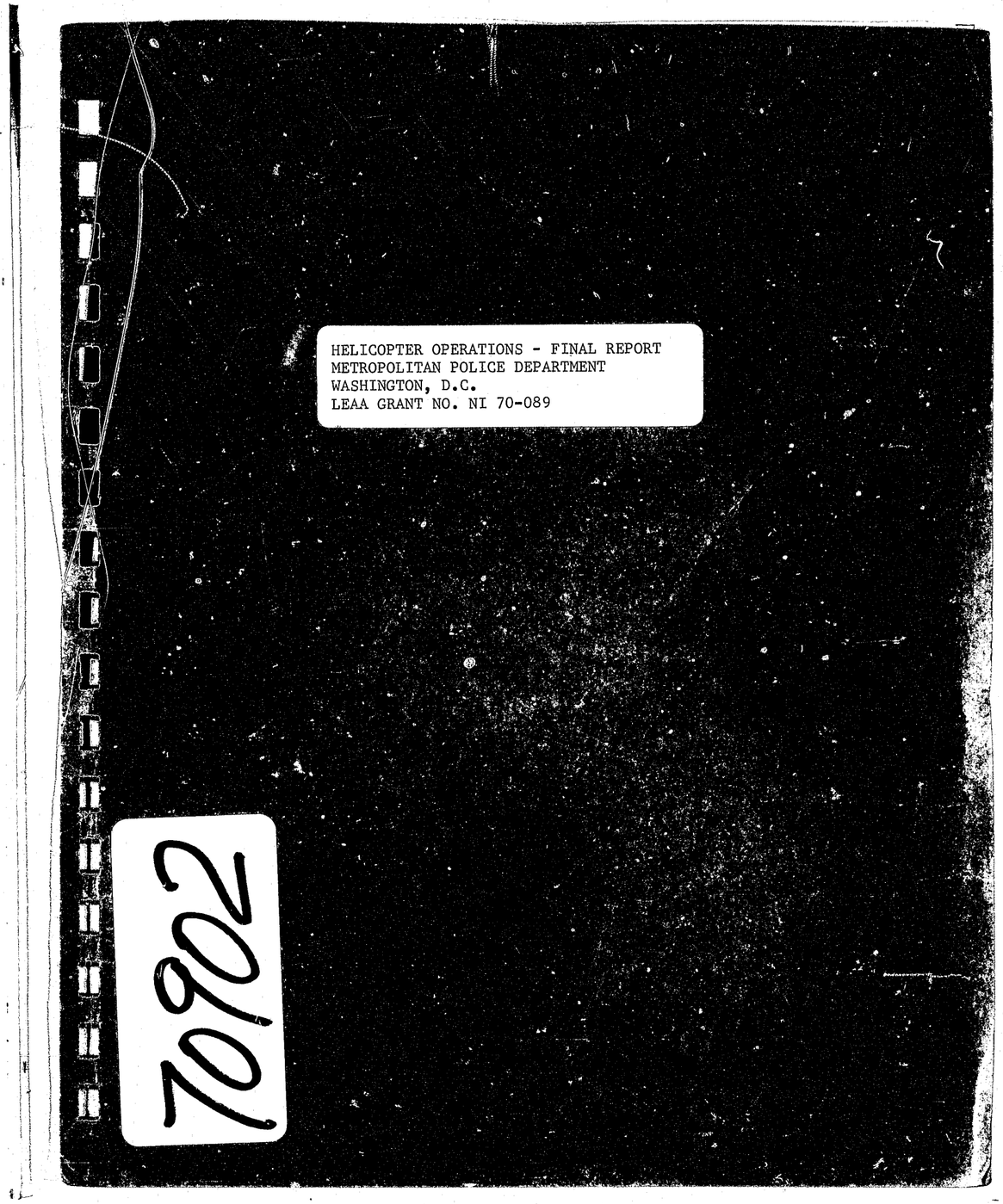

HELICOPTER OPERATIONS - FINAL REPORT

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1.0 PREPARING FOR HELICOPTER OPERATIONS

1.1 Acquiring the aircraft

Before determining the particular make and model helicopter which would be best suited for law enforcement operations in the District of Columbia, the total mission requirements were projected, then analyzed. Included in this analysis were: the projected number of flight hours; day and night time operational requirements, weather minimums, and Pilot Safety Terrain and profile features of the city including obstruction heights, water, regular and emergency landing sites, zoning regulations, and noise abatement procedures were also taken into consideration.

After determining basic needs, but prior to writing formal specifications for the aircraft, police personnel assigned with the responsibility for helicopter operations visited several other police helicopter facilities. This was done to obtain an objective evaluation of the performance of different helicopters in a police environment.

Once mission requirements were determined, police personnel charged with establishing helicopter operations worked closely with District of Columbia procurement personnel handling the procurement of the aircraft. Since procurement contracts deal primarily with "lowest bid" cost factors, performance standards could have been minimized to a point which would jeopardize mission requirements; so police helicopter personnel proved useful for determining if aircraft performance parameters-quoted or published by manufacturers-fit the performance requirements of our police mission.

Finally, to support a final decision in selection of the helicopter and ancillary equipment, a series of flight tests were conducted with two

prospective bidders. Side by side flight tests were made under adverse weather conditions, both night and day, and extensive tests were conducted with each manufacturer's searchlight. In addition, prospective bidders were to furnish copies of their FAA approved flight operations manual.

However, even with our careful preparation, problems were encountered during the procurement process.

Bidder non-compliance and other difficulities encountered during negotiations forced the District of Columbia procurement office to issue three successive invitations for bid. However, to keep a competitive procurement, specifications were modified and, as a result, diminished prior to releasing each new invitation for bid. Unfortunately, certain communications equipment was removed in order to keep the bidding competitive.

Even with our attempts to keep the procurement competitive, only one helicopter manufacturer responded to the final bid request, and was subsquently awarded the contract.

The procurement process which began in February, 1971, was finally completed in the latter part of May, 1971. The helicopters were delivered to the Metropolitan Police Department in July, 1971.

1.2 Acquiring Headquarters and Support Equipment and Services

In March, 1970, President Nixon asked the Federal Bureau of the Budget and the Secretary of Defense to assist the District of Columbia in its war against crime. This assistance proved decisive in initiating helicopter operations.

1.2.1 Acquiring a Suitable Helipad and Support Facilities

The factors we considered in seeking a suitable site for our helicopter base were:

1) It should be in the District of Columbia so the helicopters can respond quickly when they receive calls while on the ground. Also a minimum time would be needed to return to base from patrol areas.

2) It should have enough free air space so the helicopters can land and take-off easily even after dark and in bad weather.

3) Outside lighting must be sufficient for safe night operations.

4) Taxi and take-off areas must be used by aircraft only and free of obstructions. These areas should be near an area suitable for parking helicopters and for refueling by truck.

5) It must comply with FAA regulations for flight operations in its area.

6) The zoning regulations of the area must permit the noise of the helicopter engines.

7) It must have effective fire department support nearby.

8) The hanger must be large enough to house three helicopters at the same time; it must have enough electricity and water for helicopter maintenance.

The only airports in the area which could meet these requirements were military bases and Washington National Airport. National Airport was already operating beyond capacity and thus was eliminated from the list of possibilities. Discussions with the commander of each of the military bases led us to conclude that the Naval Air Station in the Anacostia section of the District of Columbia was by far the best site.

The Naval Station could provide space for our flight operations, but did not have a building suitable for our needs. We considered building a temporary hanger, but the department's building priorities and the cost made this impossible.

Sharing the hanger housing the Presidential helicopter Unit located on the base also proved to be impractical.

We then discovered two buildings at the Naval Air Station which would be suitable for our use.

We sent a request to the Pentagon asking "building-use" at the Naval Air Station be changed so that we could use these buildings. This request cited the urgency of our situation; our pilots were about to graduate from their training school and the helicopters would soon be delivered. Shortly after this, we were notified that one of these buildings would be cleared out for our use.

Our search for headquarters for our Helicopter Branch which started in August, 1970, ended in April, 1971.

1.2.2. Acquiring Support Equipment

Officers in the Helicopter Branch compiled the following equipment requirements essential for safe and efficient flight operation:

1) A 1200 gallon aviation fuel truck. (This will hold one week's supply for the three helicopters.)

2) A portable power unit for starting helicopters in cold weather and in case of battery failure.

3) A small air compressor to inflate tires and floats, for cleaning engines and other maintenance.

4) A small tractor and towbar to move the helicopters in and out of the hanger and, under adverse wind conditions, from the parking area to the take-off area.

5) A mobile platform to move a float equipment helicopter.

6) A platform to enable mechanics and pilots to work on and inspect the main rotor system without climbing on the helicopter.

7) Four portable extinguishers for gasoline fires. (Our helicopters use highly flammable gasoline; we are required to have these extinguishers manned and standing by whenever an engine is started.)

8) Personal equipment for the crew including:

a) 40 Nomex flight suits and 20 pairs Nomex gloves (Fire is a constant danger because the gas tank is

just above the engine. If a fuel fire would occur, the crew would have only fifteen seconds to get out of the flammable plexiglass cockpit. Protection by fireproof Nomex suits would be invaluable if the escape took longer.)

b) 25 radio-equipped safety helmets

c) 20 pairs heavy leather lace-up boots

d) 20 intermediate weight flight jackets

e) 6 self-inflatable aviation life jackets (Our patrol area covers over nine miles of water.)

Our original estimates of equipment needed for the helicopter program did not include these necessary items and they were not included in the grant request. The U.S. Army loaned us a 1200 gallon fuel truck, a portable generator, an air compressor, and needed items of personal gear, most of which we are still using.

As an agency of the federal government, we may purchase fuel from the military at cost. Having the fuel truck enabled us to purchase aviation gasoline from Andrews Field for 17 cents per gallon and to refuel at our base rather than spend about 30 minutes per flight refueling at Andrews. The other source of fuel would have been National Airport. Their charge is 54 cents per gallon and would involve spending 45 minutes flying to the airport then returning to patrol.

1.2.3. Maintaining the Helicopters

We planned our helicopter maintenance program carefully, since it

is an expensive part of the program. Three steps were needed to reach our goal of in-house maintenance.

During the first phase of our maintenance program, Bell Helicopter Company provided us with two factory technical representatives who set up and performed all helicopter maintenance including major overhaul.

These mechanics are skilled and are familiar with the requirements for maintaining their company's helicopters, and the equipment and parts required. They can schedule maintenance so that only one helicopter at a time is being worked on, thus keeping two available for service.

One of the factory technical representatives is also a flight-test pilot. He performs the flight testing necessary every time the engine or flight controls are adjusted. He also sets standards for safe operation of the helicopters in line with FAA and Bell limitations.

At the start of phase two, one of the factory technical representatives was replaced by two experienced helicopter mechanics who had attended Bell's school on maintenance of our model helicopter.

Phase three of a maintenance program will see the establishment of in-house maintenance with the department hiring three mechanics. In preparation for this, one of our pilots who is a licensed aircraft mechanic was appointed to head our maintenance program. He will attend a three week "Field Operations Maintenance" course at the Bell factory.

In this final step to our own maintenance program, two police pilots

will attend "operational flight-test pilot" training and replace the Bell pilot. We expect training these three pilots in maintenance and flight-testing to cost about $5,000.

Contracting maintenance locally was rejected because of the problems this can present. With outside maintenance we cannot be assured that only experienced helicopter mechanics will do our work. Licensed fixed wing aircraft mechanics can repair helicopters but they usually are much more experienced with planes. Inexperienced mechanics tend to be parts changers--lacking the familiarity to troubleshoot problems.

Another problem encountered in contract maintenance, especially for a round-the-clock flying program, is getting unexpected maintenance performed in a timely manner. With our flight schedule one helicopter must be grounded for maintenance each day. If one of our other helicopters also needs work done on it and the contractor is unable to have it fixed right away, all three helicopters may be grounded for repairs at the same time.

1.3 Acquiring Insurance

Our original request for funds was based on purchasing one million dollars liability insurance and no hull (aircraft) insurance. However the Corporation Counsel of the District of Columbia ruled that the city would not self-insure the helicopters, but would buy hull insurance. Subsequent research showed that large cities should have five to fifteen millions dollars liability coverage. Considering the many historic and government buildings, embassies, and large office and apartment

buildings in the District, insurance requirements were increased to fifteen million dollars.

The actual insurance rates are as follows: 15 million dollars liability insurance at $6,627.03 per aircraft, or $19,881.09; hull insurance with 5% deductible-rotor in motion, $250 deductible-rotor not in motion-at $5,519.91 per aircraft, or $16,559.73.

liability	$19,881.09
hull	16,559.73
total	$36,440.82

1.4 Pilot Training

We wanted the best flight training for our helicopter pilots, since so much of our patrol area is over a densely populated urban area.

So many flight courses rush the students through training too rapidly. These courses point toward an early solo flight, as a result training deficiencies do not appear until much later in flight training, or until the pilot is flying in an operational situation. Then the student is forced to relearn flying fundamentals.

Our selection of the U.S. Army helicopter flight training was based on their 14 years of experience in flight training. This kind of teaching experience produces a competent and reliable pilot.

The Army flight training program includes many audio-visual training aids including closed circuit television. T.V. tapes are produced on the base and are continually updated. The tapes are shown through a closed circuit television network to classrooms in the training area. Also, learning centers are open to the student pilots during evening hours. Those student pilots having difficulty

with a phase of instruction can view a tape cartridge on that phase of the program. A large aviation library is also available for student use.

120 hours of academic subjects are given during the first twelve weeks of the 20 week course. 200 hours of dual and solo flight time comprise the flight portion of the instruction. This allows each student pilot enough time to develop flying skills and enough time to adequately demonstrate these skills to instructor pilots.

When the student completes the Army basic helicopter training course he not only possesses the necessary flying skills but also an appreciation of aircraft structure and rotary wing aerodynamics.

Let us now contrast Army training with commercial helicopter training. First of all, commercial helicopter training provides little academic instruction. It assumes the student pilot has acquired his academic knowledge elsewhere. Since training costs are so high, their primary concern is to teach actual flying. Another drawback for police pilots is that commercial flight training is geared to industrial and agricultural applications, not police work.

And from an economic standpoint, the military training is less costly. The entire 20 week course cost $9,300 per man. In a commercial school the same amount of training would cost about $21,000.

2.0 PATROL OPERATIONS 2.1. Patrol Patterns

To evaluate the extent helicopters prevent crime, the city was divided into six helicopter patrol zones. Every two weeks two

different zones were selected for patrol. (Section five discusses the preventive phase of the evaluation program.)

Original planning called for a one-helicopter patrol from 07:00 to 15:00 and a two-helicopter patrol from 15:00 to 23:00 hours. However, we did not have enough pilots for such extended patrol coverage.

During the seven month evaluation period patrol operations were limited to an average of 9.4 flying hours per day for the three helicopters. Two-helicopter patrol coverage was achieved an average of only 18 hours per-month. Poor weather conditions often cancelled flight operations to further contribute to the decrease in flying hours.

During the day the helicopters patrol at altitudes ranging between 500 and 700 feet. Nighttime patrols are conducted between 700 and 1000 feet. These altitudes were selected as the optimum for providing high visibility for deterrence while allowing the helicopter to be close enough to the ground to readily observe ground activities in detail.

2.2 Special Mission Areas

During the evaluation period, the helicopters were limited in special patrol missions due to the assigned patrol areas. For example, if daytime burglaries were occuring frequently in the Fourth District, helicopters could not assist in prevention unless they were assigned to patrol the area which included the Fourth District.

Following our L.E.A.A. grant guidelines, the helicopter patrol was used primarily as a quick-response surveillance vehicle. Although this remained the prime role for the helicopters throughout the

evaluation period, other law enforcement roles were also tested:

Helicopter observers paid particular attention to school areas at lunch time and told ground forces of suspicious persons in an effort to deter narcotics traffic and sexual deviates.

One continuing special mission of the Helicopter Branch is helping determine where police are most needed and what should be done to control demonstrations. Helicopters contributed to the success of the Metropolitan Police Department in controlling the demonstrations. Hourly photographs of the crowds were supplied to the command post. Accurate counts of crowd strength made from the helicopter were instrumental in assigning police personnel to the various demonstration locations.

A microwave TV system is being installed in the helicopters which will telecast demonstrations to the police and city officials in charge of handling the demonstration. The system will enable them to use available manpower and equipment more effectively. They will be able to look at several demonstration locations, both in detail and in panorama. (In Washington, demonstrations often involve demonstrators at several locations.) The system will give them a complete, up-to-the-minute picture of the situation and enable them to take appropriate actions.

Photographing crime scenes and escape routes for the department's I.D. Bureau has been another important task of the Helicopter Branch. The photographs are used as evidence for the department in court and by U.S. Attorneys in presenting cases to grand juries.

2.3 Problem Areas

As already mentioned, the Helicopter Branch did not have enough pilots to sustain the projected flight schedule. The two sergeant pilots were required to handle administrative duties which reduced their flying time. In addition, one pilot was placed on extended sick leave due to an injury to his hand and another was transferred. However even with crew shortages the Helicopter Branch met the minimum 2700 hour operational commitment.

Besides crew limitations, unanticipated maintenance decreased flight time from that originally projected, with radio communications problems being the major factor in grounding the aircraft.

Aircraft vibration and heat created problems which meant standard police car radios could not be used. So motorcycle radios were installed in the helicopters.

This led to the communications problem most responsible for our difficulties. The majority of our departments communications equipment is VHF -FM. Our motorcycle radios receive VHF broadcasts but transmit on UHF.

The police broadcast station can receive both UHF and VHF. However because of unusual noise and distortion in the ultra high frequencies, the dispatcher frequently must cut off UHF reception, limiting reception to VHF. Under these circumstances transmissions from the helicopters are not received. Without two-way communications, helicopter effectiveness is greatly reduced.

Communications between pilot and observer also hindered the program's effectiveness. The recent installation of a mixer panel resolved this problem and also improved broadcasting and reception. The mixer panel allows the pilot and observer individually to select which system -- VHF, UHF, intercom, or PA--they wish to monitor and to control the volume. Previously the helicopter crew could monitor only one police channel; the flexibility provided by the mixer panel allows them to monitor three channels simultaneously.

2.4 Workload not Included in the Evaluation

Some other results of helicopter operations not mentioned in the formal evaluation section of this report are as follows:

A. The helicopter proved extremely effective in dispersing crowds. During the seven month evaluation period there were 35 instances where the helicopters, using its nightsun, hovered over a crowd and caused it to disperse.

B. By using its nightsun after dark and by making daytime checks of roofs at sites of attempted burglaries, the helicopter saves time for ground units. During the evaluation period the helicopters checked over 175 roof tops for suspects.

C. In planning operations for the helicopter, one task deliberately excluded from the duties of the branch was routine traffic patrol. However, with their broad field of vision, helicopter crews frequently sighted traffic problems and were able to inform the Traffic Division of the need for

a traffic officer at the spot.

D. The helicopter conducted over 475 searches for suspects during the evaluation period and sighted over 55 possible suspects.

E. The helicopter's nightsun was used eight times to light the scene of a fire for firemen.

2.5 Excerpts from Observers Reports

The following four excerpts from the observers reports dramatically reflect the impact helicopters have had on the apprehension of suspects:

Case No. 1

About 1845 hours Thursday, December 30, 1971, police helicopter Juno #2, crewed by Officer John T. Layton, observer, and Ryszard W. Niemira, pilot, had occasion to respond to the area of 17th Street and Independance Avenue, S.W. to assist the United States Park Police in a search for a subject wanted for assault on a Police Officer and Larceny of United States Property. , ...a U.S.P.P. service revolver. The subject was known to be armed with both a rifle with telescopic sights and the revolver.

Officer Layton directed the pilot to conduct a systematic search of the Lincoln Memorial, Tidal Basin and Haines Point grounds utilizing the Nightsun light mounted on the helicopter. While over the area adjacent to the 14th Street bridge, both crew members observed a subject in the bushes and the aircraft's light was placed on him. At this time, the subject left the bushes, moving up 14th Street, he was also observed by U.S. Park Policemen. The subject began to run, turned and fired upon his pursuers. Officer Niemira fearing one of the officers may be struck, flew in closer in an attmept to distract the assailant. In the meantime, Officer Layton attempted to 'blind' the subject with the light. The felon fired one or two more shots,

ran behind a retaining wall and crouched with his head forward. He made no further movements. The light was kept on the individual while he was cautiously approached by the U.S. Park Police.

The subject, later identified as Richard Stan Mingus, male, 24 years of 11022 Delmar Court, Fairfax, Virginia, was pronounced dead on arrival at D.C. General Hospital.

Case No. 2

About 0130 hours Sunday, May 7th, 1972 Police helicopter Juno #2, crewed by Officer John J. Campbell, observer, and Officer Thomas F. Feddon, pilot, monitored a request for assistance by Scout #146 in the parking lot of McKinley Tech. High School, 2nd and T Streets, N.E., in the Fifth District. Officer Hanson, Scout #146, was chasing three subjects in the parking lot who were wanted for Criminal Assault. Juno's response time was about 15 seconds and the Nightsun light was used to illuminate the area. Two subjects were apprehended in the alley in the rear of 100 block of R Street, N.E., and later identified as William Brown and Kenneth Kelly. Both subjects were charged with Rape and Sodomy, CCR #232189. The assault took place in the parking lot, above location, on a 15 year old female. The third subject was not apprehended at that time.

Case No. 3

About 0505 September 20, 1971, Officer Gerald J. Grochoski, observer and Officer Walter H. Taylor, Pilot, received a call land line to respond to the 1600 block of Rhode Island Avenue, N.E. and assist the units chasing two subjects for Burglary of the Delicatessen, 1511 Rhode Island Avenue, N.E.

At approximately 0510 the above crew in helicopter Juno #2 hovered over the scene and used the Nightsun light to illuminate the area. At about 0520 K-9 Cruiser #694 spotted one of the subjects and gave chase on foot. The Helicopter crew kept the subject within the beam of the Nightsun light and after a short foot chase he was apprehended by Officer L. A. Porter of the Fifth District, who charged the subject with Burglary.

After going 10-8, the helicopter crew received a "well done" from the Night Supervisor, Cruiser #166.

Case No. 4

At 1150 hours, September 23, 1971, helicopter Juno #2, crewed by Officer William H. Booth, observer and Officer Roger C. King, pilot, monitored a lookout for Robbery Holdup of the Citizens Bank and Trust Company, 1286 East-West Highway, Montgomery County Md. The lookout was for three negro males, one of whom escaped in a white and orange 68 Lincoln. This auto was observed by the helicopter crew in the Colonial Village section of Montgomery County, just north of Beach Drive. The vehicle was followed into the District by Juno #2 and the Police Dispatcher was advised. Ground units were alerted that the vehicle was proceeding south on Georgia Avenue, N.W., in the 6500 block. The auto was stopped by Officer McCoy, a scooter-man, with other units assisting. The occupant, Charlie Lewis Anderson, 33 years of 3501 B Street, S.E., Apt. #2, operator of the vehicle was later charged with being a Fugitive from Maryland by the Washington Field Office, of the FBI.

3.0 APPREHENSION PHASE OF THE HELICOPTER EVALUATION

3.1 Overview

Discussions between the Metropolitan Police Department and The National Institute of Law Enforcement and Criminal Justice during the spring of 1971 led to the formulation of an evaluation plan for measuring helicopter effectiveness in the apprehension of suspects.

Original planning for the "apprehension phase" of the evaluation addressed itself only to a statistical comparison of calls for service participated in by the helicopter, and a control group of similiar calls for service handled without the helicopter.

This phase of the evaluation began in September, 1971. By the end of October, it became apparent that the data being gathered should be expanded to achieve a more comprehensive program evaluation. Especially lacking was data on the impact of the helicopter on an arrest and the circumstances relating to that involvement. Consequently, in November, the evaluation plan was broadened. Added were subjective evaluations by the arresting officer and the helicopter observer of the assistance provided by the helicopter in making the apprehension. This additional data was compiled until the conclusion of the evaluation program in March, 1972. Since this portion of the evaluation did not begin until November, similiar evaluation data for the months of September and October was derived by reviewing narrative accounts of each arrest situation involving the helicopter and judging the extent of the helicopter's impact on the arrest situation.

Quantitative and qualitative workload data gathered under the two foregoing programs, along with certain helicopter flying hour data, have provided the principal data scources used in analyzing helicopter effectiveness in arrest situations.

3.2 The Test Group-Control Group Evaluation Method

As previously noted, this portion of the evaluation tracked calls for service in two groups: a test group (calls participated in by the helicopter) and a control group (calls requiring helicopter response, but coming in when no helicopter was available for dispatch.) The calls for service included in the evaluation were certain felonies, in progress or just committed. These were defined to the communications dispatchers as part of the evaluation procedures. However, the dispatcher also had the latitude to dispatch the helicopter on other calls which, in his opinion, would benefit from helicopter assistance. Besides the helicopter being dispatched from Central Communications, the helicopter patrol crew also monitored the radio frequencies in the district in which they were operating and initiated their own response on calls for service, notifying the dispatcher when they responded on a call.

Each call for service identified by the dispatcher as trackable under the evaluation guidelines was traced from the dispatch of police assistance to the final disposition recorded by the ground officers responding to the call. Data elements recorded at dispatch were time,

date, and offense code. For analysis purposes, disposition information on each call for service was quantified within one of the following categories: (1) a false call or call requiring no report, (2) a valid call (a crime actually occurred) without a usable lookout, (3) a valid call with a usable lookout, (4) an arrest. (To gather this data accurately and completely, reporting procedures were prepared for each department organization involved in the reporting precess. A discussion of these procedures is contained in Appendix 1 of this report at Tab D.)

Data for this phase of the evaluation was gathered for a seven month period beginning in September, 1971, and ending in March, 1972. Table I (at Tab A) reflects a summary of calls for service with helicopter response, disposition, and categorized by complaint reported. Table II (at Tab A) reflects similiar data, only it is for the control group.

3.3 Evaluating Helicopter Assistance In Arrests By On Scene Observation

Through a monthly reporting requirement, the helicopter observer and the arresting officer were asked to categorize the contribution made by the helicopter in support of each arrest. The officers selected the category which best described the extent of helicopter assistance. Alternatives presented were;

(1) decisive - The arrest resulted from the helicopter sighting the suspect(s) or the escape vehicle; or the helicopter's nightsun illumination exposed the suspect(s) location.

(2) some assistance - The arrest was made with some assistance from the helicopter, although the apprehension would most likely have

been made anyway, without the helicopter's presence. Based on circumstances this category chiefly credits the helicopter with possibly causing the suspect to react to the helicopter's presence in a manner which caused his arrest. Included in this category are such arrest situations as: (a) the helicopter may have prevented an escape attempt by covering the rear exit of a building until additional help responded to assist a one man unit answering the call, (b) the helicopter's night sun illuminated an arrest location where a disorderly crowd had gathered, dispering the crowd, (c) the helicopter was the first unit on the scene, started its search pattern for the suspect, and later the suspect was arrested in the search area.

(3) no assistance - The arrest was made without assistance from the helicopter.

These on-scene opinions by the observer and the arresting officer were gathered for the months of November, 1971, through March, 1972. Prior to this period, narrative reports on each arrest situation (arrest situation is defined as a call for service resulting in an arrest or arrests) were reviewed by the program evaluator, who categorized each arrest within the same three areas. Although this portion of the evaluation was done on a historical basis, in most instances the arrest narrative was sufficiently detailed for an informed judgement. Reported results for this portion of the evaluation are reflected in Table IV (Tab B).

3.4 Other Arrest Data used in Analysis

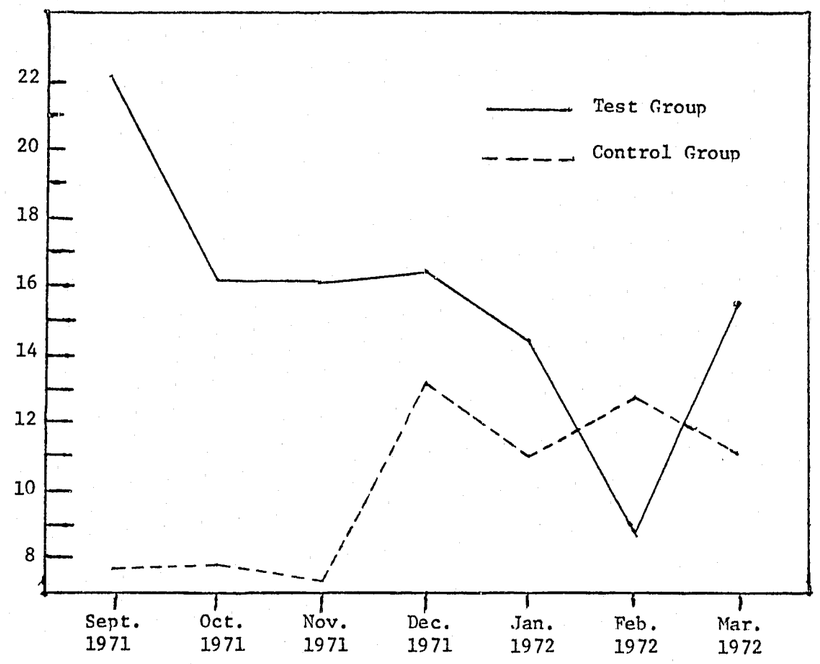
In addition to the judgement of the helicopter observer and the arresting officer, certain key circumstances of each arrest with helicopter dispatch have also been quantified in Table IV (Tab B with totals at end of the table preceding Tab C) for purposes of analysis. Table III (at Tab A) compares the percentage of offenders apprehended in the test group to the control group and also compares the arrest offenses of both groups.

3.5 Evaluation of Test and Control Group Data

In establishing the two comparative data groups (the test group and the control group) at the beginning of the evaluation program, the assumption was made that if the helicopter is an effective police tool, then there will be a significant measurable difference between the disposition of calls involving the helicopter and calls not involving the helicopter.

Figure 1 graphically traces control group and test group arrest results for the evaluation period. The graph line was plotted using calls with arrests as a percentage of good calls (calls with reports taken) for each month of the evaluation period. For the entire evaluation period this comparison indicates calls with arrests as a percentage of good calls increased from 10.3 percent to 15.8 percent, a 53% increase in calls with on-scene arrests. In terms of the number of arrest situations, 6.1 per month were due to the helicopter.

Percentage of Arrests To Good Calls
Control Group - Test Group



evaluation period

	TEST GROUP Good Calls	Arrests	Arrest %	CONTROL GROUP Good Calls	Arrests	Arrest %
Sept.	138	30	21.7	293	23	7.8
Oct.	99	16	16.2	407	32	7.9
Nov.	130	21	16.2	401	29	7.2
Dec.	135	22	16.3	582	77	13.2
Jan.	125	18	14.4	287	32	11.1
Feb.	112	10	8.9	288	37	12.8
Mar.	64	10	15.6	388	43	11.1
Total	803	127	15.8	2646	273	10.3

3.5.1 The Presence of a Bias in Test Group Data

During the evaluation of helicopter operations, constraints could not be imposed within program guidelines which would restrict helicopter response to calls for service on a strictly sequential basis. If the helicopter was needed on a high priority call, it was diverted. Yet, in these instances, a higher priority call was more likely to result in an arrest (e.g. being diverted from a burglary to a fresh pursuit situation.)

To the extent that the helicopter was being diverted to situations where an arrest was more likely to occur, a bias was present in the evaluation program, and this bias favored the helicopter.

To ascertain the extent of this bias, each narrative account of an arrest in the helicopter log was reviewed. This review uncovered eight instances of a helicopter being diverted from its original call to another call on which an arrest was made.

When these arrest situations are eliminated from the evaluation, the percentage of arrest to "good calls" decreased from 15.8% to 13.4%. A comparison of this 13.4% with control group results (10.3% of the control group calls resulted in arrest) reveals the increase in the percentage of arrests due to the helicopter remains statistically significant at 30%.

3.6 On Scene Evaluation Results

Data gathered under this portion of the evaluation further substantiates the positive impact of the helicopter on arrest situations, although not to the extent reflected in the statistical portion of the evaluation. Of the 127 arrest situations with helicopter response, the helicopter's impact was judged decisive in 26 calls for service with arrests and "of some assistance" in 42 arrest situations. "No assistance" judgements were made on 59 arrests. Dividing the 26 decisive arrests situations by 7 gives a monthly average of 3.7 arrests per month which would not have been made without helicopter assistance.

3.7 Comparison of Apprehension Phase Statistics

No comparison of the 3.7 arrests per month caused by the helicopter in the on scene evaluation can be made with the 6.1 arrests per month average computed from the test-control group. The two evaluation program methodologies differ substantially; one program being a statistical comparison, and the other a purely subjective evaluation. This diversity precludes any meaningful comparison of the results of each program.

3.8 Analyzing The Circumstances of Arrest

To analyze the impact of the helicopter's rapid response on calls for service, the time elapsed from receipt of a call to the helicopter's arrival on the scene was recorded. Of the helicopter's 2364 calls for service, 694 calls resulted in a response time of less than thirty seconds; in 659 calls the response was less than one minute; and, of the remaining 1031 calls, 90% took less than four minutes.

Yet, other data collected indicates this rapid response time has had little impact on the 127 arrest situations with helicopter dispatch, to the extent that the helicopter was not the first unit on the scene for most calls with arrests. Again looking at the 127 arrest situations to which the helicopter responded: in 26 arrest situations fresh pursuit was already in progress; in 56 arrest situations ground units were already on the scene where the arrest would occur; and of these 56 arrest situations, 27 arrests were made prior to the arrival of the helicopter.

Evident from the foregoing data is that when most arrests with helicopter response were made, the helicopter was not arriving first on the scene but, instead, arriving after the first ground unit. Yet of the 26 calls with arrests when the helicopter's contribution was judged decisive, the helicopter was the first unit on the scene 21 times. So the chance for the helicopter being decisive in arrest situations is in large part dependent upon it being the first unit on the scene and having the first opportunity to sight, track, and direct interception of the fleeing suspect(s).

3.8.1 Arrests as a Percentage of Offenders Compared

The percentage of offenders arrested in both the test data groups and control data groups were compared (table IV Tab C) to assess the assistance rendered by the helicopter in arresting additional offenders. The assumption being that the helicopter's vantage point for surveillance and its rapid response time would result in a higher percentage of offenders being caught at the crime scene or fleeing the crime scene. Results of this comparison show 87% of the test group offenders were arrested, whereas 96% of the control group's offenders were arrested. The conclusion is that the helicopter's presence did not result in the arrest of additonal offenders.

4.0 OPERATIONAL DATA AND COST REVIEW

4.1 Arrests Correlated to Flying Hours

During the seven month evaluation period, the helicopter averaged 283 patrol hours per month or 9.4 hours per day (see table 5 at Tab C). The helicopter responded to a call for service with an arrest every 14 hours of patrol time. And on a statistical average, one arrest situation was attributable to the helicopter for every 45 hours of patrol time. (One felony arrest situation was attributable to the helicopter for every 56 patrol hours.)

4.2 Costs - Program Inception - April 1973

Through three grants totaling $343,243 the Law Enforcement Assistance Administration has underwritten a sizeable portion of the costs to date for helicopter operations.

Costs borne by the Metropolitan Police Department mainly include salaries. Program costs are detailed in Table 6 (Tab C.)

4.3 Cost Comparison - One Helicopter - One Scout Car

For purposes of comparison, helicopter lease purchase costs are not included; costs addressed in table 7 (Tab C) are based on the helicopter being purchased outright at the 1971 purchase price.

Total operating expenses for one helicopter are projected at $132,460. Whereas a scout car costs $90,774 to operate for a one year period. Based on this comparison, the projected $427,380 for operating three helicopters would provide 4.7 additional scout cars citywide.

4.4 Projected Flying Hours Costs

Taking into account lease purchase arrangements, the Metropolitan Police Department can purchase the three helicopters for $85,100, or

$28,366 per helicopter, in April, 1973. Our purchase price for one helicopter amortized over a six year period yields a cost of $4727 per year. Taking into consideration this reduced purchase price, yearly costs per helicopter reflected in Table 7 (Tab C) should drop from $132,460 to $127,733. Twelve hundred flying hours are projected annually per helicopter yielding a cost per flying hour of $106, based on the $4727 amortized purchase price.

5.0 EFFECT OF A HELICOPTER PATROL UPON CRIME PREVENTION

5.1 Introduction

Modern law enforcement agencies are constantly seeking new methods of maximizing the effectiveness of police personnel in preventing crime as well as apprehending the criminal. Besides using the helicopter for apprehension of criminals, we have found it helpful in the prevention of crime. Used over the Lakewood City area, the Los Angeles Police Department reported that the crime in this area was reduced by 8%, while crime in Los Angeles County, in toto, increased by 9%, from a comparable period a year earlier. The test procedure in this case kept the helicopter over the same area (9 square miles), whereas the Metropolitan Police Department helicopter study was conducted citywide. The phase to be discussed in this section will be the inhibiting effect of a helicopter upon the incidence of crime.

The experiment performed by the Metropolitan Police Department to determine the effects of helicopter patrol on crime prevention began in August 1971. The first two months, for various reasons, were not used in the experiment; one reason being that the necessity of revising our data sources during the analysis suggested a smaller time-period, for completion within a reasonable time. Also, the inexperience of police helicopter personnel during the early months may not reflect the actions of these personnel in later months or during normal patrol procedures, thus possibly biasing the experiment, if this time-period were included.

5.2 Summary

1. Based upon a statistical analysis of the designed test, the following conclusions were drawn:

A. Overall, the presence of a helicopter(s) as flown in this test and reflecting all the procedures of the test, resulted in an 18.5% decline

in projected crimes over the area flown by the helicopter.

B. The areas adjacent to the experimental zone (s) also reflected a sharp decline in crime, indicating that the helicopter appears to have an effect beyond the immediate experimental area. No quantitative evaluation was made of the degree of decline, since the paucity of crime data in the adjacent areas would preclude a valid estimate.

C. Three other aspects of the study not yet completed, but of interest to the Metropolitan Police Department, are the relative effects of the helicopter by shift, by area of the city, and by type of crime. These phases will be subsequently studied.

5.3 Description of the Test

1. Originally the city was divided into six helicopter zones, and it was decided that one helicopter would cover the two experimental zones between 0700-1500 hours, while two helicopters would cover the same area between 1500-2300 hours. This plan, however, could not be implemented. A lack of resources, both helicopters and pilots, precluded our fulfilling such an extensive flying-hour schedule. Thus, flight assignments were varied, more flights being assigned to the afternoon shift and on certain days to take into account high-crime peaks.

2. It was decided to switch zones each two weeks and a proportional random sampling of zones (based upon the incidence of crime in each zone) was used to select the experimental zones for the two-week period, with the constraint that no zone would be consecutively selected. What this sampling technique does is to relate the helicopter flying pattern to the higher crime areas but not to the extent warranted by the proportion. High-crime zones were selected more frequently than the other zones. The switching of experimental zones on a two-week basis has an advantage not associated with a constant experimental zone.

In the latter case, the exodus of the potential criminal from the helicopter experimental zone (s) resulted in his arrival in a "safe" (from helicopter) area. Crime patterns in the constant non-experimental zones are immune from helicopter observance. In the former case (the varying experimental zones), the exodus would have to re-occur each two weeks, thus, put some crimp into crime operations (assumming the helicopter has some effect).

3. At this point, some definitions are in order:

A. An experimental zone is that area that has been authorized for patrol during that two-week period, even though it may not be patrolled at any one specific time.

B. An adjacent area is deemed to be that area within walking distance of the boundary of the experimental zone. If, in the necessity of evading the patrol of a helicopter, a potential thief has the use of a car, it is possible for him to venture into any part of the city and there is no way for us to evaluate this effect. We are assuming however that a good portion of those (if any) attempting to evade the patrol activities of the helicopter will attempt to do so on foot and will not venture more than two reporting areas beyond the boundary of the experimental zone. This can be evaluated.

C. A control area is one that is neither experimental nor adjacent during that two-week period.

D. Also, "crime" refers to Part I Offenses, minus larcenies.

4. As was indicated, the city was divided into six zones. It soon became apparent, however, that a stratification of offenses by only six zones was not sufficient to facilitate analysis, primarily because most of the helicopter zones have reporting areas that are adjacent to experimental zones and these adjacent areas might be more influenced by a helicopter patrol than the remaining

area of this "control" zone. Thus, these adjacent areas were separated, and six zones become 16 sub-zones. That portion of a zone that was not adjacent to an experiment was provided with a zero before the number. Thus, 05 is that portion of zone 5 not adjacent to any other zone. The area that is adjacent was provided with a digit after the zone. Thus, subzone 54 is that portion of zone 5 that is adjacent to zone 4. To ease the arithmetic manipulations and analysis, crime incidence data was obtained for each of the 16 subzones.

5. Although the helicopters are designated to patrol the selected experimental areas, they are also obligated to respond to calls for service in any zone. Originally, this posed a problem with respect to the effects of preventive patrol upon crime. If the helicopters are responding to a call outside the experimental zones, not only are they not patrolling the helicopter zones, but basically they are patrolling a non-helicopter zone and further diminishing the effect of the helicopter patrol. The proportion of times (22%) out side the patrol zone(s) was considered to be relatively large and a handicap to an effective analysis. Now, initially we had decided that any significant change in crime would have been attributable to the presence of the helicopter, even when such helicopter patrolling occurred less than half of the 16-hour patrol day. The alternative would have been to acquire, at a late stage in the experiment, the exact flying times of the helicopter and then to transform these times to hours and obtain the crime record for these hours for each of the zones. We felt that this course of action would have been prohibitive, requiring reprogramming several times daily, and that the generated data would be voluminous and extremely difficult to analyze. We also thought that the delayed effect of a helicopter in one time-period could bias the results in a subsequent time-period. To validate this gross analysis, however, one basic assumption had to be made: The presence of a helicopter will decrease the crime incidence, by increasing the criminal's fear of being apprehended. The only question was the degree of

prevention.

6. While the assumption is still deemed correct, a helicopter's presence will reduce crime, it was subsequently decided that analyzing all the crimes occurring during a 16-hour day, for all 14 days within this two-week period, would encompass about three times as many crimes when the helicopter was not patrolling as would be included when the helicopter was aloft, thus effecting a major bias in the analysis. Let us cite an example to note the effect of this gross error upon changes attributable to a helicopter patrol. First, it must be remembered that though a helicopter is authorized to fly over two-experimental zones, the normal practice is for the pilot to concentrate over one zone. Now, assume zones 3 and 5 are deemed to be the experimental zones and on any 16 hour day, a helicopter patrols zone 3 for about 8 hours. Assume 25 crimes normally occurring in each zone and for each 8-hour period, without the effect of a helicopter patrol. Now, assume that the helicopter was on patrol in zone 3 between 0700-1500 hours. If the helicopter's presence resulted in a 20% decline in crime, this zone-time interaction would have reflected a decline of 5 crimes (.20 x 25) in zone 3, between 0700-1500 hours. However, if both zones and both shifts are combined, the overall result would have been a decline of only 5% (5 ÷ 100).

7. Thus, we belatedly concluded that this type analysis is invalid and what was really needed was an evaluation of the times and zones only when the helicopter was truly patrolling.

8. The helicopter crews generally kept precise records of the helicopter activity. Specifically, mentioned in these daily logs were the precise times a helicopter departed from and arrived back at the pad, the times it patrolled an area, when it received a radio call to investigate an incident or crime,

in general, the type of information needed for this analysis.

9. A review was then made of these daily logs from October 1971 through March 1972, determining the exact times that the helicopter was aloft and over the experimental area. Although much data was acquired, a good portion of the information could not be captured for the following reason: Our data processing organization captures crime data by the hour, starting on the half-hour, e.g. 1030-1130 hours. If however, a helicopter was patrolling between 1100 and 1200 hours, none of the crime information could be used, since the 1100 to 1130 hour data would have to be combined with the crimes occurring between 1030 and 1100 hours (non-flying time). Similarly, the crimes recorded between 1130 and 1200 hours would be combined with those recorded between 1200 and 1230 hours (non-flying hours). Much recorded data had to be discarded.

10. At other times, some question arose as to whether data should be included, e.g. a patrol over the experimental zone between 1027 and 1120, should we include the 1030-1130 data even though we're including 10 minutes of non-patrol time. Some procedure had to be established that would determine use or non-use of data. The following was established:

A. For any one-hour interval and for a zone:

(1) If the helicopter was patrolling at least 45 minutes, and

(2) If there is no more than 15 minutes between the end of the patrol time in the last hour and the start of the current patrol, that hour's data can be used. The rationale was that a lapse of several minutes (15 was assumed) in the patrol activity would probably have no effect, if the helicopter had been patrolling earlier,

(3) If (1) occurs, and no more than eight minutes of the remaining

15 non-patrol minutes occurred at the very beginning of the hour, that hour's data was also used. Because of the paucity of crimes by hour, an 8 minutes lapse in patrolling was deemed to be of no consequence.

11. Based upon these procedures and reviewing the daily logs we recorded those times when the helicopter was patrolling and the data could be used for evaluation. These were then summarized into two-week periods, since the experimental, adjacent and control areas would be the same throughout each two-week period.

5.4 Analysis

An attempt to evaluate the effect of a helicopter, necessitates a comparison of a change in crime in those sub-zones where a helicopter has been flying relative to an earlier "control" period, and then to relate this change with that of other sub-zones which were in control for both time periods. Thus, the helicopter would be the only variable and the net difference in the crime incidence would be attributable to the helicopter. It is recognized that the helicopter does not operate in a vacuum, that there are many conflicting and diverse factors affecting crime. These factors (e.g., presence or absence of a tactical patrol in the area or a new innovation by a District Inspector) would cause periodic aberrations in the data that would invalidate period-to-period analysis. However, a randomized selection of experimental zones, each two weeks, would tend to neutralize these factors (at times exaggerating the effect of the helicopter, at other times depressing this effect), thus permitting an unbiased estimate of the preventive effects of the helicopters on crime.

The change in the experimental zones between the current and previous time period would have to be compared against changes in the control zones for the

same time periods. With the exception of the current time period for the experimental zones, all other data would be "controlled". The desired control period would be on the one nearest the current period. In some cases though, the immediate preceding time period for some of the experimental zones were not "controlled" (were "adjacent" areas), thus, the use of even earlier time periods were required. Also, quite often, some of the control zones were experimental in the immediate preceding time period and thus would not be used in the analysis. Basically, we attempted to match the experimental and control changes as much as possible, since the larger the number of sub-zones used, the more valid the results. However, at times some of the sub-zones could not be used in some of the evaluations.

The question also arises as to which control period to use. Basically, we would use the same day-of-week and time-of-day, but how far back would it be necessary? Remembering that there is a two-week flight pattern for the helicopters, we attempted to see if the corresponding day within the two-week schedule could be used. The day in the first week was not used, based upon the possibility of a helicopter's lingering effect upon crime and thus having a biased effect upon some control zones. This specific day could be used only if it were a control day during this period. If it were not, we went back an additional 14 days and kept doing this until we found a suitable control day. In this manner we eliminated potential biases relating to day, hour, or lingering helicopter effects.

Thus, for a two week period, the exact days and times that the helicopter was recorded as patrolling an area were listed. For each two-week period, the patrolling could have been over each of the two experimental zones

or over both (3 combinations in all), and generally all three combinations were analyzed, though separately.

An example would probably be the best manner of illustrating the technique used. The December 15th-18th time-period will be used as the example (See 9-16 at tab D).

A. For the period December 15th-18th, eight hours were recorded for the helicopter patrol over zone 4 (comprising sub-zones 04, 45 and 46). December 15th, between 2030 and 2130, was one of the these hours. Now December 15th is Wednesday, and to avoid a "day" bias, it was decided to compare it against a previous Wednesday for the same time. For this previous Wednesday however, sub-zones 04, 45 and 46 would have to be in control. For sub-zones 04 and 46, December 1st was used as the control. For sub-zone 45 however, we had to go back to November 3rd, since for the previous two two-week periods, sub-zone 45 was either an adjacent sub-zone or an experimental one.

B. Based upon knowledge of the experimental sub-zone, we can determine the adjacent and the control zones. Thus, 02, 06 and 05 became control sub-zones and we determined that 02 and 06 could be compared with 04 and 46, while 05 could be compared with 45. In every case, the day of week and times were exactly the same. The selection of these sub-zones were not arbitrary - they were the only sub-zones that could be used as controls. All the other sub-zones were shown to have been either experimental or adjacent areas during the control times.

C. Now, sub-zones 02 and 06 recorded 9 crimes during the eight hour control period and 7 crimes during the eight-hour experimental time-period. There were 18 crimes recorded for the control period for sub-zones 04 and 46, and if the helicopter had no effect upon crime,

we would expect 14 crimes ($\frac{7}{9}$ X 18) in experimental zones 04 and 46 during the same experimental time periods. Only 7 such crimes were recorded, or 7 less than expected, which we can attribute to the helicopter effect.

D. The same type analysis was made for sub-zone 45, relative to sub-zone 05 during the specific control time-periods listed. In this case, no change in the control resulted in an increase of two over what should have been expected in sub-zone 45.

E. In one comparison, there was a decline of 7 crimes, in the other comparison, an increase of two crimes. The overall reduction for this combination is 7-2=5 crimes.

F. By itself, this one comparison is meaningless, since the paucity of data in this one comparison certainly does not permit an overall generalization for the whole experiment. However, thirty-six such comparisons summarized into rationale categories, would provide a very good indication of the effect of helicopter patrolling in the prevention of crime. This technique was implemented for each of the other 35 combinations of times, days and areas. (See Tables 9-1 through 9-36 at tab D.) In some cases, the helicopter did not turn out to be successful. In other cases, it was incredibly so.

G. Some modification had to be made in the analysis, because of the presence of zeros.

(1) In those cases, where in either a control or experimental category, the two time periods both indicated no frequency of crime, we

assumed no change in the effect of the helicopter.

(2) In other cases, where a change occurred from zero to a positive number, we automatically added one to the zero and to the positive number, so as to permit changes to be calculated. While not exactly valid (it will impair the precision of the estimate) it does, however, permit a good qualitative evaluation to be made. Besides, the effect on the estimate will be minor, since this did occurred infrequently.

Prior to making an estimate of the effect of the helicopter in inhibiting crime, it is generally desired to ascertain whether the helicopter can truly be considered to have an effect in inhibiting crimes. At times this is a statistical function, we do not know if the process will yield better results and we thus test the process statistically. At other times however, knowledge of the operations does permit an automatic assertion of significance without a statistical test. This is the case here. We can assume (as we have previously) that the helicopter does have this effect, no matter what the magnitude of this effect, it would be incredulous that the presence of the helicopter failed to inhibit some crimes. This is really the purpose of a statistical significance test.

To verify our assumption, the significance test was made (even though there were limitations on its validity). The method of accomplishing this is to assume that the helicopter had no effect and to attempt to prove otherwise. As was indicated, 36 separate evaluations were made and no effect would mean that half the time, the experimental zones would show a decline in crime, while half the time, either an increase or no change occurred. Of the 36 evaluations, 20 showed a drop in crime in the experimental zones,

14 an increase and 2 showed no change. The question arises as to the significance of these figures. Now, a statistical conclusion of non-significance would generally occur, if there were at least 18 increases and no changes, since the probability of helicopter significance would then be no more than 50%. In this case, 20 of the 36 categories showed declines and it was necessary to test whether this combination was statistically significant.

Based upon the binomial theorem, we ascertained that there is a 30% probability that this 16 high - 20 low configuration could be attributable to mere chance. Thus, the evidence is not positively conclusive (statisticians almost always prefer a probability of less than 10%). Based upon this test, however the odds are still 7 to 3 in favor of the helicopter having some effect in reducing the crime incidence in those areas it patrolled. As was pointed out earlier, the presence or absence of extraneous factors could also cause periodic aberrations in the crime incidence that would negate the validity of this significance test e.g. The presence of the Tactical Branch in control zones or the innovation of an effective patrol technique in a control zone could very easily negate the effect of a successful helicopter patrol.

Even if the test were valid, it must be emphasized that a failure to conclude that significance exists does not mean that there is no real significant difference. While this is one possibility, the lack of significance may also exist because the sample size is too small to show the existing significance. We thus concluded that the helicopter does have an effect.

We now attempt to determine quantitatively the effectiveness of the helicopter. The most logical method would be to sum the crimes prevented

(subtracting the increases) from the combinations tested. However, this method to some extent, would distort the true picture, since in some cases, the technique used resulted in crime prevention estimations of 97 or 59 crimes during two day-time combinations. This large frequency would be difficult to accept and we can assume it to be some of the aberrations that do appear in statistical analysis of small frequencies. To offset these extreme changes, however, we decided to eliminate the four evaluations which showed the helicopter in the best light and the four evaluations showing the helicopter in the worse light. Thus, the extreme eight evaluations were eliminated from estimating the quantitative effect of the helicopter upon crime prevention. For the other 28 comparisons, the total crime prevention incidence was summed (the increases were subtracted from the decreases) and divided by the actual number of crimes projected for the time-periods (the actual number, where there was an increase plus the total of the actual number and the prevented crimes, where there were decreases). The overall decline attributable to helicopters came to 18.5%, which is deemed to be our best estimate of the decline in crime attributable to the helicopter patrol over the experimental areas.

We also decided to be cautious in claiming an advantage, thus we arbitrarily restricted the reduction in crime for any combination to the maximum amount that could have been increased, if an increase had been shown to occur. For example, table 9-5 shows the helicopter reducing crime by 10 offenses. Since only four offenses occurred in the experimental area during the control time-period, thus no more than four was claimed as a reduction. Utilizing this concept, the revised value in Table 9-column "change caused by helicopter" - follow: Table 9-3, zero; table 9-5, -4; table 9-15, -2;

table 9-22, -1. Continuing with the exclusion of the 8 extreme combinations, the new result was calculated as a 9.4% decline of the projected crimes. This percent decline is considered low, since it arbitrarily places a restriction on the number of crimes that could be prevented, when there is no logical basis for such a restriction. It is quite possible for a projected reduction for any combination to exceed the actual crime occurrences.

The overall summary of each comparison appears in Table 8. The 36 separate comparisons appear in Table 9-1 through 9-36.

TABLES 1 and 2

TEST AND CONTROL GROUPS WORKLOAD

TABLE 1
TOTAL HELICOPTER WORKLOAD FOR EVALUATION PERIOD
(HELICOPTER RESPONDED)

Complaint Received	Number of Runs	Good Calls	Good Calls With Look-Out* Foot	Good Calls With Look-Out* Veh.	Arrests	Arrests With Night-sun (Included in total Arrests column)
Homicide	4	3	3	0	0	-
Rape	4	4	3	0	0	-
Robbery	390	301	170	59	26	8
Assault	76	27	9	7	6	3
Burglary	373	75	38	5	23	12
Larceny	10	9	6	2	1	0
Stolen Auto	38	34	7	21	13	9
Tampering with Auto	32	11	8	2	7	3
Officer in Trouble	53	27	11	2	9	7
Fugitive	15	13	10	0	3	1
Alarm-- Burg.,H/U	738	51	24	1	5	5
Disorderly	82	35	22	0	8	3
Traffic	56	40	4	27	5	4
Man With Gun	308	91	45	15	8	2
Shooting	65	28	11	5	11	8
Non-crime Run	140	54	17	9	2	1
Total	2384	803	388	154	127	66

* Included in good calls

TABLE 2

TOTAL CONTROL GROUP WORKLOAD FOR EVALUATION PERIOD*
(HELICOPTER COULD HAVE RESPONDED)

Complaint Received*	Good Calls	Good Calls With Look-out ** Foot	Good Calls With Look-out ** Veh.	Arrests
Homicide	6	1	0	2
Rape	4	2	0	0
Robbery	1619	1264	174	63
Assault	142	56	17	35
Burglary	429	144	12	63
Larceny	93	26	9	13
Stolen Auto	22	0	14	1
Officer in Trouble	4	2	0	2
Alarm--Burglary,H/U	182	86	19	31
Disorderly	30	11	1	15
Traffic	4	1	0	0
Man With Gun	55	24	5	33
Shooting	45	16	4	14
Non-crime Run	11	5	0	1
Total	2646	1638	255	273

* Breakdown by complaint of runs received unavailable for the entire program. Total runs received -- 17,112.

** Included in good calls

TABLE 3

PROGRAM OFFENDER SUMMARY

OFFENSE	TEST GROUP Arrests	TEST GROUP Offenders	CONTROL GROUP Arrests	CONTROL GROUP Offenders
Burglary	38	43	104	105
Attempted burglary	--	--	4	4
Robbery	29	36	120	130
Attempted robbery	2	3	7	7
Grand larceny	3	3	16	16
Petit larceny	--	--	6	7
Rape	3	3	1	1
Assault with a deadly weapon	13	17	60	60
Carrying a deadly weapon	7	7	34	34
Homicide	2	2	7	7
Unauthorized use of a vehicle	19	26	1	1
Tampering with an auto	10	11	1	1
Disorderly conduct	27	29	14	16
Assault	--	--	1	1
Assault on a police officer	2	2	1	1
Receiving stolen property	4	4	--	--
Fugitive	2	2	--	--
Destroying property	2	2	--	--
Hit and run	2	2	--	--
Traffic violation	1	1	--	--
Arrest on a warrant	1	1	--	--
Transporting explosives	--	--	2	2
Possession of implements of crime	--	--	2	2
Narcotics violation	4	4	1	1
Juvenile offender	8	8	--	--
Unknown	10	11	2	2
Total	189	217	384	398

Test group--87% of offenders were arrested

Control group--96% of offenders were arrested

TABLE 4

HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS

TABLE 4
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE TIME	NUMBER ARRESTED / NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL	HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
9-2-71 00:15	3/3				X			X	Burglary
9-2-71 19:45	1/1		X		X			X	Robbery
9-3-71 00:26	1/1	X			X		X		Tampering with auto
9-4-71 00:35	1/1				X	X			Assault with a deadly weapon
9-4-71 21:18	1/1	X		X			X		Juvenile Offender
9-4-71 22:10	1/1				X	X			Assault with a deadly weapon
9-4-71 17:04	1/1	X			X		X		Assault with a deadly weapon
9-6-71 03:35	1/2	X			X	X			Burglary
9-9-71 22:10	1/1				X			X	Burglary
9-11-71 13:09	1/1	X			X			X	Unauthorized use of vehicle
9-13-71 16:18	1/3				X			X	Robbery Hold-Up
9-16-71 10:35	1/1		X		X	X			Burglary I
9-16-71 20:33	3/3				X			X	Tampering with an auto
9-4-71 18:37	3/3				X			X	Juvenile Offender

TABLE 4
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE TIME	NUMBER ARRESTED / NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL	HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
9-16-71 21:10	2/2	X			X		X		Carrying a deadly weapon
9-18-71 16:18	3/3				X			X	Receiving stolen property
9-19-71 02:37	1/1				X		X		Possession of implements of (crime)
9-19-71 02:46	1/4		X	X			X		Burglary II
9-20-71 05:05	1/1	X			X		X		Unauthorized use of a vehicle
9-19-71 12:20	1/1				X			X	Burglary
9-22-71 13:34	1/2		X		X		X		Receiving stolen property
9-23-71 11:50	3/3				X		X		Unauthorized use of a vehicle
9-25-71 02:00	1/2		X	X				X	Robbery-Hold-up
9-30-71 16:35	1/1				X		X		Attempted Robbery
9-30-71 18:40	1/1		X		X		X		Robbery
9-30-71 22:08	1/3				X		X		Robbery
9-23-71 17:19	1/1	X		X			X		Burglary
9-27-71 16:04	1/1		X	X			X		Robbery
									Unknown

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE / TIME	NUMBER ARRESTED / NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL	HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
9-27-71 16:26	1/1		X	X			X		Unknown
9-19-71 12:45	2/2		X		X		X		Stolen auto
10-3-71 04:20	1/1	X			X	X			Fugitive
10-2-71 21:28	2/2				X	X			Unknown
10-6-71 20:56	1/2		X		X	X			Assault with a deadly weapon
10-7-71 19:15	1/1	X			X		X		Assault with a deadly weapon
10-8-71 00:05	1/1				X		X		Carrying a deadly weapon
10-13-71 17:15	1/1	X			X		X		Assault with a deadly weapon
10-17-71 17:22	1/1	X			X		X		Barricaded criminal
10-24-71 20:05	7/7	X			X		X		Disorderly conduct
10-27-71 09:06	1/1	X			X		X		Burglary II
10-29-71 12:16	1/1				X	X			Pocketbook Snatching
10-29-71 20:30	1/1				X			X	Robbery Pocketbook Snatching
10-31-71 00:47	3/3	X			X	X			Burglary II

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE TIME	NUMBER ARRESTED NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL	HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
10-6-71 02:46	1/1				X			X	Burglary
10-18-71 10:34	1/2				X	X			Possession of Implements of crime - Burglary II
10-29-71 12:31	1/1				X	X			Pocketbook Snatching
10-15-71 17:17	1/1	X			X	X			Juvenile Offender
11-5-71 22:20	5/5	X			X	X			Burglary
11-6-71 00:44	1/1		X		X	X			Unauthorized use of vehicle
11-6-71 21:28	1/1	X			X	X			Burglary
11-10-71 03:31	2/3		X		X	X			Unauthorized use of vehicle
11-9-71 12:40	1/1	X			X		X		Robbery-Fear
11-7-71 01:17	1/1	X			X	X			Armed Robbery
11-7-71 01:36	1/1	X			X		X		Disorderly conduct
11-10-71 15:20	1/1		X		X	X			Unauthorized use of vehicle
11-12-71 02:23	1/2	X	X	X			X		Attempt Robbery Assault with deadly w.
11-12-71 15:05	1/1	X		X			X		Burglary
11-10-71 22:05	1/2				X	X			Un[illegible]

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE TIME	NUMBER ARRESTED / NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL	HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
11-15-71 20:02	7/7	X			X		X		Disorderly
11-16-71 13:02	1/1	X			X		X		Assault with a deadly weapon
11-17-71 21:39	1/1	X			X		X		Unknown
11-20-71 18:18	1/1				X			X	Burglary
11-17-71 21:03	1/1	X			X	X			Unknown
11-17-71 22:09	1/1	X			X	X			Disorderly conduct
11-23-71 16:21	1/1			X			X		Tampering with an auto
11-22-71 19:45	1/1				X	X			Burglary I
11-30-71 09:52	1/1				X			X	Burglary I
11-27-71 15:59	1/1				X			X	Carrying a deadly weapon
12-2-71 11:29	1/4				X		X		Robbery Hold-up
12-2-71 12:58	1/1				X		X		Robbery Hold-up
12-3-71 23:30	1/2	X		X			X		Unauthorized use of a vehicle
12-4-71 17:06	1/1				X	X			Carrying a deadly weapon

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE / TIME	NUMBER ARRESTED / NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL
12-6-71 10:35	3/3		X	X	
12-11-71 16:14	4/4	X			X
12-11-71 19:48	2/2	X			X
12-13-71 15:55	2/2				X
12-14-71 02:15	1/2	X		X	
12-14-71 14:15	2/2	X			X
12-14-71 14:19	2/2	X			X
12-14-71 00:14	1/1				X
12-15-71 21:48	1/1		X	X	
12-16-71 09:58	1/1				X
12-19-71 23:30	2/2				X
12-21-71 18:35	1/1	X		X	
12-23-71 21:50	3/3				X
12-24-71 22:02	1/1	X			X
12-17-71 22:20	3/3				X

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
	X		Robbery Hold-up
	X		Disorderly Craps
X			Disorderly conduct
X			Destroying property
	X		Stolen auto
	X		Burglary II
X			Homicide - Robbery Hold-up
X			Burglary
X			Unauthorized use of a vehicle
	X		Yoke Robbery
X			Burglary II
X			Carrying a deadly weapon
		X	Burglary
	X		Unauthorized use of a vehicle
X			Unknown

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE TIME	NUMBER ARRESTED / NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL	HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
12-29-71 19:30	1/1	X			X	X			Attempt Robbery Assault
12-28-71 20:13	1/1		X		X	X			Robbery
12-30-71 18:24	1/1		X		X			X	Assault on a police officer
1-3-72 9:30	1/1				X			X	Robbery Hold-up
1-3-72 03:20	3/3	X			X	X			Rape Robbery
1-3-72 22:55	2/2		X		X	X			Unauthorized use of a vehicle
1-9-72 16:15	1/1				X			X	Tampering with an auto
1-12-72 00:22	1/1				X		X		Disorderly conduct
1-6-72 21:39	2/2	X		X			X		Stolen auto
1-6-72 21:44	1/3	X		X			X		Assault with a deadly weapon
1-15-72 01:45	1/1	X		X			X		Assault with a deadly weapon
1-8-72 19:30	2/2	X	X		X		X		Hit and run
1-12-72 08:15	1/1				X			X	Carrying a deadly weapon
1-13-72 21:49	1/1	X		X			X		Assault with a deadly weapon

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE TIME	NUMBER ARRESTED / NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL	HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
1-15-72 02:20	1/1				X			X	Traffic violation
1-19-72 18:42	1/1	X		X			X		Assault with a deadly weapon
1-20-72 11:28	1/1				X		X		Robbery Hold-up
1-21-72 13:38	1/1				X			X	Burglary II
1-24-72 09:45	2/2				X	X			Tampering with an auto
1-26-72 10:24	2/2	X			X		X		Grand larceny
1-29-72 16:40	1/1	X			X		X		Disorderly conduct
2-2-72 01:02	1/1				X			X	Assault on a police officer
2-5-72 10:48	1/1	X		X			X		Arrest on a warrant
2-5-72 14:07	1/1				X	X			Burglary I
2-16-72 14:14	1/2		X		X	X			Tampering with an auto
2-7-72 16:05	2/2	X			X	X			Unauthorized use of a vehicle
2-28-72 02:00	1/1		X		X			X	Tampering with an auto
2-9-72 22:15	2/2		X		X	X			Robbery Hold-up

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

TABLE 4 (CONT'D)
HELICOPTER EFFECTIVENESS IN ARREST SITUATIONS
SEPTEMBER 1971 THROUGH MARCH 1972

DATE TIME	NUMBER ARRESTED / NUMBER OFFENDERS	GROUND UNITS ON SCENE BEFORE HELICOPTER	GROUND UNITS IN PURSUIT BEFORE HELICOPTER	ARREST MADE PRIOR TO HELICOPTER'S ARRIVAL	ARREST MADE AFTER HELICOPTER'S ARRIVAL	HELICOPTER-SOME ASSISTANCE IN ARREST	HELICOPTER-NO ASSISTANCE IN ARREST	HELICOPTER-DECISIVE IN ARREST	PRINCIPAL CHARGE AGAINST SUSPECT
2-11-72 10:49	1/2		X	X			X		Burglary
2-14-72 20:24	1/1	X		X			X		Disorderly conduct
2-21-72 19:31	2/3		X	X			X		Robbery
3-1-72 19:44	1/1	X			X			X	Assault with a deadly weapon
3-3-72 18:40	1/3	X			X	X			Robbery
3-4-72 18:30	1/1	X		X			X		Robbery Hold-up
3-5-72 18:34	1/1		X		X	X			Grand Larceny
3-10-72 15:30	2/2				X		X		Disorderly conduct
3-10-72 21:15	4/4	X			X		X		Narcotics violation
3-11-72 11:50	2/2				X			X	Juvenile Offender
3-17-72 15:04	2/2	X		X			X		Burglary
3-17-72 15:15	1/1	X		X			X		Juvenile Offender
3-23-72 13:16	1/2	X		X			X		Disorderly conduct
Totals	189/217	56	26	27	100	42	59	26	

127 Arrest Situations

TABLE 5

OPERATIONAL SUMMARY FOR EVALUATION PERIOD

TABLE 5
OPERATIONAL SUMMARY FOR EVALUATION PERIOD

		September	October	November	December	January	February	March	Program Total*	Monthly Average
1.	Total/air coverage*	unknown	268.4	287.5	279.9	289.6	254.5	208.4	1588	264
2.	Total patrol hours**	288.1	293.8	306.4	295.8	312.0	271.5	215.5	1983	283
3.	Two helicopter coverage***	unknown	25.4	18.9	15.9	22.4	17.0	7.1	106	18
4.	Total stand-by hours	unknown	272.5	330.9	271.6	285.7	204.1	200.7	1565	260
5.	Total hours down for weather	unknown	202.8	90.9	161.2	163.7	221.0	136.2	975	162
6.	Total hours down--other	unknown	0	10.7	25.2	4.0	0	195.6	235	39
7.	Daily average air coverage*	unknown	8.94	9.2	9.02	9.3	8.7	6.7		8.8
8.	Daily average--total patrol hours**	9.6	9.79	9.8	9.5	10.06	9.3	6.9		9.4
9.	Daily average stand-by hours	unknown	9.08	10.6	8.7	9.2	7.03	6.4		8.6
10.	Daily average hours down-weather	unknown	6.7	2.9	5.2	5.2	7.6	4.3		5.4
11.	Daily average down-other	unknown	0	0.3	0.8	.12	0	6.3		1.3

* Air coverage - reflects hours spent in flying operations over the city; e.g., if two helicopters patrolled simultaneously for two hours, the air coverage would be two hours.

** Patrol hours - this figure totals flying hours. In the illustration defining air coverage, flying hours would total four.

***Two helicopter coverage - indicates the number of hours two helicopters were patrolling simultaneously, which is the difference between 1 and 2.

TABLE 5
OPERATIONAL SUMMARY FOR EVALUATION PERIOD

*September data unavailable for all but total flying hours.

TABLE 6

COST OF HELICOPTER PROGRAM OPERATIONS

I. Program Costs -- through April, 1972	
A. Salaries and benefits For helicopter personnel from their affiliation with the program through the end of the nine month evaluation period.	$239,772
B. Travel and per diem For nine helicopter personnel attending flight training	10,906
C. Pilot training costs Paid to the U. S. Army	91,323
D. Operating costs (July 1971 -- April 1972)	
1. Parts and maintenance	54,000
2. Insurance	36,219
3. Lease-purchase	49,950
4. Fuel (41,071 gals @ 17¢ per gal.)	6,982
E. Overhead For heat and light at helicopter hangar and other operating overhead costs ($500 per month X 9 months)	4,500
Total costs through April 1972	493,652
I. Program Costs -- Current Year (April 1972-April 1973)	
A. Salaries and benefits Annual salaries of twenty officers in the program (benefits @ 2.2%)	230,170
B. Operating costs	
1. Lease-purchase ($5,550 per month)	66,600
2. Hull insurance	36,440
3. Maintenance Contracted at $29.09 per flying hour on 300 flying hours per month	104,724

4. Fuel Projected at 60,000 gals. per year, 17¢ per gallon	10,200
5. Overhead Heat and light and other facilities maintenance costs	6,000
Total projected costs for current contract year	454,134*

*Excludes training costs for officers sent to helicopter flight training since none are projected at this time.

TABLE 7

SINGLE YEAR COST COMPARISON BETWEEN
ONE HELICOPTER AND ONE SCOUT CAR

	Helicopter	Scout Car
Personnel (includes proportionate supervisory costs through the rank of lieutenant)	$76,723	$87,088
Training Costs (Nine helicopter pilots; cost of training amortized over a six year period)	15,000	
Equipment		
Cost of one helicopter amortized over an expected 8 year period of operations (based on 1971 purchase price)	7,700	
Cost of one scout car amortized over a 2 year period		1,980
Annual Maintenance		
Helicopter (1,200 hours flight time)	43,037	
1. Fuel 10,200		
2. Labor 9,879		
3. Parts 11,748		
4. Insurance 9,710 (hull insurance based on 1971 rate)		
5. Overhead 1,500 (facilities costs)		
Scout car (fuel, labor, parts)		1,706
Total	142,460	90,774

TABLE 8

SUMMARY OF RESULTS

Corresponding Table	Experimental Dates	Area Patrolled	Actual Crimes In Experimental Area	Change Caused By Helicopter*	Eliminated From Calculation of Estimate
9-1	10/2 to 10/4	1 & 3	1	—	
9-2	10/3 to 10/9	3	12	+ 9	X
9-3	10/3 to 10/9	1	—	- 2	
9-4	10/10 to 10/21	4	3	+ 1	
9-5	10/11 to 10/16	2	4	-10	
9-6	10/24 to 11/2	3	7	—	
9-7	10/24 to 11/4	1	3	- 2	
9-8	10/27 to 11/1	1 & 3	10	+ 8	X
9-9	11/10 to 11/20	4	35	- 1	
9-10	11/11 to 11/16	4 & 6	16	+14	X
9-11	11/22 to 12/2	3 & 5	4	+ 2	
9-12	11/26 to 12/3	3	9	- 1	
9-13	12/1 to 12/3	5	3	+ 1	
9-14	12/11 to 12/17	1	5	+ 3	
9-15	12/14	1 & 4	2	- 5	
9-16	12/15 to 12/18	4	7	- 5	
9-17	12/19 to 12/30	2 & 3	7	- 3	
9-18	12/21 to 12/30	3	10	+ 4	X
9-19	12/22 to 12/30	2	3	+ 1	
9-20	1/3 to 1/15	4	21	- 7	
9-21	1/5 to 1/14	1 & 4	11	-59	X

TABLE 8 Continued

Corresponding Table	Experimental Dates	Area Patrolled	Actual Crimes In Experimental Area	Change Caused By Helicopter*	Eliminated Fro Analysis
9-22	1/6 to 1/15	1	1	- 2	
9-23	1/17 to 1/28	3 & 5	13	- 5	
9-24	1/18 to 1/27	3	18	- 7	
9-25	1/18 to 1/29	5	2	— (Calculated as -0.4)	
9-26	1/30 to 2/10	4 & 6	5	+ 1	
9-27	2/1 to 2/12	4	21	- 9	
9-28	2/14 to 2/16	5	2	- 1	
9-29	2/14 to 2/26	3	7	- 6	
9-30	2/15 to 2/21	3 & 5	3	+ 2	
9-31	2/27 to 3/4	4	9	-37	X
9-32	3/2 to 3/11	2	5	+ 3	
9-33	3/3 to 3/10	2 & 4	12	-78	X
9-34	3/13 to 3/22	3	9	— (Calculated as +0.4)	
9-35	3/15 to 3/23	1 & 3	4	+ 2	
9-36	3/18 to 3/19	1	45	-33	X

* A negative value means that the helicopter inhibited so many crimes. A positive value is a statistical measure meaning the reverse. See Analysis Section for interpretation of the data.

TABLE 9-1

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
01	1	1
12		
03		
CONTROL		
02	1	2
05	1	
ADJACENT		
21		
93		

TIMES AND DAYS OF TEST

TIMES	DAYS
16	10-4 9-25
11	10-2 9-20

TIME PERIODS

Exp. Cont

TABLE 9-2

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
03	12	2
CONTROL		
02	4	3
05	3	1
ADJACENT		
93	1	1

TIMES AND DAYS OF TEST

TIMES	
17-18	10-3 9-19
16	10-4 9-19
16	10-6 9-22
22	10-7 9-23
14	10-9 9-25

Time Periods

Exp Cont

TABLE 9-3

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES
01	1
12	
CONTROL	
02	1
05	1
ADJACENT	
21	

TIMES AND DAYS OF TEST

TIMES		
22	10-3	9-19
10	10-9	9-15

Time Periods
Exp Cont

TABLE 9-4

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
04	2	2
45	1	-
46	-	-
CONTROL		
01	3	
03	2	
05	-	-
06	1	1
93	-	
ADJACENT		
54	-	-
64	-	-
94	-	-

TIMES AND DAYS OF TEST

TIMES	DAYS	
17	10-10	10-3
13	10-21	10-7

Time Periods
Exp Cont

TABLE 9-5

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
02	3	7	
21	1	-	
CONTROL			
01	5		3
03	4		7
05	2	-	
06	2	1	
93	1		1
ADJACENT			
12	-		-

TIMES AND DAYS OF TEST			
20	10-11	10-4	9-20
18	10-14	10-7	9-23
10	10-16	10-9	9-25
14-15	10-16	10-9	9-25

Time Periods		
Exp	Cont	Cont

TABLE 9-6

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
03	7	7
CONTROL		
05		3
06	7	4
ADJACENT		
93	-	2

TIMES AND DAYS OF TEST		
TIMES	DAYS	
18	10-24	10-17
9-10	10-27	10-20
18-20	10-27	10-20
16	10-29	10-22
19	10-29	10-22
22	10-30	10-23
16-17	11-1	10-18
14	11-2	10-19

Time Periods	
Exp	Cont

TABLE 9-7

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
01	3	2	
12			
CONTROL			
05	5	3	
06	3		
ADJACENT			
21			1

TIMES AND DAYS OF TEST

TIMES			
16	10-24	10-17	9-19
17	10-29	10-22	9-24
13	11-4	10-21	9-23
19	11-4	10-21	9-23
	Time Periods Exp	Cont	Cont

TABLE 9-8

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
01	3	4	
12	1		-
03	6	2	
CONTROL			
05	2	1	3
06	-	4	
02	1		-
ADJACENT			
21	-		-
93	1	-	

TIMES AND DAYS OF TEST

TIMES	DAYS		
13	10-27	10-20	9-22
20	10-29	10-22	9-24
19	11-1	10-18	9-20
	Time Periods Exp	Cont	Cont

TABLE 9-9

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
04	23	41
45	2	4
46	10	4
CONTROL		
02	8	7
05	3	8
ADJACENT		
54	1	8
94	4	6

TIMES AND DAYS OF TEST

TIMES		
19	11-10	11-3
21-22	11-10	11-3
12	11-12	11-5
14	11-13	11-6
16	11-13	11-6
14-15	11-14	10-31
13	11-15	11-1
17	11-15	11-1
13	11-16	11-2
10	11-17	11-3
14	11-19	11-5
18	11-19	11-5
16-17	11-20	11-6

Time Periods
Exp Cont

TABLE 9-10

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
04	11	7
45	-	-
46	2	-
06	2	-
64	1	-
CONTROL		
02	-	1
05	1	2
ADJACENT		
54	1	1
94	1	4

TIMES AND DAYS OF TEST

TIMES	DAYS	
10	11-11	11-4
12	11-13	11-6
16	11-16	11-2

Time Periods
Exp Cont

TABLE 9-11

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
03	4	-	
05	-	1	
54	-		-
CONTROL			
12			
01	2	1	
02	2	3	1
21	-	-	
46	2		1
64	-		1
04	4		2
06	-		-
ADJACENT			
45	-		-
93	-	-	

TIMES AND DAYS OF TEST

TIMES	DAYS		
10	11-22	11-15	11-1
18	12-2	11-18	11-4
	Time Periods		
	Exp	Cont	Cont

TABLE 9-12

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
03	9	13
CONTROL		
12		-
01	3	2
02	3	6
21	-	-
ADJACENT		
93	-	1

TIMES AND DAYS OF TEST

TIMES	DAYS	
16	11-26	11-19
21-22	11-26	11-19
19	11-27	11-20
10	12-3	11-19
13	12-3	11-19

Time Period
Exp Cont

TABLE 9-13

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
05	1	2	
54	2		-
CONTROL			
12	-	-	
01	1	1	
02	2	2	4
21	-	-	
46	1		2
64	-		1
04	7		4
06	-		-
ADJACENT			
45	-		1

TIMES AND DAYS OF TEST

TIMES	DAYS		
16-17	12-1	11-17	11-3
22	12-3	11-19	11-5

Time Period

Exp	Cont	Cont

TABLE 9-14

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
01	3	4
12	2	1
CONTROL		
02	4	9
06	1	1
ADJACENT		
21	-	-

TIMES AND DAYS OF TEST

TIMES		
17	12-11	12-4
17	12-12	11-28
22	12-13	11-29
16-17	12-14	11-30
16	12-15	12-1
09	12-17	12-3

Time Periods

Exp	Cont

TABLE 9-15

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
01	-	1	
04	1	1	
46	-	-	
12	1	-	
45	-		-
CONTROL			
02	2	1	-
05	1		-
06	1	-	-
ADJACENT			
54			-
64	1	-	
21	1	1	
94			-

TIMES AND DAYS OF TEST

TIMES	DAYS		
10	12-14	11-30	11-2
	Time Periods		
	Exp	Cont	Cont

TABLE 9-16

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
04	7	1	
46	-	1	
45	3		1
CONTROL			
02	4	6	
06	3	3	
05	2		2
ADJACENT			
54	1		1
64	-	-	
94	1		3

TIMES AND DAYS OF TEST

TIMES	DAYS		
21	12-15	12-1	11-3
09	12-16	12-2	11-4
12	12-16	12-2	11-4
14	12-16	12-2	11-4
16-17	12-17	12-3	11-5
20	12-17	12-3	11-5
19	12-18	12-4	11-6
	Time Periods		
	Exp	Cont	Cont

CONTINUED

1 OF 2

TABLE 9-17

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
02	2	4	
03	5	8	
21			-
CONTROL			
01	9		2
04	12		6
46	1		2
05	2	1	
06	2	4	2
64	-		1
94	2		3
ADJACENT			
12	-		1
93	2	-	

TIMES AND DAYS OF TEST

TIMES	DAYS		
16	12-19	12-12	11-28
21	12-19	12-12	11-28
16	12-20	12-13	11-29
9	12-24	12-17	12-3
17	12-27	12-13	11-29
11-12	12-28	12-14	11-30
11	12-30	12-16	12-2

TABLE 9-18

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
03	10	3
CONTROL		
05	4	3
06	2	-
ADJACENT		
93	-	-

TIMES AND DAYS OF TEST

TIMES	DAYS	
18	12-21	12-14
16-17	12-24	12-17
9	12-29	12-15
22	12-30	12-16

Time Periods
Exp Cont

TABLE 9-19

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
02	3	3
21	-	-
CONTROL		
01	4	5
04	7	12
06	-	-
46	1	1
05	2	3
64	-	-
94	1	-
ADJACENT		
12	-	-

TIMES AND DAYS OF TEST

TIMES	DAYS		
14	12-22	12-15	12-1
20	12-25	12-18	12-4
12-13	12-27	12-13	11-29
9	12-30	12-16	12-2
13	12-30	12-16	12-2

Time Periods
Exp Cont Cont

TABLE 9-20

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
45	2	-
04	16	28
46	3	4
CONTROL		
05	7	6
06	1	3
ADJACENT		
54	3	-
64	1	-
94	4	3

TIMES AND DAYS OF TEST

TIMES	DAYS	
16	1-3	12-27
13	1-6	12-30
20	1-6	12-30
10-12	1-7	12-31
16	1-9	12-26
18-20	1-9	12-26
18	1-11	12-28
21	1-11	12-28
10	1-14	12-31
18	1-14	12-31
11	1-15	1-1
16	1-15	1-1
18-19	1-15	1-1

Time Periods
Exp Cont

TABLE 9-21

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
45	-	1	
01	2	-	
04	9	11	
46	-	2	
12	-		-
CONTROL			
02	1		9
05	3	-	
06	2	1	1
ADJACENT			
21	-		-
54	2	1	
64	-	-	
94	-	-	

TIMES AND DAYS OF TEST

TIMES	DAYS		
18-19	1-5	12-29	12-1
19-21	1-8	1-1	12-4
12-13	1-12	12-29	12-1
12-13	1-14	12-31	12-3
19-20	1-14	12-31	12-3

Time Periods
Exp Cont Cont

TABLE 9-22

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
01	1	1	
12	-		-
CONTROL			
02	1		3
05	2	1	
06	1	-	
ADJACENT			
21	-		-

TIMES AND DAYS OF TEST

TIMES			
9	1-6	12-30	12-2
17	1-6	12-30	12-2
17	1-13	12-30	12-2
21	1-13	12-30	12-2
22	1-15	1-1	12-4

Time Periods
Exp Cont Cont

TABLE 9-23

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
03	13	5	
05	-	-	
54	-	-	-
CONTROL			
01	4		4
02	6	-	
04	9		10
46	3		1
06	1	2	-
64	-		-
94	1		1
ADJACENT			
45	-		2
93	-	2	

TIMES AND DAYS OF TEST

TIMES	DAYS		
13-14	1-17	1-10	12-27
16-17	1-17	1-10	12-27
18-19	1-20	1-13	12-30
19	1-21	1-14	12-31
13-14	1-24	1-10	12-27
12-13	1-28	1-14	12-31

Time Periods
Exp Cont Cont

TABLE 9-24

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
03	18	12
CONTROL		
02	12	6
06	5	2
ADJACENT		
93	-	3

TIMES AND DAYS OF TEST

TIMES		
09	1-18	1-11
11-12	1-18	1-11
17-18	1-18	1-11
9-10	1-19	1-12
17	1-19	1-12
21-22	1-19	1-12
10-11	1-20	1-13
9	1-20	1-13
9	1-21	1-15
10	1-24	1-10
9-10	1-26	1-12
9	1-27	1-13
12	1-27	1-13

Time Periods
Exp Cont

TABLE 9-25

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
05	1	1	
54	1		2
CONTROL			
01	3		1
02	-	1	
04	4		17
46	1		2
06	1	-	2
64	-		-
94	2	1	2
ADJACENT			
45	-		2

TIMES AND DAYS OF TEST

TIMES	DAYS		
22	1-18	1-11	12-28
13	1-21	1-14	12-31
16	1-26	1-12	12-29
9	1-27	1-13	12-30
19	1-29	1-15	1-1

Time Periods
Exp Cont Cont

TABLE 9-26

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
04	4	7	
46	-	1	
06	-	-	
45	1		2
CONTROL			
12	-	-	
01	-	7	8
02	3	-	
21		-	
05	1		2
ADJACENT			
54	2		3
94	1	-	
64	1	-	

TIMES AND DAYS OF TEST

TIMES	DAYS		
21	1-30	1-23	12-26
10	1-31	1-24	12-27
17	1-31	1-24	12-27
20	2-9	1-26	12-29
21-22	2-10	1-27	12-30

Time Periods
Exp Cont Cont

TABLE 9-27

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
04	15	21	
46	4	-	
45	2		-
CONTROL			
12	-	-	
01	4	3	-
02	3	2	
21	-	-	
05	-		3
ADJACENT			
54	3		4
94	1	4	
64	-	1	

TIMES AND DAYS OF TEST

TIMES			
21-22	2-1	1-25	12-28
21	2-5	1-29	1-1
11	2-5	1-29	1-1
16	2-8	1-25	12-28
10-11	2-8	1-25	12-28
22	2-9	1-26	12-29
19	2-10	1-27	12-30
11	2-10	1-27	12-30
9	2-10	1-27	12-30
19	2-12	1-29	1-1

Time Periods
Exp Cont Cont

TABLE 9-28

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
05	1	-	
54	1		
CONTROL			
12	-	-	
01	3	1	3
02	-	-	
21	-	-	
04	8		2
46	1		-
06	1		1
64	-		-
94	1		-
ADJACENT			
45	-		4

TIMES AND DAYS OF TEST

TIMES	DAYS		
17	2-14	2-7	12-27
10	2-15	2-8	12-28
10	2-16	2-9	12-29

Time Periods
Exp Cont Cont

TABLE 9-29

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
03	7	10
CONTROL		
12	1	-
01	3	3
02	1	1
21	-	-
ADJACENT		
93	1	3

TIMES AND DAYS OF TEST

TIMES	DAYS	
10	2-14	2-7
18	2-15	2-8
16	2-15	2-8
12-13	2-16	2-9
9	2-22	2-8
12-13	2-23	2-9
19	2-24	2-10
20	2-26	2-12
	Time Periods Exp	Cont

TABLE 9-30

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
03	3	2	
05	-	-	
54	-		-
CONTROL			
12	-	-	
01	-	1	3
02	2	3	
21	-	-	
04	2		4
46	1		-
06	1		1
64	1		-
94	-		1
ADJACENT			
45	1		-
93	2	-	

TIMES AND DAYS OF TEST

TIMES	DAYS		
14	2-15	2-8	12-28
10-11	2-21	2-7	12-27
14	2-21	2-7	12-27
	Time Periods Exp	Cont	Cont

TABLE 9-31

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
04	6	7	
45	1		1
46	2	1	
CONTROL			
01	4	-	-
05	1		1
06	1	1	-
ADJACENT			
54	-		1
64	1	-	
94	3	1	

TIMES AND DAYS OF TEST

TIMES	DAYS		
22	2-27	2-20	12-26
16	3-1	2-23	12-29
12	3-4	2-26	1-1
	Time Periods Exp	Cont	Cont

TABLE 9-32

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
02	5	1
21	-	-
CONTROL		
01	4	2
06	2	1
ADJACENT		
12	1	-
64	1	-
94	1	-

TIME AND DAYS OF TEST

TIMES	DAYS	
19	3-2	2-24
20	3-3	2-25
20	3-4	2-26
16	3-5	2-20
11-13	3-8	2-23
14	3-9	2-24
17	3-9	2-24
19	3-9	2-24
10	3-11	2-26
	Time Periods Exp	Cont

TABLE 9-33

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
02	1	3	
21	-	-	
04	10	10	
45	-	-	-
46	1	2	
CONTROL			
01	6	1	3
05	1		1
06	-	-	1
ADJACENT			
12	-	1	
54	1		-
64	-	-	
94	2	1	

TIMES AND DAYS OF TEST

TIMES	DAYS		
9-10	3-3	2-25	12-31
10	3-4	2-26	1-1
16-17	3-4	2-26	1-1
11	3-9	2-24	12-30
8-9	3-10	2-24	12-30

Time Periods
Exp Cont Cont

TABLE 9-34

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES	
03	9	10
CONTROL		
05	4	5
06	2	2
ADJACENT		
93	2	1

TIMES AND DAYS OF TEST

TIMES	DAYS	
9	3-13	3-6
8	3-15	3-8
20	3-15	3-8
10-11	3-16	3-9
13-14	3-16	3-9
16	3-17	3-10
17	3-18	3-11
22	3-18	3-11
19	3-19	3-5
14	3-21	3-7
22	3-21	3-7
18	3-22	3-8

Time Periods
Exp Cont

TABLE 9-35

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
01	3	1	
12	-		-
03	1	3	
CONTROL			
02	2		1
04	2		1
46	1		-
05	-	-	
06	-	1	-
64	-		-
94	1		1
ADJACENT			
21	-		-
93	-	1	

TIMES AND DAYS OF TEST

TIMES	DAYS		
14	3-15	3-8	2-33
10	3-22	3-8	2-23
13	3-23	3-9	2-24

Time Periods
Exp Cont Cont

TABLE 9-36

NUMBER OF CRIMES IN SELECTED ZONES AND TIMES

EXPERIMENTAL	NUMBER OF CRIMES		
01	40	-	
12	5		-
CONTROL			
02	21		-
04	123		3
46	21		1
05	21	-	
06	20	-	-
64	8		-
94	33		-
ADJACENT			
21	4		

TIMES AND DAYS OF TEST

TIMES			
19	3-18	3-11	2-26
16	3-19	3-5	2-20

Time Periods
Exp Cont Cont

Appendix 1

Procedures Developed for Gathering Data Used in The Control Group Test Group Comparisons

The focal point was the Department's Communications Center. Dispatchers were briefed as to the category of calls for service which required helicopter response. Guidelines called for helicopter dispatch for felonies in progress, felonies just committed and burglar and holdup alarms. The dispatchers were also given sufficient latitude to send the helicopter on other timely calls for service which they considered appropriate for helicopter response.

Specific procedures were outlined. The radio run card which serves as the record for scout car response also served as the source record for the evaluation. Each dispatcher was instructed to annotate the radio run card in the "Units Responding" block with a "C" followed by the designation of the helicopter responding: C-1, C-2 or C-3. If the helicopter was not dispatched - but the type of call was one requiring dispatch - a "C" was annotated in the "Remarks" block of the radio run card. This notation placed the call for service in the control group. Once tagged with either the "C" or "C-1, C-2, C-3" the call service was tracked through to final disposition. After the dispatcher completed all the usual notations on the radio run card, it was sent to the keypunch section through the supervising sergeant who verified the helicopter notation. Seeing a helicopter identifier on the radio run card (C-1, C-2, C-3 or "C"), the keypuncher would enter an identifier which would place the run in the control or test group, as appropriate.

Data accuracy centered on the dispatcher. So, besides the supervisory review, a daily audit was made during the first month of the evaluation. This was done using an existing daily report of calls for service requiring reports, which was expanded to include a helicopter data column. If the dispatchers and keypuncher were following the instructions correctly, a "C" would print out next to each call for service with helicopter dispatch. This computer listing was checked against the helicopter's log on a daily basis. Calls for service on which reports were made not appearing on the computer listing but noted on the helicopter log were checked by pulling the radio run card from file. If the appropriate dispatch notation had not been made on the card, the dispatcher handling the run was again instructed on the reporting procedures. Through this daily audit, the dispatchers realized the data had to be gathered accurately and completely, and made a conscious effort to follow the reporting procedures through the evaluation period.

At the end of each month, a computer listing was printed. The listings identified all calls for service with helicopter response, as one grouping. Another grouping contained calls for service in the control group. For each call the following data was provided: the call control number or central complaint number, the date and time the call was dispatched, and the offense code - determined by the dispatcher based on the complaint received. Program limitations prevented the disposition information being included in the monthly listing, so this data had to be extracted from the radio run cards manually.

Disposition data was categorized for quantitative comparisons between the test and control data groups. It was obtained by reviewing each radio run card identified on the monthly listing and recording the following dispositions data: if a report was taken, if a lookout was given, if an arrest was made.

Besides this disposition data on each call for service, other operational information was tracked by the helicopter crews and collated for evaluation purposes. Item tracked on each call for service with helicopter dispatch are reflected in attachment 1 to this Appendix. Attachment 2 is a copy of a completed data sheet prepared by the helicopter crew.

METROPOLITAN POLICE DEPARTMENT
WASHINGTON, D.C.

HELICOPTER SUMMARY SYSTEM
Coding Instructions

Item 1 - Time - From your log, the time the run was received in hours and minutes. The military time system will be used. (i.e., from 1 through 24 hours)

Item 2 - Date - The date showing month, day, and year.

Item 3 - Radio Run - Code this column "M", if you monitored the call the ship is responding to, and "D" for a call given by the dispatcher.

Item 4 - Location - The police District number in which the call is located.

Item 5 - Response - The length of time, in minutes and seconds, taken to respond.

Item 6 - Night Sun - If the light was used, code "YES". If not, code "NO".

Item 7 - Offense - Enter the numeric code for each offense as shown on the Radio Run Card.

Item 8 - GOA - If the call was false and nothing was found, code "YES", otherwise code "NO".

Item 9 - Good/NL - If the call was good, but no lookout available, code "YES", otherwise code "NO".

Item 10 - Good/L - If the call was good, and a useable lookout, code "YES", otherwise code "NO".

Item 11 - Type L - If the lookout was on foot, code "F". If a vehicle, code "V".

Item 12 - Time L - Code the time the lookout was received, using the same format as in Item 1.

Item 13 - Arrest - If an arrest is made within 90 minutes, code "YES", otherwise code "NO".

Item 14 - Impact - Since the helicopter can provide valuable assistance in many areas (e.g., Crowd control, Search, and Rescue) not resulting in arrest, this assistance should also be noted. This item will be used to identify the positive impact the helicopter has had. If in your judgement, the helicopter did provide assistance which resolved the problem, code "YES", otherwise code "NO".

GENERAL: Leave nothing blank. Code clearly according to the instructions. Remember to check the block in the upper left hand corner with "GO" or "CHG" for Could Have Gone. With "CHG" leave Items 3, 5, 6, 12, and 14 blank.

GO ☒ CHG

METROPOLITAN POLICE DEPARTMENT - WASHINGTON, D.C. - HELICOPTER SUMMARY SYSTEM

Time (1)	Date (2)	Radio (3)	Location (4)	Response (5)	Night Sun (6)	Offense (7)	GOA (8)	Good/NL (9)	Good/L (10)	Type L (11)	Time L (12)	Arrest (13)	Impact (14)
2358	9-21-71	D	6	03:00	No	4003	Yes	No	No			No	No
0005	9-22-71	M	6	00:10	No	0550	Yes	No	No			No	No
0012	9-22-71	D	6	00:05	Yes	4003	Yes	No	No			No	Yes
0500	9-22-71	D	5	03:00	Yes	0500	Yes	No	No			No	No
0503	9-22-71	D	1	01:00	Yes	0500	Yes	No	No			No	Yes
0545	9-22-71	D	7	01:30	Yes	7000	No	No	Yes	F		No	Yes
1215	9-22-71	M	4	01:00	No	0600	No	No	Yes	F		No	No
1242	9-22-71	M	4	00:10	No	0600	Yes	No	No			No	No
1334	9-22-71	M	5	01:00	No	0700	No	No	Yes	V		Yes	No
1346	9-22-71	D	1	00:20	No	5200	Yes	No	No			No	No
1535	9-22-71	D	7	00:40	No	0300	Yes	No	Yes	F		No	No
1530	9-22-71	M	5	00:30	No	0300	No	No	Yes	F		No	No
1225	9-22-71	M	4	00:00	No	7000	No	No	Yes	V		No	No

END