



National Institute of Justice

R e s e a r c h i n A c t i o n

Jeremy Travis, Director

August 1998

Highlights

Advancements in helicopters and onboard auxiliary equipment have improved the ability of police departments to fight crime and maintain public safety. Helicopters assist police activities by providing support and a presence in the air. They serve an important part in the advancement of law enforcement strategies and tactics.

From their observational vantage point, the helicopter pilot or observer can monitor a vehicle safely and provide pertinent information to ground pursuit officers allowing them to:

- Remain in close proximity to the suspect while tracking the location and direction without being noticed, enabling officers on the ground to take action once the suspect has stopped or exited the vehicle.
- Assist with a call involving an officer in trouble by providing directions and if necessary a show of force.
- Report on traffic or environmental conditions.

The versatility, range, and vantage point of the helicopter allows ground officers to conduct pursuits more successfully, decreasing the use of high-speed pursuits and increasing apprehension rates.

Helicopters in Pursuit Operations

by Geoffrey P. Alpert

While existing information on the uses, costs, and effectiveness of helicopters in police operations generally indicates that the helicopter can play a valuable role, there has been no research that examined the uses and productivity of the helicopter in pursuit operations. This research study conducted for the National Institute of Justice addressed these issues.

This Research in Action presents findings and assessments from a study of helicopters used in pursuit operations for the Baltimore City and Miami-Dade County Police Departments.

The two study sites: Baltimore City and Miami-Dade County

The study focused on two geographically and demographically contrasting sites that have been successfully using helicopters in pursuit activities. Baltimore City is approximately 80 square miles in size and is laid out in narrow streets. The city is densely populated, with roughly 750,000 people. The Baltimore Police Department is divided into nine police districts and its helicopter unit is responsible for all areas of the city. Miami-Dade County extends over approximately 2,000 square miles, with a population of approximately 3 million people. The county covers a variety of areas less densely populated than Baltimore City, including

rural, commercial, and residential neighborhoods.

The primary function of the Baltimore Police Department helicopter unit is to perform routine patrol, at an altitude of 500 feet, and to respond to calls for service. The observer in the helicopter can provide detailed support information to ground units. The primary purpose of the Miami-Dade Police helicopter unit is to respond to calls for service as well as to provide a patrol function. Due to the spatial distribution of the two jurisdictions, the helicopter's primary role in Baltimore is patrol, and response in Miami-Dade. Both sites, however, place a 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 (see "Helicopter Features").

Primary pursuit operations

The study looked at each site's policy for ground and helicopter pursuit activity. Baltimore has a discouragement policy for vehicular pursuits and Miami-Dade has a policy that only permits ground pursuits for violent felonies. Once a ground unit initiates a traffic, investigative, or felony stop, and the suspect refuses to pull over and begins to flee, the ground units slow down and turn off all

Exhibit 1. Pursuits Involving Helicopters

Site	Year	Number	Arrested	% Success
Baltimore	1995-96	89	74	83
Miami-Dade	1996	43	39	91

emergency equipment (unless the pursuit is justified by policy) “to avoid pushing the fleeing vehicle.”¹

In most cases, unless a helicopter is available, the ground units terminate their pursuit rather than pursue a fleeing suspect. When a helicopter is available, the ground unit ceases its active pursuit, turns off its emergency equipment, slows down, and continues to remain in the general area of the suspect’s vehicle. The ground unit officers rely on the helicopter crew to transmit directions and other information to determine when to resume pursuit activity. Both Miami-Dade’s and Baltimore’s ground units follow at a safe distance so that the suspect is not aware of police presence.

In both departments, suspects are observed until they stop and exit the vehicle, at which time ground units can move in and take the suspects into custody. Exceptions to this practice are situations in which a suspect is driving erratically, running through controlled intersections, or endangering people. If any of these occur, the helicopter observer (Baltimore) or pilot (Miami-Dade) may take the following action:

- Communicate to the ground units that the subject is accelerating fleeing activity.
- Make the suspect aware of the helicopter’s presence in hope that the suspect will cease fleeing.

- Use the searchlight to illuminate the suspect’s position during night pursuits.

Neither department uses the onboard searchlight to blind a fleeing suspect to force the individual to stop the vehicle, but maximizes on its capability to illuminate the vehicle for the police, light an area to alert civilian motorists of an oncoming danger, and light the roadway should the fleeing suspect turn off the vehicle’s lights. Both Baltimore’s and Miami-Dade’s helicopters are equipped with a combination of crime-fighting tools—the radio, searchlight, infrared heat sensing system, and camera—that together are effective tactical resources available to police during patrol and response activity.

Effectiveness in pursuits

The primary question considered as a result of the observations of these units was the helicopter’s effectiveness in pursuit activities. Available data permitted some basic comparisons on the reasons for pursuits and their effectiveness. Data were collected from Baltimore from July 1995 through June 1996 and from Miami-Dade for the calendar year 1996.

Miami-Dade helicopters were involved in 43 pursuits (see Exhibit 1). In Baltimore, helicopters were involved in 89 pursuits. These statistics indicate that both departments have had a high arrest-success rate for using helicopters in pursuits.

For both helicopter units, a stolen car was the most common reason for initiating a pursuit. There were 21 pursuits involving a stolen car in Miami-Dade and 38 in Baltimore. In addition, there were 10 pursuits for armed robbery or robbery in Miami-Dade compared to 9 pursuits for similar reasons in Baltimore (see Exhibit 2). The Baltimore helicopter unit reported that the specific type of robbery involved carjacking in 7 out of the 9 robbery pursuits. Almost 57 percent of the pursuits in Baltimore occurred at night. Although information on exact times for most of the pursuits in Miami-Dade was not available, the usable data did reveal that approximately one-half of the helicopter pursuits were conducted at night.

The most common pursuit scenario involved a helicopter following a vehicle from which one or more suspects had

Exhibit 2. Reasons for Helicopter-Initiated Pursuits

Reason	Site	
	Miami-Dade	Baltimore
Stolen Car	21	38
Robbery	10	9
Traffic	2	12
Other*	10	22
Unknown	0	8

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

“bailed-out.” There were many “pursuits” that did not involve ground units until the suspect had exited and fled from the vehicle once it had stopped. In both units, the data indicated that when a helicopter became involved in a pursuit, the most likely outcome was an arrest. Both Baltimore and Miami-Dade had additional findings that are presented in Exhibits 3 and 4.

These data also compare favorably to the results of ground pursuits. Agencies reported that approximately 75 percent of ground pursuits result in an apprehension.² Law enforcement agencies have been aided by the versatility, vision, and speed of helicopters.³ Additionally, both agencies in the study reported similarities in the reasons for their initial involvement in a pursuit.

Case studies support helicopters in pursuits

In a sample of seven documented pursuit cases from the two sites, five involved a stolen vehicle, and six resulted in bail-out of the suspect(s) once ground units began to follow at a distance. The helicopter aerial surveillance allowed the ground units to follow a suspect’s 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 whether or not suspects were carrying weapons. The information provided to ground units from the helicopter flight crews was very important to officer and public safety as well as to the immediate arrest of many of the suspects in these pursuits.

Conclusions

The data presented in this report demonstrate that helicopters can provide a valuable service to law enforcement in

Exhibit 3. Miami-Dade Police Helicopter Data

Miami-Dade Pursuits Involving Helicopters, 1996				
Number	Felony	Bail Out	Arrested	% Success
43	40	32	39	91

Reasons for Helicopter Involvement in Pursuits	
Reason	Number
Stolen Car	21
Robbery	7
Smash & Grab	5
Armed Robbery	3
Traffic	2
Burglary	2
Battery on Police Officer	1
Narcotics Investigation	1
Hit & Run	1

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 backup to ground units. Flight crews can provide a perspective that cannot be achieved on the ground. They can communicate with ground units and provide information to direct them toward an intended position or away from a dangerous one. The helicopter’s altitude and onboard equipment, particularly the searchlight, create a tactical advantage for the police by providing them with assistance and aerial cover.

From its vantage point, a helicopter can be removed from direct action while its crew can observe what is taking place below. In pursuits, helicopters can 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 tactical advantage has proven to be very successful in the apprehension of fleeing suspects and the reduction of risk to the public. Additionally, a helicopter can, at determined times, make itself known to the suspect as a show of authority and a show of force.

Although helicopters have proven to be a credible component of pursuits, as their role increases, it will be important to develop policies guiding their activities, including specific circumstances when a ground unit supervisor authorizes his or her officers to continue ground pursuit.

As part of these policy determinations, use of the spotlight during pursuits will require structured guidelines to maintain it as an important crime-fighting tool. Guidelines need to be based on the spotlight’s effect on the fleeing suspect and environment, to ensure that it is used effectively, for its intended and appropriate goal, in a manner that does not encourage a suspect to take more risks or continue dangerous actions.

Exhibit 4. Baltimore City Police Helicopter Data

Baltimore Pursuits Involving Helicopters, 1995–1996		
Number	Arrested	% Success
89	74	83

Reasons for Helicopter Involvement in Pursuits*

Reason	Number
Traffic	54
Carjacking	7
Drug Crimes	6
Foot Chase	5
Theft	4
Breaking & Entering	2
Assault & Robbery	2
Handgun Violation	2
Homicide	1
Unknown	6

*These numbers represent combined helicopter and ground unit pursuit data.

Since this study is the first on the use of helicopters in pursuit, it is not surprising that the author found a lack of recordkeeping policy in agencies to compile and analyze their own efforts. Similarly, the study of helicopter pursuits follows the tradition of research on ground units in pursuit. Tracking and analyzing ground pursuits is only a relatively recent requirement in many police departments. The Miami-Dade Police Department is a pioneer in this area and has been keeping detailed records on ground pursuits since the 1980s.⁴ Miami-Dade has also been maintaining similar records for helicopter pursuits since mid-1996, but many agencies in the country still do not require a specialized reporting form for ground pursuits.⁵ (See Exhibit 5.) Future analysis would benefit from a change in reporting and recordkeeping procedures. Linking the reports of both ground and air units would assist in understanding the whole pursuit picture.

Notes

1. Interview. Womack, Doug, formerly Sergeant of the Baltimore helicopter unit, July 14, 1994.
2. Alpert, Geoffrey, Dennis Kenney, Roger Dunham, William Smith and Michael Cosgrove. *Police Pursuit and the Use of Force*, Final Report, Washington, D.C.: U.S. Department of Justice, National Institute of Justice, 1996, NCJ 164833.
3. McGowan, Robert. "Police Helicopters," *Police Chief*, (February 1978a):45:57–60, 81 and (March 1978b):45:56–59.
4. Alpert, Geoffrey and Roger Dunham. *Police Pursuit Driving*. New York: Greenwood Press, 1990.
5. Kenney, Dennis and Geoffrey Alpert. "A National Survey of Pursuits and the Use of Police Force: Data from Law Enforcement Agencies." *Journal of Criminal Justice*, (1997): 25:315–323.

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Helicopter Features

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. According to the pilots in the unit, it is easy to maneuver, has 360-degree visibility, and a relatively small rotor. These features allow the helicopter unit to patrol in all parts of the city. The Schweizer 300-C, however, is limited to 600 pounds and is therefore restricted to two passengers (pilot and observer), whose total weight cannot exceed 380 pounds.

The Miami-Dade aviation unit was established in 1959 as the Sheriff's Air Patrol. Currently, the aviation unit owns four Jet Long Ranger Helicopters (B206L-4). The Rangers are considerably larger than the Schweizer 300-C, holding up to seven people and equipment. The Miami-Dade Unit flies a helicopter larger than the Schweizer 300-C because they perform a variety of functions, including transportation and disaster assistance.

The helicopters used in both units are equipped with support equipment and crime-fighting tools that 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, searchlight, and an infrared heat sensing system. The Miami-Dade Jet Rangers also have VHF transceivers, a public address system, police radios, searchlight, and an infrared heat sensing system.

Exhibit 5. Aviation Pursuit Summary Form*

MIAMI-DADE POLICE DEPARTMENT AVIATION PURSUIT REPORT

Airport Location		Unit Number
Year	Month	Day
Start Time	Total Pursuit Time	
Agency Initiating		
Signal Number		Lojack Signal Y N
Type of Offense to Initiate Pursuit		
Highest Speed	Area Pursuit Concentrated In	
Perimeter Y N		Canine Y N
Damage	Terminated By	Bail Out Y N
Pursuit Result	Case Number	
Narrative		
GROUND UNIT INFORMATION		
GU Involvement Y N	Initiating Unit Number	
Case Number		

CODES

LOCATION
01-Opa-locka
02-Tamiami

DAY/WEEK
10-Sunday
11-Monday
12-Tuesday
13-Wednesday
14-Thursday
15-Friday
16-Saturday

AREA
20-Agricultural
21-Commercial
22-Residential

DAMAGE
30-Police Vehicle
31-Subject
32-Other Vehicle
33-Other Prop
34-Unknown

TERMINATED BY
40-Crash
41-Officer
42-Supervisor
43-Subject
44-Unknown

RESULT
50-Arrest
51-Escape
52-Unknown

*Form pending final approval of the Miami-Dade Police Department.

Alpert, Geoffrey and Roger Dunham. *Police Pursuit Driving*. New York: Greenwood Press, 1990.

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This study was performed under NIJ grant 93-IJ-CX-0061, awarded to the University of South Carolina. Points of view in this document are those of the author and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

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NCJ 171695

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