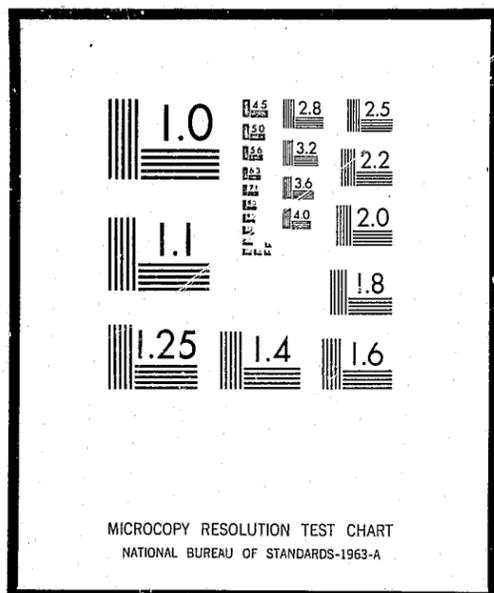


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9/15/75

Office of Criminal  
Justice Planning

Final Report

OFFICE OF CRIMINAL JUSTICE PLANNING

**Evaluation of  
OCJP<sup>A</sup> Funded Helicopter  
Patrol Projects**

FINAL REPORT

April, 1974

ARTHUR YOUNG & COMPANY



ARTHUR YOUNG & COMPANY

555 CAPITOL MALL  
SACRAMENTO, CALIFORNIA 95814

April 1, 1974

Mr. Anthony L. Palumbo  
Executive Director  
Office of Criminal Justice Planning  
7171 Bowling Drive  
Sacramento, California

Attention: Ms. Francine Berkowitz

Dear Mr. Palumbo:

We are pleased to submit this final report which provides an evaluation of four helicopter patrol projects originally funded by the Office of Criminal Justice Planning. These projects are:

<u>Project Title</u>	<u>Applicant Agency</u>
ASTREA - (Aerial Support to Regional Enforcement Agencies)	San Diego County Sheriff's Department
Ventura County Sheriff's Department Helicopter Program	Ventura County Sheriff's Department
Helicopter	San Bernardino County
Project CO-OP (Crime Oriented - Optimum Patrol	Kern County

The main body of the final report provides a discussion of project objectives, evaluation constraints, evaluation methodology and a comparative evaluation of the helicopter patrol project cluster. Also included for your consideration is a helicopter patrol project program cluster statement and a suggested evaluation component for similar projects. An in-depth evaluation of each of the four cluster projects is included as a separate appendix. The individual project evaluations are designed to be self contained such that they

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may be extracted for local use. This format was adopted at the request of the local project directors.

We have summarized the key points in our final report in the remaining portion of this letter.

1. EVALUATION METHODOLOGY

Each of the four projects, as well as the project cluster, was evaluated within the context of five evaluation components. These evaluation components, which are briefly described below, encompass the individual project objectives.

Program Operation and Implementation - In this component the local pre-project activities and planning processes are reviewed. In addition, a profile of descriptive information and statistics for each project is provided. Included among factors considered are the following: equipment, maintenance, staffing, organization, patrol areas and schedules, evaluation year activities, etc.

✓ Perceived Effectiveness of the Helicopter Patrol Projects - In order to determine the views of individual groups associated with the projects including service recipients and users, three surveys were conducted. These surveys were:

- Community Survey - in each county a brief questionnaire was mailed to a randomly selected sample of 2,000 county residents. The survey was designed to elicit the attitude of the public served by the helicopter patrol as to whether or not they were: (1) aware of the program, (2) believed themselves more secure as a result of the program, and (3) were in favor of continuing the program.

- Sworn Officers Survey - in each county sheriff's department sworn officers were asked to complete a confidential questionnaire relating to the department's helicopter program. In general, the questionnaire solicited attitudes concerning the program's effectiveness and the utilization of the helicopter in law enforcement operations. Space

was provided for making specific suggestions relative to program modifications.

- Other Agencies Survey - in each of the helicopter programs, the helicopter has been utilized in a variety of ways in support of other governmental agencies. In order to determine the type of support, availability of support, and the perceived contribution of the helicopter, five to fifteen agencies in each county were contacted and agency officials personally interviewed.

Effect on Incidence of Crime - A major objective of each individual project is to reduce or slow the rate of growth in the crime rate in the patrolled area. An attempt was made in each county to evaluate the effect the helicopter patrol program had on the crime rate. However, as is discussed in the technical report, this effort was largely unsuccessful due to the lack of the necessary crime statistics. Data for the geographic areas within the counties patrolled by the helicopters was not available to make comparisons of a "before and after" nature and/or of a "with helicopter vs. without helicopter" nature.

In Section VII of the report we have provided recommendations which will remedy this problem for future helicopter patrol programs.

Response Time - In most counties, improved response time to "crimes in progress" calls was a stated project objective. Where applicable an analysis of comparative response times, i.e., response time of helicopter as compared to response times of ground units, was conducted. In all counties, project objectives included responses to special category incidents such as: search, rescue, medical evacuation, natural disasters, civil disobedience situations, etc. In each county, 20 or more of these types of responses were analyzed to determine the effectiveness of the helicopter.

Comparative Cost Effectiveness - In each county a procedure was utilized to determine the overall effectiveness of the helicopter program in achieving project objectives, as compared to an approach to achieve the same objectives by traditional means with a similar expenditure of funds without the helicopter.

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2. HELICOPTER PATROL PROJECT OBJECTIVES

Project evaluation requires concise definition of project objectives in order to measure project achievement. In general, the objectives as stated in the individual grant requests were: (1) not stated in impact oriented terms, (2) not all encompassing of actual project objectives and/or (3) not the actual objectives which evolved as a result of project operations. For each project, major impact oriented objectives were determined based upon the grant request, a survey of departmental and program personnel, and consultant observation of program operation. Eleven major objectives, which are listed below, were identified:

- . Increase the effectiveness of search and rescue operations in remote areas
- . Reduce or slow the rate of growth in the crime rate
- . Enhance officer safety
- . Improve response time to crimes in progress calls
- . Increase apprehension of criminal suspects
- . Provide medical aid and evacuation services
- . Assist other law enforcement agencies
- . Reduce seriousness of civil disorders
- . Increase surveillance effectiveness in specified areas for specific offenses
- . Provide aid during natural disasters
- . Provide the public with a greater sense of security.

Each project was evaluated in terms of objectives important to that project. It should be noted that several of the listed objectives are only marginally related to law enforcement; however, in the context of local programs some of these non-law enforcement objec-

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tives were of primary importance. The eleven above listed objectives are also recommended as OCJP helicopter program objectives. This subject is addressed in greater detail later in this letter.

2. EVALUATION CONSTRAINTS

The evaluation of the individual projects, and, hence, the cluster evaluation was constrained by four major factors. These factors which constrained a comprehensive evaluation are summarized below:

- . The evaluation was conducted retrospectively, i.e., after the projects were implemented and operational. As such, detailed pre-project information was not available.
- . The individual evaluation components were for the most part poorly designed and/or not implemented. Implementation of the individual project evaluations as is required by the grant process, would have facilitated comparative evaluations.
- . Basic data relating to both helicopter operations and other law enforcement operations within the various jurisdictions were either incomplete or non-existent. As previously indicated, a major component of data unavailability was in the area of reported incidence of crime.
- . There were many non-comparable aspects of the four cluster projects. Non-comparable aspects, especially with respect to objectives, limited the cluster evaluation.

4. INDIVIDUAL PROJECT EVALUATIONS

In the following paragraphs the highlights of the individual project evaluations are briefly summarized. Each project is evaluated in considerable detail in the attached final report.

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(1) San Diego County - Project ASTREA

Project ASTREA tends to have balanced objectives, in that, of the identified project objectives all are believed to be of more or less equal importance. This is reflective of the fact that San Diego is a large diverse county with urban concentrations as well as vast remote areas. In addition, since Project ASTREA has the largest unit (three helicopters) it is better able to pursue multiple objectives.

The San Diego helicopters maintained a scheduled day and night patrol over a reasonably fixed patrol beat area within the County during the course of the evaluation year. In addition, equipment was available to respond to special situations, i.e., medical evacuations.

The community survey in San Diego indicated an exceptionally high awareness of the project (94.4 percent). General support of the project is indicated by the fact that 90.8 percent of respondents favored continuing Project ASTREA. Our survey of departmental officers indicated that within the San Diego Sheriff's Department, 87.2 percent of respondents believed the helicopter was aiding in deterring criminal activity. The survey of other agencies utilizing the helicopter program indicated satisfaction with the services provided. Utilizing agencies requested more helicopter availability and expanded joint training.

Response time surveys indicated: (1) that the helicopter was able to respond to crimes in progress in less time than ground units, and (2) that the helicopter provided an effective vehicle for special situation responses as measured in terms of man-hours and elapsed time saved.

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Unfortunately, it was not possible to demonstrate either a positive or negative effect of the helicopter upon the incidence of crime in San Diego County. Lack of crime data by Sheriff's jurisdictional beat and a change in reporting procedures made this analysis impossible within the scope of this project.

In conclusion, it was found that Project ASTREA is effectively accomplishing project objectives. No major project recommendations relating to project change are suggested.

(2) San Bernardino County - Helicopter

The San Bernardino County helicopter program is in somewhat the same circumstances as the San Diego County program in that San Bernardino has two helicopters and a vast rural area of responsibility as well as an urbanized area of patrol. Objectives regarded as being the most important include: "enhancing officer safety", this is reflective of an active program of integrating aerial and ground patrol and, "aid in search and rescue" which is reflective of the size and terrain of the County.

The surveys of the general public, departmental officers and other agencies served by the helicopter indicated general satisfaction with the program. In the latter two surveys additional joint training was suggested.

An analysis of response times indicated swift response to crimes in progress calls. It was found that the San Bernardino helicopter participated frequently and effectively in search and rescue operations. As in the other projects evaluated, it was not possible to identify a statistically demonstrative effect on the incidence of crime.

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The San Bernardino project was found to be effectively accomplishing objectives. Major specific project recommendations are made concerning: (1) the addition of administrative staff, (2) greater training emphasis, and (3) physical centralization of operations.

(3) Kern County - Project CO-OP

Project CO-OP provides night rural patrol of a 3,000 square mile area surrounding the City of Bakersfield in Kern County. Project CO-OP's objectives are narrow but well defined. Essentially the project objectives relate to the suppression of rural theft of farm and oil field equipment and supplies.

The rural populace being served by the project indicates strong support of the project. Kern County Sheriff's Department Officers, while generally supporting the project would prefer to see expanded operations in terms of area and hours patrolled.

While improved response time is not a priority objective of the Kern County project it was found that, in certain instances, especially burglar alarms, the Kern County helicopter was responding quickly and effectively. Although the number was not large, several occurrences of special incidence responses were investigated.

Kern County instituted in 1971 a system of crime incidence reporting by beat and detailed crime category. Although it was not possible to develop historical crime trends for the helicopters beat, due to the lack of data for a number of years, preliminary indications are that Project CO-OP has reduced the incidence of rural theft.

In conclusion, Project CO-OP is accomplishing the objectives set forth for the project. However, in narrowly defining objectives, questions are raised as to whether or not the County

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is utilizing the full capabilities of the helicopter. Major specific project suggestions include: (1) investigating the possibility of program supplementation with fixed wing aircraft, (2) obtaining maintenance services in closer proximity to the unit's headquarters and, (3) obtaining additional fueling locations.

(4) Ventura County - Helicopter Program

The Ventura County helicopter is utilized basically as a standby response vehicle. This mode of operation results in the following project objectives being ranked as most important: increase effectiveness in search and rescue, aid in natural disasters (fires), and increase surveillance effectiveness.

The total number of helicopter flight hours in Ventura County during the evaluation year was less than any of the other projects. Except under exceptional circumstances night flight was prohibited. In addition, prior authorization procedures precluded swift response to calls relating to crimes in progress and special incidents.

Major project recommendations included: (1) changing the mode of operation to include more flight time, night flight time and greater flexibility to respond to developing situations; (2) reassignment of the unit to an operating division within the department; (3) additional joint training, and (4) installation of updated communications equipment at the heliport.

5. HELICOPTER PROJECT PROGRAM STATEMENT

An OCJP helicopter project program statement is provided in the report. The essential finding with respect to developing a helicopter program is that there are in fact, similarities in helicopter projects which will allow for common consideration and evaluation.

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However, it is stressed that each agency must individually tailor project objectives rather than simply adopt a set of "approved objectives".

6. EVALUATION MODEL

A model for the evaluation of on-going and/or new helicopter projects is suggested. The model is designed to be implemented on the local level with a minimum of outside assistance. The previously presented 11 helicopter project objectives form the core of the evaluative model. For each objective the following is provided: (1) measurement criteria; (2) required data elements; (3) data resources; (4) data collection procedures; and (5) suggested analysis.

\* \* \* \* \*

In closing we wish to express our appreciation to the OCJP staff, in particular Ms. Francine Berkowitz, Project Director, and the local individual project staffs for their cooperation throughout the project. In addition, we wish to acknowledge the invaluable technical assistance provided during the course of the project by our subcontractor, Captain Robert Hoffman, Los Angeles Sheriff's Department (Retired).

We are confident that the results of this evaluation will be of assistance to the local agencies in improving their helicopter program operations and will be of aid in structuring future helicopter patrol programs.

Very truly yours,

*Arthur Young & Company*

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I INTRODUCTION

## I. INTRODUCTION

The firm of Arthur Young & Company was retained by the California Office of Criminal Justice Planning (OCJP)<sup>1/</sup> to provide an evaluation of four helicopter patrol projects. These projects are:

<u>Project Title</u>	<u>Applicant Agency</u>
ASTREA - (Aerial Support to Regional Enforcement Agencies)	San Diego County Sheriff's Department
Ventura County Sheriff's Department Helicopter Program	Ventura County Sheriff's Department
Helicopter Project Co-Op (Crime Oriented - Optimum Patrol)	San Bernardino County Kern County

The above listed four helicopter patrol projects were thought to represent a cluster or group of projects with common objectives which might lend themselves to common evaluation. This evaluation of the helicopter patrol project cluster is part of a broader evaluation of similar projects being carried out by the OCJP. The objectives of the evaluation as set forth by the evaluation unit of OCJP (CCCJ) in a document entitled "Evaluation Of Crime Control Programs in California: A Review" follows:

"Specifically, this evaluation effort, will, for each of the seven clusters, assess each project's performance as a separate entity, and also in comparison to the achievements of other projects in the cluster. Thus, cluster evaluation will assess each project's and each cluster's achievements of impact-oriented objectives, reflected in reduction of crime or improvement of the criminal justice system. Cluster evaluation will also involve critical analysis of the design in data collected and methodology employed, as presented in each project's evaluation report. In addition, cluster evaluators will explore the potential for building a program from each cluster of projects, as well as for developing impact-oriented objectives for these programs."

<sup>1/</sup> Formerly California Council on Criminal Justice (CCCJ).

## 1. PROJECT REPORTS

The evaluation of the four helicopter patrol projects is described principally in three project reports. Each report is designed to stand alone and, as such, represents the status of the project evaluation as of the date of the report. The three reports are briefly described below:

### (1) Status Report

On October 23, 1973 a report entitled, "Helicopter Patrol Project Cluster Evaluation--Status Report", was submitted to the Evaluation Advisory Committee. That report outlined the findings of initial visits by the consultant to each of the four project areas. The report also established the broad framework for evaluation.

### (2) Phase I Report

On January 7, 1974 a second report entitled, "Phase I Report, Helicopter Patrol Project Cluster Evaluation," was submitted to the Evaluation Advisory Committee. The Phase I Report was submitted approximately mid-way in the helicopter patrol project evaluation contract period. The principal purpose of the Phase I Report was to set forth in detail the specific steps and procedures which were to be utilized to evaluate each individual helicopter patrol project as well as the helicopter patrol project cluster as a whole. The Phase I Report updated and expanded upon the previously referred to Status Report. The Evaluation Advisory Committee met with the Consultant on January 25, 1974 to review the Phase I Report, principally the evaluation design. No substantive modifications in the evaluation as proposed in the Phase I Report were requested by the Evaluation Advisory Committee.

## 2. ORGANIZATION OF THE FINAL REPORT

The main body of the Final Report contains the evaluation of the helicopter patrol project cluster as well as certain common elements of the individual project evaluations. An in-depth evaluation of each of the four projects in the cluster is contained in a separate section of the appendix. This format was adopted in order to provide local agencies the opportunity to extract their project evaluations intact for local distribution. All of the project's directors expressed the desire to follow this procedure.

## 3. ACKNOWLEDGEMENTS

At this point, we wish to express our thanks to each of the individual project directors, their staff and members of the sheriff's departments who have cooperated in the evaluation effort. In each of the departments, we found considerable interest in the evaluation process. Individuals, too numerous to mention personally, have devoted time to answering questions, collecting data, and completing questionnaires. These efforts have contributed immeasurably to the success of the evaluation. We hope the evaluation and our specific recommendations will enhance future project operations.

## II. OBJECTIVES OF EVALUATION

## II. OBJECTIVES OF EVALUATION

The objectives of the evaluation are discussed in the paragraphs below.

### 1. OBJECTIVES OF CLUSTER EVALUATION

The Office of Criminal Justice Planning, the statewide agency authorized by the Omnibus Crime Control and Safe Streets Act of 1968, has described a single goal to which all of its programs and activities are directed. This goal is to "improve the overall performance of the criminal justice system through support to agencies which have responsibilities in the criminal justice field." Since 1968 the OCJP has expended over \$150 million for the support of projects designed to address the needs of the criminal justice system. Typically requests for funds substantially exceeded the limited financial resources of the OCJP.

The overriding responsibility of the OCJP therefore, is the rational selection of projects for funding from among the myriad of requests received. Thus, deliberative judgment is most critical as it addresses future program planning and implementation. In support of this responsibility the OCJP must develop an objective basis by which to assess the impact of previous expenditures and upon which to predicate the development of plans and programs.

The individual project evaluations described in this report provide important data to the OCJP relative to individual projects. However, by Executive Committee decision the OCJP desires to proceed one step further and that is to comparatively evaluate groups or clusters of similar projects.

Specific objectives of the cluster comparisons as paraphrased from the Request for Proposal include:

To identify common objectives for the cluster of projects and relevant measurement criteria associated with these objectives

- . To compare each projects performance to achievements of other projects in the cluster
- . To explore the potential for building a program from the cluster of projects
- . To develop impact oriented objectives for the program, should a program be feasible
- . To determine the appropriate level of evaluative research for the program
- . To specify the program evaluation methodology.

### 2. OBJECTIVES OF INDIVIDUAL PROJECT EVALUATIONS

The primary objective of the individual project evaluation is to critically analyze each project's achievement in terms of that project's stated objectives and to some extent the perceived objectives of the project. The perceived project objectives were identified during the evaluation process. The end product of such an evaluation serves three purposes: (1) it can assist local jurisdiction decision makers by providing a basis for determining whether a project should be refunded, curtailed, or expanded; (2) it can provide local project personnel with suggestions for project operational improvement; and, (3) it can assist the OCJP in determining which projects should be refunded or replicated in other jurisdictions.

In conducting the individual project evaluations, we were specifically guided by the following questions set forth in OCJP "Request for Proposal for Cluster Evaluation":

"1. Were the project objectives met? Why, or why not? What results can be attributed to the work done by the project staff?

2. What contributions did project results make, or in what manner was the project detrimental to: a) controlling crime? b) improving criminal justice operations c) improving other aspects of community life? d) achieving the objectives of the relevant OCJP program?

3. Was the evaluation component of the project well-designed? Well executed? Why or why not?"

In the following sections evaluation constraints and evaluation methodology are discussed. This is followed by a comparative evaluation of the helicopter patrol project cluster and the presentation of a suggested evaluation model. The individual project evaluations are contained in separate sections of the Appendix.

As a final note, it should be stressed that the overall purpose of our effort is to be constructive. It is hoped that our findings and recommendations will contribute to more effective project operations.

### III. EVALUATION CONSTRAINTS

### III. EVALUATION CONSTRAINTS

The purpose of this section is to discuss those factors, determined during the course of the evaluation, which rendered conducting a comprehensive evaluation extremely difficult if not impossible. Four major constraints which are enumerated below were identified:

- . The evaluation was conducted retrospectively, i.e., after the projects were implemented and operational
- . The individual evaluation components were for the most part poorly designed and/or not implemented
- . Basic data relating to both helicopter operations and other law enforcement operations within the jurisdiction is characterized by gaps
- . There are many non-comparable aspects of the four projects included within the cluster.

As can be seen from the above listing, the enumerated evaluation constraints are interrelated in many respects, i.e., major reasons for the lack of data include retrospective evaluation and poorly designed evaluation components. All four of these evaluation constraints contributed to making the cluster evaluation difficult. The first three (all except the constraint relating to dissimilarities within the cluster) contributed to reducing the effectiveness of the individual project evaluations.

Each of the four constraints is discussed in some detail below.

#### 1. RETROSPECTIVE EVALUATION

Retrospective or after the fact evaluation is difficult at best. In order to provide a comprehensive after-the-fact evaluation one of two unlikely conditions must be met. These conditions are:

. The program to be evaluated must plan for an after-the-fact evaluation. An evaluation component must be designed and data collected such that the evaluation can be conducted at a later date.

. Sufficient program description and data must be collected throughout the project such that the evaluator can reconstruct the situation and compile the necessary data.

Unfortunately, neither of these two conditions was completely met in any of the projects. The evaluation contained herein is dependent, to a large extent, upon an effort to reconstruct events which occurred one to two years ago. As has been underscored throughout the report, numerous weaknesses are inherent in this approach.

#### 2. PROJECT EVALUATION COMPONENTS

The OCJP "Request for Proposal for Cluster Evaluation" specifies, in some detail, page 7, under the heading "Assessment of Evaluation Components," the factors to be considered in evaluating the evaluation components of each project. In the Phase I Report an assessment of the evaluation components was included. This assessment is included herein in essentially the same format. The reason for inclusion in this section is that, as has been previously shown, implementation of individual project evaluation components, which has been completely lacking, would have enhanced the opportunities for comparative cluster evaluation.

As was stated in the Phase I Report, it must be stressed that none of the four helicopter patrol projects implemented an evaluation component of the nature referred to in the Request for Proposal. With the exception of some attempt to show the affect of helicopter patrol on crime rates, all evaluation which took place was descriptive in nature. In none of the projects were any of the following evaluative tools used:

- . Statistical tests
- . Pre-project base line data files
- . Control groups
- . Random samples
- . Quantified objectives.

The above comments are not included to denigrate individual projects but, rather to strongly indicate that it is not possible on an individual project basis to review each evaluation component in the depth suggested in the RFP.

In the following paragraphs each individual evaluation component (as proposed) and the resulting project evaluations are briefly discussed.

(1) San Diego

~~The evaluation component as described in San Diego's grant application is comprehensive.~~ The intended evaluation anticipated the use of statistical techniques, sampling and surveys. The grant application lists the following personnel who were to be assigned to the evaluation:

- . Project director (evaluation)
- . Senior systems analyst
- . Programmer analyst
- . Clerk typist.

The evaluation as outlined was never implemented. It is our understanding that the funding anticipated by San Diego from OCJP for the evaluation did not materialize.

The evaluation which was eventually implemented in San Diego is largely descriptive. The major document, entitled, "Project ASTREA" October 1971 - March 1972, provides a good background of the start-up phases of Project ASTREA. A second document dated April 20, 1973 entitled, "Helicopter Program - Evaluative Summary" essentially relates to the evaluation period of this report. The material contained in this evaluation report is descriptive.

(2) San Bernardino

Essentially, the San Bernardino grant application does not contain an evaluation component. Despite this, considerable descriptive information was compiled by the San Bernardino

project which has contributed to the present evaluation. The document, "Aviation Division - 1972 Annual Report" provides a good summary of this information for the evaluation year.

(3) Kern County

As in the case of San Bernardino, the Kern County grant application has almost no evaluation component. Kern County submitted quarterly reports to OCJP during the grant period. These reports describe in some detail the previous quarter's activities. In addition, rural theft in the patrol area in 1972 was compared to pre-patrol rural theft in the same area. The present evaluation has extended these efforts.

(4) Ventura County

The Ventura County grant application proposed an in-house evaluation with evaluation responsibility assigned to the Sheriff's (Administrative) Lieutenant. The evaluation as proposed was largely descriptive.

The document entitled, "Ventura County Sheriff's Department, Helicopter Program #0650, 1 July 1971 - 30 June 1972 - Final Evaluation" summarizes operations for most of the current evaluation year.

(5) Summary

The above description highlights the overall lack of evaluation during the course of project implementation and grant funding. As has been previously suggested, the absence of ongoing individual project evaluation greatly hinders cluster evaluation.

3. LACK OF BASIC DATA

The previously discussed evaluation constraints essentially discuss reasons for not being able to obtain basic evaluation data relative to the helicopter program. Despite the possible redundancy we

believe it is necessary to cite again the lack of basic data as an evaluation constraint. As will be discussed in the individual project evaluations Appendicies A through D a major data gap exists in the field of crime incidence. This data gap rendered virtually meaningless the evaluation of one, if not the most important, impact objective, i.e., the helicopter patrol program should reduce the incidence of crime. Although each jurisdiction was unique, the following describes common data problems with respect to incidence of crime:

- . Crime incidence data was never compiled by a geographic area coinciding with the helicopter patrol beat
- . The geographic boundaries for which crime incidence data were compiled had changed over time and there was no method for reconciling old boundaries with new boundaries
- . Crime incidence data which had been originally compiled was either lost or discarded.

The above serves to illustrate some of the major problems encountered in the efforts to obtain crime incidence data. Similar problems also existed, although not as acute, in obtaining descriptive data relative to such operations as search, rescue, medical evacuation, etc., for pre-helicopter activities.

#### 4. NON-COMPARABILITY OF THE HELICOPTER PROJECTS

Both the Status Report and the Phase I Report contained sections which indicated that serious problems existed with respect to comparability of helicopter projects within the cluster. In the individual project summaries (Appendicies) the objectives of each project as enumerated in the original grant requests are provided. As has also been shown in this Report, in many cases program implementation procedures did not support the project objectives. As originally stated, our evaluation revealed that two projects are reasonably comparable with respect to objectives and two of the projects are not comparable except in a limited way to any of the other projects.

Comparable projects - San Diego and San Bernardino. Similarities of the San Diego and San Bernardino programs include:

- scheduled day and night patrols over reasonably fixed areas
- pilot discretion to answer calls during time of patrol
- a charter to respond to special situations, (i.e., medical evacuations, search, rescue, etc.) exists.

Limited comparability projects - Kern and Ventura. Factors which make these projects non-comparable include:

- Kern County - The Kern County program has a single primary purpose. That purpose is the suppression of rural crime, mainly theft. To effect this suppression a rural scheduled night patrol is maintained. Almost no other activities are participated in by the helicopter unit.
- Ventura County - The Ventura County helicopter is used primarily as a response vehicle. Area patrol in the sense that it is engaged in the other projects is not used in Ventura County.

The above discussion of comparability of objectives is included at this juncture as an evaluation constraint. The implications of this variation as it impacts on the viability of a program cluster to be developed from helicopter patrol projects will be subsequently discussed.

#### IV. PROJECT EVALUATION METHODOLOGY

The purpose of this section is to discuss the common aspects of the methodology utilized in the evaluation of each project within the helicopter patrol project cluster. The purpose of presenting the common methodological aspects within a single section is to reduce the repetition which would result from including a detailed description within each project section.

As stated within OCJP "Request for Proposal for Cluster Evaluation", the principal direction of the evaluation is to be the "analysis of data and establishment of criteria for measurement of each project's achievement of impact-oriented objectives".

A second level of evaluation involves the professional observation of program implementation and operation during the evaluation period. This type of evaluation, which is referred to as "process evaluation", is particularly important to individual projects as it relates to individual project operational improvements. In addition, the results of process evaluation can provide insight for upcoming projects such that success can be replicated and pitfalls avoided.

In the Arthur Young & Company proposal of August, 1973, five evaluation components were identified. As was indicated in the Status Report, the objectives as stated for the individual projects are, for the most part, not impact-oriented and in many cases do not encompass perceived objectives that resulted from actual program operation. Our evaluation indicates that the five evaluation components encompass the objectives of each of the four projects, both process and impact-oriented; hence, the individual project evaluations are discussed within the context of these components.

The five components, as identified by process and impact-oriented evaluation, are listed on the following page.

Process Evaluation Component

- Program Implementation and Operational Activity

Impact Evaluation Components

- Perceived Effectiveness of Helicopter Patrol Projects by:
  - .. community
  - .. ground patrol officers
  - .. other governmental agencies utilizing helicopter services
- Effect on Incidence of Crime
- Response Time
- Comparative Cost Effectiveness

The remainder of this section summarizes both process and impact evaluation methodology. Data collection instruments are found in Appendix E.

1. PROCESS EVALUATION

As has been indicated, process evaluation is oriented toward determining a profile of procedures, methods, schedules, etc., which were utilized during project implementation and throughout the evaluation period. Data sources utilized included: interviews with project personnel, review of grant requests, project records, and project reports. A list of data items to be collected was prepared for each project. To the extent possible, the list of data items was standardized to allow for inter-project comparisons. Common data elements collected include the following:

Project Background

- Impetus for Project
- Grant Date
- Implementation Date
  - .. reason for delay (if any)
- Equipment
  - .. helicopter model
  - .. altitude performance

- .. high intensity lights
- .. litter capacity
- .. communications capacity
- .. method of maintenance
- .. other special features

- Staffing
  - .. administrative responsibility
  - .. pilots/observers
  - recruitment

- Perceived Problems

Project Operation (Evaluation Year)

- Patrol Schedule
- Patrol Assignment Type
- Time in Air
  - .. total
  - .. average monthly/daily
- Distribution of Time by Activity Classification (activity classifications vary among projects)
- Distribution of Patrol Time by Area (not available for all projects)
- Operational Activity Statistics for Evaluation Year such as:
  - .. arrests
  - .. assists to own departmental ground units
  - .. responses to critical incidents
  - .. assists to other agencies
  - .. property recovered
  - .. responses while on standby
  - .. searches/rescues
  - .. fires
  - .. other

For each of the projects, relevant data items are discussed within the individual project evaluations. In the cluster evaluation, common and dissimilar aspects of each project's implementation and operation are described. To a large degree the individual project suggestions for improvement are based upon the process evaluation.

## 2. IMPACT EVALUATION

In the following paragraphs, the four evaluation components related to project impact will be discussed. For each evaluation component, the associated impact oriented objective(s) is provided.

### (1) Perceived Effectiveness of Helicopter Patrol Projects

In each county three surveys were instituted to determine the perceived effectiveness of the helicopter project. The surveys were directed toward: (1) the general public served by the helicopter project, (2) the sheriff's department operating personnel, and (3) other agencies utilizing the helicopter. Each survey element is described below:

#### Community Survey

In each county a short mail out questionnaire was sent to a randomly selected sample of county residents. The common questionnaire is provided as Exhibit E-I in Appendix E.

In each case 2000 questionnaires were mailed. As will be shown in the individual evaluations, in general, the response in terms of number of returned forms was exceedingly high. In each case, to the extent possible, an effort was made to survey areas most heavily patrolled within the service area. In two counties, San Diego and Kern, mailing lists were obtained which provided a survey of the principal target areas. In San Bernardino and Ventura Counties, mailing labels were provided by a mailing firm within specified zip code zones. The selected zip code zones were identified by project personnel as zones where relatively intense patrol activity had occurred.

The purpose of the community survey was to elicit the attitude of the public served by the helicopter patrol as to whether or not they were: (1) aware of the patrol, (2) felt more secure as a result of the patrol, and (3) in favor of continuing the patrol. In addition, a small space was allotted for comments. Impact objectives associated with the community survey include the following:

- The public should be aware of law enforcement programs designed to serve them.
- The public should feel more secure as a result of the helicopter program....

- The public should favor continuing the program.

The results of each survey are presented in the individual project summary. Comparative results are presented in the following section.

#### Sworn Officer's Survey

In each of the four counties, sheriff's departments sworn officers were asked to complete a confidential questionnaire relating to the department's helicopter program. In general, the questionnaire solicited attitudes concerning the effectiveness and utilization of the helicopter in law enforcement operations. Space for making suggestions relative to the helicopter program was provided. The questionnaire form is provided as Exhibit E-II in Appendix E.

The primary impact objective associated with the sworn officer's survey is:

- The helicopter program should increase the overall effectiveness of the law enforcement team.

It should be noted that the sworn officer's survey also provided input to the process evaluation in terms of suggestions for improvement and observations relative to the program operation. The results of the sworn officer's survey are included in the individual project's evaluation.

#### Other Agencies Survey

In each of the programs, the helicopter has been used in a variety of ways in supporting other governmental agencies in the various counties. These agencies include: local police departments, fire departments, hospitals, narcotic enforcement units, etc. In one form or another, each of the department's original grant requests listed "support of other governmental agencies" as an objective of the helicopter program.

In order to determine type of support, availability of support, perceived contribution of the helicopter and the procedures utilized to obtain assistance, five to fifteen governmental agencies were interviewed within each county. The agencies to be interviewed were selected by the consultant in conjunction with local project personnel. The list of agencies to be contacted was provided in the Phase I Report.

The agency interviews were conducted utilizing a structured interview guide. Exhibit E-III in Appendix E provides the "Other Governmental Agency Structured Interview Format" which was used. The impact oriented objectives associated with this component are:

- The sheriff's department helicopter should be available to other governmental agencies when needed.
- The Sheriff's Department helicopter should be a useful tool in carrying out the individual missions of other governmental agencies.

As with the sworn officer's survey, the other agency survey also relates to process evaluation especially in the area of procedures necessary to receive services. The results of the other governmental agency surveys are included in the individual project evaluations.

(2) Effect on Incidence of Crime

A principal objective of each of the helicopter patrol projects is to reduce the rate of crime within the patrol area. In an attempt to measure objective achievement in each jurisdiction, crimes upon which the helicopter might be expected to impact were first identified. Included among these crimes are the following:

- . Robbery
- . Aggravated Assault
- . Burglary
- . Grand Theft
- . Grand Theft Auto
- . Other Theft by Category (where appropriate)

The above list of crimes was established by reviewing previous studies and in discussions with individual project personnel. To the extent possible, data relative to categorical crime occurrence within the helicopter patrol area were collected for the years 1966 to the present. Unfortunately, three related problems existed, by varying degrees, which minimized to a large extent the fruitfulness of the crime incidence analysis. These problems were:

. Crime statistics in many cases were not currently available for the patrol area.

. Crime statistics in many cases were not available for an area geographically comparable to the patrol area for years prior to the implementation of the program.

. No patrol area existed and/or the patrol area changed during the course of the program.

Based upon specific data availability, crime incidence analysis was attempted for each project. The methodology employed for each project and its limitations are discussed in the individual project evaluations. In general, two lines of analysis were attempted:

. Variance from a trend - where possible categorical crime incidence data for the patrol area were extracted for as many years as these data were available prior to project implementation. Based upon these data, the projected crime occurrences for the projection year were established. Actual incidence was then compared to projected incidents to determine whether or not the helicopter had a demonstrative effect upon the incidence of crime.

. Inter-year comparisons - where historical trend data were not available, an attempt was made to obtain the relevant categorical data for at least the pre-project and the project evaluation year. The resulting crime incidents by year by category were compared to ascertain whether or not a significant change had taken place.

A third method of detecting changes in crime incidence was investigated but rejected. This method involves the comparison of crime incidence in the patrol area with crime incidence in a demographically comparable area either within the same county or elsewhere. It was determined that in none of the four counties was it possible to delineate a comparable area which would not be influenced by the helicopter patrol program. The identification of similar areas outside of the county was not possible due to evaluation funding limitations.

### 3. RESPONSE TIMES

All of the projects (except Kern County) listed improved response time as a project objective. For purposes of the evaluation, two categories of response times were evaluated. These were: (1) response to calls for service, and (2) special situation responses. The impact oriented objectives associated with the above categories of response are:

- . The helicopter should improve response time on calls regarding crimes (or suspected crimes) in progress.
- . The helicopter should improve response to special situations, i.e., search, rescue, natural disasters, medical evacuations, etc.

The methodology used to evaluate the helicopter's effectiveness in these categories of response is discussed in the following subsections.

#### (1) Response to Calls for Service

It is generally accepted, although not necessarily proven, that swift response to calls for service enhances the opportunity for suspect apprehension and/or deters criminal activity as the criminal avoids areas where he believes a quick response will result.

In three of the four projects, improved response time was a primary project objective. In no project were records available to determine response times in a manner which would provide comparisons with patrol car response times. In the two projects where response time comparisons would be meaningful, the project personnel were requested to institute a special log entry which would provide, for a limited period, comparable data.<sup>1/</sup> This log entry included the following:

<sup>1/</sup> For the third project with improved response time as a project objective, (Ventura County) it was found that the operating mode made the measurement of comparative response times meaningless.

. Time of receipt of call of incidents to which both a patrol car and helicopter were responding

. Time on scene -- helicopter

. Time on scene -- patrol car

The mean time of each mode and the observed differences were calculated by category.

#### (2) Improved Response Special Situations

All of the projects, as initially conceived, had one or more objectives related to improved response or to more efficient handling of special incidents. Special incidents being defined as searches, rescues, medical evacuations, riot control, natural disasters, etc.

In each of the four projects, 10 - 20 special incidents were selected for in-depth analysis. The categories of incidents were selected in conjunction with project personnel based upon the criterion that the particular type of incident was important in the context of the overall helicopter program. The purpose of this analysis was to develop a profile of various types of special activities to determine the impact of the helicopter. To the extent possible, impact was measured in terms of time, dollars, lives and/or property saved. Data sources utilized in the special incidents analysis included: program logs, special incident reports, other division reports and personal interviews with project and other departmental personnel. Exhibit E-IV in Appendix E provides the form utilized in the special incidents analysis.

### 4. COMPARATIVE COST EFFECTIVENESS

An implicit objective of any governmental program should be that the program under consideration is the least expensive method of achieving program objectives. With respect to the individual helicopter programs, the following impact oriented objective was analyzed:

The helicopter-patrol car team should be the least expensive means of achieving program objectives.

In order to evaluate this objective, a technique was utilized which provided a numerical comparison of how well the helicopter "operating in its regular mode" accomplished program objectives as compared to how well program objectives could be accomplished by the additional patrol or other units. The concept of cost was introduced by comparing equal amounts of service from a cost standpoint.

It must be stressed that this formulation provides comparative cost effectiveness and not cost effectiveness in terms of cost expenditures measured against a flow of benefit and/or service returns. The formulation is designed to measure how well the helicopter accomplishes the objectives set forth in comparison to what the patrol units alone could do. The technique does not allow for comparison of how well the helicopter accomplishes objectives as compared to some new form of service delivery, such as fixed wing aircraft. Previously, the term "helicopter operating in its regular mode" was used. By this we mean the helicopter operating with patrol units, special units, a chase car, etc. That is to say, we were comparing the helicopter as it operated in an individual county with a situation where helicopters were not available and the same objectives were to be accomplished.

The following equation summarizes the computation:

$$A_1 \cdot W_{H1} + A_2 \cdot W_{H2} \dots A_N \cdot W_{HN} = \begin{array}{l} \text{Helicopter} \\ \text{Operating} \\ \text{Effectiveness} \end{array}$$

Where:

$A_1 - A_N$  = Activity importance rating, i.e., crime incidence, response time, community attitudes, etc.

$W_{H1} - W_{HN}$  = Weighted relative effectiveness of helicopter patrol activities ( $A_1 - A_N$ )

A similar formula was utilized to compute operating effectiveness without helicopters.

In order to implement the previously described formula, three important pieces of information were required. These were:

- . Activity importance ratings
- . Equivalent patrol car units which could be supplied for the cost of normal helicopter operations
- . Relative effectiveness ratings

(1) Activity Importance Ratings

Activity importance ratings for each project were based upon the following:

- . Helicopter Project Objectives Questionnaire administered to department and program officials
- . Original project goals
- . Qualitative judgement of the consultant

The Helicopter Project Objectives Questionnaire is included as Exhibit E-V in Appendix E. The questionnaire was completed by representative individuals in each department. The respondents included, at least, some of the following:

- . Sheriff and/or Undersheriff
- . Departmental Planning Bureau
- . Patrol Bureau Chief
- . Project Director
- . Helicopter Pilot

From the list of activities contained in Exhibit E-V a maximum of eight were selected as being the most important activities of the helicopter. That is not to say that the other activities were unimportant, only that these were the most important. A total of 40 points were distributed over the activities in each county. The distribution of weights were determined by

- . Scored rankings obtained in survey
- . Project objectives
- . Qualitative judgement

It is important to note that the full 40 activity points were allocated in each county. This procedure facilitated inter-county comparisons which are discussed in the "Comparative Cluster Evaluation".

(2) Cost

As indicated, it was necessary to determine the helicopter program cost and patrol car cost. This was necessary in order to determine the number of patrol units which could be provided with the equivalent expenditure as the helicopter program.

Helicopter program costs were extracted based upon the experience of the individual county. The following format applied:

HELICOPTER PROGRAM COSTS

Fixed Costs

Personnel	\$
Services/supplies	
Other (Rent, etc.)	_____
TOTAL FIXED COSTS	\$ _____

Variable Costs

Fuel, oil, etc.	\$
Maintenance	
Routine and Overhaul Parts	
Time Life Retirement Parts	_____
TOTAL VARIABLE COSTS	\$ _____

Using the above data, hourly and monthly operating costs for each program were calculated.

Patrol car costs were based upon established contract city cost arrangements when available. If contract costs were not available, an average of the available counties contract prices were used.

As a final result, the number of patrol cars which could be supplied for the cost of the helicopter program was calculated.

(3) Relative Effectiveness Ratings

The final numeric index required was the weighted relative effectiveness rating. For each selected activity, the helicopter (with patrol car, etc.) and the calculated additional patrol cars deployable received a relative effectiveness rating. The following ratings applied:

- . Very effective (point score 4)
- . Effective (point score 3)
- . Moderately effective (point score 2)
- . Slightly effective (point score 1)
- . Not effective (point score 0)

The determination of the effectiveness rating resulted from the previous evaluation components as interpreted by the consultant.<sup>1/</sup>

(4) Summary

The comparative cost effectiveness procedure provides a logical framework within which to provide a quantifiable comparison between helicopter teams and additional patrol cars operating

<sup>1/</sup> In this system, if the helicopter patrol car team were ranked very effective for all activity categories, the total point score would be 160 i.e., very effective (4) X total activity points (40) = 160.

alone. The procedure also, to some extent, provides for numeric comparisons among cluster counties.

In the preceding text, the weaknesses of the formulation have been identified, i.e., use of judgemental qualification. Despite this weakness, we believe the procedure as described has considerable merit. We only wish to caution that the user should not impute a meaning to the final numbers beyond what can legitimately be implied.

\* \* \* \* \*

#### EVALUATION METHODOLOGY SUMMARY

As has been indicated each of the individual projects was evaluated in depth, based upon the five evaluation components: (1) program implementation and operational activity, (2) perceived effectiveness of helicopter patrol projects, (3) effect on incidence of crime, (4) response time, and (5) comparative cost effectiveness. The detailed individual project evaluations are contained in Appendices A-D. In the following section a comparative evaluation of the helicopter patrol project cluster is presented. The comparative evaluation is also presented in the five evaluation component format.

In Section III of this report evaluation constraints were discussed. As was shown, some of the constraints seriously hindered the evaluative effort. Despite this, we believe the methodology employed resulted in an evaluation which will be useful to individual projects and one which will enhance future comparative efforts.

#### V. COMPARATIVE PROJECT EVALUATION

## V. COMPARATIVE PROJECT EVALUATION

In this section of the report a comparative evaluation of the four helicopter patrol projects is presented. As was pointed out in the previous section, significant differences exist among projects which makes comparative evaluation difficult. Despite this, the projects are compared component by component with significant strengths and weaknesses identified.

Exhibit I, following this page, provides pertinent comparative data relative to the four counties and the sheriff's jurisdiction within each. As can be seen considerable variation among counties exists especially with respect to size and population densities. The variations are manifested in numerous ways not the least important of which is within the individual helicopter project objectives.

### 1. PROJECT OBJECTIVES

Exhibit II, following Exhibit I, provides the individual project objectives as identified during the course of the evaluation. In total, 11 objectives were identified. Eight objectives were determined as significant to the Ventura, San Diego, and San Bernardino projects. Seven objectives are included for the Kern County project. The individual priority weights are shown in the exhibit for each objective by county (the method of determining priority weights is described in the previous section).

Pertinent observations relating to the objectives follow:

- San Diego - Project ASTREA tends to have balanced objectives, i.e., the variation in priority weights is less than in other counties. This is reflective of the fact that San Diego is a large diverse county with urban concentrations as well as vast remote areas. In addition, since Project ASTREA has a larger unit (i.e., three helicopters) it is better able to pursue multiple objectives.

- San Bernardino - San Bernardino is in somewhat the same circumstances as San Diego having two helicopters and a vast uninhabited area of responsibility as well as an urbanized area of patrol responsibility. The high priority weight assigned to officer security is reflective of the active program of integrating aerial and ground patrol. Search and rescue receives a high ranking as numerous searches and rescues are routinely performed.
- Kern County - In Kern County only seven project objectives were identified as significant. This results from Project CO-OP's principal mode of operation, i.e., rural night patrol. In the context of Kern County the objective of increasing surveillance is taken to mean the routine patrol of the rural area surrounding Bakersfield. Kern County was the only county in which reducing the seriousness of civil disorders was regarded as significant. This is reflective of the frequent rural labor disputes during which the helicopter serves as an observation platform.
- Ventura County - The Ventura County helicopter is utilized basically as a standby response vehicle. This mode of operation results in high priority weights assigned to: increase effectiveness in search and rescue, aid in natural disasters (fires), and increase surveillance effectiveness.

## 2. PROJECT IMPLEMENTATION AND OPERATION

In the following paragraphs significant aspects of project implementation and operation are discussed.

### (1) Project Implementation

All of the individual grant requests were dated July 1, 1971. Each of the projects was subjected to considerable delay in actual project implementation. These delays resulted from the following common factors: (1) procedural/fiscal problems in setting up accounts and expending funds, (2) delayed delivery of equipment, and (3) difficulty in obtaining and training personnel.

HELICOPTER PATROL PROJECTS  
COMPARATIVE DESCRIPTION OF COUNTIES

<u>CHARACTERISTIC</u>	SAN DIEGO	VENTURA	SAN BERNARDINO	KERN
Population County	1,448,300	423,000	698,000	342,000
Area (Sq. Mile) County	4,258	1,884	20,160	8,064
Population/Sq. Mile	340	225	35	42
Crime <sup>1/</sup>	33,142	11,216	21,138	9,869
Crime/sq. Mile <sup>1/</sup>	8	6	1	1
Crime/1,000 Pop. <sup>1/</sup>	23	27	30	29
Population (Sheriff's Jurisdiction)	323,000	170,000	320,000	218,000
Crime (S. D. Jurisdiction)	6,153	3,322	7,902	5,317
Crime/1,000 (S. D. Jurisdiction)	19	20	25	24
Sworn Personnel/1,000 Pop. in Jurisdiction	1.8	2.02	1.7	1.11
Total Patrol Cars	95	46	140	90
Patrol Cars/ 1,000 Pop. in Jurisdiction	.3	.3	.4	.4
Men/Patrol Car	1/1 day 2/1 night	2/1 - Unincorporated 1/1 - Central City	1/1	1/1

<sup>1/</sup> Part I Offenses

HELICOPTER PATROL PROJECT OBJECTIVES

OBJECTIVE	PRIORITY WEIGHT			
	SAN DIEGO	SAN BERNARDINO	KERN	VENTURA
Increase the effectiveness of search and rescue operations in remote areas	-	5	3	8
Reduce or slow the rate of growth in the crime rate	5	6	7	4
Enhance officer safety	7	9	7	5
Improve response time to crimes in progress calls	6	6	-	2
Increase apprehension of criminal suspects	6	5	-	3
Provide medical aid and evacuation services	4	-	-	-
Assist other law enforcement agencies	5	3	5	5
Reduce seriousness of civil disorders	-	-	5	-
Increase surveillance effectiveness in specified areas for specific offenses	2	2	8	6
Aid in natural disasters	-	-	-	7
Provide the public with a greater sense of security	5	4	5	-
TOTAL	40	40	40	40

(2) Equipment

The following Bell helicopter models were utilized:

- . Ventura - 47G-3B2 (1)
- . Kern - 47G-3B2 (1)
- . San Bernardino - 47G-3B2 (2)
- . San Diego - 47G-3B2 (1)  
                  47G-5 (2)

As can be seen, each project had at least one Bell model 47G-3B2. This model was selected because of high altitude performance characteristics which were deemed a necessity for search and rescue operations in each county. In addition, San Diego utilized two Bell model 47G-5's. This machine can not function at as high altitudes but is less expensive to operate and maintain. This latter characteristic is reflected in lower operational costs in San Diego County.

(3) Maintenance

All projects contracted for maintenance services during the grant period. This procedure appears reasonable in view of the number of helicopters assigned to each unit as overhead costs associated with permanent maintenance personnel are avoided. In only one case, Kern County, were there problems associated with the maintenance services provided.

(4) Unit Assignment

In San Diego and San Bernardino the aviation unit is assigned functionally to the patrol division. This procedure appears to insure a maximum of coordination between air and ground units as evidenced by the sworn officers survey and the records of assists in each county. In Kern County the unit is administratively assigned to the Chief of the Criminal Bureau; however, when operating the unit is functionally assigned to the Watch Commander. This latter assignment appears to allow

the necessary flexibility. In Ventura County the unit is assigned to the Undersheriff. Call out procedures are administratively complicated which has resulted in under-utilization and considerable animosity among ground units.

(5) Evaluation Year Flight Activities

In the evaluation of each individual project a detailed description of the project's operation during the evaluation year was presented. Due to the diverse operations and the many facets of the individual projects it is not possible to recapitulate all aspects of the projects in summary form. However, the more important characteristics of the individual projects are presented below:

San Diego - Project ASTREA maintained a regularly scheduled day and night patrol of a reasonably well defined geographic area (San Diego Master Beats 52 and 54) during the course of the evaluation year. In addition a wide variety of special incidents were responded to and direct assistance was lent to nearly all law enforcement agencies in the County. Total flight time during the year totalled 3255 hours.

San Bernardino - The San Bernardino helicopter maintained a regularly scheduled day and night patrol during the evaluation year. The major portion of patrol time was spent over the Sheriff's Central Division (the area surrounding San Bernardino City). The San Bernardino helicopter became involved in a large number of special incidents, especially searches and rescues, during the course of the evaluation year. A total of 2473 flight hours were logged.

Kern County - The Kern County helicopter maintained a regularly scheduled night patrol of the rural valley area surrounding Bakersfield during the course of the evaluation year. The purpose of this patrol was to suppress theft of farm and oil field equipment and supplies. This mode of operation resulted in a relatively small number of special deployments. A total of 797.1 flight hours were logged.

Ventura County - The Ventura County helicopter operated as a special response vehicle during daylight hours only during the course of the evaluation year. No regular patrol area was established or flown. The Ventura helicopter participated in a number of special deployments, the most important being in support of fire suppression. A total of 595.5 hours were flown.

(6) Cost

Exhibit III, following this page, summarizes cost of the four projects during the evaluation year. Costs are depicted for the categories indirect (fixed), direct (variable) and total costs per hour flown. (See Individual Project Summaries for a more detailed breakdown). San Bernardino had by far the lowest total costs per hour flown. This resulted from maximum use of equipment with a minimum number of personnel. (In the San Bernardino project summary additional personnel are recommended.) Kern County had the highest total costs per hour flown; however, to a large extent this results from a higher "administrative and benefits" cost assignment in Kern County. For this reason the Kern County program costs are not directly comparable. Ventura County also had relatively high costs per hour flown. This resulted from the relatively small number of hours flown by the helicopter during the evaluation year.

3. PERCEIVED EFFECTIVENESS

In each of the four counties three surveys were conducted to determine the perceived effectiveness of the individual projects. Survey groups included: (1) the general public (community survey), (2) departmental officers, and (3) other county agencies who had been served by the helicopter projects.

(1) Community Survey

Exhibit IV, following Exhibit III, provides a summary of the communities response to the individual helicopter programs. In general the community survey demonstrates a high awareness

and acceptance of the helicopter patrol projects. Pertinent observations from the community survey's follow:

- . The public is generally aware of the Sheriff's helicopter programs. Awareness ranged from a high of 96.1 percent in Kern County to a low of 75.2 percent in Ventura County.
- . Nearly 87 percent of respondents in the four counties expressed the belief that they felt themselves more secure as a result of the project.
- . In all counties more than 90 percent of respondents favored continuation of the helicopter patrols.

(2) Departmental Sworn Officers

In each county departmental sworn officers were asked to respond to a confidential survey regarding attitudes relative to the helicopter program. A detailed summary of responses is provided in each individual project description. Perhaps the question most indicative of overall departmental attitude was question number three--"In your opinion, has the helicopter aided in deterring criminal activity within your Department's jurisdiction?" Responses to this question were as follows:

<u>COUNTY</u>	<u>RESPONSE QUESTION 3</u>	
	<u>PERCENT YES</u>	<u>PERCENT NO</u>
San Diego	87.2	12.8
San Bernardino	81.8	18.2
Kern	61.4	38.6
Ventura	48.9	51.1

As can be seen in San Diego and San Bernardino, departmental officers believed the helicopter was an effective tool of law

COMPARATIVE PROJECT COSTS  
HELICOPTER CLUSTER

<u>COST CATEGORY</u>	<u>COUNTY</u>			
	<u>SAN DIEGO</u>	<u>SAN BERNARDINO</u>	<u>KERN</u>	<u>VENTURA</u>
Indirect (Fixed) Costs Per Hour Flown <sup>1/</sup>	\$71.33	\$39.32	\$ 86.86	\$ 80.35
Direct (Variable) Costs Per Hour Flown <sup>2/</sup>	\$25.35	\$29.85	\$ 29.72	\$ 32.78
Total Costs Per Hour Flown	\$96.68	\$69.17	\$116.53	\$113.13

1/ Includes: project staff, benefits, insurance, rent, etc.

2/ Includes: fuel, maintenance labor, parts, reserve for overhaul

COMPARATIVE COMMUNITY SURVEY RESULTS\*

QUESTION	SAN DIEGO		KERN		SAN BERNARDINO		VENTURA	
	% YES	% NO	% YES	% NO	% YES	% NO	% YES	% NO
Aware of Program	94.4	5.6	96.1	3.9	81.7	18.3	75.2	24.8
Personally Observed Helicopter Activities	84.0	16.0	82.8	17.2	63.0	37.0	49.6	50.4
Feel More Secure	84.7	15.3	87.5	12.5	89.1	10.9	85.8	14.2
Favor Continuing	90.3	9.7	94.9	5.1	95.0	5.0	91.1	8.9

\* Percentages based on individuals responding to the particular question.

enforcement. In these counties other responses indicated a general endorsement of the program. In Kern and Ventura Counties the support of the departmental officers was less extensive.

### (3) Other Governmental Agencies Survey

In each of the counties other governmental agencies which had participated with the helicopter unit were contacted by personal interview to elicit views with respect to the program. In nearly all cases these agencies expressed general satisfaction with the program. The most frequent occurring suggestions were the expressed desire for more helicopter availability and for additional joint training.

## 4. RESPONSE TIME

In two counties, San Diego and San Bernardino, a special analysis of "response to crimes in progress" calls was conducted. This analysis involved measuring the comparative mean time taken to arrive "on scene" of the helicopter and patrol unit. The analysis concerned only incidents to which both types of units were responding. In both counties it was shown that when airborne, the helicopter arrives "on scene" significantly faster than a patrol unit. Decreased response time was not an objective of the Kern County project and in Ventura County the call out procedure precluded the accomplishment of an improved response time objective. Thus, in these two counties this line of analysis was not possible.

In each project a number of special incident responses were analyzed and time in terms of man-hours saved and elapsed time saved (time from incident initiation to incident completion) were measured. In this analysis it was shown that by both these measures significant amounts of time were saved utilizing the helicopter. Types of incidents analyzed included, searches and rescues, medical evacuations, responses to burglar alarms, urban lost child searches, etc. It should be noted that in some of these incidents quicker response resulted in a saving of life and/or reduced a period of anguish for

relatives. These latter categories of savings are difficult to measure in objective terms.

5. EFFECT ON INCIDENCE OF CRIME

The most disappointing aspect of the present evaluation was the inability to statistically analyze the effectiveness of the helicopter in reducing or slowing the rate of crime growth within a patrol area. In Section III, "Evaluation Constraints," the general lack of current as well as historic crime data for patrol areas was discussed. In the evaluation model, Section VII, the requirements for analyzing the effect on incidence of crime are specified. Unfortunately, no conclusions can be drawn from the present evaluation with respect to the programs effect on the incidence of crime.

6. COMPARATIVE EVALUATION SUMMARY

The objectives and operational procedures of the four helicopter projects are diverse. Despite this, we believe that sufficient common objectives exist such that helicopter patrol projects can be thought of in terms of a cluster. As has been shown in the preceding pages and is discussed in much greater detail in the individual project evaluations (see Appendicies), the projects have enjoyed varying levels of success in objective achievement. As a result of the comparative evaluation the following conclusions/recommendations are offered:

Prior to project initiation individual departments/communities should carefully specify project objectives. The objectives should be tailored to and will vary depending on local needs. In the four projects evaluated, to a large extent, this important element of pre-planning was ommitted.

Projects need to develop data reporting and compilation methods. Systems can be as simple as pin maps or as complicated as sophisticated, comprehensive electronic data processing systems. The systems should be designed to assist in the assignment of helicopter patrol to areas of greatest impact as well as facilitate evaluation.

In a helicopter patrol project it is desirable to integrate ground and aerial patrol. This appears to be accomplished only when the aerial and ground units are functionally assigned to the same division or department.

All projects should emphasize to a greater extent training. This is particularly the case with respect to joint training with other departmental units and other agencies served by the helicopter unit. Follow up contact with "other agencies" is also desirable.

The cost per hour flown for helicopter services varies greatly among the four projects. The helicopter is a very expensive law enforcement tool due to the high overhead costs of idle crews, when it is not utilized to the maximum safe extent.

All counties within the cluster should establish a system to keep up to date on recent equipment improvements. In particular the cluster projects should explore the use of the following accessories: infra-red scanners, stablized binoculars, special night vision aids, improvements in lighting and other technical aids to aerial support. (It should be noted that, of the counties visited San Diego has the most active program of keeping up to date on equipment improvements.)

VI. HELICOPTER PATROL PROGRAM STATEMENT

VI. HELICOPTER PATROL PROGRAM STATEMENT

The OCJP request for proposal stated that the evaluation should consider whether or not an OCJP program can be developed for helicopter patrol projects. It is our opinion that helicopter projects do possess similar objectives, and, thus may be considered as a program by OCJP.

Exhibit V in the following section presents 11 common helicopter objectives as well as methodology for evaluating objective accomplishment. It is not suggested that each project must have all 11 objectives. The opposite is true, as each project must carefully consider individual project goals specifying objectives which reflect local desires and priorities. We; however, believe that the listed objectives encompass most of what a helicopter program would desire to accomplish.

As can be seen, many of the objectives, i.e., search and rescue, aid in natural disaster, etc., relate only marginally to "safe streets". They do; however, reflect traditional functions of law enforcement agencies. An agency administering "safe streets" funds must, of course, be most concerned in objectives coincident with the requirements of this ACT. However, we believe the other objectives are important and must be considered in the provision of funding. The important point is that a balance must be struck. With this in mind the following program statement is suggested:

PROGRAM STATEMENT  
HELICOPTER PATROL PROJECTS

INTRODUCTION

"The high incidence of crime in the United States threatens the peace, security, and general welfare of the nation and its' citizens. To prevent crime and to insure the greater safety of people, law enforcement efforts must be better coordinated, intensified, and made more effective at all levels of government."

This legislative finding spurred congress to enact the Omnibus Crime Control and Safe Streets Act of 1968 (Public Law 90-351). The legislation is designed to provide financial assistance to state and local governments for improvement of crime control efforts.

The following guidelines are designed to articulate the objectives, priorities, and general policies for the development of helicopter projects for law enforcement agencies operating within the State of California. It is intended to provide insights and directions to local, regional, and statewide criminal justice agencies who are charged with public safety and who are contemplating either:

Planning and developing helicopter projects

or

Seeking funding from the Office of Criminal Justice Planning for helicopter projects

PROJECT CONSIDERATION

The usefulness and versatility of helicopters in performing the functions of patrol, surveillance, search, and rescue have been thoroughly tested and demonstrated by the military. It is,

therefore, only natural to consider the helicopter as a valuable tool for law enforcement agencies. However, to fully realize the potential of helicopters it is not only essential for the local law enforcement agencies to assess the objectives, costs, and benefits of various applications of helicopter services, but it also is necessary for the Office of Criminal Justice Planning to evaluate the validity and reliability of these applications. It is for this consideration that the following guidelines are emphasized:

#### GOALS

1. The central thrust of a helicopter project must be to reduce crime and to provide greater security of persons and property. Although there are many well identified needs for the improvement of operating efficiency of criminal justice agencies, and to increase functional effectiveness, each of these needs must be evaluated in terms of relative impact on specific crime targets.
2. The project must clearly demonstrate its ability to encourage, implement, and accomplish operations that introduce innovative and advanced concepts and practices of crime prevention and reduction for the local criminal justice system.
3. The accelerating crime trends evident in the last decade, as well as the general growth of the population within the State of California, are causing significant increases in the cost of operating the criminal justice system. While it is apparent that increased dollar expenditures will be required for a helicopter project, it is mandatory for that project to impact an increase on the cost effectiveness of the local criminal justice system in order to justify the expenditure....

4. Documented support from other affected law enforcement agencies and regional governmental units should be incorporated in the operational and objectives provision of the project.

#### GENERAL POLICIES

1. All applications must relate to local, regional and statewide problems, with considerations being given for long-range funding impact on future plans and established priorities for the local community.
2. The project application must clearly and concisely state measurable objectives and provide the criteria for the measurement of outcomes.
3. Each project should include provisions for in-house and/or outside evaluation. An appropriate evaluation component (for both on-going and after-the-fact evaluation) must be developed. Components must contain the pre-project demographic and statistical baseline data for the target area, as well as the criteria for the development of the post-project data base. This must be a designed and planned collection of data as opposed to the simple accumulation of information. Additionally, all projects for purposes of evaluation, as well as of project replication, must indicate the capability to maintain adequate and uniform records of the types of services rendered, clientele served, outcome of service, and other statistical data.

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## VII. HELICOPTER PATROL PROJECT EVALUATION MODEL

The purpose of this section is to suggest a relatively simple evaluation component to be utilized for individual helicopter projects and/or clusters of projects. As has been indicated numerous times the objectives of helicopter projects vary in scope and importance, depending upon local circumstances. The model we are suggesting is designed to be flexible in that it is tailored to accommodate local objectives. We also believe the level of evaluation suggested can be implemented by local personnel with a minimum of outside assistance. The model builds upon the evaluation design of the present project.

### 1. BACKGROUND

It is paramount that the primary purpose of a helicopter project evaluation is to provide objective, systematic and comprehensive evidence on the degree to which the project achieves its intended objectives. In addition, the degree to which other unanticipated, but relevant, consequences or characteristics are identified, they should be developed and integrated into the evaluation findings and recommendations.

A vital consideration in an evaluation of a helicopter project is the distinction that must be made between determining the effects of the project and estimating its effectiveness. Effectiveness refers to the extent to which the project achieves its objectives, or goals, but the question of just how much effectiveness constitutes success and justifies the efforts of the project is unanswerable by evaluative research. It remains a matter of judgment of the project's sponsors, administrators, critics, or others, and the benefit, of course, must be balanced against the costs involved. An evaluation of a helicopter project is further complicated in that it contains multiple objectives. Each one of these may be achieved with varying degrees of success over time and among varying groups of project participants.

2. EVALUATION MODEL

Exhibit V, following this section, provides 11 of the most relevant objectives of a helicopter patrol project. The objectives are listed vertically on the Exhibit. Listed horizontally, from left to right, are the six steps in the evaluation process. The use of the evaluation model is discussed below:

First - The individual project objectives must be identified by the local department or the community. The objectives must reflect local needs and the existing situation. It would not be suggested, for instance, that all 11 of the listed objectives be incorporated within a single project. Initially, some assessment of the priority or importance of achievement of the selected objectives should be made.

Second - Measurement criteria for each objective or sub-component of each objective must be specified. Suggested measurement criteria are identified.

Third - Data elements necessary to measure objective achievement need to be identified. Recommended evaluation elements are included in the model. Actual data elements to be used must be modified to correspond to specific objectives and data availability within the individual department.

Fourth - Data resources must be identified. Types of resources include: departmental records, specially developed records, surveys, interviews, and other agency records.

Fifth - Data collection procedures must be established. Forms and instruments to be used must be developed. Appendix E contains forms utilized in the project evaluations contained in this report. They may be modified, as necessary, for local project evaluation.

Sixth - Effectiveness of the project must be analyzed in terms of objective achievement. Lines of analysis are suggested for each of the 11 objectives contained in Exhibit V. The comparative cost effectiveness formula utilized herein may be implemented to obtain a quantitative measure of relative objective achievement.

The process is relatively simple but there are pitfalls. Of primary importance, must be the understanding that the failure to complete one step makes it impossible to achieve a realistic and practical evaluation. In the planning of steps three, four, and five, the following characteristics of good data should be kept in mind:

. Descriptiveness Over Communication

Are the data understandable? Of what elements are the data composed? What are their limitations?

. Consistency Over Time

Are the data always collected utilizing the same procedures?

. Uniformity Over Area

Are the data collected in the same way from place to place? Organization to organization? With the same parameters? Dimensions? Components?

. Accessibility Over Distance

Are the data easily available and channels of availability known?

. Overall Desirability

Are the data relevant and useful?

HELICOPTER PROJECT EVALUATION MODEL

OBJECTIVE	MEASUREMENT CRITERIA	DATA ELEMENTS	DATA RESOURCES	RECOMMENDED COLLECTION	ANALYSES
ENHANCE OFFICER SAFETY	Changes In Officer Perception	Officers' Views	Survey	Sworn Officers' Survey <ul style="list-style-type: none"> <li>· Pre-Project</li> <li>· Post-Project (1 yr.)</li> </ul>	Comparative: <ul style="list-style-type: none"> <li>· Pre vs. Post Project Responses To Survey With Tabulation Of Degree And Direction Of Change</li> <li>· Determination Of Change Implications</li> </ul>
	On-The-Job Injuries Or Fatalities	Injury Rate And Fatality Rate For Both Helicopter (Patrol) And Non-Helicopter Personnel (Patrol)	Helicopter Log Patrol Records	Monthly And Annual Summaries	Comparative: <ul style="list-style-type: none"> <li>· Month vs. Month</li> <li>· Annual vs. Annual</li> </ul>
REDUCE THE CRIME RATE	Pre-Project Specific Crime Incidence Data For Specific Geographic Area Which Will Be Patrolled By Helicopter	Crime Rates For: <ul style="list-style-type: none"> <li>· Robbery</li> <li>· Aggravated Assault</li> <li>· Burglary</li> <li>· Grand Theft</li> <li>· Grand Theft Auto</li> </ul> Delineated Geographic Area - Identification	Department Records Annual Reports Helicopter Flight Log And Records Bureau Of Criminal Statistics	Monthly And Annual Print-Outs/Tabulation	Comparative: <ul style="list-style-type: none"> <li>· Number Of Specific Crime Incidences For Pre-Project Years vs. Number Of Specific Crime Incidences For Post-Project Year</li> <li>· Test Observed Data Differences For Statistical Significance</li> </ul>
	Post-Project Incidence Data For The Same Specific Crimes And In The Same Geographic Area	Same As Above	Same As Above	Same As Above	Same As Above
	Other Crime Incidence Reduction Projects For Same Specific Crimes And In The Same Specific Geographic Area During Same Time Period	Depending Upon Nature And Kind Of Program	Grant Request Progress Reports Final Report	As Soon As Available	Isolate Degree Of Change In Specific Crime Incidences Attributable To This Project And Delete From Changes Attributable To Helicopter Unit OR If Not Possible, Estimate Degree Of Helicopter Impact

Note: Post-Project Refers To After Project Has Been Implemented.

OBJECTIVE	MEASUREMENT CRITERIA	DATA ELEMENTS	DATA RESOURCES	RECOMMENDED COLLECTION	ANALYSES
ASSIST OTHER LAW ENFORCEMENT AGENCIES	Requests For Helicopter Services	Number Of Requests Types Of Services Requested Types/Names Of Agencies Location	Flight Log Helicopter Unit Log Helicopter Unit Monthly Summaries Central Dispatch Log Department Records Annual Reports Reports From Other Agencies	Monthly Compilation Of: <ul style="list-style-type: none"> <li>Daily Flight Logs</li> <li>Monthly Summaries</li> <li>Annual Reports</li> <li>Project Progress Reports</li> </ul>	Method Of Disposition - Pre-Helicopter Project Monthly And Annual Statistical Tabulation And Determination Of Trends Alignment With Project Objectives And Priorities
	Time Demands	Hours Of Service Provided Availability For Response When Requested - Day-Night-Specific Times	Same As Above	Same As Above	Total Activity Hours In Relation To Project Total Hours Alignment With Project Priorities And Other Responsibilities Within Department
	Effect On Unit And/Or Department Law Enforcement Operations	Disposition Of Request Disposition Of Response Services	Same As Above	Same As Above	Monthly And Annual Statistical Tabulation And Identification Of Developing Trends
		Cost Factors: <ul style="list-style-type: none"> <li>Personnel</li> <li>Equipment</li> </ul>	Budget Personnel/Payroll Maintenance Logs	Compile: <ul style="list-style-type: none"> <li>Monthly Summaries</li> <li>Annual Reports</li> </ul>	Monthly And Annual Costs Relative To Budget Considerations
INCREASE SURVEILLANCE EFFECTIVENESS IN SPECIFIED AREAS AND FOR SPECIFIC OFFENSES	Request For Helicopter Surveillance Services	Number Of Requests By Whom - Type Identification Of Specific Areas Types Of Offenses For Which Surveillance Was Requested	Central Dispatch Log Flight Log Helicopter Unit Log Monthly Summaries Department Records Annual Reports Reports From Other Agencies	Monthly Compilation Of: <ul style="list-style-type: none"> <li>Daily Logs</li> <li>Monthly Summaries</li> <li>Annual Reports</li> <li>Project Progress Reports</li> <li>Specific Incidence Reports At Completion Of Mission</li> </ul>	Statistical Tabulation And Comparisons Compatibility Of Data With Project Objectives And Priorities Indications Of Trends
	Time Demands	Nature Of Surveillance: <ul style="list-style-type: none"> <li>Total Time For Services</li> <li>Location - Type Of Terrain</li> <li>Unusual Conditions</li> </ul>	Same As Above	Same As Above	Time Period Comparisons Indications Of Trends Implications

OBJECTIVE	MEASUREMENT CRITERIA	DATA ELEMENTS	DATA RESOURCES	RECOMMENDED COLLECTION	ANALYSES
INCREASE SURVEILLANCE EFFECTIVENESS IN SPECIFIED AREAS AND FOR SPECIFIC OFFENSES (Con't.)	Effect On Rate Of Apprehension And Quality Of Law Enforcement Operations	Availability For Response Number Of Arrests Credited To Helicopter Unit Number Of Arrests Credited To Ground Unit Value Of Property Recovered Or Confiscated	Central Dispatch Log Flight Log Helicopter Unit Log Monthly Summaries Department Records Annual Reports Reports From Other Agencies	Monthly Compilation Of: . Daily Logs . Monthly Summaries . Annual Reports . Project Progress Reports . Specific Incidence Reports At Completion Of Mission	Statistical Tabulation And Comparisons Compatability Of Data With Project Objectives And Priorities Indications Of Trends
		Cost Factors: . Personnel . Equipment	Budget Personnel/Payroll Maintenance Log And Budget	Compile: . Monthly Summaries . Annual Reports	Monthly And Annual Cost Evaluation And Budget Considerations
INCREASE THE EFFECTIVENESS OF SEARCH AND RESCUE OPERATIONS IN REMOTE AREAS	Requests For Search And Rescue Services	Number Of Requests Types Of Requests Location	Flight Log Helicopter Unit Log Monthly Patrol Summaries Central Dispatch Log Department Records Annual Reports Reports From Other Agencies Special Incidence Reports	Compile Special Incident Report At Completion Of Operation Compile Monthly Summaries Conduct Annual Agency Survey Of Agencies Involved	Monthly And Annual Comparisons In Order To Identify Significant Statistical Trends Responses To Annual Survey From Other Participating Agencies Or Units
	Protection Of Life	Disposition Of Missions: . Number Found . Number Rescued . Number Air Evacuations	Same As Above	Same As Above	Monthly And Annual Tabulation
		Survival Factors: . Time And Exposure	Reports From Hospitals Ground Units, Air Evacuation Personnel And Other Participating Agencies	Same As Above	Determine Relevancy Of Time And Exposure Factors To Degree Of Survival Opportunity

OBJECTIVE	MEASUREMENT CRITERIA	DATA ELEMENTS	DATA RESOURCES	RECOMMENDED COLLECTION	ANALYSES
INCREASE THE EFFECTIVENESS OF SEARCH AND RESCUE OPERATIONS IN REMOTE AREAS (Con't.)	Utilization Of Law Enforcement Manpower Components	Manpower Expanded: <ul style="list-style-type: none"> <li>. Helicopter Units</li> <li>. Ground Units If Helicopter Unavailable</li> </ul>	Flight Log Helicopter Unit Log Monthly Patrol Summaries Department Records Annual Reports Reports From Other Agencies	Compile Special Incident Report At Completion Of Operation Compile Monthly Summaries Conduct Annual Agency Survey Of Agencies Involved	Comparison Of Total Hours, Helicopter Unit vs. Ground Unit Significance Of Variance To Department's Total Law Enforcement Responsibilities
		Time Expanded: <ul style="list-style-type: none"> <li>. Helicopter Units</li> <li>. Ground Units If Helicopter Unavailable</li> </ul>			
		Cost Factors: <ul style="list-style-type: none"> <li>. Personnel - Hrs.</li> <li>. Equipment And Maintenance</li> </ul>	Budget/Personnel/ Payroll Records Maintenance Log	Compile: <ul style="list-style-type: none"> <li>. Monthly Summaries</li> <li>. Annual Report</li> </ul>	Determination Of Total Costs Costs Projection And Alignment With Budgetary Capabilities And Priorities
IMPROVE RESPONSE TIME TO "CRIME IN PROGRESS" CALLS	Responses	Time Call Received Time Arrived At Designated Location Time Differential - Received And Arrived Geographic Considerations	Central Dispatch Log Daily Flight Log Helicopter Unit Log Department Patrol Log	Compile: <ul style="list-style-type: none"> <li>. Daily Log</li> <li>. Monthly Summary</li> <li>. Annual Report</li> <li>. Special Incident Report</li> </ul>	Monthly Statistical Tabulation To Determine Whether Response Time Or Pattern Is Changing A Comparison With Ground Unit Response Times And Patterns (If Applicable) Determine Whether Minimizing Response Time When A Crime Is In Progress Reduces The Expected Loss Of Life And Property
	Crimes	Identification Of "Crimes In Progress" Responded To: <ul style="list-style-type: none"> <li>. Robbery</li> <li>. Burglary</li> <li>. Aggravated Assault</li> <li>. Grand Theft</li> <li>. Grand Theft Auto</li> </ul>	Same As Above	Same As Above	Same As Above
INCREASE THE APPREHENSION OF CRIMINAL SUSPECTS	Arrests Attributable To Helicopter Intervention	Number Of Arrests Credited To Helicopter Unit	Daily Flight Log Helicopter Unit Log Monthly Summaries Annual Reports Department Patrol Log Reports From Other Agencies	Same As Above	Determination Of The Effect Of Helicopter Services On The Total Number Of Arrests Monthly Statistical Tabulation To Determine Arrest Patterns, Changes, And Trends

OBJECTIVE	MEASUREMENT CRITERIA	DATA ELEMENTS	DATA RESOURCES	RECOMMENDED COLLECTION	ANALYSES
PROVIDE THE PUBLIC WITH AN INCREASED SENSE OF SECURITY	Change In Public Perception	Public Views Re: Helicopter Patrol And Security	Public Survey: <ul style="list-style-type: none"> <li>Interviews</li> <li>Questionnaires</li> <li>Mail-Out Or Person-To-Person</li> </ul>	Pre And Post-Project Public Opinion Survey In A Specific Delineated Geographic Area	Comparative: <ul style="list-style-type: none"> <li>Pre And Post-Project Concept Responses</li> <li>The Tabulation Of Degree And Direction Of Change, If Any</li> </ul>
PROVIDE MEDICAL AID AND EVACUATION SERVICES	Requests For Medical Aid And Evacuation Services	Number Of Requests By Whom - Type Types Of Medical Evacuation And Aid Location	Flight Log Helicopter Unit Log Helicopter Unit Monthly Summaries Central Dispatch Log Department Records Reports From Other Agencies	Compile: <ul style="list-style-type: none"> <li>Daily Flight Log</li> <li>Monthly Summaries</li> <li>Annual Reports</li> <li>Project Progress Reports</li> <li>Special Incident Reports</li> </ul>	Method Of Disposition - Pre-Project Period Monthly And Annual Statistical Tabulation And Determination Of Changes And Trends Compatibility With Project Objectives And Priorities
	Time Demands	Hours Of Service Provided Availability For Response When Requested - Day-Night-Specific Times	Same As Above	Same As Above	Activity Total Hours In Relation To Project Total Hours Alignment With Project Priorities And Responsibilities To Department
	Effect On Unit And/Or Department Law Enforcement Operations	Disposition Of Requests Services Provided  Cost Factors: <ul style="list-style-type: none"> <li>Personnel</li> <li>Equipment</li> <li>Training</li> </ul>	Same As Above  Budget Personnel/Payroll Maintenance Log	Same As Above  Compile: <ul style="list-style-type: none"> <li>Monthly Summaries</li> <li>Annual Reports</li> </ul>	Monthly And Annual Statistical Tabulation And Identification Of Trends  Monthly And Annual Cost And Budget Considerations, And Identification Of Trends
REDUCE SERIOUSNESS OF CIVIL DISORDERS	Helicopter Utilization For Control Purposes	Effect On Crowd Reaction Of Crowd Coordination Of Ground And Helicopter Unit Duration Of Air Time Pre And Post Helicopter Time Duration Of Civil Disorder	Daily Flight Log Special Incident Report Helicopter Unit Log Ground Patrol Log Department Records And Reports Reports From Other Participating Agencies News Media	Compile: <ul style="list-style-type: none"> <li>Daily Special Incident Report</li> <li>Monthly Summaries</li> <li>Annual Reports</li> </ul>	Evaluation Of All Data Elements To Measure Impact Of Helicopter Utilization On Disposition Of Civil Disorder

**CONTINUED**

**1 OF 3**

. Importance of Searches and Rescues

52 searches and 23 rescues. Time saved totaled 1,917 elapsed hours in 1972.

. Reasons for Large Number of Searches and Rescues in San Bernardino County

- County is largest in the United States, over 20,000 square miles
- Mountains - extensive recreation, summer and winter resort communities, and a large transient population
- Wide desert area - thousands of square miles which is attractive to campers, rock hounds, dirt bikes, dune buggies and easy to become lost in
- Thousands of light aircraft - direct route Los Angeles area to Las Vegas, Nevada, the airways are over rugged San Bernardino terrain characterized by unstable weather
- Colorado River - resort, boaters, water skiing, high transient population with consequent injuries, thefts, and disturbances.

. Typical Search and Rescue Setting

Two or more persons in mountainous (or desert) area, often with map, inexperienced in wilderness operations, feel they can traverse several miles at near same pace as possible on flat ground, set goal to hike from point A to point B, terrain often not negotiable, keep detouring, dead end canyons, steep cliffs, impassable waterfalls, darkness approaches, often panic, hopelessly disoriented. Friends notify forest ranger or other authority, usually do not know actual proposed route only that party has not reached destination

Helicopter airlifts searches to vicinity of known hiker trap locations, permits quick checks. Saves many hours of foot travel while still taking full advantage of mountain searchers expertise. Helicopter airlifts hikers (hunters, etc.) after they are found. Helicopter then airlifts searchers back to base camp.

. Advantages of Helicopter

Exceptional search platform - highly maneuverable stop in mid-air, land minimum of space, traverses over rugged terrain in minutes instead of in hours by foot, enables air-crew to see acres at a time. Unparalleled as evacuation vehicle from inaccessible areas.

Disadvantages of Helicopter

Direct operating costs high; fuel oil, maintenance and parts expenditures for San Bernardino searches in 1972 were \$3,291.30, same expenditures for rescues were \$1,049.40 a total of \$4,340.70. Average combination search and rescue costs without helicopter figures to approximately \$35.50 each, annual total \$2,622.50, \$1,678.20 less than the helicopter.

The helicopter is restricted by weather and visibility (most mountain flying should be conducted with one mile or more visibility and clear of clouds).

Helicopters, due to complexity of mechanical parts and heavy demands on engines must undergo frequent major and on-going routine maintenance, sometimes affecting availability, especially of a small fleet.

Exhibit B-V, following this page provides a "Special Incident Data Form" for an actual search and rescue in San Bernardino.

From many additional specific incidents, relating helicopter-patrol unit time saved, man-hours saved, lives saved, several were examined utilizing the "Special Incident Data Form" format. Some of the more unique incidents are briefly described below.

A six year old girl drowned in the Colorado River on February 19, 1972. Intensive search for recovery of the little girl's body was conducted by established conventional means through February 22. On the 23rd the helicopter was called. One hour and five minutes after arrival, the air crew located the body. In this case it was not possible to save a life, however, the duty to expend every effort to aid the bereaved parents and spare the continuing anguish probable if the body were never located is a part of the Sheriff's responsibility. Over 80 sworn personnel man-hours were spent prior to calling the helicopter. Another several hundred may have been expended prior to locating or abandoning the body.

January 7, 1972 the helicopter spent one and one-half hours in a desert search for a possible female victim or grave (based on woman's clothing found by radio car). Sufficient area was covered in that time to reach a conclusion to discontinue the search because the area was so well covered. At least 32 man-hours would have been required to reach that same conclusion without aerial search.

SPECIAL INCIDENT DATA FORM

COUNTY: San Bernardino  
TYPE OF INCIDENT: Search/Missing Hikers  
DATE OF INCIDENT: February 22, 1972

Brief description of incident: Family of six overdue from hike in the mountain resort area of Green Valley. Helicopter covered over 100 miles of rugged terrain located the hikers, made positive identification via P.A. system. Party assisted further by two (2) deputies on ground.

Time advised of incident: Approx. 2:30 p.m. Means: Phone/Radio

Time deployed: 3:00 p.m. at Green Lake (Valley)

Duration (deployment to completion): 1½ hours--½ hour enroute

List other Sheriff's Department units participating: One unit, two (2) deputies from Crestline Sub-station.

List other agency units participating: None

What was principal contribution of helicopter? The helicopter located the missing hiking party and established communication. It would have been dark in about two (2) hours.

What was the primary result of the incident: Lost persons found and aided prior to darkness and possible injury or exposure.

Was the same result possible without helicopter: Yes x No     

If yes, explain how and in what manner: The parties could have been located but only by lengthy ground search probably going well into the next day. Entire substation force would have been involved plus many search and rescue personnel along with special 4 wheel drive vehicles. Tracking and heavy deployment of men would have been required.

## SUMMARY:

	<u>WITH HELICOPTER</u>	<u>WITHOUT HELICOPTER</u>
Time Utilized	2 hours	18 - 20 hours
Manpower Utilized	10 man hours	180 - 200 man hours
Operation Cost	\$47.70	\$50.00*

Other: \* Approximate cost includes vehicle and feeding searchers.

Additional consideration must be given to the fact that other functions of substation deputies would have been postponed or neglected during "life hazard" search increasing probability of criminal offenses and decreasing called for service response capability.

Source of information: Inter-office Memo. Discussion with principals.

Twenty eight minutes (including landing to make an arrest) were spent in apprehending two gun burglars on January 24, 1972. Circumstances were such that suspects would probably not have been apprehended at all without aerial tactics. If they were, 6 to 12 man-hours would have been spent in the effort.

On May 31, 1972 the helicopter rushed fresh blood from Loma Linda hospital in San Bernardino to St. Mary's Hospital in Victorville. Hospital authorities stated that had there been no helicopter, time lost transporting the blood would have resulted in death of the receiving patient.

#### 7. COMPARATIVE COST EFFECTIVENESS

The purpose of this section is to provide an analysis of comparative cost effectiveness. In Section III a detailed description of the methodology employed in determining comparative cost effectiveness is presented. For this reason only the highlights of the procedure and the results are presented here. The interested reader should refer to Section III.

The purpose of this procedure is to quantitatively compare the achievement of helicopter project objectives: (1) assuming the existence of the helicopter program, and (2) assuming that the Department attempted to achieve the same objectives without the helicopter i.e., by using additional patrol cars and men. The steps involved in making this comparison are briefly described below:

1. The cost of the helicopter program is determined
2. The number of patrol units which could be supplied with the equivalent expenditure of dollars (i.e., the same expenditure as the helicopter program) is determined
3. The primary objectives of the helicopter program are determined and prioritized. A numerical weight is assigned to each objective. (A total of 40 points are assigned)
4. An effectiveness rating is assigned to each objective for: (1) the helicopter program, and (2) assuming the same objectives are pursued without the helicopter

5. The numerical results of the above procedure are described and summarized.

(1) Costs

Exhibit B-VI, following this page, summarizes the costs associated with the San Bernardino helicopter program. A combination of grant year costs and calendar 1972 operating hours were used to estimate hourly costs. The Exhibit is largely self explanatory with footnotes describing procedures. Pertinent information is summarized below:

. Indirect hourly cost - \$39.32  
 . Direct hourly cost - \$29.85  
 . Total hourly cost - \$69.17  
 . Annual program cost - \$171,000

Based upon San Bernardino contract for police services prices, a two man patrol car working two shifts per day, 365 days per year would cost approximately \$123,000. This staffing configuration is roughly comparable to the helicopter patrol coverage. Thus, for comparative purposes it is assumed that 1.4 additional patrol cars could be provided for the equivalent helicopter program expenditures in San Bernardino County.

(2) Weighted Project Objectives

As indicated, a major step in determining comparative cost effectiveness is the establishment of project objectives and the assignment of weights (priority) to these objectives. The process involved included:

. Review of the grant request  
 . Analysis of the helicopter project objectives questionnaire (see Exhibit E-V) which was completed by project and ranking Departmental officials  
 . Consultant analysis of actual program operation.

SAN BERNARDINO HELICOPTER PROGRAM COST

1972 (Adjusted)

	<u>AMOUNT</u>	<u>TOTAL</u>
<u>INDIRECT (FIXED) COSTS</u>		
Labor		
1 Lieutenant	\$ 12,024	
2 Sergeants	21,816	
3 Deputies	<u>30,420</u>	
Subtotal	\$ 64,260	
Administration and Benefits (32%)	20,563	
TOTAL LABOR		\$ 84,823
Other		
Insurance, Supplies	10,100	
Rent, Misc.	<u>2,300</u>	
TOTAL INDIRECT	\$ 12,400	<u>\$ 12,400</u>
		<u>\$ 97,233</u> annual
<u>DIRECT (VARIABLE) COSTS</u>		
Fuel, Oil, Grease	\$ 8.31	
Maintenance Labor	6.05	
Parts, Routine Overhaul	6.09	
Time Life Retirement Parts	3.20	
Reserve for Major Overhaul <sup>1/</sup>	<u>\$23.85</u> per hour flown	
	6.00	
	\$29.85 per hour flown	

NOTES:

<sup>1/</sup> No reserve for major engine overhaul is maintained. A reserve is created for project comparability.

ANALYSIS:

Based on 2473 flight hours

. Indirect costs per hour flown = \$39.32  
 . Direct costs per hour flown = \$29.85  
 . Total costs per hour flown = \$69.17

As a result of this analysis, the following eight San Bernardino helicopter project objectives were identified and weights assigned:

<u>Objective</u>	<u>Priority Weight</u>
1. Enhance officer safety	9
2. Improve response time to crimes in progress	6
3. Reduce or slow the rate of growth in the crime rate	6
4. Increase the effectiveness of search and rescue operations in remote areas	5
5. Increase the apprehension of criminal suspects	5
6. Provide the public with a greater sense of security	4
7. Assist other law enforcement agencies	3
8. Increase surveillance effectiveness in specified areas for specific offenses	<u>2</u>
Total	40

Four of the eight identified objectives correspond to the objectives identified in the grant request (see sub-section 2, this section). Not included from the original objectives were the following: (1) aid in riot control, and (2) serve as an observation platform during natural disasters. The San Bernardino helicopters have only to a very limited extent participated in these activities during the course of the project.

(3) Effectiveness Ratings

In the following paragraphs an effectiveness rating is assigned to the accomplishment of each objective: (1) with the helicopter program, and (2) without the helicopter program. The ratings were derived based upon the analysis previously presented in the detailed discussion of the evaluation components, thus only a brief narrative is provided. It must be stressed that this comparison assumes that the same objectives would be

pursued without a helicopter i.e., by assigning approximately 1.4 additional patrol units. However, because the objectives of the project are highly diverse, direct comparison is difficult, thus, this comparison must be thought of as only one element of project evaluation and not as the final evaluation conclusion. Objective ratings are provided below.

- Enhance officer safety
  - with helicopter--very effective (4)
  - without helicopter--slightly effective (1)

Based upon the sworn officer's survey and the large number of "assists" credited to the San Bernardino helicopter it is clear that the program has enhanced officer's safety. The addition of 1.4 additional patrol units would have only minimal effect.

- Improve response time
  - with helicopter--very effective (4)
  - without helicopter--slightly effective (1)

The response time survey as well as the special incidents analysis indicates that the helicopter has significantly reduced response time. In view of the large area served by the helicopter, the addition of 1.4 additional patrol units would only slightly reduce response times.

- Reduce or slow the rate of growth in the crime rate
  - not rated--as indicated in the Sub-section entitled, "Effect on Incidence of Crime" data is not available which will allow analysis of the helicopter's effectiveness in reducing (or slowing the rate of growth) in the crime rate. Recent studies indicate that the effect on the crime rate of increasing the number of patrol units is also not known.

- Increase the effectiveness of search and rescue operations in remote areas
  - with helicopter--very effective (4)
  - without helicopter--not effective (0)

As has been shown, search and rescue is an important function of the San Bernardino helicopter program. The special incidents analysis demonstrated savings in terms of time, lives, etc. when the helicopter was utilized. The same result would not take place with the addition of conventional forces.

Increase the apprehension of criminal suspects

- with helicopter--effective (3)
- without helicopter--slightly effective (1)

The relatively large number of arrests credited to the helicopter in addition to the large number of assists indicates that the San Bernardino helicopter has increased the apprehension of criminal suspects. An additional 1.4 patrol units would be expected to increase apprehension only slightly.

Provide the public with a greater sense of security

- with helicopter--effective (3)
- without helicopter--moderately effective (2)

The community survey indicated a perceived security among San Bernardino County residents resulting from the helicopter program. It may be assumed that additional patrol units in a specified area would also increase perceived security.

Assist other law enforcement agencies

- with helicopter--moderately effective (2)
- without helicopter--moderately effective (2)

The other agencies survey indicates that the agencies believe the services of the San Bernardino helicopter program have been of significant assistance. However, the small number of actual assists (during the evaluation year) results in only a moderately effective rating. It may be assumed that additional funds expended to assist other agencies via ground units would also provide moderate additional service.

Increase surveillance effectiveness in specified areas for specified offenses

- with helicopter--moderately effective (2)
- without helicopter--moderately effective (2)

Surveillance by helicopter is effective in some instances where patrol units can not work. The same is also true of patrol units in specific instances. In view of this, and the low level of use in surveillance activity of the San Bernardino helicopter program both modes are rated as moderately effective.

Exhibit B-VII, following this page summarizes the comparative cost effectiveness analysis. As can be seen, the San Bernardino helicopter program provides an effective means of achieving project objectives, especially those objectives rated as highest

priority. Additional patrol units would not be a viable alternative to achieving these objectives. Summary numerical effectiveness ratings follow:

- Accomplishment of project objectives with helicopter
  - effective to very effective; point score 117
- Accomplishment of project objectives without helicopter
  - slightly effective to moderately effective; point score 36.

#### 8. OVERALL SUMMARY AND PROGRAM RECOMMENDATIONS

The foregoing evaluation demonstrates a high level of project objective achievement in the San Bernardino helicopter program. This is especially true in terms of objectives which are ranked high in priority by Departmental and project personnel. Local satisfaction with the San Bernardino helicopter program is demonstrated by the fact that the unit is currently being expanded under a new grant wherein services will be provided to a wider number of cities in the County.

Based upon project observation and this evaluation the following specific project recommendations are offered:

- Greater emphasis should be placed upon compiling data which can be used in ongoing evaluation. Exhibit V summarizes data elements which are useful for ongoing evaluation. Although not within the purview of the helicopter unit alone, every effort should be made within the San Bernardino Sheriff's Department to institute a system of reporting crime incidence by geographic area (at present reporting is by substation only). Without the availability of incidence data by smaller geographic areas, i.e., beats, it is very difficult to assess the impact of any program and, also difficult to task force Departmental units.

Additionally, the unit should reassess the present logging and reporting system. We noted in the course of the evaluation a great deal of double recording which could be eliminated and, thus reduce the effort expended in obtaining the current level of information.

COMPARATIVE EFFECTIVENESS  
SAN BERNARDINO HELICOPTER PROGRAM

OBJECTIVE	OBJECTIVE PRIORITY WEIGHT	EFFECTIVENESS WITH HELICOPTER	RATING WITHOUT HELICOPTER	RATING WITH HELICOPTER	EFFECTIVENESS WITHOUT HELICOPTER
1. Enhance Officer Safety	9	4	1	36	9
2. Improve Response Time	6	4	1	24	6
3. Reduce or Slow Crime Rate	6	-	-	-	-
4. Increase Effectiveness of Search and Rescue	5	4	0	20	0
5. Increase Apprehension	5	3	1	15	5
6. Provide Public With Sense of Security	4	3	2	12	8
7. Assist Other Law Enforce- ment Agencies	3	2	2	6	4
8. Increase Surveillance	2	2	2	4	4
TOTAL	40			117	36

The helicopter unit is clearly understaffed in the area of administrative assistance. A position should be funded for an individual, not necessarily a pilot, to provide the following support services:

- record maintenance and analysis
- budgeting and purchasing
- scheduling
- timekeeping
- evaluation

In our opinion the lack of an individual to provide these services diverts present management personnel from important functions such as training, staff meetings, briefings, and community relations.

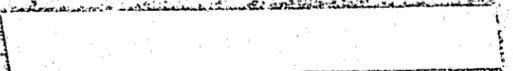
The helicopter unit should be physically centralized, perhaps at the heliport, as space is extremely limited at the Sheriff's headquarters. The present physical separation makes coordination difficult and considerable time is expended commuting.

Greater emphasis should be placed upon training. Both departmental officers and "other agencies" indicated a desire for more air-ground mixed training. We observed a lack of such training. In somewhat the same context the unit should maintain a pilot proficiency folder on each pilot.

The Department should, either internally or externally, provide for the comprehensive evaluation of the new, expanded helicopter program.

APPENDIX C

KERN COUNTY - PROJECT CO-OP



KERN COUNTY - PROJECT CO-OP

1. BACKGROUND

Kern County is the third largest county in California encompassing 8,064 square miles. One-third of the County is flat valley floor ranging from 200-400 feet in elevation. The valley is surrounded by mountains ranging to 8,000 feet above sea level.

The valley area is devoted to agricultural and oil production. The vastness of the rural area of the county has made the detection and apprehension of thieves, especially at night, nearly impossible.

General information relating to Kern County and the Kern County Sheriff's Department is summarized below:

- . Population (1972) - 342,000
- . Area (square miles) - 8,064
- . Crime (1972)<sup>1/</sup> - 9,869
- . Crime per 1000 population<sup>1/</sup> - 29
- . Population (Sheriff's Jurisdiction) - 218,000
- . Sworn Personnel (S. D. per 1,000 pop.) - 2.4
- . Location S. D. Headquarters - Bakersfield

In order to provide more comprehensive law enforcement services, especially at night in the rural valley area, the Sheriff's Department, in 1971, decided to implement a helicopter patrol program.

Pursuant to OCJP Grant Number 0536 the Kern County Sheriff's Department acquired one Bell Model 47G-3B2 helicopter.

Project CO-OP (Crime Oriented-Optimum Patrol) was funded on July 1, 1971. The aircraft was picked up in September 1971 and the first patrol flight was made on October 20, 1971. An extension of first year funding was granted through October 31, 1972. Second year funding was sought and subsequently granted through October 31, 1973.

<sup>1</sup> Part I offenses

2. PROJECT OBJECTIVES

The objectives of Project CO-OP as contained in Grant Request Number 0536 are as follows:

- . Reduce crime
- . Assist in search and rescue
- . Provide assistance to other county agencies.

The mode of operation of Project CO-OP has been such that the objective of reducing crime in the rural areas of the county is of paramount importance.

3. PROJECT IMPLEMENTATION AND OPERATION

In this sub-section the implementation of Project CO-OP is discussed along with a presentation of evaluation year descriptive statistics. The purpose of this evaluation component is to summarize actual project operations. The information contained herein will be utilized in making project comparisons and in identifying specific project strengths and weaknesses.

(1) Project Background

The area in the valley surrounding greater Bakersfield, in Kern County, is one of the largest agriculturally oriented land usage sections in Southern California. More than 3,000 square miles are in orchards, cotton fields, grapes, dairy, feed, truck garden, etc. Much of the country is reachable only by secondary or dirt roads. During the hours of darkness, activity of any sort is nearly impossible to see even if there were an adequate number of patrol cars available. A very high theft rate from these rural areas involving oil rigs as well as agricultural operations has caused concern. In addition, mercury, aluminum, wire, hay, farm machinery all were subject to theft and/or vandalism. It was evident there was no way to adequately

patrol or protect the area with existing equipment and techniques. A system of electronic alarms tried for a period of time did not prove to provide any increase in degree of protection. Meanwhile the Sheriff's Department studied results of other agencies' aerial patrols with particular attention paid to the large areas which could be covered. Potential of the helicopter to aid other communities in the county, a modified regional concept, was given considerable weight. In addition the search and rescue capabilities of the helicopter were studied. Measures of success enjoyed by other law enforcement agencies encouraged the Kern County Sheriff to mount an aerial patrol.

Officially the project commenced July 1, 1971, however fiscal regulations of the county prohibited encumbering funds not on hand, thus, the bid to helicopter manufacturers was not processed in time to obtain delivery of the aircraft until late in September 1971. From then to October 20 the helicopter was being outfitted with the equipment necessary to operate a five night per week patrol. The table below summarizes the detailed implementation schedule in Kern County:

- . July 1, 1971 - Project funded
- . July 28, 1971 - Advertising begun for experienced pilot
- . Aug. 27, 1971 - Closing date for pilot examination
- . Sept. 27, 1971 - Deputy pilots hired
- . Sept. 28, 1971 - Helicopter delivered at Bell Factory in Texas
- . Sept. 29, 1971 - Helicopter left Fort Worth, Texas enroute to Bakersfield
- . Oct. 2, 1971 - Helicopter arrived in Bakersfield from Fort Worth
- . Oct. 4, 1971 - To Van Nuys for installation of Nightsun light
- . Oct. 9, 1971 - To Rialto for installation of radios
- . Oct. 13, 1971 - Returned to Bakersfield - end of procurement and equipping stage.

## (2) Equipment

One Bell model 47G-3B2 was selected from vendor bid returns. This helicopter has a supercharged 280 horsepower reciprocating engine capable of operating (hovering in ground effect - approximately 24 feet above the terrain) up to altitudes of 13,000 feet standard day temperature, i.e., 72 degrees at sea-level, two degrees less per each thousand feet above that (standard day temperature for 5,000 feet above sea-level would be 62 degrees). Altitude performance is particularly important in the Kern County project for two reasons: first, it becomes very hot in the valley during the summer months, well over 100 degrees. High heat creates thin air such that flights indicating, say, 3,000 feet are the equivalent of flights of nearly 7,000 feet under standard day temperatures. Second, the Sheriff is responsible for the mountain ranges east and south of the City of Bakersfield area, thus high altitude capability is necessary in cases of certain search and rescue situations. The 47G-3B2 helicopter is designed commercially to be a three place aircraft, however, the location and weight of police equipment alters it to be effectively a two place aircraft. It has a time range (fuel available aboard) of three hours plus reserve under normal conditions. A very important piece of equipment to Kern County is the Xenon arc high intensity light. The light selected was the "Nightsun" XS-16, producing 3.8 million candlepower. (It is used almost continuously from patrol initiation to conclusion, and thus, it is very seldom turned off and on during flight.) One "Stokes" litter was procured for attachment to the passenger side of the helicopter. The patrol helicopter is well equipped with communications. It carries the FAA required 360 channel VHF. Sheriff and police communications include: two Sheriff's FM channels, two coded-encoded Sheriff's channels, Intercity FM net including the Police Departments of: Arvin, Taft, Shafter, Wasco and McFarland, direct connections with Bakerfield City P.D. dispatcher, local CHP dispatcher, and County Fire Department dispatcher. The helicopter has a Federal ITT 24-28 volt

combination siren and P.A. system. The air-crews often carry a self-powered Sony TV camera and video tape recorder; the camera has 10 to one zoom lens.

Kern County helicopter equipment is recapped below:

- . Helicopter Model: (1) 47G-3B2
- . Altitude Performance: 12,000-13,000 feet for take-off and landing
- . High Intensity Lights: Nightsun XS-16, 3.8 million candlepower
- . Litter: -1 external, attachable to passenger side
- . Communications: FAA required and local police channels
- . Other Special Features: P.A. system

(3) Maintenance

Airframe and power-plant maintenance are provided on a contract basis with vendors who hold FAA repair station licenses. It is interesting to note that Kern County has contracted with three different vendors; two were discontinued, one for evident laxness and the other went out of business. The current vendor is situated in Porterville about 20 miles from the heliport. Labor hours, parts, and discounted gas are included in the vendor contract. Oil is purchased by the County at bulk rates. The County owns an extra engine (pre-overhauled ready to replace the one due for overhaul), an extra turbo supercharger, and extra tail rotor blades. These component extras make it possible to return the helicopter to flight status much sooner than normal, i.e., with an engine ready to be replaced in the machine a two week loss of flight time may be reduced to two days.

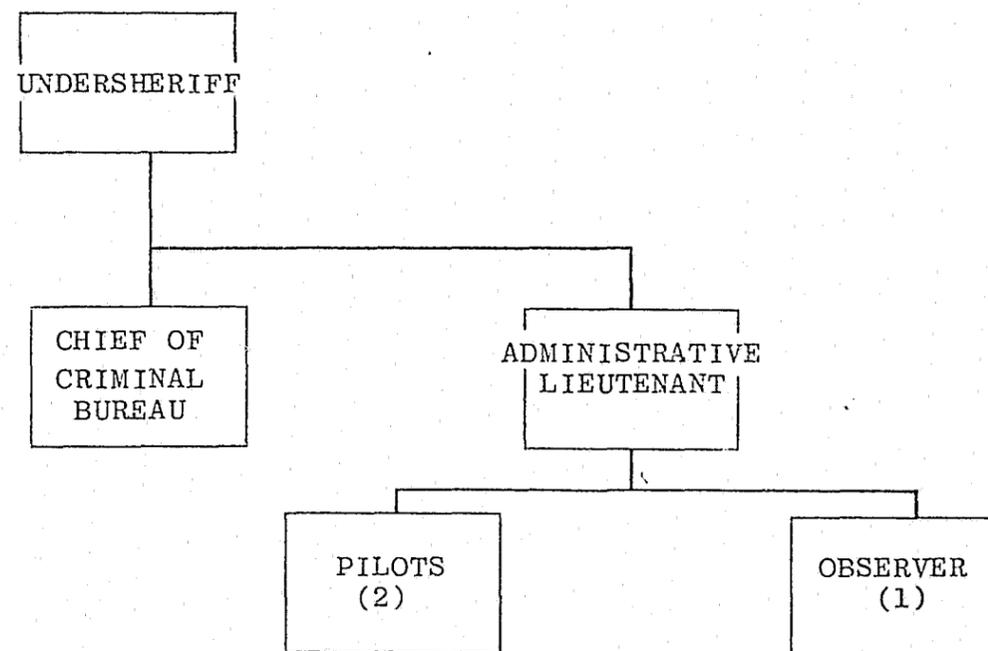
(4) Staffing

Project CO-OP is administratively assigned to the Chief of the Criminal Bureau. The administrative details are the responsibility of the Lieutenant assigned as the administrator.

The Criminal Bureau Chief is the official Project Director and has been trained in the helicopter to the point where he holds a private license as a Rotorcraft-Helicopter pilot.

Functional supervision of the air-crews during flight duty hours has been given to the Watch Commanders, principally the p.m. watch. Call-out for special assignment generally is through the Criminal Bureau. Currently and during a considerable part of the Grant period the helicopter unit utilized two (2) pilots and one (1) deputy observer. When the project was in the formative stages, a civilian helicopter pilot, a Vietnam returnee with many hours of helicopter time, was selected from several applicants. The pilot was given police training to meet State Peace Officer's Standard of Training (POST) requirements and introduced to patrol work "on-the-job". During the program one of the first officers selected as an observer obtained his helicopter pilots rating and has been the second pilot for some time. Observers are selected and trained mostly in an on-the-job basis.

The chart below depicts the organizational relationships of Project CO-OP.



(5) Time-in-Air

The Kern County Sheriff's Department helicopter unit logged a total of 757.5 hours during the project year and flew on an average of 17 days per month. Projecting this to a monthly and daily average would show an average monthly commitment of 63 hours and a daily commitment of 3.7 hours.

(6) Distribution of Time by Activity Classification

The helicopter unit performed a wide variety of essential tasks for the Kern County Sheriff's Department and other law enforcement agencies. The identification of these various activities and their respective average time per utilization is indicated in the following table:

Flight Activity	No. of Flights	Ave. Time Per Flight	Total Flight Hours	Percent of Total Time
Patrol	179	3.84 hours	687.7 hours	90.8%
Training	19	1.44	27.5	3.6
Investigation	4	3.8	14.4	1.9
Major Occurrence	3	1.83	5.5	0.7
Special Survey	6	2.33	14.0	1.9
Transit	9	.8	7.2	0.9
Maintenance and Test Flight	1	1.2	1.2	0.2
TOTAL	221	2.17 hours	757.5 hours	100.0%

(7) Chase Patrol Car Utilization

The helicopter unit had one ground unit (chase car) attached to its operation. This unit was operated and maintained by the helicopter unit on an operational partnership basis. It participated in 157 missions logging 15,573 miles during the evaluation year (99 miles per mission).

As was previously indicated two pilots and one observer are assigned to Project CO-OP. Each of these three officers also serves as the patrol car officer (which is designated Helio-2) on a rotating basis. It is believed that this procedure provides better coordination within the program.

(8) Distribution of Activities Engaged in While on Patrol

During this project period the Kern County Sheriff's Department responded to a total of 215 calls and made a total of 193 observations while on patrol.

(9) Selected Evaluation Year Statistics

Arrests

The helicopter unit participated in a significant number of law enforcement operations and investigations which resulted in a substantial number of arrests. The total number of arrests directly credited to the utilization of the helicopter unit was 43. A detailed breakdown of these arrests is provided below:

Violation	Number of Arrests
Burglary	15
Narcotics	6
Wire Theft	2
Armed Robbery	2
G.T. and G.T.A.	7
Murder Suspect	1
Escapee	1
Assault	2
Miscellaneous	7
Total	43

Total Assists to Other Agencies

During the Project Year the Kern County Sheriff's Department helicopter unit responded to assist-calls from other law enforcement departments. All of the police agencies in the valley area of Kern County as well as the Kern County Fire Department have received services from the unit. In addition, the

neighboring Counties of Tulare, San Luis Obispo, and Ventura, the California Highway Patrol, and the F.B.I. have been assisted whenever requested.

#### Total Searches

The helicopter unit was utilized on search and rescue operations during the Project Year. All of these were coordinated with ground units. All were successfully (found or rescued) completed.

As has been previously indicated, the principal mode of operation of Project CO-OP has been to provide regularly scheduled patrol of the rural valley area in Kern County. This objective was fairly strictly adhered to during the evaluation year as is indicated by the fact that more than 90 percent of time was actually spent on patrol. This procedure resulted in somewhat fewer "other activities" i.e., search, rescues, lost children, etc., in Kern County than in the other projects within the cluster.

#### 4. PERCEIVED EFFECTIVENESS OF PROJECT CO-OP

The purpose of this section is to present and analyze the findings of the three perceived effectiveness surveys conducted in Kern County. Each of the three surveys is discussed in a sub-section relating to the object survey group. These groups are: (1) the general public (community survey), (2) departmental sworn officers, and (3) other governmental agencies utilizing the helicopter.

As discussed in Section III, "Individual Project Evaluation Methodology: the following impact oriented objectives apply to the three surveys:

- Community Survey
  - The public should be aware of law enforcement programs designed to serve them
  - The public should feel more secure as a result of of the helicopter program
  - The public should favor continuing the program

#### • Sworn Officers Survey

- The helicopter program should increase the perceived overall effectiveness of the law enforcement team.

#### • Other Agencies Survey

- The Sheriff's Department helicopter should be available to other governmental agencies when needed.
- Governmental agencies utilizing the helicopter should perceive the helicopter as a valuable tool in carrying out their individual missions.

Each of these surveys is discussed in detail in the following pages.

#### (1) Community Survey

Project CO-OP maintained a regularly scheduled night patrol of the rural area surrounding Bakersfield. The Kern County Farm Bureau agreed to distribute, using their mailing list, the community survey questionnaire. It was determined that the group contained within this list generally corresponded with the recipients of helicopter patrol services.

A total of 2000 questionnaires were sent to a randomly selected sample from the Farm Bureau's list. Usable responses totaled 959 or 47.9 percent of the total mailing.

Exhibit C-I, following this page, provides a summary of survey returns. Pertinent data from the Exhibit includes:

- 96.1 percent of respondents said they were aware of Project CO-OP.
- 82.8 percent of respondents said they had personally observed the activities of the helicopter.
- 94.9 percent of the respondents said they favored continuation of the helicopter program; only 5.1 percent said they favored termination of the project.
- 71.5 percent of respondents answered yes to all four questions.

## COMMUNITY SURVEY

OVERALL TABULATION					
QUESTION	YES	NO	PERCENT <sup>1/</sup> YES	PERCENT <sup>1/</sup> NO	NO RESPONSE
1. Aware of Program	918	36	96.1	3.9	6
2. Personally Observed Activities	808	139	82.8	17.2	10
3. Feel More Secure	797	100	87.5	12.5	63
4. Favor Continuing	868	45	94.9	5.1	46

<sup>1/</sup> Percent responding to question only.

## SELECTED TABULATION

Response Description

1. Respondents answering yes to all questions	- 686
2. Respondents answering no to all questions	- 2
3. No responses total	- 125
4. Favorable responses not observing helicopter activities <sup>1/</sup>	- 77
5. Favorable responses not feeling more secure <sup>2/</sup>	- 41

<sup>1/</sup> Answer yes questions 1, 3, and 4; no question 2

<sup>2/</sup> Answer yes questions 1, 2, and 4; no question 3

Only 00.2 percent of respondents answered no to all questions.

The overall response (47.9 percent) is regarded as high as mail surveys often do not elicit response from more than 10-30 percent of those surveyed. This fact is taken to indicate general interest in Project CO-OP. It is clear from the survey that Project CO-OP has high visibility among rural residents as 96.1 percent of respondents were aware of the program and 82.8 percent had actually observed operations. A significant majority 87.5 percent believed themselves more secure as a result of the program.

A small space was allotted for comments. Favorable comments generally fell into the category of expressing a feeling of greater security. It is interesting to note that many individuals desired program expansion. On the negative side some respondents thought the helicopter to be a nuisance and others doubted the cost effectiveness.

In summary, the results of the survey are regarded as extremely positive in support of Project CO-OP

(2) Sworn Officer's Survey

All sworn officers, except those in detention and traffic control, in the Kern County Sheriff's Department were given the opportunity to respond to the sworn officer's survey. (Exhibit E-II provides the survey format.)

In addition to 16 attitudinal questions, space was provided for officer comments relative to the program. Exhibit C-II, following this page, provides a tabular summary of the 16 attitudinal questions. Responses by primary job function (question number 1) were also tabulated; however, this tabulation is not included as no significant variation among job function categories existed. A summary of officer comments will be subsequently presented.

A review of responses tabulated in Exhibit C-II indicates general satisfaction with the helicopter program. Of respondents 61.4 percent believed the helicopter to be an aid in deterring criminal activity while 33.6 percent expressed the opposite opinion. More than 45 percent wanted the program to remain at the present level, 31.6 percent expressed the desire for program expansion, and 22.8 percent believed the program should be curtailed or eliminated. Only seven percent felt the program had created a personnel problem within the Department.

Many officers responding to the survey offered suggestions for program improvement. The most frequently occurring suggestion related to greater use of the existing helicopter or addition of more units. With respect to greater use of the existing helicopter the following suggestions were offered:

- . Expand the patrol to seven nights a week
- . Start the patrol earlier and end the patrol later
- . Provide service on a 24 hour basis.

Other suggestions in order of frequency of mention were:

- . Increase coordination between helicopter and ground units
- . Paint numbers on roofs of ground units to facilitate identification
- . Purchase gyro stabilized binoculars
- . Eliminate the program because it is too costly.

### (3) Other Agencies Survey

Due to the wide sweep of Kern County's helicopter patrol and the vast size of its' patrol "beat", 3,000 square miles, it has numerous contacts regularly with other agencies.

KERN COUNTY  
SWORN OFFICER'S SURVEY  
QUESTIONNAIRE TABULATION

<u>QUESTION</u>	<u>NUMBER</u>	<u>PERCENT OF TOTAL</u>
1. Which one of the following best describes your current <u>primary</u> job function?		
1. Field Patrol	31	54.4%
2. Investigation (Detective)	23	40.4
3. Prisoner Detention (Jail)	-	-
4. Traffic Control	-	-
5. Supervisor/Administrator	2	3.5'
6. Technical Services	-	-
7. More Than One Checked	<u>1</u>	<u>1.7</u>
	57	100.0%
2. Do you consider the crime problem existing within the jurisdiction of your Department a serious one?		
	Yes 55	96.5%
	No <u>2</u>	<u>3.5</u>
	57	100.0%
3. In your opinion, has the helicopter aided in deterring criminal activity within your Department's jurisdiction?		
	Yes 35	61.4%
	No <u>22</u>	<u>38.6</u>
	57	100.0%
4. Do you consider Crime Reduction as a <u>most</u> important function of the law enforcement helicopter?		
	Yes 43	75.4%
	No <u>14</u>	<u>24.6</u>
	57	100.0%

QUESTION	NUMBER	PERCENT OF TOTAL
5. Do you believe the effectiveness of your Department's basic police function, "Protection of Life and Property" has been improved by application of the helicopter?		
Considerably	15	25.3%
Slightly	34	59.6
Not at all	6	10.5
Effectiveness has decreased	<u>2</u>	<u>3.6</u>
	57	100.0%
6. Do you believe the helicopter is of value to <u>you</u> in your particular job function?		
Yes	33	57.9%
No	<u>24</u>	<u>42.1</u>
	57	100.0%
7. In your opinion, have the following (listed below) accepted your Department's helicopter program as an effective law enforcement tool?		
The general public:		
Yes	49	86.0%
No	<u>8</u>	<u>14.0</u>
	57	100.0%
Fellow department officers:		
Yes	34	59.6%
No	<u>23</u>	<u>30.4</u>
	57	100.0%
Other agency officers in your area:		
Yes	39	72.2%
No	<u>15</u>	<u>27.8</u>
	54	100.0%
8. Do you feel the helicopter program has caused any degree of personnel problem in your Department (i.e., "elite" air crew vs. ground troops type of situation)?		
Yes	4	7.0%
No	<u>53</u>	<u>93.0</u>
	57	100.0%

QUESTION	NUMBER	PERCENT OF TOTAL
9. In your opinion, do you feel that services provided by your helicopter have been effective enough to merit continuation, or even increase of, the helicopter program?		
Increase	18	31.6%
Continue about the same	26	45.6
Decrease or eliminate	<u>13</u>	<u>22.8</u>
	57	100.0%
10. Have you been involved <u>personally</u> with the utilization of the helicopter in a field function?		
Yes	33	66.7%
No	<u>19</u>	<u>33.3</u>
	57	100.0%
11. Have you been involved <u>personally</u> with the utilization of the helicopter on any case assigned to you?		
Yes	33	66.7%
No	<u>19</u>	<u>33.3</u>
	57	100.0%
12. Have you been involved with utilization of the helicopter as a Supervisor/Administrator of units/personnel which have worked directly with the helicopter?		
Yes	10	18.2%
No	<u>45</u>	<u>81.8</u>
	55	100.0%
13. Do you, as a field officer, feel more secure while performing certain hazardous field functions if the helicopter is present?		
Yes	29	67.4%
No	<u>14</u>	<u>32.6</u>
	43	100.0%

QUESTION		NUMBER	PERCENT OF TOTAL
14. As a Supervisor/Administrator, have you observed that field officers display an increased sense of security if the helicopter is present in certain field functions?	Yes	9	52.9%
	No	8	47.1
		17	100.0%
15. While working jointly with air crews, have you found the overall tactics, coordination and cooperation to be generally satisfactory?	Yes	30	81.1%
	No	7	18.9
		37	100.0%
16. As an investigator, supervisor or administrator have you observed, overall, that air-ground, and/or air tactics, coordination and cooperation have been generally satisfactory?	Yes	16	72.7%
	No	6	27.3
		22	100.0%

NOTE: Percent of total refers only to individuals answering the particular question.

The helicopter is equipped with communication capabilities which allows for cooperative effort with other agencies and, as noted in the "Phase I" report, assistance to other county agencies is one of the stated objectives of Project CO-OP.

Agencies contacted were:

- . Bakersfield Police Department
- . Wasco Police Department
- . Shafter Police Department
- . Kern County Fire Department
- . California Highway Patrol, Local Office

Interviewees contacted were high in the chain of command of the survey agencies. Three of the five interviewed had served directly in a liaison capacity with the Sheriff in establishing helicopter use procedures for their agencies. One of the other two was quite conversant with the agency liaison program, as handled by his immediate superior, and had observed requests for use as well as personally observed results of use. The remaining interviewee had no recollection of joint operations requiring liaison procedures.

Four, unhesitatingly, stated that "call-out" procedures for their agency to obtain Sheriff's helicopters were "well defined." Interestingly, none of the four utilized a formal or written procedure. They depended upon and were satisfied with this informal and accepted procedures of - a phone or radio call, informal communications between watch commander, direct orders from the field commander to the helicopter, or radio instructions from the Sheriff's dispatcher to the helicopter. The fifth interviewee abstained from discussing procedure which had not been utilized but added that his agency had certainly been informed by the Sheriff to call the helicopter if needed.

One interviewee stated the helicopter has always been available to them - "It has responded every time needed and reports over our jurisdiction by radio when on patrol." The other four

responded "usually." Three of these cited priorities, distance and time availability as factors slightly limiting routine use but pointed out that they have never been turned down for emergencies if air-crews and machine were available. One interviewee pointed out that his "usually" answer was conjecture based on offers of use presented by the Sheriff's Department which, to his knowledge had never really been tested. Due to lack of joint use, one interviewee felt that further response to specific questions would not be significant. Therefore, summarization from this point on does not include this agency.

The remaining four interviewed characterized the helicopter's contribution as "very significant." Results range from containment of fire to effecting arrests not otherwise possible. Some decrease in offenses, particularly burglary, theft and malicious mischief were, in the opinion of some, related to the helicopter. One interviewee stated that burglars and thieves interrogated stated that they "--quit 'ripping-off' due to that helicopter with the light."

Three felt that their agency would benefit if the helicopter program expanded. Expansion would increase availability, benefit all valley communities and encourage increased use by their agencies on preventative patrol (police and fire). The fourth response was "remain about the same." The latter interviewee based his response, he said, on a feeling that he could not really know if his jurisdiction "needed more air support" until more availability so indicated.

The four interviewees concluding with program modification suggestions all presented more than one. Following are these suggestions (given in essence and by frequency):

- . Joint training with air crews and agency personnel - 3 suggestions
- . Increased availability (includes daylight patrol, more machines, more aircrews) - 3 suggestions
- . Increased number of helistops with fuel supplies which would allow for more use of available air time - 2 suggestions

Expanded communications - 1 suggestion

The enthusiasm encountered by the interviewer during discussions with personnel of the listed agencies further strengthens the impression that within its limited operational mode, Project CO-OP is providing valuable assistance to other agencies.

5. EFFECT ON INCIDENCE OF CRIME

The purpose of this evaluation component is to analyze the effect Project CO-OP has had on crime in its' patrol area in Kern County. A primary focus of Project CO-OP is the reduction of rural crime, in particular theft of oil field and farm equipment and supplies. The Kern County Sheriff's Department compiles detailed crime incidence statistics by a number of relevant categories by patrol beat. Unfortunately the present system of compilation has been in existence only since 1971, and, hence our analysis is restricted only to an inter-year comparison of 1971 and 1972 (the evaluation year).

The following areas and beats which essentially represent the helicopter patrol area were selected for analysis:

<u>AREA</u>	<u>BEAT</u>
Bakersfield	(All Sheriff's Department Beats)
Delano	(D-01, D-02)
Wasco	(W-01, W-02, W-03)
Button-Willow	(BW-1, BW-2)
Taft	(T-01, T-02, T-03)
Lamont	(L-01, L-02, L-03)

Exhibit C-III, following this page, provides crime incidence data for selected categories of robbery, burglary and theft. Data are provided for: (1) the Sheriff's Bakerfield beats, (2) other helicopter patrolled beats, and (3) the total of all helicopter patrol beats. Pertinent observations concerning these data follow:

- . Robberies in the patrol area decreased 44 percent from 1971 to 1972. In absolute terms there were four less robberies. Countywide robberies increased 18 percent during the same period.
- . Burglaries in the patrol area increased by 307 incidents or 30 percent in the period 1971-1972. Countywide the increase was three percent.
- . Thefts in the patrol area decreased by 37 percent. Countywide thefts increased by four percent. Further it can be seen that thefts decreased substantially in all categories except in the category of "theft of oil field equipment" where there was an increase of nine reported incidents.

In summary the crime incidence data from Kern County tends to indicate that Project CO-OP has decreased the incidence of rural theft in the period 1971-1972. This is, of course, a major stated objective of the Kern County helicopter program. Unfortunately, because historical data on crime incidence within the patrol area are unavailable it is not possible to provide a substantive statistical analysis of the helicopters role. However, it should be noted that the recipients of the helicopter patrol believe the program to be effective and both the public and the departmental officers suggest expansion of the program to provide greater coverage in terms of days and hours patrolled.

#### 6. RESPONSE TIME

The Kern County helicopter engages in night rural patrol. The primary objective of this patrol is crime suppression, mainly theft. In theory, through high visibility the helicopter will discourage theft of farm and oil field equipment and/or will observe suspicious events taking place which can be rapidly checked out. Because of the time of night when the patrol is taking place and the vast areas of observation, the Kern County helicopter receives relatively few calls to intercept "crimes in progress." For this reason, "reduce response time to crimes in progress" calls is not an objective of Project CO-OP.

KERN COUNTY  
CRIME INCIDENCE DATA

CRIME CATEGORY	BAKERSFIELD BEATS <sup>1/</sup>			OTHER HELICOPTER BEATS <sup>2/</sup>			ALL BEATS <sup>3/</sup>		
	1971	1972	% CHANGE 1972/1971	1971	1972	% CHANGE 1972/1971	1971	1972	% CHANGE 1972/1971
ROBBERY -									
13.51 - Residence - Weapon	3	3	0	0	0	-	3	3	0
13.52 - Residence - Strongarm	6	1	-83%	0	1	+100%	6	2	-66
Sub-Total	9	4	-56	0	1	100	9	5	-44
BURGLARIES -									
14.11 - Residence Night - Force Entry	217	333	+53	17	66	+288	234	399	+70
14.12 - Residence Night - Attempted Force	22	36	+63	5	6	+ 20	27	42	+55
14.13 - Residence Night - Unlawful Entry	151	191	+26	43	46	+ 7	194	237	+22
14.41 - Other Structure - Force Entry	329	361	+10	41	114	+178	370	475	+28
14.42 - Other Structure - Attempted Force	35	25	-29	11	13	+ 18	46	38	-17
14.43 - Other Structure - Unlawful Entry	113	79	-30	24	45	+ 88	137	124	- 9
Sub-Total	867	1,025	+18	141	290	+106	1,008	1,315	+30
THEFT -									
17.11 - Theft of Hay	30	27	-10	28	24	- 14	58	51	-12
17.21 - Theft of Mercury	5	1	-80	7	3	- 57	12	4	-66
17.41 - Theft Of Oil Field Equipment	14	20	+64	41	41	0	55	64	+16
17.51 - Theft of Farm Equipment	32	13	-60	116	114	- 2	148	127	-14
17.61 - Theft of Cattle/Livestock	57	35	-40	31	21	- 32	88	56	-36
17.71 - Theft of Wire/Metal	39	10	-74	193	64	- 67	288	74	-74
Sub-Total	117	109	- 7	416	267	- 36	594	376	-37
Total	1,053	1,138	+ 8%	557	558	0	1,611	1,696	+ 5

1/ Sheriff's jurisdiction Bakersfield beats

2/ Sheriff's jurisdiction: Delano, Wasco, Button Willow, Taft, and Lamont beats

3/ Bakersfield plus other helicopter beats

Although "reducing response time" was not an objective aerial operation and the capabilities of the helicopter's communication system made it possible for the patrolling helicopter to respond to various calls. The types of calls ranged from direct radio instructions to "overheard" radio calls emanating from the Sheriff's and local police dispatchers.

A large number of logged responses were examined, twenty-eight were reviewed in some detail. Included among types examined were:

- . Burglar Alarm/Report
- . Robbery Alarm or Report
- . Hay Theft - In Progress
- . Burglary - In Progress
- . Control - Civil Disobedience
- . Searches/Rescues - Various

The operational mode of the helicopter project is such that the majority of activities are observations. In such cases, of course, response time is simultaneous with the time advised of the incident. However, two repetitive types of incidents resulting from radio intelligence are: burglar alarms/reports and robbery alarms/reports. These two categories were selected for in-depth examination.

Exhibit C-IV, on the following page, profiles elapsed time and man-hours usage when the helicopter responds to this type call and when patrol units respond without aerial support.

Importance of Burglar-Robbery Alarm/Reports Response in Kern County

- Kern County has over 8,000 square miles, much of it rural and remote. Communities are 15 to 20 miles apart
- There are many cross-road businesses, oil field buildings, farm residences and agricultural outbuildings in lonely surroundings
- Several, heavily traveled, major highways cut through the valley floor carrying a high transient population through the jurisdiction

- Ingress and egress to a mobile criminal or potential violator is quick and direct
- Patrol beats are exceptionally large, (the helicopter's beat is 3,000 square miles), suppressive patrol car patrols resulting in "high police visibility" are difficult to provide on a frequent basis.

Typical Burglar-Robbery Alarm or Report

The offenses of burglary and robbery are separate. Elements of the offenses are different and they are reported from Kern County to C.I.I. and F.B.I. separately, as Part I offenses, just as they are from all other policing agencies in the State of California. However, the circumstances of burglar alarm/reports and robbery alarm/reports are very similar. In both instances there is a possibility of a felony "in progress" with the possibility of suspects at the location. For this reason, these reports are considered as one type of incident to be utilized for purpose of responses in Project CO-OP.

The Sheriff's or police agency's complaint desk-radio dispatcher receives information of a possible burglary or robbery occurring now. The information may be received electronically through a "silent alarm," it may be a sound (electrical) alarm heard by persons who inform law enforcement agencies by phone or in person, or it may be information phoned in by persons who see or hear suspicious activity at the location of the incident. (In some cases a patrol unit of a law enforcement agency may be the informant, having seen or heard activity indicating such a conclusion.)

Upon receipt of information that a possible burglary or robbery is occurring, dispatchers quickly broadcast the information and location to monitoring units, normally assigning the closest as the "handling" unit. If the information comes through an informant (person hearing or observing) the dispatcher obtains as much additional information as possible to augment the broadcast.

The primary responding patrol unit may be many minutes away from the location in Kern County due to vast sizes of patrol areas. Because of a possibility of suspects "there now" and the need for apprehension, the primary unit responds at high rates of speed. Other units usually respond, one or more, to assist in containing as much of the area as possible and to "back-up" the handling unit in case

SPECIAL INCIDENT RESPONSE

KERN COUNTY

CATEGORY	ELAPSED TIME MINUTES	MAN HOURS EXPENDED	NUMBER OF INCIDENTS (1972)	ANNUAL TIME SAVED MINUTES	ANNUAL MAN HOURS SAVED
I. Burglar Alarm/Report					
Median Time With Helicopter	26	.98	130	9,100	484
Median Time Without Helicopter	90	4.7			
II. Robbery Alarm/Report					
Median Time With Helicopter	40	1.5	3	105	6.0
Median Time Without Helicopter	75	4.5			

suspects are at, or have just left, the location. Thorough search of the area and road-blocks would be required if evidence of an entry or suspects leaving location is reported. Roofs would be checked on some buildings as roof entry may be suspect. Slow cruise patrol car search or foot search would result, in such cases, as suspects can "fade away" into darkened areas quite handily. Meanwhile the primary unit may be taking a report or awaiting assistance to gain entry or reach a rooftop.

The helicopter can respond very quickly in a straight flight line from its patrol position to the alarm location, unhindered by traffic, geographic barriers or speed restrictions (at up to 105 MPH). From the vantage point of height and aided by a 3.8 million candlepower light the air-crew can quickly scan acres of area surrounding the location. In effect, the eyes of the air observer have arrived on the "scene" before the actual arrival of the helicopter as he looks ahead for movement of vehicles or persons. The helicopter, as one unit, can keep the location (building) in sight and contained to prevent possible undetected escape of suspects. In a few seconds the air-crew can check and reassure that no roof top entry has been made. A ground patrol unit can then conclude the necessary investigation very quickly.

#### Advantages of the Helicopter

Straight line of travel, speed; altitude advantage for viewing and lighting capability combine to make the helicopter an ideal vehicle for burglar-robbery alarm/report response. Properly used in conjunction with the assigned patrol unit it is a most excellent tool for such investigations offering a measure of suppression as well as expediting handling times: Ground units may proceed at safer speeds.

#### Disadvantages of the Helicopter

In the circumstances of Kern County, the helicopter has such a vast "beat" it must be somewhat selective of which locations it should respond to, i.e., some may be too far away for even the helicopter to provide valuable assistance to the patrol units. Configured with the light and creating sound the helicopter is not approaching the location in a covert manner and may frighten off suspects and thereby decreasing opportunity for arrest. (Some believe this to be an advantage as it may prevent actual commission of an offense, others believe that arrest is the only ultimate deterrent.) The helicopter, particularly in a sit-

uation wherein only one is operated by the law enforcement agency, is very often unavailable due to required mechanical work. Weather conditions, particularly low visibility created by fog, will ground a helicopter while it only slows patrol units. Helicopters, as a machine, are expensive to operate. The direct hourly operating cost in Kern County is \$29.72. Each response averages 33 minutes or \$16.35. There were a total of approximately 133 burglar-robbery alarm/report responses in 1972 representing operating costs of \$2,175 for these incidents. Approximate median cost for patrol units handling such calls without the helicopter is \$4.42 per incident. Discounting man-hours and result variances the same number of calls handled by patrol units would have cost \$579.

Exhibit C-V, following this page, depicts an actual response in Kern County, diagnosed and profiled from Departmental records.

Of the many incidents involving helicopter response studied and recorded in the "Special Incident Data Form" format, all were examined to compare elapsed time and man-hour differentials. Following are a few of these incidents briefly recounted:

On June 11, 1972, while on routine night patrol the helicopter crew spotted activity of vehicles on farm property. Lighting of the activity disclosed hay theft in progress. Patrol units were notified, suspects kept in sight, chain of evidence maintained and three suspects arrested. Property was recovered and preserved. Total flight time 35 minutes.

Thirty five minutes after midnight on December 5, 1971, the helicopter crew responded to a burglar alarm call at a school. They were the first unit at the location and spotted a vehicle departing the scene. The helicopter unit directed ground patrol units to the vehicle, ascertained that a burglary had, in fact, been committed, contained the area while seven suspects were apprehended. Stolen property was recovered, two prior cases were cleared. Total flight time - 40 minutes.

The helicopter has been a control and command platform as well as a tactical unit in controlling motorcycle club camps and activities in the late spring. Of special interest is a crowd control situation connected with the serious labor disputes in June of 1973. From their command

## SPECIAL INCIDENT DATA FORM

COUNTY: Kern  
 TYPE OF INCIDENT: Burglar Alarm  
 DATE OF INCIDENT: June 17, 1972

Brief description of incident: Responded to burglar alarm call arrived prior to units, lighted and contained location for ground units, checked roof and grounds for persons or vehicles.

Time advised of incident: 1:30 a.m. Means: Radio

Time deployed: 1:30 a.m.

Duration (deployment to completion): 10 minutes

List other Sheriff's Department units participating: Two patrol units

List other agency units participating: None

What was principal contribution of helicopter? Quick response vehicle able to observe and contain location, check for cars or persons, provide light for ground units, check roof.

What was the primary result of the incident: Location quickly checked and secured, considerable time saved as helicopter checked several acres in one pass.

Was the same result possible without helicopter: Yes  No

If yes, explain how and in what manner, Units have historically responded to burglar alarms covered entries and exits to buildings by proper placement of units checked roofs for entry by use of ladder or by waiting for owner to arrive to admit officers.

## SUMMARY:

	<u>WITH HELICOPTER</u>	<u>WITHOUT HELICOPTER</u>
Time Utilized	30 minutes*	1 - 2 hours
Manpower Utilized	1.3 man-hours	2 - 6 man-hours
Operation Cost	\$10.78	\$7.00 to \$8.00

Other: \*All figures under "with" also include ground unit time and equipment, operating cost, helicopter time 10 minutes, cost \$4.96.  
Third unit is often required on alarms and frequently time is lost waiting for roof access (if necessary) and cruising area for possible suspects.

Source of information: Helicopter flight log of June 17, 1972,  
information from police personnel acquainted  
with alarm response tactics.

NOTE: There is a possibility that sound of the helicopter approaching scared off suspects (attempted entry had been made) but more likely they departed due to hearing alarm. Deterrence is a part of the helicopter patrol concept.

vantage point, the air-crew observed violence and assaults occurring in an area not visible to ground officers. Information was radioed, activity watched, suspects (five) identified from the air and arrested, a potentially explosive situation was contained and more serious complications avoided. This action consumed less than forty minutes.

Due to the fact that the helicopter and crew fly regularly at night, they are often not available for search and/or rescue operations. However, several searches and rescues were participated in, such as the following: September 30, 1972, a lost hunter was located in the Tehachapi mountains by air, three hours flight time; November 13, 1972, a missing (crashed) aircraft was located by the air-crew at the 6,500 foot level in mountains, search flight time 2 hours 45 minutes; called to assist Tulare County officers in a search for a missing six year old boy in rugged mountains, the helicopter responded and the child was quickly located by the air-crew (flight time - 15 minutes of search).

7. COMPARATIVE COST EFFECTIVENESS

The purpose of this section is to provide an analysis of comparative cost effectiveness. In Section III a detailed description of the methodology employed in determining comparative cost effectiveness is presented. For this reason only the highlights of the procedure and the results are presented here. The interested reader should refer to Section III.

The purpose of this procedure is to quantitatively compare the achievement of helicopter project objectives: (1) assuming the existence of the helicopter program, and (2) assuming that the Department attempted to achieve the same objectives without the helicopter i.e., by using additional patrol cars and men. The steps involved in making this comparison are briefly described below:

1. The cost of the helicopter program is determined
2. The number of patrol units which could be supplied with the equivalent expenditure of dollars (i.e., the same expenditure as the helicopter program) is determined

3. The primary objectives of the helicopter program are determined and prioritized. A numerical weight is assigned to each objective. (A total of 40 points is assigned)
4. An effectiveness rating is assigned to each objective for: (1) the helicopter program, and (2) assuming the same objectives are pursued without the helicopter
5. The numerical results of the above procedure are described and summarized.

(1) Costs

Exhibit C-VI, following this page, summarizes the costs associated with the Kern helicopter program. Calendar 1972 operating hours were used to estimate hourly costs. The Exhibit is largely self explanatory with footnotes describing procedures. Pertinent information is summarized below:

- . Indirect hourly cost - \$ 86.86
- . Direct hourly cost - \$ 29.72
- . Total hourly cost - \$116.58
- . Annual program cost - \$92,926

A major element in the relatively high hourly flight costs is the category "administration and benefits." Local accounting procedures dictate that 63 percent be added to labor costs to estimate total labor costs. In comparing hourly costs in Kern County with hourly costs in similar projects, it should be remembered that this procedure, by comparison, results in inflated hourly costs.

Kern County does not contract for police services as do the other cluster projects. For this reason, local patrol vehicle costs are not computed for determining services available for a comparable expenditure. For comparative purposes it will be assumed that approximately 1.5 additional patrol units could be provided for an equivalent expenditure as Project CO-OP.

(2) Weighted Project Objectives

As indicated a major step in determining comparative cost effectiveness is the establishment of project objectives and the assignment of weights (priority) to these objectives. The process involved included:

- . Review of the grant request
- . Analysis of the helicopter project objectives questionnaire (see Exhibit E-V) which was completed by project and ranking departmental officials
- . Consultant analysis of actual program operation.

As a result of this analysis the following seven Project CO-OP objectives were identified and weights assigned:

	<u>Objective</u>	<u>Priority Weight</u>
1.	Increase surveillance effectiveness in specified areas for specific offenses	8
2.	Enhance officer safety	7
3.	Reduce or slow the rate of growth in crime	7
4.	Provide the public with a greater sense of security	5
5.	Assist other law enforcement agencies	5
6.	Reduce seriousness of civil disorders	5
7.	Increase the effectiveness of search and rescue in remote areas	<u>3</u>
	Total	40

(3) Effectiveness Ratings

In the following paragraphs an effectiveness rating is assigned to the accomplishment of each objective: (1) with the helicopter program, and (2) without the helicopter program. The ratings were derived based upon the analysis previously

## KERN COUNTY PROJECT CO-OP PROGRAM COST

1972

<u>INDIRECT (FIXED) COSTS</u>	<u>AMOUNT</u>	<u>TOTAL</u>
Labor		
Deputy Pilots (2) <sup>1/</sup>	\$ 24,168	
Deputy Observer (1)	10,884	
	<u>\$ 35,052</u>	
Administration and Benefits (63%) <sup>2/</sup>	22,083	
TOTAL LABOR		\$ 57,135
Other		
Insurance, Supplies	11,538	
Rent, Misc.	606	
	<u>\$ 12,194</u>	
TOTAL INDIRECT		\$ 12,194
		<u>\$ 69,329</u>
		annual
<u>DIRECT (VARIABLE) COSTS</u> <sup>3/</sup>		
Fuel, Oil, Grease	\$ 9.59	
Maintenance Labor	4.00	
Parts, Routine Overhaul	16.69	
Time Life Retirement Parts	7.42	
Less Special Parts <sup>4/</sup>	<u>\$37.70</u> per hour flown	
	<u>-7.98</u>	
TOTAL DIRECT		\$29.72 per hour flown

## NOTES:

- 1/ Deputy pilots receive \$100 per month flight pay
- 2/ Accounting procedures utilized in County allocate general administrative costs to project. This results in an "Administrative and Benefits" figure which is comparatively greater than other cluster projects
- 3/ Direct costs includes a reserve for major overhaul; also certain parts. See note 4.
- 4/ Special parts include spare engine, supercharger and tail rotor purchased to insure availability. They are excluded to allow inter-project comparability.

## ANALYSIS:

Based on 797.1 flight hours

- . Indirect costs per hour flown = \$36.86
- . Direct costs per hour flown = \$29.72
- . Total costs per hour flown = \$116.58

presented in the detailed discussions of the evaluation components, thus, only a brief narrative is provided. It must be stressed that this comparison assumes that the same objectives would be pursued without a helicopter i.e., by assigning approximately 1.5 additional patrol units. As previously indicated, since the objectives of the project are highly diverse, direct comparison is difficult, thus, this comparison must be thought of as only one element of project evaluation and not as the final evaluation conclusion. Objective ratings are provided below:

- . Increase surveillance effectiveness in specified areas for specific offenses
  - with helicopter--effective (3)
  - without helicopter--slightly effective (1)

In the context of Kern County surveillance is taken to mean the rural night patrol of the valley itself (as contrasted to other counties where surveillance generally refers to specific events of limited duration i.e., narcotics surveillance). The purpose of Kern County's surveillance is to detect and deter rural crimes. Project CO-OP is rated effective in this activity and additional patrol units are rated as only slightly effective. An attempt to patrol the vast beat area by traditional means would probably produce only marginal results. Project CO-OP did not receive a very effective rating due to the limited hours and days of the week in which patrol takes place.

- . Enhance officer safety
  - with helicopter--moderately effective (2)
  - without helicopter--slightly effective (1)

The sworn officers survey indicates that the majority of Kern County personnel believe Project CO-OP enhances security; however, the number responding in the affirmative is not as substantial as in some counties. Additional ground units would do little to further enhance security.

- . Reduce or slow the rate of growth in crime
  - not rated--The effect of project CO-OP on the crime rate is not rated because sufficient data are not available to reach a statistically valid conclusion. However, as was discussed pre-

viously there is some indication that Project CO-OP has impacted on the incidence of rural theft. Additional patrol units would most likely have no effect on the incidence of crime in the rural area.

Provide the public with a greater sense of security

- with helicopter--very effective (4)
- without helicopter--slightly effective (1)

The community survey indicates that the rural citizens of Kern County being served by Project CO-OP believe the helicopter significantly enhances security. In view of the vast area patrolled additional ground units would have little effect.

Assist other law enforcement agencies

- with helicopter--moderately effective (2)
- without helicopter--moderately effective (2)

Other law enforcement agencies interviewed expressed satisfaction with the helicopter program but also commented on limited availability. Project CO-OP is ranked only moderately effective in this category for this reason and the limited amount of time actually spent in assistance to other agencies. If helicopter program funds were spent in another manner to assist other agencies it may be assumed a moderately effective program could be developed.

Reduce seriousness of civil disorders

- with helicopter--effective (3)
- without helicopter--slightly effective (1)

The Kern County helicopter has been used effectively in various civil disorder situations. It is recognized; however, in some civil disorder situations the presence of an air unit could exacerbate the situation.

Increase the effectiveness of search and rescue in remote areas

- with helicopter--moderately effective (2)
- without helicopter--not effective (0)

The helicopter's role in increasing effectiveness in search and rescues is ranked only moderately effective due to the limited use in this activity in Kern County. Other additional units would not increase effectiveness

Exhibit C-VII, following this page, summarizes the comparative cost effectiveness analysis. As can be seen, Project CO-OP provides an effective means of achieving the limited objectives of the project. Additional patrol units would not be a viable alternative in providing this service. Summary numerical effectiveness ratings follow:

- . Accomplishment of project objectives with helicopter
  - moderately effective to effective (89)
- . Accomplishment of project objectives without helicopter
  - slightly effective (30)

#### 8. OVERALL SUMMARY AND PROJECT RECOMMENDATIONS

As has been pointed out Project CO-OP has narrow objectives i.e., rural night crime suppression patrol. During the course of the evaluation year and during the second year of the project the use of the helicopter has largely been restricted in use to this objective area. Our surveys indicate general satisfaction that Project CO-OP is in fact achieving this objective; however, sufficient data is not available to statistically demonstrate crime suppression. On the other hand it is clear that the rural area currently being subjected to night time helicopter surveillance could not be covered with additional ground units. For the above reason it is concluded that Project CO-OP is effectively achieving project objectives.

Based upon our evaluation and observation of project operation the following project suggestions are offered:

- . The Kern County Sheriff's Department should investigate the feasibility of augmenting the helicopter program with fixed wing aircraft. Distances covered and project experience which indicates that the necessity of landing for suspect apprehension is infrequent and would suggest that fixed wing operation might be feasible. Two major advantages would possibly result from this course of action:

- Fixed wing aircraft are more economical to operate and, hence the potential for cost savings exists
- The helicopter would be made available for other law enforcement uses. Our evaluation of helicopter programs in other counties indicates that the helicopter provides valuable services in many areas not currently receiving services in Kern County because of the restricted mode of operation.

It should be noted that the above discussion of fixed wing vs. helicopter is offered as a suggestion to investigate the feasibility. Our evaluation was not designed to specifically address this question.

It was noted in the description of project operation and implementation that Project CO-OP had encountered problems in obtaining adequate contract equipment maintenance services. It is understood that this problem has been solved from a technical maintenance standpoint; however, the present maintenance location in Porterville is a considerable distance from the heliport. This situation causes a problem with respect to the ground travel time involved and project coordination. It would be desirable to obtain maintenance services near the airport. It is, of course, understood that maintenance standards can not be compromised on the basis of convenience.

At least an additional fueling point should be established for the helicopter. Since most commercial facilities are not available during Project CO-OP's night flight hours the helicopter must return to the heliport in Bakersfield for fuel. This situation unnecessarily restricts the use of the helicopter.

COMPARATIVE EFFECTIVENESS  
KERN COUNTY - PROJECT CO-OP

OBJECTIVE	OBJECTIVE PRIORITY WEIGHT	EFFECTIVENESS WITH HELICOPTER	RATING WITHOUT HELICOPTER	RATING WITH HELICOPTER	EFFECTIVENESS WITHOUT HELICOPTER
1. Increase Surveillance Effectiveness	8	3	1	24	8
2. Enhance Officer Safety	7	2	1	14	7
3. Reduce or Slow Crime Rate Growth	7	-	-	-	-
4. Provide the Public With a Greater Sense of Security	5	4	1	20	5
5. Assist Other Law Enforcement Agencies	5	2	2	10	10
6. Reduce Seriousness of Civil Disorders	5	3	1	15	5
7. Increase Effectiveness of Search and Rescue	3	2	0	6	0
TOTAL	40			89	30

VENTURA COUNTY - HELICOPTER PROGRAM

1. BACKGROUND

Ventura County encompasses 1,884 square miles and extends from sea level to nearly 9,000 feet in elevation. The 1972 population was 423,000 inhabitants. There are nine incorporated cities within the County. The Sheriff assumes the responsibility for law enforcement services in the County's unincorporated areas and two cities - Thousand Oaks and Camarillo - by contract agreement.

General information relating to Ventura County and the Ventura County Sheriff's Department is summarized below:

- . Population (1972) - 423,000
- . Area (square miles) - 1,884
- . Population per square mile - 225
- . Crime (1972)<sup>1/</sup> - 11,216
- . Crime per 1,000 population<sup>1/</sup> - 27
- . Population (Sheriff's jurisdiction) - 170,000
- . Sworn personnel (S. D. per 1,000 pop.) - 2.0
- . Location S. D. Headquarters - Ventura

On August 15, 1971 the Ventura County Board of Supervisors approved the County Sheriff's Department Helicopter Program (OCJP Grant No. 0650). The Ventura County Helicopter Program commenced operations on September 23, 1971.

2. PROJECT OBJECTIVES

The following six Helicopter Program objectives were specified in Ventura County Grant Request Number 0650:

- . Decrease response time
- . Increase patrol observation and integrate mobile patrol with helicopter patrol

<sup>1/</sup> Part I offenses.

- . Engage in rescue and search operations
- . Provide assistance and support in major disasters and civil disorders
- . Provide assistance to all law enforcement agencies in Ventura County
- . Reduce major crimes.

3. PROJECT IMPLEMENTATION AND OPERATION

In this sub-section the implementation of the Ventura County helicopter program is discussed along with a presentation of evaluation year statistics. The purpose of this evaluation component is to summarize actual project operations. The information contained herein will be utilized in making project comparisons and in identifying individual project strengths and weaknesses.

(1) Project Background

The Ventura County Sheriff's Department primary field function is police patrol. A need for an aerial platform was perceived for: crime repression through specific patrol, aerial surveillance of suspects, aerial photography (for many agencies in the County involved with "life and Property"), crowd control, specific "task force" application, search and rescue and general application to problems and incidents as needed. On numerous occasions and for a variety of applications such as those listed above, helicopters were rented by the Department, provided to them by other agencies (particularly by military in search and/or rescue) and in other matters by nearby agencies with helicopters available. The high measure of success observed in operations wherein borrowed or rented machines were used increased the impetus to establish a helicopter program. While the grant was approved for commencement on July 1, 1971, internal processes which prevent encumbrance of funds not on hand and other processes fiscally related delayed approval by the County Board of Supervisors until August 10, 1971.

(2) Equipment

Ventura utilizes one helicopter, a Bell 47G-3B2, a three place cabin machine with a supercharged 230 horsepower engine with an envelope of performance up to 20,000 feet MSL (Mean Sea Level). Operational performance - hovering in ground effect - is approximately 13,000 MSL standard day temperature. Altitude performance was necessary in consideration of the mountainous terrain in the county, especially since there was to be only one helicopter to perform many functions. The flight time range is three hours with reserve for safety. Fuel required is aviation gasoline 100/130 octane. Police equipment includes; the Nightsun XS-16 xenon arc lamp producing 3.8 million candlepower (the light is remotely controlled electrically from the cabin), a heavy duty 100 amp generator, two externally mounted Stokes litters (both are normally carried on most flights), floats for water operations, and a federal ITT combination siren and PA system 24/28 volt 100 watt. Communications equipment includes: Ventura Sheriff's FM frequencies One and Two with open positions for four more frequencies, one shared frequency for the cities of Santa Paula, Fillmore and Ojai, a relay frequency capability for Port Hueneme, mount and canon plug adapter for any PT-300 or PT-400 walkie talkie as needed (most agencies having contact with Ventura Sheriff have these). Other equipment includes a battery pack Sony TV camera with zoom lens and video tape recorder. Equipment distinctive to the Ventura helicopter is a 105 gallon water, borate, or fire retardant chemical drop tank with quick mount/dismount capabilities. This is controlled by the pilot and drops water in a manner similar to the bombay door concept of WW II bombers. The Sheriff has a full shared program with the Ventura County Fire Department which includes training, pre-planning, photography, fire alert patrols and actual fire-fighting - water drops on fires, hose drops, flying crews in and out of watershed fire areas, flying the fire control commander during fires for observation and strategy purposes. The Fire Department has developed a comprehensive training manual for fire

helicopter tactics and is urging greater cooperative use of the machine in this fire fighting capacity. Since arson is so often suspect during fire hazard seasons in watershed areas the police-fire cooperative effort is serving dual purposes: fire suppression and observation i.e., suspects or suspicious circumstances during fires. Onlookers, traffic problems and evacuations (when necessary) are controlled as a police function.

Ventura County helicopter equipment is recapped below:

- . Helicopter Model: (1) Bell 47G-3B2
- . Altitude Performance: 12,000-13,000 feet for takeoff and landing
- . High Intensity Lights: Nightsun XS-16, 3.8 million candlepower
- . Litter: 2 external
- . Communications: Standard FAA and local multi-police
- . Other Special Features: Floats, water drop tank, and P.A. system.

### (3) Maintenance

The helicopter is stored at and maintained by Rotor-Aids, an FAA and Bell approved repair station. The vendor supplies all parts as needed, including fuel, oil, grease and all labor. The contract is reviewed at budget time and adjusted to reflect needs of the aircraft and projected hours to be flown. Credit cards are also supplied to provide for refueling at airports in the county if need arises. Department and county administration have been satisfied with the contract arrangement. The pilots indicate confidence in and high regard for the FAA rated mechanics supplied by the vendor.

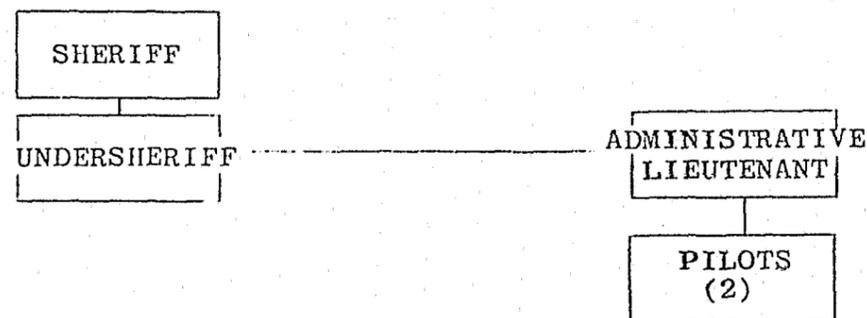
### (4) Staffing

The helicopter unit is primarily responsible to the Sheriff. This responsibility is administered by the Undersheriff through the Undersheriff's Administrative Lieutenant who has functional supervisory control in general assignments. Functional control during field activities (patrol, task force application) is exercised by the Watch Commander of the Station concerned.

The working helicopter unit consists of two pilots who are sworn personnel, duly recognized as peace officers and paid equivalent to the rank of Sergeant. There are no officers assigned as observers to the unit itself. In the present mode of operation it was decided not to create positions for observers but rather to use field function officers acquainted with the district or the function being performed (i.e., narcotics officers for narcotics surveillance, patrol officers from the district being patrolled on special patrols, detectives for task force - burglary, robbery assignments - search and rescue personnel for that function). Observers being used are actually "on-the-job" trained and those proving "best" from their unit are assigned when needed.

Pilot recruitment requirements consisted of: "A police experienced pilot with a commercial Rotorcraft - Helicopter rating (FAA) who had 2,000 hours in helicopters." The first pilot recruited formerly flew with the Los Angeles Police Department. The second pilot hired was a police officer on the Santa Paula P.D. who had ample time as a commercial helicopter pilot but no experience flying as an officer.

The chart on the following page depicts the organization of the Ventura helicopter program.



(5) Time in Air and Patrol Schedules (January 1, 1972 - December 31, 1972)

The Ventura County Sheriff's Department helicopter unit flew a total of 595.5 hours during the project year. Broken down further this averages to 49.6 hours monthly and, based upon an average 16 days flown per month, to 3.1 hours daily.

The helicopter unit during this year operated on a standby basis and as such had no formal or informal patrol schedules.

(6) Distribution of Time by Activity Classification

The helicopter unit performed various services for the Sheriff's Department and other agencies during 1972. The specific service and the time in the performance of each is listed in the following table.

<u>Activity</u>	<u>Time (hours)</u>
Patrol Services (no specific beat)	335.1
Search and Rescue	85.2
Surveillance	30.7
Photography	22.9
Training	15.9
Maintenance	3.2
Special Night Flying	5.0
Fire Observations	29.9
Transportation	16.7
Other Misc. Services	<u>50.9</u>
TOTAL	595.5

(7) Selected Evaluation Year Statistics

Arrests

The Ventura County Sheriff's Department helicopter unit in coordination with various ground law enforcement units was involved in a number of selective law enforcement investigations and operations. As a result of these activities the unit was credited with a total of 24 arrests during 1972.

Total Responses to Critical Incidents

During the project year the need for helicopter services in response to critical incidents in Ventura County was substantial. Critical incidents herein refer to search and rescue (medical and non-medical air evacuations) missions, fires, coordinating ground efforts, and other emergency situations. The helicopter responded to 51 such critical incident calls in 1972.

Total Assists to Other Agencies

The Ventura County Sheriff's Department helicopter unit assisted a significant number of ground law enforcement units from other Ventura County agencies during 1972. The total number of assists to other agencies, in addition to their responsibilities and activities to the Sheriff's Department, was 61.

Total Property Recovered

It is difficult to ascertain the actual amount and/or quantity of property recovered with the cooperation and participation of the helicopter unit. This is due to the individual methods of record keeping practiced by the various law enforcement agencies operating within Ventura County. The total amount of property credited directly to the efforts of the Ventura County Sheriff's Department helicopter unit during 1972 is as follows:

- narcotics = \$42,000 value: 48 kilograms of marijuana
- explosives = 600 pounds of dynamite: estimated \$2,000 value.

The preceding operational statistics were extracted from helicopter logs and various Departmental reports. Record keeping is such that more detailed statistics are not recoverable.

4. PERCEIVED EFFECTIVENESS OF VENTURA HELICOPTER PROGRAM

The purpose of this section is to present and analyze the findings of the three perceived effectiveness surveys conducted in Ventura County. Each of the three surveys is discussed in a sub-section relating to the object survey group. These groups are: (1) the general public (community survey), (2) departmental sworn officers, and (3) other governmental agencies utilizing the helicopter.

As discussed in Section III, "Individual Project Evaluation Methodology", the following impact oriented objectives apply to the three surveys:

Community Survey

- The public should be aware of law enforcement programs designed to serve them
- The public should feel more secure as a result of the helicopter program
- The public should favor continuing the program.

Sworn Officer's Survey

- The helicopter program should increase the perceived overall effectiveness of the law enforcement team.

Other Agencies Survey

- The Sheriff's Department helicopter should be available to other governmental agencies when needed
- Governmental agencies utilizing the helicopter should perceive the helicopter as a valuable tool in carrying out their individual missions.

Each of the three surveys is discussed in detail in the following pages.

(1) Community Survey

The Ventura helicopter has not been engaged in regular patrol since project inception, but rather, has been generally utilized as a standby special response vehicle. For this reason

it was not possible to identify any area which had been subjected to intensive patrol. However, in conjunction with project personnel two zip code zones were selected for distribution of a community attitude survey. The zones selected had received relatively intensive (in comparison to other areas in Ventura County) patrol. The selected zip code zones were:

- . 93010 Oxnard
- . 93030 Camarillo

One thousand community attitude survey forms were sent to residents in each zone. (See Exhibit E-J). Of the total of 2,000 questionnaires sent 464 were returned for a gross return of 23.2 percent. Exhibit D-I, following this page, provides a summary of data from the Ventura survey.

Pertinent information contained in the exhibit follows.

The majority of respondents to the survey (75.2%) were aware of the Ventura helicopter program; however, only 49.6 percent had actually observed helicopter operations

85.8 percent of respondents said they felt more secure as a result of the program and 91.1 percent favored continuing the program.

In general the survey response in Ventura County indicates satisfaction with the current helicopter program; however, the level of satisfaction (as measured by positive answers) is not as great as in other communities surveyed.

(2) Sworn Officer's Survey

All sworn officers of the Ventura County Sheriff's Department were given the opportunity to respond to the sworn officer's survey. (Exhibit E-II provides the survey format). In addition to 16 attitudinal questions space was provided for officer comments relative to the program. Exhibit D-II, following this page, provides a tabular summary of responses to the 16 attitudinal questions. Responses by primary job function (question

number 1) were also tabulated. In general the deviation among responses by job function did not vary significantly, thus, only the overall tabulation is provided. Areas of significant variance will be commented upon in the discussion on the Exhibit. A summary of officer comments is also provided.

A summary of major implications extracted from the tabulated responses follows:

- . 93.5 percent of respondents believe the crime problem in Ventura County is a serious one
- . Only 48.9 percent of respondents believed the helicopter aided in deterring criminal activity. Considering only field personnel, 33.8 percent thought the helicopter was effective in Ventura County. In spite of this negative view, 78.4 percent of respondents said the most important function of the helicopter was crime reduction
- . Despite the negative implication of the above perceived responses 81.4 percent of respondents felt the helicopter program merited increased application. Only 2.8 percent favored discontinuance of the program.

In the remainder of this section, Ventura County officer suggestions are discussed. Although suggestions of all personnel are important, very few were made by Ventura County's 54 responding jail personnel. The Department's assignment structure is such that most officers on jail assignment are recent academy graduates as yet not experienced in the field as patrolmen. Others have varying amounts of field experience at different points of time in their careers. The "suggestions" section for this group is probably best expressed by one officers statement, "unable to make objective suggestions due to limited helicopter contact." Therefore efforts to synopsize officer suggestions were expended on respondents in other job function categories.

Only 27 of the remaining 132 respondents did not offer suggestions. Thus, we observe a noticeable degree of expressed interest on the part of those officers involved with field type

## COMMUNITY SURVEY

OVERALL TABULATION					
	YES	NO	PERCENT <sup>1/</sup> YES	PERCENT <sup>1/</sup> NO	NO RESPONSE
1. Aware of Program	349	115	75.2	24.8	1
2. Personally Observed Activities	228	231	49.6	50.4	4
3. Feel More Secure	354	59	85.8	14.2	51
3. Favor Continuing	380	39	91.1	8.9	47

<sup>1/</sup> Percent responding to question only.

## SELECTED TABULATION

Response Description

1. Respondents answering yes to all questions	- 193
2. Respondents answering no to all questions	- 15
3. No response total	- 98
4. Favorable responses not observing helicopter activities <sup>1/</sup>	- 101
5. Favorable responses not feeling more secure <sup>2/</sup>	- 101

<sup>1/</sup> Answer yes questions 1, 3, and 4; no question 2

<sup>2/</sup> Answer yes questions 1, 2, and 4; no question 3

VENTURA COUNTY HELICOPTER PROGRAM

SWORN OFFICER'S SURVEY  
QUESTIONNAIRE TABULATION

QUESTION	NUMBER	PERCENT OF TOTAL
1. Which one of the following best describes your current <u>primary</u> job function?		
1. Field Patrol	71	28.3%
2. Investigation (Detective)	34	18.3
3. Prisoner Detention (Jail)	54	29.0
4. Traffic Control	1	0.5
5. Supervisor/Administrator	20	10.8
6. Technical Services	1	0.5
7. More Than One Checked	5	2.7
	186	100.0%
2. Do you consider the crime problem existing within the jurisdiction of your Department a serious one?		
Yes	173	93.5%
No	12	6.5
	185	100.0%
3. In your opinion, has the helicopter aided in deterring criminal activity within your Department's jurisdiction?		
Yes	90	48.9%
No	94	51.1
	184	100.0%
4. Do you consider Crime Reduction as a <u>most</u> important function of the law enforcement helicopter?		
Yes	134	78.4%
No	37	21.6
	171	100.0%

QUESTION	NUMBER	PERCENT OF TOTAL
5. Do you believe the effectiveness of your Department's basic police function, "Protection of Life and Property" has been improved by application of the helicopter?		
Considerably	82	45.1%
Slightly	80	44.0
Not at all	20	10.9
Effectiveness has decreased	-	-
	182	100.0%
6. Do you believe the helicopter is of value to <u>you</u> in your particular job function?		
Yes	105	57.4%
No	78	42.6
	183	100.0%
7. In your opinion, have the following (listed below) accepted your Department's helicopter program as an effective law enforcement tool?		
The general public:		
Yes	154	86.3%
No	28	13.7
	182	100.0%
Fellow department officers:		
Yes	141	77.1%
No	42	22.9
	183	100.0%
Other agency officers in your area:		
Yes	141	79.7%
No	36	20.3
	177	100.0%
8. Do you feel the helicopter program has caused any degree of personnel problem in your Department (i.e., "elite" air crew vs. ground troops type of situation)?		
Yes	30	16.9%
No	148	83.1
	178	100.0%

QUESTION	NUMBER	PERCENT OF TOTAL
9. In your opinion, do you feel that services provided by your helicopter have been effective enough to merit continuation, or even increase of, the helicopter program?		
Increase	144	81.4%
Continue about the same	28	15.8
Decrease or eliminate	<u>5</u>	<u>2.8</u>
	177	100.0%
10. Have you been involved personally with the utilization of the helicopter in a field function?		
Yes	91	48.9%
No	<u>95</u>	<u>51.1</u>
	186	100.0%
11. Have you been involved personally with the utilization of the helicopter on any case assigned to you?		
Yes	61	32.8%
No	<u>125</u>	<u>67.2</u>
	186	100.0%
12. Have you been involved with utilization of the helicopter as a Supervisor/Administrator of units/personnel which have worked directly with the helicopter?		
Yes	34	19.1%
No	<u>144</u>	<u>80.9</u>
	178	100.0%
13. Do you, as a field officer, feel more secure while performing certain hazardous field functions if the helicopter is present?		
Yes	88	87.1%
No	<u>13</u>	<u>12.9</u>
	101	100.0%

QUESTION	NUMBER	PERCENT OF TOTAL
14. As a Supervisor/Administrator, have you observed that field officers display an increased sense of security if the helicopter is present in certain field functions?		
Yes	38	74.5%
No	<u>13</u>	<u>25.5</u>
	51	100.0%
15. While working jointly with air crews, have you found the overall tactics, coordination and cooperation to be generally satisfactory?		
Yes	85	90.4%
No	<u>9</u>	<u>9.6</u>
	94	100.0%
16. As an investigator, supervisor or administrator have you observed, overall, that air-ground, and/or air tactics, coordination and cooperation have been generally satisfactory?		
Yes	37	80.4%
No	<u>9</u>	<u>19.6</u>
	46	100.0%

NOTE: Percent of total refers only to individuals answering the particular question.

job functions, evidenced by the 79.6 percent who voiced suggestions/opinions.

One major re-occurring suggestion was expressed by deputies of all ranks. This suggestion was:

- . The helicopter should be immediately available, routinely serving field officers on a day to day basis as an integral part of the basic law enforcement function - aerial patrol and back-up of field function units.

Other suggestions of noticeable number were usually included in, or with, the major suggestion above. Some are mentioned briefly below:

- . Air time is needed during higher crime rate and called for service times, i.e., during darkness.
- . Administratively reassign the helicopter program to the patrol division.
- . Train ground personnel in proper utilization of aerial support - coordinate and integrate the program into the total field function.
- . Train patrol observers

It is interesting to note that, in their suggestions, Ventura County Sheriff's deputies express a remarkable "oneness" concerning their concept of helicopter programs in law enforcement. The above suggestions are indicative of this oneness.

### (3) Other Agency Survey

The Ventura County Sheriff Department's Helicopter Program's principal operational mode, i.e., standby response to specific incidents or specific areas for some type of patrol assignment (routine or task-force oriented), is reflected in other agency interview responses.

Ventura specified assistance to all law enforcement agencies in Ventura County as a project objective. Administrative

personnel of the following agencies were interviewed in relation to this objective:

- . Oxnard Police Department
- . Ventura County District Attorney
- . Ventura Police Department
- . Santa Paula Police Department
- . Ventura County Fire Department

All five interviewed were directly involved in a liaison capacity with the Sheriff's Department for helicopter service requests. Each was a part of the chain of command in his own agency for "call out" procedures.

Four of the five believed procedures for obtaining the helicopter are "well defined". Some have no written directives of their own but know, from personal contacts and initial planning, the Sheriff's helicopter service call out policy. One interviewee felt that the lack of written procedures (both departments) left reception of services as "poorly defined".

One interviewee, whose agency rarely utilizes the helicopter except for pre-planned (good notice lead time) assignments, listed availability as "always". The other four chose the term "usually", citing good availability in pre-planned assignments with poorer availability and response to "happening now" incidents. They were aware of priority assignments and difficulty of one helicopter to provide broad coverage. Thus, many times, requests are not made.

Significance of the helicopter's contribution was perceived as varied by those interviewed. One labeled the contribution as "very significant" because mission involvement was only on significant incidents, missing child, rescue and civil disturbance. Two categorized the contribution as "moderately significant" to "very significant", depending on response time and type of mission to which applied. One rated contributions

as "moderately significant" as most usage is for "after the fact" incidents, crime photo, some crowd control and restricted use. One classed contributions as "slightly significant" because assignments were not critical to his agency but rather time saving and facilitating in some cases and expanding on information in other cases.

Four interviewees readily responded that their agencies would benefit if the program "expanded". They favored expansion particularly to provide increased time of availability and quick response to incidents happening now. The fifth said the program "definitely should not be curtailed or decreased" but felt his agency would not increase their usage even if the program expanded.

All interviewees presented several suggestions for program modification. These are synopsized below:

- . Increase availability all hours of day (includes more machines, more crews) - 4 suggestions
- . Mutual training with agency ground personnel (all could use "tool" better) - 3 suggestions
- . Provide analysis as to; how, when and where to apply the machine for best efficiency of use - 1 suggestion
- . Utilize "this dimension" (the helicopter) to be a focal point for better inter-departmental coordination and cooperation - 1 suggestion
- . Increase time for fire patrol and increase fire suppression accessories - 1 suggestion

Most interesting was the enthusiasm and involvement of the County Fire Departments. They have developed a 15 page comprehensive "helicopter operations" procedure manual. More than three pages of the manual constitute a written test which must be passed before any county fireman will be considered for assignment as a helicopter ground crewman.

Cumulative responses of all agency personnel interviewed are indicative that the Ventura County Helicopter Program

provides services to other agencies on a basis commensurate with the service distribution system utilized within their own department.

#### 5. EFFECT ON INCIDENCE OF CRIME

The Ventura County Sheriff's Department helicopter unit made its maiden patrol flight in September, 1971. Since this initial flight and up to 1974 the unit has not been utilized as a patrol vehicle operating on a specific, regular and clearly defined beat area. However, it should be noted that there has been a significant increase in the monthly number of hours flown in patrol activity. In the first year of operation the average was approximately 20 hours monthly. In the project year this was increased to approximately 30 hours per month (a 50 percent increase), and currently the helicopter is averaging close to 40 hours monthly (a 100 percent increase over the initial implementation year).

The above information is included because it indicates an increasing emphasis on patrol activity. As will be shown, accompanying this increase has been a decline in certain categories of crime for which it might be expected that helicopter patrol would have a repressive effect. Despite the above relationship, we do not believe that statistically reliable comparisons of patrol activity and crime incidence can be made in Ventura County. The major reasons for this are the following:

- . The total number of hours flown on patrol, while increasing, is still relatively small, in comparison to other counties in the cluster.

- . Patrol activity is generally dispersed throughout the County.

- . In areas where patrol has been concentrated (although minimally) it is not possible to develop crime incidence statistics which geographically correlate.

Exhibit D-III, following this page, provides Countywide crime statistics for the years 1970 - 1973. Percentage changes for helicopter years are also provided. Further statistical analysis of this data is not possible.

6. RESPONSE TIME

Although "decrease response time" is included as an objective in the Ventura County grant request, the mode of project implementation adopted does not allow a comparison of helicopter response times and patrol unit response time. This mode of operation did not allow the helicopter to divert from original missions (despite a crime in progress call) nor initiate missions without receiving due authorizations. Records were not kept of the time involved in obtaining authorization nor of incidents which could have been responded to if the authorization procedure were not in effect. In any case, the authorization procedure on the average precludes swift response to "in progress" incidents.

A second line of analysis involved examining a sample of special incidents, search, rescue, narcotic surveillance, etc. In this approach the entire incident was analyzed to determine a profile of helicopter response which included time as one element of the analysis.

A total of 26 incidents which were identified as being of importance to the helicopter program, were selected from Ventura County's records for review and analysis. Information sources included; air unit daily reports (logs), air unit field evaluation reports, record bureau reports, inter-office memoranda and personal contact with concerned personnel.

The following types of incidents were reviewed:

- . Searches
- . Rescues/Evaluations
- . Narcotic Surveillance

- . Suspects Arrested/Detained
- . Fire Suppression

Of these categories of special incidents it was determined that; searches, rescues and narcotic surveillances were the most frequent in occurrence. Exhibit D-IV, following this page, summarizes frequency of these types of incidents in 1972.

Time measured in "elapsed time" (incident initiation to completion) and "man hours" expended is also presented for the helicopter. An estimate, based upon past records for the same incidents, is made for these categories assuming no helicopter availability.

Although considerable documentation was compiled on special incidents, the information is difficult to present in synopsis form. In view of this fact and the significance in Ventura County of searches and rescues, in depth discussion is limited to these categories.

. Importance of Searches and Rescues

In 1972 there were 10 searches and 8 rescues. Time saved totaled 356 elapsed hours. Man hours saved totaled 2,671. <sup>1/</sup>

. Reason for Large Number of Searches and Rescues in Ventura County

- Although slightly less than 2,000 square miles in area, the county has many hundreds of square miles of wilderness area attracting thousands of people.
- Some of Southern California's most rugged mountains (The Topatopas), reach heights of nearly 10,000 feet.

<sup>1/</sup> In many cases Ventura County differentiates between searches (looking for lost persons but not necessarily evacuating them) and rescues (where a victim removal is made). Many times a rescue follows a search but not necessarily. For illustrative purposes they are discussed in combination herein.

CRIME INCIDENCE DATA  
VENTURA COUNTY

CRIME CATEGORY	YEAR				PERCENT CHANGE		
	1970	1971	1972	1973	1971/ 1972	1972/ 1973	1971/ 1973
Robbery	54	64	75	58	+17.2%	-22.6%	-9.4%
Aggravated Assault	102	144	152	144	+ 5.6	- 5.3	0
Burglary	2884	2652	1604	1438	-39.5	-10.4	-45.8
Grand Theft	462	409	483	491	+18.1	+ 1.7	+20.3
Grand Theft Auto	347	256	328	323	+28.1	- 1.5	+26.2

SPECIAL INCIDENT RESPONSE  
VENTURA COUNTY

	ELAPSED TIME (HOURS)	MAN HOURS EXPENDED	NUMBER OF INCIDENTS (1972) ESTIMATED	ANNUAL TIME SAVED (HOURS)	ANNUAL MAN HOURS SAVED
I. Search					
Median Time With Helicopter	6.8	15.2			
Median Time Without Helicopter	37.4	258	10	306	2428
II. Rescue					
Median Time With Helicopter	2.1	4.6			
Median Time Without Helicopter	8.3	35	8	50	243
III. Narcotic Surveillance					
Median Time With Helicopter	10.2	48.8			
Median Time Without Helicopter	42.4	145.6	8	258	744

- Many miles of sea coast and large inland lakes (one of which is in mountainous terrain), attract boaters, hikers, campers and weekend nature lovers.
- All of these natural attractions are within a short drive of the millions populating the Los Angeles basin area to the south.

#### Typical Search and Rescue Setting

One or several persons hiking or hunting in a mountain wilderness area, lacking proper experience and knowledge, feel they can walk the same distances in wilderness areas at nearly the same pace accomplished on flatter, friendlier terrain. Goals of distance to cover are set or contemplated but non-negotiable terrain is encountered. They keep detouring, come to dead end canyons, impassable waterfalls, darkness may approach, often panic sets in and they become hopelessly dis-oriented.

Family or friends become concerned and notify authorities, forest rangers, police or fire stations. Reporting parties often do not know the actual route proposed by the lost person(s) nor the actual area involved, only that the victim has not returned. They are concerned the party may be injured and are often right.

Helicopter airlifts searchers to vicinity of known "hiker trap" locations, permits quick checks while saving many hours of foot travel. Expertise of mountain search personnel is utilized to its fullest in this manner as well as in the capacity of aerial observers. In many cases, the helicopter crew actually locates the missing victim(s) while moving personnel (i.e., before actually beginning search). Located victim(s) are usually flown to safety. The helicopter then airlifts ground searchers out to the base camp.

#### Advantages of Helicopter

Exceptional search platform - highly maneuverable, stop in mid-air, land minimum of space, traverses over rugged terrain in minutes instead of in hours by foot, enables aircrew to see acres at a time. Unparalleled as evacuation vehicle from inaccessible areas.

#### Disadvantages of Helicopter

Direct operating costs are high; Ventura's fuel, oil, maintenance and parts expenditures for searches in 1972 were \$222.90, same expenditures for rescues were \$68.80. Average search and rescue cost without helicopter approximates \$29.18 in Ventura County (direct expense only).

The helicopter is restricted by weather and visibility (most mountain flying should be conducted with one mile or more visibility and clear of clouds).

Helicopters, due to complexity of mechanical parts and heavy demands on engines must undergo frequent major and on-going routine maintenance, sometimes affecting availability, especially of a small fleet.

Exhibit D-V, following this page, provides a "Special Incident Data Form" completed for an actual search and rescue in Ventura County.

Many other incidents were studied and analyzed using the special incidents form format. In each case it was possible to observe value in terms of: time saved, man hours saved and lives or human suffering saved.

Some of these incidents representing typical helicopter tactics and, in one case, exceptional application of the helicopter are briefly described below:

During mid-afternoon of February 14, 1972 the air-crew overheard a "burglary just occurred" radio call. The vehicle described was quickly spotted from the air, constantly kept in sight through multiple efforts to elude on the part of suspects. Ground units were coordinated to close in and capture three armed suspects. The helicopter provided officer cover during arrest. Results: three suspects in custody, case cleared, in one and one-half hours.

On a typical dry windy day in September 1973, numerous watershed area fires were burning, probable arson suspected. Helicopter tactics were employed to provide; aerial overview for battalion chiefs, check areas for possible arson suspects, keep access routes clear of onlooker obstruction and drop water on the fires. Early containment, perhaps a full day or more, was accomplished by eight hours of flight time.

In the middle of January during heavy surf conditions, waves 10 feet or more, a boat swamped and capsized in the ocean 150 yards off-shore. Of two men aboard, one drowned almost instantly. The remaining victim

SPECIAL INCIDENT DATA FORM

COUNTY: Ventura  
TYPE OF INCIDENT: Search/Missing Hikers/With Evacuation  
DATE OF INCIDENT: September 27, 1973

Brief description of incident: Called to search wilderness area of Sespe for three missing adult hikers. Helicopter called as primary search vehicle prior to alerting large ground search. Two separate flights employed with refueling in between, two pilots used.

Time advised of incident: Approx. 10:35 a.m. Means: Phone

Time deployed: 11:28 a.m.

Duration (deployment to completion): 4 hours 38 min. flight time

List other Sheriff's Department units participating: One Sergeant observer, no vehicles

List other agency units participating: None

What was principal contribution of helicopter? With the aid of one observer the helicopter conducted an entire search with no ground support. Was able to cover vast amounts of wilderness terrain and located victims, unassisted.

What was the primary result of the incident: Lost persons located and flown to safety

Was the same result possible without helicopter: Yes  No

If yes, explain how and in what manner: A full response search utilizing 4 wheel drive vehicles, (horses if required) would have probably located the hikers, additionally there is a chance the hikers, since they were not injured, may have found a way out during the search. In either case the search would have been very lengthy.

SUMMARY:

	<u>WITH HELICOPTER</u>	<u>WITHOUT HELICOPTER</u>
Time Utilized	Approx. 7 hours *	Est. 20 to 30 hours
Manpower Utilized	21 hours (man)	Est. 160 to 300 + (manhours)
Operation Cost	\$157.50	Est. \$60.00 +

Other: \* Reflects elapsed time including refueling; actual flight time in search and evacuation--2 hours 38 minutes. Ground searches of this type (area often subject of search) require base camp, communications and provisions for searches in addition to vehicular equipment.

Source of information: Air Unit daily report. Information from police search oriented personnel. Talk with pilots.

NOTE: Full impact of speedy location of lost persons in rugged terrain cannot, perhaps, be fully appreciated except by families of the missing and/or the lost persons.

could be reached by no other means than via air. Flotation gear was dropped to the survivor and one pilot jumped from the hovering helicopter into the surf to bring the stunned victim to safety. (This incident is recounted as it is a circumstance wherein measurement of the helicopter's value is human life. Officials involved and observing report that the violent sea state and water temperature would have taken two lives instead of one - had there been no helicopter available):

#### 7. COMPARATIVE COST EFFECTIVENESS

The purpose of this section is to provide an analysis of comparative cost effectiveness. In Section III a detailed description of the methodology employed in determining comparative cost effectiveness is presented. For this reason only the highlights of the procedure and the results are presented here. The interested reader should refer to Section III.

The purpose of this procedure is to quantitatively compare the achievement of helicopter project objectives: (1) assuming the existence of the helicopter program, and (2) assuming that the Department attempted to achieve the same objectives without the helicopter, i.e., by using additional patrol cars and men. The steps involved in making this comparison are briefly described below:

1. The cost of the helicopter program is determined.
2. The number of patrol units which could be supplied with the equivalent expenditure of dollars (i.e., the same expenditure as the helicopter program) is determined.
3. The primary objectives of the helicopter program are determined and prioritized. A numerical weight is assigned to each objective. (A total of 40 points is assigned).
4. An effectiveness rating is assigned to each objective for: (1) the helicopter program, and (2) assuming the same objectives are pursued without the helicopter.
5. The numerical results of the above procedure are described and summarized.

#### (1) Costs

Exhibit D-VI, following this page, summarizes the costs associated with the Ventura helicopter program. Calendar 1972 operating hours were used to estimate hourly costs. The Exhibit is largely self-explanatory with footnotes describing procedures. Pertinent information is summarized below:

- . Indirect hourly cost - \$ 80.35
- . Direct hourly cost - \$ 32.78
- . Total hourly cost - \$113.13
- . Annual program cost - \$67,369

The hourly cost of \$113.13 is somewhat high in relation to other cluster projects. This is due to the relatively small number of hours flown by the Ventura helicopter. It should be noted that in Ventura no observer or administrative costs were ascribed to the helicopter program. If these costs were included the program costs would be considerably higher. Ventura County charges a flat rate of \$100,000 for contract patrol services, i.e., one car, 24 hours per day for 3.5 days per year. Since the Ventura helicopter provides services only during daylight hours, it will be assumed that two additional eight hour patrol units could be provided for an equivalent cost.

#### (2) Weighted Project Objectives

As indicated, a major step in determining comparative cost effectiveness is the establishment of project objectives and the assignment of weights (priority) to these objectives. The process involved included:

- . Review of the grant request.
- . Analysis of the helicopter project objectives questionnaire (See Exhibit E-V) which was completed by project and ranking departmental officials.
- . Consultant analysis of actual program operation.

## VENTURA COUNTY--HELICOPTER PROGRAM COSTS

1972

<u>INDIRECT (FIXED) COSTS</u>	<u>AMOUNT</u>	<u>TOTAL</u>
Labor		
Pilots (2) <sup>1/</sup>	\$ 36,489	
TOTAL LABOR		\$ 36,489
Other		
Hanger Rent	\$ 600	
Office	161	
Insurance	10,598	
	\$ 11,359	
TOTAL INDIRECT		\$ 11,359
		\$ 47,848 (annual)
DIRECT (VARIABLE) COSTS <sup>2/</sup>		
Fuel, Oil, Grease	\$10.06	
Maintenance Labor	6.59	
Parts, Routine Overhaul	5.22	
Time Life Retirement Parts	4.91	
Reserve for Major Overhaul <sup>3/</sup>	\$26.78	\$26.78
	6.00	per hour flown
TOTAL DIRECT	\$32.78	\$32.78 per hour flown

## NOTES:

- <sup>1/</sup> Project labor costs include benefits. Pro-rated administrative costs are not included; observer costs are not included.
- <sup>2/</sup> Variable costs are derived from figures provided by Bell Helicopter and project experience.
- <sup>3/</sup> No reserve for major overhaul is maintained. For comparative purposes \$3.00 per hour flown is estimated.

## ANALYSIS:

Based upon 595.5 hours of flight

- . Indirect costs per hour flown = \$80.35
- . Direct costs per hour flown = \$32.78
- . Total costs per hour flown = \$113.13

As a result of this analysis, the following eight Ventura helicopter program objectives were identified and weights assigned:

<u>Objective</u>	<u>Priority Weight</u>
1. Increase the effectiveness of search and rescue operations in remote areas	8
2. Aid in natural disasters	7
3. Increase surveillance effectiveness in specified areas for specific offenses	6
4. Assist other law enforcement agencies	5
5. Enhance officer safety	5
6. Reduce or slow the rate of growth in the crime rate	4
7. Increase apprehension of criminal suspects	3
8. Improve response time to crimes in progress	2
Total	40

The identified objectives and priority weights assigned reflect the operational mode of the Ventura helicopter program, i.e., a program based on standby and special activity response. As will be seen, this mode of operation results in rather low effectiveness ratings for law enforcement oriented objectives.

(3) Effectiveness Ratings

In the following paragraphs an effectiveness rating is assigned to the accomplishment of each objective: (1) with the helicopter program, and (2) without the helicopter program. The ratings were derived based upon the analysis previously presented in the detailed discussions in the evaluation

components, thus, only a brief narrative is provided. It must be stressed that this comparison assumes that the same objectives would be pursued without a helicopter, i.e., by assigning approximately 2.0 additional patrol units. Since the objectives of the project are highly diverse, direct comparison is difficult, thus, this comparison must be thought of as only one element of project evaluation and not as the final evaluation conclusion. Objective ratings are provided below:

. Increase the effectiveness of search and rescue operations in remote areas

- with helicopter--effective (3)
- without helicopter--moderately effective (2)

The Ventura helicopter successfully participated in a number of search and rescue operations (18 in 1972). Since the overall number of incidents is comparatively low and the fact that night operations are not allowed, an effective rating (rather than very effective) is assigned. Similarly, the rating of moderately effective is assigned assuming no helicopter as it is believed, for the comparatively small numbers of searches and rescues, alternative means for the same program costs to achieve similar results could be implemented. However, as can be seen, the helicopter operating in a standby mode does provide a valuable service in searches and rescues.

. Aid in natural disasters

- with helicopter--very effective (4)
- without helicopter--not effective (0)

In the context of the Ventura helicopter program, natural disasters are taken to mean fires. The Ventura unit has provided valuable assistance as indicated from special incident reports and in interviews with the Ventura County Fire Department in the area of fire spotting, control, and suppression. It is also noted that the helicopter is specially fitted for fire suppression. It is unlikely that additional "other" law enforcement units could provide this service.

# CONTINUED

## 2 OF 3

Increase surveillance effectiveness in specified areas for specific offenses

- with helicopter--effective (3)
- without helicopter--moderately effective (2)

The Ventura helicopter has participated in a relatively large number of surveillances. Investigative officer interview responses as well as other agency interviews indicate general satisfaction with the helicopter's effectiveness. It may be assumed that additional ground units could provide this service, but not in all instances.

Assist other law enforcement agencies

- with helicopter--effective (3)
- without helicopter--moderately effective (2)

Other law enforcement agencies indicate general satisfaction with the assistance provided by the helicopter; however, these agencies desire more availability and joint training. If an additional two ground units were assigned to assist other agencies it may be assumed that desirable service could be provided.

Enhance officer safety

- with helicopter--not effective (0)
- without helicopter--slightly effective (1)

Officer response in Ventura County indicates general dissatisfaction with the present mode of operation which excludes general back-up assistance to field units. Additional ground units alone would, to a limited extent, enhance officer safety.

Reduce or slow the rate of growth in crime

- not rated--In view of the fact that no definitive area of patrol exists, it is not possible to determine the effect of the helicopter on crime. It must, however, be noted that the limited and special use mode of operation would tend to indicate that an effect on the crime rate is unlikely. It is also not known what effect two additional ground units, used countywide, would have on crime incidence.

Increase apprehension of criminal suspects

- with helicopter--not effective (0)
- without helicopter--moderately effective (2)

The standby mode of operation, the lack of assistance to ground units, low number of arrests credited, and the requirement that the helicopter must receive prior authorization before engaging in and/or diverting from a mission indicates that apprehension of criminal suspects is not significantly increased by the existence of the helicopter. Two additional full time ground units would tend to increase apprehension somewhat.

Improve response time to crimes in progress

- with helicopter--not effective (0)
- without helicopter--slightly effective (1)

The requirement to receive prior authorization to respond to situations eliminates the possibility of the helicopter generally reducing response times. Additional patrol vehicles would increase response times slightly.

Exhibit D-VII, following this page, summarizes the comparative effectiveness analysis. As can be seen, the Ventura County helicopter program is rated relatively effective in areas such as search and rescue, aid in natural disasters, etc. However, in activities generally associated with the law enforcement function ratings are low.

The summary of ratings is as follows:

Accomplishment of project objectives with helicopter

- slightly to moderately effective; point score 80

Accomplishment of project objectives without helicopter

- slightly effective; point score 41

COMPARATIVE EFFECTIVENESS

VENTURA COUNTY--HELICOPTER PROJECT

OBJECTIVE	OBJECTIVE PRIORITY WEIGHT	EFFECTIVENESS WITH HELICOPTER	RATING WITHOUT HELICOPTER	RATING WITH HELICOPTER	EFFECTIVENESS WITHOUT HELICOPTER
1. Increase Effectiveness in Search and Rescue	8	3	2	24	16
2. Aid in Natural Disaster	7	4	0	28	0
3. Increase Surveillance Effectiveness	6	3	2	18	6
4. Assist Other Law Enforcement Agencies	5	3	2	15	6
5. Enhance Officer Safety	5	0	1	0	5
6. Reduce or Slow Crime Rate Growth	4	-	-	-	-
7. Increase Apprehension	3	0	2	0	6
8. Improve Response Time	2	0	1	0	2
TOTAL	40			85	41

COMPARATIVE EFFECTIVENESS

VENTURA COUNTY--HELICOPTER PROJECT

OBJECTIVE	OBJECTIVE PRIORITY WEIGHT	EFFECTIVENESS WITH HELICOPTER	RATING WITHOUT HELICOPTER	RATING WITH HELICOPTER	EFFECTIVENESS WITHOUT HELICOPTER
1. Increase Effectiveness in Search and Rescue	8	3	2	24	16
2. Aid in Natural Disaster	7	4	0	28	0
3. Increase Surveillance Effectiveness	6	3	2	18	6
4. Assist Other Law Enforcement Agencies	5	3	2	15	6
5. Enhance Officer Safety	5	0	1	0	5
6. Reduce or Slow Crime Rate Growth	4	-	-	-	-
7. Increase Apprehension	3	0	2	0	6
8. Improve Response Time	2	0	1	0	2
TOTAL	40			85	41

## 8. OVERALL SUMMARY AND PROJECT RECOMMENDATIONS

In the preceding pages the Ventura County helicopter program has been described in detail. In summary, the analysis has indicated that the Ventura program is characterized by a relatively low level of activity as measured in number of hours flown. The mode of operation adopted by the program precludes close cooperation with ground units which has resulted in dissatisfaction within the Department. Operation of the unit in the standby mode and helicopter use authorization requirements preclude achievement of such objectives as reducing response time and increasing apprehension of criminal suspects. The above procedures have resulted in a relatively high cost per hour flown. It should, however, be noted that in selected areas and functions, i.e., search and rescue, fire assistance, etc., the helicopter is perceived as a valuable tool. In addition, the county is acquiring another unit, and indications are that this unit will be used more extensively in law enforcement functions.

Based upon our analysis and our observation of the Ventura County helicopter program, the following specific project suggestions are offered:

Consideration should be given to changing the operational mode of the Ventura County helicopter program. Suggested changes include: more flight time, authorization of night flight time, a revised "authorization for use" procedure to allow greater flexibility, and the assignment of permanent observers and/or the training of a corps of observers to be used in their respective specialties. In addition, consideration should be given to reassignment of the helicopter unit to a division, such as patrol. Such an assignment should result in greater integration of the helicopter unit with ground units.

A program of joint training should be instituted. Joint training should include exercises with departmental ground units and additional joint training with the other agencies served.

A greater effort should be expended to collect and utilize evaluative data. (See recommended evaluation component). It should be noted, that of

the counties visited Ventura has the most sophisticated system of crime reporting by geographic area. Unfortunately, this data is seldom used in unit assignment.

Communications equipment at the heliport should be updated with the installation of a frequency selector. The present system of monitoring all bands simultaneously is unworkable.

Consideration should be given to establishing more heliports. The need is most critical in East Valley.

DATA COLLECTION INSTRUMENTS AND METHODOLOGY

The purpose of this section is to provide the data collection instruments utilized which were common to the cluster projects. In addition, certain methodological procedures which were common to all projects are presented. The information contained in this section is designed to be read and understood in conjunction with the individual project summaries.

The following data collection instruments with appropriate methodological discussion are presented in this section:

- . Community Survey
- . Sworn Officers Survey
- . Other Governmental Agency Structured Interview Format
- . Special Incident Response Time Data Form

1. COMMUNITY SURVEY

Exhibit E-I, following this page, depicts the community survey form and instructions.<sup>1/</sup> The results of the individual surveys are discussed in some detail in each individual project summary under the heading "Perceived Effectiveness of Helicopter Patrol."

Two thousand questionnaires were mailed to patrol area residents in each county. The survey instrument, as depicted, was designed to fit on a single three by five inch card. Actual card size within each community was dependent upon the final mailing vehicle as envelope stuffing machines have varying requirements.

<sup>1/</sup> The survey form used in San Bernardino County is shown for illustrative purposes.

2. SWORN OFFICERS SURVEY

Exhibit E-II, following this page, provides the format utilized for the sworn officers survey. The questionnaire was designed to be completed by sheriff's department sworn officers in each jurisdiction. The survey form, which is self explanatory was distributed by the individual departments. The results of the sworn officers survey are presented in the individual project summaries - Appendices A through D.

COMMUNITY SURVEY

Dear San Bernardino County Resident:

On the attached card are four questions concerning the San Bernardino County Sheriff's Department helicopter program. As part of your Sheriff's Department efforts to provide better law enforcement, we are evaluating this program. I would appreciate your taking a few moments to answer the brief questions and drop the return postage paid card in the mail.

Please detach and drop in the mail. No postage is required.

Sincerely,  
San Bernardino  
County Sheriff

First Class Permit  
No. 1650  
San Bernardino, CA

**BUSINESS REPLY MAIL**  
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY:

SAN BERNARDINO COUNTY SHERIFF'S DEPT.  
Aviation Division  
P. O. Box 6  
San Bernardino, CA 92402



1. Have you heard of the Sheriff's Department helicopter program? YES  NO
2. Have you personally observed the activities of the Sheriff's helicopter? YES  NO
3. Are you in favor of continuing the helicopter program? YES  NO
4. Do you feel more secure as a result of the program? YES  NO
5. Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SHERIFF'S DEPARTMENT

Bulk Rate  
Permit No. 235  
Sacramento, CA

HELICOPTER PROGRAM SURVEY

Sir:

For some period of time your Department has utilized the helicopter in a program designed to aid the law enforcement function in a variety of ways. This program is now being studied for evaluation.

Comprehensive evaluations of projects which effect Departmental service must consider factual/objective "in-put" from each member of the Department.

Because you, as a Police Officer, are both a user and a beneficiary of the helicopter program, your cooperation in completing this questionnaire will be of immeasurable assistance in assuring an effective evaluation.

Thank you.

1. Which one of the following best describes your current primary job function?
  1. Field Patrol
  2. Investigation (Detective)
  3. Prisoner Detention (Jail)
  4. Traffic Control
  5. Supervisor/Administrator
  6. Technical Services
2. Do you consider the crime problem existing within the jurisdiction of your Department a serious one? Yes  No
3. In your opinion, has the helicopter aided in deterring criminal activity within your Department's jurisdiction? Yes  No
4. Do you consider Crime Reduction as a most important function of the law enforcement helicopter? Yes  No

5. Do you believe the effectiveness of your Department's basic police function, "Protection of Life and Property" has been improved by application of the helicopter?

- 1. Considerably
- 2. Slightly
- 3. Not at all
- 4. Effectiveness has decreased

6. Do you believe the helicopter is of value to you in your particular job function? Yes  No

7. In your opinion, have the following (listed below) accepted your Department's helicopter program as an effective law enforcement tool?

- 1. The general public Yes  No
- 2. Fellow department officers Yes  No
- 3. Other agency officers in your area Yes  No

8. Do you feel the helicopter program has caused any degree of personnel problem in your Department (i.e., "elite" air crew vs ground troops type of situation)? Yes  No

9. In your opinion, do you feel that services provided by your helicopter have been effective enough to merit continuation, or even increase of, the helicopter program?

- 1. Increase Yes  No
- 2. Continue about the same Yes  No
- 3. Decrease or eliminate Yes  No

10. Have you been involved personally with the utilization of the helicopter in a field function? Yes  No

11. Have you been involved personally with the utilization of the helicopter on any case assigned to you? Yes  No

12. Have you been involved with utilization of the helicopter as a Supervisor/Administrator of units/personnel which have worked directly with the helicopter? Yes  No

NOTE: If you have answered "yes" to any of the above three questions concerning "personal" involvement, please complete any of the following which apply, (if not, skip to suggestions).

13. Do you, as a field officer, feel more secure while performing certain hazardous field functions if the helicopter is present? Yes  No

14. As a supervisor/administrator, have you observed that field officers display an increased sense of security if the helicopter is present in certain field functions? Yes  No

15. While working jointly with air crews, have you found the overall tactics, coordination and cooperation to be generally satisfactory? Yes  No

16. As an investigator, supervisor or administrator have you observed, overall, that air-ground, and/or air tactics, coordination and cooperation have been generally satisfactory? Yes  No

SUGGESTIONS

The aerial support concept - helicopter or fixed wing - is the tool of the functioning officer. How well a tool does a job depends on how well the tool is being used. You are the user. As the user, and no matter how minor it may seem to you, what suggestions would you offer which you feel could make the helicopter program more efficient? (Suggestions might include tactics, availability, type equipment used, support equipment, more helicopters required, etc.)

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3. OTHER GOVERNMENTAL AGENCY STRUCTURED INTERVIEW FORMAT

The questionnaire used in surveying county agencies which had utilized or had been involved in operations with the helicopter is provided in Exhibit E-III, following this page. In the individual project summaries the agencies contacted in each county were identified.

For the most part, the agency interviews were on-site personal contacts. As can be seen, the format provides for a brief introductory discussion. Following this discussion, five attitudinal questions were asked followed by suggestions for program modification. The responses and suggestions were hand tabulated by the consultant. Individual agency responses were divulged to the individual projects. The results of this survey are contained in the individual project summaries - Part A, Sections IV through VII.

4. SPECIAL INCIDENT DATA FORM

Exhibit E-IV, following this page, provides the Special Incident Data Form used in obtaining information in each of the counties on search and rescue, medical evacuation, fire support operations, etc. As pointed out in the individual project summaries, the number of incidents, type of incidents, and the availability of data related to individual incidents varied widely among projects. For this reason complete standardization in this line of analysis was not possible.

In each county 15-40 special incidents were analyzed. The results of this analysis are included within the individual project summaries - Appendices A through D.

OTHER GOVERNMENTAL AGENCY  
STRUCTURED INTERVIEW FORMAT

AGENCY \_\_\_\_\_

NAME OF INTERVIEWEE \_\_\_\_\_

I. Introductory Topics

1. Description of purpose of visit

- . Independent evaluation of Sheriff's Department helicopter program.
- . Confidential nature of interview
- . Interview format

2. Role of interviewed agency

3. Role of interviewee in agency

II. Specific Attitudinal Questions

1. In your position have you been involved in a liaison capacity with the Sheriff's helicopter program?

Yes \_\_\_\_\_

No \_\_\_\_\_

Explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Are the procedures by which your agency can receive the services of the Sheriff's helicopter:

Well defined \_\_\_\_\_

Poorly defined \_\_\_\_\_

Explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. In your opinion, are the services of the Sheriff's helicopter available to your agency when needed?

Always \_\_\_\_\_

Usually \_\_\_\_\_

Seldom \_\_\_\_\_

Explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. How would you characterize the contribution received by your agency for missions which involved the Sheriff's helicopter?

Very significant \_\_\_\_\_

Moderately significant \_\_\_\_\_

Slightly significant \_\_\_\_\_

Not significant \_\_\_\_\_

Explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Do you believe the Sheriff's helicopter program as it relates to your agency should be:

Expanded \_\_\_\_\_

Curtailed \_\_\_\_\_

Remain about the same \_\_\_\_\_

Explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

III. Interview Conclusion

1. Suggestions for helicopter program modifications.
2. Special incidence analysis.
3. How often.

SPECIAL INCIDENT DATA FORM

COUNTY: \_\_\_\_\_  
TYPE OF INCIDENT: \_\_\_\_\_  
DATE OF INCIDENT: \_\_\_\_\_

Brief description of incident (attach detailed description on separate sheet, if available): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Time advised of incident: \_\_\_\_\_ Means \_\_\_\_\_

Time deployed: \_\_\_\_\_

Duration (deployment to completion): \_\_\_\_\_

List other Sheriff's Department units participating: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

List other agency units participating: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What was principal contribution of helicopter? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What was the primary result of the incident, i.e., lost person found, body removed, fire extinguished: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Was the same result possible without helicopter: Yes \_\_\_ No \_\_\_

If yes, explain how and in what manner, i.e., recreate incident without helicopter: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SUMMARY: WITH HELICOPTER WITHOUT HELICOPTER

Time Utilized  
Manpower Utilized  
Operation Cost

Other: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Source of information: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. HELICOPTER PROJECT OBJECTIVES QUESTIONNAIRE

Exhibit E-V, following this page provides the "helicopter project objectives questionnaire" which was administered to selected administrative personnel within each jurisdiction. The purpose of the questionnaire was to determine the perceived project objectives. The perceived project objectives, in conjunction with the stated (grant request) project objectives, were utilized in the comparative cost effectiveness analysis. The results of this analysis are presented in the individual project summaries Appendices A through D.

HELICOPTER PROJECT OBJECTIVES QUESTIONNAIRE

Dear Sir:

As you are aware the \_\_\_\_\_ County Sheriff's Department helicopter patrol project is being evaluated by an outside consultant. Because of your knowledge of the helicopter program you are being asked to take a few minutes to complete the following form.

The list following this instruction provides functions of the law enforcement helicopter. While there may be other functions of a helicopter program we have listed 15 of the most important. We would appreciate your reviewing the entire list and then ranking all functions 1 through 15. The rankings represent your opinion.

Example:

- Rank 1 = most important function
- Rank 2 = second most important function
- Rank 15 = least important function

All functions should be ranked, and all numbers 1 through 15 used.

Thank you for your cooperation.

<u>FUNCTION</u>	<u>RANK</u>
Increase the effectiveness of search and rescue operations in remote areas	_____
Reduce or slow the rate of growth in the crime rate	_____
Reduce time to locate lost persons in metropolitan areas	_____
Enhance officer safety	_____
Improve response time to crimes in progress	_____
Increase apprehension of criminal suspects	_____
Provide medical aid and evacuation services	_____

FUNCTION

RANK

Provide medical service to remote areas

Assist other law enforcement agencies

Assist other non law enforcement agencies in the County.

Reduce seriousness of civil disorders

Increase surveillance effectiveness in specified areas and for specific offenses

Aid in natural disasters

Provide the public with a greater sense of security

Enhance the public image of the law enforcement agency

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**END**