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normal operating procedures Management of labour relations and environment Wage negotiations and substantive conditions of employment Management of all human resources administration reports and records Management and motivation of direct reports, e.g. HR Assistant, IR Coordinator, Training and Development Coordinator, etc.	Communication Provide/obtain sensitive information requiring tact and diplomacy Sensitive press statements Reading and understanding cabinet memoranda Handling and dealing with complex iegal documents Handling and dealing with complex notes, memoranda and letters Effective public appearances Creativity
	 Exceptional creativity is required to develop strategies, policies and new HR approaches Basic understanding of law enforcement

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SIGNATURE OF INCUMBENT

SIGNATURE OF MANAGER

Road Traffic Management Corporation October 2007 Draft National Road Traffic Law Enforcement Code

JOB PROFILE (Finance)

(Filland

Job Title: Financial Manager Incumbent/s Name:

Job/Role Job Code: Grade:

Category/Function: Finances Department:

Area of Jurisdiction: Municipal/Provincial

Date:

Interviewer:

Reporting Structure/Chain of Command

Please attach organogram indicating your position and the one supervisor/manager above you and the one level below you if applicable or draw it in this box. Also clearly indicate any dotted line relationship.



What is the primary purpose of your job? What does this job do to add value to its customers? Personnel provides a sound financial governance advice and direction.

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WHAT ARE THE KEY OUTPUTS OF YOUR JOB – ROLES AND RESPONSIBILITIES? (WHAT RESULTS DO YOU HAVE TO ACHIEVE)	WHAT ARE THE KEY COMPETENCIES REQUIRED IN YOUR JOB?	WHAT ARE THE LEARNING INDICATORS REQUIRED IN YOUR JOB? (LIST MINIMUM QUALIFICATIONS /EXPERIENCES REQUIRED WHEN RECRUITING NEW AND EXTERNAL CANDIDATES)	WHAT ARE THE STATUTORY REQUIREMENTS REQUIRED IN YOUR JOB?
 Oversees payroll Ensures monthly reconciliations Compiling financial statements Monitoring budgets Analyse budgets to maintain expenditure control Prepare budget reports Consulting with management to ensure budget adjustments are done in compliance with PFMA & MFMA Act Cash management Receiving payment Banking Assisting stations with balancing and reconciliation Handling contracts Managing and coaching staff 	 Knowledge Advanced Computer Literacy General Management Advanced Financial Management Advanced Planning and Organizing Coaching and Mentoring Communication Strategy Development Basic Information Technology (IT) Clear understanding and application of National Road Traffic Act, Road Traffic Management Corporation Act and the Criminal Procedure Act Skills Policy formulation Analytical thinking Research People Management Leadership Assertiveness Negotiations Communication Provide/obtain sensitive information requiring tact and diplomacy Sensitive press statements 	Qualifications Grade 12 Grade 12 Advanced Diploma in Labour Law Training Project Management Interpersonal Skills Coaching and mentoring Transformation Leadership Experience Strategic Finance management at a senior level 10 years in finance management position	 Valid EB driver's license Clean criminal record

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WHAT ARE THE KEY OUTPUTS OF YOUR JOB – ROLES AND RESPONSIBILITIES? (WHAT RESULTS DO YOU HAVE TO ACHIEVE)	WHAT ARE THE KEY COMPETENCIES REQUIRED IN YOUR JOB?	WHAT ARE THE LEARNING INDICATORS REQUIRED IN YOUR JOB? (LIST MINIMUM QUALIFICATIONS /EXPERIENCES REQUIRED WHEN RECRUITING NEW AND EXTERNAL CANDIDATES)	WHAT ARE THE STATUTORY REQUIREMENTS REQUIRED IN YOUR JOB?
•	 Reading and understanding cabinet memoranda Handling and dealing with complex legal documents Handling and dealing with complex notes, memoranda and letters Effective public appearances 		
÷	 Creativity Exceptional creativity is required to develop strategies, policies and new Finance approaches Basic understanding of law enforcement 		

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SIGNATURE OF MANAGER

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JOB PROFILE

(Administration)

Job Title: Administration Manager Incumbent/s Name:

Job/Role Job Code: Grade:

Category/Function: Administration Department:

Area of Jurisdiction: Municipal/Provincial

Date:

Interviewer:

Reporting Structure/Chain of Command

Please attach organogram indicating your position and the one supervisor/manager above you and the one level below you if applicable or draw it in this box. Also clearly indicate any dotted line relationship.



What is the primary purpose of your job? What does this job do to add value to its customers? Personnel provides a sound administration governance advice and direction.

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WHAT ARE THE KEY OUTPUTS OF YOUR JOB – ROLES AND RESPONSIBILITIES? (WHAT RESULTS DO YOU HAVE TO ACHIEVE)	WHAT ARE THE KEY COMPETENCIES REQUIRED IN YOUR JOB?	WHAT ARE THE LEARNING INDICATORS REQUIRED IN YOUR JOB? (LIST MINIMUM QUALIFICATIONS /EXPERIENCES REQUIRED WHEN RECRUITING NEW AND EXTERNAL CANDIDATES)	WHAT ARE THE STATUTORY REQUIREMENTS REQUIRED IN YOUR JOB?
 Develop administration policies and systems Ensures proper record keeping of the organization's assets (fixed and movable) Taking stock of assets Continuously evaluating and maintaining administration systems Responsible for material and equipment movement Inventory management 	 Knowledge Advanced Computer Literacy General Management Advanced Financial Management (PFMA & MFMA) Advanced Planning and Organizing Coaching and Mentoring Communication Strategy Development Basic Information Technology (IT) Clear understanding and application of National Road Traffic Act, Road Traffic Management Corporation Act and the Criminal Procedure Act Skills Policy formulation Analytical thinking Research People Management Financial Management Leadership Assertiveness Negotiations Communication Provide/obtain sensitive information requiring tact and diplomacy 	Qualifications Grade 12 B.Comm (Finance/Acc) Training Project Management Interpersonal Skills Coaching and mentoring Transformation Leadership Experience Strategic Administration management at a senior level 10 years in administration management position	 Valid EB driver's license Clean criminal record

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WHAT ARE THE KEY OUTPUTS OF YOUR JOB – ROLES AND RESPONSIBILITIES? (WHAT RESULTS DO YOU HAVE TO ACHIEVE)	WHAT ARE THE KEY COMPETENCIES REQUIRED IN YOUR JOB?	WHAT ARE THE LEARNING INDICATORS REQUIRED IN YOUR JOB? (LIST MINIMUM QUALIFICATIONS /EXPERIENCES REQUIRED WHEN RECRUITING NEW AND EXTERNAL CANDIDATES)	WHAT ARE THE STATUTORY REQUIREMENTS REQUIRED IN YOUR JOB?
	 Sensitive press statements Reading and understanding cabinet memoranda Handling and dealing with complex legal documents Handling and dealing with complex notes, memoranda and letters Effective public appearances Creativity Exceptional creativity is required to develop strategies, policies and new Administration approaches Basic understanding of law enforcement 		

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SIGNATURE OF MANAGER

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JOB PROFILE (Stores)

Job Title: Stores Manager Incumbent/s Name:

Job/Role Job Code: Grade:

Category/Function: Stores

Department:

Area of Jurisdiction: Municipal/Provincial

Date:

Interviewer:

Reporting Structure/Chain of Command

Please attach organogram indicating your position and the one supervisor/manager above you and the one level below you if applicable or draw it in this box. Also clearly indicate any dotted line relationship.



What is the primary purpose of your job? What does this job do to add value to its customers? Personnel provides a sound stores governance advice and direction.

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WHAT ARE THE KEY OUTPUTS OF YOUR JOB – ROLES AND RESPONSIBILITIES? (WHAT RESULTS DO YOU HAVE TO ACHIEVE)	WHAT ARE THE KEY COMPETENCIES REQUIRED IN YOUR JOB?	WHAT ARE THE LEARNING INDICATORS REQUIRED IN YOUR JOB? (LIST MINIMUM QUALIFICATIONS /EXPERIENCES REQUIRED WHEN RECRUITING NEW AND EXTERNAL CANDIDATES)	WHAT ARE THE STATUTORY REQUIREMENTS REQUIRED IN YOUR JOB?
 Implement and manage supply chain function of the organization Development of the organization's supply chain policies, systems and procedures Guide procurement process during implementation of supply chain Conduct supplier evaluation to ensure uninterrupted service delivery Provide regular status reports, highlighting trends and risks, deviations, delays and appropriate recommendations 	 Knowledge Advanced Computer Literacy General Management Advanced Financial Management (PFMA & MFMA) Knowledge of Preferential Procurement Policy Framework Act Advanced Planning and Organizing Coaching and Mentoring Coaching and Mentoring Communication Strategy Development Basic Information Technology (IT) Clear understanding and application of National Road Traffic Act, Road Traffic Management Corporation Act and the Criminal Procedure Act Skills Policy formulation Analytical thinking Research People Management Financial Management Leadership Assertiveness Negotiations Communication Provide/obtain sensitive information 	Qualifications Grade 12 B.Comm (Finance/Acc) Training Project Management Interpersonal Skills Coaching and mentoring Transformation Leadership Purchasing Management Stores Control and Materials Handling Receiving, storing and issuing of material and equipment Experience Strategic Warehouse/Storage Management at a senior level 10 years warehouse/storage management position	 Valid EB driver's license Clean criminal record

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WHAT ARE THE KEY OUTPUTS OF YOUR JOB – ROLES AND RESPONSIBILITIES? (WHAT RESULTS DO YOU HAVE TO ACHIEVE)	WHAT ARE THE KEY COMPETENCIES REQUIRED IN YOUR JOB?	WHAT ARE THE LEARNING INDICATORS REQUIRED IN YOUR JOB? (LIST MINIMUM QUALIFICATIONS /EXPERIENCES REQUIRED WHEN RECRUITING NEW AND EXTERNAL CANDIDATES)	WHAT ARE THE STATUTORY REQUIREMENTS REQUIRED IN YOUR JOB?
	 requiring tact and diplomacy Sensitive press statements Reading and understanding cabinet memoranda Handling and dealing with complex legal documents Handling and dealing with complex notes, memoranda and letters Effective public appearances Creativity Exceptional creativity is required to develop strategies, policies and new Supply Chain approaches Basic understanding of law enforcement 		

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ANNEXURE 13 POLICE ALLOCATION MANUAL

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Police Allocation Manual

Determination of the Number and allocation of personnel

For Traffic Authorities

Prepared by

The Traffic Institute

Northwestern University, USA

- -----

Road Traffic Management Corporation

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CHAPTER 1: Introduction

Purpose of the Manual

The Police Allocation Manual (PAM) is designed to be used by state police authorities, or divisions within those authorities, whose mission includes the delivery of police traffic services. The Manual is designed to help such authorities address two key resource allocation questions:

- 1. What is the total number of officers (i.e., officers, field supervisors, and staff and command personnel) that are required to provide an acceptable level of service? and
- 2. How should a specified total number of officers be allocated by geographic regions or time periods to maximize authority productivity?

This version of the Manual is derived from earlier editions that were based on a review of procedures currently used by state, provincial and county authorities throughout the United States and Canada. The framework and rationale presented in the Manual are the result of a distillation process that identified

the "best" procedures, and then modified and blended those procedures into a comprehensive model for determining appropriate staffing levels and deployment patterns.

It is anticipated that the Manual will provide both immediate and long-range benefits. The procedures in PAM will provide authorities with a logical and explicit format in which to frame requests for additional personnel and/or staff allocation. In addition, it is anticipated that the Manual will serve as a catalyst for stimulating further discussion and research in the area of staffing and allocation for law enforcement authorities.

How To Use the Manual

This "Special Version" of the Police Allocation Manual consists of four chapters and two appendixes. Chapter 1 provides a brief introduction to the purposes and uses of the Manual. Chapter 2 describes the PAM staffing and allocation model.

Chapter 3 contains eight worksheets, each with instructions that provide a step-by-step process for determining staffing levels. For the first-time user of the Manual, the following procedure is recommended:

1. Read Chapter 2 - Chapter 2 can be used to gain an initial understanding of the overall logic of the model and its major components. It is not imperative for the user to understand every detail at first reading. The primary objective of Chapter 2 is to

provide readers with sufficient information to assess how the model can best be used to assist their authority.

- 2. Review Chapter 3 Chapter 3 contain all the worksheets and instructions for the PAM model. The purpose of this step is to enhance understanding of the model, to resolve questions about the procedures that are used, and to help the user assess the effort required to use the model.
- 3. Determine the Data Collection Effort After reading chapters 2 and 3 the user should estimate the data collection effort that will be required to use the model. The following steps are recommended for this assessment:
 - Review the worksheets in chapter 3 to identify which model options will be used.
 - Compile a list of the input data requirements for the authority. This list will include all the data items in Worksheet 1 plus additional data items from worksheets 2 9 depending on the particular options selected.
 - For each data item on the list, determine its availability, its accessibility, and the effort that will be required to obtain it. It is important to recognize that no authority is likely to have all the data required; it is probable that every authority will have to estimate some of the data items, at least initially.
- 4. Assess the Benefits of the Model to the Authority Before proceeding further, the user should weigh the benefits to be gained from using the model versus the data collection effort that will be required. This tradeoff can be used to help decide whether to use the model or not.
- 5. Collect the Required Data If a decision is made to use the model, initial activities should focus on data collection. The actual time required to collect the data will vary considerably by authority and will depend on the size of the authority, the degree of automation within the records section, and the scope of existing records. Initial data collection efforts may require time that will not be necessary for later uses of the model because some input data items are not likely to change (e.g., the number of roadway miles, the size of the patrol areas, etc.).
- 6. Complete the Worksheets Once the input data items have been collected, the nine worksheets in chapters 3 and 4 can be used to determine the staffing and allocation levels required for each patrol area. Once the data are available, actual completion of the worksheets themselves will require relatively little time (i.e., only ā few hours) compared to the days or weeks that may be required to collect the data.

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- Review and Adjust the Results After the model has been used to determine staffing and allocation levels, the results should be carefully reviewed. The purpose of this review is to:
 - explicitly identify the rationale for each model option that is used,
 - explicitly identify the rationale for each performance objective value that is used,
 - verify that the authority data used is both comprehensive (e.g., that all patrol workload is accounted for) and consistent with model data definitions, and
 - identify and understand differences between current staffing levels and those specified by the model.

The Role of Resource Allocation Models

It is important for PAM users to remember that the Manual is based on a "model" of staffing and deployment. All models are limited by the assumptions on which they are built and by the data that are used. (See Chapter 2 for additional discussion concerning the limitations of the PAM model.) The user must guard against the temptation to believe that the model provides "the answer." All models, including the one described in the Manual, use a variety of assumptions about the "real" world to assemble data into rational patterns that can be used by decision- makers. (Traffic Chiefs do not suffer from a lack of data, but rather from a scarcity of tools for effectively using that data.) The decision-maker, in turn, must weigh the merits of the recommendations of the model against other factors (e.g., political, economic, operational, etc.) in arriving at a final course of action. Perhaps John Schuiternan said it best when he wrote:

"Adequate police protection, like beauty, lies in the eye of the beholder. The optimal or appropriate ratio of officers to population, traffic volumes, reported crimes or accidents, etc., is not a matter of mathematics or statistics. It is a matter of human judgment and community resources."

"Allocating State Officers: The Virginia Experience," The Police Chief, July 1985.

CHAPTER 2: Overview of the Police Allocation Manual Methodology Time-Based Model

The procedures used in the PAM model to determine the total staff requirements for the delivery of traffic officer patrol services are based on an analysis of patrol workload requirements, performance objectives, and personnel policies, all measured in time. All officer time, both on and off-duty, is divided into two categories: patrol and non-patrol. Non-patrol time, determined largely by the personnel policies of the authority, is reflected in the "shift relief factor" determined in Worksheet 8 of the Manual. All patrol time is divided into four time components:

- 1. Reactive time (calls-for-service),
- 2. Proactive (self-initiated) time,
- 3. Proactive (uncommitted patrol) time, and
- 4. Administrative time.

Reactive Time

Reactive time refers to patrol time spent on activities that can be described as service-ondemand. These are usually calls for service (CFS) that are assigned by radio dispatch. For some authorities, the most important CFS activities are requests for police assistance at traffic accidents. Since most authorities also provide services beyond traffic-related activities, the PAM model classifies all CFS as either "accidents" or "other CFS." The total time spent answering CFS is referred to as "obligated time."

Proactive (Self-Initiated) Time

Proactive (self-initiated) time refers to patrol time spent on non-CFS activities. In the PAM model, self-initiated activities include the issuance of citations and warnings for driving violations, assisting motorists, providing traffic direction and control, and conducting field interrogations.

Proactive (Uncommitted Patrol) Time

Proactive (uncommitted patrol) time refers to the time spent patrolling the roadway system in the jurisdiction (i.e., time not spent on reactive, self-initiated, or administrative activities). Uncommitted patrol provides two benefits: "visibility" for the general deterrence of traffic and criminal violators, and "availability" for self-initiated activities and for the timely response to CFS. Uncommitted patrol time includes time spent on both moving and stationary patrol.

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Administrative Time

Administrative time refers to patrol activities that do not fall into the reactive, self-initiated, or uncommitted patrol time categories. Typical administrative activities include on duty court time, personal time (e.g., for meals), patrol car maintenance, training, and authority administrative duties. On-duty time spent on non-patrol activities such as extended training or special assignments are accounted for in the calculation of the shift relief factor for the authority.

Autonomous Patrol or Jurisdictional Area

The PAM procedures are designed to determine total staffing requirements for "autonomous patrol areas"; that is, geographic areas that exhibit the following characteristics:

- Virtually all of the CFS that originate in the area are handled by officers assigned to the area (or conversely, few CFS in the area are handled by officers assigned to other areas);
- Officers assigned to the area are rarely assigned to CFS outside of the area; and
- Although officers may be assigned to specific geographic subdivisions within the area for patrol, an officer may be dispatched, if required, to a CFS anywhere within the area.

In some authorities, their jurisdictional area operates as an autonomous patrol area (APA). In others, with larger geographic areas such as provincial authorities, one jurisdictional area may consist of several APAs.

Total Staff Requirements

To determine the total staff requirement for an authority, the PAM model is used in the following way:

- 1. The entire jurisdiction is used as single autonomous patrol area (APA) or is subdivided into a number of autonomous patrol areas (APAs). The APAs should cover the entire jurisdiction and should not overlap one another.
- 2. The PAM procedures are used to determine the total staffing requirement for each APA.
- 3. The staffing requirement for the entire jurisdiction is obtained by adding the staffing numbers for all the APAs. (The resulting total may need to be supplemented with additional personnel assigned to the central or regional headquarters of the authority.)

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The PAM model uses the following steps to determine the total staffing requirement for each APA:

- 1. Determine the average daily on-duty staff requirement (i.e., the number of officers required to meet the administrative, reactive, self-initiated, and uncommitted patrol requirements). The resulting number of officers is then adjusted for the use of two-officer patrol units, specialized units, and, if applicable, minimum staffing requirements.
- Determine the average number of on-duty field supervisors required to support the average daily on-duty officer requirement. The number of officers is then adjusted to account for patrol workload performed by field supervisors.
- 3. Determine the total staff requirement (i.e., the total number of personnel needed, both on and off-duty, to support the required on-duty patrol presence) for the APA. The total staff requirement will include officers, field supervisors, and staff and command personnel.

Average Daily On-Duty Officer Requirement

The PAM model determines the average number of on-duty officers that will be required each day (i.e., within each 24-hour period) based on the following formula:

$$N = \frac{N_r + N_p}{1 - \frac{m_e}{60} - \frac{m_s}{60}}$$

where:

N - The average number of on-duty officers required per day (i.e., per 24-hour period),

 N_r - the average number of on-duty officers required per day to service all CFS and accidents in the APA,

 N_p - the average number of on-duty officers required per day to provide the specified level of uncommitted patrol in the APA,

 m_a - the average number of minutes per hour spent on administrative activities by each onduty officer,

 m_s - the average number of minutes per hour spent on self-initiated activities by each onduty officer.

Much of the effort required to use the PAM model is spent determining appropriate values for N_n , N_p , m_s , and m_a based on the workload level, operational policies, and roadway and traffic characteristics of the authority and patrol area. The basis for deriving each of these values is outlined below.

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Number of officers for reactive time workload (N_r)

The average number of officers required per day to provide service for all accidents and other CFS in the patrol area is based on the average total obligated time per day required for all accidents and other CFS, and the shift length used by the authority.

Number of officers for uncommitted patrol time (N_{ρ}) .

The average number of officers required per day to provide uncommitted patrol is based on:

- The number of officers required to provide an adequate level of uncommitted patrol visibility as measured by the "patrol interval" (i.e., the average time between trips past any given point on the roadway); and
- The number of officers required to insure a timely response to obligated time activities.

The number of officers required for visibility is based on the length of roadway to be patrolled, the hours of coverage per week, the average uncommitted patrol speed, the shift length, and the desired patrol interval by roadway type. As an example, a patrol interval of eight hours indicates that a officer will be observed on uncommitted patrol on a given roadway segment about once every eight hours or three times per day.

Two criteria are available in the PAM model for determining the number of officers required for a timely response to CFS. The number can be determined based on either:

- The percent of obligated time activities for which a officer is immediately "available" (i.e., a officer not currently involved in a CFS, self-initiated, or administrative activity), or
- The average travel time to each obligated time activity.

The number of officers required for immediate response is based on the average number of officers required per shift for reactive time activities and the immediate response percent set by the authority. Travel time values are based on the size of the patrol area (and/or roadway length if line patrol is used), the hours of coverage per week, the average response speed, the shift length, and the average travel time objective set by the authority.

Self-initiated time per hour per officer (ms)

The PAM model does not attempt to directly determine the total number of officers that are necessary for all self-initiated activities. To produce such a value would require an accurate measure of the total self initiated workload for the authority (i.e., the total time that an authority should spend on these activities within the patrol area). To avoid the difficulties associated with determining this value, the PAM model focuses on the number

of minutes per hour spent on self-initiated activities by each officer (m_s). The PAM model allows the user either to specify a value for m_s or to derive a value based on self-initiated data for the authority from previous years.

Administrative time per hour per officer (m_a)

Paralleling the rationale given above for determining m_s , the PAM model does not attempt to determine the total administrative workload of the patrol force, but rather focuses on the amount of administrative time required per hour per officer (m_a). The PAM model permits the user either to specify a value for m_a or to estimate it based on authority experience.

Adjustments to the Average Daily Number of On-Duty Officers

The initial value for the average number of on-duty officers required per day is examined to determine whether additional or fewer officers are needed because of:

- The use of two-officer patrol units,
- Patrol provided by officers assigned to specialized units (e.g., hazardous materials or accident investigations), and
- Minimum staffing levels.

Average Daily Number of On-Duty Field Supervisors

The average number of on-duty officers required per day serves as the basis for calculating the number of on-duty field supervisors required. Two factors are used to determine the final number of on-duty officers and supervisors:

- 1. The average number of officers supervised by each field supervisor (set by authority policy), and
- 2. The fraction of each field supervisor's time spent on patrol (i.e., non-supervisory) activities.

Total Staff Requirements

Worksheet 8 of the PAM model is used to determine the total number of personnel, both on- and off-duty, required to support the average number of on-duty officers and field supervisors required per day. The total number of personnel consists of officers, field supervisors, and staff and command personnel. The total number of officers and field supervisors is determined using the shift relief factor for the authority. This factor indicates the average number of officers required to staff one shift position every day, and is based on the shift length, the average work week, and the average number of on-duty patrol hours expected from each officer per year. The number of staff and command personnel required is specified as a policy decision by the user.

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Limitations of the PAM Model

The PAM model, as presented in this document, should be viewed as a generic procedure that must be adapted to fit the mission, physical environment, roadway system, and operational idiosyncrasies of each authority. State police departments in the United States, as in South Africa exhibit a wide range of missions: from extended service police authorities such as the metropolitan police departments to municipal traffic departments with limited responsibilities. The varieties of authority missions, in turn, exist within a wide range of environmental and roadway settings.

In addition, there are a number of issues which, although addressed in a general sense in the PAM model, represent relationships and circumstances for which additional research and operational experience are needed. Some of these areas include:

- The relationship between the amount of self-initiated work and various roadway and traffic characteristics;
- The determination of travel time for large non-urban areas with sparse roadway systems; and
- The determination of staffing requirements for high volume, high-density, urban interstate and expressway systems.

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CHAPTER 3: PAM Instructions and Worksheets for Determining Total Staff Requirements

Introduction

This chapter provides a systematic format and process for determining the total staff requirements for traffic departments providing patrol services in autonomous patrol areas. The process is presented in a series of eight worksheets entitled:

Worksheet 1: Operations, Workload, and Roadway Data

Worksheet 2: Administrative Time

Worksheet 3: Reactive Time

Worksheet 4: Proactive Time - Self-initiated

Worksheet 5: Proactive Time - Uncommitted Patrol

Worksheet 6: Average Daily Number of On-Duty Officers

Worksheet 7: Special Assignments and Field Supervision

Worksheet 8: Total Staff Requirements

Worksheet Format

The same format for each data entry and calculation step is used in all eight worksheets. Each worksheet is divided into a number of sections. Each section consists of a series of individual steps. For each step, a numeric value is obtained and recorded in a box on the right-hand side of the worksheet. Each box is labeled with a numeric identifier to facilitate reference to values that are used in later steps, sections, or worksheets. The numeric value that is recorded for each step is obtained in one of four ways:

- data collection,
- policy decision,
- referenced from an earlier step, or
- calculated using the method or formula given in the worksheet based on numeric quantities from previous steps.

Preceding each worksheet is a brief description of its purpose followed by instructions for individual steps and the anticipated source of required data items; that is: data collection (D), policy decision or current authority practice (P), referenced value (R), or calculation (C).

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For some procedures, more than one method is available for obtaining a particular data item. When two or more options are presented, they are separated with the word "OR" between them.

Terminology, Notation, and Key Assumptions

Within the Manual, the term "patrol" refers to the activities associated with all four time categories used in the PAM model (i.e., reactive, self-initiated, administrative, and uncommitted). "Non-patrol" refers either to off-duty time or to on-duty time spent on temporary special assignments that do not include activities in any of the four time categories. (A more detailed discussion of non-patrol time is presented in the instructions for Worksheet 1.) The term "uncommitted patrol" refers to one of the four time categories and represents patrol time spent in the field while not engaged in reactive, self-initiated, or administrative activities. This definition of patrol is sometimes referred to as "preventive patrol" or "uncommitted time." The total uncommitted patrol time per hour equals the time left over when the average number of minutes per hour spent on reactive, self-initiated, and administrative activities is subtracted from 60 minutes. The appropriate meaning of "patrol" in the Manual is indicated by the context in which it is used.

The PAM model is based on a number of assumptions that are identified in the instructions preceding each worksheet. Two key assumptions that should be kept in mind are:

- The total staff requirement determined with the worksheets is only applicable to autonomous patrol areas (APA). If a district or zone consists of more than one APA, the total staffing requirement for the district or zone is obtained by determining the staffing requirement for each APA and adding the results together.
- 2. The procedures used in worksheets 1-5 and Section 6.1 of Worksheet 6 assume the use of only one officer for each patrol unit. As a result, the phrases "number of officers" and "number of patrol units" are used interchangeably.

An adjustment for the use of two-officer patrol units is presented in Section 6.2 in Worksheet 6.

Instructions for Worksheet 1: Operations, Workload, and Roadway Data

Worksheet 1 is used to identify most of the data items that will be used in worksheets 2 - 8. Worksheet 1 is not a complete list of all the data items that may be needed since several of the worksheets permit the use of optional procedures, each requiring a slightly different set of data items.

Some procedures in the worksheets use the number of roadway miles in the APA as part of the calculation process. The worksheets in this version of the Manual are designed to accommodate up to three categories or types of roadways. (More than three can be easily Draft National Road Traffic Law Enforcement Code

accommodated if necessary). Each PAM user is free to determine how many types will be used and what the definition of each category will be. How many types to use and what the definition of each should be is related to the variety and extent of roadways in an APA and the nature of the data collection system used by the authority. Possible roadway categories that can be used are freeway, highway, primary roadway, secondary roadway, rural roadway, municipal, and residential streets.

Regardless of how many roadway types and what definitions are used, all roadways in the APA regularly patrolled by the authority must be included in one of the roadway types.

Instructions for Individual Steps

- 1.1 Name of the autonomous patrol area (usually a province or municipal area) (D).
- 1.2 Operations Data for the APA
- 1.2.1 Shift length is the number of hours each officer is on duty for one tour or watch or shift (P). If shift length varies by officer or assignment, an average value should be used.
- 1.2.2 The average number of on-duty hours on patrol per year per officer refers to the actual number of hours that a officer appears for regular patrol duty each year (D). This number should include both regularly scheduled on-duty time and paid overtime. (See discussion below about "non-patrol" time.) The average number of actual on-duty hours spent on patrol may be determined in a number of ways. The authority may have a system that keeps track of the number of on-duty patrol hours for each officer. If this system is used, the average number of hours is obtained by adding all the on-duty patrol hours and dividing by the number of officers. In some authorities, it may be easier to determine the average on-duty hours per year on patrol per officer by assuming that each officer works one shift on patrol every day and then subtracting the average number of non-patrol hours, both on and off-duty, per year per officer.

"Non-patrol" time consists of:

- (1) Regular days off unpaid time off. The number of regularly-scheduled days off is determined by the shift length and the average work week (e.g., an 8-hour shift length and a 40-hour work week produces an average of 2 days off per week).
- (2) Benefit days off paid days off. Benefit days off usually include vacation leave, sick leave, holiday leave, compensatory time off, and a variety of other kinds of days off that vary by authority and region.

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- (3) Temporary special assignments on-duty assignments that remove an officer from patrol operations (e.g., attendance at a training course, assignment to duty at the county fair, limited duty status, etc.). It is recommended that only assignments that last one or more shifts at a time be included in this category. Activities that require less than one shift (e.g., roll-call training and desk duty for one or two hours) should be included as administrative time when estimating m_a in Worksheet 2.
- 1.2.2.1 Average work week (P). The average number of hours an officer is paid for each week. Most authorities use 40 hours per week, although it is not uncommon to find values that are slightly above or below this.
- 1.2.2.2 Average number of benefit hours off per year per officer (P). The average number of paid off-duty hours an officer uses per year for vacation, holidays, illness, compensatory time off, etc. It is important to note that this value is benefit time taken which may be less than benefit time earned per year. Since this value reflects the specific benefit time-off policies and experience of an authority, it can only be estimated by collecting data on the benefit time off history of the authority.
- 1.2.2.3 Average number of on-duty hours spent on temporary (non-patrol) special assignments per year per officer. Paid on-duty time that is not spent on regular patrol operations.
- 1.2.3 Average number of officers to be supervised by one field supervisor (P).
- 1.2.4 Percent of field supervisor on-duty time spent on patrol activities (D).

"Patrol activity" refers to any activity that would be performed by a officer if the field supervisor was not present. Alternatively, patrol activities for field supervisors can be thought of as all non-supervisory activities. The percentage is a number between 0 and 100. A value of 0 indicates that each field supervisor spends no (zero) time on patrol activities. A value of 50 indicates that each field supervisor spends an average of 50% of his/her time on patrol activities.

- 1.2.5 Patrol operations roadway category 1
- 1.2.5.1 Name or type of roadway used for category 1.
- 1.2.5.2 Coverage per week (P)(D). The number of hours that category 1 roadways in the patrol area are covered per week. A roadway is considered "covered" during a shift if at least one officer has patrol responsibility for the roadway. Note that a "covered" roadway does not imply that the patrol level is adequate; merely that at least one unit has patrol responsibility for it whether it can provide adequate coverage or not. Coverage is expressed in hours per week (i.e., a number

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between 0 hours (no coverage) and 168 hours (coverage 24 hours per day, seven days a week). Coverage in shifts per week can be easily converted to hours; e.g.

E	PATROL COVERAGE, NUMBER OF 8 HOUR SHIFTS PER WEEK	2	PATROL COVERAGE, NUMBER OF HOURS PER WEEK
8	21	2	168
ŧĿ	14	5	112
W	5	廢	40

- 1.2.5.3 Average patrol speed (D). The average speed (MPH) of units while on "uncommitted patrol" on category 1 roadways (i.e., it does not include the average speed during travel to an accident or other CFS or travel while performing administrative or self-initiated activities or while on uncommitted patrol on non-category 1 roadways). This value can be determined by dividing the miles driven while on uncommitted patrol (on category 1 roadways) per shift by the time spent on uncommitted patrol (on category 1 roadways) during the shift. The uncommitted patrol time spent on a particular roadway type equals the shift length minus time spent on accidents, other CFS, self-initiated, administrative activities, and uncommitted time spent on other roadway types. Note that uncommitted patrol time includes time spent on both stationary and moving patrol even when speeds are reduced because of traffic volumes or control devices.
- 1.2.5.4 Patrol interval performance objective (P). The patrol interval indicates the frequency with which a officer will pass a given point on a category 1 roadway. Measured in hours, it is the average time a stranded motorist would have to wait for a officer to come by on uncommitted patrol. As the patrol interval objective is lowered, the number of officers required increases. As examples, consider the table below (based on 8-hour shifts):

PATROL (HOURS)	INTERVAL	PATROL PAST FIXE	FREQUENCY ED LOCATION)	(TIMES
2		4 tim	es per shift	

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PATROL (HOURS)	INTERVAL	PATROL FREQUENCY PAST FIXED LOCATION)	(TIMES
4		2 times per shift	
8		Once a shift	
24		Once per Day	
168		Once per week	

Note that "patrol interval" and "patrol coverage" are not directly related. Patrol coverage merely indicates responsibility for patrolling a roadway segment. The patrol interval determines the extent or intensity of the coverage.

- 1.2.6 Patrol operations roadway category 2. See instructions for steps 1.2.5.1 1.2.5.4.
- 1.2.7 Patrol operations roadways category 3 See instructions for steps 1.2.5.1 1.2.5.4.
- 1.3 Workload Data for the APA
- 1.3.1 Total number of days in the sample period (D). Collect accident and other CFS data for the previous 1, 2, or 3 years.
- 1.3.2 Total number of accidents during the sample period (D). Total number of accidents handled or investigated by the authority during the sample period. The number should include accidents in which the authority only provides backup services.
- 1.3.3 Average service time (hours) per accident (D). The average time required to handle one accident. The average time can be determined on the basis of a sample of 100 or more accidents. The average service time for an accident includes:
 - travel time to the accident,
 - on-scene time,
 - report writing time,
 - follow-up investigation time, and
 - time charged by all authority units assigned to the accident.

Note that the average service time for accidents does not include dispatching time.

1.3.4 Total number of other CFS during the sample period (D). Total number of other CFS handled by the authority during the sample period. The number should include CFS for which the authority only provides backup support.

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- 1.3.5 Average service time(hours) per other CFS (D). The average time required to process one CFS. The average time can be determined on the basis of a sample of 100 or more other CFS. The average service time for a CFS includes:
 - travel time to the CFS,
 - on-scene time,
 - report writing time,
 - follow-up investigation time, and
 - time charged by all authority units assigned to the CFS.

Note that the average service time for other CFS does not include dispatching time.

1.4 Roadway Data for the APA

For steps 1.4.1 - 1.4.3, enter the number of miles in the patrol area for category 1, 2, and 3 type roadways based on the roadway category definitions determined by the authority.

The total miles determined should be based on roadways in the jurisdiction of the authority that are routinely patrolled by authority personnel. Roadway miles within a municipality that are considered within the jurisdiction of the state authority, but are not usually patrolled by officers would not be included. Note that if visibility or access to opposing lanes is limited (e.g., on some highways and freeways), each direction of travel can be considered as a separate roadway in determining total length.

See the pro Forma for worksheet 1 in Annexure 12 of Part F of the Code.

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Instructions for Worksheet 2: Administrative Time

Worksheet 2 is used to determine the average number of minutes per hour per officer spent on administrative activities (e.g., on-duty court time, range training, etc.). Either of two procedures can be used to obtain a value for the administrative time (m_a). In Section 2.1, the user specifies the value directly. In

Section 2.2, the user determines the value based on authority administrative workload information for the APA. Care must be taken in defining what authority activities will be included as administrative time to insure that all non-patrol time is included and that no activities are counted more than once. (See the instructions for operations data in Worksheet 1 above)

Instruction for Individual Steps

User specifies average number of minutes per hour per officer spent on administrative time (P).

Determine ma based on the historical experience of the authority within the APA (D).

- Select a sample period (e.g., one year) and collect data that indicates the total amount of time (hours) spent by the patrol force on administrative activities during the sample period within the APA.
- Determine the total number of on-duty hours on patrol provided in the APA during the sample period used for Step 2.2.1.

Administrative Time User selects a value for m_a based on either section 2.1 or 2.2.

Note that the value selected for m_a (Step 2.3) must satisfy the following condition: 0 <= $m_a < 60$.

This condition requires that the total administrative time per hour for administrative activities must be greater than or equal to zero minutes and less than 60 minutes. In practice, administrative time per officer is usually less than 20 minutes per hour.

See the pro forma for worksheet 2 in Appendix 12 of Part F of the Code.

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Instructions for Worksheet 3: Reactive Time

Worksheet 3 is used to determine the average number of on-duty officers (N_r) that are needed each day to handle accidents and other CFS within an APA. The average number of on-duty officers required per day is determined with the formula:

$N_{r} = \frac{AverageTotalObligatedTime(hours) perDayforAccidentsandOtherCFS}{ShiftLenght(Hours)}$

Sections 3.1 and 3.2 are used to determine the average obligated time per day for accidents and other CFS respectively. If desired, the "other CFS" category can be divided into subcategories (e.g., other authority assists, criminal calls, etc.) for informational purposes. The total average obligated time per day is obtained in Step 3.3.1, and the number of on-duty officers is calculated in Step 3.3.3.

Authorities that are using computer-aided dispatching (CAD) systems may be able to obtain the total obligated time data required for steps 3.1.3 and 3.2.3 directly. Authorities that use this approach should insure that the total time reported by the CAD system includes all of the elements of obligated time; i.e.

- travel time to the scene,
- on-scene time,
- report writing time,
- follow-up investigation time, and
- time consumed by all units involved with the incident.

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Instructions for Worksheet 4: Proactive Time - Self-initiated

Worksheet 4 is used to determine the average number of minutes per hour (m_s) each officer spends on self-initiated activities within the APA. Three alternative procedures are available to determine m_s . The user can either:

- (1) select the value directly based on authority policy (Section 4.1),
- (2) determine the value indirectly by specifying a number of self-initiated contacts per shift per officer, the shift length of the authority, and the average time per contact (based on authority experience within the APA) (Section 4.2), or
- (3) determine the value based on authority workload experience within the APA (Section 4.3).

Instructions for Individual Steps

User selects the average number of minutes per hour per officer to be spent on selfinitiated activities within the APA (P).

User selects m_s based on a performance objective for the average number of selfinitiated contacts (i.e., warnings, citations, assists, etc.) per shift, the authority shift length, and the average time per contact within the APA (P) (D).

Collect data to determine the total number of self-initiated contacts within the APA during a specified sample period (e.g., one year).

Determine the total time (hours) spent on self-initiated activities by the patrol force within the APA during the same sample period used for Step 4.2.1.

Determine m_s based on authority experience within the APA (D).

Determine the total time (hours) spent on self-initiated activities within the APA during a sample period (e.g., one year). Note: the total hours indicate the time actually spent handling self-initiated activities; i.e., issuing violations, assisting disabled motorists, etc. It does not include the time spent in looking for these activities.

Determine the total on-duty hours on patrol within the APA during the sample period used for Step 4.3.1.

Proactive Time (Self-initiated) User selects a value for m_s based on either section 4.1, 4.2, or 4.3.

Note that the values selected for ma (Section 2.3) and m_s (Section 4.4) must satisfy the following conditions:

 $0 \le m_a \le 60$,

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 $0 \le m_s \le 60$, and

 $0 \le m_a + m_s \le 60.$

These conditions require that the total time per hour for administrative activities, selfinitiated activities, and for administrative and self-initiated activities combined must be greater than or equal to zero minutes and must be less than 60 minutes. In practice, selfinitiated time per hour is usually less than 15 minutes.

The PAM field test results suggest that the combined times for administrative and selfinitiated activities (i.e., **ma** + **ms**) for most authorities falls in the range: 15 - 30 minutes per hour; i.e.,

 $15 <= m_a + m_s <= 30.$

It should be noted that the general structure of the PAM model is predicated on the assumption that administrative and self initiated activities together do not consume a majority of available patrol time (i.e., that ma + ms 30 minutes). The use of a combined time for administrative and self-initiated activities that is greater than 30 minutes is not recommended.

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Instructions for Worksheet 5: Proactive Time - Uncommitted Patrol

Worksheet 5 is used to determine the number of officers (Np) that are required for an adequate level of uncommitted patrol to provide visibility for general determine and availability for the timely response to accidents and other CFS within the APA.

Section 5.1 is used to determine the number of officers that are required to meet the patrol interval level specified by the user for each roadway type within the APA. The formula for the number of officers (used in steps 5.1.2.6, 5.1.3.6, and 5.1.4.6) is based on:

- the number of roadway miles,
- the hours of patrol coverage per week,
- the average patrol speed (MPH),
- the shift length (hours), and
- the patrol interval (hours) set by authority policy.

The total number of officers required for uncommitted patrol equals the sum of the number of officers needed for each roadway type (Step 5.1.5).

The number of officers required for rapid response is determined using either section 5.2 or 5.3. Section 5.2 determines the number of officers that must be available during the hours of coverage to insure that at least one officer will be available in the APA for immediate dispatch or action for a user-specified percentage of all accidents, CFS, and self-initiated activities.

The number of required officers is based on the number of officers required for reactive activities, the immediate response percent set by the authority, the hours of patrol coverage per week, and the values determined for m_a and m_s in worksheets 2 and 4.

Section 5.3 determines the number of officers that must be available in the APA to provide a specified average travel time .Steps (5.3.1) through (5.3.6) are used for patrol over a designated geographic area. The value obtained from the supplemental worksheet is entered in Step (5.3.7) and the total number of officers required to meet the travel time requirement is determined in Step (5.3.8). The formula for the number of officers required for area patrol (Step 5.3.6) is based on:

- shift length (hours),
- area (square miles) of the APA,
- patrol coverage per week (hours),
- average response speed (MPH), and

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average travel time specified by the authority.

Whether response time is based on area or line patrol or both, the average response speed that is used should be equal to or greater than the average patrol speed used in Section 5.1.

The average number of officers per day for uncommitted patrol (N_p) is determined by calculating the number of officers required for visibility (Step 5.1.5) and the number of officers required for timely response (Step 5.4) and using the larger of the two values (Step 5.5).

Instructions for Individual Steps

- 5.1 Uncommitted Patrol Visibility
- 5.1.2.4 The average patrol speed (MPH) is defined as the average speed while on "uncommitted patrol" on category 1 roadways only. Uncommitted patrol is defined as the total shift time minus time spent on reactive (i.e., accidents and CFS), self-initiated, and administrative activities, and uncommitted time on non-category 1 roadways. Some authorities make a distinction between "moving" and "stationary" patrol. The PAM model does not make this distinction and the average patrol speed used in the PAM model should be based on both moving and stationary patrol time while on category 1 roadways. If the average patrol speed is known for moving patrol time only, it is possible to estimate the overall patrol speed with the formula given below.

AveragePatrolSpeed = AveragePatrolSpeed(Moving)xFractionOfTimeOnMovingPatrol

As an example, if the average speed during moving patrol is estimated to be 40 MPH and moving patrol time represents approximately 50% of total uncommitted patrol time, then the average patrol speed that should be used in the PAM model is 20 MPH (i.e., $20 = 40 \times .50$). The fraction of time on moving patrol (a number between 0 and 1) is obtained by dividing the percent of time by 100. Notice that if all uncommitted patrol time is spent on moving patrol, the average speed patrol for the PAM model equals the average speed for moving patrol.

- 5.1.3.4 Average patrol speed on uncommitted time on category 2 roadways. See discussion above for Step 5.1.2.3.
- 5.1.4.4 Average patrol speed on uncommitted time on category 3 roadways. See discussion above for Step 5.1.2.3.

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- 5.2 Uncommitted Patrol Availability Immediate Response Determination of the number of officers needed for immediate response in Section 5.2 is based on three simplifying assumptions:
 - 1. staffing is uniform over all shifts,
 - 2. the values for m_a (Step 2.3) and m_s (Step 4.4) are approximately 15 and 9 minutes per hour per officer respectively, and
 - the same user-specified immediate response performance objective is used for each shift.

As all these assumptions are not true 5.2 will not be used readily and are therefore not discussed in detail.

5.3 Uncommitted Patrol Availability - Travel Time for Area Patrol and/or Line Patrol

This section is used to determine the average number of officers required for uncommitted patrol within the APA during the hours of coverage to provide a user-specified average travel time response to CFS for area and/or line patrols. Steps 5.3.1 - 5.3.6 are used for area patrol.

- 5.3.4 Average response speed (MPH) (D). The average speed of a patrol unit while responding to a CFS. The average speed is usually lower than anticipated due to factors that may delay or impede a responding unit (e.g., heavy traffic, cornering, etc.)
- 5.3.5 Average travel time performance objective (minutes) (P). The user-specificed average travel time performance objective for patrol unit response to accidents and other CFS within the APA. It is important to note that this procedure is based on the average travel time. The number of officers determined in Step (5.3.6) will provide a level of availability that will produce travel times that collectively will equal the travel time objective value. For individual responses, however, some travel times will be lower than the objective value and some will be higher. The number of officers obtained in Step (5.3.6) does not guarantee that the travel time to every incident will be less than the authority-specified objective value.

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Instructions for Worksheet 6: Average Daily Number of On-Duty Officers

Worksheet 6 uses information from worksheets 2, 3, 4, and 5 to determine the average number of on-duty officers that are needed per day within the APA. The formula for the average number of on-duty officers (Step 6.1.5) is based on:

- the average number of on-duty officers needed for reactive activities (Nr),
- the average number of on-duty officers needed for uncommitted patrol (Np),
- the average number of minutes per hour per officer spent on administrative activities (ma), and
- the average number of minutes per hour per officer spent on self-initiated activities (ms).

Sections 6.2 and 6.3 are used to add officers to account for the use of two-officer patrol units and the presence of minimum staffing requirements set by the authority.

Instructions for Individual Steps

6.1 Number of On-Duty Officers per Day - All One-Officer Patrols (C) With the completion of Step 6.1.5, it is possible to determine how much time each officer, on the average, will spend on each of the four work categories: reactive, self-initiated, uncommitted patrol, and administrative.

The four times will sum to 60 minutes. The time (in hours) spent on each activity for an entire shift can be determined by dividing each time by 60 and multiplying by the shift length (in hours).

- 6.2 Adjustment for Two-Officer Patrol Units (P).
- 6.2.1 The percentage of time that patrol units are staffed with two officers. A value of 0 indicates that no patrol units within the APA are staffed with two officers while a value of 100 indicates that every patrol unit has two officers.
- 6.2.2 The adjustment factor is a number between 1 and 2 that is derived from the percentage entered for (6.2.1). The factor indicates the average number of officers per unit. A value of 1 indicates an average of one officer per unit (i.e., no two-officer units are used). A value of 2 indicates that every unit has two officers.
- 6.3 Minimum Staffing Level The minimum number of on-duty officers that must be available each day in the APA as determined by authority policy.

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Instructions for Worksheet 7: Special Assignments and Field Supervision

Worksheet 7 is used to determine the impact of special assignment units (e.g., inspections, K9, accident investigation, etc.) on total patrol staffing and the number of field supervisors required in the APA.

The impact of special assignment personnel is based on the number of on-duty officers required for each type of specialized unit (specified by the authority) and the percentage of patrol work, if any, performed by the specialists. The procedure assumes that the number of officers on special assignments is permanent (i.e., that they will continue on the assignment for an indefinite period of time). Additional staffing for non-permanent or temporary assignments such as traffic and crowd control at special events (e.g., a county fair) is considered in the derivation of the shift relief factor in Worksheet 8.

The number of field supervisors is based on the span of supervision (i.e., the average number of officers that report to each field supervisor) set by authority policy and the amount of patrol work done by each field supervisor.

Instructions for Individual Steps

Since field supervisors, and officers assigned to special assignments, may spend part of their time performing patrol activities, the addition of field supervisors and special assignment personnel to the patrol force may reduce the number of full-time (i.e., non-supervisory and non-special assignment) officers that are needed. The number of on-duty officers determined in sections 7.1 and 7.2 consists of an adjusted number of full-time officers and the number of officers used for special assignments.

- 7.1 Number of full-time, on-duty officers required per day, adjusted for field supervisors (P,D,C) The adjusted number of full-time, on-duty officers (N_{ao}) is based on the number of officers (N_o) derived in Step 6.3.2, the average number of officers supervised by each field supervisor (Step 7.1.1), and the percentage of on-duty time field supervisors spend on patrol activities (i.e., time spent on reactive, self-initiated, uncommitted patrol, and non-supervisory administrative work) (Step 7.1.2). If field supervisors spend no time on patrol activities, then the adjusted number of fulltime, on-duty officers required is unchanged (i.e., $N_{ao} = N_o$).
- 7.2 Number of on-duty officers required per day, adjusted for special assignment personnel (D,C) If special assignment personnel are used. Section 7.2 can be used for up to three types of special assignments, and can be easily modified by the user if more than three are needed. The adjustment is based on the adjusted number of full-time, on duty officers (N_{ao}) derived in Step 7.1.6; the number of on-duty officers required for special assignments (i.e., Ns1, Ns2, and Ns3 in steps 7.2.1.1, 7.2.2.1,

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and 7.2.3.1); and the percentage of time special assignment personnel spent on patrol activities (i.e., time spent on reactive, self-initiated, uncommitted patrol, and patrol-related administrative work) (steps 7.2.1.2, 7.2.2.2, and 7.2.3.2). The final adjusted value for the number of on-duty officers required per day (Not) is determined in Step 7.2.4 and includes both full-time patrol officers and officers who spend all or part of their time on special assignments.

7.3 Total number of on-duty field supervisors (N_{os}) required per day for the adjusted number of on-duty officers (N_{ot}) (C) The number of on-duty field supervisors (N_{os}) is based on the adjusted number of on-duty officers (N_{ot}) from Step 7.2.4 and the number of officers assigned to each field supervisor (Step 7.1.1). The value determined for N_{os} in Step 7.3.1 includes supervisors for both full-time patrol officers and officers assigned to special units.

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Instructions for Worksheet 8: Total Staff Requirements

Worksheet 8 is used to determine the total staff needed to support the on-duty officer and field supervisor requirements determined in worksheets 6 and 7. The total staff requirements for the APA are derived using the following procedure:

- Sections 8.1, 8.2, and 8.3 are used to determine the total number of officers and field supervisors, both on and off-duty, that are needed.
- Section 8.4 is used to indicate the total number of staff and command personnel that are required.
- Section 8.5 is used to collect the results into a final tabulation of the total staff requirements for the APA.

The total number of officers and field supervisors required is determined based on the shift relief factor for the APA. The shift relief factor is defined as the average number of persons required to staff one shift position per day, 365 days a year.

The average number of actual on-duty hours on patrol per person per year is determined by the average work week, the shift length, the benefit time policies (i.e., vacation time, holiday leave, sick leave, etc.) of the authority, and the extent to which officers are used for non-patrol activities. For authorities with eight-hour shifts, shift relief factors usually fall between 1.60 and 1.90.

To indicate the number of staff and command personnel, the user must specify the number directly in Section 8.4.

Instructions for Individual Steps

8.2 Shift Relief Factor

- 8.2.7 Average number of on-duty hours on patrol per officer per year This value is obtained by taking the total hours that an officer is paid per year (Step 8.2.4) and subtracting the total hours for benefit time (Step 8.2.5) and temporary assignments (Step 8.2.6).
- 8.4 The Number of Staff and Command Personnel Authority Policy (P). This category should include all command personnel (e.g., lieutenants, captains, majors, etc.) and other staff personnel (i.e., administrative, technical, etc.) that are needed for the supervision and support of the patrol force within the APA.

The specific kinds of personnel included in this category will vary from authority to authority.