The Administration of a Municipal Police Helicopter Patrol Program

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Chapter I

Introduction

In recent years society's interest in the betterment of the American police service has often been expressed as a call for progressiveness on the part of the service as a whole, in the attitudes and abilities of individual officers, and particularly in regard to the approaches and practices of police administrators. Police administrators at all levels of government - federal, state, and local - have been encouraged to experiment, to view new methods with ~~retain~~ an open mind ~~toward new methods~~, and to be innovative. In an attempt to meet these expectations and provide a higher level of police service to the community, administrators have increasingly sought to develop new programs and make better use of existing capabilities. This emphasis stands in sharp contrast to time-honored police practices.

> Until recently law enforcement has attempted to thwart the growth of crime primarily through the addition of personnel. The inherent philosophy underlying this approach to the problem is that maximum uniform patrol is the most dependable means of preventing the occurrence of illegal acts.[1]

The inadequacy of this approach is obvious. In the decade 1960-1969, the crime rate in the United States increased by 120%.[2] In this same period of time the number of police employees, sworn and civilian, per 1,000 persons increased from 1.9 to 2.2, or a total of 15.8%.[3]

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[1] Berkeley, California, Police Department, Project Report: A Berkeley Helicopter Patrol Program, 1969, p. 1.

[2] Federal Bureau of Investigation, Crime in the United States: Uniform Crime Reports - 1969, (Washington, D.C.: Government Printing Office, 1970), p. 2.

[3] FBI, Uniform Crime Reports - 1960, p. 21, and Uniform Crime Reports - 1969, p. 41.

Even this small increase is not as significant as it might appear; many police departments have reduced their work weeks substantially during this period, and more employees have been hired to compensate for the reduction. Despite the widespread interest in the criminal justice system which marked the latter portion of the 1960's, the budgetary support necessary to dramatically increase personnel numbers has simply not been forthcoming except in a minority of cases. Those departments which do have funds available to hire additional personnel have found that recruiting highly qualified applicants is not an easy task. The great majority of the larger police organizations are substantially below their authorized personnel levels for these reasons, and it has become apparent that the solutions to the pressing crime and public service problems confronting the American police will not be found in sheer numbers of personnel.

Improved individual abilities and more effective personnel management policies have helped compensate for the lack of an adequate number of police employees, but for maximum effectiveness police administrators have increasingly sought to apply science and technology to the police service.

> Of all criminal justice agencies, the police traditionally have had the closest ties to science and technology. There is considerably more scope for the equipment technology in policing than in other parts of the criminal justice process. Police communications, transportation, weaponry, crime detection, and crime investigation all draw on science and technology to an extent that exceeds the potential in courts and corrections. Yet even here many potential contributions remain unexploited.[4]

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[4]President's Commission on Law Enforcement and Administration of Justice, Task Force Report: Science and Technology, (Washington, D.C.: Government Printing Office, 1967), p. 7.

As administrators have become more aware of the capabilities of science and technology applied to the police service, advanced programs and equipment have seen increasingly widespread use, and significant accomplishments have resulted. Most of this technology, however,

> ... has been directed toward the investigation of criminal offenses already committed -- far removed from the patrol aspect of police work. Not since the advent of radio-equipped patrol cars in 1929 has there been any truly innovative tool made available to the "man on the beat."[5]

While sophisticated equipment of great value in the detection and apprehension of criminal offenders has been developed, equipment to aid the patrol officer in his task of deterring criminal activity has generally been relegated to a position of secondary importance.

Within the past five years, however, a number of police agencies at the state and local levels of government have begun using helicopters as police patrol vehicles; these departments claim that the helicopter adds a third dimension to law enforcement and provides an advantage which criminals simply cannot match at this time. Furthermore, the helicopter is cited as an important deterrent to criminal activity, the first significant new deterrent in forty years.

There has to this point been very little written about the helicopter as a patrol vehicle. Most of the information currently available concerns individual programs of a handful of departments.

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[5]Los Angeles County Sheriff's Department, "Helicopter Patrol," 1969, p. 1.

The purpose of this paper is to examine municipal police helicopter patrol as an administrative problem. To this end the hardware involved in maintaining a patrol program is not discussed. The focus is instead on the administrative decisions which must be made in the course of implementing and managing the program. The background of police helicopter patrol is discussed, and the operational considerations which must be taken into account on initial consideration and during the continued operation of the program are evaluated. Internal management policies and possible methods of gaining departmental and public acceptance of helicopter patrol are reviewed, and internal personnel management practices are discussed. The specific uses of the helicopter as a police patrol vehicle are examined, and some comments are made on the effectiveness of the helicopter as a patrol vehicle. The conclusion contains statements concerning the present level of development of helicopter patrol and a discussion of the probable future of municipal police helicopter patrol programs.

Included as an appendix are the results of a survey of helicopter patrol which was conducted independently of other research activities. Reference is made to some survey findings in the body of the paper, but the complete results and several informational tables are found only in Appendix A.

Chapter 2

The Background of Police Helicopter Patrol Programs

The use of aircraft for law enforcement purposes is not a new practice. The New York City Police Department established a Police Air Service Division on October 24, 1929.[1] The department at that time used fixed-wing aircraft only. Other major city police departments and state law enforcement agencies came to recognize the value of aircraft in several phases of law enforcement - search, traffic observation, speed enforcement, and transportation - and it became a virtual necessity to either own or have immediately avilable a fixed-wing aircraft for these purposes.

Progress with the helicopter was not quite so rapid. Although the concept of vertical flight dates to ancient China, and helicopter models are found in the sketches of Leonardo da Vinci in the sixteenth century,[2] the modern helicopter did not actually evolve until about 1940, when Igor Sikorsky produced a machine with the stability and control lacking in earlier models.[3] Sikorsky was motivated by his success to predict a rosy future for the helicopter, but the extreme complexity of the aircraft retarded its spread in both commercial and private uses. The helicopter was considered to be expensive and of limited utility in comparison with fixed-wing aircraft.[4]

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[1] David O. Moreton, "The Helicopter Story," Law and Order, June, 1957, p. 10.

[2] Ibid.

[3] C. Lester Walker, "Tomorrow's Helicopters," Harper's Magazine, May, 1953, p. 31.

[4] Ibid., p. 32.

Despite the lack of universal acceptance, a number of individuals and organizations came to recognize the potential of the helicopter. As was the case with fixed-wing aircraft, the New York City Police Department was a pioneer in the use of the helicopter in law enforcement. On September 30, 1948, a Bell Model 47-D helicopter, designated P. D. #4, was purchased and placed in service.[5]

The initiation of the first police helicopter patrol program provided very little impetus for other such programs. The next two major programs initiated were those of the County of Los Angeles and the City of Los Angeles, which began in 1955 and 1956, respectively.[6] These programs proved to be equally as successful as New York City's program, with Los Angeles County in particular making significant advances.

> Because of the variety of missions thrust upon a law enforcement agency and the rugged terrain of the county, the utility helicopter has largely displaced fixed-wing aircraft. In the last half of 1958 and the first half of 1959, Aero Detail's three helicopters flew almost seven times as many hours as its two fixed-wing aircraft. For most missions, a deputy sheriff must be on the scene in person, and only the helicopter makes this possible while offering quick access to underdeveloped areas. The greatest usefulness of fixed-wing aircraft is found in search and patrol work, but even for this mission the helicopter is now more frequently used. It lowers the danger potential of mountain searches in restricted visibility.[7]

In none of these programs or in others which were developed in the latter part of the 1950's and the early 1960's was the helicopter

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[5]Moreton, "The Helicopter Story," p. 12.

[6]Personal correspondence from the County of Los Angeles, December 23, 1970, and the City of Los Angeles, March 9, 1971.

[7]"Sheriffs Use Bell 47's for Patrol Work," Aviation Week, December 14, 1959, p. 96.

used as a routine patrol vehicle. Rather, it was still utilized as special purpose vehicle. The most widespread use of the police helicopter during this time was that of traffic observation. Police departments in several major cities reported on traffic conditions for drivers using city streets. Rush hour radio traffic reports did much to acquaint the public with police use of helicopters. Other duties performed during this time included search and rescue missions, transportation, and photography. All duties performed, however, were as a result of a specific assignment or call for service. Helicopters were not yet assigned to patrol an area and assist ground units in normal police operations of all types.

Then, in August of 1965, massive and disastrous civil disturbances in the Watts area of South Los Angeles made demands on helicopters and crews which demonstrated that these machines could be effectively used as patrol units, even at night, under extreme conditions never before considered feasible.[8] When patrol cars could not safely enter some sections of the riot area, sheriff's officers used their helicopters as airborne platforms to spot fires, direct ground units, and for transportation purposes.[9] The operation proved that air-ground liaison could be a most important law enforcement tool when applied in a defined area throughout a lengthy operation.[10] Concentrated patrol (of the riot area) had not only demonstrated that

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[8]Los Angeles County Sheriff's Department, Sky Knight: A Project Report, 1968, p. 10.

[9]Douglas Diltz, "Helicopters - Regular Police Patrol Vehicles," Law and Order, November, 1965, p. 10.

[10]Los Angeles County Sheriff's Department, Sky Knight, p. 10.

visibility of the officers was vastly improved, it also placed officers in a position where they were highly visible to offenders.[11]

Project Sky Knight

The success of the police helicopter in Watts stimulated rethinking of its law enforcement role. Furthermore, proof of the aerial patrol's efficacy came at a time when the soaring national crime rate had led Congress to appropriate some seven million dollars to seek new ideas to help local police.[12] The Los Angeles County Sheriff's Department, with the cooperation of the Hughes Tool Company and the city of Lakewood, California, developed a proposal for using helicopters on routine police patrol. This project, called "Sky Knight," was partially funded by a federal grant from the Office of Law Enforcement Assistance and began operation on May 1, 1966.

> Primary goals of the project were sixfold:
> 1) Improve police response time.
> 2) Demonstrate successful daytime surveillance methods.
> 3) Initiate effective nighttime surveillance.
> 4) Increase patrol observation.
> 5) Increase officer security.
> 6) Reduce crime in the project area.
>
> Further, the project was to demonstrate that these ambitions could be accomplished by an aerial police unit, in conjunction with existing ground units, without the requirement of continuously increasing the number of officers and radio cars found necessary today, to cope with spiraling crime rates.[13]

Many departments, particularly on the West Coast, were following this innovative program with great interest. When the project was at

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[11] Ibid., p. 11.

[12] Patricia and Ron Deutsch, "Sky Knight, the Heavenly Prowl Car," Reader's Digest, April, 1968, p. 117.

[13] Los Angeles County Sheriff's Department, Sky Knight, p. 17.

its midpoint, the prestigious President's Commission on Law Enforcement and Administration of Justice released its report of findings and recommendations. In a discussion of types of police vehicles, the Commission made the following comment:[14]

> ... helicopters offer a potential for demonstrating a police presence, for searching a large patrol area, and for responding rapidly (over 100 miles per hour) to an emergency call when the action is taking place in the streets, on rooftops, or on highways. Their potential has not yet been adequately explored.

The Commission also indicated that the "Sky Knight" project results would provide a great amount of information concerning the use of the helicopter as a patrol vehicle, information which was at that time virtually nonexistent in the United States.

British Helicopter Patrol Experiences

At the time American interest in police helicopters was increasing, the British police were also involved in a program of experimentation.

> In 1960, a Committee of the Central Conference of Chief Constables was set up to "consider and report upon the provision of helicopters for the police." In its report published in 1961, the Committee recommended a wide variety of uses for police helicopters, including rescues, searches for missing persons, escapees and criminals, and in connection with such incidents as serious road accidents, flooding and crashed aircraft. Further, helicopters would save much time on long-distance travel, that dogs could be quickly conveyed to the scene of serious crime and that urgent supplies could be transported to isolated places in times of national emergency, although that function was generally performed by the service authorities.
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> In support of these contentions, chief constables had been asked how many times helicopters had been used or could have been used in their areas during 1960 if they had been available. According to the Committee's report, helicopters had been used in England and Wales 150 times by the police and, if machines

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[14]President's Commission on Law Enforcement and Administration of Justice, Task Force Report: Science and Technology, p. 14.

had been readily available, could have been used on about another 170 occasions. It was clear that the great majority of these occasions referred to urgent life-saving rescues, particularly in coastal waters.[15]

From that time until the actual national helicopter experiment began in March, 1967, the police sought the assistance of the military whenever helicopters were needed.[16] In the experiment they borrowed military helicopters and assigned them to police forces in the southern part of England. The results of the first study were impressive enough to spawn a second study beginning in November, 1967, and continuing through July, 1968. Although the British helicopters were not routinely assigned to routine patrol duties, but acted primarily on a called for service basis, they were well satisfied with the results of their trials. The British experimentation also produced one of the most thorough analyses of helicopter operational factors which has been put forth to date.[17]

The British helicopter patrol program has continued to develop as more of a stand-by service than one assigned to airborne observation and routine patrol responsibilities. Helicopters respond to emergency calls, of course, but a significant minority of their calls, at least in the experimental period, were pre-planned a minimum of eight hours in advance.[18] This task or mission orientation made a determination of the effectiveness of various duties

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[15] G. Gates, "Helicopters for Police Use - An Introduction," Police Research Bulletin, January, 1967, p. 15.

[16] Ibid.

[17] P. Ostler, "Helicopters: Their Use in Police Work - An Assessment," Police Research Bulletin, October, 1968, pp. 3-14.

[18] Ibid., p. 6.

performed by helicopter personnel much more feasible than is usually the case; these findings will be discussed in a later chapter.

The Post-Sky Knight American Experience

The effects of the Sky Knight Project in Lakewood have been more readily apparent than those of the British experiments conducted at the same time. Sky Knight was acclaimed an immediate success, and the Los Angeles County Sheriff's Department, in fulfillment of the terms of the federal grant the department received, has prepared several reports dealing with the project and its findings. These reports have received a very enthusiastic response; the number of cities employing helicopters as routine patrol vehicles has skyrocketed since the end of the demonstration project. Commercial manufacturers have been quick to realize the potentialities of the police helicopter market and have made every effort to supply a helicopter for any type of need. Increased demand and a most enthusiastic response have resulted in the police market coming to account for fifteen to twenty per cent of the total commercial helicopter sales volume.[19] The exact number of users at the local level of government is not readily available at this time. There are approximately forty municipal police departments which either have now or are in the process of implementing helicopter patrol. The number of county law enforcement organizations using helicopters is perhaps about twenty, but it is doubtful if most of these use helicopters as routine patrol vehicles.

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[19]"Crime Issue Spurs Helicopters," Aviation Week and Space Technology, March 9, 1970, p. 198.

Chapter III

Operational Considerations

Any city considering the question of helicopter patrol for its police force should do so calmly and thoroughly; a decision should be reached only after all pertinent officials of the municipal government and the police department have had ample opportunity to review the issue and consider possible ramifications. With the use of helicopters becoming more widespread in recent years, there may well be a tendency for helicopter patrol to be viewed as a panacea for all police problems in some instances. Although the results of helicopter patrol have often been spectacular, the helicopter is no miracle weapon. It has its limitations as well as its strong points, and great confusion is likely to prevail if a city obtains a helicopter without deciding precisely what it is going to do with the machine after it arrives. Among those factors which should be considered, and which form the basis of this chapter, are those of need, the advantages and disadvantages of helicopter patrol, cost, safety, legality, and altitude, patrol area, and duty hours. Although several of these may appear so basic as to not require close examination, the variations among cities are such that any of these may assume enormous importance in the overall operation of a particular program.

Need for Helicopter Patrol

Requisite to any discussion relative to the inauguration of an aerial police patrol is the determination of the need for such a patrol.[1]

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[1] Los Angeles County Sheriff's Department, Manual of Aerial Patrol, 1968, p. 1.

Need implies both the intent and the ability to make full use of the additional capabilities supplied by the helicopter, and it is obvious that all cities cannot meet these requirements. A review of objective factors, among them population, area, and crime rate, may make it apparent that a helicopter is not what the city needs, that some other alternative would be much more suitable.

The importance of the objective factors cited is difficult to define precisely. Population, area, and crime rate serve more to eliminate cities which could make little use of a police helicopter than to establish lines of demarcation, above which all cities should have a helicopter patrol program. Thus a city with a population of 10,000, an area of 4 square miles, and a serious crime rate of 1,000 (per 100,000 inhabitants) would not have enough activity to justify its own helicopter on routine patrol. On the other hand, a city like Dallas, Texas, with a population of 844,000, an area of about 300 square miles, and a serious crime rate in excess of 5,000 could certainly be expected to make complete use of several helicopters.

The difficulty is not really in evaluating the cases of cities at the extremes, but rather ones toward the middle of the scale. Why does a city such as Newport Beach, California, with a population of approximately 50,000 persons, or Costa Mesa, California, with a population of 72,000 persons, have a helicopter patrol program when 16 of the 37 cities in the United States in the 300,000 to 1,000,000 population range do not now have such a program or do not have plans for beginning a program in the near future?[2]

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[2]Kansas City, Missouri, Police Department, "1970 Survey of Municipal Police Departments," Chart 47.

Assuming that the use of helicopters in those seven or more American cities with populations of less than 300,000 which have helicopter programs is fully justified,[3] it would appear that need is not determined solely by objective factors, and that an analysis making use of population, area, crime rate, and other such information is destined to break down. Perhaps, then, a subjective analysis of need is a more meaningful process. As a British researcher suggested:[4]

> A decision to provide a helicopter service to the police will depend upon a number of factors which are not open to direct scientific measurement. Possibly, some of these additional criteria could be estimated by attitude surveys among the public and the police service, but, inevitably, great weight must be given to professional judgment on an issue of this kind.

Not only are the professional opinions of police administrators and city officials likely to have great influence, other factors such as the city's level of progressiveness and the influence of programs in surrounding cities are also likely to have a significant role. California has traditionally been the location of many progressive police programs and concepts, and effective programs normally spread very rapidly across the state. The use of the helicopter as a vehicle for routine patrol was pioneered there, and ten of the twenty-five departments which are included in the final survey base are located in California.[5]

The resolution to the question of need, then, may well lie in

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[3] Table 3-A of Appendix A shows seven cities in this category. There may well be others which are not included in the table.

[4] P. Ostler, "Helicopters: Their Use in Police Work," p. 14.

[5] Table 3-A of Appendix A.

the further dissemination of information concerning helicopter patrol to acquaint more departments with its capabilities. In many departments which do not have a police helicopter patrol program at this time, the need does not exist because administrators are not fully aware of the potential of the helicopter in police operations. As knowledge spreads, increased need for helicopter services may be expected to result.

Advantages and Disadvantages of Helicopter Patrol

As one specific method of police patrol, helicopter patrol is characterized by certain advantages and disadvantages. The helicopter is most strikingly different, of course, in its medium of operation. While all other forms of routine patrol take place at the surface level, either on land or on water, the helicopter operates in the air above the ground and lands to participate in police activities only in urgent situations. Most of the advantages and disadvantages discussed in this section relate specifically to the use of the air as a medium from which to conduct certain police operations.

Response time. Probably the most dramatic impact aerial patrol has on traditional law enforcement is the improved response time.[6] Early response, as pointedly documented by the President's Commission on Law Enforcement, is a prime factor in the apprehension of offenders. In many cases, the helicopter provided the slight time edge needed to affect apprehension.[7] The President's Commission, in a study of

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[6]Los Angeles County Sheriff's Department, Manual of Aerial Patrol, p. 4.

[7]Los Angeles County Sheriff's Department, Sky Knight: A Project Report, p. 61.

response time in Los Angeles, found that emergency calls resulting in an arrest took an average of only 4.1 minutes, while the response time on emergency calls in which no arrest was made averaged 6.3 minutes.[8] If there is a helicopter airborne at the time an emergency call is broadcast, it will in almost every case be either the first or second vehicle to arrive at the scene of the emergency; the car nearest the scene would normally be assigned to investigate and in most areas of the city it would arrive first.

Direct response. Moving through a less-congested area than a ground unit, the helicopter is able to take a more straight-line approach when answering a call. It does not have to weave in and out of traffic, disregard traffic signals, or follow a prescribed path. So even if a ground unit should be travelling at the same speed as a helicopter and both started from the same distance away, the direct approach of the aircraft would result in it arriving first on the scene.

Accessibility. Areas which would be very difficult to patrol in a car are normally much more readily accessible to a helicopter. Remote areas within a jurisdiction become so readily accessible that they are routinely and effectively patrolled.[9]

Visibility. The helicopter crew has a much expanded view in comparison to a ground unit. If a ground officer is driving a car he is very much restricted to viewing the street and the buildings

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[8]President's Commission on Law Enforcement and Administration of Justice, Task Force Report: Science and Technology, p. 9.

[9]Los Angeles County Sheriff's Department, Manual of Aerial Patrol, p. 5.

on either side. Even with a partner the field of view is no larger. A helicopter, on the other hand, at a patrol altitude of three to five hundred feet has an area about three blocks wide under excellent surveillance.[10] Visibility is not restricted to the streets, but rooftops, three sides of buildings, yards, and alleys may all be examined from this height.

Speed. Although the maximum speed of most helicopter models is not a great deal higher than that of cars used for ground patrol, the helicopter has a much greater opportunity to make use of its speed. A ground unit running at top speed is seldom able to do so without endangering the lives of its occupants and other persons who may be using the highways. The helicopter, when necessary, can travel at top speed with no more danger than at its regular cruising speed.

Weather. Adverse weather can hamper helicopter operations at times, although generally it is not as subject to grounding due to poor weather conditions as fixed wing aircraft. Only three types of bad weather will ground the helicopter; hail (which could seriously damage the rotor blades); freezing rain (which generates icing on blades and windows); and fog (which reduces visibility to a point at which flight becomes unsafe).[11] The helicopter has demonstrated its effectiveness in emergency situations in all types of weather.

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[10] Houston, Texas, Police Department, "Police Helicopter Patrol Program," p. 1.

[11] Richard H. Gilbert, "Helicopter Traffic Reports in Chicago, Illinois," Traffic Quarterly, XIX (October, 1965), p. 574.

Inability to land. The helicopter is obviously intended to operate in the air rather than on the ground. For this reason the helicopter crew may experience some difficulty in landing the aircraft exactly where they wish in a congested area. In urban and suburban areas, it is not generally feasible for helicopters to land and give assistance, except in extreme emergencies.[12] The helicopter, by remaining in its environment and remaining visible to those persons involved in an incident on the ground, probably has a greater effect than if it were to land and its crew take part in the incident. There may be occasions [redacted], however, when this lack of immediate landing capability is a handicap.

Special facilities, training, and skills. The helicopter used for routine patrol activities requires several special considerations. It is not practical, for instance, to have complete interchangeability of patrol personnel. Although some special skills are required to drive a car, there are few police officers who cannot drive. But there are a great many police officers who cannot fly a helicopter, and none of these people can be assigned (as a pilot) to helicopter patrol. For those people who are selected and trained as police helicopter pilots, a very high skill level must be maintained. Furthermore, the helicopter itself should not, as a matter of practice, take off and land in the police parking lot. Some special facilities are required for its operation and storage, and when the aircraft must be repaired or inspected, some special expertise beyond that found in the average auto mechanic is required.

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[12] C. Robert Guthrie and the Los Angeles County Sheriff's Department, Project Sky Knight: A Demonstration in Aerial Surveillance and Crime Control, Washington, D.C.: Government Printing Office, 1968, p. 132.

Cost of Helicopter Operations

The case for or against the use of helicopters in police work is impractical in terms of pure economics.[13] The original equipment needed may cost from $40,000 to $50,000 or more (if purchased) and the machine itself is only a small part of the total investment. A heliport is needed, personnel to fly the aircraft are needed, fuel and maintenance are required, and a hangar or other storage facility is desirable. None of these come cheaply, and the fact must be faced that it is more expensive to field a single airborne patrol unit than it is to field a single vehicle patrol unit.[14] Helicopter patrol may cost from $75,000 to well over $100,000 per helicopter each year, and it is obviously no program to rush headlong into.

Financial arrangements.[15] Several alternative methods are available to the city which has determined that it wishes to operate a helicopter on routine police patrol. The most direct method is outright purchase, but a number of departments have avoided this method initially, preferring to wait until the program has been operating for some time and they are more certain of exactly what the program entails.

If the department should happen to be in California (and possibly in other states), it could contract with an already established program for whatever level of coverage is desired. The Los Angeles County Sheriff's Department has been providing helicopter patrol

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[13] Guthrie, Project Sky Knight, p. 139.

[14] Los Angeles County Sheriff's Department, Sky Knight: A Project Report, p. 92.

[15] The programs discussed in this section are described in much greater detail in information supplied by helicopter manufacturers, from which the information given here was taken.

services to a number of county cities on a contract basis since the Sky Knight program began.

Another alternative available to departments who wish to test the value of a helicopter program before making a significant investment is to rent a helicopter and pilot. At least one firm which specializes in training pilots for police helicopter patrol programs also has an optional program in which the company supplies an aircraft and pilot to the city to assist in the evaluation program.

The most common method of beginning a patrol program involves the leasing of a helicopter over a period of several years, usually a five year period.. At the end of the lease period the aircraft becomes the property of the police department. Similar to this program is the rental plan, in which a department pays the manufacturer a flat yearly fee, with an option to buy during the rental period. In both of these programs, the city is responsible for maintenance, insurance, pilots, observers, and program development.

If the department is properly prepared to handle all details of the program, it is normally cheaper to purchase the aircraft outright rather than to lease or rent. Many departments, however, do not have the finances immediately available to invest in a lump sum purchase, and others are initially not so sure of the program that they wish to assume complete responsibility for its operation.

Helicopter maintenance. Maintenance of the helicopter is usually provided in one of two manners. The city may either contract with a supplier for maintenance, or it may hire its own mechanic, purchase its own parts, and take care of routine maintenance itself. For a very small program (one or two ships), an agency may be better off contracting for maintenance if the persons who will be performing

maintenance services are immediately available. Departments which have several aircraft or which do not have maintenance support nearby would do well to provide their own maintenance. Several departments have indicated that they believe providing their own maintenance is both less expensive and more reliable. New York City, which trains police officers as mechanics for its helicopters, illustrates this orientation. The normal operating expenses cited in the survey which was conducted ranged from $18,00 per hour to $53.37 per hour, depending of the type of helicopter flown.[16]

Heliport and hangar facilities. Departments beginning helicopter operations have found that they must have facilities available to take off from and land on and to store the helicopter when it is not in use. There must also be a supply of fuel available. A common practice in the early stages of a program is to operate from the local municipal airport or a private field if one is available nearby. This separate operation tends to establish the helicopter unit as an independent force and should be avoided. The Sky Knight project indicated that moving routine helicopter operations to the station was the singularly most important measure taken to produce a total mix between air and ground units.[17]

If the department has the space available near its headquarters building, this is the most desirable location for the heliport and hangar. The facility must be built in accordance with Federal Aviation Agency specifications which deal primarily with the safety of arriving and departing aircraft.

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[16]Table 3-D.1 of Appendix A.

[17]Los Angeles County Sheriff's Department, Sky Knight: A Project Report, p. 54.

Additional considerations include the probable size of the helicopter fleet in the future and the need for protection of the aircraft. The landing pad itself should be large enough to facilitate two helicopters, and the interior of any hangar facility built should be large enough to allow for storage of all aircraft not being flown and for the performance of maintenance tasks. The facility, while meeting the operational needs of the system, should also be designed to provide adequate security for equipment.[18] This would require that the facility be enclosed and equipped with alarm devices if appropriate. The approximate cost of the heliport and hangar facility varies greatly according to the size and type of structure. One recently constructed facility is reported to have cost $20,000 while another still in the planning stages is estimated at $60,000 excluding land preparation.[19]

Those departments which are unable to afford such facilities may be interested in the minimal facilities, which usually consist of a flat piece of land and a gasoline tank truck. For those agencies suffering from a tight budget, it should be remembered that there is no specific requirement that hanger facilities, structures, or special asphalt surfacing be available at the pad site.[20] While departments with large-scale programs or which handle their own maintenance may have a great need for these facilities, these items are strictly optional.

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[18]Pasadena, California, Police Department, "The West San Gabriel Regional Helicopter System," 1971, p. 11-c.

[19]Covina and West Covina, California, Police Departments, "Community Overhead Patrol: Testing and Evaluation Report," 1970, p. 40; and Pasadena Police Department, "West San Gabriel System," p. 3.

[20]Covina and West Covina Police Departments, "Community Overhead Patrol," p. 26.

Personnel costs. Personnel expenditures include costs of training, salaries, and administrative overhead. Chapter V contains a detailed discussion of personnel administration as such, but regardless of what administrative techniques are used the people flying the aircraft and riding as observers will still be an expense. Helicopter manufacturers and private firms offer training courses for prospective helicopter pilots. Costs range from about $3,000 to more than $5,000 per student, depending upon previous flying experience, whose aircraft is used, and the length of the program. After training, pilots in most cities receive extra compensation above the salary paid to patrol officers for their flying status. If the department is obliged to hire additional personnel to replace those who are assigned to helicopter patrol, this also respresents added expense. Finally, the operation of a helicopter unit will generate a certain amount of paperwork which will probably be reflected as a need for increased clerical assistance.

Special equipment. The equipment needs of a police department are determined primarily by its social and geographic environment. The needs of the helicopter are influenced by its normal uses and by the geography of the city. Helicopters which operate in coastal cities are likely to have some rescue and evacuation responsibilities, and this, more than any other police operation performed by the helicopter, requires several items of special equipment. The basic "police package" provided by manufacturers normally contains searchlights, a public address system, a siren, and a police radio. With these equipment items the helicopter crew can perform all standard duties

with the exception of rescue and evacuation. To properly perform this function, a stretcher and first aid supplies are needed, and floats for water landings are very helpful. Other equipment which is used by some departments includes life jackets, life rings, and rope. A number of departments also routinely equip their aircraft with cameras and fire extinguishers. Basic equipment items can usually be obtained for from $4,000 to $6,000, but the purchase of this additional equipment needed for an expanded mission may push the total to between $15,000 to $20,000.

Financial assistance. Some federal assistance and presumably state assistance in several states is available to aid in the initial financing of the helicopter patrol program. Helicopter patrol programs are currently being aided by federal funds from two major sources:[21]

1) National Highway Safety Act of 1966.
2) Crime Control and Safe Streets Act of 1968.

The highway safety program provides matching funds for states to purchase light helicopters such as the Hughes 300 for patrol and heavier vehicles such as the Bell 47J-2A or Bell JetRanger for carrying persons injured on highways. Under the crime control bill, the federal government will provide up to 75% of the cost for establishing an aerial police patrol, or for improvements to existing programs.

In addition, funds were available at one time and may still be available through the Civil Defense program for helicopters to be used in performing highly specialized types of civil defense emergency operation functions.[22] The departments which are included in the

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[21] Richard F. Covurn, "Police Units Expand Helicopter Operations," Aviation Week and Space Technology, January 13, 1969, p. 103.

[22] "Whirlybird Traffic Control," The American City, April, 1962, p. 115.

final survey base have relied primarily on non-federal funds in obtaining their equipment. Only seven of the cities noted that some federal monies were involved, and of these, only Oakland, which funded its helicopters through the Highway Safety Bureau, indicated that a source other than the Law Enforcement Assistance Administration was used.[23] Funding may be available through the crime commissions at the state level of government, but little information on this source of funds was unearthed in the survey or other research activities.

Cooperative programs. For those smaller cities which cannot justify or support their own helicopter patrol program, cooperative ventures may merit consideration. in some cases ~~have been successful.~~

> Use of aerial patrol by several adjacent small cities is of practical value where the size and need of the small communities does not merit a full-sized patrol. The cost of shared programs can be prorated among several participating communities through a joint powers agreement. An equitable basis for such proration may be established by considering area (size), population and assessed valuation, with added consideration given to variations in crime rates or incidents peculiar to a particular community which may require more patrol concentration.[24]

British researchers reached a similar conclusion:[25]

> One force of itself cannot support a demand for helicopters, therefore, to employ helicopters in support of police forces in a manner which will use the craft to its maximum usefulness, one needs to support more than one force. It is suggested that the natural grouping of police forces for this purpose is into police regions.

Unfortunately, joint helicopter programs appear to suffer from the

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[23] Table 3-D.1 of Appendix A; and the Oakland, California, Police Department, "Oakland Police Department Helicopters," information bulletin, November 2, 1970, p. 1.

[24] Los Angeles County Sheriff's Department, Manual of Aerial Patrol, p.2.

[25] P. Ostler, "Helicopters: Their Use in Police Work," p. 7.

same handicaps as other cooperative municipal ventures. Several joint projects have been proposed in California, but none has yet reached the operations stage. Difficulties in jurisdictional matters, radio communications, equitable cost distribution, and amount of use determination have prohibited rapid development of these programs thus far. One city which studied multiple use programs commented:[26]

> A major factor in recommending against this type of proposal for Berkeley is ... that larger cities or areas involved in mutually administered programs seem to reap the least in benefits and actual air patrol time.

Until a method of cooperative patrol is developed which can assure each of the participants that it is receiving its fair share of patrol time and can counter the desire for local control of the program, joint ventures are not likely to be very successful.

Cost versus increased patrol. In initially considering helicopter patrol, many cities have evidently been influenced by the level of intensity of helicopter patrol. The fact that new areas are brought under surveillance and that a wider area is under observation during flight has convinced several cities that the expense incurred is significantly less than the benefits received.

> The helicopter can stretch the patrol dollar significantly by combining long-run patrol areas and hard-to-police locations, thereby freeing ground units for more consolidated patrol activities.[27]

> The helicopter has taken over areas of selective patrol previously handled by patrol vehicles. This has allowed us to patrol high crime areas with fewer personnel; however, we

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[26] Berkeley Police Department, Project Report, p. 43. Pages 42-45 contain an evaluation of joint programs.

[27] Houston Police Department, "Police Helicopter Patrol Program," p. 1.

> do not anticipate a savings in patrol costs due to the utilization of helicopters. The helicopter has generated more work for the ground units. Acting as an observation post, it must call in ground units to check out any suspicious persons or incidents that it observes.[28]

Several cities have undertaken experiments of various kinds in an attempt to compare helicopter and automobile costs.

> A study conducted by the city of Huntington Beach realistically illustrates such a cost comparison. The city area of Huntington Beach is 26.5 square miles. A single patrol car, cruising each street, one time only, on continuous patrol, and answering no calls, required 31.8 hours and cost $344.50 including all direct costs, manpower and equipment. The patrol unit did not cover any of the city's alleys, railroads, fenced industrial areas, parking lots, shopping centers, golf courses, riding courses, riding trails, or school grounds.
>
> The cost to patrol the same city area, and including all the areas not patrolled by the ground unit plus residential back yards, swimming pools, and rooftops, by helicopter was $69.75. The patrol was accomplished in 1.6 hours.[29]

The Los Angeles County Sheriff's Department took a different approach to the question of cost.

> In an effort to totally explore potential fiscal support for aerial patrol, the last four months of "Project Sky Knight" were conducted with the total ground unit complement of Lakewood Station depleted by two cars from each of two shifts -- day and evening. The normal number of general law cars per shift, 16.5, was reduced to 14.5.
>
> For the two shifts involved during the four month study, the audited cost of helicopter patrol was $65,333.00.
>
> Potential savings through deletion of two ground units on two shifts for the same period was $45,265.00.
>
> Statistics for the test months when compared to the same period the year prior indicate that removal of two patrol cars did not evidence any documentable decrease in the quantity of work performed.
>
> When all factors were measured, the study indicated that units can be removed for extended periods to time with minimum loss of efficiency and adverse effect, if such moves are fiscally requisite to provide support for advanced police techniques.[30]

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[28] Huntington Beach, California, Police Department, "Huntington Beach Helicopter Resume," p. 2.

[29] Covina and West Covina Police Departments, "Community Overhead Patrol," p. 50.

[30] Guthrie, Project Sky Knight, pp. 93-96,

Few departments may desire to reduce the level of vehicle patrol, but if the potential value of helicopter patrol cannot be exploited because of high costs and an inadequate budget, a slight reduction in automobile patrol may achieve the savings necessary to establish helicopter patrol. Such a move should not be undertaken until the existence of a pronounced need for aerial services has been established.

Helicopter Patrol Safety Considerations

A police department operating a helicopter patrol program can take several obvious steps to reduce the danger of accidents. The requirement that all pilots complete extensive training courses and be subject to frequent check flights is one of these. Continual inspection of the aircraft and immediate correction of equipment defects is another.

But even if all available preventative measures are utilized, an element of danger remains, and administrators may initially be plagued with visions of a police helicopter falling from several hundred feet into a heavily-populated area. After more thorough investigation, however, it becomes apparent that the helicopter is not likely to come crashing to the ground unless its main rotor blades come off or the pilot becomes ill or injured and is physically unable to operate the craft.

The helicopter carries its own built-in parachute in the form of a free-wheeling characteristic of the rotor system that insures a safe landing so long as the pilot maintains an altitude appropriate to the amount of congestion on the ground beneath him.[31] Safe landings are not only possible, they are virtually certain with implementation

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[31]Gilbert, "Helicopter Traffic Reports," p. 576.

of a technique referred to as "autorotation."[32]

> If there is an in-flight mechanical or tail rotor failure the main rotor blades continue to revolve at essentially the same speed because of their inertia. This enables the pilot to control the ship and maintain a relatively safe rate of descent. Upon nearing the ground the pilot changes the pitch in the main rotor blades, considerably reducing the descent rate, and proceeds to level off preparatory to landing.

Safety is further assured by the establishment of pre-designated landing zones or points to be used in the event of mechanical difficulty or other emergency condition.

> When not actually covering a police incident, helicopter patrols usually fly a pattern that assures observation, at one time or another, of every point in the city. More than one pattern can be devised and the starting point can be located anywhere in the pattern to avoid a consistent routine that is known to criminals. Incorporated into the flight program is the location of "safety corridors", or routes that are preferable because they contain various open areas where an emergency landing could be made in safety. A comprehensive survey of the locality is completed prior to initiating a patrol program to ascertain the safest possible routes. Pilots are instructed according to the results of the survey and are required by Federal Aviation Agency regulations to stay within the safety corridors unless on actual police assignment.[33]

> Upon completion of training, pilots and observors should be so well acquainted with the emergency landing points that an instinctive response can occur even in the face of imminent danger.[34]

Confidence in the safety of helicopter patrol is demonstrated by those departments which do not pay their personnel "hazard" pay during the time they are assigned to helicopter duty. The widespread feeling expressed in departments which have used helicopters

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[32] Berkeley Police Department, Project Report, pp. 31-32.

[33] Ibid., p. 30.

[34] Pasadena Police Department, "West San Gabriel System," p. 11.

for some time is that helicopters are actually much safer than automobiles.

Legal Issues of Helicopter Patrol

In the course of normal operations the personnel of the helicopter unit are likely to be involved in numerous criminal incidents. Because of the helicopter's accelerated response time, personnel may many times find themselves first on the scene of a criminal act in progress. ~~Certain legal precedents are likely to be established in the near future~~ Many jurisdictions have begun to establish legal precedents regarding the arrest powers of helicopter officers.

> There is a lack of legal material on which to base a really comprehensive study concerning police use of helicopters as patrol vehicles. Should helicopters come into widespread use, past experience in the use of fixed wing aircraft will serve as a guide when preparing cases for court trial where arrest has come about through the use of a helicopter.[35]

Felony arrests, in which a police officer can normally make an arrest if he has reasonable grounds to believe that the arrested person has committed the crime, would appear to constitute a minor problem. If the officers in the helicopter do not make the arrest themselves, they may very easily provide the grounds necessary for arrest by indicating the perpetrator of the felony to ground officers. Unless the ground officers had other information independent of that received from helicopter personnel, the airborne officers would have to appear as witnesses in the case.

In misdemeanor cases the arrest powers of airborne officers are somewhat curtailed. The helicopter officers must have observed the crime being committed themselves, and unless ground officers have

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[35]Guthrie, Project Sky Knight, pp. 130-131.

witnessed the same offense, the police officers in the helicopter would technically have to arrest the offender in most jurisdictions. The states of Kansas and Missouri have enacted legislation which permits ground officers to make misdemeanor arrests on information supplied by airborne officers. Other states may also have or may be considering such legislation, which in effect substantially expands the powers of airborne officers.

The most useful application of expanded misdemeanor powers would be in regard to traffic violations, which are almost exclusively misdemeanor offenses. Helicopter personnel in several cities report that they do occasionally issue citations for traffic offenses; it would appear quite probable that the police and courts have reached an understanding in traffic cases which sanctions arrests by ground officers for traffic offenses witnessed by aerial officers. Perhaps approval has been granted for other types of offenses also; very little information is available.

Liability in helicopter accidents. The issue of city liability for damages incurred as a result of helicopter operations would appear to be very similar to that of arrest powers.

> In regard to the question of civil liability of a government agency for damage resulting from the use of helicopters, the governmental agency may be liable, based on general tort law involving negligence principles. There is a wealth of cases establishing tort liability for fixed wing aircraft. Helicopter damages will probably come under the same general theories in establishing both liability and defenses.[36]

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[36] Ibid., pp. 131-132.

Patrol Area, Duty Hours, and Altitude

The operational factors of area, altitude, and duty hours form the skeletal structure on which the remainder of the patrol system is built. Each of these factors should be evaluated in light of the best information the police department has available concerning criminal and other activity, for there can be no question that it is desirable to obtain full use of the helicopter after it has been acquired.

Patrol area. Determination of routine patrol area is influenced by several factors. Size of the city is perhaps most important. Smaller cities can routinely schedule patrol across the entire city without ever having the helicopter so far away that ten or more minutes would elapse before it reached the scene of an emergency. This would approximate a city no larger than 200 square miles. It is desirable to have a smaller patrol area, perhaps one in which the helicopter could travel from one end to the other in no more than five minutes, but with a limited number of helicopters this is unduly restrictive, representing an area of about 50 square miles.[37] Only three of the 37 American cities with populations of 300,000 to 1,000,000 could be completely covered with a single helicopter using the latter formula, but with the 200 square mile figure only ten cities could not be completely patrolled.[38]

Within a city there are likely to be certain high crime rate areas which should be intensively patrolled, and some thinly populated areas should be covered infrequently. The downtown areas of several

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[37]Los Angeles County Sheriff's Department, Manual of Aerial Patrol, p. 20

[38]Kansas City Police Department, "1970 Survey," chart 2.

cities may not permit effective helicopter patrol.

> In New York City, because of the multitude of high-rise buildings, operation in many areas is considered unsafe at altitudes lower than 1,500 feet. When low-level night patrols were instituted over Central Park on weekends with Bell helicopters, noise complaints were received from posh Fifth Avenue apartments. The police now avoid the low-level flights around the park periphery.[39]

Dallas police also report that helicopters avoid the downtown area except in emergencies.[40]

Patrol duty hours. There is no reason that helicopters should not be used around the clock if the demand for their services exists. The great majority of the police departments surveyed have a break in the operating schedule during the early morning hours, presumably for two reasons. First, most people are asleep during this time, and second, they do not feel that these hours would be as productive a patrol period as other hours of the day. In those cities which have two or more helicopters, the most common technique is to schedule two shifts, the first from mid-morning to early evening and the second beginning about the time the first ends and continuing until 2 a.m. or 3 a.m. Dallas and Kansas City operate their aerial patrols around the clock, but no information as to the effectiveness of patrol during the dead hours of early morning was available at the time this report was prepared.[41]

From the standpoint of greatest level of activity, helicopters should normally operate from the late afternoon until midnight. In most jurisdictions these hours are the busiest of the day, and as a

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[39]Coburn, "Police Units Expand Helicopter Operations," p. 105.

[40]Table 3-B of Appendix A lists routine patrol areas.

[41]Table 3-B of Appendix A lists normal duty hours.

surveillance vehicle, this is the time when there is the most for the helicopter to see.

Patrol altitude. Police departments using helicopters have determined that it is most advantageous to operate the aircraft at the minimum altitude consistent with both safety and a reduced noise level. In most cases this altitude is about 500 to 600 feet above ground level. During the nighttime hours several cities, apparently as an additional safety feature, raise this minimum altitude by 100 to 300 feet. Los Angeles County, in the early days of its Sky Knight operations, received so many noise complaints that it was forced to raise its minimum patrol altitude to 1,500 feet. At this altitude visibility was considerably reduced, however, and the helicopter manufacturer was encouraged to alleviate the noise problem. When the necessary correction was made, the department returned its aircraft to the former level with only a few complaints.[42] Since that time most departments have observed the normal 500 foot altitude, although in carrying out a specific assignment or responding to an observed offense the helicopter may descend to as low an altitude as necessary.[43]

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[42]Guthrie, Project Sky Knight, pp. 48-49.

[43]Table 3-B of Appendix A lists normal patrol altitudes.

Chapter IV

Program Administration

The administrative practices and procedures associated with helicopter patrol operations greatly influence the ability of the unit to carry out its responsibilities and to gain acceptance within the community and inside the department. It is most important that the helicopter patrol unit be recognized as an operational element which can apply its unique abilities to the benefit of ground elements; to achieve this recognition the unit must insure that its activities are noted and recorded. The unit must further insure that information concerning its operations is widely dispersed among the public and other members of the department. Incomplete understanding of the purposes and capabilities of the helicopter patrol unit will almost certainly have an undesirable effect on its operations.

Command Responsibility and Internal Relations

Command responsibility for the operation of a helicopter patrol program should be placed in the functional unit of the department which has overall responsibility for patrol services. Most logically this responsibility would be placed with the Patrol Division Commander.[1] In the great majority of the departments which use helicopters, the aircraft is not a traffic unit although it may on occasion issue a citation or report on traffic conditions. It is not an ambulance, though it may on occasion transport sick and injured persons. Neither is the helicopter a planning and research tool, a fire vehicle, a detective unit, a juvenile unit, or a community relations device. Though it may

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[1] Covina and West Covina Police Departments, "Community Overhead Patrol," p. 29.

at a given time be performing any of these functions, the helicopter is essentially a patrol vehicle which, because of its flexibility, can be adapted to a number of other purposes. Very few departments, however, are interested in the helicopter because it performs any one specialized function particularly well. Rather, the general patrol capabilities that it offers are its most outstanding features.

If there is one function that the helicopter performs in a manner superior to any other, it would have to be that of observation, and observation has long been recognized as the key to an effective patrol service. O. W. Wilson has defined the three classes of patrol operations as services called for, inspectional services, and routine preventive patrol.[2] It is absolutely impossible to perform the last two of these operations without highly developed powers of observation, and the ability to observe is often no less important in regard to an incident which has resulted in the provision of a called for service. From its position several hundred feet in the air, looking down on an area which is perhaps eight to ten times larger than that viewed by automobile officers, the helicopter is the essence of the observation function. With this consideration in mind, there is little justification for assigning the unit to any division other than patrol.

In those municipal departments and in agencies at other levels of government which have defined the role of the helicopter in more narrow terms, the decision of unit placement should be based on how most of the unit's duty time is spent. In no case should responsibility fall to any element which receives very little benefit from

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[2] O. W. Wilson, Police Administration, (2nd ed.; New York: McGraw-Hill, 1963), p. 238.

helicopter operations or is only casually involved in the operations function.

No matter what the exact position of the helicopter unit in the organization structure of the department, problems of coordination and communication are likely to exist. The helicopter program in some cases is carried on from a location far removed from the main police building, and helicopter personnel do not frequently have contact with other personnel. Crew members operating from a remote location do not have an opportunity to participate in regular briefing and shift change activities, and they miss out on much of the informal interaction which is essential to group solidarity and unity. Helicopter personnel in this situation may develop a feeling of superiority or eliteness which goes far beyond the pride in their work that they might be expected to feel, and in the end they may come to view ground patrol officers as lackeys rather than as members of a highly skilled air-ground team.

To avoid undesirable working relationships with other functional units of the department, every effort must be made to involve members of the helicopter unit in the same processes in which other members are involved. Recognition of the fact that they are a part of the total patrol effort retards any inclination of air officers to view their detail as an "elite corps."[3] The most effective means of accomplishishing this integration is to move the helicopter operation as close to the main police facility as is feasible, and then to require that all aerial officers attend pre-shift briefing, training,

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[3]Berkeley Police Department, Project Report, p. 47.

and other exercises. The informal contact which results from persons sharing the same facilities should also be beneficial. Another means of eliminating an environment in which elitism would flourish involves the training of more pilots than are actually needed to man the aircraft. Assignment to flying status may then be rotated among the qualified pilots on a daily or weekly basis, and pilots not assigned to flight duty can be assigned to accompany other patrol officers on routine automobile patrol. The opportunity to participate in both air and ground operations facilitates the development of a more well-rounded attitude and brings on better understanding of mutual problems. It is important that all ground personnel, supervisors and patrolmen, have confidence in the helicopter so that it may be used to its full capability, and the more extensive the contact between helicopter personnel and other members of the department, the more likely all personnel will accept and support helicopter operations.[4]

Of particular importance to the helicopter operation are the field supervisors and the command personnel who direct field activities. If the people in these positions do not believe in the value of helicopter patrol, they are not likely to encourage their subordinates to cooperate fully in air-ground operations. In Project Sky Knight operations the Los Angeles County Sheriff's Department soon found that a lack of coordination at the command level immeasurably restricts aerial patrol effectiveness.[5] Lack of cooperation in some cases may result from incomplete understanding of the operational chain of command.

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[4]Pomona, California, Police Department, "H.A.L.O.," 1968, p. 16.

[5]Guthrie, Project Sky Knight, p. 128.

It would appear that the person in charge of field operations at any given time should have the authority to direct helicopter activities. Some departments have neglected to establish this type of command relationship, however, and helicopter personnel are not certain as to whose orders they should follow. From the standpoint of success or failure of the total helicopter program, it appears that responsibility rests primarily with the field commander in charge of both air and ground operations.[6] If he is not free to use the helicopter in the manner he believes is most appropriate, then field activities are not likely to be marked by cohesiveness and full cooperation.

The department can take several steps to acquaint all personnel with helicopter operations. There should be, for instance, an in service training program for all uniform personnel prior to the beginning of helicopter patrol. Policies and procedures should be fully explained, and written materials outlining the proposed method of operation should be distributed. Participation in demonstration flights should be ~~mandatory~~ encouraged for all uniform personnel. Mandatory flights A number of departments have made such rides available but have not required officers to take them. For a complete understanding of the aerial patrol operation, officers should be taken aloft to see precisely what crew members can see and do, during both day and night operations. Being told about the advantages of the program is good, but having an opportunity to participate first-hand is better.

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[6] Ibid., p. 129.

After the helicopter program has become regularized, the department should continue to keep all affected personnel advised of changes in aerial procedures. Refresher training should be provided as needed, although for those persons who have frequent contact with the helicopter in the course of normal duty such training is likely to be of limited value. Training and demonstration rides should become a part of the department's recruit training program, and rides should be available at specified times for all personnel.

Records Management

As a still controversial concept, helicopter patrol is very much involved in proving itself. Even persons who have been fully informed of the purposes of aerial patrol and have had an opportunity to see what it can do may not fully conceive what the results of its operations may be. To the many people who have only the vaguest conception of what the capabilities of helicopter patrol are, the most convenient means of illustration is an adequate records system. The helicopter unit should be required to maintain a daily log or activity report on which all called for services and activity initiated by personal observation should be recorded. The unit commander should combine these reports and send periodic reports to his superior. At the highest level of the department, activity reports should be compiled into summaries to provide information about the unit's operations. Information can be divided into two primary categories, police activity and public service activity. The goal should obviously be to show what the unit has accomplished and how much of its time is spent performing services of one kind or another.

The information gained from analysis of helicopter unit records and from the records of other field service units should be used in determining patrol hours and times. If a pattern of activity is noted, the helicopter can be assigned to concentrate on patrol of the area at the time criminal activity is most likely to occur.

Records information should also be studied to determine the usefulness of helicopter patrol. If the unit were to spend 90% of its duty time responding to calls and only 10% on routine patrol activities, the assumption might well be made that the helicopter was justified and that another one or two might be used. If, on the other hand, the point is reached that the helicopter patrols for an entire shift with no activity to report, several possibilities are presented. This could mean that crime has been eliminated, but this does not appear likely. It might mean that the helicopter has been patrolling the wrong area and should be reassigned to more productive efforts. But if the lack of activity persisted regardless of patrol area, it would probably mean that the original need for helicopter patrol was overrated, and that the city should consider curtailing the program.

Realistically, and assuming that unit personnel complete all reports as they are told to do, the information gained should show that the unit performed well and that its service is fully justified. It is not enough at this point for the administrator to know that he was right after all. Rather, he should make this information available to other members of the department, to government officials, and to members of the public. The confidence and support of persons not

completely familiar with unit operations is necessary, and they are more likely to be convinced if the records support of unit activity is available.

Public Relations Methods and Procedures

In the initial proposal for funding of the Sky Knight program the Los Angeles County Sheriff's Department recognized the importance of publicizing helicopter patrol operations:[7]

> This project's effectiveness will depend in large measure on the recipients of the services being fully aware of all aspects of the project's operation.

The value of community support for helicopter patrol is no less important now than it was at that time, and every department with a helicopter patrol program is obligated to inform the public of its existence, and to seek out the public's reaction to the patrol.

Departments which have operated helicopter patrol programs for a period of time sufficient to form an opinion indicate that the public has received the program very well.[8] Any number of sources of complaints were foreseen by police administrators, among these noise, lights, invasion of privacy, danger of crashing, and the "Big Brother" syndrome, but most of them have not been as important as initially expected.

> The most undesirable feature of the helicopters, to residents, appears to be the noise. Lights and danger of accident were ranked much lower. Respondents ... placed invasion of privacy very low in their overall ranking. Noise was not mentioned, by businessmen, as having an effect, and the most commonly stated good effects mentioned by them were a feeling of protection and a reduced crime rate.[9]

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[7]Los Angeles County Sheriff's Department, "Aerial Surveillance Methods of Crime Prevention," January 6, 1966, p. 12.

[8]Table 3-D.2 of Appendix A contains public reactions responses.

[9]Jet Propulsion Laboratory, "Effectiveness Analysis of Helicopter Patrols, Vol. II: Evaluation," (Pasadena: California Institute of Technology, 1970), pp. 59-60.

The level of public support in several instances has been truly outstanding. The city of Los Angeles and Los Angeles County have each taken surveys of public reaction to helicopter patrol, and they found 89% and 92% of the public, respectively, approving of helicopter operations.[10] In another instance, reaction was even more impressive.[11]

> Flight crews talked to an estimated 35,000 to 40,000 persons during this period (one week). Less than 10 people were opposed to the idea of police helicopter patrol. The overwhelming response not only favored the patrol, but thought it should be increased.

In those surveys which have been taken, the public has generally believed that helicopter patrol increases safety and security. The public also tended to think of the police whenever a helicopter was heard overhead, and to be more conscious of the amount of police patrol.

> Helicopter patrol, with its "space age" connotation, induced increased citizen interest in and awareness of law enforcement. While helicopter crews were enjoying unobstructed visibility of large areas, they were also more readily visible to persons on the ground. A citizen who may have complained he rarely saw a police ground unit observed the patrol helicopter numerous times in the course of a day.[12]

Public support does not come about by accident, nor is the concept of helicopter patrol by itself so impressive that it literally sells itself to the public. Most police departments have initiated strong public relations programs at the time helicopter patrol was begun. Various methods of acquainting the public with helicopter patrol have

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[10] Jet Propulsion Laboratory, "Vol. II: Evaluation", p. 60.; and Guthrie, Project Sky Knight, p. 104.

[11] Huntington Beach Police Department, "Resume of Helicopter Activities for the Month of November, 1970," p. 2.

[12] Los Angeles County Sheriff's Department, Sky Knight: A Project Report, pp. 81-82.

been used. The most common methods include the mass media, public appearances, and school demonstrations.

As a rather innovative concept, helicopter patrol has generally received very favorable treatment from the mass media. Radio, television, and particularly newspapers have been very interested in police helicopters and have helped keep the public informed. The Long Beach Independent wrote about the Sky Knight program shortly before it began operation:[13]

> On June 6, when Project Sky Knight gets its first nationwide launching in Lakewood, the modern-day "castle guard" goes to the air again for his first elevated look at the world around him in almost seven centuries.
>
> There's not much similarity between the knight of the Middle Ages and today's sheriff's deputy, whose access to the broad countryside in a two-passenger Hughes helicopter would make the medieval knight marvel.

The Boston Globe also had comments favorable to the Sky Knight program:[14]

> The Sheriff's Department here (in Los Angeles) is experimenting with a radically new concept in police patrol that would have made honest men of the likes of the Dalton Brothers, Billy the Kid and Jesse James.
>
> It's a 12-month program called Project Sky-Knight -- the world's first aerial police patrol which operates day and night.

If the department beginning helicopter patrol cooperates fully with the press and makes them aware of the details of the program, the press is usually only too happy to give the program extensive coverage. The influence of the community newspaper can thus become a potent ally, particularly when the article concerns a spectacular incident in which the helicopter has been involved.

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[13] Long Beach Independent, May 21, 1966, p. 1.

[14] Boston Blobe, July 4, 1966, p. 1.

Newspapers can also provide support of helicopter patrol when it is still in the proposal stage. The following excerpt is taken from an editorial which appeared shortly before the Berkeley City Council considered funding a helicopter program:[15]

> Quite simply, aerial patrol is an anticrime tool, the use of a vehicle that increases the efficiency and response of law enforcement when dealing with criminals and criminal conduct. We urge the city council to view the helipatrol as it would any other necessary piece of city equipment. And we hope councilmen will be guided by practical, rather than emotional, arguments. ...if so, they will approve this crime prevention tool so urgently requested by the Berkeley P.D. Shouldn't your city be next?

Even with such enthusiastic support, of course, there is no certainty that helicopter patrol will be approved; it failed in Berkeley.

Public appearances before civic, business, and professional groups can also help gain support for aerial patrol. The Dallas Police Department helicopter unit has its personnel appearing before neighborhood groups frequently, and response has been very enthusiastic. The Las Vegas Police Department sends its personnel out to public appearances armed with a pamphlet which describes the history and purposes of helicopter patrol. The results of these speaking programs have been very favorable.[16]

Demonstrations put on at schools throughout the city can help acquaint school children with the helicopter patrol concept. Persons of school age appear to be very much impressed with the aircraft even though the younger ones may not fully understand what it is

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[15] Berkeley Daily Gazette, March 31, 1970, p. 7.

[16] Survey questionnaires completed by Dallas Police Department and Las Vegas Police Department, December, 1970.

intended to do.

Demonstration flights for members of the public would be an excellent means of showing the effectiveness of helicopter patrol if the aircraft available held more people. The total number of seats is such that only two or three people could be taken up in each flight. For selected individuals, however, the demonstration rides may prove very informative. One such program was operated at one time in Chicago:[17]

> To make use of the extra space in the cabin, invitations are extended to selected individuals to accompany the pilot throughout all or a portion of the "Traffic Show." Traffic analysts of state, county, and city highway offices have made frequent use of this opportunity, as have photographers, potential traffic-spot-broadcast sponsors, newspaper reporters, and celebrities. Thus, the Traffic Helicopter doubles as a public-service vehicle, creating goodwill by giving its guests an unparalleled view of Chicago.

One other public relations method which has been used with great success is the static display set up at a shopping center or other public area. A helicopter displayed in a parking lot normally attracts some attention, and many members of the public have an opportunity to examine at first hand what they may have heard flying about over the city earlier. These displays, by virtue of being located in areas marked by a great deal of foot traffic, often attract several thousand persons during a day.

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[17]Gilbert, "Helicopter Traffic Reports," p. 576-577.

Chapter V

Helicopter Unit Personnel Administration

Many departments considering helicopter patrol programs often relegate the personnel factors to a position of secondary importance forgetting, in their eagerness to obtain the most suitable equipment, that it is the people, and not the machine, who actually do the work. The most expensive and versatile aircraft available is worth very little if there is no one capable of using it correctly. Fortunately, the police service has an abundance of talent available, and the primary personnel problem is that of management rather than lack of raw material. This chapter discusses helicopter unit personnel in three basic categories - pilots, observors, and other personnel. Within each category the processes most important to unit operations are reviewed, and recommendations as to those policies and procedures which appear to maximize personnel contributions and satisfactions are put forth.

The Helicopter Pilot

It is of course quite impossible to operate a helicopter patrol program without a pilot. Apart from this one inescapable conclusion, there are few definite principles regarding other aspects of the pilot's position. Individual programs in operation across the nation indicate great variation in the number of pilots per aircraft, method of selection, amount and type of training, rate of compensation, sworn or civilian status, and other factors. Each program stresses what it believes to be the most correct personnel practices, but there is

obviously very little consensus as to what these practices are.

Number of pilots. The number of helicopter pilots needed to operate a police helicopter patrol program is partially determined by the number of aircraft but primarily determined by internal management policies. To operate the basic two helicopter patrol fleet on a two shift per day, seven day a week basis requires a minimum of three pilots. The standard ratio of 1.6 personnel for each position which is often used in determining personnel requirements appears to apply in this case. Of all departments surveyed, only Baltimore had more helicopter available than pilots; pilots were outnumbered three to two. In most other cities, the ratio of pilots to aircraft is 2.0 to 1 and 3.0 to 1. Fifteen cities for which positive figures were available maintained figures within these limits.[1]

The primary consideration in maintaining a surplus number of pilots appears to be that of availability. Departments realize that the certainty of always having an operator available can be virtually assured by training more pilots than are actually needed. It hardly makes sense to invest several hundred thousand dollars in equipment, facilities, and personnel only to find in an emergency that no one is available to pilot the helicopter.

There are several other advantages which mark those programs with an excess of pilots. Pilot personnel may complete other duties, such as making public appearances or instructing departmental training

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[1]Table 3-A of Appendix A lists the number of helicopters in each survey city, while Table 3-C gives the number of pilots.

programs, without hampering unit operations. Rotation of pilot trained personnel into ground patrol duties is another benefit; the ability to participate in both air and ground operations provides a more complete perspective. Replacement capabilities are much better when more pilots are available. If an individual on flying status is reassigned to another function, there is no time lapse in finding and training a replacement. Finally, those departments which have trained some of their pilots to the instructor level will in all probability find that as their programs expand these personnel will spend a much greater portion of their time in training and administrative duties and proportionately less time in aerial patrol.

Sworn vs. civilian status. There is an almost complete aversion to hiring civilian pilots to fly police helicopters. The few departments which have hired helicopter pilots from civilian ranks have given them police training immediately and then assigned them to helicopter patrol. In no known instance has a police department employed a civilian with no police experience or training to fly its aircraft and not required that he receive training and give up his civilian status.[2]

Several factors influence the decision to use sworn officers as helicopter pilots. There is a belief throughout the police service that special attitudes, abilities, and personality traits are required to be a good officer. The patrol officer is increasingly coming to represent the best of these necessary qualifications. The good

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[2]In Table 3-C of Appendix A two cities, Fort Worth and Honolulu are shown as having civilian pilots. The individuals in both cases are reserve officers who have received some training and have full arrest powers.

patrolman is used to stress, is well versed in standard police practices, is observant, and in general may be termed a very stable person. Many departments do not feel that these characteristics can be matched by the great majority of the civilian helicopters pilots who might be available for employment.

> Experience has shown that a civilian pilot tends to become excited during a police action and is prone to diversion of attention from his job. A police officer is already trained against having his attention diverted from the job at hand.
>
> The field of civilian helicopter pilots is reportedly comprised of many transient or itinerant individuals. Recruiting a stable, professional individual for pilot services from this field often proves a difficult task, and retention presents additional problems.[3]

> When flying under the stress conditions of serious crimes in progress he (the civilian pilot) is more apt to be distracted by the ground action rather than devoting full attention to maneuvering the aircraft. This inattention to the prime pilot task could have serious consequences and is less likely to occur if an experienced police officer is at the controls.[4]

Criticisms of civilian pilots citing lack of stability and self-control may be a bit harsh, particularly as there is as this time very little information available based on empirical observation. Many civilian helicopter pilots are returning military veterans with experience in Viet Nam; it hardly appears likely that these persons would be any more likely to become rattled than most police officers.

More valid reasons for selecting police officers as pilots are the proven ability of the officer and the greater flexibility of the program. A career officer who has continually performed in a satisfactory manner and who has enough interest in the helicopter program to volunteer for pilot training is probable capable of

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[3]Covina and West Covina Police Departments, "Community Overhead Patrol," p. 27.

[4]Berkeley Police Department, Project Report, p. 52.

becoming a competent pilot. On the other hand, even experienced helicopter pilots cannot operate police helicopter units effectively without special police training.[5]

> There is greater flexibility in the program if the pilot is also a police officer. Should it be necessary to ground the aircraft for any reason, the civilian pilot will be paid his salary for doing nothing. The officer pilot can easily be reassigned to any police function in need of assistance.[6]

Despite the negative reaction to civilian pilots thus far, it does appear to be feasible to use civilian pilots in certain specialized positions or until officers can be adequately trained as replacements. A firm which specializes in training helicopter pilots has a special program in which it rents an aircraft and pilot to a city for test purposes. This type of evaluation may prove very useful. As another example, the Dallas Police Department has two civilian pilots in its program, one the Chief Pilot and the other an instructor. The department has had no adverse effects resulting from this arrangement.[7]

Selection of pilots. Pilots should be selected from among those officers volunteering for the program. The need for enthusiasm and dedication in pilot personnel indicates that assignment of unwilling personnel to this function is not desirable. An additional consideration in pilot selection is the desirability of having had ample opportunity to evaluate the ability and performance of all applicants. This would indicate that some minimum tenure with the department prior to acceptance into the helicopter unit would have to be established; two or three years would appear to be a period of satisfactory length.

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[5]Guthrie, Project Sky Knight, p. 133.

[6]Berkeley Police Department, Project Report, p. 52.

[7]Dallas Police Department, survey questionnaire, December, 1970.

A selection factor of importance in several departments is the prior flying experience of the applicant. In some cases a private or commercial pilot's license is required before an applicant will be accepted for helicopter training. This requirement is intended to assure the flying cabability of the applicant and also to shorten the training period. It may in some departments be unduly restrictive, and consideration should be given to waiving the rule.

Training of pilots. Training programs are conducted by both helicopter manufacturers and private firms. Pilot training from either source is normally satisfactory, and the decision as to which to use can in most cases be based on the convenience of the department undergoing training. Perhaps more important than who does the training is the determination of the level of training required for each officer. The standard among American police departments at present appears to be about 200 hours of ground and flight training, with the attainment of the commercial helicopter pilot rating. Included in the standard program are day and night flights, helicopter ground school, aerial police and emergency procedures, and pilot-observor procedural training. The most intensive training program in effect at this time appears to be that of Dallas, in which beginning pilots receive 350 flying hours of training.[8]

After the initial training period has been completed, departments require that their personnel be checked periodically for proficiency and ability to meet emergency operations standards. The frequency of these periodic checks varies from every 14 days to about once a month. Check flights are directed by a helicopter pilot with the instructor

[8]Survey questionnaires of departments listed in Table 2 of Appendix A.

rating; he may come from inside the department or from another source. It is strongly recommended that one or more department pilots be encouraged to advance their training and obtain helicopter instructor ratings for check purposes as well as for training pilots for future patrol expansion.[9] There is no reason why a department should not operate its own training program and avoid relying on personnel outside the department.

Compensation of pilots. Rates of compensation for helicopter pilots vary substantially, and seven of the departments surveyed did not provide any additional compensation on the basis of special training and skill.[10] Among those departments which do pay helicopter pilots a higher salary than that to which they would otherwise be entitled, rates or amounts of extra compensation also differ widely. Most departments which do provide "skill pay" or extra pay under another title do so on a monthly basis, with rates ranging from $40 per month extra through 10% above the normal salary to a peak of $407 per month extra. Compensation at the higher rate is dependent on remaining on flying status.

The most satisfactory method of providing extra compensation is that used by the San Mateo County, California, Sheriff's Department. Personnel assigned to flying status receive extra pay at the rate of $1.75 per flight hour. When pilots are not performing flying duties, they are compensated at their regular rate of pay. This formula might be varied slightly to provide for compensation at the higher

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[9]Los Angeles County Sheriff's Department, "The Police Helicopter Patrol Team," 1968, p. 41

[10]Table 3-C of Appendix A lists compensation findings.

rate of pay when flying or on standby status on the ground. Normally only about five hours of an eight hour shift would be spent in the air, but it would appear appropriate to pay the pilot at the higher rate for the entire shift. The exact rate of additional compensation would be related to salary and would vary substantially from department to department.

Fatigue. One additional consideration of the utmost importance to the police helicopter program is the problem of pilot fatigue. Even the most enthusiastic pilot cannot fly sixteen hours a day and retain the mental sharpness necessary to both safety and effective police operations. The fatigue factor generally limits a pilot to approximately five hours flight time out of each eight hour shift. Routine reporting, meal and refueling breaks will usually consume the three hours of no flight time in an eight hour shift.[11] Patrol time is normally divided into two 2½ hour or three or more shorter periods. This effective patrol time does not compare unfavorably with ground patrol units, but fatigue appears to be higher for helicopter pilots because of the continuity of patrol and the absence of interruptions.

Fatigue appears to affect both the pilot and observor. Thus programs which have involved pilots serving as observors and switching responsibilities midway through a shift have found that fatigue was not reduced. Both pilots complained of equal fatigue on long flights regardless of which handled the controls or how often they switched from the role of pilot to the role of observor.[12]

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[11] Los Angeles County Sheriff's Department, Manual of Aerial Patrol, p. 10.

[12] Guthrie, Project Sky Knight, p. 21.

The Helicopter Observor

The need for the police observor is created by the inability of a solo helicopter pilot, undertaking close surveillance duties, to combine flight and observation duties simultaneously.[13] It is neither safe nor effective to have a one-man crew. The observor has a very important role in the police helicopter patrol program, in fact, the performance of the observor in the helicopter is the single most important of the degree of effectiveness achieved in operating helicopters as police vehicles.[14] The factors involved in staffing the observors' positions should be given the same degree of consideration as those pertaining to the pilots' positions.

Selection of observors. The observor, like the pilot, should be a police officer. Although the observor could be selected and trained from civilian ranks, the police officer who is trained as an observor also offers the extra advantages of established compatability with ground personnel, knowledge of law enforcement techniques and operation, general geographical knowledge of his community, and the ability to serve in a dual capacity as a member of the ground forces when not airborne.[15]

Departments differ as to whether the observor should be pilot-trained. Some believe that it is not required, and is, in fact, somewhat undesirable, for the observor to be a pilot or to be primarily interested in flying. Observors must not be distracted from their

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[13]A.E. Clarke and H. Roberts, "Rotocraft: Some Background Information," Police Research Bulletin, July, 1967, p. 20.

[14]Guthrie, Sky Knight, p. 133.

[15]Covina and West Covina Police Departments, "Community Overhead Patrol," p. 29.

primary objective of ground observation.[16] There is also some feeling that prolonged periods of two pilot patrols should be avoided to prevent efficiency loss in the patrol operation.[17] At least one department, however, holds the opposite opinion and prefers that both crew members be pilots; New York City experienced a fatal helicopter crash at one time which might have been avoided had the observor been pilot-trained, and this has apparently exerted some influence on their decision.[18] In the end the determination of whether both crew members should have pilot training must be made by the local department; each argument has its merits and the choice between them is strictly a matter of local preference.

Training of helicopter observors. Methods of training personnel for helicopter observors vary widely. In some cases the would-be observor would receive a couple of orientation flights, informed of the applicable rules and procedures, and sent aloft, all in the matter of a few hours. The Los Angeles County Sheriff's Department typifies the departments which have a much more extensive training program. Observors receive from 48 to 56 hours of training prior to flying on routine patrol.[19] Other departments have similar programs, which usually include familiarization with the helicopter, map reading, day and night flights, and perhaps simulated police problems. Also included in most courses is a definition of responsibilities of both the pilot and the observor.

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[16]Los Angeles County Sheriff's Department, "The Police Helicopter Patrol Team," p. 6.

[17]Ibid., p. 41.

[18]New York City Police Department, personal correspondence, March 7, 1971.

[19]Los Angeles County Sheriff's Department, "The Police Helicopter Patrol Team," pp. 8-9, 24-27.

> While on helicopter patrol the police observor is fully responsible for the assignment of the helicopter. He directs the patrol areas, monitors the communications network, and directs the helicopter to the location of police incidents. In this position he reports directly to the Watch Commander and may have coordinating responsibilities over ground units during police incidents. The pilot, on the other hand, has absolute responsibility for the safety of the craft and may override the observor's directions when he indicates that the desired operation is unsafe.[20]

It is absolutely essential that an understanding be reached as to the authority of each crew member in aerial operations.

Permanent or rotative status. Of the departments surveyed, seven indicated that observors were permanently assigned to the helicopter unit and six indicated that assignments were rotated regularly.[21] The arguments for permanent assignment of officers to observor status center around the increased competence which is developed over a long period of time. Those who favor rotating assignments among all personnel who volunteer point out that this helps acquaint more personnel with the helicopter patrol program and provides for greater acceptance within the department.

Analysis of this issue indicates that assignments should be rotated when the personnel assigned to the observors' positions require or request replacement. Routine rotation every few weeks or months would prohibit developing the intimate knowledge of the area and the operation which would be required for maximum effectiveness. It is, after all, the observor, not the pilot, who is most important to the success of the operation, and a high level of proficiency should be sought. The most proper method of acquainting

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[20]Pomona Police Department, "H.A.L.O.," p. 17

[21]Table 3-C of Appendix A contains information on observor status.

personnel outside the unit with the helicopter program is by means of demonstration flights in conjuntion with an in service training program.

Compensation. Extra compensation for observors does not appear to be completely justified. Practices among departments vary, with some paying "skill" pay to officers assigned as observors. This is opposed to "hazard" pay which is generally denounced.[22]

> No hazard pay is given for helicopter service for experience indicates that the helicopter is approximately nine times safer than ground units.

If an officer is assigned to helicopter patrol as an observor on a routine basis, and he incurs no hardships not found in automobile patrol (long or unusual working hours, special uniform requirements, or other conditions), he certainly should not receive an amount significantly higher than a ground patrol officer. If any bonus is paid it would probably serve more as an incentive to attract officers into the unit than to reward them for special skills or competence.

Other Helicopter Unit Personnel

Departments may, for administrative purposes, assign personnel other than pilots and observors to the helicopter unit. The unit commander may in some cases a non-flying supervisor. Secretaries and clerks may be assigned to complete records tasks within the unit, and mechanics may also be assigned to the unit. The unit must not fail to develop policies and procedural guidelines applicable to these support personnel who are not normally on flying status.

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[22]Pomona Police Department, "H.A.L.O.," p. 17.

Chapter VI

The Uses and Effectiveness of Police Helicopter Patrol

Essential to the police helicopter patrol program is the determination of the duties to be performed by the helicopter crew. The range of possible functions available is quite broad. The helicopter need not be reserved for the exotic -- rescues, riots, or disasters. It has proven to be realistically effective whether applied to control of illegal dumping and driving, or to the apprehension of murderers and bandits.[1] The selection of the tasks to be carried out by aerial patrol officers should be done very carefully; wasted time can contribute to ineffectiveness and poor morale on the part of crew members. In this chapter a number of the basic uses of the helicopter will be reviewed, and the effectiveness of helicopter patrol will be examined from several viewpoints - the statistical effect, the deterrent effect, the types of activities in which the helicopter is most useful, and the factors which should be considered in deployment for maximum effectiveness. Although some of these may appear to be quite subjective, it is important that every department using helicopters make an effort to determine their effectiveness, from the standpoint of both justification of cost and the overall contribution made to the level of police service.

Functions of the Helicopter Unit

The most basic duty of the helicopter is that of routine patrol and observation. Since Project Sky Knight demonstrated that the

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[1] Los Angeles County Sheriff's Department, Sky Knight, pp. 77-78.

helicopter was capable of serving as a regular patrol vehicle, all municipal departments which have obtained helicopters have used them for this purpose.[2] Routine patrol as a police activity is intended primarily as a deterrent and is directed primarily at diminishing less tangible hazards (situations likely to result in a call for police service) that are not readily isolated and identified.[3] During both ground patrol and air patrol, officers spend much more time routinely patrolling than they do participating in apprehensions, chases, or activities which exhilarate and relieve boredom. This is more prevalent in the air than on the ground as diversification and contact with others are more restricted.[4] The Sky Knight project found that the helicopter was as well-suited to patrol as any ground vehicle, and possessed some unique capabilities not found in ground vehicles.[5]

> ... ground units in the test area averaged approximately 100 linear miles per eight-hour shift. The helicopter averages 300 linear miles per shift. While traversing their beat many times over, helicopter crews maintain an observational advantage eight to ten times that possible from ground vehicles.

Although there is justification for conducting task-oriented helicopter patrol, as will be noted later, the ability of the helicopter to perform routine patrol and surveillance duties cannot be doubted. The chief shortcoming of the helicopter as a patrol vehicle is the inability of its officers to immediately participate in ground

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[2]Table 3-E of Appendix A indicates routine helicopter duties.

[3]Wilson, Police Administration, p. 238.

[4]Los Angeles County Sheriff's Department, Sky Knight, p. 53.

[5]Ibid., p. 93.

activities without first finding a place to land, but this is not frequently a serious handicap.

Traffic surveillance. The use of helicopters for traffic observation and reporting is almost as frequent as for routine patrol. In fact, in the past helicopters have been used in police work largely in support of the traffic control function. Only recently have they been used in patrol work.[6] Several major cities have been giving helicopter traffic reports for years, and the traffic copter has become an accepted service in today's traffic-congested life.[7] Philadelphia at one time had perhaps the most comprehensive helicopter traffic operation in the country.[8]

> Twice a day, five days a week, the "Voice of the Go Patrol" is heard over ten AM and four FM Philadelphia area radio stations, with accurate reports of highway ahppenings and time-saving information of the road for millions of drivers.
>
> The Go Patrol's communications network is impressive. It links the helicopters with the operations office of Copters, Inc., with the Go Patrol's four squad cars and two tow trucks and with the police radio network. The squad cars and tow trucks are equipped for emergencies, carrying gasoline, tires, tools and flares, as well as first aid supplies, and can be directed by the helicopter to a highway accident or local disaster.
>
> In addition, Go Patrol has organized "HELP" -- helicopter emergency life-saving plan. With this plan, highway accident victims may be picked up by helicopter and flown to a hospital heliport. The helicopters may also fly doctors to the accident.

Not only can motorists be advised of current traffic conditions through such a program, the police and other agencies involved in the traffic function may respond to traffic incidents much more rapidly.

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[6]Jet Propulsion Laboratory, "Effectiveness Analysis of Helicopter Patrols, Vol. 1: Summary," Pasadena: California Institute of Technology, 1970, p. 1.

[7]Jean Ross Howard, "When Minutes Really Count," Flight, January, 1967, pp. 69-70.

[8]Ibid., p. 69.

> One of the most important functions of the WBBM Traffic Desk is one of which most people are not even aware -- the almost instantaneous handling of the reverse flow of current traffic information from the helicopter through the Traffic Desk to the responsible agency or agencies, in many cases long before they could have received such information from other sources. This splendid cooperation greatly accelerates agency responses to motorists in trouble.[9]

The value of the helicopter in the traffic observation and coordination function is likely to continue to increase.

> One of the few aspects of our society that has been able, thus far, to keep pace with our population explosion is automobile registration. Since car ownership is a function of population increase, most qualified observors agree that registrations and subsequent highway clogging will not only continue to plague our everyday lives, but that the problem will grow worse. Expressway construction cannot keep pace, and all attempts to monitor the precise traffic situation from the ground or from conventional airplanes have proven inadequate. The helicopter really moves into its own in this sphere, providing the perfect platform from which to observe patterns of metropolitan traffic in general, and then to close in on specific tie-ups for detailed study of the situation.[10]

The Oakland Police Department received a grant in June, 1970, to partially fund a helicopter patrol program. About 40% of the total patrol time is to be spent on traffic-safety related activities. The objective of this federally funded project is to favorably modify the incidence of crime, vehicle accidents, and traffic congestion through the innovative and tactical use of helicopters.[11] The results of this program may well indicate additional uses of the helicopter for traffic surveillance.

Traffic law enforcement. Most police departments have been reluctant to fully involve their helicopters in traffic law enforcement

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[9]Gilbert, "Helicopter Traffic Reports," pp. 574-575.

[10]Ibid., p. 575.

[11]Oakland Police Department, "Information Bulletin," p. 1.

activities. One reason for this is the belief that patrol time can be better spent in other tasks. Another factor may involve the role of public opinion in the success of helicopter operations. Administrators apparently feel that extensive use of the helicopter to apprehend traffic violators would undo much of the good public image the helicopter presently enjoys. The Kansas City Police Department expresses this opinion very well in one of its publications when it states that helicopters have been used in very little traffic work because the department feels it would receive public criticism.[12]

Several departments use helicopters for traffic enforcement purposes when the violation involved is a serious one. Such offenses as driving under the influence of alcohol, leaving the scene of an accident, reckless driving, and particularly attempting to elude police officers often bring the helicopter into play. The normal role of the helicopter in apprehending a violator is that of keeping the vehicle under surveillance and directing ground units to it, with the ground officers making the arrest or issuing the citation. In no traffic application is the helicopter more valuable than in the high speed chase in which a driver is deliberately trying to elude apprehension. The driver who runs from the police may be scared, he may be intoxicated or mentally ill, or he may be a criminal fleeing the scene of the crime. Without prior knowledge of the driver, the police are put in the position of endangering the public by attempting to chase him down and force him to stop. Now, however,

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[12]Kansas City, Missouri, Police Department, "Helicopters in Law Enforcement," p. 6.

> ... the use of the helicopter will contribute substantially to vehicular safety in eliminating or reducing the need for officers to engage in high speed pursuit driving. When a ground unit becomes engaged in a pursuit, a helicopter, if available, will respond immediately and will relieve the ground unit. When the helicopter officers make visual contact with the fleeing vehicle, ground unit officers will terminate the pursuit and will respond to directions from the aircraft concerning the location of the vehicle. All officers should be knowledgeable that the airborne officers can pursue a fleeing automobile with ease and safety; the opportunity for a driver to elude the police is virtually eliminated and there is absolutely no need for ground officers to continue a high-speed pursuit through the streets.[13]

The capabilities demonstrated in this application could be very easily applied to other types of traffic violations, but with the limited number of aircraft now available, the time involved can be better spent on other functions. As more helicopters are obtained in some cities, a portion of the patrol day might very well be allocated to the enforcement of traffic laws.

Investigative surveillance. Several kinds of investigative activities can be conducted from helicopters. They are well suited, for instance, to maintaining a stakeout where a criminal act is expected to occur. The helicopter is equally capable of maintaining a surveillance of a moving vehicle. In both cases, the altitude maintained can be such that the aircraft remains undetected and the persons who are the subjects of the investigation are not alerted. Because of the length of time involved in many surveillance operations, however, it is not practical at this time for the helicopter to become heavily involved in routine criminal stakeouts. When the case is extremely serious in nature, or when there is an expectation

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[13]Oakland Police Department, "Information Bulletin," p. 4.

of immediate results, the helicopter may prove very useful. The police departments of Baltimore, Costa Mesa, California, and Wichita and the Los Angeles County Sheriff's Department indicated that helicopters are used for some investigative surveillance activities in their jurisdictions.[14]

Rescue and evacuation. A number of departments employ their aircraft in the rescue and evacuation of persons in need of medical attention or who are facing immediate danger. The helicopter is particularly useful when waterways are involved; the number of opportunities to rescue persons in precarious positions may be very closely related to the amount of water in the jurisdiction. During its two decades of helicopter patrol, the New York City Police Department has frequently been involved in rescue operations.[15]

> The 568 miles of New York City waterfront which comprise rivers, bays, marshes and the Atlantic Ocean off Rockaway Beach and Coney Island, provide an ideal operational environment for the helicopter. Rescue of persons from disabled, burning, or overturned boats have been affected by helicopters; persons trapped on reefs by rising tides have been removed to safety, and persons marooned in inaccessible marshlands have been rescued. When rough water conditions would jeopardize the landing of the helicopter in performing a rescue, an electric hoist operated from within the cockpit of the ship can be lowered to the victim to accomplish the rescue.

Evacuation by means of a police helicopter has come increasingly to suggest transporting persons injured in traffic crashes to medical attention. Independent studies of helicopter ambulance efficiency generally show that the aircraft begin to save lives and minimize

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[14]Appendix A, pp. 12-13.

[15]New York City Police Department, attachment to helicopter questionnaire, p. 5.

the effects of injuries when the normal response time for ground vehicles exceeds 15 minutes.[16]

The federal government recently sponsored an innovative evacuation program in several rural areas which may indicate the future of the helicopter in evacuation. The program

> ... may have saved as many as 61 lives during its first three months, according to the Department of Transportation. During that period, it said, a total of 100 missions were flown -- 65 of those in response to highway vehicle crashes.[17]

The Indianapolis, Indiana, Police Department has used its helicopter for evacuation of persons injured in traffic crashes since it began aerial operations in 1968. In the first two years of helicopter operations, police officers transported 90 persons to area hospitals sufferring from accident injuries.[18]

The ability of the police to participate in activities of this kind is limited by the facilities available at treatment locations. If there are no landing facilities at a hospital, the helicopter is severely restricted. Hospitals have come to realize the possible advantage in having a landing pad installed on the roof or in another area.

> Montana has led the way in providing state assistance to hospitals wishing to locate heliports on their grounds. Montana's hospital administrators are urged to take advantage of this program and especially to include a heliport in any newly-planned hospital. It is expected that hospital heliports there will add substantially to the efficient handling of emergency cases, will increase the use of helicopters as aerial ambulances, and

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[16]"Helicopters Undergo New Tests as Traffic Units," The American City, April, 1970, p. 58.

[17]Insurance Institute for Highway Safety, Status Report, February 15, 1971, p. 8.

[18]Indianapolis, Indiana, Police Department, survey questionnaire.

result in the saving of lives.[19]

It is apparent that the full potential of the helicopter as an evacuation vehicle has not yet been reached. As one official of a national safety organization has commented:

> We still have much to learn about the use of the helicopter as an ambulance, but the remarkable savings in time demonstrated thus far in getting the injured off the highway and into the hospital, using the helicopter, could prove highly significant in the development of future emergency medical procedures and a reduction in accidental death and disability resulting from traffic crashes.[20]

Searching. Related to rescue and evacuation but often with a different focus is the searching operation. Helicopters have been used frequently to search for lost persons and for criminals who have evaded capture. Helicopters can cover inaccessible areas much faster than officers on foot and can permit foot officers to concentrate their searches in areas which the helicopter cannot cover. The Los Angeles County Sheriff's Department has used its aircraft to search for persons missing in rugged areas of the county. Other departments have indicated similar uses, and a number have used helicopters to search areas in which escaped criminals have been hiding. While the helicopter has not always produced results itself in criminal searches, the inhibiting effect it may have on an individual's freedom of movement may aid in the capture.

> A Sioux helicopter was used in support of the Devon and Exeter Constabulary's search for five prisoners who had escaped from Dartmoor Prison. All five men were recaptured and there is good evidence that the presence of the helicopter pinned

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[19]Howard, "When Minutes Really Count," p. 69.

[20]Robert E. Hetherington, "Helicopter Ambulances and Traffic Casualties," Traffic Engineering, XXXVIII (August, 1968), p. 43.

> the men down and frustrated any attempt to get clear of the area.[21]

Searches conducted from helicopters in wooded areas are likely to be less effective than those taking place in the open.

> The helicopter is not of great use in wooded country, and if the wanted man stays still, it is possible even in open country for him to avoid detection from a helicopter. Where it is useful and time-saving is when the ground forces have the man on the move. Then he is easily spotted from the air. It should also be remembered that the mere presence of an aircraft may drive him into panic movement.[22]

Searches of this kind for wanted persons are perhaps more likely to take place in an area which is not properly the jurisdiction of a city police department, but most departments do have a frequent need to attempt to locate persons who have committed criminal acts and then fled the scene on foot. There are of course more places to hide in the middle of a large American city than in an English field, but the searching procedures are very much the same and have often resulted in the same degree of success.

Riot control. The use of helicopters in the Watts riots of 1965 was the impetus for the further experimentation which has led to the expanded role of the helicopter in law enforcement today. The helicopter in Watts and in other uses since that time has shown itself to be an aerial observation platform for command purposes, an anti-sniper tool, and a deterrent to looting and vandalism. Officer safety is much greater several hundred feet in the air, and transportation of key personnel may also be important during

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[21] "Helicopters," Police Research Bulletin, April, 1967, p. 4.

[22] Gates, "Helicopters for Police Use," p. 15.

civil disturbances. The most important of the helicopter's duties in these situations, though, is the basic task of observation. Civil disturbances are very complex, fast-moving situations, and as was the case in regard to traffic conditions, it is often impossible to determine exactly what is taking place from a ground position. The flexibility of the helicopter, however, permits instantaneous reporting of significant events and rapid response to changing conditions.

Special events. Special events are very similar to civil disturbances in several ways, but the former normally give more direct notice of their occurrence and are not likely to result in violence. The principal problem is usually congestion, and the helicopter is called upon to monitor the police operation involving moving the large number of persons into and away from the area. The ability of the helicopter in regard to this function is demonstrated by this comment on the handling of an outdoor prayer rally in San Francisco in 1962, at which some 250,000 persons gathered.[23]

> The result of this helicopter-ground coordination was that upon conclusion of the rally the entire crowd in some 900 buses and 40,000 automobiles funneled out of San Francisco's Golden Gate Park area in little more than an hour without a scratched fender reported.

On a more recent note, the Kansas City Police Department uses one of its aircraft for coordination at Kansas City Chiefs home football games. Problems at these events are reported to be minimal.[24]

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[23]"Traffic from Crowd of 250,000 Cleared in One Hour by Helicopter-Ground Team," Police, January-February, 1962, p. 61.

[24]Kansas City Police Department, survey questionnaire.

Community relations. The community relations value of the helicopter as a new weapon against crime may be significant, and the additional public service duties it performs may also be important. There is a basic need to demonstrate to the entire community that the helicopter meets certain of their needs without threatening other needs. In a black area, for instance, there is a need to show that the helicopter patrols provide faster response and are effective in reducing crime without posing a threat to the exercise of civil rights. In a white middle class area, there is a need to show that the helicopters are effective in providing protection without increasing the net cost to the individual.[25] In all areas of the city people should be informed of the rationale behind helicopter patrol, and they should be requested to report any observations they may have as a result of helicopter patrols. Furthermore, the administration of the police department should respond promptly and completely to any citizen complaints which occur. Findings in most cities indicate that helicopter patrol has received a very warm reception. This is all the more reason for developing a full program to convince the community of the merit of police helicopter patrol, and of its significance in the department's overall effort to provide better service to the community.

Aerial photography. Placing a camera in a helicopter is perhaps one of the smartest moves a police administrator may make. More departments are realizing the multitude of uses of aerial photography,

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[25]Jet Propulsion Laboratory, "Vol. 2: Evlauation," p. 60.

and they are equipping their aircraft for these assignments. The value of photography made possible through the use of helicopters was recognized even before the days of Sky Knight in Los Angeles County.[26]

> In Los Angeles County, Sheriff Peter J. Pitchess has armed fifteen deputies with the latest in camera equipment and has placed four speedy helicopters at their disposal. Any one of the flying photographers can be whisked to any part of the far-reaching jurisdiction at a moment's notice. In addition to covering crime scenes, aerial cameramen in Los Angeles County may be called on to photograph an escape route used by criminals, raids being conducted by other officers, and arrests. Whenever the call goes out for aerial photography, one of Pitchess' sky cameramen jumps aboard a helicopter and heads for the action.

By using the powerful searchlights now available for night operations in conjunction with the camera, it is possible to take photographs of the criminal in action. With the proper publicity, the camera's picture-taking capabilities would contribute greatly to deterring would-be robbers and burglars, and even looters during riots and other civil disorders.[27] With the development of even more sophisticated equipment for photographic purposes, it appears that the police may take even greater advantage of this medium in future operations.

Transportation. In an operation marked by the mobility of all participants, police and criminal, the helicopter provides a means of moving key personnel where they are needed with a minimum of delay. Rapid transportation of these personnel is an additional benefit of aerial patrol.[28] Investigators, field commanders, and

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[26]Bob Spangler, "Cameraman in a Helicopter," Law and Order, August, 1965, pp. 8-9.

[27]Milt Valera, "Light Overcomes Darkness," Law and Order, November, 1968, p. 72.

[28]Los Angeles County Sheriff's Department, Manual of Aerial Patrol, p. 5.

administrators who are urgently needed at some distant location can be transported much faster than by conventional means of transportation. Care must be taken to insure that the department's helicopters do not become expensive taxis for anyone needing a lift, but within reasonable limits the helicopter can save both time and money in this function.

> The use of helicopters, just for transportation of detectives, has been significant. In this area they have proven out econmically, thus justifying their operation. The helicopter, by eliminating the wasted hours spent on long drives, reduces travelling time and hence reduces costs.[29]

Supervision. Helicopters have not been extensively used as aids in supervision of personnel to date, but the potential use in this area is worthy of note. Supervision of ground officers by another ground officer is difficult at best. The supervisors's presence is normally enough to affect the subordinate's conduct to the point that no accurate determination of attitude and general performance can be made. The person being supervised is certainly conscious of the fact and is likely to make every effort to put on a good show.

By placing the supervisor in a helicopter, the ability to observe the actions of subordinates without actually being there participating in the same activity is gained. Without a supervisor physically present, the actions of the officers are less inhibited and therefore are more demonstrative of general performance. There are obvious handicaps to supervision from a helicopter, such as the

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[29] Diltz, "Helicopters," p. 8.

inability to hear any conversation taking place, but the ability to survey the entire scene from the air compensates for these shortcomings.

> In the course of these flights the supervisors have sometimes been able to observe how their ground units comply with good police procedures. In some cases they have used the camera for purposes of documentation and identification. It is believed by the police management that this supervisory technique has a favorable effect on the work of the ground units and should be continued.[30]

The helicopter may be useful not only as a general supervisory tool in observing the procedures of all patrol officers occasionally, but also as a means of investigating specific allegations of continuing misconduct or derilection of duty on the part of individual officers. Avenues of possible use for supervisory purposes should be further explored, and, if it appears feasible, occasional observation flights by supervisory personnel should become standard practice.

Officer security. The helicopter has consistently demonstrated unique capabilities in providing increased protection for ground officers. The situations in which the helicopter affords an added safety factor are numerous. Some of the more frequent and obvious types of hazardous situations would include the following:

1) criminal apprehensions in which one or two officers must control several suspects.

2) incidents in which crowds gather and attempt to interfere with the officers.

3) suspicious calls, involving the possibility of an ambush.

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[30] Jet Propulsion Laboratory, "Vol. II: Evaluation," p. 83.

In these and other situations, the psychological and physical value of the helicopter in officer protection has been widely recognized.

> Instantly available to the ground officer's call, the helicopter can relay overall surveillance information, survey or light up dark areas under investigation, protect the ground officer from surprise attacks, and under proper conditions even land to offer additional manpower assistance.[31]

This assistance is particularly important in those cities which field primarily one-man patrol units.

> The helicopter has been used very successfully in covering for one-man patrol cars. The helicopter can often reach an officer requiring assistance faster than another unit from a nearby district.[32]

While an element of danger is always present in patrol operations, the hours of darkness are the most dangerous. Of the 561 police officers killed by criminals in the 1960's, 309 were killed between the hours of 7 p.m. and 3 a.m.[33] In routine night patrol missions, the searchlight equipped helicopter is aiding surface units by reconnoitering suspicious situations before ground patrols expose themselves.[34] Lights which can illuminate an area as large as a football field are available for use by helicopter personnel in providing cover for ground operations.[35]

In specific types of incidents involving great danger, the helicopter may be used with great effect while ground officers remain under cover. The value of the helicopter in riot conditions has

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[31]Covina and West Covina Police Departments, "Community Overhead Patrol," p. 13.

[32]Frank Dyson, Chief of Police, Dallas, Texas, classroom presentation, January 28, 1971.

[33]FBI, Uniform Crime Reports - 1969, pp. 44-45.

[34]Valera, "Light Overcomes Darkness," p. 72.

[35]Dyson, classroom presentation.

already been noted, and it is equally capable of dealing with the isolated sniper or barricaded person in some situations.

> It was demonstrated that the helicopter could approach a barricaded house with complete safety from above, to the extent that tear gas could be tossed into a chimney or fired through the roof. The remarkable performance proved that the whirly-bird would be a real aid to police in the apprehension of criminals and in protecting the lives of police officers.[36]

Cities which have conducted helicopter patrol for some time indicate that patrol officers recognize the additional protection provided by the helicopter. A Los Angeles survey documents this point.[37]

> Ninety-six percent of the responses were positive when asked if the helicopter provides any officer security. Much of this was in the officer-needs-assistance, or back-up, category. It tends to divide the attention of a suspect and provides a psychological advantage. There is a decided tendency for suspects to cool down. In talking with suspects officers reported a strong apprehensiveness -- the feeling of not being able to get away once spotted.

To take full advantage of these protective capabilities, departments should study the types of calls which normally involve a significant element of danger to the officers and consider routinely assigning the helicopter to cruise by the location of such incidents and insure that the ground officers have the situation under control.

Assistance to other departments. Those police departments which have helicopters have normally been very cooperative is assisting other agencies in the city and other police departments in special operations. The helicopter's capabilities are well suited to many

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[36] "County Sheriff Uses Helicopter," The American City, November, 1958, p. 13.

[37] Elliot P. Framan and Robert Gaunt, "Evaluation of Helicopter Patrols," paper presented to the Third National Symposium on Law Enforcement Science and Technology, March-April, 1970.

other functions associated with various city departments. The New York City Police Department routinely uses its aircraft for many non-police functions.[38]

> The versatility of the helicopter is proven by the variety of requests for particular services from agencies outside the Police Department:
>
> Aerial dusting of marshlands for mosquito control (Health Department).
>
> Aerial photography: Furnishes Department of Corrections with photos of prison sites and buildings; photos of land sites subject to litigation for the Board of Estimate; map fire zones for the Fire Department; photos for Bureau of Smoke Control.
>
> Aerial searches for Department of Corrections in ferreting out escaped prisoners.
>
> Air-sea rescues in cooperation with U.S. Navy and Coast Guard.
>
> Cloud seeking for Department of Water Supply, Gas, and Electricity in watershed areas in the Catskill Mountains.

Other cities report equally diverse operations for other agencies.

The fire department of all municipal agencies is most likely to benefit from police helicopter patrol. The patrol aircraft will in the course of its duties report some fires which had thus far gone unreported, and at the scene of a fire the command post capabilities of the helicopter are of great benefit.

The helicopter of one police department may also prove very beneficial to police operations in another jurisdiction. A number of the departments which were surveyed indicated that their aircraft were made available on occasion to assist other jurisdictions. The Kansas City Police Department commented:

> Since the beginning of our program, our ships have been made available upon request to all police agencies in the metropolitan area. During 1969, we assisted outside agencies

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[38] Walter E. Klotzback, "The Helicopter - New York Police on Patrol," Journal of Criminal Law, Criminology, and Police Science, XLVIII (January-February, 1958), pp. 549-550.

> a total of 51 times. These calls involved escapees, bank robberies, burglaries, homicides, downed aircraft, and missing children.[39]

Such uses are typical and should be continued.

The spirit of cooperation and mutual assistance which can be promoted by loaning helicopters to other departments is important, but it is also necessary to insure that a substantial portion of the helicopter's time is spent on routine patrol of the owner city. If a point is reached at which another police department or municipal agency is continually requesting assistance and diverting the helicopter from its normal police duties, the most practical alternative is to suggest that the borrower obtain its own helicopter, as it obviously has demonstrated a need for helicopter services.

Other uses. The brief treatment of several of the most common uses of police helicopters given here is not meant to suggest that other uses not covered are unimportant or unnecessary. Rather, the need definitely exists for further research into each of these uses and for the development of many more types of practical applications.

The Effectiveness of Police Helicopter Patrol

Departments using police helicopter patrols are unanimous in their declaration of the effectiveness of these operations, but in the absence of standards for measuring the degree of success it is difficult to determine exactly what these statements mean. This section will review the experiences of those cities which employ

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[39]Kansas City Police Department, "Helicopters in Law Enforcement," p. 7.

helicopter patrols in an effort to determine what "effectiveness" means and how it may be achieved.

The apparent statistical effect of helicopter patrol. The effectiveness of helicopter patrol is often measured in terms of such factors as crime rates, arrest rates, and police activity. The general feeling is that helicopter patrol retards or lowers the crime rate, that it enables more arrests to be made, and that it increases police activity. Most departments have not yet undertaken the thorough study of the helicopter's effect on these factors which would be necessary for a conclusive statement, but at least two such studies have been made. The first is the Sky Knight project in Los Angeles County and the other is a study of the city of Los Angeles. The results of both studies indicate that the general suppositions hold true. The Los Angeles County test found:[40]

> During 1966-67, the first full fiscal year after Sky Knight, actual major crimes in the city of Lakewood decreased eight per cent while crimes in the total Los Angeles County area increased nine per cent.
>
> The crime rate per 100,000 population in the city of Lakewood decreased eleven per cent, while the crime rate in the Los Angeles County area increased eight per cent.
>
> Total adult arrests -- felony and misdemeanor -- were sixty-three per cent higher in the test months of 1967 than they were for the same period in 1966. Total cases handled were thirty-two per cent higher.
>
> During the controlled study in the Lakewood area, no increase in manpower or other new law enforcement technique was used except for the helicopter.

Findings in the two test divisions in Los Angeles were similar.[41]

> Looking now at the University Division, it is observed that in robbery the division has had a history of always increasing over the previous year, but in 1969 a decrease ...

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[40] Guthrie, Project Sky Knight, pp. 95-103.

[41] Jet Propulsion Laboratory, "Vol. II: Evaluation," pp. 46-47 and 85-86.

> occurred in spite of the fact that the surrounding divisions continued increasing as did the city as a whole.
>
> In the burglary category this does not appear to be the case but in theft and auto theft and to a lesser degree in total property, the change (a decrease) occurs.
>
> The changes are even more pronounced in the West Valley Division. The changes occur in the surrounding area as well but are more pronounced in West Valley, with the exception of burglary.
>
> In the test divisions the resulting changes in the trends in the Part I Property Crimes and the number of times the actual offenses committed were significantly lower than the predicted offenses can only be attributed to the helicopter patrol operations. No other changes within the police system were found that could account for these results.
>
> The operational results indicate that the helicopter-car patrol team affects almost three times as many arrests as the city as a whole per reported offense.

The reports from these two areas indicate that helicopter patrol is capable of exerting a noticeable effect in those categories which are viewed as being the best indicators of overall police effectiveness.

The deterrent effect. The feeling that the police helicopter patrol program actually acts as a deterrent to criminal activity is common in those departments which have such programs. The ability to deter crime by reducing both the desire and the opportunity to commit a criminal act is cited as the helicopter's most outstanding characteristic, and it is this ability which has caused the helicopter to be called the first major breakthrough in police work in decades. Mention of the helicopter's deterrent influence can be found in many of the written materials concerning helicopter patrol which have appeared. The Memphis Police Department reported:[42]

> Ninety-five per cent of our flying is for criminal repression. And three-fourths of this time is done at night. The helicopter and spotlight have become one of the most tremendous tools we have.

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[42]Carl L. Harris, "Helicopter Works for Memphis P.D.," Law and Order, February, 1970, pp. 84-85.

The Dade County Florida public Safety Department has reported that criminal awareness of the helicopter has reached a significant level.[43]

> The Dade County Public Safety Department has made it policy that the "chopper" will be dispatched to all crime scenes where descriptions of subjects and/or vehicles are available; the results have been amazing. There is also one intangible benefit; the word-of-mouth message from one would-be criminal to another that he must look up as well as around has an effect that cannot be measured.

An even more significant indication of criminal displeasure with helicopter patrol comes from Indianapolis, where the police have received threats from local criminals to shoot down the helicopter if it continues its patrols.[44] Finally, Public Administration Service in its 1970 report on police service in Jackson, Mississippi, made the following comment in recommending that the city consider a helicopter program in the future:[45]

> Perhaps the most important impact of helicopter patrol is its deterrent effect on potential criminals and the reassurance it provides concerned citizens. It is of course impossible to accurately estimate either effect, but the possibility that a police helicopter may be hovering overhead looking for suspicious action is one which should be given increasing consideration by criminal offenders and by persons concerned with their own safety and security.

The police have thus come to place great significance on an effect which cannot actually be measured directly, and may be only indirectly shown in reduced crime rates. While this in no way detracts from the capabilities of a helicopter patrol program, it does demonstrate the importance of subjective judgments to the success of the operation.

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[43] Ralph Page, "Well-Equipped Chopper Gets Results," Law and Order, February, 1970, p. 92.

[44] Indianapolis, Indiana, Police Department, survey questionnaire.

[45] Public Administration Service, Jackson, Mississippi, Police Department: A Survey Report, (Chicago: Public Administration Service, 1970), p. D-7.

Deployment for maximum effectiveness. Although the helicopter is capable of performing any number of tasks effectively, it would appear reasonable to expect that the level of effectiveness would vary among the possible alternatives. That is, the helicopter would not perform all tasks equally well, and it would be more suited to some activities than to others. The limited amount of information available indicates that there are certain operations in which the capabilities of the helicopter are more likely to be brought into play with a positive result.

In regard to criminal activities, the helicopter is more likely to be successfully involved when the following conditions are present:

1) The crime must be reported to the police soon after it occurs, or it may be reported in progress.

2) An element of mobility on the part of the perpetrator of the offense is involved, requiring him to move into the open.

3) The police are given a physical description of the perpetrator or of a vehicle used or property taken.

With these conditions as guidelines, it would appear that such offenses as fraud, forgery, and narcotics violations would not be particularly susceptible to either deterrence or enforcement by the helicopter. Such offenses as murder, assault, and other crimes of violence would be subject primarily to enforcement efforts, assuming the spontaneity of these offenses renders them less subject to deterrence, and also assuming that many of these offenses occur indoors.

The types of offenses most affected by both deterrent and enforcement efforts would appear to be the crimes against property

offenses of burglary, auto theft, vandalism, and to a lesser extent larceny, and the personal offense of robbery, which is directed toward acquiring property. Each of these, with the possible exception of vandalism, requires an element of premeditation. Each offense is serious enough to be reported immediately upon discovery, and in each case the offender would normally leave the scene of the offense immediately after completing the act. The great majority of the property offenses and robberies committed either occur in the open or involve movement from the open into a building and then back into the open again. In each case except vandalism, physical property will be in the possession of the offender immediately after he leaves the scene of the crime.

Experiences in helicopter patrolled cities appear to bear out the conclusions based on this analysis of crime characteristics. The results of the study in the city of Los Angeles cited previously indicate that the helicopter patrol was most effective against robbery, auto theft and theft in the West Valley Division and against robbery and auto theft in the University Division.[46] For those departments which returned the survey questionnaires, the offenses of burglary, robbery, and auto theft were those most often cited as being most effectively controlled by helicopter patrol.[47] When the amount of increase of each of these offenses in the past decade is considered, the effectiveness of the helicopter takes on additional significance. In the period from 1960 through 1969, burglary underwent

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[46]Jet Propulsion Laboratory, "Vol. II: Evaluation," p. 85.

[47]Table 3-E of Appendix A lists most effective uses.

a 92.9% increase (on the basis of number of offenses per 100,000 inhabitants), auto theft a 137.8% increase, and robbery a 146.1% increase.[48] It is apparent from these figures that conventional police methods have not had a great deal of success in deterring these acts, and with the overall crime clearance rate down by some 34% over the same period, apprehension efforts have been almost as unsuccessful. With the success the helicopter has had in regard to these offenses in mind, they should head any list of priorities developed to guide the activities of the helicopter patrol unit.

Determination of usefulness in performing criminal or public service activities is certainly no simple task, and each department which employs helicopters should make a careful study of each type of use in establishing priorities. Each incident in which a helicopter is used should be noted, the success or failure of the operation determined, and the factors involved in success or failure evaluated. It would thus be possible to determine what types of incidents the helicopter will contribute the most to, and what conditions should exist for the helicopter to be assigned to cover a particular incident. In a British helicopter patrol experiment which was conducted along these lines, the most productive uses of the helicopter were found to be searches for missing persons, for suspects, and for prison escapees. The least productive operations were routine patrol and crowd control.[48] This evaluation was concerned primarily with the usefulness in terms of cost, and such intangible factors as

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[48]Ostler, "Helicopters: Their Use in Police Work," p. 12.

crime prevention, reassurance to the public, and improved police morale.[49] A similar evaluation of American police helicopter operations would prove most interesting.

Several conditions other than the specific uses of the helicopter have important consequences for overall effectiveness. The British experiences demonstrated that:[50]

> ... any helicopter service provided for the police must satisfy a set of conditions which can now be fairly clearly defined. If these conditions are not satisfied, the service is not likely to be of great operational value. With an expensive piece of equipment of this kind, it is clear that the scale of issue must be such that full utilisation is achieved. Equally, since the cost of the system grows rapidly with load-carrying capacity, it is essential to keep the individual machine as small as is compatible with meeting the vast bulk of the demand. A third major influence to be taken into account when specifying a system will be the reaction time -- that is, the mean time between ordering up the machine and its arrival on the scene.

The scale of use, as distinct from the types of use, is also very important to the total effect.

> The optimal benefits of the helicopter in police work will occur only if sufficient geographical area is involved, and the level of called for police services (number and type) is moderate to large.[51]

It is probable also that as the use of the helicopter in police work becomes more commonplace, its role will become more clearly defined, and this in itself may have a significant effect on the level of effectiveness.

> While it is recognized that "on-view" patrol has certain values, and that original observations may very well initiate important activities, it is suggested that patrols should be primarily task oriented and that a far greater amount of patrol

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[49] Ibid., p. 13.

[50] Ibid., p. 14.

[51] Guthrie, Project Sky Knight, p. 136.

> time should be on a specifically assigned basis rather than in merely orbiting around the patrol area.[52]

A recent program outline reflects this orientation.[53]

> It is not intended that the helicopters will be used for rnadom patrol as has been the practice in many other cities which have used such vehicles; rather, all flight plans will be formulated with clearly defined objectives.

What is suggested by this emphasis on a definite plan of action is that helicopter patrol can be made more effective through a careful analysis of all factors influencing operations, with assignment of the aircraft being based on the results of the analysis. The expectation is that the need for helicopter services can be predicted in advance, and the schedule and flight pattern can be arranged to meet the predicted need. If this does in fact occur, the effectiveness of the helicopter program must be increased.

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[52] Ibid., p 133.

[53] Oakland Police Department, "Information Bulletin," p. 1.

Chapter VII

Conclusion

Helicopter patrol operations in American cities have proven to be an innovative and practical method of providing an increased level of police service to the community. Helicopter patrol does have its limitations; it must be recognized that some patrol activities are not capable of being handled effectively by aircraft.[54] Although airborne patrol does not replace ground patrol, it can replace (individual) ground units under certain conditions due to its ability to provide both intense coverage and isolated area coverage effectively and economically.[55] From the demonstrated results of helicopter patrol thus far, it seems clear that further expansion of helicopter patrol in terms of both users and responsibilities is likely to occur.

A city considering the initial implementation of a helicopter patrol program should not be dissuaded by the cost factors involved, but should proceed to rationally evaluate its need for helicopter patrol in light of the contribution to the overall service level the program would be expected to provide. In a city which already maintains a helicopter patrol operation, the need exists for continuing evlauation of the program to determine its effectiveness. The responsibilities of the helicopter unit should be very carefully

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[54] Guthrie, Project Sky Knight, p. 132.

[55] Pomona Police Department, "H.A.L.O.," p. 6.

delineated, and the accomplishments of the program should be reviewed to determine if patrol should be expanded. Both the community and the police organization should be kept fully advised of the operation of the program, and every effort should be made to gain complete support for the program. To gain the acceptance and widespread use necessary to status as a routine patrol vehicle, the helicopter most of all requires the guidance and vision of enlightened police administrators, who are willing to experiment, to innovate, and to try new approaches to solving continuing problems. In both criminal deterrent and enforcement activities and public service activities, the helicopter appears to be capable of contributing significantly to an improved level of services. In a day of increasing crime rates and an expansion of police responsibilities, the potential of routine police helicopter operations should be fully exploited.

Appendix A

The Helicopter Patrol Survey

Although the use of the helicopter as a police patrol vehicle has spread rapidly within recent years, there has been only a minimum of information gathered and disseminated regarding the nature and types of helicopter patrol programs in operation. Several departments have reported on their own experiences with helicopters, but an in-depth survey of police helicopter patrol programs has not yet been completed. This is in all probability due to the newness of the great majority of such programs; widespread use of helicopters for police patrol has only come about in the past three years.

The number of users has grown to such an extent, however, that a preliminary survey of helicopter patrol as an American police patrol method can very readily be conducted. The survey which is the subject of this report was undertaken to bring together information concerning on-going helicopter patrol programs. It is hoped that the information contained in the report will be beneficial to those departments already operating or considering the operation of helicopter programs, as well as to individuals who may also have some interest in the subject. Included in the report are a basic survey information table and an analysis of responses to each question in the survey questionnaire which was used.

The Helicopter Questionnaire and Survey Base

The questionnaire used in the survey which forms the basis of this

report was developed in November, 1970. Questions were included which would gather data in the following areas:

1) The background of the program. This includes the program starting date and the number of helicopters.

2) Demographic and operational considerations. Included here are such matters as hours of operation, normal altitude, areas of the city covered, and special police equipment.

3) Personnel administration. Included are questions concerning pay, training, and status of pilots and observers, and total number of personnel assigned to the helicopter program.

4) Program administration. This rather broad category contains questions concerning responsibility for the unit's operation, expenses involved in maintaining the program, methods used to acquaint other members of the department and the public with helicopter patrol, and the reaction of the police and the community to helicopter patrol.

5) Uses and usefulness. Questions concern the various uses of the helicopter, the uses in which it is most effective, and the overall effectiveness of helicopter operations.

The survey does not include questions about the hardware itself; such information is readily available from commercial sources.

When the survey form had been completed, it became necessary to determine what departments would be surveyed. There are departments at all levels of government--municipal, county, state, and federal, which use helicopters, but the municipal programs normally influence the most concentrated numbers of persons and are more likely to involve helicopters serving as general purpose patrol vehicles. For these reasons the decision was made to focus on municipal police departments

and those county departments which serve essentially urban areas. Lacking a pre-prepared list of such departments, various periodical publications, advertisements, and other sources were reviewed to make the survey representative. A list of 36 departments which either had at the time or would soon have a helicopter patrol program was compiled. Table 1 contains all departments which were sent survey questionnaires. Thirty-four are municipal agencies, and two are county sheriff's departments. The list is admittedly incomplete; that is, there are several other cities which operate continuing helicopter patrol programs, but no information was available which indicated the existence of these programs at the time the survey was formulated.

Survey Response and the Final Data Base

Thirty-three questionnaires were originally sent out in December, 1970. By February, 1971, twenty-six forms had been returned. The seven departments which had not responded were sent another questionnaire and cover letter, and three other cities were added to the base and sent their first questionnaires. By early March an additional five returns had been made, raising the total to thirty-one. Of the five departments which did not return the questionnaires sent them, three - San Antonio, Atlanta, and Seattle - were still developing their programs and may not have actually begun operation at the time the survey was conducted. The Santa Monica Police Department responded with a letter but did not return the questionnaire. One department, Chicago, did not respond early enough to be included in the final base.

When the thirty-one replies which were received were evaluated, it was determined that six of these could not be used in the final data base. Two cities, Rochester and Cleveland, do not now operate

Table 1
Departments Surveyed

Anaheim, California
Atlanta, Georgia
Baltimore, Maryland
Bell Gardens, California
Chicago, Illinois
Cleveland, Ohio
Costa Mesa, California
Dallas, Texas
Denver, Colorado
Downey, California
Fort Worth, Texas
Honolulu, Hawaii
Houston, Texas
Huntington Beach, California
Indianapolis, Indiana
Jacksonville, Florida
Kansas City, Missouri
Las Vegas, Nevada
Long Beach, California
Los Angeles, California
Los Angeles County, California
Memphis, Tennessee
Newport Beach, California
New York, New York
Oakland, California
Pittsburg, Pennsylvania
Rochester, New York
San Antonio, Texas
San Francisco, California
San Mateo County, California
Santa Monica, California
Seattle, Washington
Tampa, Florida
Washington, D.C.
Whittier, California
Wichita, Kansas

Table 2
Final Survey Base

Anaheim, California
Baltimore, Maryland
Costa Mesa, California
Dallas, Texas
Denver, Colorado
Fort Worth, Texas
Honolulu, Hawaii
Houston, Texas
Huntington Beach, California
Indianapolis, Indiana
Jacksonville, Florida
Kansas City, Missouri
Las Vegas, Nevada
Long Beach, California
Los Angeles, California
Los Angeles County, California
Memphis, Tennessee
Newport Beach, California
New York, New York
Oakland, California
Pittsburg, Pennsylvania
San Francisco, California
San Mateo County, California
Tampa, Florida
Wichita, Kansas

a helicopter patrol program although they do anticipate beginning such a program in the near future. Downey and Whittier, California, have helicopter patrol contracts with the Los Angeles County Sheriff's Department, and the information included in these questionnaires would be duplicative. One other city which formerly contracted with the Los Angeles County Sheriff's Department for helicopter patrol, Bell Gardens, has dropped its contract and is apparently in the process of developing its own helicopter program. The sixth city, Washington, D.C., is still in the training stage of its program and could not respond to enough of the questions to be included in the final base.

Of the twenty-five departments which are listed in Table 2 and included in the final data base, thirteen had been operating their programs for less than one year at the time questionnaires were first sent out, and this lack of experience should of course be taken into account. Three of the cities - Anaheim, Baltimore, and Jacksonville-Duval County - were not yet completely operational, but had operated helicopter patrols for a period of several months and could reply to most questions on the basis of this training experience.

The Survey Findings

Several comments are necessary to understand and interpret the information in the five parts of Table 3. Throughout the table an effort has been made to record the exact responses received. In some cases this has not been possible, and a word or phrase has been used which is different from the exact response. The meaning in no case has been altered by this substitution. When the respondent has failed to answer a particular inquiry, this is indicated by the words "not given" or the abbreviation "n.g." In some cases further

explanation of a table entry is needed; each entry requiring additional comment is marked by an asterisk (*). A section is included at the end of the table which lists the cities in alphabetical order and contains the explanations indicated in the table itself. It is quite possible that some respondents failed to reply completely to each inquiry. This would result in data appearing the table which only partially describes the actual situation. This is especially true concerning those questions involving special equipment, public relations methods, and the duties performed by helicopter personnel. Realistically, no department could be credited with any response other than that specifically made, and this may in some cases result in inaccuracy.

CONTINUED

1 OF 2

Table 3-A

BACKGROUND OF MUNICIPAL POLICE HELICOPTER PROGRAMS

City	1970 Census Population	Year Begun	Number of Helicopters
Anaheim, Cal.	166,701	1970	2
Baltimore, Mary.	905,759	1971	3
Costa Mesa, Cal.	72,660	1970	2
Dallas, Tex.	844,401	1970	3
Denver, Colo.	514,678	1968	2
Forth Worth, Tex.	393,476	1968	1
Honolulu, Ha.	324,871	1970	1
Houston, Tex.	1,232,802	1970	3
Huntington Beach, Cal.	115,960	1969	2
Indianapolis, Ind.	447,624	1968	1
Jacksonville, Fla.	528,865	1971	2
Kansas City, Mo.	507,087	1968	6
Las Vegas, Nev.	125,787	1969	3
Long Beach, Cal.	358,633	1968	3
Los Angeles, Cal.	2,816,061	1956	9
Los Angeles County, Cal.	7,032,075[1]	1955	14
Memphis, Tenn.	623,530	1970	2
Newport Beach, Cal.	49,422	1970	2
New York, N.Y.	7,867,760	1948	7
Oakland, Cal.	361,561	1970	2
Pittsburg, Pa.	520,117	1969	1
San Francisco, Cal.	715,674	1968	1
San Mateo County, Cal.	556,234[1]	1970	2
Tampa, Fla.	277,767	1970	2
Wichita, Kan.	276,554	1970	2

[1]Includes all persons living in county, including cities listed in table.

Table 3-B

HELICOPTER OPERATIONAL CONSIDERATIONS

City	Normal Duty Hours	Normal Altitude	Patrol Area	Special Equipment[1]								
				Radio	Siren	PA System	Searchlights	First Aid Kit	Stretcher	Floats	Fire [illegible]	Other
Anaheim, Cal.	1800-0200	D-500 N-700	Entire city	X	X	X						
Baltimore, Mary.	Varies	500-600	Entire city*	X	X	X	X					X
Costa Mesa, Cal.	1100-0300	D-500 N-700	Entire city	X	X	X	X		X	X		
Dallas, Tex.	Continuous	D-500 N-600	Entire city*	X	X	X	X					
Denver, Colo.	Varies*	600	Entire city	X	X	X	X					
Fort Worth, Tex.	1900-2400*	800-1000	Entire city	X	X	X	X					
Honolulu, Ha.	1800-0200	D-500-600 N-700-900	Primarily Metropolitan	X	X	X	X					
Houston, Tex.	0900-0300	D-500 N-800	Entire city	X	X	X	X					
Huntington Beach, Cal.	0900-0300	D-500 N-700	Entire city	X	X	X	X	X		X		X
Indianapolis, Ind.	Varies*	D-500 N-700	Entire city	X			X	X	X			
Jacksonville, Fla.	Continuous	300-1000	Primarily non-residential	X								
Kansas City, Mo.	Continuous	D-500 N-700	Primarily Metropolitan	N	O	T		G	I	V	E	N
Las Vegas, Nev.	1000-0200	500-800	Entire city	X	X	X	X					
Long Beach, Cal.	1100-0300	D-500 N-700	Entire city	X						X	X	
Los Angeles, Cal.	0700-0200	800-1000	3 of 17 police divisions	X	X	X	X		X	X		X
Los Angeles County, Cal.	0800-0300	500	Entire county	X	X	X	X	X	X	X		X
Memphis, Tenn.	Continuous	500-700	Entire city, high crime areas	X	X	X	X					
Newport Beach, Cal.	0800-0300	500-700	Entire city	X	X	X	X		X	X		
New York, N.Y.	0600-2100	500*	Entire city, waterways	X	X	X	X					X
Oakland, Cal.	1300-2300	500	Entire city, high crime areas	X	X	X	X					
Pittsburg, Pa.	1000-0200	500	Entire city	X			X			X		
San Francisco, Cal.	1000-1800	1200	Entire city	X	X	X	X		X			
San Mateo County, Cal.	1000-0200	D-500 N-700	Entire county	X	X	X	X					
Tampa, Fla.	Continuous	500	Entire city	X	X	X	X					
Wichita, Kan.	1300-1700*	D-400-500 N-500-600	Entire city	X	X	X	X					

[1] Only that equipment mentioned specifically by the city is listed.

Table 3-C

HELICOPTER PROGRAM PERSONNEL ADMINISTRATION

City	Personnel	Pilots	Sworn or Civilian	Extra Pay	Rate or Amount	Observors and Status
Anaheim, Cal.	5	4	Sworn	Yes	5%	n.g.
Baltimore, Mary.	5	2	Sworn	Yes	Sgt. salary*	2 permanent
Costa Mesa, Cal.	6	3	Sworn	Yes	10%	3, n.g.
Dallas, Tex.	13	7	5 Sworn 2 Civ.	Yes	$100/mo.	4 permanent
Denver, Colo.	4	4	Sworn	Yes	$80/mo.	n.g.
Forth Worth, Tex.	4	*	Civilian	Yes	$300/mo.	2 permanent 2 rotative
Honolulu, Ha.	12*	2	Civilian	Yes	n.g.	3 permanent 7 part-time
Houston, Tex.	16	8	Sworn	No	---	8 rotative
Huntington Beach, Cal.	7	4	Sworn	Yes	11.5%	3 permanent
Indianapolis, Ind.	3*	3	Sworn	No	---	n.g.
Jacksonville, Fla.	11	11	Sworn	No*	---	No set numbe rotative
Kansas City, Mo.	20	10	Sworn	Yes	10%	10 rotative
Las Vegas, Nev.	8	8	Sworn	Yes	$40/mo.	n.g.
Long Beach, Cal.	7	7	Sworn	Yes	n.g.	n.g.
Los Angeles, Cal.	20	*	Sworn	Yes	$407/mo.	n.g., permanent
Los Angeles County, Cal.	30	*	Sworn	Yes	Varies*	n.g., permanent
Memphis, Tenn.	13	12	Sworn	No	---	n.g.
Newport Beach, Cal.	6	3	Sworn	Yes	10%	3 rotative
New York N.Y.,	34	19	Sworn	Yes	$400/yr.	n.g.
Oakland, Cal.	6	6	Sworn	Yes	5%	n.g.
Pittsburg, Pa.	2	2	Sworn	No	---	n.g.
San Francisco, Cal.	6	5	Sworn	No	---	n.g.
San Mateo County, Cal.	18	6	Sworn	Yes	$1.75/ flt. hr.	12 rotative
Tampa, Fla.	9	*	Sworn	Yes	n.g.	n.g.
Wichita, Kan.	6	4	Sworn	No	---	n.g.

Table 3-D.1

HELICOPTER PROGRAM ADMINISTRATION

	Functional Division	Initial Financing	Hourly Expense[1]	Departmental Training Program	Department's Reaction
Anaheim, Cal.	Operations	Internal ls./pur.	$[illegible].00	Yes - demonstration flights	Favorable
Baltimore, Mary.	Tactical	LEAA-internal	$53.37	Yes - in-service	Favorable
Costa Mesa, Cal.	Uniform	Internal ls./pur.	$21.50	Yes - in-service & demo flights	Mixed, now favorable
Dallas, Tex.	Operations	Internal ls./pur.	$23.50	Yes - one short program	Very favorable
Denver, Colo.	Patrol	Lease & purchase	$35.00	Yes	Mostly favorable
Fort Worth, Tex.	Not a part of dept.*	Lease*	$30.00	Yes - demo rides and recruit	Very favorable
Honolulu, Ha.	Patrol	Internal lease	$23.50	Yes	Mixed, mostly favorable
Houston, Tex.	Traffic	Internal ls./pur.	$22.50	Yes - roll call	Favorable
Huntington Beach, Cal.	Patrol	Internal purchase	$18.50	Yes - demo rides	Mixed to favorable
Indianapolis, Ind.	Planning & Research	Internal lease*	$90.00 (salary)	Yes - recruits only	Favorable
Jacksonville, Fla.	Patrol	Internal purchase	$23.00-$30.00	Not yet fully developed	Mixed to favorable
Kansas City, Mo.	Patrol	n.g.	$23.25	None	Favorable
Las Vegas, Nev.	Uniform	1 LEAA 2 Internal	$25.00	Yes - demo rides for key officers	Mixed, now favorable
Long Beach, Cal.	Patrol	Internal purchase	$26.00	Yes - demo rides available	Very favorable
Los Angeles, Cal.	Tactical Operations	Internal purchase	*	Yes - roll call*	Very favorable
Los Angeles County, Cal.	Patrol	3 LEAA* 11 Internal	$73.00 (sal.)	Yes - demo rides	Very favorable
Memphis, Tenn.	Patrol	1 Federal 1 Internal	*	Yes - demo rides available	Very favorable
Newport Beach, Cal.	Patrol	Internal ls./pur.	$25.65	Yes - in-service	Very favorable
New York, N.Y.	Emergency Services	Internal purchase	*	None	Unknown, si[illegible] too large
Oakland, Cal.	Patrol	Internal ls./pur.	$25.00	Yes - information bulletin	General approval
Pittsburg, Pa.	Special Operations	Internal rental	$105.00 (sal.)	None	Readily accepted
San Francisco, Cal.	n.g.	Internal ls./pur.	$33.00	Yes - demo rides	Very favorable
San Mateo County, Cal.	Patrol	Internal purchase	$29,85	Yes - demo rides	Very favorable
Tampa, Fla.	Operations	Federal-Internal	$23.50	Yes - demo rides available	Readily accepted
Wichita, Kan.	Operations	Internal-Federal	$18.00	Yes - demo rides	Very favorable

[1] Unless indicated, does not include salary of pilots or observors.

Table 3-D.2

HELICOPTER PROGRAM ADMINISTRATION (cont.)

City	Public Reaction	Source of Opposition	Public Relations Methods: Mass Media	Appearances	Schools	Other
Anaheim, Cal.	Favorable	None thus far	X			
Baltimore, Mary.	Acceptance	None noted	X			
Costa Mesa, Cal.	Some complaints, mostly good	Noise	X	X	X	X
Dallas, Tex.	Acceptance	None noted	X	X		
Denver, Colo.	Very little opposition	Noise	X			
Fort Worth, Tex.	Good	None noted	X	X		
Honolulu, Ha.	Good	None noted	X			
Houston, Tex.	Complete acceptance	None noted	X	X		
Huntington Beach, Cal.	Excellent	A few noise complaints	X	X	X	X
Indianapolis, Ind.	Very good	Noise*	X			
Jacksonville, Fla.	n.g.	None noted	X			
Kansas City, Mo.	Good	None noted	X	X		
Las Vegas, Nev.	Favorable	Opposition from militant groups	X	X		X
Long Beach, Cal.	Excellent	None noted	n.	g.		
Los Angeles, Cal.	Polls show 89% in favor	Some small groups and opposed individuals	X	X		
Los Angeles County, Cal.	Great acceptance	Minimal complaints	X	X	X	X
Memphis, Tenn.	Widely accepted	Militant groups and criminals	X	X		
Newport Beach, Cal.	Well received	Noise at night	X	X	X	
New York, N.Y.	Generally favorable	None noted	X			
Oakland, Cal.	n.g.	None noted	X			
Pittsburg, Pa.	Excellent	None noted	X			
San Francisco, Cal.	Well accepted	None noted	X			
San Mateo County, Cal.	Favorable	None noted	X	X		
Tampa, Fla.	Readily accepted	None noted	X			
Wichita, Kan.	Very good	Occasional noise or light	X			

Table 3-E

HELICOPTER USES AND USEFULNESS

City	Greatest Effectiveness	Overall Effectiveness	Plans for Expansion	Duties Performed: Routine Patrol	Traffic Surveillance	Speed Enforcement	Rescue and Evacuation	Community Relations	Riot Control	Other
Anaheim, Cal.	Burglary, auto theft, robbery	n.g.	None	X	X		X		X	
Baltimore, Mary.	n.g.	Undetermined	None	X	X		X		X	X*
Costa Mesa, Cal.	Routine patrol	Adequate	None	X	X		X	X	X	X*
Dallas, Tex.	Burglary & robbery	Exceeding expectations	Yes-add 3 ships	X	X		X	X	X	X*
Denver, Colo.	Burglary and robbery	Very effective but costly	None	X	X		X	X	X	
Fort Worth, Tex.	Night patrol with spotlight	Effective in all operations	Yes-add a ship & crew	X	X	X	X	X	X	
Honolulu, Ha.	Part I offenses	Too early to tell	Yes-add 2 ships	X	X		X	X		
Houston, Tex.	Robbery, auto theft, burglary	Exceeding all expectations	Yes-add 2 ships	X	X			X	X	
Huntington Beach, Cal.	Crimes against property	Very successful	Yes-add to functions	X	X			X	X	
Indianapolis, Ind.	Deterrent to street crime	n.g.	Yes-add 3 ships	X	X		X	X	X	
Jacksonville, Fla.	Deterrent	Cannot yet be appraised	Yes-add 4 ships*	X*	X*	X*	X*	X*	X*	
Kansas City, Mo.	Auto theft	n.g.	n.g.	X						
Las Vegas, Nev.	Burglary, robbery, prowlers	Highly productive	Yes-not definite	X			X	X	X	
Long Beach, Cal.	Robbery, auto theft, burglary	Excellent	None	X	X		X	X	X	
Los Angeles, Cal.	Burglary, auto theft, robbery	Extremely valuable	Yes-not definite	X	X*		X*	X*	X	
Los Angeles County, Cal.	Robbery, burglary, prowlers	Very successful	Yes-not definite	X	X		X	X	X	X*
Memphis, Tenn.	Deterrent	Very effective	Yes- add 1 ship	X	X		X	X	X	
Newport Beach, Cal.	Unknown	No overall evaluation	Yes-add 3 pilots	X	X		X	X	X	X*
New York, N.Y.	Nighttime predatory crimes	Generally good	Yes-more patrol time	X	X		X	X	X	X*
Oakland, Cal.	Robbery, burglary in progress	Satisfactory	None	X	X					
Pittsburg, Pa.	Supplementing ground units	Effective, limited by cost	Unknown	X	X		X		X	
San Francisco, Cal.	Pursuits, riots, burglary	Very good	Yes-n.g.	X	X		X		X	X*
San Mateo County, Cal.	Crimes against property	Very effective	Yes-not definite	X	X		X	X	X	
Tampa, Fla.	Burglary, robbery	Very effective	Yes-not definite	X						
Wichita, Kan.	Pursuits, auto and criminal	Extremely effective	Yes-add 1 ship	X						X*

Explanation of Responses Marked in Table 3

Baltimore, Maryland

Table 3-B: Downtown area is not extensively patrolled because of high altitude necessary.

Table 3-C: Pilots have a graduated scale somewhat higher than a patrolman but not exceeding the top sergeant's pay.

Table 3-E: Other uses include special events, harbor patrol, and investigative uses.

Costa Mesa, California

Table 3-D.2: The department also uses fixed displays in public locations.

Table 3-E: Other uses include investigative surveillance.

Dallas, Texas

Table 3-B: Helicopters respond to calls in downtown area on emergency basis only.

Table 3-E: Dallas also makes its helicopters available to other city departments.

Denver, Colorado

Table 3-B: Helicopters are used for traffic surveillance from 0700-0800 and 1600-1730, but do not follow regular hours otherwise.

Fort Worth, Texas

Table 3-B: Helicopters are also used for traffic surveillance from 0700-0900 and 1600-1800.

Table 3-C: The number of civilian pilots is not given. There are apparently no sworn police pilots.

Table 3-D.1: The helicopter used by the Fort Worth police is leased by the city and is used by other departments.

Honolulu, Hawaii

Table 3-C: Personnel and observor totals include part-time observors who are used only when the helicopter is assigned in their district.

Indianapolis, Indiana

Table 3-B: The helicopter is used during the summer from 1600-1800 and 2100-2300. In the winter it is used from 0700-0900 and 1600-1800. A stand-by pilot is available from 0800-2400 when the helicopter is not in the air.

Table 3-C: A civilian flys the helicopter when it is used by other city agencies.

Table 3-D.1: The helicopter is leased by six government agencies at a cost of approximately $15,000 each per year.

Jacksonville, Florida

Table 3-C: Three patrolmen were hired at a higher salary because they already held instructor pilot ratings.

Table 3-E: Jacksonville states that their helicopters will be used for all the tasks listed. They have apparently been used for all these functions in the training program, but the department may make more specific duty assignments in the continuing program. Helicopters are to be purchased over five year period to reach the desired number.

Angeles, California

Table 3-C: The total number of pilots is not given.

Table 3-D.1: The cost of one type of helicopter (probably the Bell 47-G-5) is given as $48.66 per hour, and the cost of another type (probably the Bell 206-A) is given as $76.15 per hour. Both figures include salary for one pilot. Roll call training was given to officers in only the affected divisions.

Table 3-E: Helicopters are used for traffic surveillance and rescue and evacuation only in emergencies. They are only occasionally involved in community relations activities.

Los Angeles County, California

Table 3-C: The number of pilots is not given. Pilots receive additional compensation above their normal rates as follows: deputy, $279 per month; sergeant, $210 per month; and lieutenant, $160 per month.

Table 3-D.1: Three helicopters were originally leased by the City of Lakewood during their "Sky Knight" program, and were later purchased by the city.

Table 3-E: Other uses include transportation, criminal surveillance, and training.

Memphis, Tennessee

Table 3-D.1: The cost of a Bell 47-G-5 was given as $21.00 per hour; the cost of a Bell 206-A was given as $44.00 per hour. No crew expenses are included.

Newport Beach, California

Table 3-E: Other uses include supervision of personnel and assistance to other departments.

New York, New York

Table 3-B: Over congested areas the helicopter flies 1000 feet above the highest obstacle.

Table 3-D.1: The department operates four types of Bell helicopters, with costs varying according to type.

Table 3-E: Other uses include aerial photography, air pollution control, transportation, rooftop debris surveys and missions for other city agencies, closed circuit television surveillance

San Francisco, California

Table 3-E: Other uses include aerial photography.

Tampa, Florida

Table 3-C: Number of pilots is not given.

Wichita, Kansas

Table 3-B: Flights are conducted at other hours of the day, but not according to a regular schedule.

Table 3-E: Other uses include investigative surveillance.

Current Trends and Practices

This section of the report is concerned with the analysis of survey responses by subject matter. The emphasis will be on pointing out the areas of similarity among the programs of the twenty-five cities surveyed. Each of the factors or characteristics which were used as column headings in Table 3 will be examined independently and as they may be influenced by other factors.

Population

Few very conclusive statements are likely to result from the analysis of the population figures of Table 3. Helicopter patrol is being provided Newport Beach, California, with a population of 49,422, and it is also being conducted in New York City, with a population of almost 8,000,000. The degree of success enjoyed in these cities at the extreme ends of the scale indicates that cities in all population categories may benefit significantly from helicopter patrol if they can afford the costs involved and if other factors (total area to be patrolled, amount and types of crimes occurring, traffic conditions, and other considerations) are favorable. It is difficult to imagine a helicopter patrol program for a single city of less than 50,000 persons being fully utilized except under unusual conditions. Of the cities surveyed only five have populations of less than 250,000, and four of these five are in California, where helicopter patrol programs have attracted the most attention and have come the closest to gaining widespread acceptance as a standard police practice. California police programs have generally been among the most progressive in the nation, and it is quite conceivable that the trend toward implementation of helicopter patrol

programs in California cities of less than 250,000 persons may indicate the practicability of these programs across the nation in cities of this size, but there does not appear to be any indication of an immediate rush to helicopter patrol on the part of small to moderate size cities.

Year Program Began

Findings in this category bear out statements made earlier about the newness of many police helicopter programs. Only three of the departments surveyed, New York City, Los Angeles County, and Los Angeles, have used helicopters longer than five years, and thirteen of the departments began helicopter operations after January 1, 1970. New York City police have used helicopters since 1948, but the first truly on-going program using helicopters for routine patrol was that of the Los Angeles County Sheriff's Department in Lakewood in 1966. The well-publicized success of this operation sparked the implementation of six additional municipal programs in 1968, three in 1969, and thirteen in 1970 and thus far in 1971. It should be remembered again that this information concerns only those cities included in the final survey base. If the volume of new users in the past year is any indication, the optimism of commercial helicopter manufacturers expressed in recent years appears to be fully justified.

Number of Helicopters

The number of helicopters operated by a department appears to be determined more by budget provisions than by number of persons served or other factors. Five cities, Fort Worth, Honolulu, Indianapolis, Pittsburg, and San Francisco, operate a single helicopter, while Los Angeles County operates fourteen. Each of the cities

operating only one helicopter has plans for obtaining additional aircraft soon, except for Pittsburg, which cited cost problems. Four of the twenty-five departments operate more than three helicopters, five operate three, eleven operate two, and five operate one only. Several cities surveyed commented that to have one helicopter always available required a minimum of two helicopters. No meaningful correlation can be drawn from the ratio of population to number of helicopters. At one extreme Newport Beach has one helicopter for each 25,000 persons, and Costa Mesa one for 36,000, and at the other extreme San Francisco has one for its 715,000 persons while New York City has one per 1,100,000 inhabitants.

Normal Duty Hours

The eventual goal of several departments is twenty-four hour police helicopter patrol. Only Dallas and Kansas City programs are presently organized and equipped in this manner. Dallas has one helicopter operating during each eight hour shift around the clock. Kansas City's staffing pattern was not indicated. Other cities vary the normal duty hours of their helicopters and use them at all hours, but it is not practical to attempt to maintain a twenty-four hour patrol program with less than three helicopters. Nineteen of the twenty-five departments indicate that they do have definite hours for normal duty. Six cities vary the hours of routine patrol; some of these mentioned that information concerning crimes committed is analyzed to determine duty hours.

Helicopters are normally assigned to work a continuous eight hour shift, probably because this is considered the normal working day for their human operators. Approximately five hours of this

tour of duty is spent on routine patrol or other airborne police assignments. To gain continuous coverage, those cities with two or more helicopters normally schedule consecutive or overlapping patrol shifts. The model first shift begins in mid-morning and lasts until late afternoon. The second shift would begin around dusk and continue until after midnight. Typifying this schedule are Houston, with helicopter patrol hours of 0900 to 0300 daily, and Los Angeles, with duty hours of 0700 to 0200.

The most active period of the day, from the standpoint of number of helicopters assigned on patrol, appears to be late afternoon and early evening. Traffic surveillance is a common responsibility during the afternoon rush hour, and the availability of lighting equipment makes it possible to continue patrol after dark. The period from 1900 to 2300 is normally a very active one for most police departments, and twenty-two of the twenty-five survey cities routinely have a helicopter on patrol during these hours.

Most of the departments which do not maintain continuous patrol have a pilot on call. Few departments keep a helicopter on duty during the early morning hours, but instead keep the helicopter ready to fly as soon as its pilot arrives after being notified of the emergency situation requiring helicopter assistance.

Normal Patrol Altitude

The normal altitude maintained by police helicopters on patrol varies slightly with local conditions but generally is the most standardized of the operational practices. An altitude of 500 geet above ground level is considered to be almost completely safe; from this height a pilot experiencing engine failure should be able

to begin autorotation and land safely. The normal daytime patrol altitude, then, is about 500 feet. As an additional margin of safety at night, the minimum altitude has been increased by many departments, the most common altitudes being 600 and 700 feet. Several departments have experienced no greater difficulty at night than during the day and maintain the same altitude for all routine patrol. San Francisco maintains the highest routine patrol altitude, 1200 feet above ground level, and report that the helicopter is very effective despite the increased height. Regardless of what the routine patrol altitude is, of course, the helicopter can descend to as low a level as necessary to perform a police or public service. Most departments apparently believe that the lower the minimum patrol altitude, the more likely the crew will be able to observe ground incidents in precise detail and take the required action. The increased range of observation at higher altitudes is offset by the inability to define images with sufficient clarity.

Routine Patrol Area

None of the departments surveyed restrict their helicopters to a particular part of the city on a permanent basis. There are operational considerations in several cities which limit the amount of helicopter coverage a particular section may receive, but the flexibility of the helicopter is such that in an emergency it may be used virtually anywhere. Dallas and Baltimore both indicated that helicopters do not routinely patrol the highly congested downtown area. New York City commented that helicopters in congested areas were instructed to fly 1000 feet above the highest obstacle. Jacksonville has thus far chosen to limit patrol of residential areas in order to increase coverage of business, industrial, and recreational areas.

Honolulu, Kansas City, Memphis, and Oakland are other cities indicating an emphasis on patrol of metropolitan or "high crime" areas as opposed to routine residential patrol. The size of the city also exerts an influence on the exent of patrol for a given area. Cities with a large area (Honolulu, 598 sq. miles; Kansas City, 317 sq. miles) may be obliged to set priorities for coverage, while cities with less total area (Huntington Beach, 29 sq. miles; Long Beach, 48 sq. miles) may well be able to cover the entire city with the same level of coverage.

Special Equipment

It is difficult to draw much meaning from the responses to this inquiry. It is apparent that all departments equip their helicopters in what they consider to be a suitable manner. The basic police equipment includes radio, siren, public address system, and a searchlight. Twenty-one of the twenty-four departments responding to this question indicated that they use a searchlight for night flying, and it is quite possible the other three departments may have failed to indicate this as an item of special equipment. All departments do maintain radio communications with the helicopter at all times, and only four failed to indicate that they have public address capabilities. Three departments indicated that they have first aid kits on board, six carry stretchers on board for rescue purposes, six have floats on some of their aircraft, two specified basic fire equipment, and five departments listed other equipment items. Among the other items cited were a hoist, life jackets, cameras, life rings, and rope. The departments which maintain the most extensive supply of first aid and rescue equipment are those which patrol a large area of water and do a great number of search and rescue operations.

Cities such as Wichita and Tampa prefer to use their aircraft more for observation than for rescue work, and they consequently do not equip their helicopters with equipment of this kind.

Total Helicopter Unit Personnel

The number of personnel assigned to the helicopter units of the responding cities and the makeup of the totals offers several very interesting contrasts. New York City, for instance, has sworn police officers acting as its helicopter mechanics and part-time observors, and it counts these officers in its figures. Pittsburg includes only its two pilots, making it the smallest unit surveyed. The Los Angeles Police Department includes secretarial and administrative workers in its unit, while Memphis includes one civilian maintenance employee. At this time there appear to be few standards as to desirable patterns of staffing a helicopter unit, and the total number of personnel is not necessarily related to the number of aircraft, the number of pilots, or any other apparent factor.

Number of Helicopter Pilots

Most departments find it desirable to have more pilots than aircraft, with the obvious aim of always having someone available to fly the vehicle. Baltimore was the only city surveyed with more helicopters than pilots, people being outnumbered by machines three to two. In the other cities, the ratio of pilots to helicopters is generally about two or three to one. Fourteen cities maintain a ratio within these limits. At the other end of the scale, Memphis has twelve pilots for its two helicopters, Jacksonville eleven for two, and San Francisco five for its one. Each of these cities does have plans for purchasing additional ships.

Pilot Status

Only three of the twenty-five cities have civilian pilots flying police helicopters, and each of these does have rather special circumstances. In Dallas, the chief pilot and an instructor pilot are civilians; they do very little routine patrolling. Forth Worth's helicopter is owned by the city, and the pilot is a civilian with a reserve officer's commission and full arrest powers. Honolulu's two pilots are also reserve officers. Both Fort Worth and Honolulu have given their civilian pilots training in police procedures. Jacksonville, in staffing its unit, recruited three helicopter pilots who have become sworn police officers assigned to the helicopter unit. Other cities have taken the opposite approach and have required officers applying for flight positions to have already completed several years of employment with the department. In most cases no prior experience with helicopters or aircraft of any type is necessary before transfer to the helicopter unit. Departments are satisfied that an officer with no previous flying experience, but who has demonstrated his ability in other police assignments, will with training become a perfectly capable pilot. On the other hand, a professional helicopter pilot recruited as a police officer may have little interest in police work or may perform in an unsatisfactory manner when he is required to take action as an officer rather than a pilot.

Extra Pay for Pilots

Only seven of the twenty-five survey cities do not give pilots extra compensation for flying status.

Rate or Amount of Extra Pay

Among the eighteen departments which do provide additional

compensation for helicopter pilots, there is a wide variance in the amount of extra pay. There actually is no common bonus rate; 10% above the individual's normal pay is the most frequently cited figure, and it is the standard in only three departments. Other figures listed range from New York City's $400 annually to Los Angeles' $407 per month. San Mateo County makes the finest distinction regarding extra compensation. Its pilots receive $1.75 for each flight hour; they do not receive any additional pay for time which is not spent flying.

Observors and Status

There were not enough responses dealing with the number and status of helicopter observors to draw any reasonable conclusion. A number of departments do not have non-pilot qualified observors as such; that is, pilots double as observors when they are not actually flying the helicopter. Other departments have commented, however, that the added safety which results from the presence of two fully trained pilots is not that significant, and that the second pilot is likely to pay more attention to flying the aircraft than to observing activity on the ground below him. Those departments which do have a group of observors separate from pilots disagree as to whether assigments should be on a permanent or temporary basis. There is much to be said for allowing as many members of the department to act as helicopter observors as possible, but the development of skill which accompanies continual observation is a very important factor. Of the departments which indicated assignment basis, seven had permanent observors and six rotated them regularly.

Functional Division in Which Helicopter Unit Operates

The survey results indicate that those departments which use helicopters recognize its capabilities as a general purpose patrol vehicle rather than a specialized toy. Twenty-one of the twenty-five departments have assigned the helicopter unit to the functional unit of the department which conducts uniformed patrol. This unit is variously called the operations bureau, patrol division, tactical section, and so forth, but all unit titles give an indication that helicopter patrol is assigned to the unit which provides all patrol services. Houston and Indianapolis were the two cities which offered the most unusual approaches to the assignment issue. In Houston, the individual who headed the development of the police helicopter program is in charge of the traffic division, and it was to this unit that the helicopter was assigned when it became operational. The Indianapolis helicopter unit operates as a part of the planning and research division.

Financing the Initial Helicopter Program

Six of the twenty-five survey cities indicated that some federal funds were used in obtaining one or more helicopters. These funds came primarily from the Law Enforcement Assistance Administration under the terms of the 1968 Omnibus Crime Bill. In those cities which did not obtain any federal funds for equipment purchase, agreements which provide for the purchase of the helicopter over a period of several years are the most common. These lease to purchase arrangements normally cover a period of from three to five years. In at least seven of the cities cited the helicopters have been purchased outright as funds were available.

Hourly Operating Expenses

A comparison of the hourly operating costs listed in Table 3 illustrates the importance of local variations in determining the total cost of maintaining a helicopter patrol program. The prominent differences apparent in the table may be partially explained when it is noted that helicopters produced by different manufacturers have hourly operating costs which vary just as initial purchase prices vary. Bell helicopters, for instance, cost several dollars an hour more to operate than their smaller Hughes counterparts. It would seem reasonable to expect, however, that helicopters of the same model would cost about the same to operate. This does not appear to be a valid assumption. The departments in Kansas City, Anaheim, San Mateo County, Newport Beach, Honolulu, and Oakland all operate Hughes 300-C helicopters, and list the hourly expenses as $23.25, $25.00, $29.85, $25.65, $23.50, and $25.00, respectively. The variation among other models is similar, and gives rise to a feeling that local budget considerations may be more important in shaping hourly operating figures than other factors.

Departmental Training Program

Questionnaire responses indicate that there is no widespread agreement as to exactly what constitutes a departmental training program or whether such a program is necessary. The training programs of thirteen of the twenty-one cities which indicated that they had a program of some kind consist almost exclusively of demonstration flights, and in most cases these flights are not mandatory but left strictly to the individual. Several departments have gone beyond this rather limited concept of training and have

established roll call and in-service training programs intended to fully acquaint patrol and other personnel with helicopter capabilities and operations procedures.

Internal Reaction to Helicopter Patrol

No responding department indicated that its personnel were dissatisfied with helicopter patrol operations. Those departments which indicated a rather mixed initial reaction to the helicopter noted that the program seemed to be gaining acceptance with time. There does not appear to be any significant correlation between the type of training program and the department's reaction. Most departments noted that personnel were genuinely enthusiastic about the results of helicopter patrol, particularly after individual officers had participated in a joint air-ground operation which ended successfully. As officers personally experience the flexibility of helicopter operations, their respect for the program normally increases.

The Public's Reaction to Helicopter Patrol

All responding departments noted that the initial public reaction to helicopter patrol was favorable. Many of the expected outcries against noise or "Big Brother" in the sky simply failed to materialize, and citizen support of helicopter patrol has been outstanding. The city of Los Angeles has used public opinion polls to determine community reaction; they have found 89% of those surveyed solidly in favor of helicopter patrol.

Source of Opposition

Ten of the twenty-five respondents listed one or more sources of complaints about helicopter patrol. In at least seven of these noise was the chief complaint; others did not specify exact sources.

Helicopter manufacturers have concentrated on noise problems as the use of police helicopters has spread, and they have generally been very successful in dealing with the problem. Their efforts have enabled departments to reduce the routine patrol altitude to 500 feet with little public opposition. Indianapolis reported that criminals had complained about helicopter patrol and had made threats to shoot the aircraft down if patrol did not cease. The reaction of this section of the public was considered as justification for continuing the program rather than shaping it to the desires of complainants.

Public Relations Methods

Police departments have taken several different approaches to informing the public about the helicopter patrol program. Twelve respondents noted that they had relied on the mass media almost exclusively. In some cases newspaper coverage of particular operations is about the only method used. In other departments radio and television programs have been used to spread the word.

Another group of twelve cities has expanded their public relations program to include appearances before civic, business, and professional groups. These personal contacts have been extremely successful. In at least four of these cities, helicopters have been taken to city schools and demonstration programs for school children have been conducted. The cities of Costa Mesa, Huntington Beach, and Las Vegas and the Los Angeles County Sheriff's Department have perhaps the most ambitious programs for acquainting the public with the police helicopter program. They employ the programs already mentioned and such additional methods as static displays in shopping centers and

public areas and pamphlets explaining the purpose of the program which are distributed during public appearances. Each of these four departments was among those who listed some sources of opposition to helicopter patrol, but their public relations efforts do not appear to have been primarily motivated by public dissatisfaction.

The Greatest Effectiveness of Helicopter Patrol

Though the respondents individually list many specific types of criminal activity as being very susceptible to control by helicopter patrol, there is substantial agreement as to the class of criminal acts which is most effectively combatted by the helicopter. The offenses of burglary, robbery, and auto theft appear to be most affected by helicopter patrol. Each of these offenses is likely to involve notification of the police as soon as the offense is discovered, each normally involves persons leaving the location of the offense immediately after completion and travelling on a street or through an open area, and in each case something of tangible value associated with the offense is likely to be in the offender's possession. Of these characteristics, that of openness or visibility is perhaps most important. The usefulness of the helicopter is very strongly related to what its crew can observe on the ground below. Private offenses and offenses in which the victim is not immediately aware of what has occurred are less likely to involve the helicopter because there is no specific indication of what to look for.

The deterrent value of helicopter patrol in reducing outdoor crimes of many types was noted by several respondents. The use of the helicopter with searchlight for nighttime patrol is reported to be most effective.

Overall Effectiveness

Those departments which have operated helicopter patrol programs for a period of time sufficient to arrive at a decision as to the effectiveness of the programs are generally well satisfied. Comments tended to be more toward the superlative end of the scale than in the middle satisfactory range. The only negative remarks noted were those of Denver and Pittsburg, who noted that their programs were very costly and somewhat limited because of this factor.

Plans for Expansion

Seventeen departments replied that they plan to expand their helicopter patrol program in one form or another, either by adding more aircraft, expanding functions, or changing duty hours to provide more coverage. Seven of these have their future programs planned to the point that they were able to indicate that the department would be adding to its helicopter fleet within the near future. According to their plans a total of sixteen additional helicopters will go on patrol in these cities soon, more than doubling the total number of aircraft assigned to police patrol.

Duties Performed

The duties which police helicopters perform vary substantially from department to department. Such factors as helicopter model, special equipment available, social and geographic considerations, and perhaps most importantly, administrative considerations, all interact to determine exactly what use will be made of a helicopter after it has been obtained. The only standard duty among all departments surveyed is routine patrol. Traffic surveillance is an almost universal responsibility, with only four departments failing to incate that their helicopters are used for this purpose. Nineteen of

the respondents assign their helicopters to rescue and evacuation work occasionally, although this may take the form of searching rather than actually landing and picking up injured or lost persons. Twenty departments are prepared to use their aircraft in crowd control situations, and seventeen believe that the helicopter can be used in community relations efforts. Only one department noted that its aircraft was regularly used for traffic speed enforcement, although there were other comments that some traffic citations had been issued by helicopter personnel when serious offenses were observed.

Other uses of the helicopter depend very much on local conditions and initiative. Transportation, photography, and investigative surveillance were among the most common additional uses listed. New York City helicopters, though they are among the most limited in terms of routine patrol, have a wide variety of special uses, including air pollution control, rooftop debris surveys, and other missions for other city agencies. As departments become more accustomed to routine operations, it seems logical to expect that the number of special uses will be expanded.

Conclusion

As more and more departments consider extablishing helicopter patrol programs of their own, it is to be expected that much more serious study of the helicopter as a police patrol vehicle will be undertaken. The findings of this preliminary survey indicate that helicopter patrol is a most promising weapon in the war on crime. The helicopter appears to be particularly effective against those crimes which have showed the most significant increase within recent years -- burglary, robbery, and auto theft.

But initial successes should not lead to the formation of concrete notions concerning helicopter patrol. Programs and equipment are still very much in a state of flux, and the developments of recent years seem likely to be overshadowed by future events. To keep pace with these developments, the American police must above all insure that flexibility and imagination continue to characterize the helicopter programs which are put into operation to better serve the community.

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