHIELD
03	03	– TREES, CROPS, BUSHES, ETC.
04	04	– BUILDING(S)
05	05	– EMBANKMENT
06	06	– SIGNBOARD
07	07	– HILLCREST
08	08	– PARKED VEHICLE(S)
09	09	– MOVING VEHICLE(S)
10	10	– BLINDED BY HEADLIGHTS
11	11	– BLINDED BY SUNLIGHT

CHARACTER (Circle One For Each Veh.)
1 – Straight – Level
(2) – Straight – Down Grade
3 – Straight – Up Grade
4 – Straight – Hillcrest
5 – Curve – Level
6 – Curve – Down Grade
7 – Curve – Up Grade

TRAFFIC CONTROL (Circle One For Each Vehicle)
1 – STOP SIGN
2 – STOP & GO SIGNAL
3 – YIELD SIGN
4 – OFFICER OR FLAGMAN
5 – RR CROSSING GATES
6 – RR FLASHING LIGHTS
(7) – NONE
8 – OTHER

ROADWAY LANES (Circle One For Each Vehicle)
1 – ONE LANE
2 – TWO LANES
3 – THREE LANES
(4) – FOUR LANES
5 – FIVE LANES
6 – SIX LANES OR MORE
7 – UNPAVED (Any Width)
8 – OTHER

ROADWAY DIVIDED BY: (Circle One For Each Vehicle)
1 – CONCRETE
2 – ROUGH SURFACE
(3) – EARTH
4 – PAINTED MEDIAN BARRIER
5 – CONCRETE
6 – METAL GUARDRAIL
7 – FENCE
8 – OTHER

INVESTIGATION

None

SUMMONS NUMBER: None | NAME OF PERSON CHARGED | CONTRIBUTING CIRCUMSTANCE(S)

POLICE AGENCY NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	TRAFFIC FLOW RESTORED	NAME OF PHOTOGRAPHER
1 : 45 (AM) PM	1 : 51 (AM) PM	1 : 55 (AM) PM	3 : 25 (AM) PM	Butch Adams

NAME OF INVESTIGATING OFFICER	BADGE NUMBER	POLICE AGENCY
J. T. Smalley	904	A S T

NAME OF OTHER OFFICER(S) AT SCENE	BADGE NUMBER(S)	POLICE AGENCY
G.J.Ward,J. C.Fowler,W.F.Kirkland	337,125,243	A S T

THE DATA ON THIS REPORT REFLECTS MY BEST KNOWLEDGE, OPINION AND BELIEF COVERING THE ACCIDENT, BUT NO WARRANT IS MADE AS TO THE FACTUAL ACCURACY THEREOF

SIGNATURE OF INVESTIGATING OFFICER: J. T. Smalley DATE: 06 | 29 | 74

CONTRIBUTING CIRCUMSTANCE(S)

10 – No Improper Driving
11 – Violations Unknown
12 – Imp. Backing
13 – Changing Lanes Imp.
14 – Parking Improperly
15 – Failure to Dim Lights
16 – Lights Improper
17 – Veh. Unsafe Cond.
18 – Driving in Wrong Lane
19 – No Sig. Imp. Sig.
20 – Following Too Closely
21 – Defective Brakes
22 – Exceeding Speed Limit
23 – Exceeding Safe Speed
24 – Disregard Sign Sig.
25 – No Right of Way
26 – Wrong Side of Road
27 – Passing Co...
28 – Passing on Curve
29 – Other Improper Passing
30 – Turning Unlawfully
31 – Driving in Safety Zone
32 – Pass Stop School Bus
33 – Inattention
34 – Other Moving Viol.
35 – Exc. Wt. Ht. Lt. Wh.
36 – Pedestrian Drunk
37 – Faulty Equipment
38 – Walking Violation
39 – Min. Speed Law
40 – Ruling On Hwy.
41 – Driv. under Inf.

2.30 miles South to Evergreen

North

I- 65

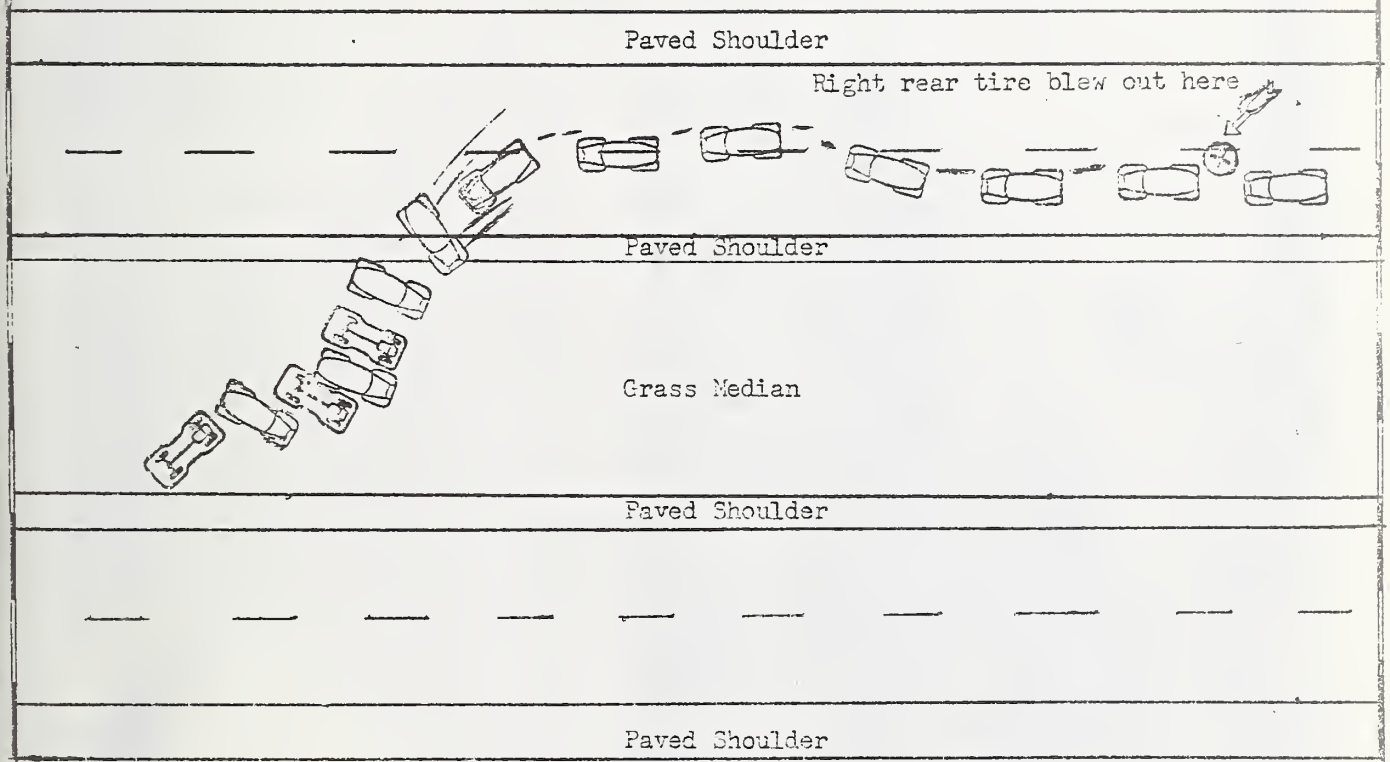


Diagram Scale 1 inch = (20 feet) (10 feet)	Location: Interstate # 65, 2.30 miles South to Evergreen in Conecuh County	Time: 1 : 40 A.M. (P.M.)	
Signature of Reporting Officer(s): Sgt. J. T. Smelley	Badge No.: 904	Reporting Police Agency: Alabama State Troopers	DATE: Month 06, Day 27, Year 71

ATTACHMENT B

STATE OF ALABAMA
DEPARTMENT OF PUBLIC SAFETY
MONTGOMERY, ALABAMA 36102

AUGUST 9T, 1974

COLONEL ALDRED G. GOTHARD
DIRECTOR OF PUBLIC SAFETY

LT. COLONEL G. W. RUSSELL
ASSISTANT DIRECTOR

M E M O R A N D U M

To: Staff

From: Lieutenant Harold Hammond

Sub: Tire Failure-Perry County, Florida Sheriff's Office

As a result of a news article found in the August 8, 1974 issue of the Perry News-Herald reporting the death of Taylor County Deputy Sheriff Victor J. MacDonald on Sunday August 4, 1974, Sheriff Maurice Linton was contacted for further details (Area Code 904, 584-4225).

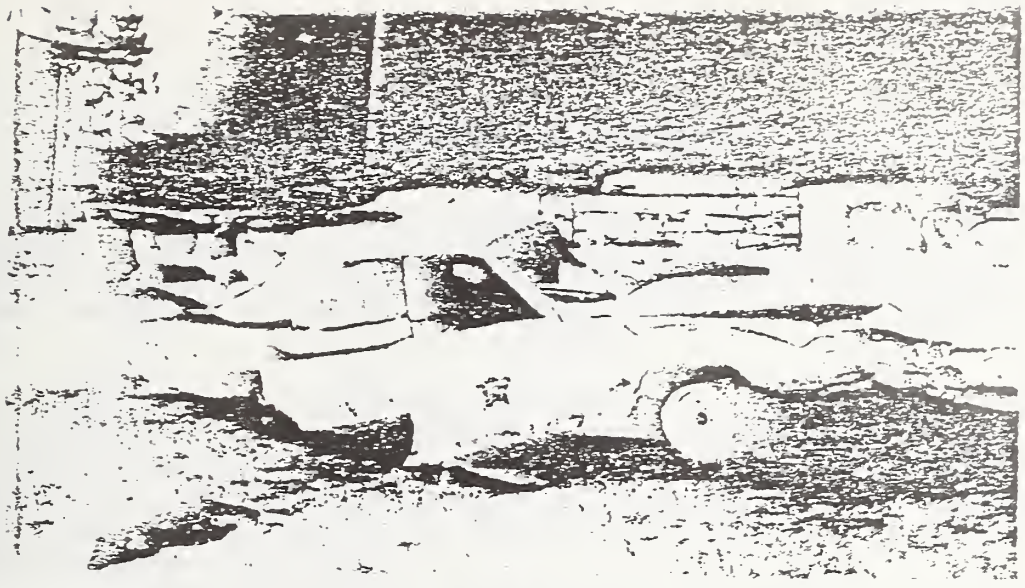
According to reports, Deputy MacDonald was out of his patrol vehicle at a service station when a speeding car went by on US-19. The deputy ran to his patrol car and pursued the car at speeds in excess of 100 MPH. The road was wet during the pursuit but no rain was falling at the time. Sheriff Linton reported that the tread on the right rear tire separated from the body of the tire and "rolled into a ball". The tire was a Goodyear steelguard radial and had been mounted on the patrol car on July 26, 1974. The sheriff estimated that the tire had less than 2,000 miles on it at the time of the failure. The sheriff said a combination rollbar and shield kept the car's top up even though the car overturned several times. He was of the opinion that the deputy would have lived if he had fastened his seatbelt and remained in the car. He stated the department planned no action against Goodyear Tire and Rubber Company but he believed the deputy's family planned legal proceedings.

An insurance adjustor had attempted to secure the tire which failed for the purpose of returning it to Goodyear for tests. Instead the sheriff has released the tire to the Florida Highway Patrol with the understanding that they permit an independent laboratory to inspect it and issue a report.

The sheriff was unable to advise how many Goodyear tires were in service on the wrecked vehicle and also he stated his department had no established regulation governing tire air pressure. The amount of air pressure required is determined by the driver of the vehicle.

HJH/ggb

DRIVE CAREFULLY - SAVE A LIFE



DEATH CAR....Pictured above is the car in which Taylor County Deputy Sheriff "Skip" MacDonald went to his death Sunday night after the car blew a tire as MacDonald pursued a speeder on US 19 South.

'Skip' MacDonald Dies In Crash Sunday Night

Taylor County Deputy Sheriff Victor J. "Skip" MacDonald died instantly of head injuries received Sunday evening when his patrol car overturned after blowing a tire as the deputy pursued a speeding motorist at more than 100 miles per hour on US 19 south of Salem.

Witnesses said MacDonald was at a service station in the area when the speeding vehicle went by and that he hurried to his parked cruiser to give chase.

The blowout was caused, it was reported, by seperation of the tread of a rear tire. Sheriff Maurice Lanton said Monday that the tire in question had been put on the car only about two weeks before the accident and that he was unable to understand its failure.

"MacDonald's car turned over several times it was reported. The officer died instantly of "massive head injuries" it was reported.

MICHELIN ROADABILITY TEST

On April 3, 1968, handling tests were conducted with two 1966 Dodge Class A vehicles equipped with the Michelin Radial Tires. One vehicle had zero camber; the other negative. The testing location consisted of turns of varying radii and corresponding speeds.

Testing began with air pressures of 36 p.s.i. At approximately 20 miles of testing, tread chunking at the outer edges of the front tires appeared. With both camber settings, there was an extreme understeer characteristic until cornering forces became such to cause the tire to roll upon the sidewall. At this point, extreme oversteer took place.

Air pressures were reduced to manufacturers recommendation of 27 p.s.i. and testing duplicated. Handling was the same as with the higher pressures except that the lag between understeer and oversteer was shorter.

With both air pressures at speeds of 90 to 100 m.p.h., the tires caused a lateral oscillating effect.

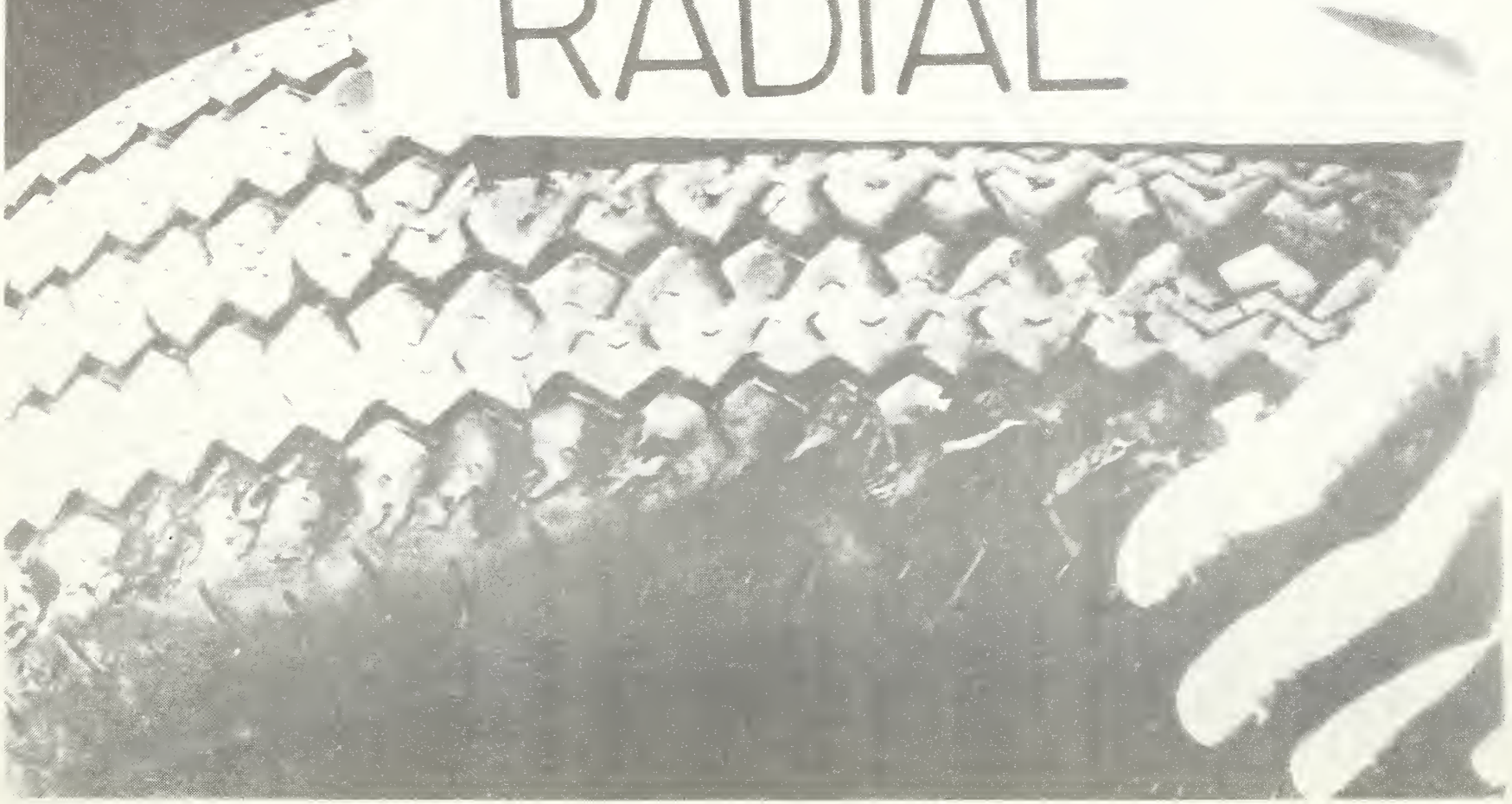
Tire spin on acceleration in tight turns was minimal indicating good rectilinear cohesion.

At the conclusion of testing, an inspection of the tires indicated excessive tire tread "chunking" and sidewall wear.

AUTHOR'S NOTE:

The model of tire used in these 1968 tests are no longer in production, according to the Michelin Corp. Current model Michelin standard grade, steel belted radial tires were included in the DOT tests summarized in Table 1a.

MICHELIN RADIAL



ATTACHMENT C-2

Training Division

October 9, 1973

31.2673.A1418

FIRESTONE RADIAL TIRES

Academy

As instructed, the Academy has completed testing of Firestone steel radial tires.

The tires, two sets of HR 78-15 Steel Belt Radial 500's and one set of HR 70-15 Steel Belt Radial V1's, have been returned to Motor Transport Section.

All testing was conducted on the Academy high speed course in the presence of Mr. F. W. Weller, Firestone Tire and Rubber Company. Prior to testing, each set of tires was driven a minimum of 50 break in miles at normal highway speeds.

The results of our tests are as follows:

Firestone Steel Radial 500-HR 78-15

Testing was conducted on September 26, 1973. The tire is 4 ply (2 polyester - 2 steel) with 2 ply polyester side walls. Tire pressures were at factory specification - 32 p.s.i.

The handling characteristics of the tires were erratic with predominant understeer. This is typical with radial tires during hard cornering. Chunking occured at the outer shoulder of the right front tire after 14 miles of testing.

Firestone Steel Radial V-1-HR 70-15

Testing was conducted on October 1, 1973. The tire is 7 ply (6 rayon - 1 steel) with 2 ply rayon side walls. Tire pressures were at factory specification - 32 p.s.i.

The handling characteristics were typically erratic with radial tires although improving with wear. The tires were testrd for 40 miles without the presence of abnormal wear or failure. Testing was terminated with the appearance of a chunking about the size of a quarter on the right front tire. This was probably caused by a stone cut, but could be a separation at the tire splice point. The tire is far superior to other radial tires tested by our staff to date.

Firestone Steel Radial 500-HR 78-15

Testing was conducted on October 4, 1973. The tire is identical to the steel radial 500 tested on September 25, 1973. Tire pressure was increased to 36 p.s.i. for this test.

Handling characteristics were the same as previous tests. Chunking appeared after 10 miles.

Attached are photographs taken of the tires after testing.

H. D. FARGO, Captain
Commander

Enclosure

ATTACHMENT C-3

Academy

July 24, 1973

31.6176.A2820

PIRELLI CINTURATO CN 75
RADIAL TIRE TEST

Skill Development Unit

On July 17 and 19, 1973, the E.V.O.C. staff conducted a series of tests designed to evaluate the handling characteristics and durability of the Pirelli Cinturato CN 75 radial tire. The tire is a 4 ply tread, 2 rayon, 2 steel, with 2 ply, rayon sidewall.

The tires used in the evaluation were mounted on a 1972 Dodge Polara, (B8655) assigned to the Academy E.V.O.C. unit as a high speed training vehicle. The tires were mounted by Jack's Shell and the front end aligned by Swift Dodge to specifications requested by the Bruces Tire Company.

After 60 miles of street driving the tires were subjected to high speed testing on the E.V.O.C. course. Twelve laps were completed counterclockwise. The first 5 laps were at moderate speeds with the last 7 laps at high speeds. At the completion of the 12th lap (18 miles) the right front tire was warped to the point of being unusable. The right front tire was replaced and testing continued. At the end of 13-1/2 laps clockwise the entire tread peeled off the casing of the left front tire. This occured as the vehicle entered a constant radius turn to the right at a speed of 100 mph. The tire failure caused the vehicle to leave the roadway at this point. Total mileage on the 5 tires was 120 miles.

The tires were inflated to 36 p.s.i. as specified by Bruces Tire Company. The handling characteristics was completely unsuitable for enforcement driving purposes. If moderate to hard accelleration was attempted while hard cornering, excessive understeer occured. If no accelleration was attempted an exaggerated oversteer was present.

Although one tire warped and another separated, it was noted that no chunking of the outer tread was present, as has been the case with some previous radial tires tested.

The consensus of the two test drivers is that the Pirelli Cinturato CN 75 radial tire is unpredictable performancewise and lacks the durability to be effective on enforcement vehicles.

J. R. McDANIEL, I.D. #6176
State Traffic Officer

ATTACHMENT D-1

State of Florida

Department Of HIGHWAY SAFETY AND MOTOR VEHICLES

OCT 2

RALPH DAVIS
EXECUTIVE DIRECTOR
NEIL KIRKMAN BLDG.

TALLAHASSEE 32304

COL. REID CLIFTON, DIRECTOR
DIVISION OF FLORIDA HIGHWAY PATROL
NEIL KIRKMAN BLDG.

JOHN D. CALVIN, DIRECTOR
DIVISION OF MOTOR VEHICLES
COLLINS BLDG. — 107 W. GAINES ST.

CLAY W. KEITH, DIRECTOR
DIVISION OF DRIVER LICENSES
NEIL KIRKMAN BLDG.

AUDRY CARTER, JR., DIRECTOR
DIVISION OF ADMINISTRATIVE SERVICES
NEIL KIRKMAN BLDG.

FLORIDA HIGHWAY PATROL
P. O. Box 332
Lake City, Florida
28 September 1973

SUBJECT: Accident Involving Trooper T. L. Sullivan - FHP-1047 - 9/24/73

TO: Colonel J. E. Beach, Director

ATTENTION: Major W. R. Kaufman

Please find attached complete investigation by Sergeant T. A. Pace on an accident involving Trooper T. L. Sullivan while operating FHP-1047.

Trooper Sullivan was responding to a call to assist Trooper R. W. Aderholt who had received a "hit" on an automobile from NCIC and this car was occupied by five runaways. Trooper Sullivan was proceeding south on SR-93 at approximately 100 MPH when his left rear tire, Firestone Steel Belted Radial HR-70 completely separated from the tread but did not lose all its air, causing Trooper Sullivan to lose control. He skidded sideways through the median strip, across two northbound lanes, at the emergency strip started turning over and turned over four times, coming to rest upon a fence against a small tree on his side, driver's side down. Trooper Sullivan has a broken right leg and is now confined to the Alachua General Hospital and in all probability will be off about three months.

I personally went to the scene before Trooper Sullivan was placed in the ambulance and observed all the evidence at the scene and it is my opinion that the entire cause of the accident was the Firestone tire separating at high speed.

FHP-1047 was a total loss and attached find three bids for salvage and I recommend we accept Mott Chrysler Plymouth, Inc. Live Oak, Florida, bid for $300.00 for this wrecked vehicle.

We have not received a written statement from Trooper Sullivan because of his injury but will get one

Accident Involving Trooper T. L. Sullivan -
FHP-1047 - 9/24/73

when he is able and a homicide report will follow.

As Trooper Sullivan was enroute to assist another trooper in the performance of his duties, I do not feel he was negligent and recommend no disciplinary action whatsoever.

T. C. Hodges

T. C. Hodges, Captain
Commander - Troop B

TCH/fg

Encls.

ATTACHMENT D-2

State of Florida

Department Of
HIGHWAY SAFETY AND MOTOR VEHICLES

TALLAHASSEE 32304

RALPH DAVIS
EXECUTIVE DIRECTOR
NEIL KIRKMAN BLDG.

COL. REID CLIFTON, DIRECTOR
DIVISION OF FLORIDA HIGHWAY PATROL
NEIL KIRKMAN BLDG.

JOHN D. CALVIN, DIRECTOR
DIVISION OF MOTOR VEHICLES
COLLINS BLDG. - 107 W. GAINES ST.

CLAY W. KEITH, DIRECTOR
DIVISION OF DRIVER LICENSES
NEIL KIRKMAN BLDG.

AUDRY CARTER, JR., DIRECTOR
DIVISION OF ADMINISTRATIVE SERVICES
NEIL KIRKMAN BLDG.

FLORIDA HIGHWAY PATROL
P.O. Box 332
Lake City, Florida
25 September 1973

SUBJECT: Accident involving FHP # 1047
Trooper T. L. Sullivan, ID # 586

TO: Captain T. C. Hodges

VIA: Lieutenant J. E. Love

On Monday, 9/24/73, at approximately 7:45 A.M., I was advised that Trooper T. L. Sullivan had been involved in an automobile accident. Upon arriving on the scene and completeing an investigation of the accident, I found the following had occurred.

Trooper R. W. Aderholt requested the FHP Station to check for wanted on a Georgia tag, LAR715. The Station advised Trooper Aderholt the car was wanted and should be occupied by several runaways.

Trooper Sullivan, upon hearing this radio transmission, advised the Station that he was enroute to assist Trooper Aderholt. Trooper Sullivan was proceeding south on SR # 93 (I-75) at a high rate of speed when the left rear tire on FHP 1047 completely separated, causing Trooper Sullivan to lose control of his vehicle. Trooper Sullivan skidded across the median and north bound lanes of SR # 93, before turning over four times.

My investigation revealed that while speed was a factor, the major cause of this accident was a defective tire.

Due to Trooper Sullivan responding to a call for assistance from Trooper Aderholt, I do not feel he was negligent in any way.

T. A. Pace, Sergeant
Troop B - Lake City

TAP/da

ATTACHMENT D-3

FLORIDA TRAFFIC ACCIDENT REPORT

MAIL TO: ACCIDENT RECORDS BUREAU, DEPT. OF HIGHWAY SAFETY & MOTOR VEHICLES, TALLAHASSEE, FLA. 32304

TIME & LOCATION

DATE OF ACCIDENT: 9/24/73	DAY OF WEEK: Monday	TIME OF DAY: 7:45 A. M
CITY: Columbia	CITY, VILLAGE OR TOWNSHIP: None	
DISTANCE FROM NEAREST TOWN: 4.1 Feet / ☒ Miles; ☐☒☐☐ N S E W	of: Lake City (City, Village or Township)	
ROAD ON WHICH ACCIDENT OCCURRED: SR # 93 (Use State or County Road Number or Name) ☐ Exit Ramp ☐ Entrance Ramp	☐ At Intersection with ☐ Influenced by Intersection: None (Highway Number or Name of Intersecting Street)	
IF NOT AT INTERSECTION: 2.9 ☐ Feet ☒ Miles; ☐☒☐☐ N S E W	of: SR # 10 29180-19.474 (Show nearest milepost, intersecting street or highway, bridge, RR crossing, underpass or curve)	
IS ENGINEERING STUDY NEEDED? (If so explain): No		DO NOT WRITE IN SPACE ABOVE

TYPE MOTOR VEHICLE ACCIDENT

OVERTURNING X	OTHER NONCOLLISION	PEDESTRIAN	MV IN TRANSPORT	MV ON OTHER ROADWAY		HIT AND RUN
PARKED MV	RAILWAY TRAIN	PEDALCYCLIST	ANIMAL	FIXED OBJECT	OTHER OBJECT	NON CONTACT

VEHICLE 1

TOTAL NO. VEH. INVOLVED: 1

YEAR	MAKE	TYPE (Sedan, Truck, Bus, etc.)	VEHICLE LICENSE PLATE NO.	STATE	YEAR	VEHICLE IDENTIFICATION NO.
1973	Dodge	4 Dr. Sedan	FHP-1047	Fla.	1973	DK41U3F214919

Area of Vehicle Damage: 15 | Damage Scale: 3 | Damage Severity: 3 | AMOUNT (Approximate): 3500.00 | Safety Equipment: 3 | VEHICLE REMOVED BY: Doyles Paint & Body

NAME OF INSURANCE (Liability Only): Pacific Indemnity | POLICY NO.: LAC9808-92-99 | Owner ☒ Driver ☐ | ☒ Owner's Request ☐ Other (Explain) ☐ Rotation List

OWNER (Print or type FULL name): Florida Highway Patrol | ADDRESS (Number and street): Neil Kirkman Bldg., | CITY and STATE: Tallahassee, Florida

DRIVER (Exactly as on driver's license): Timothy Leonard Sullivan | ADDRESS (Number and street): Rt. 6 Box 678, | CITY and STATE: Lake City, Florida 32055

OCCUPATION	Driver's License Type	ORIVER'S LICENSE NUMBER	STATE	DATE (Month, Day, Year) OF BIRTH	RACE	SEX	Safety E.	Eject.	Injury
State Trooper	Op	S415812413144722	Fla.	9/24/41	W	M	1	0	2

OCCUPANTS	Name	ADDRESS - Number and Street	City and State	AGE	RACE	SEX	Safety E.	Eject.	Injury
Front center	None								
Front right									
Rear left									
Rear center									
Rear right									

VEHICLE 2 or PEDESTRIAN

YEAR	MAKE	TYPE (Sedan, Truck, Bus, etc.)	VEHICLE LICENSE PLATE NO.	STATE	YEAR	VEHICLE IDENTIFICATION NO.

Area of Vehicle Damage | Damage Scale | Damage Severity | AMOUNT (Approximate) | Safety Equipment | VEHICLE REMOVED BY

NAME OF INSURANCE (Liability Only) | POLICY NO. | Owner ☐ Driver ☐ | ☐ Owner's Request ☐ Other (Explain) ☐ Rotation List

OWNER (Print or type FULL name) | ADDRESS (Number and street) | CITY and STATE

DRIVER (Exactly as on driver's license) | ADDRESS (Number and street) | CITY and STATE

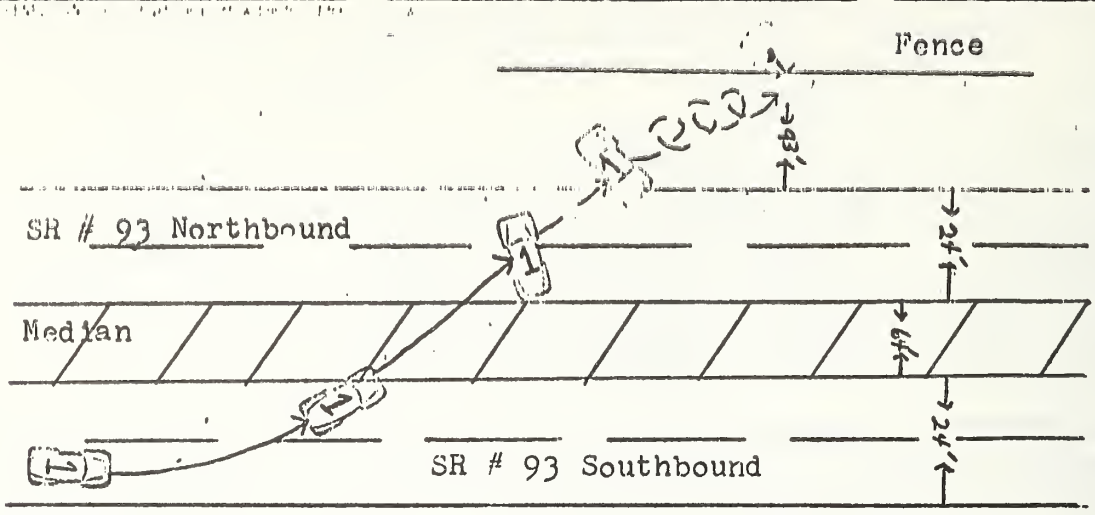
OCCUPATION	Driver's License Type	DRIVER'S LICENSE NUMBER	STATE	DATE (Month, Day, Year) OF BIRTH	RACE	SEX	Safety E.	Eject.	Injury

OCCUPANTS	Name	ADDRESS – (Number and Street)	City and State	AGE	RACE	SEX	Safety E.	Eject.	Injury
Front center									
Front right									
Rear left									
Rear center									
Rear right									

PROPERTY DAMAGED (Other than vehicles)	AMOUNT	OWNER - Name	ADDRESS - No. and Street	CITY and STATE
Fence	50.00	Fla. Dept. Of Transportation,		Lake City, Fla.

INVESTIGATION - Name and rank (Signature)	BADGE NO.	I.D. NO.	DEPARTMENT				DATE OF REPORT
Sergeant L. A. Poe	S-97	121	FHP	☐ F.H.P.	☐ C.P.D.	☐ S.O.	☐ Other	9/24/73

FHP 2 Revised 1-1-73



INDICATE N WITH ARROW

POINT OF IMPACT

Vehicle No.	1	2
Front	☐	☐
Right front	☐	☐
Left front	☐	☐
Right side	☒	☐
Left side	☐	☐
Rear	☐	☐
Right rear	☐	☐
Left rear	☐	☐

DESCRIBE WHAT HAPPENED – Describe vehicles by number

Vehicle # 1 traveling south on SR # 93 at a high rate of speed. The left rear tire came apart causing the driver to lose control. Vehicle # 1 skidded 295' across median, 100' more across northbound lanes of SR # 93 and then 196' turning over four times and came to rest on left side heading east.

VEHICLE DEFECTS: Defective Tires.

*WHAT VEHICLES WERE DOING BEFORE ACCIDENT

VEHICLE No. 1 was traveling ☐ ☒ ☐ ☐ (N S E W) On SR 93 at 100 Approximately M.P.H.

VEHICLE No. 2 was traveling ☐ ☐ ☐ ☐ (N S E W) On ..... at ..... M.P.H.

	Vehicle 1	Vehicle 2
Going straight ahead	☒	☐
Overtaking	☐	☐
Making right turn	☐	☐
Making left turn	☐	☐
Slowing or Stopping	☐	☐
Changing lanes	☐	☐
Starting from parked position	☐	☐
Stopped or parked	☐	☐
Other (explain above)	☐	☐

*WHAT PEDESTRIAN WAS DOING

PEDESTRIAN was going (check one) ☐ ☐ ☐ ☐ (N S E W) ☐ Along ☐ Across or into ..... (Street name, highway no.) from ..... (N.E. corner to S.E. corner, etc.) to .....

Color of Clothing: ☐ Dark ☐ Light

☐ Crossing at intersection	☐ Stepped into path of Vehicle	☐ Getting on or off Vehicle	☐ Playing in roadway
☐ Crossing not at intersection	☐ Standing in roadway	☐ Hitching on Vehicle	☐ Other roadway
☐ Walking in roadway – with traffic	☐ Standing in safety zone	☐ Pushing or working on Vehicle	☐ Not in roadway
☐ Walking in roadway – against traffic	☐ Lying or Sitting on roadway	☐ Other working in roadway	☐ Other (explain above)

DRIVERS AND VEHICLES

	VEHICLE 1	VEHICLE 2
PHYSICAL DEFECTS (Driver)	0	
VEHICLE DEFECTS	16	
CONTRIBUTING CIRCUMSTANCES	1	

ACCIDENT Characteristics								
LIGHTING CONDITION	1	ROAD DEFECTS	0	TRAFFICWAY CHARACTER	1	CLASS OF TRAFFICWAYS	1
WEATHER	1	TRAFFIC CONTROL	0	TRAFFICWAY LANES	4	TYPE TRAFFICWAY	1
ROAD SURFACE	1	TYPE LOCATION	4	VISION OBSCURED	0		

WITNESSES other than occupants

NAME	ADDRESS – Number and street	City and State
Wilkin Robbins Jr.,	123 Bullock St., Apt. 133,	Atlanta Ga.
Earl Snowden	Rt. 5 Box 243,	Lake City, Florida

FIRST AID GIVEN BY: Lake City Rescue Squad

☐ Doctor or Nurse ☐ Certified First Aider ☒ Certified First Aider (Police) ☐ Other (Explain)

INJURED TAKEN TO: Lake Shore Hospital BY: Lake City Rescue Unit

☐ Priv. Ambulance ☐ Other (Explain) ☒ Gov't Ambulance

CHEMICAL TEST — TEST RESULTS

	YES	NO
Driver No. 1	☐	☒
Driver No. 2	☐	☐

ARREST

NAME	CHARGE	Citation No.
None		

PHOTOGRAPHS TAKEN: ☒ Yes ☐ No ☒ Agency FHP ☐ Other (Explain)

TIME AND DATE OF ACCIDENT	TIME ARRIVED AT SCENE	WAS INVESTIGATION MADE AT SCENE (If not where)	IS INVESTIGATION COMPLETE (If not why)
9/24/ 19 73 7:50A M	7:55 A. M	Yes	Yes

ATTACHMENT E-1

The ARMSTRONG RUBBER COMPANY

EXECUTIVE OFFICES
500 SARGENT DRIVE
NEW HAVEN, CONNECTICUT

INTER-OFFICE CORRESPONDENCE

FROM A. R. Colborne

TO F. L. Palmieri

DATE April 2, 1975

SUBJECT G70-15 Load Range B
High Speed Pursuit 70
Testing Data

COPY TO T.C. Fritz, Jr.
E.J. Doyle
T.J. Hughes

The G70-15 High Speed Pursuit 70 in a 4 ply nylon construction was tested on Armstrong's extended version of the FMVSS 109 stepped high speed wheel test.

Each of three tires tested achieved 1/2 Hr. @ 125 MPH without failure.

The wheel test conditions were as follows:

1) 30 PSI cold inflation pressure at start of test.
2) Constant 1,380 Lbs. Load throughout test.
3) Wheel room temperature of 100°F.
4) Speeds:

1 HR. @ 50 MPH	(Break-In)
1/2 HR. @ 75 MPH	
1/2 HR. @ 80 MPH	
1/2 HR. @ 85 MPH	
.- - - -	FMVSS 109 Minimum
	Then increase the speed 5 MPH for each succeeding half hour test increment.

I would like to add that in any comparison between indoor wheel and road high speed testing, the wheel testing must be considered, by far, the most severe due to the high ambient temperature required and lack of air circulation.

Outdoor track testing is forthcoming and these results will be forwarded to you upon receipt.

A. R. Colborne

A. R. Colborne
Project Engineer,
Research & Development

ARC:el

ATTACHMENT E-2

DUNLOP A WORLD ORGANIZATION
TIRE AND RUBBER CORPORATION
EXECUTIVE OFFICES: BOX 1109, BUFFALO, NEW YORK 14240, 716 - 877-2200, TELEX 9-1240

June 4, 1975

Mr. Jared J. Collard
Standards Lab
National Bureau of Standards
Washington, D. C. 20234

Dear Mr. Collard:

Enclosed is the certificate of Dunlop Elite RS Radial Patrol tire and specifications. This letter and the information attached has been sent to the various state agencies interested in this tire.

We also have a G78-15 and H78-15 nylon 4 ply Dunlop RS Patrol certified for 125 miles per hour of sustained speeds.

If any other information is necessary, please contact me.

Very truly yours,

DUNLOP TIRE AND RUBBER CORPORATION

B. P. Klyza

B. P. Klyza, Assistant to
the Senior Vice President

BPK/bb

Encls.

COPY

CERTIFICATION OF TESTING AND TEST RESULTS

STATE OF TEXAS X

COUNTY OF REEVES X

That on this 16th day of July, 1974, personally appeared before me, a Notary Public, in and for said County and State, VICTOR F. SPRINGER, known to me to be the President of the Corporation that executed the foregoing instrument, who upon oath did depose that he is the Officer of said Corporation as above designated; that he is acquainted with the seal of said Corporation and that the seal affixed to said instrument is the Corporation seal of said Corporation; that the signature to said instrument was made by the Officer of said Corporation as indicated after said signature; that the same Corporation execued the said instrument freely and voluntarily and for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above mentioned.

SEAL

(signature)
LETHA E. COATS, NOTARY PUBLIC
IN AND FOR REEVES COUNTY, TEXAS

COPY

AUTOMOTIVE PROVING GROUNDS, INC.

P. O. Box 109 Phone 445-5092

Pecos, Texas 79772

I hereby certify that the tests reported below were conducted at Automotive Proving Grounds Incorporated on July 13, 1974.

Tires were two (2) Dunlop Radial HR78-15, Identified as EAVYAA 1204, Numbers B1 & B2.

Tests were conducted under the following conditions:

1. Test tires on two front wheels of vehicles
2. Cold Inflation - 30 psi
3. Load - 1510 lbs per tire
4. Rim - 6.50 JJ
5. Test Surface - Automotive Proving Grounds High Speed Track
6. Break-in - 54 miles @ 60 MPH
7. Test - 54 miles @ 90 MPH
   - 54 miles @ 105 MPH
   - 54 miles @ 115 MPH
   - 50 miles @ 125 MPH

The test was conducted under the above conditions on the (9) nine mile asphalt test track located at Automotive Proving Grounds, Incorporated, Pecos, Texas.

This track was built for testing of tires and was constructed to simulate turnpike conditions.

At the end of the test, the tires were inspected and no visable defects or failures of any nature could be found.

Ambient temperature for the tests was 73°F at start and 81°F at finish.

The tachograph chart made during the test is attached.

SEAL

Signed: (signature)
Victor F. Springer, President

Firestone

April 1, 1975

Mr. Jared J. Collard, Acting Mgr.
Police Vehicle Programs
Law Enforcement Stds. Laboratory
Room B-150, Physics Building
National Bureau of Standards
Washington, D.C. 20234

Dear Mr. Collard:

Our Washington Office has referred your inquiry concerning the sizes and types of tires which Firestone has certified as suitable for high speed patrol and pursuit tire application to us. These are listed below. Those sizes and types listed in Group 1 were sent to you attached to my letter of January 23, 1975. Group 2 lists additional sizes and types certified for this usage since my letter and Group 3 lists additional sizes which are in process of being tested. The latter will be certified when successful tests are completed.

	Size	Description	Cord Materials
Group 1.	HR78-15	Super 500 Radial Tubeless	Polyester/Kevlar
	G78-15	Super 500 Sup-R-Belt Tubeless	Polyester/Fiberglass
	H78-15	Super 500 Sup-R-Belt Tubeless	Polyester/Fiberglass
	G78-15	Super 500 Nylon Tubeless	Nylon
	H78-15	Super 500 Nylon Tubeless	Nylon
	J78-15	Super 500 Nylon Tubeless	Nylon
Group 2.	HR78-15	Super 125 Radial Tubeless	Polyester/Kevlar
	JR78-15	Super 125 Radial Tubeless	Polyester/Kevlar
	GR70-15	Super 125 Radial Tubeless	Polyester/Kevlar
	G78-15	Super 125 Nylon Tubeless	Nylon
	H78-15	Super 125 Nylon Tubeless	Nylon
Group 3.	FR70-14	Super 125 Radial Tubeless	Polyester/Kevlar
	HR70-15	Super 125 Radial Tubeless	Polyester/Kevlar
	LR78-15	Super 125 Radial Tubeless	Polyester/Kevlar

The Super 125 Radial line has recently been announced. Attached is a news release covering this line.

Very truly yours,

A. J. DiMaggio

A. J. DiMaggio
QUALITY ASSURANCE

AJD:g
att.

Firestone

April 10, 1975

FIRESTONE DEALERS AND STORES:

SUBJECT: USE OF NORMAL RADIAL PASSENGER CAR TIRES AS HIGH SPEED "PURSUIT" TIRES

The National Highway Traffic Safety Administration and the Law Enforcement Assistance Administration have recently cautioned against the dangerous practice of some highway patrol police organizations using normal radial passenger car tires in extra-legal high speed "pursuit" driving. Firestone concurs in this caution and re-emphasizes the following to its stores and dealers who sell tires to local governmental organizations.

Most tires procured by government agencies will be used in normal passenger car service. In such case, our Steel Radial 500 tire represents the most economical all-purpose tire for this application. However, the Steel Radial 500 is not a "pursuit" tire. In the interest of safety, it should be confined to speeds under 100 mph where permitted by local law. When used at extra-legal speeds, it is imperative that cold tire inflation pressures be maintained daily at 32 PSI.

Emergency vehicles, such as highway patrol police vehicles which are customarily required to drive at speeds in the 100 mph to 125 mph range, should always be equipped with manufacturer's certified "pursuit" tires. The following three (3) tires are certified by Firestone as "pursuit" tires and should be used exclusively in such application:

Super 125 Nylon	(Previously Super 500 Nylon)
Super 125 Radial	(Previously Super 500 Radial)
Super 500 SRB	(Now discontinued)

As it is impossible to know whether tires sold to police organizations will be mounted on vehicles employed in routine police service, or as extra-high speed "pursuit" vehicles, we have advised all stores and dealers that effective January 21, 1975, they may sell only manufacturer's certified "pursuit" tires to police organizations.

Special attention should be given to cases in which the procurement is of a general nature, but there is a possibility that some of the tires procured will or may be used on police pursuit or other emergency vehicles. In such cases, the above information should be carefully reviewed with the governmental procurement office or purchasing agent with a view to obtaining the correct tire for the specific use or application intended.

(over)

Customers who have purchased radial passenger car tires for a use which may not be proper under the above guidelines should be contacted and advised to remove such tires from emergency vehicles and place them on normal passenger service vehicles belonging to their organization. You should then attempt to sell them one of the two Super 125 "pursuit" tires listed above for emergency vehicles use. You should also re-emphasize to all of your customers the necessity of daily maintenance of cold tire inflation pressures at 32 PSI for driving at extra-legal speeds. This will be particularly critical during the forthcoming Summer months.

If you have any questions on the above, please contact your district manager or district truck tire manager.

THE FIRESTONE TIRE & RUBBER COMPANY

ATTACHMENT E-4

B.F.Goodrich

VERY IMPORTANT—READ IMMEDIATELY!

BULLETIN

Bulletin No. #PP74-65 Date 7-31-74

B.F.GOODRICH TIRE COMPANY
RECOMMENDS PURSUIT RADIAL, STOCK SERIES 302,
FOR USE ON ALL TYPE POLICE VEHICLES

B.F.Goodrich Tire Company manufactures three sizes of Pursuit Radial Tires: Sizes GR, HR, and JR70-15. These tires are constructed of rayon belts and carcasses and have been tested and certified to be capable of driving up to 125 MPH.

B.F.Goodrich Tire Company strongly recommends that no other tire, bias, bias belted or radial steel, be offered for use on Police vehicles where the operator could be caused to drive that vehicle in excess of 100 MPH.

W. A. Kester,
Director of Field Sales

wb

	AREA
X	Area Mktg. Director
X	Mgr. Area Admin.
	Sup. Retread Service
	Arch. & Const. Sup
	Sup. Retail Service
	REGIONS
X	Regional Mgr
X	Dist. Mgr.-Fran. Sls
X	Dist. Mgr.-Retail Sls
X	Mgr. Reg. Sls. Admin.
X	Mgr. Franchise Sls.
	Contr. Tire Men
X	Class 1 BFGS
X	Class 2 BFGS
	Leased Dept. Sup.
	Leased Dept.
	Sup. Pt. BFGS
X	Comm'l Salesmen
	Retread Plants
	BFGS—B&W Depts.
	Reg. Acct'g

	TIRE DLRS.		
X	F	X	Max.
X	405		E
X	410		PR
	Associate		

	BAT. DLRS.		
	BFG	DELCO	
	A		7A-30
	B		RP-25
	Whlser		7A-20

	A&H DLRS.
	GENERAL
	Cust Rel. & Prod Ser
	Cr. Mgrs. & Sup
	Field Auditors
	Whse. S S. Mgrs.
X	Mgr. Direct Sls.
	Sup. Fleet Sls.
	Spec. Contr. Repr
	Sup. Mileage Sales
	Oil Co Personnel As Specified
X	Akron List

TAKE FOLLOWING ACTION

1. File in P&PM 2. Keep until Revised
3. File in your _____ Manual Passenger Section After ____ Page
4. Remove from _____ the following: _____

BFG-4864 7/74

B.F.Goodrich Tire Company
a Division of The B.F.Goodrich Company

LITHO. IN U.S.A.

B.F.Goodrich

VERY IMPORTANT—READ IMMEDIATELY!

BULLETIN

Bulletin No. GI-75-22 Date March 20, 1975

GOVERNMENT WARNS POLICE: USE ONLY HIGH SPEED TIRES ON PURSUIT VECHICLES

Steel belted radial passenger tires recently received national news coverage when statements were issued by both the Department of Justice and the Department of Transportation. Highlights of the statements are as follows:

1. A number of accidents, including two fatalities, have recently resulted when steel belted radials failed during pursuit in excess of 90 miles per hour. (No B.F.Goodrich tires are involved.)

2. Police agencies should purchase only tires designed for high speed pursuit for patrol vehicles that exceed 90 miles per hour.

3. Steel belted radials, in consumer use, "provide superior performance in many aspects of vehicle handling and tire durability."

B.F.Goodrich Recommendation

The B.F.Goodrich recommendation was originally stated in Product and Price Bulletin 74-65 sent to all retailers in mid-1974. This recommendation is emphasized as follows:

"B.F.Goodrich Tire Company manufactures three sizes of Pursuit Radial Tires (stock series 302-): sizes GR, HR, and JR 70-15. These tires are constructed of rayon belts and carcasses and have been tested and certified to be capable of driving up to 125 mph."

"B.F.Goodrich Tire Company strongly recommends that no other tire, bias, bias belted, or radial steel, be offered for use on police vehicles where the operator could be caused to drive that vehicle in excess of 90 mph."

B.F.Goodrich Tire Company

TAKE FOLLOWING ACTION

1. File in Product & Price Manual. 2. Keep until further notice.

3. File in your _____ Manual _____ Section After ____ Page

4. Remove from _____ the following: _____

	AREA
X	Area Mktg Director
X	Mgr. Area Admin.
X	Sup. Retread Service
X	Arch. & Const Sup.
X	Sup. Retail Service
	REGIONS
X	Regional Mgr.
X	Dist. Mgr.-Fran. Sls.
X	Dist. Mgr.-Retail Sls.
X	Mgr. Reg. Sls. Admin.
X	Mgr. Franchise Sls.
X	Contr. Tire Men
X	Class 1 BFGS
X	Class 2 BFGS
X	Leased Dept Sup.
X	Leased Dept
	Sup. Pt. BFGS
X	Comm'l Salesmen
X	Retread Plants
	BFGS—B&W Depts
X	Reg. Acct'g
	TIRE DLRS.
X	Key PR
X	Net
	Other
	BAT. DLRS.
	BFG DELCO
	A 7A-30
	B RP-25
	Whlser. 7A-20
	A&H DLRS.
	GENERAL
X	Mgr Mkt Devel
X	Cust Rel & Prod Ser.
X	Cr. Mgrs & Sup
X	Field Auditors
X	Whse S S Mgrs
X	Mgr Direct Sls
X	Sup Fleet Sls
X	Spec Contr Repr
X	Sup Mileage Sales
	Oil Co Personnel As Specified
X	Akron List

BFG-4864 12/74

B.F.Goodrich Tire Company
a Division of The B.F.Goodrich Company

LITHO. IN U.S.A.

The Goodyear Tire & Rubber Company

Akron, Ohio 44316

June 5, 1975

United States Department of Commerce
National Bureau of Standards
Washington, DC 20234

Attention: Jared J Collard, Acting Manager
Police Vehicle Program
Law Enforcement Standards Laboratory

Subject: High Speed Tires
for Police Vehicles

Gentlemen:

In reply to your letter of May 30, 1975 to Mr J W Timmons of our company, we are furnishing the information requested on police tires manufactured by Goodyear.

Following is a list of available police tires which, at this time, we have tested and certified up to a minimum speed of 125 mph.

I. Bias Type (Rib Design)

Size	Brand Name	Construction	Certified Speed Rating
G78-15	Police Special Nylon	4 plies nylon body	125 mph
H78-15	"	"	"
J78-15	"	"	"

II. Bias Belted Type (Rib Design)

G78-15	Police Special Polyglas	4 plies polyester body + 2 fiberglass belts	125 mph
H78-15	"	"	"
L78-15	"	"	"

III. Radial Tires (Rib Design)

Size	Brand Name	Contruction	Certified Speed Rating
DR70-14	Police Special Radial	2 plies polyester body + 4 rayon belts	125 mph
GR70-15	"	"	"
HR70-15	"	"	"
HR78-15	"	"	"
JR78-15	"	"	"
LR78-15	"	"	"

In addition to the above rib design tires, a line of winter tread tires is also available, which have been tested and certified up to a minimum speed of 115 mph which is the standard test for Goodyear.

Note: All of the above listed rib and winter tires are supplied in load range B (4 ply rating) construction.

Enclosed is a brochure covering our police special line of tires which provides engineering data for each size.

Very truly yours,

C T Wig

Manager
Government Sales Department

C T Wig
evk

ATTACHMENT E-6

MICHELIN

mailing address: P.O. Box 3467, New Hyde Park P.O., New York 11040

MICHELIN TIRE CORPORATION
Technical Group
2500 Marcus Avenue
Lake Success, New York

tel: (516) 488-3500 (212) 895-0900 cable: Pneumiclin Lake Success

31 March 1975

This is to certify that the following Michelin radial steel-belted tires are designed for maximum speeds up to 130 mph and for handling performance as required in applications such as police pursuit cars.

Tire Size Designation	Rims	Overall Width	Overall Diameter	Loaded Radius	Revs Per Mile	Max. Load	PSI	Tube Codes
205HR14XVS	5, 5½, 6, 6½, 7, 7½	8.2	27.0	12.2	773	1730	36	14H913
215HR15XVS	5, 5½, 6, 6½, 7, 7½	8.6	28.5	13.1	726	1860	36	15H913

JBW:abb

PIRELLI TIRE CORPORATION 600 [illegible] AVENUE [illegible]

PIRELLI

April 2, 1975

PIRELLI TIRES CERTIFIED FOR POLICE USE

Pirelli makes available tires certified for Police use in sizes 215-15 (replaces HR78-15) and 235-15 (replaces LR78-15). The tires are suitable for applications requiring high speed capabilities, such as Police Pursuit cars, and have:

- black sidewall
- load range B
- max. air pressure 32 P.S.I.
- max. speed rating 130 M.P.H.

NBS-114A (REV. 7-73)

U.S. DEPT. OF COMM. BIBLIOGRAPHIC DATA SHEET	1. PUBLICATION OR REPORT NO. NBSIR-75-734	2. Gov't Accession No.	3. Recipient's Accession No.

4. TITLE AND SUBTITLE

Report on an Investigation of the High Speed Hazards of Steel Belted Radial Tires on Police Patrol Cars

5. Publication Date: June 1975

6. Performing Organization Code

7. AUTHOR(S): Jared J. Collard

8. Performing Organ. Report No.

9. PERFORMING ORGANIZATION NAME AND ADDRESS

NATIONAL BUREAU OF STANDARDS
DEPARTMENT OF COMMERCE
WASHINGTON, D.C. 20234

10. Project/Task/Work Unit No.: 4409380

11. Contract/Grant No.

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16. ABSTRACT (*A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.*)

Two police fatalities and one permanent disability have been caused by catastrophic failures of steel belted radial ply tires during high speed police operations. More than 200 other failures were reported by one State highway patrol department. The report recommends that police departments use caution in selecting tires for patrol cars, and that tire manufacturers be required to provide evidence that the tires sold for police use have been tested and certified at speeds of at least 125 miles per hour.

17. KEY WORDS (*six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons*)

High speed radial tire hazard; radial tire failures; certification of steel belted radial tires

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