HELICOPTERS AND THEIR USE IN POLICE PURSUIT

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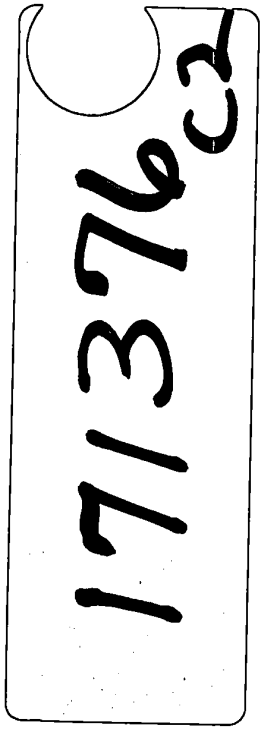

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Executive Summary

The primary purpose of this project was to generate information concerning the use of helicopters in pursuit operations. The project included ethnographic studies of the Aviation Units in Baltimore City and Metro-Dade (Florida) Police Departments, empirical analyses of their helicopter functions and a survey of citizens attitudes toward pursuits. The findings from the study demonstrate that helicopters provide a valuable and important service to law enforcement in general and to the pursuit function in particular.

In pursuits, helicopters can track vehicles and alert ground units to the suspects' direction, location and activities. This allows the ground units to turn off emergency equipment and slow to protect public safety while maintaining visual contact with the fleeing vehicle. This strategy has proven to be very successful in the apprehension of fleeing suspects and the reduction of risk to the public. Although criticisms about the use of helicopters in law enforcement have been raised, only the financial requirement remains a major obstacle to the maintenance and operation of a helicopter unit. However, placing a financial value on officer safety when a helicopter's spotlight illuminates a police officer and his suspect in a dark and secluded area is impossible.

The sequence of events for most of the pursuits reviewed during this research included a ground unit calling for air support after a suspect did not pull over for a traffic, felony or investigative stop. Usually, the driver of the ground unit would terminate his active pursuit by turning off his emergency lights and siren and slowing to the speed limit. Once the flight crew identified the fleeing vehicle, information about location, direction and activity was relayed to the ground units. In the vast majority of cases, the fleeing suspect would slow after a short distance and

then exit his vehicle. At this point, the flight crew directed the ground units to his location and an arrest was made.

The public opinion survey which was conducted in Baltimore demonstrated that citizens support the police in their attempt to apprehend suspects of serious crimes by pursuit but the support diminishes when the nature of the offense is not serious. Similarly, public support for pursuit decreases when information about the dangers of pursuit is presented.

As the use of helicopters in pursuit increases, developing policies to guide their use and the application of their crime-fighting tools will be important. For the safety of the public, requiring ground units to terminate their active involvement in a chase by turning off all emergency equipment and returning to the speed limit is important. Additionally, training must be required to provide both flight crews and ground personnel information that can enhance the use of the helicopter, alert them to issues and concerns about helicopter operations and ways to improve communication.

In sum, the use of helicopters in pursuit provides an excellent way to protect the public and apprehend suspects.

I. Helicopters in Law Enforcement

Throughout history, police departments have utilized various technological advancements to improve their abilities to fight crime and maintain public safety (Uchida, 1997). Technological advancements have improved a variety of areas in policing, including communication and transportation. For example, the advent of the two-way radio, cellular phone and computers inside police cars have all improved communication and the transfer of information. Similarly, transportation has also played an important part in the advancement of law enforcement strategies and tactics. Certainly, the use of the bicycle, motorcycle and automobile as patrol vehicles has changed the way law enforcement officers perform their duties. More recently, other vehicles such as boats and wave runners have changed law enforcement activities on water, while the use of fixed-wing aircraft and helicopters have assisted police activities by providing a presence in the air. All of these vehicles have served important roles to modify and improve police operations.

The long history of airplanes and helicopters in law enforcement is one of benefits and change: Aviation has improved both communication and transportation. While the general use of air support in police work will be addressed in this report, our focus will be on the use of helicopters in high-speed pursuits.

New York and Los Angeles were the first police agencies to create aviation units (Hoffman, 1996). These units utilized fixed wing aircraft to serve rescue tasks with minimal involvement in daily patrol activities (Hoffman, 1996). In 1925, the Los Angeles County Sheriff's Department formed an "on-call" reserve aero squadron. The success of this squadron convinced the Sheriff to maintain the unit on a full-time basis. The New York Police Department began using aircraft in the

mid-1920s and formed a permanent unit in 1929 (Dade County Department of Public Safety, 1971). It was not until the late 1940's that helicopters were utilized in any law enforcement activities. The first use of these aircraft was in New York City (Hoffman, 1996) to rescue civilians trapped in ice, to spot fires, to follow cars being pursued, and to find cars "buried in the swamps of Brooklyn and Queens" (Hoffman, 1996: 26). The helicopter was used in lieu of a fixed-wing plane because of its maneuverability in the sky.

The utility and success of the helicopter became known and its use spread from New York to other agencies. In 1956, Los Angeles County bought its first helicopter (Hoffman, 1996). It was used mainly to assist in traffic enforcement on the city's freeways (Hoffman, 1996). Its use became more diverse when helicopters were brought into service during the L.A. riots in 1965. The helicopter was used during these civil disturbances to spot problems and to direct officers and troops to troubled areas. Early assessments of the helicopter noted its effectiveness as an practical tool in "unusual occurrences and discreet surveillance," but it was thought to be a waste of money for patrol work (Hoffman, 1996: 26). Officer Jim Beall, of the Los Angeles Police Department was assigned to evaluate the Los Angeles Police Department (LAPD) helicopter patrol in 1965 (Hoffman, 1996). Although he was concerned with the inefficiency of using a helicopter for general patrol work, he praised their use in civil disturbances and other types of work which required surveillance (Hoffman, 1996). He also noted that a helicopter's panoramic view was helpful to law enforcement officers on the ground (Hoffman, 1996). Officer Beall's early observations have been credited with the justification of police aviation units throughout the country (Hoffman, 1996).

From modest beginnings, aviation in general and helicopters in particular have grown to play some role in more than 600 American police departments (Morrison, 1994). Traditionally, and for

obvious financial considerations, helicopters have been utilized mostly by large agencies. For example, departments serving populations of one million or more have a 75 percent or more likelihood that they will have at least one helicopter at their disposal (Local Police Department, 1993). Seventy-one percent of those serving a population of 500,000 or more have access to a helicopter (Local Police Departments, 1993). In those agencies serving 250,000 to 499,999, helicopters are available in 42 percent of the departments (Local Police Departments, 1993). Only a small percentage of agencies serving populations with less than 250,000 operate helicopters (Local Police Departments, 1993).

The reasons helicopters are so useful is that they can be employed in a variety of law enforcement activities. Many of the high-profile helicopters activities have included such activities as search and rescue and assisting stranded persons who could not be easily reached from the ground (Craig, 1975; Hoffman, 1996; McGowan, 1978c; Morris, 1995; Pauley, 1979). Helicopters have also been used to assist disaster relief in earthquakes, flooding, fires and other emergencies (McGowan, 1978c; Pauley, 1979). Beyond disaster relief, helicopters have been used in activities which aid directly in the detection, investigation and reduction of crime (Hoffman, 1996; DeFoor, 1981; McGowan, 1978a; Simonsen, 1975). Perhaps the most important function is the support they provide to ground units (Morris, 1995). For example, helicopters have supplied back up to patrol units in monitoring drug operations, tracking suspects, directing perimeter searches and high-speed chases (McLean, 1990). They can provide coordination of stakeouts or pursuit activities from "a vantage point no ground unit could command all in direct, second-to-second support of the forces on the ground" (McLean, 1990:34). In pursuits, helicopters can observe a vehicle safely and provide pertinent information to allow officers on the ground to stay close to the vehicle without being

spotted and to take appropriate action when a suspect has stopped or exited a vehicle. Helicopter support can also assist a call involving an officer in trouble by providing directions and, if necessary, a show of force (Hoffman, 1996).

The most common advantage of the helicopter is the information the pilot or observer can provide to the officers on the ground. Information can include location or direction of a fleeing suspect, traffic or environmental conditions, and direction and coordination of the ground units. This information can assist officers to respond to calls more quickly and reduce the need for unreasonable speeds.

In sum, law enforcement agencies have been aided by the versatility, vision, and speed of helicopters (McGowan, 1978a; McGowan, 1978b). The versatility of helicopters has been shown in its ability to track suspects, clock speeding automobiles, rescue endangered citizens, provide information and support officers on the ground. Versatility can also be seen in the helicopters ability to land on a variety of surfaces, including the ground, streets, roof tops or water (Hoffman, 1996). The vantage point of an observer in a helicopter can be described as a bird's eye view as compared to a worm's eye view, which is available to an officer in a patrol car. A helicopter has "30 times the visual range of a street-bound counterpart" (Yates, 1994, p. 65). Helicopters can travel slowly and at sharp angles to conduct circular observations and coordination of perimeters or at very fast speeds to respond quickly to areas at which support is needed.

There is little doubt that helicopters can assist law enforcement efforts. The one drawback is that of cost. Costs for helicopters include the initial purchase, maintenance and fuel as well as the costs of pilots and other flight personnel. Some of the initial capital costs can be reduced by purchasing the helicopter from the federal surplus property system (Morrison, 1994; Pauley, 1979).

The Department of Defense Authorization Act established the system to assist law enforcement agencies in "taking advantage of surplus equipment" from the Department of Defense and the Department of Justice (Morrison, 1994:61). The 1986 Act allowed law enforcement agencies to purchase surplus equipment from federal law enforcement agencies (Morrison, 1994). Agencies can ban together to purchase helicopters and share other costs (McGowan, 1978c). However, agencies are still faced with costs required to make the aircraft airworthy.

Other costs to maintain the aircraft are numerous. A location must be created or modified to permit storage and landing space. Many agencies can utilize space in existing airports. This choice would include easy access to mechanics, fuel and storage space. In any case, it is expensive to purchase, maintain and fly helicopters.

Another disadvantage of helicopters is noise. Helicopters are noisy instruments and their propellers create strong winds that can cause damage to persons and property by the winds picking up and tossing objects around the area below the aircraft. As a result, agencies have had to deal with negative publicity or anticipate issues and explain the problems and benefits to the public. Some agencies have anticipated the problems and forewarned their citizens. For example, the Pasadena, California Police Department had representatives visit civic groups, homeowner's associations, town hall meetings, schools, business and social organizations to explain the functions and possible concerns which are attributed to the use of helicopters (McGowan, 1978a). These public-relations information sessions helped generate strong support for the helicopter unit from community groups and the media (McGowan, 1978a).

A final disadvantage of the use of helicopters in policing is the risk. The risk of a helicopter malfunctioning during flight is always present. A malfunction could result in the helicopter crashing

to the ground and injury resulting to the pilot and others inside the aircraft. Also, any crash could result in property damage, injury or death if a helicopter were to crash.

Any justification of helicopters will involve a comparison between helicopters and the ground patrols. Obviously, the cost of helicopters is far above that of car patrols, yet helicopters can out perform automobiles in many tasks. It has already been stated that helicopters have extremely fast response times as they have uninterrupted routes and can travel at high speeds. The use of a helicopter can increase the number of cases an agency can handle (Hoffman, 1996) due to the flexibility and speed of the aircraft. Helicopters can handle up to three times as many service contacts than ground units (Simonsen, 1975). Although helicopters can cost significantly more than automobiles to purchase, operate and maintain, the effectiveness of the vehicle must be computed (Hoffman, 1996). A study of the Columbus, Ohio helicopter patrol found that the "cost-per-unit-of-output-per-hour resulted in a more equitable comparison of effectiveness between helicopter patrol and cruiser patrol" (Simonsen, 1975: 30). In Pasadena, a study found that a police car in an hour could effectively patrol 1/5 of a square mile (McGowan, 1978a). A helicopter could cover 7.6 square miles within an hour with the same effectiveness (McGowan, 1978a). It was also noted that helicopters could observe subjects from 500 feet at 60 miles an hour for 10 times longer than a patrol car (McGowan, 1978a). Advocates of helicopter patrols claim that helicopters can do the work of 10 to 15 ground units and offer the same effectiveness and crime reduction aspects of a ground unit (Stone & DeLuca, 1985; Yates, 1994). Another study reported that 85% of helicopter flights were dedicated to drug related tasks (McLean, 1990), including the tracking of suspects and vehicles, support during raids, and location of possible marijuana fields (Gaines, Kappeler & Vaughn, 1994). In sum, helicopters can provide unparalleled support to ground units but there will be a price to pay.

The information on the uses, costs and effectiveness of helicopters in police operations generally and pursuits specifically, it is apparent that the helicopter can play a crucial role. However, there is no existing literature that has examined the uses or productivity of the helicopter in pursuit operations. This report includes the findings from an ethnographic study of the use of helicopters in pursuit driving in Baltimore City and Metro-Dade Police Departments, an empirical assessment of the role of helicopters in pursuit in theses two agencies and findings from a public opinion survey conducted in Baltimore. The next chapter explains the methods used to collect the data sets.

II. Methodology

This project involved the collection and analysis of several data sets. First, an observational study of the helicopter functions in the Baltimore City and Metro-Dade Police Department Aviation Units was conducted. Second, an empirical assessment of helicopter involvement in pursuits was performed. Third, a public opinion survey of pursuit approval was conducted in Baltimore.

A. Observational Study of the Helicopter Units

The observational study of the helicopter functions included individual and group interviews with unit personnel from both Baltimore and Metro-Dade. Additionally, during the months of November and December 1996 and January 1997, considerable time was spent with the flight crews and other personnel. Numerous flights were taken to observe the nature and extent of work the helicopter crews performed. During the formal and informal interaction with members of the two units, field notes were taken that form the description of the functions of the helicopters.

B. Empirical Study of the Helicopter Pursuits

The empirical study of the pursuits which involved helicopters included reviewing forms and flight logs which were completed by the pilots and observers. Each unit had a different procedure for documenting its action. In Baltimore, there was no specific form to complete documenting participation in a pursuit. However, flight crews did complete daily run sheets which noted the various functions which were performed. These sheets were

maintained for the preceding 12 months. This enabled a review of daily records from July 1995 - June 1996.

These run sheets reported the frequency of pursuits, type of offense for which the pursuit was initiated, the number of arrested or escaped, the day and time in which the pursuit occurred, the time elapsed of the pursuit and the source of call for the pursuit as well as some accident information.

The Metro-Dade Aviation Unit requires pilots to collect specific pursuit information on "Vehicle Pursuit Summary" forms (see chapter IV). The department created a Vehicle Pursuit Log that reported the frequency of pursuits, type of offense for which the pursuit was initiated, number of arrested/escaped, bail outs, as well as accidents. The summary data from the Metro-Dade Aviation Unit covered the years 1994-1996.

Unfortunately, the data collected by Baltimore and Metro-Dade did not permit a sophisticated comparison or analysis because the agencies did not collect comparable data. Also, it was not possible to link the helicopter pursuit information to the information collected on ground pursuits for either agency. In fact, many situations which involved the use of the helicopter did not require a ground pursuit form being completed, as the ground units did not become involved in a pursuit.

Representatives from both agencies reported that there had not been any previous outside requests for information on helicopter involvement in pursuit driving. The inference was that no one had paid attention to the helicopter's use as a pursuit vehicle and only recently had either agency (Metro-Dade) been collecting specific data for each pursuit. This

is certainly an area that needs improvement. It mirrors the history of data collection on ground pursuits.

The collection and analysis of pursuit data from ground units have only a recent history. Although Metro-Dade has been collecting this information since 1982, many agencies have only recently been requiring their officers to complete special forms.

C. Public Opinion Survey

The sample population consisted of all residents, 18 years and older who live in Baltimore City. A random sample of 1300 phone numbers was purchased from Survey Sampling, Inc. of Connecticut. These numbers were selected from a random digit dialing procedure so as to include listed as well as unlisted residential phone numbers. The phone numbers were then entered into the computer in order to use the Computer Aided Telephone Interviewing (CATI) software.

Each phone number was called two times to obtain a response. Only 444 of the original 1300 numbers purchased from Survey Sampling were appropriate for the study. Three hundred and fifteen were not working numbers, 433 numbers were connected to fax machines or computers, there were 20 numbers at which no answer was received, 10 calls in which there was a language barrier, and 78 that were business numbers. Therefore, the final sample consisted of 444 respondents. Out of these 444 eligible numbers, 275 refused to answer the survey. As a result of these methods, the final sample of respondents was 169, which represented a 38% response rate.

Two survey instruments were administered. The first instrument was designed to elicit information on the publics' attitudes toward pursuit without providing any background

information. The second survey instrument first provided the citizen with some general information about the outcome of pursuits and then asked them to respond to specific questions. Specifically, respondents were told that approximately 40% of pursuits result in accidents, 20% of the pursuits resulted in injuries, and 1% of the pursuits resulted in a death. Additionally, they were told that nationwide, there are between 350 and 400 people killed per year as a result of police pursuit, and the police really have no way to stop a fleeing vehicle without setting up a roadblock, ramming the car or shooting it. The instrument which did not provide information to the subjects was completed by 92 (54%) citizens. The second instrument which provided the information about pursuits was completed by 77 (46%) of the subjects (see chapter V).

Trained interviewers from the University of Maryland's Interdisciplinary Health Research Laboratory called all potential respondents and explained the purpose of the survey. The respondents were informed that the survey was anonymous and confidential and that all responses used in subsequent analyses would be aggregate data. Furthermore, they were given the option to terminate the survey at any time. Once the respondents gave verbal consent to participate, the interviewers began the survey.

III. The Aviation Units of Baltimore and Metro-Dade Police Departments

Baltimore City is approximately 80 square miles with a population of roughly 750,000 people. The downtown area, next to the Inner Harbor, includes skyscrapers mixed with older, more traditional buildings. Outside the downtown area, the City is comprised of row houses and some high-rise apartment complexes. In most residential neighborhoods, alleys are located behind the row houses. However, away from downtown and the city center, neighborhoods become less densely populated and are characteristic of typical suburban areas. Generally, Baltimore is a densely populated area with narrow streets. The Baltimore Police Department has divided the City into nine police districts. The helicopter unit is responsible for all areas of the city.

In contrast, Dade County is approximately 2,000 square miles with a population of approximately three million people. The county covers a variety of areas, including rural, commercial and residential neighborhoods. It is certainly less densely-populated than Baltimore City.

The Baltimore City Helicopter Unit was formed in November 1970. Since its inception, the Helicopter Unit has used the same model Schweizer 300-C helicopter. This helicopter, according to the pilots in the Unit, is easy to maneuver, has three hundred and sixty degree visibility, and a relatively small rotor. These features allow the helicopter unit to patrol in all parts of the city. In addition, the 300-C helicopter is much more cost effective than other types of helicopters, with an hourly fuel cost of $75.00. The Schweizer 300-C, however, is limited to six hundred pounds and is therefore restricted to two passengers (a pilot and observer) both of whom cannot weigh over 380 pounds.

The Metro-Dade Aviation Unit was established in 1959 as the Sheriff's Air Patrol. Presently, the aviation unit owns three Cessna fixed wing airplanes and four Jet Long Ranger Helicopters (B206L-4). The fleet was upgraded after Hurricane Andrew. The Rangers are considerably larger than the Schweizer 300-C, holding up to seven people and equipment. The Metro-Dade Unit flies a helicopter larger than the Schweizer 300-C because they perform various functions, many of which were listed in Chapter I. The Jet Long Ranger Helicopters operating cost for fuel, oil, labor, maintenance and insurance is $260. per hour.

The helicopters used in both units are equipped with support equipment and crime-fighting tools which assist the officers with their mission as a patrol or response vehicle. The Baltimore Schweizers have VHF transceivers with which the pilot communicates with Air Traffic Control (ATC). They are also equipped with a siren, public address system, police radios, Nightsun searchlight, and Forward Infra-Red (FLIR) heat sensing system. The Metro-Dade Jet Rangers also have VHF transceivers, a public address system, police radios and a Nightsun searchlight, in addition to a FLIR system.

A. Purpose and Operations of the Helicopter Units

The main purpose of the Baltimore Police Department helicopter is to perform routine patrol at an altitude of 500 ft. and to respond to calls for service. The observer in the helicopter has a bird's eye view from his or her platform and can provide detailed support information to ground units. The main purpose of the Metro-Dade Police helicopter is to respond to calls for service. In both agencies, there are pilots who, when on patrol, assist ground officers by illuminating specific locations, suspects and vehicles. The difference between patrol in Baltimore and response in Metro-Dade is due primarily to the spacial distribution of the two jurisdictions and patrol time. In other

words, a helicopter can cover the 80 square miles of Baltimore in a fraction of the time it would take it to cover Dade county. Baltimore is primarily a dense urban area that covers only 80 square miles, and as a result routine patrol is possible and effective. In contrast, Metro-Dade's jurisdiction is spread out over 2,000 square miles. However, both units place high priority on responding to calls for service from both the dispatcher and the ground unit officers. As a result, both units play a crucial role during pursuits.

B. Responsibilities of Members of The Helicopter Units

In Baltimore, the flight crew includes the pilot and an observer. The primary role of the pilot is to fly the aircraft and make all necessary transmissions to ATC on the VHF radio, such as takeoff clearance, and communication with other aircraft while on patrol (Kincaid, 1995). The pilot is required to fly in (restricted) class B airspace. However, during the case of a covert surveillance the pilot may adjust his altitude, but only after obtaining a clearance from air traffic control.

In contrast, the observer does not operate any of the flight equipment. The observer's role is to operate the police equipment on board the helicopter. For example, the observer may use the siren or spot light to warn citizens of a dangerous situation or to get the attention of ground unit police officers or fire department personnel (Kincaid, 1995). The observer in certain situations may use the public address system on board the helicopter to communicate with individuals on the ground, for instance when the officer gives an order to a suspect.

The Metro-Dade flight crew is limited to a pilot. As in Baltimore, the helicopter is restricted to class B airspace. However, unlike Baltimore, the Metro-Dade pilot operates the radio, the Nightsun searchlight, and all other police functions of the helicopter. In fact, many of the Metro-

Dade pilots stated that they would rather fly alone as they can more easily maneuver and operate the searchlight while flying the helicopter than if they had an observer. The logic behind this statement is that the pilot is trained to maneuver the helicopter for his optimum vision and perspective and not that of an observer seated in the passenger's seat.

C. Equipment Uses

The police equipment, including the radio, searchlight and FLIR have numerous uses from the aircraft. Both units utilize the altitude as a platform, which provides the flight crew with a elevated view of the activities on the ground. The police radio provides the helicopter crew with several options. As the helicopter patrols, transmissions on the various channels can be monitored by the pilot/observer. For example, the city-wide channel receives and transfers requests for air support and alerts the pilots to major problems occurring in all parts of the city. Normally, the radio operator monitors both the city-wide channel and the channel of the district over which he is flying.

In addition to the use of the radio, the searchlight is also often used for both units during helicopter support. The searchlight is most often employed in low light situations at night, such as when an officer on the ground is following a suspect. Also, the searchlight is often used to illuminate areas, suspects, vehicles, and buildings during searches. While operating the searchlight over an area, the observers or pilots pay particular attention to shadowed areas as well as areas just outside the beam of light. This method is essential in cases where the light is being used to locate a suspect, as the suspect may attempt to flee along the perimeter of the searchlight (Kincaid, 1995). The observers or pilots also make sure to keep the beam of light in front of the ground officers while a search is being conducted to avoid back lighting the ground officers and ensuring their safety (Kincaid, 1995). In cases of pursuits, both helicopter units may use the searchlight to illuminate the

suspect, ground or vehicle in order for the person to understand that he or she has been identified by the helicopter.

Along with the searchlight, another commonly used tool by the observer in the Baltimore unit is the FLIR, an infrared system heat-differentiating identification system. This system is used at night to detect a heat source. For example, when the helicopter receives a request to search for a suspect, the infrared system is able to identify a heat source, and its shape. Often, suspects and weapons are identified as long as each is still warm. A typical scenario includes a situation where ground units search for suspects who have bailed out of a car and are hiding in a field or building. As a result of the searchlight and infrared system, the pilot/observer can often inform the ground units of the suspects exact location as well as if and where a suspect may have thrown down a gun.

Another approach, and the one utilized most often by the Metro-Dade Police Helicopter Unit, includes coordination between the helicopter and K-9 unit. For example, after the Metro-Dade helicopter helps establish a police perimeter, the dogs are brought in to search for and apprehend the suspect(s).

D. Basic Operations of the Units

The best way to describe the role of the helicopter has been affectionately described by one of the pilots as a "Bear in the air." It must be emphasized that flying in a helicopter for an extended period is extremely difficult, both mentally and physically. However, when in action, helicopter can respond more quickly than ground units, observe more area, provide back up for ground officers, and assist ground unit requests. These are all essential functions provided by the helicopter units in both municipalities.

Currently, in Baltimore, the helicopter unit's officers work two shifts, 11am to 7pm and 7pm

to 3am. This is accomplished with eight teams made up of eight flight officers (pilots) and eight police observers. All patrol flights include one pilot and one observer. Since the mission of the helicopter unit is to provide support for ground patrol units, the unit flies seven days a week, 365 days per year, with the weather permitting. The schedules are set up with two teams on each shift. Each flight operation lasts approximately two hours. When one flight is completed the next team takes off to patrol. Due to the costs of having two helicopters in the air at the same time, the policy is to switch crews on the ground at Martin State Airport. The crew being relieved remains at Martin State Airport (the Helicopter Unit Headquarters) and performs administrative duties for two hours until the same procedure takes place again. During the time of 3am to 11am, a call-in procedure is used if the need for helicopter support arises (Kincaid, 1995).

In Metro-Dade the helicopter unit's officers work 7am to 2am 365 days a year. Pilots average 2 to 4 hours of flight time per eight hour shift. The remainder of the time on the ground is spent performing administrative duties. In contrast to the Baltimore unit, during the hours the helicopter unit is not flying in Metro-Dade (2am-7am) there is no routine call in procedure. Unless there is an emergency or a planned tour, the helicopter is not available during those hours.

The Metro-Dade helicopter unit performs its mission out of two airports: the Opa -Locka Airport (north end of Dade County) and Tamiami Airport (south end of Dade County). The unit is divided this way so that it can provide the fastest response time possible to both northern and southern ends of Dade County.

The pilot and observer as a team in the Baltimore City Police Helicopter unit have separate duties that they are required to perform. Prior to each flight the pilot must check the weather and make sure all visual requirements for the flight are satisfied (three miles of visibility and 1,000 foot

ceiling). It is the pilots duty to make sure the aircraft is safe for operation (Kincaid, 1995). In contrast, the observer is responsible for all current crime related information and operating all of the police related functions of the flight. While on patrol the observer monitors the radio and makes sure that the helicopter responds to calls for service or requests for assistance throughout the whole city. In Metro-Dade the pilot performs all police duties and communications while flying by himself.

In addition, while on patrol the helicopter is not to fly in Baltimore any lower than 200 ft above ground level during daylight hours and a 300 foot clearance from the nearest obstruction during nighttime hours (Kincaid, 1995). However, during times of emergency, for example, when a lone officer needs back up in a dark alley discretion may be used by the pilot as to the proper level of altitude. Regardless, the helicopter unit's response depends on the specific request of the dispatcher, patrol units, detectives and other agencies, that call via the police radio for assistance. In other words, pilots may use discretion in emergency situations.

Similarly, the Metro-Dade unit usually maintains an altitude of 500 feet. One of the major problems faced by Metro-Dade pilots is the location of Miami International Airport (MIA), which is one of the busiest airports in the country and is located in the middle of Dade County. The air traffic and radio communications at and around the airport are strictly controlled. As a result, the Metro-Dade helicopter has difficulty establishing radio communication as well as getting permission to fly in areas near the airport.

Since the Baltimore helicopter unit is a two person team, when the helicopter unit receives a call it is the responsibility of the observer to obtain the location of the incident and to be familiar with the maps of the city in order to direct the pilot to the proper location. In comparison, the pilot in Metro-Dade performs all of these duties. Yet, both units use major landmarks in order to get to

a location as quickly as possible. It is the observer's duty in Baltimore and the pilot's in Metro-Dade to place in priority all calls that are dispatched to the helicopter. For example, violent offenses, in-progress (pursuits), and officer related incidents are given the top priority. In addition, depending on the location of the helicopter at the time of the call, the observer or pilot has the discretion to respond immediately to the call which will realistically receive their assistance.

Once the helicopter has received a call, it will obtain as much information about the scene, actors and environment, as possible. The helicopter, for example, will ask what units are involved that can provide the necessary information on a suspects description, vehicle color, direction of escape, and what weapons may be in use (Kincaid, 1995). Typically, the observer (Baltimore) or pilot (Metro-Dade) asks for the details of a subject or vehicle that will stand out from the air. For example, a suspects shirt and shoe's color or the make and color of a car that is being followed.[1]

Upon arrival to the scene of an incident many factors are used to determine the search process. For example, the observer may ask the ground unit for a description of the exact time that the incident occurred and what mode of transportation a suspect is in to determine how wide a search pattern is needed. In addition, in areas at night where street light is inadequate the searchlight is often used to track a fleeing suspect or provide reassurance to a ground officer that there is backup. In cases of fleeing vehicles the helicopter pays particular attention to the direction of the suspect vehicle and any major identifying characteristics.

Once contact with the target suspect has been made, the helicopter may fly in a variety of ways depending on what the situation dictates. For example, in a car jacking situation where a

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[1] From flight observations in the Helicopter Unit, it is clear that vehicles and persons on the ground can often be clearly identified by basic color of apparel and vehicle descriptions.

suspect vehicle is traveling at a high rate of speed attempting to elude a ground unit, the helicopter may hover in a race track pattern off to the side of the suspect. The helicopter unit also typically flies in a circular pattern to help set up a perimeter in cases where suspects are fleeing on foot. This is often used in the Metro-Dade helicopter unit with the help of the K-9 unit. The helicopter with its searchlight provides additional lighting for the K-9 officers. Also, the helicopter unit typically informs the ground unit if there are any gaps in their perimeter set up where the suspect(s) could escape.

E. Pursuit Operations

Baltimore has a discouragement policy for vehicular pursuits and Metro-Dade has a policy that only permits pursuits for violent felonies. That is, in Baltimore, a ground pursuit will be permitted by a supervisor in only the most critical situations. In Metro-Dade, a pursuit will be continued only for a violent felony. Once a ground unit initiates a traffic, investigative or felony stop, and the suspect refuses to pull over and begins his attempted flight, unless the pursuit is justified by policy, the ground units will slow down and turn off all emergency equipment to achieve what the former Sergeant of the Baltimore Helicopter Unit stated was, "to avoid pushing the fleeing vehicle" (Sgt. Doug Womack, personal communication, July 14, 1994). Therefore, in most cases in which a suspect flees, the ground units will not pursue a suspect but terminate his or her involvement unless a helicopter is available. When a helicopter is available, the ground unit(s) will terminate its active pursuit by turning off its emergency equipment and slowing down, but will stay in the general area of the suspect's vehicle. The ground unit officers will rely on the information being transmitted by the helicopter crew for direction and information. The ground units from both departments will follow at a safe distance so that the suspect(s) does not recognize the police

presence. In Baltimore, the observer will sometimes take a picture of a suspect or vehicle with a 35mm camera to provide further evidence for investigations and court cases (Kincaid, 1995). The plan in both departments is to observe the suspect until he stops and exits the vehicle at which time a ground unit can move in and take the person into custody. Of course, there are exceptions to this practice. For example, in situations where a suspect is driving erratically, running through controlled intersections, and endangering people, an observer (Baltimore) or pilot (Metro-Dade) may use the Nightsun searchlight to warn others that the subject is coming or to make the suspect aware of the helicopter's presence in hope that the suspect will end his flight. Besides the radio, the Nightsun searchlight is the one tool that is available to the helicopter flight crew.

The Nightsun searchlight is not used in either department to blind the suspect driving a fleeing vehicle to force him or her to pull over. There are two major reasons to avoid using the Nightsun searchlight to blind the driver of a fleeing vehicle. First, shining a light on a fleeing suspect serves no law enforcement goal. Second, blinding a driver might cause him or her to loose control of the vehicle and crash. This may result in the loss of property or life. However, in order to blind a driver with the Nightsun searchlight, it is necessary to fly in front of the vehicle, maintain a steady altitude and stay even with the vehicle, which during a high speed pursuit is very difficult. The Nightsun searchlight does serve several important functions in a pursuit. In can light the vehicle so police on the ground can see it, it can light the area to alert civilian motorists of an on-coming danger and it can light the roadway should the fleeing suspect turn his lights off. One note of caution, however, spotting a fleeing vehicle can alert the driver to the presence of a helicopter. This presence may influence the driver to pull over and terminate his flight. It may also influence the driver to continue his flight. In either case, the operator of the Nightsun searchlight must be trained

in its use and misuse. For example, if a Nightsun searchlight has illuminated a vehicle and it continues to flee, the operator must ask himself, what is the purpose of the Nightsun searchlight? If it is not serving an intended and appropriate goal, then it should be turned off or turned away from the fleeing vehicle. The extended use of a Nightsun searchlight which has not influenced a suspect to stop, and is really doing nothing more than lighting up the vehicle, may be detrimental to the intent of its use.

The most powerful searchlight shining on a fleeing vehicle may be annoying but it is not detrimental to the driver of the vehicle. As the helicopter moves around, the light follows its path and moves form side-to-side of the car or from front-to-back. The few times its beam hits a mirror, it can be irritating but does not disrupt the driver's ability to control his vehicle. It is not as troublesome as a searchlight being reflecting off mirrors from a trailing car.[2]

All of the methods together: aerial observation; use of the searchlight; the infrared system; the radio contact with ground units; and the use of a camera provide an effective method of assisting in general police duties.

F. Culture of The Units

Overall, the relationship between the crew as well as the ground unit is essential for safe completion of the aerial law enforcement mission. In Baltimore, members of the Helicopter Unit attend district roll-calls and in-service training to inform officers how they may involve the helicopter's unique vantage point. In fact, the uses of the helicopter are taught in the pre-service academy. The communication between ground units and the helicopter is critical.

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[2]Helicopter searchlights were used to illuminate the principal Investigator's vehicle under several conditions. Ground units' searchlights were also used to illuminate the principal investigator's car.

Although the Baltimore City Police Department policy strictly defines the separate roles of the pilot and observer, the crew acts as a team in completing its mission. The observers are street officers who are assigned to the unit and enter with no special training. The pilots have specialized helicopter licenses and training, but still go through the same hiring and police academy training as other officers. However, the starting salary for a police helicopter pilot is approximately $8,000 more than that for a beginning patrol officer. This is due to the fact that in order to be a pilot one must have extensive prior flight experience and training.

The pilots in the Metro-Dade unit are crossed trained on fixed-wing aircraft and are sworn officers selected from the ranks of street officers. Their pay is also more than the street officer.

Regardless, it is the general consensus of both units that the relations between the pilots and other ground officers is healthy and that they are considered part of the same team. For example, helicopter unit officers in both Baltimore and Metro-Dade have been told by ground unit officers that they feel more confident having the helicopter as a backup, especially in dimly lit areas. Furthermore, the helicopter officers from both units note that in cases where an officer has been alone and there is a large crowd gathering, that the helicopter hovering over acted as a deterrent and kept people from harming the officer. In addition, officers in both Baltimore and Metro-Dade Helicopter Units after completion of a police mission often receive verbal thanks over the police radio from ground unit officers.

The next section of the report will present examples which demonstrate the types of situations in which the helicopter crews are involved. They are drawn from experiences of both the Baltimore and Metro-Dade Police Departments Aviation Units.

G. Examples

Example #1:

In the fall, 1996 the helicopter unit received a call for backup in the pursuit of a suspect who allegedly killed two people. The ground unit officers, assisted by the helicopter unit, followed the suspect until the suspect bailed out of his car and then ran on foot into a dark wooded park. The ground unit officers didn't know exactly where in the wooded area the armed suspect was hiding. However, the helicopter unit was able to locate the suspect hiding behind some bushes with the use of a FLIR. The helicopter shined the searchlight on the suspect and informed the ground units of the suspects location. Immediately after being identified by the searchlight, the suspect jumped up and ran towards the ground unit officers firing his gun at the same time. The nearest officer barely jumped out of the line of fire. However, another ground unit officer returned fire killing the suspect.

Example #2:

A police officer called in the license plate of a parked vehicle as two males leaving a pizza restaurant (one carrying a pizza box) approached the vehicle. The radio dispatcher informed the officer that the car was reported stolen. As a result, the officer turned on his emergency lights, ordering the suspects to pull their vehicle over. The suspects then proceeded to flee and got out of the officer's sight. At this point, the officer called the helicopter unit for assistance in locating the fleeing suspects. Soon after, the police helicopter was able to locate the stolen vehicle parked on the side of the street with two suspects (one carrying a pizza box) walking on foot away from the vehicle. The helicopter unit then informed the ground unit of the suspect vehicle and the direction the two suspects were headed. The ground unit officers responded quickly to the scene and were

able to make an arrest on the two suspects. One suspect was still carrying a pizza box which had the address and phone number of the pizza restaurant where the two suspects had been identified. A ground unit officer then radioed the helicopter that the pizza was still warm.

Example #3:

Another pursuit involved a case of a commercial robbery in which the suspect led the ground unit on a lengthy pursuit throughout the jurisdiction. The ground units were able to block off intersections and let the suspect drive freely without endangering potential on-coming traffic. As a result, no accident occurred with other civilians. The suspect then turned a corner, lost control of the vehicle, spun out and then bailed out of the vehicle. The helicopter officer then saw the suspect reach back into the car and grab a handgun. The helicopter unit then followed the suspect as he ran and informed the ground units of his location. Soon after, the ground unit officers were able to capture the suspect and place him under arrest. However, upon arresting the suspect the ground unit could not find the suspect's weapon. The helicopter, from its ability to follow the suspect from the air, was able to locate an area between two houses where the suspect dumped the gun. As a result, the ground unit officers were able to recover the gun and make a successful arrest.

Example #4:

The helicopter unit responded to a call for backup in a the case of a suspected stolen vehicle that refused to pull over and was attempting to allude the ground unit officers. Soon after, the helicopter unit was able to get the suspect vehicle in sight as it turned a corner, crashing into the back of an other car. The flight crew observed the driver bail out of his wrecked vehicle and proceed to run through several yards. The helicopter pilot kept the suspect in sight and informed the ground unit of his suspects location. As a result, the suspect was apprehended in a residential yard by the

ground unit officers and placed under arrest.

Example #5:

A helicopter unit was requested to locate a possible stolen green vehicle. The helicopter unit responding was able to get the vehicle in sight and inform the ground unit of its location. The vehicle then turned onto a side street. At this point, the helicopter unit observed the driver of the vehicle and its passenger bail out of the vehicle, letting the vehicle crash into a parked car. Because the ground units were in close proximity, the officers were able to arrest the driver at the scene. However, the passenger ran in another direction and was able to avoid apprehension temporarily. The helicopter unit officer then placed the searchlight on the suspect as he ran with the ground unit officers chasing behind. The suspect ran through several residential yards ducked into an alley. The helicopter, viewing all of the suspects moves, informed the ground units of the suspect's location. As a result, the suspect was apprehended in the alley.

Example #6:

The helicopter unit responded to a call from the dispatcher to a car jacking which occurred outside an ATM machine. Prior to fleeing, the car jacking suspect crashed the vehicle into a parked car. The helicopter unit was able to locate a vehicle traveling eastbound that matched the car jacked vehicle's description. The helicopter unit then informed the ground units of the suspect vehicle location. The ground units soon responded to the scene and followed the suspect at a safe distance (without any emergency equipment).

Eventually, the suspect bailed out of the vehicle with an officer chasing on foot behind. However, the suspect ran behind a parked mini-van and in front of an oncoming police vehicle. As a result, the police car not being able to stop in time struck the suspect. The injured suspect was then

placed under arrest. Throughout this pursuit the helicopter unit kept the ground units informed of the suspect vehicle location, which allowed the ground units to follow at a safe distance.

Example #7:

A helicopter unit responded to a backup call for an armed car jacking. The victim of the car jacking alleged that two assailants approached his car, one of whom was armed, and forcibly removed the victim from his vehicle. The helicopter unit was able to observe the suspect vehicle and inform the ground units of its route. As a result of the traffic stop, a pursuit was initiated in which the suspect vehicle drove recklessly throughout a crowded business district to avoid apprehension. In this case, the suspect vehicle drove the wrong way down one-way streets. Finally, the suspect vehicle, as it turned onto a side street, crashed into a marked police car. As a result, the suspect vehicle was disabled and the driver arrested. The helicopter unit followed the suspect vehicle throughout the pursuit informing the ground units of its location and watching for potential bail outs.

All seven of the above cases indicate the usefulness of the helicopter in cases of pursuit. In all the above described cases, the helicopter units provided the ground units with aerial surveillance that allowed the ground units to follow a suspect vehicle at a safe distance and in most cases without the use of emergency equipment. In addition, the helicopter units provided the ground officers with crucial information, such as reporting if suspects had weapons in their possession. The information provided to ground units from the helicopter flight crews was very important to officer safety, public safety and the immediate arrest of many suspects.

IV. Empirical Study of Helicopter Pursuits

As a result of our observations of the helicopter units, the primary question considered was the effectiveness of a helicopter in pursuit?

The problems of data collection and differences in data elements that were available from each agency precluded some comparisons and analyses of data. However, the data do permit some basic comparisons on the issue of effectiveness and reasons for pursuits. The remainder of this chapter will report on data collected from Baltimore from July 1995 through June 1996 and from Metro-Dade for the calendar year 1996.

TABLE 1. PURSUITS INVOLVING HELICOPTERS

Site	Year	Number	Arrested	% Success	Accidents
Baltimore	1995/96	89	74	83	N/A
Metro-Dade	1996	43	39	91	12

The Metro-Dade helicopters were involved in 43 pursuits (see Table 1). Thirty -nine pursuits (91%) resulted in an arrest. In comparison, Baltimore helicopters were involved in 89 pursuits, 74 of which resulted in an apprehension (83%). These statistics indicate that in both departments the use of the helicopter in pursuits is highly successful. In addition, there were similarities in both departments in terms of the reason for pursuits.

In both helicopter units, a stolen car was the most common reason for a pursuit. There were

21 (49%) pursuits involving a stolen car in Metro-Dade and 38 (51%) in Baltimore. In addition, there were 10 (23%) pursuits for an armed robbery or robbery in Metro-Dade compared to 9 (12%) pursuits for similar reasons in Baltimore (see Table 2). The Baltimore Helicopter Unit reported that the specific type of robbery involved carjacking in 7 out of the 9 robbery pursuits. Overall, the data indicate that once a helicopter becomes involved in a pursuit, the result will be an arrest. It is unfortunate that the data were not more comprehensive or comparative. However, it is important to note that approximately 75% of the helicopter pursuits in Metro-Dade involved a suspect who bailed out of his vehicle and almost all pursuits which had the assistance of a helicopter resulted in an apprehension. Although there were accidents resulting from the helicopter-involved pursuits, none was serious and none resulted in a serious injury.

TABLE 2. REASONS FOR PURSUIT

Reason	Metro-Dade	Baltimore
Stolen Car	21	38
Robbery	10	9
Traffic	2	12
Other*	10	22

* Other includes miscellaneous felony and misdemeanor offenses that were not the same offense categories across both units.

The most common scenario included a helicopter following a vehicle from which one or more suspects bailed-out. The most common outcome of such a scenario was an arrest of one or more suspects. There were many "pursuits" that did not involve ground units until the suspect had exited his vehicle and ran from it once it had stopped. Both Baltimore and Metro-Dade had additional findings that are presented in appendices.

Chapter 4: Empirical Study of Helicopter Pursuits

Appendix A

Metro-Dade Police Department Helicopter Data

Metro-Dade Police Department Helicopter Pursuit Reporting Form

Appendix B

Baltimore City Police Department Helicopter Data

Appendix A: Metro-Dade Police Helicopter Data

Metro-Dade Pursuits Involving Helicopters						
Year	Number	Felony	Bail Out	Accident	Arrested	Escaped
1994	56	50	38	16	53	3
1995	64	48	49	17	60	4
1996	43	40	32	12	39	4

Reasons for Helicopter Involvement in Pursuits					
1994		**1995**		**1996**	
Unspecified Felony	31	Stolen Car	27	Stolen Car	21
Stolen Car	14	Unspecified Felony	15	Robbery	7
Suspicious Car	4	Robbery	7	Smash & Grab	5
Armed Robbery.	3	Traffic	4	Armed Robbery.	3
Unreported	2	Suspicious Car	4	Traffic	2
Burglary	1	Smash & Grab	3	Burglary	2
Assault on Police Officer	1	Hit & Run	2	Battery on Police Officer	1
		Drive-By Shooting	1	Narcotics Investigation	1
		Unreported	1	Hit & Run	1

VEHICLE PURSUIT SUMMARY

SPECIAL PATROL BUREAU

AVIATION UNIT

MONTH: _____ YEAR: ____ ENTITY: Special Patrol Bureau Aviation Unit

TOTAL NUMBER OF PURSUITS FOR MONTH: _____

REASON PURSUIT BEGAN (#):

Traffic _____ Suspicious Vehicle _____ Other _____

Felony _____ Stolen Vehicle/Tag _____

PURSUITS TERMINATED BY (#):

Accident ____ Officer ____ Supervisor ____ Lost ____

PURSUITS RESULTING IN DAMAGE TO (#):

Police Vehicle _____ Subject Vehicle _____

Other Vehicles _____ Property Damage _____

OTHER AGENCIES INVOLVED (#): _____ OTHER DISTRICTS (#): _____

AREA (#):

Residential _____ Commercial _____ Rural _____

REMARKS:

Appendix B: Baltimore City Police Helicopter Data

Baltimore Pursuits Involving Helicopters 1995 - 1996		
Number	Arrested	%
89	74	82

Reasons for Helicopter Involvement in Pursuits	
Offense	Number
Traffic	54
Car Jacking	7
Drug Crimes	6
Foot Chase	5
Theft	4
Breaking & Entering	2
Assault & Robbery	2
Handgun Violation	2
Homicide	1
Unknown	6

V. Public Opinion Toward Pursuit Driving

This section reports the attitudes of citizens toward police pursuit. Citizens were questioned specifically on their opinions toward the police conducting pursuits for various law violations, first under low-risk conditions then under high-risk conditions. The levels were defined uniformly by the interviewers. Additionally, two instruments were utilized, one which provided subjects with information concerning the dangers of pursuit and another which did not provide any information to the subject. The data presented below also include results from a similar survey conducted in Omaha and Aiken County, South Carolina which were presented as part of the original report (Alpert et al., 1996). The data from the other jurisdictions are presented for comparison but are limited to the high, low-risk level questions. The first analysis includes responses to questions concerning general support for pursuits under high-risk conditions. Second, responses to questions concerning general support for pursuit under low-risk conditions are presented. Third, responses to questions concerning support for pursuit in one's own neighborhood under both risk conditions are presented. Fourth, the differences in responses to the instrument that provided results of pursuit driving and the one that provided no information will be presented under low-risk conditions. Finally, data from questions concerning possible problems created by helicopters are discussed. The questionnaires are in Appendix A. These data were broken down by demographic variables and the results of this analysis are available as an Attachment to this report.

High-Risk Conditions

Under high risk conditions involving traffic violations, approval for police pursuits was given by 13% of the respondents from Omaha, 30% of the respondents from Aiken County and 27% of respondents from Baltimore. Property crime-misdemeanor pursuits were approved by only 21% of Omaha respondents, 38% of the respondents from Aiken County and 36% of those from Baltimore. Pursuits for property crime-felony pursuits (other than those involving stolen vehicles) were supported by 48% of the respondents from Omaha, 61% of those from Aiken County and 50% of those from Baltimore. When a vehicle was stolen, 44% of respondents from Omaha, 77% of respondents from Aiken County and 48% of those respondents from Baltimore supported the police when they pursued the suspect. Seventy-one percent of Omaha respondents, 77% of Aiken County respondents and 70% of Baltimore respondents approved pursuits for DUI. Violent felony-no reported death pursuits were approved by 88% of Omaha respondents, 74% of Aiken County respondents and 68% of Baltimore respondents. For violent felony-reported death pursuits 96% of those from Omaha, 90% of those from Aiken County and 83% of those from Baltimore approved pursuit by police. In cases in which a police officer was shot, 97% of those from Omaha, 91% of those from Aiken County and 86% of those from Baltimore approved a pursuit.

At this high level of risk conditions, the least serious offenses received the largest differences among respondents. A pursuit for a traffic offense was supported by 13% of the Omaha respondents and 30% of those from Aiken County. For incidents involving property crimes- misdemeanors, 38% of Aiken county respondents supported pursuit and 21% of respondents from Omaha supported pursuit. Sixty-one percent of respondents from Aiken County supported pursuit while 48% of respondents from Omaha supported pursuit for incidents involving property crime felonies. Incidents

involving stolen vehicles received 62% support from respondents in Aiken County and 44% support from respondents in Omaha.

Table 1

High Risk Conditions
Percent of respondents approving pursuit for specified offenses:

	Aiken County	Baltimore	Omaha
Traffic Violation	30%	27%	13%
Property Crime - Misdemeanor	38%	36%	21%
Property Crime - Felony (Other than stolen vehicle)	61%	50%	48%
Stolen Vehicle	62%	48%	44%
DUI	77%	70%	71%
Violent Felony - No Reported Death	74%	68%	88%
Violent Felony - Reported Death	90%	83%	96%
Police Officer Shot	91%	86%	97%

Low-Risk Conditions

Under low-risk conditions involving traffic violations, approval for a police pursuit was given by 47% of the respondents from Omaha, 68% of the respondents from Aiken County and 81% of respondents from Baltimore. Property crime-misdemeanors pursuits were approved by only 50% of respondents from Omaha, 66% of those from Aiken County and 62% of those from Baltimore. In property crime-felony pursuits (other than those involving stolen vehicles), approval for a pursuit was given by 83% of respondents from Omaha, 84% of those from Aiken County and 73% of those from Baltimore. In stolen vehicle pursuits, 84% of Omaha respondents, 83% from Aiken County and 91% from Baltimore approved. In Omaha, 93% of respondents approved DUI pursuits, with approval coming from 88% of those in Aiken County and 82% of those in Baltimore. For violent

felonies with no-reported death, 97% of the respondents from Omaha, 91% of those from Aiken County and 85% of those from Baltimore approved pursuits. All of the respondents from Omaha, 99% of those from Aiken County and 83% of those from Baltimore approved pursuits for violent felonies with a reported death. Ninety-nine percent of respondents from Omaha, 98% from Aiken County and 80% for Baltimore approved of a pursuit when a police officer was shot.

As under the high-risk conditions, the largest differences were in the least-serious offense categories, including traffic and property crimes. A pursuit for a traffic offense received support ranging from 81% of the respondents in Baltimore to 47% of the respondents in Omaha. Property crime-misdemeanor received 66% support from Aiken County respondents and 50% support from Omaha respondents. For property crimes involving felonies, 84% percent of Aiken County respondents supported pursuit compared to 73% of the Baltimore respondents.

Table 2

Low Risk Conditions

Percent of respondents approving pursuit for specified offenses:

	Aiken County	Baltimore	Omaha
Traffic Violation	68%	81%	47%
Property Crime - Misdemeanor	66%	62%	50%
Property Crime - Felony (other than stolen car)	84%	73%	83%
Stolen Vehicle	83%	91%	84%
DUI	88%	82%	93%
Violent Felony - No Reported Death	91%	85%	97%
Violent Felony - Reported Death	99%	83%	100%
Police Officer Shot	98%	80%	99%

Neighborhood Pursuits

Under high-risk conditions involving traffic violations, approval for a police pursuit in one's neighborhood was given by 37% of respondents from Baltimore. Property crime-misdemeanors pursuits in their neighborhood were approved of by only 38% of those from Baltimore. In property crime-felony pursuits (other than those involving stolen vehicles) in one's neighborhood, approval for a pursuit was given by 51% of respondents from Baltimore. In stolen vehicle pursuits, 52% of Baltimore respondents approved. Sixty-nine percent of the respondents approved of DUI pursuits in their neighborhood. In violent felony no-reported death pursuits, 71% approved. Eighty-six percent approved of a pursuit in their neighborhood for violent felony-reported death, and 88% of respondents approved of a pursuit in their neighborhood when a police officer was shot. Except for traffic pursuits, only minor differences of support were reported between general high-risk chases and high-risk chases in one's neighborhood.

Table 3

High Risk Conditions in Neighborhoods

Percent of respondents approving pursuit for specified offenses in their neighborhood:

	Baltimore
Traffic Violation	37%
Property Crime - Misdemeanor	38%
Property Crime - Felony ..... (Other than stolen vehicle)	51%
Stolen Vehicle	52%
DUI	69%
Violent Felony - No Reported Death	71%
Violent Felony - Reported Death	86%
Police Officer Shot	88%

Under low risk conditions involving traffic violations, approval for a police pursuit in one's neighborhood was given by 75% of respondents. Sixty-four percent of respondents supported pursuit in their neighborhood for incidents involving property crime-misdemeanors. For incidents involving property crime-felonies, pursuit was supported by 73% of the respondents. The citizens gave 75% approval to pursuits for incidents involving stolen vehicles. Eighty-four percent of respondents supported a police pursuit in their neighborhood for an incident involving a DUI. In violent felony no-reported death pursuits in their neighborhood, 82% approved a chase. Respondents gave 92% approval to pursuits that involved incidents of violent felonies-reported death. Ninety-two percent per cent of the respondents approved of a pursuit in their neighborhood for a suspect of a police officer shooting.

Table 4

Low Risk Conditions in Neighborhoods

Percent of respondents approving pursuit for specified offenses in their neighborhood:

	Baltimore
Traffic Violation	75%
Property Crime - Misdemeanor	64%
Property Crime - Felony ..... (Other than stolen vehicle)	73%
Stolen Vehicle	75%
DUI	84%
Violent Felony - No Reported Death	82%
Violent Felony - Reported Death	92%
Police Officer Shot	92%

Educating the Public on Pursuit Risks

The next set of analyses include the differences of opinions reported by citizens who were provided with some information concerning the outcome of pursuit and those who were not. The citizens were asked to respond to the questions assuming low-risk conditions. The term "information" indicates that the respondents were given information concerning possible outcomes of police pursuits prior to responding to a set of questions. While, "no information" indicates that the respondents received no information about possible outcomes of police pursuits before answering questions.

Respondents gave less support to police pursuits when given information of their actual outcomes. Support can be seen in information and no information responses and the differences which are presented in the last column of Table 5. When given no information of pursuit outcomes, respondents approved police pursuits by a higher percentage of support with all offenses except for property crime - misdemeanor. When given information of pursuit outcomes, respondents supported police pursuit less often under the same conditions and with the same offenses.

Pursuits for traffic violations received approval 87% of Baltimore respondents who received no information of actual hazards of pursuit. In contrast, 73% of the Baltimore respondents gave approval when informed about the outcome of pursuit driving. Sixty-five percent of Baltimore respondents gave approval of a police pursuit for incidents involving a property crime - misdemeanor when no information about pursuit was provided compared to 58% approval when these dangers were explained. Baltimore respondents gave 75% approval to a police pursuit for a property crime felony when no information of the hazards was provided compared to 70% approval when information of pursuit outcome was provided. When a vehicle was stolen, respondents with

no explanation of pursuit dangers gave 95% approval compared to 87% approval of those who were given some information of the likelihood of an accident, injury, or death. Eighty-eight percent of respondents approved of a police pursuit for a violent felony- no reported death when no information was provided, while 82% of those approved of a pursuit after information of pursuit outcomes was provided. Support for pursuits for a crime involving a violent felony - death reported was given by 88% of those when no information about pursuits was provided and 77% of the respondents supported a similar pursuit after information of the likelihood of a negative outcome was provided. When a police officer shooting occurs, 85% of those respondents approved of pursuit when given no information on pursuit hazards, while 74% approved with a pursuit after being told about pursuit outcomes.

The largest differences were reported in the least serious offense categories. For an incident involving a traffic violation, there was a 14% difference among respondents who were provided information about pursuit outcomes and those who were not told about the dangers of pursuit driving. There were also differences between those who had been told about pursuit outcomes and those who had not been informed for the property crime felonies (5%), property crime misdemeanors (7%) and a stolen car (8%). Additionally, for the most serious offenses, police officer shot and a violent felony with a reported death, there was an 11% difference between groups who had been told about pursuit outcomes and those who had not been informed.

Table 5

Low Risk Conditions
Percent of respondents approving pursuit for specified offenses:

	No Information	Information	Difference
Traffic Violation	87%	73%	14%
Property Crime - Misdemeanor	65%	58%	7%
Property Crime - Felony (Other than stolen vehicle)	75%	70%	5%
Stolen Vehicle	95%	87%	8%
DUI	83%	80%	3%
Violent Felony - No Reported Death	88%	82%	6%
Violent Felony - Reported Death	88%	77%	11%
Police Officer Shot	85%	74%	11%

The Potential Problems with Helicopters

Several questions were asked concerning the potential problems created by helicopters in the City of Baltimore. First, the respondents were asked if they had ever noticed a police helicopter. Almost all of the respondents (93%) acknowledged that they had noticed a police helicopter. Second, the citizens were asked if the helicopter scared them. Only 3 citizens reported being scared by the police helicopter. Third, the citizens were asked if the helicopter bothered them. Twenty-nine (19%) indicated that the helicopter did bother them. The majority of citizens (81%) reported, however, that the helicopter was not a bother. Nine citizens reported that the noise was the reason that the helicopter bothered them and 3 citizens reported that the lights bothered them.

V. Public Opinion Toward Pursuit Driving

Appendix A

Public Opinion Survey - I. Includes Pursuit Information

Appendix B

Public Opinion Survey - Version II. Does not Include Pursuit Information

PURSUIT AND THE USE OF HELICOPTERS QUESTIONNAIRE
PUBLIC OPINION SURVEY - TELEPHONE
I

Hello, my name is _____. I 'm working with the University of Maryland and we are involved in a study of police pursuits and the use of helicopters. There are many unresolved issues concerning pursuit and we would like **your** opinions.

The research we are conducting is part of a federal project being conducted here, in Baltimore and other cities. As such, we are not asking for your name and you will never be identified as answering these questions. Your answers will be kept strictly confidential. You have been selected only because your telephone number was selected randomly.

May we ask you a few questions?

FIRST, A police pursuit involves a suspect being chased by a police vehicle faster than the speed limit for more than a minute. Are you familiar with police pursuit as a strategy to apprehend law violators?

A. NOW, I WOULD LIKE TO ASK YOUR OPINIONS ABOUT PURSUITS WHICH ARE FOR VARIOUS OFFENSES WITH DIFFERENT LEVELS OF SEVERITY.

While on patrol in town, an officer signals a vehicle to stop for one of these offenses. The suspect does not stop for two blocks and he/she keeps increasing speed. This pursuit would have a low risk of injury because of the road, weather and general conditions. For example this chase is on a non-congested roadway in the day light in clear weather. Given these conditions, which, if any, of the offenses justify the officer continuing to pursue the suspect?

(rotate order of questions)

	pursue	not pursue
Traffic Violation	[ ] -1	[ ]-2
Violent Felony - reported death	[ ] -1	[ ]-2
DUI	[ ] -1	[ ]-2
Violent Felony - no reported death	[ ] -1	[ ]-2
Property Crime - misdemeanor	[ ] -1	[ ]-2
Police Officer Shot	[ ] -1	[ ]-2
Stolen Vehicle	[ ] -1	[ ]-2
Property Crime - Felony (other than stolen vehicle)	[ ] -1	[ ]-2

Now, please assume that the risk factors associated with the chase are **high**. For example, the chase takes place on congested inner-city streets, at night in wet weather. Which offense or offenses would justify a continued pursuit?

(Rotate Order)

	pursue	not pursue
Traffic Violation	[ ] -1	[ ]-2
Violent Felony - reported death	[ ] -1	[ ]-2
DUI	[ ] -1	[ ]-2
Violent Felony - no reported death	[ ] -1	[ ]-2
Property Crime - misdemeanor	[ ] -1	[ ]-2
Police Officer Shot	[ ] -1	[ ]-2
Stolen Vehicle	[ ] -1	[ ]-2
Property Crime - Felony (other than stolen vehicle)	[ ] -1	[ ]-2

Finally, as a third condition, what if the pursuit were in your neighborhood? Which offense or offenses would justify a continued pursuit?

(Rotate Order)

	pursue	not pursue
Traffic Violation	[ ] -1	[ ]-2
Violent Felony - reported death	[ ] -1	[ ]-2
DUI	[ ] -1	[ ]-2
Violent Felony - no reported death	[ ] -1	[ ]-2
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Police Officer Shot	[ ] -1	[ ]-2
Stolen Vehicle	[ ] -1	[ ]-2
Property Crime - Felony (other than stolen vehicle)	[ ] -1	[ ]-2

B. WE HAVE A FEW QUESTIONS CONCERNING YOUR VIEWS OF POLICE PURSUITS

Why do you think most suspects do not stop for the police when ordered to do so with blue lights and siren? (do you think they are scared, committed a serious crime, or have something to hide?)

Serious Crime [ ] Something to Hide [ ] Scared [ ] _____[ ]

Would you be in favor of a police policy of not pursuing unless there was a life-threatening situation?

Yes [ ] No [ ]

Have you ever noticed a police helicopter in your neighborhood?

Yes [ ] No [ ]

Did this in any way bother you?
If so, how?

Noise [ ] Lights [ ] Scared me [ ] Other (explain) _____ [ ]

Do you have any comments about the use of helicopters to chase suspects as opposed to using cars?

Do you think there is a trend in this country to restrict police officers from doing their jobs to apprehend criminals?

Yes [ ] No [ ]

C. WE HAVE A FEW QUESTIONS ABOUT YOUR NEIGHBORHOOD AND THE BALTIMORE POLICE DEPARTMENT.

What issue currently confronting your neighborhood is most urgently in need of police action?

What is the best aspect of police performance in Baltimore?

What aspect of police performance in Baltimore is most in need of improvement?

Is the quality of police service in Baltimore better or worse than it was five years ago?

Why do you feel that is the case?

What would it take to make the Baltimore Police Department the best police department that you have ever encountered?

D. PLEASE ANSWER SOME QUESTIONS ABOUT YOUR OWN BACKGROUND.

Year of Birth:

Ethnicity: African-American Hispanic Anglo Other

Gender: Male Female

What is the highest grade you have achieved?

What kind of neighborhood do you live in?

Upper middle working-class projects

How long have you lived in this neighborhood? _____Years

Do you have minor (under 18) children living with you? Yes [ ] No [ ]

Could you estimate you yearly household income?

THAT COMPLETES OUR SURVEY, THANK YOU VERY MUCH FOR YOU TIME.

PURSUIT AND THE USE OF HELICOPTERS QUESTIONNAIRE
PUBLIC OPINION SURVEY - TELEPHONE
II

Hello, my name is _____. I 'm working with the University of Maryland and we are involved in a study of police pursuits and the use of helicopters. There are many unresolved issues concerning pursuit and we would like **your** opinions.

The research we are conducting is part of a federal project being conducted here, in Baltimore and other cities. As such, we are not asking for your name and you will never be identified as answering these questions. Your answers will be kept strictly confidential. You have been selected only because your telephone number was selected randomly.

May we ask you a few questions?

FIRST, a police pursuit involves a suspect being chased by a police vehicle faster than the speed limit for more than a minute. Are you familiar with police pursuit as a strategy to apprehend law violators?

This study is designed to get information from the public on police pursuit driving. Most people we have contacted do not know much about pursuit. According to the Baltimore County Police Department and other studies, approximately:

40 % of pursuits result in accidents,

20 % of their pursuits resulted in injuries, and

1 % of their pursuits resulted in deaths.

Nationwide, there are between 350 and 400 people killed per year as a result of police pursuit, and the police really have no way to stop a fleeing vehicle without setting up a roadblock, ramming the car or shooting it. One final statistic is that most of these pursuits are started for a minor, traffic violation.

A. NOW, I WOULD LIKE TO ASK YOUR OPINIONS ABOUT PURSUITS WHICH ARE FOR VARIOUS OFFENSES WITH DIFFERENT LEVELS OF SEVERITY.

While on patrol in town, an officer signals a vehicle to stop for one of these offenses. The suspect does not stop for two blocks and he/she keeps increasing speed. This pursuit would have a low risk of injury because of the road, weather and general conditions. For example this chase is on a non-congested roadway in the day light in clear weather. Given these conditions, which, if any, of the offenses justify the officer continuing to pursue the suspect?

(rotate order of questions)

	pursue	not pursue
Traffic Violation	[ ] -1	[ ]-2
Violent Felony - reported death	[ ] -1	[ ]-2
DUI	[ ] -1	[ ]-2
Violent Felony - no reported death	[ ] -1	[ ]-2
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Stolen Vehicle	[ ] -1	[ ]-2
Property Crime - Felony (other than stolen vehicle)	[ ] -1	[ ]-2

Now, please assume that the risk factors associated with the chase are **high**. For example, the chase takes place on congested inner-city streets, at night in wet weather. Which offense or offenses would justify a continued pursuit?

(Rotate Order)

	pursue	not pursue
Traffic Violation	[ ] -1	[ ]-2
Violent Felony - reported death	[ ] -1	[ ]-2
DUI	[ ] -1	[ ]-2
Violent Felony - no reported death	[ ] -1	[ ]-2
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VI. Conclusions

The data presented in this report demonstrate that helicopters can provide a critical service to law enforcement in general and to the pursuit function in particular. The helicopter can assist ground units as a platform from which to observe, track and illuminate people or places on the ground. Specifically, the helicopter serves as back up to ground units. The flight crew can provide a perspective which cannot be achieved on the ground. They can communicate to ground units and can provide information to direct the ground personnel toward an intended position or away from a dangerous one. It is the altitude and the use of the spotlight that can create a tactical advantage for the police who can provide invaluable assistance and maintain cover.

By flying overhead, a helicopter can be removed from direct action while its crew can observe what is taking place below. On the one hand, a helicopter can provide assistance without being obvious to suspects on the ground. On the other hand, a helicopter can make itself known to the suspect as a show of authority and a show of force. The helicopters in both Baltimore and Metro-Dade Police Departments were equipped with various crime-fighting tools which included powerful spotlights, heat-sensing devices and instruments to locate stolen cars. These tools enabled the flight crew to provide critical assistance to the ground units.

In pursuits, helicopters can also provide important assistance without being noticed. They can track vehicles and alert ground units to the direction, location and any activities that are going on in their view. This critical function allows the ground units to turn off emergency equipment and slow down to protect public safety while maintaining visual contact with the fleeing vehicle. This

tactic has proven to be very successful in the apprehension of fleeing suspects and the reduction of risk to the public. Although a successful crime-fighting tool, the use of a helicopter raises several important questions.

Historically, there have been concerns about the operations of a helicopter unit. First, there is an enormous financial commitment that must be made to fly and maintain the helicopters. Second, there are concerns that the helicopters make too much noise and bother the residents. Third, the lights used by the helicopter flight crew are thought to be a nuisance to the public.

There is no doubt that operating a helicopter unit is expensive. However, it is impossible to place a financial value on the illumination of a police officer and his suspect in a dark and secluded area. It is impossible to place a dollar value on the observation and illumination of an area during a perimeter search. Rhetorically, what is the value to a ground officer who is informed that a suspect has a weapon? Finally, the expense of one successful law suit resulting from an unreasonable ground pursuit may be equal to those costs.

Interestingly, most Baltimore residents who responded to the public opinion survey had seen or heard the police helicopter but the vast majority of them were not bothered by the helicopter's lights or noise.

Since this is the first empirical study on the use of helicopters in pursuit, it is not surprising to find that the agencies had not been compiling and analyzing their own efforts. Apparently, the study of helicopter pursuits follows the tradition of research of ground units in pursuit. Tracking and analyzing ground pursuits is a relatively recent requirement in many police departments. Although the Metro-Dade Police Department is a pioneer in this area and has been keeping detailed records on ground pursuits since the 1980s (Alpert and Dunham, 1990) and is now maintaining similar

records for helicopter pursuits since mid-1996, the majority of agencies in the country still do not require a specialized form for ground pursuits. Hopefully, this will change for both ground and air units. It would be helpful to link the reports of both ground and air units to understand the whole picture of pursuit.

A typical pursuit which was reviewed as part of this study included suspects, once they felt safe with no ground units in pursuit, who would leave the car and try to escape on foot. Fortunately, the flight crew was able to direct the ground units to the location of the suspects to make an arrest. The sequence of events for the majority of the pursuits reviewed during this research included a ground unit calling for air support after a suspect did not pull over for a traffic, felony or investigative stop. In most cases, the driver of the ground unit would terminate his active pursuit by turning off his emergency lights and siren and slowing down to the speed limit. Once the flight crew identified the fleeing vehicle, information about location, direction and activity was relayed to the ground units. In the vast majority of cases, the fleeing suspect would slow down after a short distance and then exit his vehicle. At this point, the flight crew could direct the ground units to his location and an arrest could be made. There were some pursuits that included ground units, but this involvement raised the likelihood of higher speeds, reckless driving and an accident.

The public opinion survey which was conducted in Baltimore demonstrated that citizens support the police in their attempt to apprehend suspects of serious crimes by pursuit but the support diminishes when the nature of the offense is not serious. Similarly, public support for pursuit decreases when information about the dangers of pursuit is presented.

A Comment on Policy for Helicopter Pursuits

As the use of helicopters in pursuit increases, it will be important to develop policies to guide their use and the application of their crime-fighting tools. For example, it is important to require ground units to terminate their active involvement in a chase by turning off all emergency equipment and returning to the speed limit. However, a ground unit supervisor must have the ability instruct his or her officers to continue a chase under specific circumstances.

Another important policy issue is the use of the spotlight. The operator of the spotlight must be familiar with its uses and potential abuses. Structured guidelines should be developed for its use. For example, whether the spotlight should be left on during night flights or turned on only when needed should be addressed. Similarly, the direction of the spotlight should be addressed. During a pursuit, the use of a spotlight can serve as an important crime-fighting safety tool. However, its use can also encourage suspects to take more risks or continue dangerous actions. Structured guidelines on the use of the spotlight must be based on its effect on the fleeing suspect and the environment. Additionally, training must be required to provide flight crews and ground personnel information which can enhance the use of the helicopter, alert them to issues and concerns about helicopter operations and ways to improve communication.

In sum, the use of helicopters in pursuit provides an excellent way to protect the public and apprehend the suspect.

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