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A National Study of Hot Pursuit

A NATIONAL STUDY OF HOT PURSUIT

By EDMUND F. FENNESSY, JR.*

AND KENT B. JOSCELYN**

INTRODUCTION

HIGH speed police pursuit of motorists attempting to evade apprehension is a highly controversial topic bound up in the broader issue of what constitutes effective law enforcement. From a sizable and influential police viewpoint, freedom to pursue law violators is a vital measure of police deterrent capability—not only in terms of their traffic supervision mission, but also in relation to their broader crime control responsibilities. The basic argument advanced is that if police were forbidden to engage in hot pursuit, or unduly restricted, then chaos on the highways would be the result. In contrast, an equally influential group from the traffic safety community, particularly physicians, maintain that high-speed hot pursuits result in an unacceptable number of casualties and that life is too valuable to be jeopardized in the maintenance of what they regard as an unproven assertion.

One of the basic reasons for this divergence of opinion is the almost total lack of reliable information on the nature of the hot pursuit situation. In an attempt to resolve some of the basic questions of fact concerning the hot pursuit problem, the National Highway Safety Bureau [now the National Highway Traffic Safety Administration (NHTSA)] commissioned a national study of this problem by the Center for the Environment and Man, Inc., which was supported by the Indiana University Institute for Research in Public Safety.

The study was conducted to determine the nature and magnitude of the hot pursuit problem nationally and to prepare guidelines to assist policymakers in dealing with it. Specific objectives were to answer the following questions:

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- What is the law regarding hot pursuit and how has it been interpreted by the courts?
- How have police agencies translated the law into operational policy and training operations?
- How many high-speed pursuits occur nationally and what are the operational characteristics, consequences, and risks of such incidents?
- What existing and potential countermeasures are available and what are their merits and deficiencies?

The year long research project was completed in June 1970 and it is the purpose of this article to briefly summarize the major findings of that investigation.¹

I. THE NATIONAL STUDY

A. *The Hot Pursuit Situation*

The most commonly accepted definition of "hot pursuit" is: [a]n active attempt by a law enforcement officer on duty in a patrol car to apprehend one or more occupants of a moving motor vehicle, providing the driver of such vehicle is aware of the attempt and is resisting apprehension by maintaining or increasing his speed or by ignoring the law officer's attempt to stop him.²

A thorough definition is more complex. It can also refer to the pursuit of an offender across a jurisdictional boundary³ or of a motorist who is unaware that he is being chased, even though the police officer must attain very high speeds simply to catch up with him.⁴ The primary emphasis of this study, however, is on those instances where the *violator consciously attempts to evade apprehension*.

A common sequence of events leads to hot pursuit and its several possible outcomes. First, a driver commits a traffic violation or is engaged in some other activity that requires police intervention. Second, a police officer observes this action and decides to intervene or he is directed, usually by radio, to apprehend a specific motorist. Third, the suspect driver becomes aware of the officer's intention to stop him. Fourth, the suspect driver decides to evade arrest—the first significant

¹ E. FENNESSY, T. HAMILTON, K. JOSCELYN & J. MERITT, A STUDY OF THE PROBLEM OF HOT PURSUIT BY THE POLICE, Final Report to the National Highway Safety Bureau, [Contract FH-11-7220], The Center for the Environment & Man, Inc. [hereinafter cited as FENNESSY & JOSCELYN].

² Credited to Major E. W. Jones of the North Carolina Highway Patrol. It is clear, however, that the term has been implicitly understood to have this meaning for years.

³ This is more precisely called "fresh pursuit."

⁴ This type of "pursuit" is quite frequent, as the officer must attain high speeds (90-100 m.p.h.) simply to catch up with the speeder.

event in hot pursuit. Fifth, the police officer decides to pursue—the decisive event in hot pursuit. Alternatively, the officer might decide to let the suspect go, or to attempt some other strategy which would avoid hot pursuit. After the chase begins, there are few possible outcomes: the pursued driver may elect to stop, resulting in apprehension; the police officer may elect to stop, resulting in escape; or if neither driver chooses to terminate the chase, the third possible outcome will be a crash involving the offender, the police, an innocent bystander, or some combination of the three.

The pursued driver's action may be the result of a rational decision. For example, the risks of pursuit might be of less importance to him than the penalties of apprehension because he is a wanted felon or because his license is under suspension. The decision may result, however, from a less rational impulse. For example, he might be a teenage driver who panics; he might invite a chase for the "thrill," or he may simply be too intoxicated or otherwise impaired to understand the consequences of his decision.

Although elements of irrationality such as the personal challenge, a test of courage, or a hatred of criminals, might enter into an officer's decision to pursue, his decision is usually of a complex and rational nature. It will be influenced by the characteristics of the area, the performance characteristics of his vehicle, the type of road, the weather, the road conditions, other traffic, his estimate of the risk of the pursuit, the seriousness of the initial violation, the probable risks to the public of allowing the suspect driver to continue his evasion attempt, and a host of other factors that are a function of the particular incident. Other influences such as the stated and implied policy of his department, his training, the attitude and practices of his fellow officers, and his previous pursuit experiences, will also modify his decision.

All of these factors must be evaluated by the officer as he makes a decision, which under the best circumstances will result in the successful apprehension of the suspect vehicle without a crash. Under the worst conditions, the decision could result in death or serious injury to the officer or to others, as well as a lawsuit and departmental discipline if it is determined that the officer failed to exercise "due care."

The law has attached to the events in a typical hot pursuit various rights and duties. The authority of a police officer to engage in hot pursuit stems from his duty to apprehend

those persons who have committed or are committing a crime. Often the initial offense may be a traffic violation, but in all hot pursuit cases the pursuee's behavior constitutes the failure to obey the command of a law enforcement officer to stop.⁵ The pursuee is not relieved of any duties to obey normal traffic laws, but the pursuer is if he drives an authorized emergency vehicle (as statutorily defined), and if he exercises due care (privileged status theory)⁶ or due regard for the safety of others (right of way theory).⁷ In addition to pursuing, the police may use roadblocks in order to apprehend a fleeing motorist.⁸

If a collision occurs during hot pursuit, the pursuing officer and his employer will be exempted from civil liability if the officer has complied with the statutory standard of due care or due regard.⁹ Even when the pursuing officer has not met the statutory standard, the fashioning of a remedy for an injured third party may prove futile: most policemen have limited financial resources; liability of the police agency may be defeated by sovereign immunity; or, where there is no bar, the claims process may be unduly burdensome to the third party. Furthermore, if the negligent pursuee is uninsured or judgment proof, the third party must look to his own insurance coverage for compensation because the pursuee's negligence will not be imputed to the pursuer.¹⁰

B. The Study Design

The initial objectives of this study as stated by the National Highway Safety Bureau required the research team to obtain primary study data from a sample of representative U.S. police departments. Their records were to be the basic source of data, but it was found that police agencies simply

⁵ Either failure to obey a lawful order of a police officer or fleeing a police officer is a crime in all states. See, e.g., UNIFORM VEHICLE CODE §§ 11-103, 11-904 (Supp. 1969); FENNESSY & JOSCELYN, *supra* note 1, app. D, for a comprehensive list of state statutes.

⁶ For cases construing "due care" see *Torres v. Los Angeles*, 58 Cal. 2d 35; 22 Cal. Rptr. 866, 372 P.2d 906 (1962); *Parker v. Knox*, 147 Me. 396, 87 A.2d 663 (1952); *Altenberg v. Sears*, 249 Md. 298, 239 A.2d 569 (1968); *Varlaro v. Schultz*, 82 N.J. Super. 142, 197 A.2d 16 (1964). See also UNIFORM VEHICLE CODE § 11-106 (1967).

⁷ UNIFORM VEHICLE CODE § 11-405. See also FENNESSY & JOSCELYN, *supra* note 1, app. B, for a comprehensive list of state statutes.

⁸ *Kagel v. Brugger*, 19 Wis. 2d 1, 119 N.W.2d 394 (1963).

⁹ E.g., *United States v. Hutchins*, 268 F.2d 69 (6th Cir. 1959); *Pagels v. San Francisco*, 135 Cal. App. 2d 152, 286 P.2d 877 (1955); *City of Miami v. Horne*, 198 So. 2d 10 (Fla. 1967).

¹⁰ See generally *Pagels v. San Francisco*, 135 Cal. App. 2d 152, 286 P.2d 877 (1955); *Draper v. Los Angeles*, 91 Cal. App. 2d 315, 205 P.2d 46 (1949); *Chambers v. Ideal Pure Milk Co.*, 245 S.W.2d 589 (Ky. 1952); *Staton v. State*, 29 App. Div. 2d 612, 285 N.Y.S.2d 964 (1967).

were unable to provide us with valid historical data. Thus, a modified study design was implemented: a comprehensive survey of the law as it relates to hot pursuit was accomplished through a review of state statutes and associated case decisions,¹¹ seven sample sites were visited; a survey questionnaire was sent to 130 police departments serving cities of over 100,000 and to 48 state-level police agencies; previous research on the subject was reviewed; and after an initial analysis indicated that data from these sources was inadequate to meet the needs of the study, a 1-month, "real time" field study was developed.

C. Previous Studies

Our literature search identified almost 100 documents dealing directly or indirectly with hot pursuit. While many of these reports were useful in providing interesting descriptive or conceptual background material, we found only three documents that had quantitative substance. Unfortunately, each of these three reports had serious technical flaws.

A North Carolina Highway Patrol Study¹² of the problem was well conducted but is unreliable because of the very small (1 week) data sample. In addition, not enough detail is provided on quality control of the data to make any firm judgment as to the validity of its results. A Michigan State Police study was reported in a journal article,¹³ but despite numerous attempts on our part, the original study could not be located. The referenced article contained excellent detail on pursuit characteristics but almost no concrete information on study methodology or pursuit consequences.

The only national estimate of pursuit crash data we found was a 1968 report prepared by an organization known as the Physicians for Automotive Safety (PAS).¹⁴ This report attracted serious attention and received nationwide circulation by the news media. The dramatic nature of the PAS findings

¹¹ Interested readers are referred to FENNESSY & JOSCELYN, *supra* note 1, where over 100 pages are devoted to this particular approach. Commencing with a description of the legal parameters surrounding the emergency vehicle, the analysis discusses appropriate situations for operation, mode of operation, degree of care legally required by the operator, and the liability involved, such as the sanctions associated with "fleeing a police officer" and their possible deterrent effect on potential offenders.

¹² North Carolina Highway Patrol, Pursuit Survey, North Carolina, 1968 (mimeo.).

¹³ Frazier, *High Speed Pursuit*, 1961 POLICE CHIEF 38-40.

¹⁴ Physicians for Automotive Safety, *Rapid Pursuit by the Police: Causes, Hazards, Consequences: A National Pattern is Evident*, Springfield, N.J., 1968 (mimeo.).

(which were generally accepted at face value) provoked considerable editorial comment—much of it critical of the police. The basic conclusions of the study were:

- One out of five pursuits end in death.
- Five out of 10 pursuits end in injury.
- Seven out of 10 pursuits end in accidents.
- One out of 25 killed is a policeman.
- More than 500 Americans die each year as the result of rapid pursuit by the police.¹⁵

[There are] grave doubts on the payoff in rapid pursuit. The costs in deaths and injuries hardly sustain the risks involved, especially for the police and injured bystanders. The whole paramount concern is public health, we have no conflict in judging the value of human life before all other considerations.¹⁶

Closer examination of the PAS study by concerned law enforcement researchers disclosed some serious technical deficiencies. The primary area of criticism of the study surrounded the ratio statistics presented which were based on a 3-month sample of newspaper clippings. The number of pursuit accidents, the number of fatalities, and the number of injuries—serious and minor—were tabulated and extrapolated by PAS to obtain an annual estimate of the size of the problem. This data sample contains obvious biases; for example, pursuits where no crash occurred generally would not be reported.¹⁷ The fatality and injury totals, however, are reasonably reliable. The study indicates that 500 deaths and 1,200 injuries per year can be expected as the result of rapid pursuit.

D. Police Records

To determine the current state of affairs regarding pursuit policy, a request for material on such policies was sent to 130 cities with populations over 100,000 and the 48 state-level police agencies within the continental United States. A response rate of 40 percent (52 cities) was obtained from the city sites. At the state level, 22 replies were received—a response of about 46 percent.

The findings of this phase of the study indicate that existing police pursuit policy consists of three basic types:

- *Officer Judgment Model*: All basic decisions to initiate,

¹⁵ *Id.* at 14.

¹⁶ *Id.* at 15.

¹⁷ See FENNESSY & JOSCELYN, *supra* note 1, where numerous technical defects are pointed out; the most serious is the lack of reliable data on pursuit frequency.

conduct, or terminate hot pursuit are made by the street officer. His decisions are subject to internal review and possible legal action, depending on "due care" provisions.

- *Restrictive Policy Model*: There are certain restrictions on the officer's decision to initiate, conduct, or terminate a pursuit. Examples are: only pursue for felonies; no speed above 20 m.p.h. over posted limits; stop at intersections.
- *Pursuits Discouraged*: Officers are cautioned or discouraged from engaging in hot pursuit. None of the agencies, however, expressly forbids pursuit if there is no other choice and if it is an extreme emergency.

The officer judgment policy was by far (80 percent of the responses) the most predominant type in U.S. police agencies. A much smaller number of agencies (about 15 percent) subscribe to the restrictive model. Less than 5 percent of the police agencies responding to this survey have a formal written policy discouraging rapid pursuit.

Information on pursuit training was concurrently requested of the agencies, and project staff members attended pursuit driver training programs presented by the California Highway Patrol and the North Carolina Highway Patrol. These agencies are generally considered to conduct the most advanced training in this area. After reviewing the information obtained from the mailing, supplemented by detailed interviews with training experts, we can safely conclude that less than 25 percent of the nation's police officers with road patrol responsibilities have completed an adequate formal pursuit driving or emergency vehicle operations course.

Sixteen of the 74 responding agencies also provided us with quantitative data on hot pursuit problems. The quality of the data varied widely. In some cases, all we were given were pursuit-related fatalities; in others, the agency purported to supply us with complete information on the phenomenon.

Thus, inadequate, inconsistent, and sometimes suspicious records proved to be the first major obstacle to the study. After visiting the sample sites, analyzing the mail survey, and reviewing the literature, we concluded that defining the national implications of hot pursuit with a historical data collection approach was unworkable. The basic reasons for the deficiencies were:

- There is no universally understood terminology or law defining "hot pursuit," and a wide spectrum of confusing definitions exists. Without precise definition, it is impossible to equate the pursuit problems of one jurisdiction with those of another.
- There are no hard and fast standards in existence for charging violators who are apprehended as the result of a high-speed pursuit. Our preliminary study indicated that charges placed against such violators may often include the violation for which the pursuit was initiated, prior felonies, or acts committed or discovered at the point of capture. In short, the offender could be charged with almost anything, and often the specific act of fleeing the officer would *not* be included.
- Isolation of pursuit incidents or pursuit-related crashes through historical records analysis is exceedingly difficult because most police records systems are organized around names rather than offense types. Thus, if an offender is arrested for a pursuit-related incident, the record of this offense will be filed by his name. Retrieving this case from a manual records system would require an examination of all records to isolate the hot pursuit event.
- Pursuit events in which the offender eludes the police are seldom, if ever, permanently recorded.
- Records of pursuit are filed primarily for self-defense in the event there is adverse public reaction or civil lawsuit.
- Confusing and inconsistent practices prevail in the reporting of the pursuit-related accidents.¹⁸

Based on this analysis, it was clear that none of the departments could supply us with data that would enable us to

¹⁸ In two separate but similar accidents that occurred in a major city one charged the pursuing officer and the other the pursued violator. Both events began when an officer observed a violator drive through a red traffic signal. In both incidents the officer had the green traffic signal, so he immediately followed the violator. In each case, following standard operating procedures, the officer used his warning light and siren, and in each case, the violator stopped. No high speed chases, or any other acts that would endanger any motorist or pedestrians, were involved in the resulting "pursuit" accidents. In the first, the pursuing officer clipped the front bumper of a parked vehicle as he was attempting to park behind the violator. In the second, the violator, endeavoring to stop for the officer, drove over a small wooden plank which flipped onto the hood of the police car doing minor damage. In neither incident was the damage of sufficient amount to require the filing of an official state accident report. Both accidents, however, were recorded by the police department as "pursuit" accidents, because a police vehicle was attempting to stop a violator.

make a reliable determination of the total number of pursuits that occurred during the time period specified for the study.

E. *The Field Study*

With the inadequate data sources we found in the police records survey, it was impossible to validate and supplement these findings without a substantial and costly data collection program. Within the scope of this study, such an approach was infeasible. As an alternative, it was decided to embark upon a small field study which might lead to some results or conclusions that could be combined with other available data to provide a reasonably valid estimate of the national dimensions of the problem.

A program for data collection under controlled operational conditions was designed and four agencies agreed to participate: the North Carolina Highway Patrol; the Fairfax County, Virginia Police Department; the South Bend, Indiana Police Department; and the Bloomington, Indiana Police Department. A special collection form was designed and a staff member of the research team spent considerable time at each agency training the officers in its use. Following the training period, a full month's data were collected at each site. Follow-up quality control visits were also made to each agency to resolve any problems. Over 1,400 police officers participated in this study. The combined data from the four sites produced the following results:

- Forty-six pursuits were recorded by the 1,400 officers.
- One out of nine pursuits ended in a crash.
- One out of 15 pursuits ended in a minor injury.
- Eight out of 10 pursuits ended in the successful (no crash, no escape) apprehension of the offender.
- No fatal pursuit crashes were reported.
- Alcohol played a role in more than half of the pursuits.
- One out of 10 chases resulted in the offender escaping.
- Most pursuits occurred at night, and particularly during weekends.
- The apprehended drivers, as a group, had a significantly higher than "average" number of prior accidents, violation convictions, and suspensions.
- One out of seven chases involved vehicles that were "modified" to attain high speeds.
- Over 95 percent of the apprehended drivers were males

and were predominantly (75 percent) youthful (age 24 and under).

- One out of seven apprehended drivers, for whom records were available, was driving without a valid license (suspended, revoked, or no license at all).
- The longest chase distance reported was 15 miles, the shortest less than 1 mile.
- Twenty-eight percent of the chases took place in predominantly residential areas; the remainder occurred under primarily rural conditions.
- The average pursuit speed was 85 m.p.h. The average of the highest speeds attained during the 46 pursuits was 98 m.p.h. The maximum chase speed reported was 135 m.p.h. The lowest was 30 m.p.h. (during heavy traffic).

It is evident that these results are almost totally contradictory to those obtained during the PAS study. We do not make any claims that these results provide us with anything more than some initial quantitative suggestions, with respect to national conditions. We are convinced, however, that our findings are highly accurate in terms of the conditions existing at our test sites. These data were collected under controlled conditions and, as such, represent the only data of this type available. Thus, this brief field collection effort provides us with a stable baseline against which we will compare the data collected in other phases of this study.

F. *Extrapolating the Data*

The following findings are supported by a detailed examination of previous studies, data available from police agencies, and our 1-month field study:

- The majority of pursuit-related fatalities and injuries are incurred by the fleeing driver, his passengers, or uninvolved bystanders.
- The event that initiates the pursuit is a traffic violation in more than 90 percent of the cases.
- Young (under age 24) male drivers with relatively poor driving records are most likely to attempt to flee from a police officer.
- Alcohol plays a role in more than half of the cases.
- A significant number of known offenders (roughly 15 percent) were driving without a valid driver's license at the time they tried to evade apprehension.

- About 50 percent of the apprehended offenders had at least one prior license suspension or revocation on their records.
- Only a relatively small number (3 to 8 percent) of hot pursuits involve stolen vehicles.
- The majority of pursuits occur at night and particularly on weekends.

These findings, however, do not necessarily accurately characterize the scope of the hot pursuit problem on a national basis. With insufficient, vague, and unreliable data, the only reasonable way to define the national dimensions of the problem was to use careful estimation procedures based on extrapolation from the available data.¹⁹ Such estimates could not, of course, be precise. The best we could hope to achieve was a scientifically defensible estimate of the order of magnitude of the problem. With criteria developed and applied rigorously to the data, we arrived at "most probable or likely ranges" for pursuit, crashes, fatalities, and injuries. In a casual examination, the resulting ranges may seem too indefinite to be of value. Although imprecise, the estimates are the most accurate that can be expected at this time, and unless there is a pressing need for more statistically precise information, we believe them to be adequate for most conceivable decisionmaking purposes.

Our summary conclusion, based on all of the available evidence, indicates that each year, between 50,000 and 500,000 hot pursuits occur in the United States, and between 6,000 and 8,000 of these pursuits result in crashes. In pursuit-related crashes, we estimated that from 300 to 400 people are killed and from 2,500 to 5,000 people are injured. These values represent the "most likely" ranges, and were developed by means of extrapolation from all available evidence. The figures should not be converted to ratios (*e.g.*, one in 20 pursuits end in a crash) because of the lack of precise definition of the pursuit event and the variability and uncertainty of the area.

For each of these estimates, there are boundary conditions that represent conceivable, but extremely unlikely, values. For example, it is quite unlikely that less than 20,000 or more than 600,000 pursuits occur per year. Comparable "boundary" ranges are: for pursuit crashes, 2,000 and 25,000; for pursuit crash injuries, 2,000 and 15,000; for pursuit deaths,

¹⁹ See FENNESSY & JOSCELYN, *supra* note 1, for a detailed discussion of the methodology utilized in developing these estimates.

100 and 1,000. We emphasize that these are extrapolations of the available data, which are scanty at best.

II. RECOMMENDATIONS

Our primary recommendation is that local police agencies adopt a hot pursuit control program consisting of five components:

(1) *The development of a hot pursuit data base:* Without knowledge of the nature of the hot pursuit problem within a jurisdiction it will be impossible to formulate a rational policy or to avoid the misallocation of resources. The inability of the majority of agencies to supply us with any data on pursuits in their jurisdictions is disheartening and should be remedied. Thus, we strongly recommend the collection and analysis of a large seasonal sample of data on the incidence, characteristics, and consequences of hot pursuit and the collection and analysis of a representative sample of data on fleeing offenders' characteristics. Careful investigation should also be made of the reasons that underlie the decision to evade arrest and police officer pursuit motivation.²⁰ The collection of these data is a countermeasure that can be undertaken immediately and which will allow improved police training and policy formulation.

(2) *Limiting the number of hot pursuits:* A reduction in the number of hot pursuits will result in a reduction of the number of related crashes. The adoption of this policy should be dependent on the analysis of pursuit data by each police agency. This measure will not be appropriate if the pursuit crash experience is negligible.

(3) *Police hot pursuit driver training:* Training officers for hot pursuits is a matter of life and death. To be effective it must contain, as a minimum, 50 hours of: formal classroom training, practical driving instruction at a well-designed facility, skid-pad practice, and defensive driving instruction similar to the National Safety Council program.

(4) *Equipment to minimize risk:* The police vehicle is vital to the pursuit control program; it should be the best and safest available; but proposed equipment changes must provide benefits proportionate to the costs. As a minimum, it is recommended that police vehicles that are likely to engage in hot pursuit have sufficient speed to overtake any

²⁰ Although most of the officers in the field study sample who engaged in a pursuit were under 30, one 48-year-old officer accounted for four of the 46 chases.

stock vehicle manufactured in the U.S. and be equipped with the latest in safety features recommended by NHTSA. In addition, supporting communications and warning devices should be given the same attention.

(5) *Development of an increased capability to keep unlicensed drivers off the road:* The available evidence indicates that drivers whose licenses are suspended or revoked are involved in a disproportionate number of pursuits. The present system of suspension enforcement is simply not working. Thus, the development of an increased level of spot checks, surveillance, and investigation by the police will add some real deterrent to the existing system and should keep a number of suspended drivers off the road. The net result should be fewer hot pursuits.

Although hot pursuit is a problem that must be managed at the local level, it is clear that it is of national scope, and federal response is in order. A national agency should assist and encourage a representative sample of state, county, and municipal jurisdictions to engage in the hot pursuit data collection we have earlier recommended. The federal agency should prepare a data collection manual specifying definitions, procedures, and methods of reporting. The pursuit survey form used in the field study portion of this project is recommended as the collection instrument. Data subsequently obtained should be analyzed and disseminated to the widest possible audience in a continuing program that will identify trends and test countermeasures.

The data reviewed by this study indicate that individuals who attempt to flee from the police have a significantly higher number of accidents, a greater number of arrests and convictions for moving violations, and a much higher number of suspensions than "normal" drivers. A detailed national study should be made to determine the significant personality variables associated with these offenders so that appropriate screening, adjudication, and treatment programs can be developed. To provide for the development of treatment programs, it is recommended that the NHTSA encourage and assist state and local agencies in the implementation of an education program aimed specifically at high-risk drivers in order to provide them with knowledge of the personal risk, legal penalties, and social costs associated with hot pursuit.

It is also recommended that the NHTSA and other concerned federal agencies encourage and assist the states in

the development and construction of hot pursuit training facilities. The initial cost of each such facility should be in the neighborhood of \$250,000. The use of deactivated military bases should be explored.

We make two recommendations to state legislatures: First, increased penalties for the offense of fleeing a police officer should be studied. Second, each state should establish a compensation system funded from gasoline or highway use fees to provide financial relief to innocent third parties who are injured in the course of a hot pursuit and who are without recourse under the present system.

Numerous technical countermeasures, which could be useful in reducing the need for and the consequences of hot pursuits, have been suggested.²¹ None, however, is a panacea. Each will be costly to develop, and most of them will be alterable by a determined mechanic. Although detailed technical and operational studies will be required before any serious consideration be given them, the concepts are these:

(1) *Low-frequency remote ignition shut-down system:* A receiver unit, installed as an integral part of a vehicle's spark plugs, could be triggered from a pursuing vehicle and render the fleeing vehicle inoperative. It should be possible to produce these devices in large quantity for under \$1.00 per unit.

(2) *Speed limiting devices:* Design changes could be required in all new vehicles available to the public, or governors could be required on all new and used vehicles.

(3) *Vehicle identification system:* Passive transmitters that could be triggered either by units in police vehicles or by detectors imbedded in roadways could be installed in all vehicles. This system would enable the police to track an automobile without the need to maintain line-of-sight view of the fleeing driver.

(4) *Bystander warning systems:* A number of technical measures have been suggested to protect third-party drivers, and pedestrians. Improved sirens, visual signals, officer-activated traffic lights, and radio-interrupt devices present some initial possibilities.

²¹FENNESSY & JOSCELYN, *supra* note 1, lists and describes in detail all the proposed technical countermeasures.

CONCLUSION

Although an estimated 400 hot pursuit-related deaths per year represent less than 1 percent of all motor-vehicle-related fatalities, it is a significant absolute number. This study demonstrates that hot pursuit is a problem of national scope, and it suggests that hot pursuit is not an isolated phenomenon. It is closely related to other critical aspects of traffic safety, namely: alcohol abuse and driving, the problems of youthful drivers, ineffective enforcement of license suspension, and high speed driving. Thus our findings not only recommend the implementation of policies directly affecting the causes and consequences of hot pursuits but also strengthen the case for the development of integrated traffic safety measures dealing with many related problems.

