

LAW ENFORCEMENT MANAGEMENT INSTITUTE

**UTILIZATION AND ADMINISTRATION CONSIDERATIONS OF
HELICOPTER UNITS IN TODAY'S
LAW ENFORCEMENT**

**A RESEARCH PAPER SUBMITTED
IN PARTIAL COMPLIANCE OF
THE REQUIREMENT FOR "MODULE THREE"**

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OCTOBER 13, 1995**

#362

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I. INTRODUCTION

While the concept of a helicopter as an airborne patrol vehicle is still in its infancy, the concept dates back to the early 1930's with the New York City Police Department using fixed wing aircraft to patrol the harbor and beaches and a vehicle for search and a means of transportation. In the mid 1950's helicopters were brought into the law enforcement concept due to their maneuverability and capability to respond quickly over densely populated areas in large metropolitan cities. The capability of hovering and orbiting over a location or landing in confined areas in the event of engine failure or an emergency makes the helicopter superior over fixed wing aircraft.

The first documentation of helicopters being used as a patrol vehicle was in 1966, with a combined effort from the Los Angeles Sheriff's Department and the city of Lakewood California. After closely being monitored in mid 1976, several other police agencies modeled their aircraft program after the Los Angeles County Sheriff's program, basically by using the same type of equipment and implementing the same style of policies that were used by Los Angeles County.

In today's law enforcement environment helicopters are used in a variety of tasks, but all concepts center around the helicopter as being a patrol vehicle. To determine the proper use of aircraft in law enforcement it is necessary for administrators individual agencies to understand the use as well as

the limitations imposed on the aircraft.

There are two basic theories regarding an airborne program into today's law enforcement. The first theory is that the primary function of the helicopter is to serve merely as an observation platform from which spectators can view activities and can direct the others. An administrator who subscribes to this philosophy will find that the initial cost of operating a helicopter program will be slightly less due to the fact that a smaller, less expensive aircraft can be purchased, and less auxiliary equipment can be carried on board. However, the administrator must realize that the capabilities will be greatly reduced, and that limited funds allocated to such an airborne unit should be the number one consideration facing an airborne division. The second approach to an airborne unit would be the concept of the utility helicopter which can be expanded beyond the idea of an observation platform. This will expand the amount of auxiliary equipment that can be carried on board. It has been determined by aircraft supervisors and personnel that the ultimate success of the helicopter unit in the patrol application is in direct proportion to the auxiliary equipment that is carried on board the aircraft. The difference in the initial purchase price of a large aircraft and a small aircraft is insignificant in direct proportion to the operating cost. It is the quality and quantity of auxiliary equipment carried on an aircraft that makes the operating cost of a helicopter program escalate.

Police helicopter units have been successful in almost every part of the world, from Alaska, to the tropics, from the rural farm areas, to the urban metropolitan areas, and also from the mountain peaks to the ocean front. Helicopters continue to be extremely versatile in the tasks and maneuvers they perform. Even though the same helicopter can be used in each of these areas, they vary from a very large turbine jet engine to a small piston engine. It is essential that the administrator evaluate the types of missions and the type of performance that he/she expects the aircraft to perform when choosing the style and model of aircraft. Examples for types would be: in a sparsely populated area, the agency may wish to include or may be required to have an ambulance or medical evacuation capability, as well as, high speed ability. If a patrol function is the requirement of the aircraft, a small reciprocating engine will suffice, due to the fact that high speed is not critical. Smaller aircraft can provide the observation and patrol functions. However aircraft can accommodate only the necessary auxiliary equipment to carry out these functions. In aviation terms the amount of weight an aircraft can carry is called "useful load". This includes gasoline, oil, and the empty weight of the aircraft. Administrators must keep in mind that the "useful load" is what the manufacturer recommends on a standard day. A standard day is a day in which the temperature is 59 degrees at sea level. Any increase in the altitude will decrease the capability of the aircraft.

In order to justify better the utilization of a helicopter, administrators must be cognizant of the fact that a multiple purpose vehicle is more advantageous. The aircraft can be equipped with stretchers to perform medical evacuation functions, and used to transport city leaders and dignitaries.

Research outlined in the "Commercial Law Enforcement Manual" indicates that it is better to be effective in smaller areas than to be weak in larger areas due to the excessive response time that may render the aircraft function as ineffective. As an administrator who oversees the daily operation of a helicopter unit it is imperative that the chosen individual have strong leadership qualities as well as knowledge of budgetary restraints. Having worked as both an administrator and a commercial pilot I feel that the administrator must have a working knowledge of the unit and be totally dedicated to the total concept and be able to expound on the positive actions and defend opposing viewpoints. It is not necessary that the administrator be a licensed pilot or have any day to day flight responsibilities.

Transportation functions are a valid utilization of a helicopter, such as transporting executives, as well as other dignitaries. This should not be at the expense of the patrol function unless the unit has sufficient aircraft to handle these types of flights.

The primary use of a helicopter should be for patrol functions and to support officers on the ground.

Since the utilization of aircraft in law enforcement is relatively new and continues to be expensive, the justification and use of the aircraft is critical in that firm guidelines and criteria must be developed to assist the administrator. The administrator must determine which aircraft is best suited for his needs so that the reputation and accomplishments of those who are motivated and dedicated to providing service is not tarnished. On board equipment must be considered prior to the selection of an aircraft.

II. PILOT SELECTION

After the selection of an aircraft which will be used and employed within your organization, the next step will be the selection and training of the pilot and support personnel.

One of the most important considerations in selecting a pilot is his/her ability, background and desire. One must determine whether they want a police officer who is licensed to fly or a professional pilot without any police experience. It has been discovered by the Houston Police Department that the most advantageous and effective way for helicopter pilots to be incorporated into an aviation unit is through police officers. It has also been determined by the Houston Police Department that a professional pilot requires too many years to become a police officer, such as graduation from a police academy, probationary period, as well as promotional exams to become a pilot. Having a police officer already through the probationary period and administrators having some working knowledge of his ability tends to make him/her a more valuable person for the organization. A professional police officer trained as a helicopter pilot is a tool for law enforcement agencies to utilize in their everyday police activities. A helicopter is like a radio, patrol car, or firearm which the police officer uses to perform his duty. Experience as a street officer who has gained the knowledge in the utilization and limitations of law enforcement equipment can only enhance his/her ability to garner the maximum use of that equipment.

Current research in Law and Order Magazine, "Flying Cops" has shown that one of the major problems in airborne law enforcement units today is the excessive amount of turnover in observer personnel. It is important that the selected police pilot be a leader and trainer. In the same article it was shown that sworn police personnel are better able to cope with situations since they are already members of the fraternity in which they have proven themselves to be police officers. That is not always true when civilian personnel are brought in. Without a close working relationship and mutual respect, the ground team cannot enjoy the total effectiveness of the helicopter unit.

Another positive point in hiring a trained police officer as a helicopter pilot is that a street officer has acquired the professional patience that will permit him/her to accomplish his/her assignment. The officer may also spend several days patrolling a given area looking for a suspect with only a basic description, this will certainly develop the patience to do the job. The same type of patience and knowledge that the police officer has learned as a patrol officer will permit him to fly approximately five hours a day every day, even working nights to accomplish his/her patrol schedule. Flying as many as five hours a day or night is extremely difficult and a trying task placed on any individual.

It is imperative that personnel selected for pilot positions must be dedicated to the accomplishment of the police agency and the police mission and have a working knowledge and understanding of what it means to assist and other officers in the air or on the ground. It is extremely important that the officers on the ground realize that there are officers in the helicopter who are just like them and that these airborne officers understand the problems of working on the ground, and that they can make the ground officers task easier. Both will then develop a mutual respect for each other's judgement.

As an administrator, personnel selection for your airborne unit should include a case examination of past performance. Will the officers past experience apply to a helicopter unit? If the officer is enthusiastic, innovative and utilizes good police techniques in reducing crime in his/her assigned district, it is a good indications that this working ethic will be carried with them to any new assignment. An officer who makes few arrest and who does not utilize police techniques and is not innovative will have less effectiveness in accomplishing the police mission.

In the actual flight training of the pilot and support personnel, the first consideration is citizen. The second consideration is the air crew, and the third, the aircraft. The most important emergency procedure is pinpoint accuracy on touch-downs during auto-rotations or landing without power. Police departments, as well as civilian

operated helicopter companies, dedicate hundreds of auto-rotations in their training programs. During this research it was noted that the Houston Police Department requires two hundred hours of police helicopter training time before an officer can be considered as pilot in command. Most civilian helicopter companies require twenty-five hundred hours before applicants are eligible to receive an application for employment. Training for the pilot must be for the particular area in which he/she will be flying in order to become safety oriented. Pilots on the Gulf coast would not need mountain flight time, and pilots in mountain areas would not need density altitude training, etc. Training is an ongoing process. Proficiency examinations, and check rides for each pilot must be done on a routine basis in order to ensure that bad habits do not develop and the proficiency is kept within the guidelines prescribed by the unit. A safe auto-rotation to the ground from any flight angle or position must be continually practiced and must be executed with pin-point accuracy. Pilots also must simulate engine failure during take-off and landing to maximize the pilot's competency. As an administrator of any airborne unit, it is essential that the officer assigned as chief pilot be in charge of the operation and not become so deeply involved in administrative assignments that his proficiency level in flying wanes. When it comes to flight safety and competency, the chief pilot should have absolute control over personnel.

III. THE OBSERVER

The selection of the helicopter observer personnel is one of the major functions in developing a competent airborne unit. It is crucial to the effectiveness of the helicopter program that the observer be an experienced, dedicated police officer who is competent and aggressive, with the ability to take charge of any situation that may arise. He/she must be able to deal with officers on the ground and assist with any circumstance such as homicides, disturbances, or deployment of multiple police officers in a perimeter area where a robbery or burglary suspect may be hiding or may have taken hostages.

Analysis conducted by Flight Safety International has shown that most departments establish a minimum of three months experience observing other trained observers before the person can be effective and capable of performing the duties of observer. Major problems of training an observer are that an observer must work in a cramped and confining environment, must be able to monitor several different radio frequencies at one time, and assist the pilot in whatever capacity he is called upon. The observer must understand that he/she is not the pilot. The observer should not concentrate the majority of his/her flight time on the instruments in the aircraft. Instead he/she should concentrate on the primary responsibilities of observing.

The Houston Police Department Policy Manual further indicates that since observers tend to be proficient, highly trained police officers with a sincere interest

in performing the best police work possible, they find it extremely frustrating when they find activities on the ground are not handled as thoroughly as they would like to have them done. Also, observers incline to be frustrated when they have observed ample probable cause to effect a good arrest or continue with an investigation, and ground units fail to incorporate the information as part of their arrest report. It is the pilot's responsibility, as well as co-workers, to assist the new observer and encourage the new observer to use a map regardless of the new observer's experience on the ground. The pilot must assist the observer in not waiting for arriving ground units to identify the location of the call. It is the responsibility of the observer to identify the location and then advise the ground units as to what to expect upon their arrival. The observer must constantly be aware of where the aircraft is. It is also the observer's responsibility to assist with the deployment of the ground officers. Once an observer has been properly trained and has obtained several months or years of experience it is not uncommon for the observer to recognize stolen vehicles, and to apprehend suspects that have been involved in residential or business crimes. Sometimes shoplifting suspects are identified by airborne observers if a description of the suspect is given with accuracy to the observer. The observer is limited only by his initiative, imagination, and interest in the unit.

IV. UTILIZATION

Utilization is extremely critical to the operation of a helicopter division for many reasons. The most important one would be the cost as well as the effectiveness of the helicopter unit, both to the city and the department. It is extremely important that the administrator gets the most service out of the unit for a minimal amount of expenses. Each piece of equipment as well as each person, is critical and vital to the unit's success. As stated earlier, the equipment lying idle or performing as required will either have a positive or negative result of the helicopter operation. For example, having too many pilots and not providing enough service to the citizens increases your cost salary and will yield the same amount of production. There is a delicate balance to maximize the ability of service both from the helicopter and personnel without jeopardizing the safety or over-taxing the capabilities of the helicopter or its crew.

Scheduling of a helicopter is mandatory, due to the required inspections and maintenance that are crucial in order to have a positive and well run helicopter division. Without planning, an aircraft can be out of service and be down for maintenance during its most productive times. If a city helicopter organization is fortunate to have three or more aircraft, scheduling should not be a problem for maintenance and required inspections. It is essential that the administrator have a plan for personnel as well as the

aircraft. Also, in planning the helicopter unit, it will be essential to know how many helicopters will be required to patrol the areas that need to be covered. Due to the regulations, an aircraft that flies ten hours a day must have a spare engine, spare transmission, and a spare mast assembly available, and ready to be replaced in the aircraft within thirty days. This will be necessary in order to have aircraft ready to fly on a continuous basis. As a safety concern, the administration must emphasize to the pilots that while flying during the day or night and in densely populated areas they should not be permitted to practice any auto-rotations which would subject the pilot or helicopter to any unnecessary abuse or wear-and-tear or place the aircraft in a compromising situation. The administrator should also require, that all practice auto-rotations will be performed in the aircraft, and that aircraft should be assigned to training and daytime use only. Each pilot should be required to take a monthly check ride with the chief pilot who has been assigned to the unit. The practice of these auto-rotations in the training helicopter should be done as often as feasible, thus giving the pilot the opportunity to keep his/her standards at their highest level. Police departments are fortunate in that most officers work no more than five consecutive days before having two consecutive days off. This regulation will assure that the police pilot will not fly more than five successive days or more than one hundred hours per month.

It should be the role of the administrator to monitor the total

flight time for each pilot and to make whatever adjustments necessary to keep the patrol pilot's flight time under the hundred or even eighty hour mark. If the newly established unit is able it would be advantageous to stagger the hours that a pilot flies to provide extended coverage over a patrol area with fresh pilots. The helicopter administrator should certainly be flexible enough to reassign pilots and aircraft without notice in order to provide service when and where it is required. Therefore, air time for both the pilot and the aircraft must be continually monitored by the administrator.

One of the most common complaints from the ground unit to a helicopter unit is that the helicopter is always down for some reason. It is easy for the ground unit to develop this type of attitude when the helicopter is only airborne for five hours during a twenty four hour patrol day. In order for a helicopter unit to overcome this stigma, the pilot, observer, and administrator should always monitor the ground units radio traffic so that they can make themselves available whenever they are needed during critical situations. It should be the responsibility of the pilot to minimize response time by trying to remain within close proximity of an aircraft or the airport while on break or lunch and if possible live within the immediate area where the helicopter is kept.

The administrator should make every effort to assure that the helicopter is dependable and is a good investment for the department. Efforts should also be made to keep the ground officers from feeling that the aircraft or flight personnel or any members of the flight crew are prima-donnas or are not available to the needs of other officers.

V. ACTIVITIES AND OCCURRENCES

In the day to day activity of any police organization the assignment of numerous personnel and automobiles to maintain surveillance over any suspect or defendant for any extended period of time is probably one of the most expensive investigative techniques utilized by law enforcement. When the service of the helicopter is added, it undoubtedly becomes the most expensive investigation that a law enforcement agency can have.

Whenever possible a helicopter that is deployed should maneuver in a manner that will minimize the possibility of the suspect becoming aware of the helicopters involvement. If the helicopter is flown too low, it may become obvious to the suspect that the helicopter is being employed. Once a suspect or defendant becomes aware that the aircraft is being used, it then becomes almost impossible to fly high enough or to orbit outside the crime scene for the helicopter to go undetected by the suspect. Research with the Houston Police Department has determined that three thousand (3000) feet AGL (above ground level) should be maintained while surveillance is being performed on a suspect. This altitude has been determined to be the most feasible altitude to be used for routine surveillance. At this altitude, the pilot as well as a trained observer should not have any difficulty during day-light hours maintaining surveillance on a suspect. On the other hand, an untrained investigator or police officer who

climbs aboard a helicopter for the first time will probably have difficulty maintaining surveillance on a suspect, even if the altitude of two thousand (2000) feet AGL (above ground level) is flown.

The pilot in command of the aircraft should be cognizant of managing his flight time while on surveillance. It is important to establish communications and visible contact with the ground units once the pilot arrives on location.

Today's municipalities are plagued with numerous forms of civil disorder. Helicopters' versatility can be used in such natural disasters as earthquakes, fires, and floods. The helicopter unit can take photographs of large gatherings of individuals where there is a possibility of civil unrest and can be valuable in determining where to stage a command post as well as deployment of personnel. During a natural disaster, helicopters can be used in surveying damage to property or to prevent the injury of personnel by direct contact with individuals on the ground. Aircraft can evaluate the situation, saving time as well as ground equipment.

Any civil disorder should be photographed prior to any pre-activity, the activity itself and post-activity while planning and evaluating the incident. Once the civil disorder has been surveyed or the natural act of nature has been surveyed and the personnel have been deployed in the most strategic places, trust in the helicopter unit by the citizens as well as the patrol officers and division commanders in the department will further increase.

VI. MAINTENANCE

Maintenance is the single most important factor in any helicopter operation. Whether this is a civilian operation or government operation, it is the most common denominator for all helicopter programs regardless of the type, brand, style of equipment or technology that is utilized. When we speak of maintenance, we are addressing ourselves not only to the safety and competence of the air crew but, also to the safe guarding of all equipment. We must also guarantee that all equipment is available when it is required to be placed into operation. Maintenance is the major cost factor in the overall operation of any helicopter program.

The person or persons who oppose a helicopter operation for law enforcement, never fail to emphasize to the citizens the possible danger a helicopter poses, and they constantly refer to helicopters falling from the sky. Therefore, it is imperative that police programs have a safety record second to none. Citizens must have confidence in the safety of the aircraft; those cities in which auto-rotations occur frequently as a result of mechanical failure are inviting trouble. Any mechanical failure resulting in an auto-rotation gives the person or persons against the program ammunition to use against all law enforcement helicopter programs. A helicopter administrator has the responsibility of protecting rather than endangering the community, and for that reason every effort must be made to guarantee a safe flight. It is obvious that each administrator must protect his/her air crew and equipment due

to the great investment they have in both. Excellent flight training and emergency procedures are good insurance and essential to a positive and well run organization. The helicopter itself is an expensive piece of equipment, and if properly maintained will provide almost unlimited service. The care of the equipment will lengthen its life and improve dependability.

The salaries and extensive training as well as the expense of the equipment are wasted if the aircraft is not available for service when the need arises. Consequently, an excellent maintenance program must be provided to guarantee that the aircraft is ready for service when it's required. When the city provides its own maintenance personnel, the helicopter administrator can schedule maintenance to correspond with the police requirements.

This will reduce the overall operating cost as well as maintain a safe record of operation.

The Federal Aviation Administration only requires fifty and one hundred hour inspections, however, a twenty and seventy-five hour inspection should be maintained for safety on all aircraft flown over urban areas. It is essential that all scheduled inspections be performed when they are due, whether it is days, nights, or holidays. This guarantees the availability and effectiveness of the aircraft in its performance.

It is important that the police administrator understand that maintenance may include such thing as insurance, gasoline, oil, major overhauls, as well as gaskets, fan belts and any other component that may be needed in order for the aircraft to perform as it has been designed.

VII. NON-ENFORCEMENT CONTACTS

It is beneficial for an administrator of the air unit to obtain the cooperation, experience, and support of the Federal Aviation Administration. The Federal Aviation Administration tends to have an excellent working relationship with law enforcement agencies that have helicopter units in place at this time. Anytime that a problem has developed, the Federal Aviation Administration has made every effort, according to their research, to work out a positive solution that will not impede the efforts of the police and is in the best interest of everyone concerned. Research has also found that no flight rule regulations have been imposed on police operations where police flights were delayed or an emergency call for police service was interfered with or hampered. It is important to understand that cooperation is a two way street. The FAA as well as the police department cannot violate each others confidence or cooperation.

The FAA has made available numerous publications for designing heliports, guidelines for clearance minimums, lighting and various other details that they recommend. It would be in the best interest of the helicopter operation to adopt the guidelines that are suggested by the FAA. Another organization that assists the pilot and observer is the Professional Helicopters Association. This organization works hand in hand with the Federal Aviation Administration to foster some mutual respect between both Professional Pilots Association and the FAA, so that when a problem does arise both parties can bring the problem to a successful

conclusion. The Airborne Law Enforcement Association is an organization that assists police pilots with standardized professional techniques as well as advice while doing their day to day operations. Also, this organization analyzes special law enforcement equipment, and investigates the manufacturers and vendors. This organization also identifies and describes to the manufacturers and vendors what types of equipment are needed by the police personnel so they can make the best products for any law enforcement helicopter unit.

VIII. RESPONSIBILITIES OF HELICOPTER PERSONNEL

The complexity of a helicopter operation should serve as an alert to the helicopter administrator and the helicopter section officer who is in charge of the day to day functions which require an efficiently operated program.

In order to establish and maintain a well respected and safe organization a law enforcement organization must have the following: (1) An administrator who will establish operations, policies and procedures, (2) represent the department before the city council in matters relating to the unit, (3) establish a liaison between the FAA and the police helicopter unit, (4) supervise and prepare the budget, administrate and evaluate the budget, (5) and see that the training is done in the most efficient and proper manner, (6) review and debrief pilots and be able to guarantee that the flight time is not excessive as well as not being fruitless. The administrator must also be able to speak before various civic organizations, churches, flight organizations, or any other interested group.

The organization must also employ a maintenance supervisor to: (1) check the aircraft daily to see when service is due, (2) to schedule and take in to consideration when inspections are due on all equipment, (3) to maintain a liaison between any mechanics, maintenance personnel, pilots and observers, (4) to guarantee that the fuel and oil inventories are adequate, (5) to

monitor the required life time limit on different parts and to guarantee that those components will not run their life expectancy.

Police supervision over personnel is an important component in the organization. This officer's main function is to regulate continually and be a positive liaison to all patrol officers and command staff members. He will also coordinate the observer training, fly on missions with the observers, and supervise the pilot's patrol procedures. He will frequently attend role call at the station where officers can express concerns about the aircraft unit, and monitor and correct any problems that the officers may have. He/she must also monitor the flight time and insure that no excessive flight time is used and that all pilots abide by all rules and regulations set by the administrator. He/she will maintain a liaison with inspectors from the Federal Aviation Administration, standardize all check rides, administrate all check rides, conduct any and all training to pilots and see that all safety regulations and safe flight training procedures are followed.

The line pilots of the organization are required to maintain a flight proficiency, and to assist in teaching observers the technique for aerial surveillance and the use of auxiliary equipment.

They are required to pre-flight the aircraft, to assist the observer in his/her performance of their duties and to see that all Federal Aviation requirements are fulfilled. They

are to advise supervisors of any problems with ground units, and cooperate and direct the observer with any problems that need to be addressed.

The observers of the organization need to be aware of any crime problems, study reports and check over aviation maps, and be aware of all criminal activity involving vehicle/suspect descriptions in the districts that are being flown. They should also concentrate patrol efforts on police problem areas, be able to observe any problems without depending on ground units to respond to certain calls, maintain an excellent rapport with ground units, and furnish ground units with probable cause for a stop on suspicious activities. They must prepare a flight log and be able to maintain sufficiency with auxiliary flight equipment, such as cameras, and lights.

IX. AUXILIARY EQUIPMENT

A search light is one of the most important pieces of auxiliary equipment that an aircraft can have. Many search lights are on the market by different vendors, and different manufacturers. An important factor that should be considered is the light's ability to illuminate activities from the helicopter to the ground without the necessity of the helicopter having to fly so low that it can be a target from ground fire. Houston Police Department research indicates that a light that can illuminate from an altitude of eight hundred feet (above ground level) tends to be the best. The light should be able to be controlled in any direction by the observer who keeps the beam of light on the desired spot while the aircraft orbits, instead of hovering over the particular activity. By maintaining air speed the helicopter is more capable of an auto-rotation should an engine failure or forced landing be needed. The pilot enjoys greater safety and control over the aircraft while the aircraft is orbiting rather than hovering.

Problems to be considered when purchasing such a light are the capability and power source; the weight of the power source is also a consideration. Some smaller helicopters do not have the capability of adequately providing the needed power source for the light since they do not have a 28 volt power system that most lights require.

Public address and siren systems are also needed. The public address system can assist in apprehending a suspect directing them in commands such as placing his hands on his head while waiting for ground units to arrive or advising the suspect to lie on the ground. Generally however, there are some problems or drawbacks with public address systems. They cannot always be directed and have adequate range or clarity unless the speaker is pointed directly at those on the ground. The person or persons on the ground may have problems understanding what is being said. The siren can be used for such things as clearing intersections for runaway trains, and notification of evacuation in eminent danger.

The selection of police radios for the aircraft should be evaluated and chosen by the administrator based on the department's needs and requirements. The helicopter should have the capability of monitoring other aircraft and police units. The helicopter should also have available tactical frequencies that the aircraft may utilize. Again, a consideration that must be a major concern is the weight, this is always critical in any aircraft, making transistorized radios more desirable.

Listed below are other auxiliary equipment which can be a valuable asset to law enforcement aviation but is not a necessity: (1) a radio direction finder. This can be used to track vehicles from the air by using a small transmitter. (2) Low light imaging equipment

assists the pilot and crew members on the ground during hours of darkness. (3) A litter is used to transport injured persons or personnel to hospitals from secluded hard to reach areas. (4) Cameras are used to film activities between officers and suspects. (5) Armor plating will assist the crew members but is a considerable weight. (6) A sound suppression system and (7) optical aids, night vision scopes, and powerful lens can be attached to pilot and observer's helmets.

X. THE CONCLUSION

The information in this research paper is intended to show the importance of a helicopter operation for a medium or small municipality, it is also intended to provoke as well as entertain some questions that one may have concerning the application of a helicopter unit. The material that was used to compile this paper came from almost 20 years of personal experience as a commercial helicopter pilot, both in the police and private sector. A large majority of the information came from personal interviews with FAA personnel, owners, operators, pilots and observers of helicopter operations in and around the Houston, Galveston area.

Each agency will have it's own problems, whether it is civilian or law enforcement, and there is no way that this paper can include all problems that a law enforcement airborne unit can encounter. However, it is a fact, that helicopters do have a very vital role to play in law enforcement, but whether a police agency can afford and maintain such a unit is a major consideration. The public's acceptance of such a unit as well as officers within the department is and will continue to be an obstacle, due to the fact that a helicopter is not understood and people tend to be fearful or apprehensive about something they do not understand.

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