

# TUCSON POLICE DEPARTMENT

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## 4-10 PLAN FEASIBILITY STUDY

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PREPARED BY

PLANNING AND RESEARCH

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## EXECUTIVE SUMMARY

This report examines the many factors that must be analyzed when considering the differences between 4-10 and 5-8 work schedules.

Tucson Police command officers were surveyed and found to be generally negative concerning the prospect of a conversion to a 4-10 schedule for their divisions. Most patrol commanders were skeptical such a change could occur without significant negative effect on response time, overtime cost, sick leave, accidents, and vehicle availability.

A department-wide survey of all personnel showed great enthusiasm for a 4-10 plan. Most personnel expected significant improvement in their personal lives as well as overall morale.

Other police agencies with 4-10 schedules were studied directly or by the reports of other researchers. Their experience answered most of the commanders' concerns: generally, call-response improved, on-sight activity increased, costs changed little, sick leave decreased or remained unchanged, and fatigue factors such as police vehicle accidents and industrial injuries decreased or did not change.

Very few police agencies were found that scheduled units other than uniformed patrol on a 4-10 plan. Those that did, scheduled primarily communications and clerical activities. No reports or studies were found that specifically analyzed the effect of the schedule on non-patrol functions.

Other agencies that were reported to have tried and abandoned a 4-10 schedule were contacted to determine their reasons for discontinuing the plan. Generally, the agencies that were unsuccessful were small, and found they had insufficient staff to properly deploy field units.

Four-ten schedules using current staffing levels were evaluated for ability to meet PCAM-defined service demands and found to be somewhat superior to their 5-8 counterparts. Two divisions, however, probably do not have sufficient staffing to convert to a 4-10 schedule without a noticeable decrease in overall response time. It was determined that future personnel additions can be more effectively deployed with a 4-10 schedule.

Court availability was analyzed and found to be slightly superior with a 4-10 plan. Court-related overtime costs should not increase with such a schedule.

Administrative time such as briefings, meal periods, etc., should decrease 20% due to one less day per week of these activities. Using current patrol staffing for evaluation, time

equivalent to fourteen full-time additional officers should be gained.

Equipment needs (including patrol cars) were found to be adequately met with current inventory.

Without the addition of Records personnel, a full-scale implementation of a 4-10 schedule in patrol divisions should result in an increased Records backlog due to an expected increase in patrol activity.

The study led to the conclusion that a thorough test of the 4-10 schedule is necessary before a recommendation for or against wide-scale implementation can be made. Therefore, it is recommended one patrol division (South or East), one civilian unit (Identification), and one sworn support unit (Service Dog Unit) be used to test a 4-10 schedule for at least six months.

## OBJECTIVES

The overall objective of this report is to determine the feasibility of the 4-10 schedule for the Tucson Police Department. Specific areas of consideration include:

1. The experience of other police agencies and an analysis of Tucson's staffing level (actual and full PCAM required staffing) will be made to determine if response time and general patrol efficiency can be expected to change.
2. Equipment needs (particularly patrol cars) will be examined to determine if sufficient equipment is in place or additional equipment would be required.
3. Costs will be analyzed to determine whether any difference in operating expenses may be expected. Particular attention will be given to overtime costs.
4. The general feeling of employees regarding a possible switch to a 4-10 schedule will be determined.
5. Obvious concerns such as sick leave use, accidents, and industrial injuries related to fatigue, etc., will be researched to determine the likely effect of a change to 4-10 schedules.
6. Support units will be analyzed to determine what effect a schedule change would have on their operations.

## INTERNAL COMMUNICATIONS AND SURVEYS

### COMMANDERS

In January 1989, Chief Peter Ronstadt requested all department commanders "to examine all issues, pro and con, that would be affected by changing from the current 5-8 schedule to the 4-10 schedule." The Chief directed staff to specifically address:

1. A 4-10 schedule, using current staffing levels, that meets current service needs.
2. The effect on your division if other units go to a plan and your division does not.
3. The effect on other divisions if you go to a 4-10 and other units do not.
4. The effect on your division's ability to carry out its function with organizations outside the department, and the public, if you were on a 4-10 plan.

In addition to these factors, the Chief requested analysis of overtime, vehicle and equipment needs, computer needs, parking, and other considerations unique to the division.

Commanders' memoranda (as submitted) are included in Appendix A. A review of the documents indicate a clear majority opposed to the schedule for their particular unit. Most non-patrol commanders had serious reservations about the ability of their units to meet service demands while on a 4-10 schedule. Exceptions were: Headquarters Desk (now on a 4-10), Service Dog Unit, Identification Section, Records, Data Services, and Communications (Service Operators only). The remainder of non-patrol commanders either expressed no clear preference or negative feelings.

Patrol commanders appeared to have a more positive outlook in general, but expressed considerable concern about sufficient manpower, overtime costs, and fatigue. Several of the commanders suggested a test of some kind before any full-scale implementation.

In general, the commanders felt (and the experience of other departments seemed to corroborate) that 4-10 schedules were best-suited for around-the-clock operations, primarily patrol activities. Many of the questions raised by commanders are answered by the experience of other departments. The effect of others, court-related costs for example, must be estimated from internal data, and only actual experience will allow a definite conclusion.

## ALL PERSONNEL

On February 16, 1989, the following survey was attached to the paychecks of all Department personnel. A total of 973 surveys were sent, 597 (61.4%) were returned by the February 23 deadline. The large response is an indication of the interest in the 4-10 Plan within the Department. The survey invited narrative comments which may be found in Appendix B. The first response totals are from all Department personnel. The second response totals are from F.O.B. personnel.

1. Will working the 10 hour day reduce your ability to perform you assigned tasks efficiently?

Yes - 56 (9.4%)	No - 503 (84.3%)	Unknown - 38 (6.4%)
23 (7.7%)	259 (87.2%)	15 (5.1%)

2. Will increasing the workday interfere with any necessary off-duty activity?

Yes - 65 (10.9%)	No - 479 (80.2%)	Unknown - 53 (8.9%)
24 (8.1%)	248 (83.5%)	25 (8.4%)

3. Would you like such a program?

Yes - 505 (84.6%)	No - 52 (8.7%)	Unknown - 40 (6.7%)
256 (86.2%)	27 (7.7%)	18 (6.1%)

4. Do you feel you would benefit from such a program?

Yes - 487 (81.6%)	No - 59 (9.9%)	Unknown - 51 (8.5%)
247 (83.2%)	25 (8.4%)	25 (8.4%)

5. Do you feel the Department would benefit from such a program?

Yes - 450 (75.4%)	No - 42 (7.0%)	Unknown - 105 (17.6%)
232 (78.1%)	26 (6.7%)	45 (15.2%)

6. Would the additional hours effect your efficiency toward the end of your tour of duty?

Yes - 63 (10.6%)	No - 453 (75.9%)	Unknown - 81 (13.6%)
31 (10.4%)	232 (78.1%)	34 (11.5%)

7. Would having an additional 52 days off per year create hardships for you?

Yes - 12 (2.0%)	No - 574 (96.1%)	Unknown - 11 (1.8%)
5 (1.7%)	290 (97.6%)	2 (0.7%)

8. Can you foresee any problems to be created by the 10 hour shift not encountered under the 8 hour shift?

Yes - 124 (20.8%)      No - 406 (68.0%)      Unknown - 67 (11.2%)  
           52 (17.5%)                    211 (71.0%)                    34 (11.5%)

9. Would working "midnights" create hardships for making court appearances under the 10 hour work day not found under the 8 hour day?

Yes - 88 (14.7%)      No - 323 (54.1%)      Unknown - 186 (31.2%)  
           53 (17.8%)                    172 (57.9%)                    72 (24.3%)

10. Would such a program as the 10 hour day create any problems regarding family functions and activities?

Yes - 72 (12.1%)      No - 465 (77.9%)      Unknown - 60 (10.1%)  
           32 (10.8%)                    233 (78.4%)                    32 (10.8%)

11. As a member of the Department, would you or could you, work the 10 hour day even though you found the 8 hour day personally more desirable, if the majority of the effected personnel and Department wanted the 10 hour day?

Yes - 555 (93.0%)      No - 26 (4.4%)      Unknown - 16 (2.7%)  
           279 (93.9%)                    12 (4.1%)                    6 (2.0%)

12. You are: Sworn 456 (76.4%) / Civilian 141 (23.6%)

Response by bureau:

	Total	Percent	Valid Percent	Cum Percent
ASB	26	4.4	4.7	4.7
FOB	297	49.7	53.1	57.8
ISB	71	11.9	12.7	70.5
OSB	54	9.0	9.7	80.1
TSB	111	18.6	19.9	100.0
No answer	38	6.4	Missing	
Total	597	100.0	100.0	



## RESEARCH

This section contains information condensed from studies and reports of police researchers of different agencies and academia. The experiences and studies compared 4-10 schedules with their more traditional 5-day counterparts in an effort to conclude which was better. As can be seen, findings varied widely, however, several conclusions (contained in the section summary) may be drawn from the overall review of the collected material. One of the primary concerns of Tucson police commanders was the area of fatigue. Since 4-10 information was inconclusive regarding this factor, two agencies' experiences with a 12-hour patrol day were also examined and reported in an effort to specifically investigate this concern.

### **POST**

In 1981, the California Commission on Peace Officer Standards and Training (POST) published a study that was designed to determine which California agencies had experience with the 4-10 plan and what effect it had on those agencies' operations. A primary objective of the report was to provide information to assist individual agencies with the evaluation of a 4-10 plan for their own use.

POST surveyed 104 law enforcement agencies that had used some form of a 4-10 plan. Fourteen agencies were found to have abandoned the 4-10 schedule. The analysis found and studied four varieties of 4-10 work schedules:

**1. STAGGERED DAYS OFF, ADJUSTED ON THE BASIS OF WORKLOAD.**

The days off of officers assigned to each shift are arranged to put more officers on busier shifts. The day off schedule remains static until a change in call distribution requires a new shift deployment plan.

**2. SQUAD ASSIGNMENTS WITH THE SAME DAYS OFF.**

A patrol squad and supervisor all work the same shift hours with the same days off. Relief squads replace the regular squads on their days off. While this arrangement preserves unity of command, it does not permit day-to-day shift manpower adjustments to balance the patrol call load. A relief squad is often used that works different shifts each day.

**3. ALL SQUADS HAVE A COMMON WORKDAY.**

On at least one day of the week, all squads are on duty. This common workday is usually designated a training day.

Most agencies that tried this type of schedule later abandoned it in favor of a different 4-10 plan.

4. **PROGRESSIVE ROTATING DAYS OFF.**

Every officer's days off are periodically rotated so that they each occasionally receives a weekend day off. This plan does not provide for the cyclical differences in workload between days of the week and, consequently, the response time performance deteriorates.

Administrators from each responding agency were asked to comment on the positive and negative features of their 4-10 plans. The following summarizes their comments:

1. The 4-10 schedule was considered to be an employee benefit.
2. Many senior patrol officers declined special assignments which would have required a return to a 5-8 schedule.
3. Comments were mixed about how well 4-10 scheduling handled peak workload periods compared with 5-8 schedules.
4. Overtime, sick leave, and court time initially decreased. These factors subsequently returned to or exceeded past experience.
5. When supervisors worked different schedules from subordinates, unity of command and supervision were considered problems.
6. Training in ten-hour blocks of time was considered difficult to administer.
7. Some agencies implemented a combination of 4-10 and 5-8 work schedules or restricted the use of the 4-10 plan to evening shifts because of lack of sufficient personnel.
8. High cost, inflexible schedules, and lack of sufficient personnel in general, were cited as problems.
9. Several agencies abandoned the 4-10 plan primarily because they found that additional personnel were needed to provide the same coverage as 5-8 schedules.

For over ten years, POST management consultants analyzed 4-10 plans that were implemented by many California law enforcement agencies. Following is a summary of their observations:

1. Overlap (the period of time when two shifts are on-duty simultaneously) frequently occurs during a time when calls for service are low.
2. In most cases, the 4-10 plan was not implemented for the specific purpose of increasing patrol effectiveness.
3. The smaller the department, the more difficult the efficient scheduling of manpower.
4. The "common training day" variant of the 4-10 plan was one of the least efficient schedules.
5. A 4-10 plan frequently requires more equipment. During overlap periods, there were often more officers than cars.
6. Unity of command and supervision was more difficult.

The POST study found that most agencies implemented 4-10 schedules "without conducting sufficient agency-specific research." The report recommends any agency considering a 4-10 schedule to conduct at least a six-month test and the following planning considerations should be analyzed prior to a major modification of an agency's manpower deployment schedule:

1. **PRODUCTIVITY/PERFORMANCE INDICATORS.**

Data such as call response time, numbers of arrests and citations, etc., should be evaluated.

2. **SICK LEAVE.**

A review of the department's sick leave experience should be conducted.

3. **INJURED ON DUTY.**

An analysis of on-duty injuries should be conducted.

4. **INJURED OFF DUTY.**

Off-duty injuries should be analyzed for frequency.

**5. VEHICLE ACCIDENTS.**

Police vehicle accidents should be analyzed for time of day and week.

**6. OVERTIME.**

Amount of overtime should be analyzed, including extended duty time, court time, etc.

**7. COMPLAINTS.**

Time and day of complaints should be analyzed to determine if length of shift is a factor.

**8. COST OF OPERATIONS.**

An analysis should be conducted of current costs compared to costs that may change with a 4-10 schedule (personnel, overtime, vehicles, vehicle maintenance, etc.).

**9. TRAINING.**

The cost and efficiency of training schedules should be analyzed. In most cases, ten-hour training days were found to be undesirable.

**10. RECRUITMENT/RETENTION.**

The effect of the work schedule on the agency's ability to attract and retain qualified employees should be assessed.

**PHOENIX POLICE DEPARTMENT**

The Phoenix Police Department began a six-month test of 4-10 scheduling in September, 1980. A committee was formed and assigned to monitor the operation of the system which included patrol officers assigned to South Mountain Precinct. The committee identified the following advantages of 4-10 scheduling:

1. Improved morale within the test precinct.
2. Increased arrests within the precinct's boundaries.
3. Decreased response time to emergency calls.
4. Increased traffic citations.

5. Fewer vehicle accidents.
6. Improved report writing by officers.
7. Decrease in reported crimes by citizens.
8. Decrease in sick leave.
9. Fewer citizen's complaints.
10. Increased time for in-service training.
11. Increased patrol time.
12. Improved recruitment and retention.
13. Decreased industrial injuries.
14. Thirty percent reduction in overtime compared with other precincts.

Disadvantages observed during the test were:

1. Supervisory communications between field sergeants and lieutenants was disrupted because of varied days off.
2. Unity of command would sometimes suffer during overlap periods due to two sergeants per squad area.
3. The number of personnel available to respond to radio calls was not sufficient if an unscheduled absence occurred during non-overlap periods.
4. Vehicle availability was a problem during overlap periods.
5. Increased paperwork generated by the added arrests, etc., caused some problems with support activities.
6. Some fatigue was reported by field officers when lengthy court appearances were required between shifts.

Phoenix expanded the 4-10 plan, making it a permanent part of their department. Their experience showed the 4-10 schedule to be a valuable method for reallocating manpower to focus more directly on peak activity periods, increasing productivity, increasing employee morale, and for reducing overtime costs.

Phoenix began a massive reorganization of their department in 1986 designed to provide a more streamlined organizational structure which eliminates duplication of function and provides for

expected growth. Project completion is not expected until 1990. Despite the massive change, the Phoenix Police Department does not intend to abandon its 4-10 plan.

#### ILLINOIS STATE POLICE

The Illinois State Police conducted a six-month pilot study for the purpose of evaluating the 4-10 schedule. Three districts of twenty-one were selected to test the schedule. In the Illinois experiment, each of the three districts worked a different variation of the 4-10 schedule. Two included patrol personnel only and had rotating and permanent shifts. The third district included administrative and command personnel.

For each of the districts, a comparison was made between the test period and a six-month period one year prior. The results obtained in the three districts were generally consistent. A clear majority (74%) of the officers were satisfied with the schedule and 71% indicated a desire to continue with it. The majority of officers experienced no more anxiety and little change in sleeping or eating habits while working ten-hour shifts. Respondents to surveys particularly liked the additional time spent with their families. Lines of communication were not significantly affected by the 4-10 schedule. Personal attitude and time off were the areas where officers experienced the most dramatic positive change.

In all three districts a decrease in unobligated time was observed implying an increase in productivity. The amount of time spent in traffic enforcement changed very little, if any. Time spent on education increased markedly. None of the districts experienced a statistically significant change in the number of traffic contacts.

Command personnel in one district believed the schedule created some problems with manpower allocation but the majority of commanders felt the 4-10 schedule was workable and very good for morale.

One district experienced a significant reduction in overtime while the others found no significant difference.

The Illinois study addressed the problems they had encountered with the following recommendations:

1. Implement the 4-10 schedule on more than one, and preferably all, shifts. Where only one shift worked a 4-10 schedule, much more difficulty coordinating consistent staffing levels was experienced.

2. Rely more on first-line supervisors (sergeants) to improve communication.
3. Authorize command, administrative, and specialty officers to adjust their schedules occasionally to allow them to be available to more than one shift in any one work day.

#### **SURVEY OF TWELVE CALIFORNIA POLICE DEPARTMENTS**

An article by Paul M. Whisenand and associates analyzed the collective experience of twelve California police departments that had used 4-10 schedules, surveying their administrators and line personnel. Findings from the administrators included:

1. Prior to trying the 4-10 schedule, most administrators were favorable, with some skepticism and reservation noted.
2. Only one department encountered any difficulty converting pay, overtime, and holiday records for a 10-hour day.
3. Departments operating 4-10 schedules for brief periods of time felt no change occurred in sick leave use, however, those with the longest-running schedules felt sick leave decreased.
4. All of the departments found that end-of-shift overtime decreased.
5. A consensus of opinion of all the administrators was that there was essentially no cost difference between the 4-10 plan and the traditional 5-day workweek.
6. The majority of departments did not require additional equipment to implement the 4-10 plan. They did find, however, that more cars were desirable for continuation of the plan.
7. A few of the departments experienced less vehicle downtime, however, the majority noticed no difference.
8. None of the administrators noticed any change in the amount of "moonlighting" as a result of the 4-10 plan.
9. Without exception, the administrators said their departments would not like to return to a five-day schedule.
10. None of the departments found it necessary to establish any new "coordinating" positions, such as a special court liaison officer, as a result of the 4-10 schedule.

11. None of the departments experienced any change in the availability of personnel for court or emergency situations.
12. All but one administrator noted a positive morale change within their departments as a result of the 4-10 schedule.
13. The administrators found, that generally, all problems created by the implementation of a 4-10 plan were solvable but there are problems unique to the schedule.
14. All of the administrators felt that the City Manager of their community was in favor of the plan.

Line employees who worked the 4-10 schedules completed surveys which were compiled by the authors of the article. The findings of this study were:

1. Officers demonstrated a very favorable initial feeling toward the 4-10 plan.  

Positive	88.0%	Negative	5.5%	Neutral	6.5%
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2. The officers found the extra day off very useful.  

Positive	92.5%	Negative	3.0%	Neutral	4.5%
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3. The 4-10 plan was considered very adaptable to educational goals.  

Positive	68.0%	Negative	7.0%	Neutral	25.0%
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4. The 4-10 plan had a very favorable effect on morale.  

Positive	86.0%	Negative	4.0%	Neutral	10.0%
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5. Court appearances were considered to be a hardship while working a 4-10 schedule.  

Positive	35.0%	Negative	23.0%	Neutral	42.0%
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6. Officers felt their co-workers had a very favorable opinion of the 4-10 schedule.  

Positive	93.0%	Negative	4.0%	Neutral	3.0%
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7. "Moonlighting" did not change since 4-10 was implemented.  

Positive	17.0%	Negative	14.0%	Neutral	69.0%
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8. Officers felt department efficiency increased very much under the 4-10 schedule.
9. Positive 78.0%      Negative 5.5%      Neutral 16.5%
10. Officers reported no significant shortage of patrol units at the start of duty while working a 4-10 schedule.  
Positive 37.5%      Negative 35.5%      Neutral 27.0%
11. Officers financial status has not been affected while working a 4-10 plan.  
Positive 23.0%      Negative 10.0%      Neutral 67.0%
12. Officers felt that patrol division was very flexible under the 4-10 plan (e.g. deployment of personnel, emergencies, etc.)  
Positive 69.0%      Negative 7.0%      Neutral 24.0%
13. Officers felt the 4-10 schedule had a very favorable effect on their personal life.  
Positive 77.0%      Negative 6.0%      Neutral 17.0%

**REGINA POLICE SERVICE (SASK., CANADA)**

The Regina Police Service implemented a 12-hour shift system in February 1985. While the Regina experience related to cost and deployment does not compare well with 4-10 schedules, it does relate when considering time-related factors such as vehicle accidents and industrial injuries. Both of these elements are cited by commanders in their memoranda as fatigue considerations. Regarding fatigue-related factors, Regina found:

1. Police vehicle accidents decreased when operating on a 12-hour day as compared to an 8-hour day.
2. Sick leave decreased.
3. The frequency of industrial accident claims decreased.
4. Total time lost due to industrial accidents increased. The implication is that while the number of accidents went down, their severity increased.
5. Citizen complaints increased.

## EVERETT, WASHINGTON POLICE DEPARTMENT

Everett, Washington also conducted a study and test of 12-hour shifts. Everett had been using an 8-hour day, rotating seven days on, two days off, eight days on, four days off, since 1976. Patrol personnel received a 4-day weekend every three weeks. A suggestion was made to test a 12-hour shift.

Initially, the 12-hour shift suggestion was treated with great skepticism. In 1978, a new Chief was appointed and decided to try the 12-hour shift on a trial basis. The test began in January 1979. Only the night shift (1730 to 0530 hours) was placed on the schedule. The remaining shifts were constructed to compliment these hours. Because the 12-hour shifts were implemented at night, any fatigue factor associated with the schedule change was expected to be exacerbated.

The results were a surprise to the Everett researchers. They found that officers unanimously preferred the long shift to 8-hour days! They indicated higher morale, better family relations, less fatigue, and a general feeling of more quality in their work as a result of the 12-hour shift.

The department also experienced no insurmountable deployment or cost problems. In June 1979, the Everett Police Department implemented 12-hour shifts for all patrol units, department-wide.

The evaluation of the Everett experience with the 12-hour shift did not indicate a significant benefit to the department save one --- morale. There was no apparent difference in any factor, including those that are fatigue-related.

## DEPARTMENTS THAT DISCONTINUED 4-10 SCHEDULES

The POST study identified fourteen agencies that had discontinued 4-10 schedules. Staff contacted each of these agencies by telephone to determine the reasons for the changes. Ten of the fourteen found they were too small and did not have enough employees to cover the shifts. The overlap periods, in particular, caused deployment problems for small departments.

Chief Feather, of the Del Rey Oaks Police Department, stated his six officers were simply not enough to deal with vacation, sick leave, and court demands. In July 1989, he expects to add two additional officers and will try a 4-10 schedule again.

Two agencies indicated they were required to field two-officer cars when 4-10 was implemented. The resulting staffing shortage caused an insurmountable problem and the programs were terminated. Lt. Pennington, of the San Fernando Police Department, said two-

officer cars are no longer required and the city is studying a return to a 4-10 plan.

Five departments attributed the failure of the 4-10 schedule to poor planning, scheduling, and management resistance. Capt. Gibson, of the Burbank Police Department told Planning staff, "no reduction in overtime or sick leave, offers nothing for the administration. It was only a perk for employees, so we got rid of it."

Capt. Strosser, of the Pasadena Police Department, said shift overlaps were not planned to coincide with peak call periods, causing wasted manpower during slow periods and lack of manpower during peak periods.

Lt. Aluffi, of the Watsonville Police Department, blamed their 4-10 failure on the previous police chief. He said the chief's decision to discontinue the 4-10 plan almost resulted in a labor strike. The department is currently working on reimplementing the 4-10 schedule.

The California agencies all had relatively small numbers of sworn personnel, none greater than about two hundred. Staff's findings supported the POST study conclusion that many departments do not adequately study and plan a change to 4-10 schedules prior to implementation. Of the fourteen agencies that discontinued the schedules, however, six are either back to a 4-10 schedule or are planning another attempt.

## SUMMARY OF RESEARCH

Reported testing and use of 4-10 schedules in police departments for other than patrol activities was very rare.

Based upon the collective experience of other agencies experienced with 10-hour (or longer) days, the following general conclusions may be drawn regarding a 4-10 schedule when compared to a traditional 5-8 schedule.

### ADVANTAGES:

1. Significantly increased employee morale.
2. Better patrol coverage during peak activity hours.
3. Decrease in end-of-shift overtime.
4. When weekly hours remain unchanged (i.e. forty), less time is required for administrative activities such as briefings, meals, etc.
5. Increased patrol activity (more contacts).

### DISADVANTAGES:

1. More excess manpower during slack periods than 8-hour days.
2. Additional patrol activity may burden support functions such as radio and records.
3. When supervisors do not work identical hours with their subordinates (common with 4-10 plans) a decrease in supervisory control and unity of command.
4. Vehicle demand during peak activity periods may approach critical if insufficient cars are available.

### NO SUBSTANTIAL DIFFERENCE:

1. Overall cost.
2. Communication between units on 4-10 and those on 5-8.

3. Sick leave.
4. Industrial injuries.
5. Police vehicle accidents.
6. Citizen complaints.

## PATROL DIVISIONS

Several issues are important in determining whether a four-ten plan is desirable for patrol operations. Perhaps the most important is whether four-day ten-hour schedules are as efficient as current five-day eight-hour schedules. Efficient use of officers in providing service to the public is always important, but even more so when budget limitations are likely to preclude addition of new police officer positions to respond to community growth. Other issues of importance include officer acceptance of potential work hours and day off combinations, schedule gaps, modifications of the squad concept, potential court-related overtime costs, and future flexibility.

### **BASIS FOR EVALUATION**

Some method for comparing current schedules with potential 4-10 schedules was needed. For this study, a baseline patrol car requirement for each of the four patrol divisions was established, using Patrol Car Allocation Model (PCAM) computer runs with one year's calls for service data ending with November 1988. PCAM tries to model the patrol situation by blending such things as hourly numbers of incoming calls for service, hourly average time needed to service each call, area and street miles of the patrol division, officer availability and proportion of backups needed.

The result of these four computer runs was a number of patrol cars needed on the street in each division for each of the 168 hours of a typical week. All schedules, current and proposed, were evaluated on their abilities to meet these PCAM requirements.

### **METHOD OF COMPARISON**

The scheduling program now in use in Planning and Research reads in a schedule showing numbers of officers in squads and their hours and days of work. The program allocates on duty officers to each of the 168 hours of the week as appropriate. The program then compares each hours' on duty officers from all squads with the number needed according to PCAM. A plus number of officers is shown if there are more officers on duty than are needed. A minus number is shown if PCAM calls for more officers than the schedule provides. These pluses and minuses show one measure of the "fit" of the schedule to the need.

Another feature of the scheduling program is the ability to scan the schedule for "gaps" and difficult transition times, as one squad comes on duty and another goes off. Gaps may occur because

briefing time at the beginning of the shift and debriefing time at the end of the shift result in a squad of officers not being on the street when their hours would indicate that they are. If there is no other squad on the street, and starting and stopping times do not overlap, no one will be available for about an hour to respond to calls for service. In a similar manner, the schedule may show two squads working, but only one will be in service if the other squad goes off duty and a new one comes on with no overlap in hours.

Three measures of "schedule fit" were used in the present study: 1) number of hours out of 168 with minus numbers - indicating too few officers on duty, 2) largest minus number of officers - indicating the deepest hole in the schedule, and 3) the sum of the minus numbers - indicating the overall shortfall of officers provided by the schedule. These numbers were used as rough indicators of how well one schedule fits given requirements as compared with another schedule. For each division, the PCAM requirements and the number of officers scheduled were kept constant, so that the only things changing were the days and hours of work.

#### CURRENT SCHEDULES

Recently, Operations Divisions South, West and East have had ten patrol squads each, while Operations Division Midtown has had nine squads. The patrol squads work five eight hour days per week with two consecutive days off. The four divisions' current squad schedules are as follows:

<u>South</u>			<u>West</u>	
Hours	Days Off		Hours	Days Off
0600-1400	SS		0600-1400	TW
0600-1400	MT (0700-1500 on WTF)		0700-1500	SS (0600-1400 on TW)
1000-1800	TF		0700-1500	TF
1400-2200	SS		1400-2200	FS
1500-2300	TW		1500-2300	TW (1400-2200 on FS)
1600-2400	TF		1500-2300	SM
1800-0200	MT		2000-0400	WT
1900-0300	WT		2200-0600	WT
2300-0700	WT		2200-0600	TW (2300-0700 on SM)
2300-0700	MT		2300-0700	SM

<u>Midtown</u>		<u>East</u>	
Hours	Days Off	Hours	Days Off
0600-1400	FS	0600-1400	FS
0600-1400	TW (0800-1600 on SMTh)	0600-1400	SM
0900-1700	SM	0900-1700	WT
1400-2200	TW	1100-1900	SS
1500-2300	SM (1400-2200 on TW)	1300-2100	MT
1600-2400	TF	1500-2300	WT
1800-0200	SS	1800-0200	FS
2200-0600	TF (2300-0700 on TW)	1900-0300	SM
2300-0700	TW	2200-0600	MT (2300-0700 on WT)
		2300-0700	WT

For this analysis, the current number of officers in each patrol division were allocated in the optimum manner, to minimize scheduling deficits. The three measures of schedule vs. PCAM fit for the current schedules are as follows:

<u>Current Schedules</u>	South	West*	Midtown	East
Num. of Hours (out of 168) With Minus Numbers	32	30	28	27
Largest Hole in Sched.	-7	-6	-4	-3
Sum of Minus Numbers	-82	-56	-48	-52

\*PCAM requirements include Adam I though num. of officers does not

In addition, gaps and difficult transition times were assessed for current schedules. Results of this review indicate that no patrol division has a complete schedule gap (with no officers on the street). However, the four divisions have from two to ten gaps of one or two hours each where there appears to be two squads on the street during the busiest hours (10 a.m. to 1 a.m.), but there is only one squad on duty, due to squad changes with non-overlapping hours. Such gaps do not show up in the measures listed above; if they did, the number of minus hours would be up by one third and the sum of minus numbers would be 60 to 70 more in several of the divisions.



**FOUR-TEN SCHEDULES**

A number of possible four-day ten-hour schedules were reviewed. Overlaps for squad changes, optimum PCAM coverage and acceptable work hour combinations were the primary guiding principles in schedule design. As many as eight different work hour and day off combinations were created for each division. The best of these were fine tuned with day off balancing and optimum allocation of officers to squads. PCAM requirements and total numbers of patrol officers were the same for each division as were used when assessing current schedules. The resulting four-day ten-hour schedules and their measures of schedule fit are as follows:

<u>South</u>		<u>West</u>	
Hours	Days Off	Hours	Days Off
0600-1600	SMT	0600-1600	SMT
0600-1600	WTF	0600-1600	TFS
1400-2400	TWT	1400-2400	TWT
1400-2400	SSM	1400-2400	SSM
2100-0700	MTW	2100-0700	MTW
2100-0700	TFS	2100-0700	TFS
1000-2000	MTW	1000-2000	WTF
1000-2000	FSS	1200-2200	SMT
1800-0400	SSM	1800-0400	SSM
1900-0500	TWT	1900-0500	TWT

  

<u>Midtown</u>		<u>East</u>	
Hours	Days Off	Hours	Days Off
0600-1600	SMT	0600-1600	SMT
0600-1600	TFS	0600-1600	WTF
1400-2400	TWT	1400-2400	TWT
1400-2400	SSM	1400-2400	SSM
2100-0700	MTW	2100-0700	MTW
2100-0700	TFS	2100-0700	TFS
1000-2000	WTF	1000-2000	MTW
1800-0400	SSM	1000-2000	FSS
1900-0500	TWT	1800-0400	SSM
		1900-0500	TWT

<u>Four-Ten Schedules</u>	South	West*	Midtown	East
Num. of Hours (out of 168) With Minus Numbers	29	58	40	23
Largest Hole in Sched.	-5	-6	-6	-3
Sum of Minus Numbers	-65	-147	-88	-38

As can be seen, four-ten schedules provide a better fit with PCAM needs than current schedules for South and East, but somewhat worse fit for West and Midtown. Such a judgment is made without considering schedule gaps. None of the 4-10 schedules has absolute gaps or one squad gaps as defined above.

Coverage is better at squad changes in many places with the four-ten schedules, due primarily to ease of including overlaps with ten hour long days. Also, none of the 4-10 schedules has split hours, with a squad working one set of hours on some days and another set of hours on other days. As a side benefit, all of the 4-10 schedules have at least as many week-end days off as currently, with several of the divisions making significant improvements in this morale-boosting area.

#### **MODIFIED SQUAD SYSTEM**

It has been known throughout the last ten years of patrol scheduling in Tucson that using a squad system where all officers have the same days off as their sergeant is less efficient, from a pure scheduling point of view, than using a system where officers' days off are offset to one side or the other from those of the sergeant. The number of officers with each day off combination can be carefully controlled with this latter method, and exact PCAM requirements can be better met. This method of scheduling has been called the shift system or the platoon system by various department members. It was used by this department for about three years in the early 1980's.

The department's experience with the shift system produced mixed results. Most officers either liked the shift system or had no opinion about it. Since the first of two sergeants working the same hours would supervise some of the second sergeant's officers when the second sergeant was off duty, some coordination was necessary. While a number of squad sergeants worked well together under the shift system, others did not. When the department gained more patrol officer positions, it went back to its former squad system, to recover the reported loss of supervisory consistency.

Now as the department is both considering a 4-10 plan and entering a period of constrained resources, reconsideration of some form of the shift system may be in order. Specifically, a limited version is suggested, where a maximum of only one of the officers' days off is different from those of the sergeant. This limited version is more properly called a modified squad system, since most of the features of a squad system are maintained. An example schedule of two squads working the same hours under the modified squad system is shown for clarification on the next page.

If a modified squad system is more desirable from an efficiency point of view, then some form training for patrol officers, sergeants and commanders should be implemented. Philosophical

approaches inherent in a squad system of supervision are different from those appropriate within a shared supervisory setting. Officers, sergeants and commanders need to understand these differences, and together produce and implement a smooth new supervisory process.

Example Schedule Showing  
Modified Squad System Hours and Days of Work

		Days Off						
<u>Squad 1 1400-2400</u>		Sun	Mon	Tue	Wed	Thu	Fri	Sat
Sergeant				DO	DO	DO		
Officer 1				DO	DO	DO		
Officer 2				DO	DO	DO		
Officer 3				DO	DO	DO		
Officer 4				DO	DO	DO		
Officer 5			DO	DO	DO			
Officer 6			DO	DO	DO			
Officer 7					DO	DO	DO	
Officer 8					DO	DO	DO	

		Days Off						
<u>Squad 2 1400-2400</u>		Sun	Mon	Tue	Wed	Thu	Fri	Sat
Sergeant		DO	DO					DO
Officer 1		DO	DO					DO
Officer 2		DO	DO					DO
Officer 3		DO	DO					DO
Officer 4		DO	DO					DO
Officer 5		DO	DO	DO				
Officer 6		DO	DO	DO				
Officer 7		DO					DO	DO
Officer 8		DO					DO	DO

Use of a modified squad system could be helpful in controlling exactly how many officers report for duty each day, and in most nearly matching each day's PCAM requirement. With about half of each squad working no more than one day offset from the sergeant, a worthwhile measure of scheduling efficiency can be obtained. It is conservatively estimated that from one third to one half of all scheduling holes (minus numbers) can be avoided with the modified squad system and the deepest holes at least cut in half.

## FUTURE FLEXIBILITY

When considering possible ramifications of a change to four day ten hour patrol scheduling, future plans of the department should be reviewed. One of the important items on the Field Operations Bureau's agenda is the possibility of moving from four administrative areas (teams) to five, six or up to eight areas within several years. Such a change would probably entail reducing the number of squads per team from the current ten (except for nine in Midtown), to eight squads per team. This reduction may be necessary due to the significant expense of providing sergeants for expansion teams. The question is whether going to a 4-10 plan would make team expansion easier, more difficult or not feasible.

To examine this issue, eight example schedules were developed. Four schedules assumed that eight squads in each of the four divisions were working the current five day eight hour standard. The other four schedules involved eight squads working four day ten hour weeks in each of the divisions. For each division, the number of officers working and the PCAM requirements, as used above, were kept constant while the schedules were compared. None of the schedules had gaps in them as described above. Measures of fit for the four pairs of schedules are as follows:

<u>Four-Ten Schedules</u>	South	West*	Midtown	East
Num. of Hours (out of 168) With Minus Numbers	35	68	40	27
Largest Hole in Sched.	-8	-9	-7	-5
Sum of Minus Numbers	-130	-202	-117	-70
<u>Five-Eight Schedules</u>	South	West*	Midtown	East
Num. of Hours (out of 168) With Minus Numbers	52	62	57	51
Largest Hole in Sched.	-9	-13	-9	-7
Sum of Minus Numbers	-174	-226	-211	-154

\*PCAM requirements include Adam I though num. of officers does not

Comparison of these measures of schedule fit shows that going to a 4-10 plan should not provide an impediment to team expansion. Even with eight squads, 4-10 schedules appear slightly better than 5-8 schedules in meeting service needs in the field.

Both of these eight squad plans are less efficient than current ten squad schedules or proposed 4-10 plans with ten squads. So when team expansion is anticipated, actual eight squad schedules will probably require use of a modified squad system and/or some split hours, to provide the most efficient use of available personnel. The presence or absence of a 4-10 plan should provide no special problems.

#### **FULL STAFFING REQUIREMENTS**

A preliminary review was made of what full staffing requirements would be under 4-10 schedules versus the current 5-8 schedules. It was found that if current PCAM requirements were met throughout the week, with sufficient additional staffing to properly cover the absentee rate, 4-10 schedules would require approximately 436 patrol officer positions, compared with approximately 455 under current schedules.

Some of the difference between the two schedules is due to the better schedule overlap from shift-to-shift of the 4-10 plan.

#### **PATROL SCHEDULING SUMMARY**

This section of the report examined 4-10 patrol schedules in some detail, drawing comparisons with current five day eight hour schedules. If schedule gaps and split hours are considered, 4-10 schedules are slightly more efficient than 5-8 schedules. Overlaps for squad changes are easier to arrange with ten hour days, thus allowing better officer briefings to occur and providing better service to citizens by not having to hold calls while schedule gaps are endured.

Eight or nine squad versions of both schedule types are less efficient than ten squad versions. The possibilities of implementing a modified squad system and using split hours are available under both systems, to improve efficiency and provide better coverage. Use of one or both of these scheduling aids may be required if an expansion in number of teams involves reduction in the numbers of squads fielded. Supervisory consistency and methods of shared supervision are issues that should be carefully handled if change to a modified squad system is contemplated.

None of the areas reviewed in this study of potential use of 4-10 plans in the Field Operations Bureau produced results that argue against their adoption. However, while there may be some marginal improvement in personnel use obtained from using a 4-10 plan, efficiency gains alone are not a reason to implement it.

## COURT OVERTIME

In their memoranda, most patrol commanders expressed great concern that overtime, particularly due to court appearances, would significantly increase. The assumption is that with an additional day off, less time is available to schedule court.

This factor was examined from two interrelated points of view. First, all operations divisions' current 5-8 deployment schedules were analyzed to determine how many officers had weekday duty hours that coincided with the starting times of City Court cases (0830-1100, 1330-1600, and 1900-2000). Day and night court were analyzed separately, recognizing a day-court-only analysis could be used to predict availability for Superior Court and Motor Vehicle hearings as well as City Court. The sample 4-10 schedules were similarly analyzed for comparison.

The following chart shows how many "officer-hours" the schedules provide that coincide with court hours. For the purpose of this analysis, an officer-hour was defined to be one officer on duty for one clock hour. If court was scheduled during a coincidental hour, no overtime cost would occur.

	--- 5/8 SCHEDULES ---		--- 4/10 SCHEDULES ---	
	<u>Day-only Ofc-hours</u>	<u>Day+Nite Ofc-hours</u>	<u>Day-only Ofc-hours*</u>	<u>Day+Nite Ofc-hours*</u>
SOUTH	671	863	712 (+6.1)	872 (+1.0)
WEST	556	714	552 (-0.7)	686 (-3.9)
MIDTOWN	599	779	609 (+1.7)	747 (-4.1)
EAST	<u>660</u>	<u>820</u>	<u>676 (+2.4)</u>	<u>819 (-0.1)</u>
TOTAL	2486	3176	2549 (+2.5)	3124 (-1.6)

\* Number in parenthesis is percentage increase or decrease in Ofc-hours over 5-8 schedule.

As can be seen, there is essentially no difference in availability of officers during weekday court hours on 4-10 schedules when compared with current 5-8 schedules. In fact, availability is better for all but one division during the day court hours.

The above is, of course, a theoretical analysis of officers' availability for court. Next, an examination was made of actual City Court cases to determine how evenly they were distributed throughout the court day. Last quarter 1988 court schedules were analyzed as follows:

MORNING (0800-1200) CASES	1623 (40.7% OF TOTAL)
AFTERNOON (1300-1700) CASES	1563 (39.2% OF TOTAL)
EVENING (1900-2100) CASES	797 (20.0% OF TOTAL)
TOTAL CITY COURT CASES*	3983 (100.0% OF TOTAL)

\* Cases not cancelled at least the day prior to trial, which included scheduled appearance (subpoena) of at least one officer.

It was found that cases were fairly evenly distributed (approximately forty percent each in the morning and afternoon, and twenty percent in the evenings). This analysis leads to the conclusion that estimating the potential City Court overtime liability from patrol schedules should be possible. For that estimate, current schedules were analyzed to determine what percentage of total officer-hours were scheduled during court hours.

	<u>COURT</u>	<u>TOTAL</u>	<u>PERCENT</u>
South	863	3280	26.3
West	872	2480	35.2
Midtown	820	2720	30.1
East	819	2840	28.8
TOTAL	3374	11320	29.8

Actual court cases for the last quarter 1988 were again used for comparison. In addition information was collected from all court overtime records for the quarter. A total of 5578 officers were subpoenaed for 3983 City Court cases. Of the 5578 requested appearances, 2156 (38.65%) resulted in an overtime submission. This percentage includes units other than patrol which inflates it somewhat. Information was not available that would allow this analysis to be made for patrol units only. The DUI squad, for example, was responsible for 16.2% of all court overtime during the period analyzed. Their schedule has no officer-hours that overlap court hours.

It does appear, however, that the overall percentage of officer-hours that overlap court hours (in this case about 30%) provides a reasonably accurate estimate of the percentage of officer subpoenas that can be expected to be overtime.

One final comparison between the current 5-8 schedules and the example 4-10 schedules was made. For this analysis, the number of officers in each patrol division whose work hours never overlap court hours was determined. If court scheduling were used to its maximum advantage, these officers could never be scheduled into court on-duty.

	<u>CURRENT</u>	<u>4-10</u>
South	22	19
West	22	12
Midtown	18	14
East	17	14
TOTAL	79	59

As can be seen, 4-10 schedules are clearly superior in this area. Scheduling for maximum availability for on-duty court, as well as maximum service efficiency (PCAM) is a paradox. The hours of the day when court is in operation are the same hours PCAM requires the fewest officers deployed. Any schedule may be optimized for one need or the other, or balanced overall. A decision to optimize deployment (PCAM) will result in increased court overtime costs. The schedule, 5-8, 4-10, or any other, is not the determining factor.

It may be concluded that court overtime costs will not increase due merely to the implementation of a four-ten plan. Any potential schedule may be evaluated for effect on court overtime.



## PATROL VEHICLES

Patrol vehicle requirements are identified by almost all agencies as a factor which must be analyzed when considering the implementation of a 4-10 schedule. At peak manning, more vehicles are normally required for a 4-10 schedule compared to a 5-8. An analysis was done of fleet inventory and downtime to determine if the department currently has a sufficient patrol vehicle inventory to accommodate a 4-10 schedule. The following chart shows the number of assigned vehicles (excluding command vehicles) assigned to each division. Also included is the number of vehicles required at peak manning (current staffing) for a 4-10 schedule.

	<u>CURRENTLY ASSIGNED</u>	<u>4-10 MAX. REQUIRED</u>
SOUTH	51	45
WEST	43	32
MIDTOWN	44	40
EAST	48	37
TOTAL	186	154

The most recent downtime data shows an average of 14.2% downtime for the entire fleet. Including a downtime estimate of 15% overall, Operations Division West and East have sufficient vehicles for a 4-10 plan. Operations Division South is short two cars and Operations Division Midtown, three.

The analysis indicates no insurmountable problem as far as the number of patrol vehicles is concerned. It should be considered that this analysis is based upon current staffing and Dr. Ijams' suggested squad configuration (see Patrol Deployment and Scheduling).

The current ratio of patrol car needs to personnel will have to be reevaluated when any decision is made to implement a 4-10 schedule. The actual ratio will depend upon exactly what schedule is adopted. If a 4-10 schedule is implemented, the required ratio must be recalculated prior to adding additional patrol personnel. It appears that the only reason sufficient vehicles are now available is the current shortage of authorized positions.

## SHIFT CHANGES

Shift changes do not cause any cost or operational differences that should be significant between 4-10 and 5-8 schedules. When examining a substantial change in schedule, however, some consideration should be given to the possibility of extending the duration of shifts (currently 3-months) or eliminating shift changes entirely.

There are potential benefits to the department from such a change. More accurate court scheduling should result, and with it, some overtime decrease. Overtime associated with back-to-back shift changes should also decrease slightly. The administrative work associated with shift change, such as computer entry of changes, should be significantly reduced. The only potential cost benefit should be the court scheduling improvement, assuming the scheduling system were properly and consistently used.

The current 3-month rotation has been in practice for many years although half of patrol personnel participated in a non-rotating schedule for three years in the early 1980's. Historically, any suggestion to lengthen the shift rotation has met with great resistance from patrol personnel.

## ADMINISTRATIVE TIME

One clear benefit of a 4-10 schedule to the department is a decreased percentage of duty time spent in administrative activities such as briefing and vehicle preparation, breaks, meals, and debriefing periods. This is simply due to the fact that these periods are day-dependent and a reduction in the number of work days per week results in a corresponding reduction in the number of these administrative periods, freeing the time for more productive work activity.

On a 5-day schedule, 600 minutes per week is obligated for these activities. On a 4-day schedule, 480 minutes is obligated, a twenty percent reduction. Two additional hours per week, per officer should be immediately available for patrol activity. At current staffing city-wide, this is equivalent to an additional fourteen officers! In this case the additional efficiency is real and useable, a measurable benefit of any 4-10 schedule.

## OTHER CONSIDERATIONS

### **LABOR AGREEMENT**

The current City of Tucson - F.O.P. labor agreement requires overtime pay for any hours worked in excess of forty hours in a seven-day work period. It also required two consecutive days off per week. The contract as written does not prohibit a 4-10 schedule although some clarification would be desirable as it was obviously written with an 8-hour day in mind. The current agreement expires in June 1989 but a one-year extension has been approved in principal by the City Manager and the F.O.P. The extension is awaiting Mayor and Council approval.

### **LEAVE ACCOUNTING**

Vacation and sick leave, currently charged in one-hour increments as decimals of one day, would remain unchanged. Personnel on a 4-10 schedule would be charged 1.25 days for each 10-hour day of vacation or sick leave. A week of vacation would still appear as five days.

Accumulated time is currently earned and charged in one-hour increments so no accounting change should be necessary.

The only leave change required would be in holiday leave. The simplest way of accounting for a holiday while on a 4-10 would be to charge the employee on holiday leave two hours of AT or vacation on the holiday.

## SUPPORT UNITS

Data from police agencies with 4-10 experience for units other than patrol was practically non-existent. One of the most successful 4-10 plans, Phoenix, has no experience with non-patrol units.

Since no conclusion could be drawn from research about the benefits and drawbacks of the 4-10 schedule for support units (particularly non-sworn units) this analysis was made on the basis of memoranda submitted by TPD commanders and section heads.

The only commissioned support units recommended by commanders as potentially good candidates for a 4-10 schedule were the Headquarters Desk (currently working 4-10) and the Service Dog Unit. In each of these cases, the commanders found the potential benefits of changing to a 4-10 schedule outweighed the disadvantages (see Appendix A for commanders' memoranda).

Civilian support units on the other hand, provided more positive recommendations concerning a switch to 4-10 schedules. Records, Data Services, Identification, Evidence & Supply, and Communications were all identified by their commanders as suitable for a 4-10 schedule.

For patrol units, concerns of management could be mitigated by the experience of other police departments. Since other departments have little experience with non-patrol functions assigned to 4-10 schedules, the same conclusions regarding fatigue, cost, service, etc., cannot be made for support units. The analysis of civilian support units was, therefore, directed toward the identification of a suitable test unit.

The Identification Section appeared to be the unit with the most potential benefit of changing to a 4-10 schedule. ID supervisor John Neely pointed out that due to the significantly different job functions performed by various personnel in the unit, all were not suitable for a 4-10 schedule. The Field Technicians, however, were an ideal application. While a 4-10 schedule results in a greater number of hours with only one technician on duty, those hours are during the lightest call-load period. The peak-demand periods, on the other hand, are covered significantly better with a 4-10 schedule, including the ability to staff two or more technicians. These are the same peak-demand periods that are sometimes now staffed with only one technician.

## CONCLUSIONS

Should a 4-10 schedule be implemented in the patrol divisions, and assuming current staffing and equipment, the department could expect:

1. Overall response times should be as good or slightly better in Operations Divisions South and East.
2. Overall response times should increase in Operations Divisions West and Midtown.
3. Operations Divisions West and East should have rare occasions of insufficient vehicles due to deadlines.
4. Operations Divisions South and Midtown should have occasional, but probably not unmanageable, periods of insufficient vehicles due to deadlines.
5. On-sight activity, particularly during low-activity periods, should increase significantly. Problem-oriented policing time logged during these periods should also increase.
6. Records will probably face an increasing backlog of work due to increased on-sight activity of patrol officers.
7. Sick leave use should not change significantly.
8. No significant difference in fatigue factors such as industrial injuries or police vehicle accidents, should occur.
9. End-of-shift overtime (extended duty) should decrease significantly.
10. Court-related overtime should not change significantly.
11. Morale of patrol officers should significantly increase and a somewhat lessened demand for specialized assignments should be experienced (unless the special assignment was also on a 4-10 schedule).
12. Scheduling in-service training should be more difficult, but use of heavy-schedule days would decrease the effect of in-service training on field resources.

Two of the patrol divisions currently have sufficient personnel and equipment to operate as well, possibly better, with a 4-10 schedule. There is no question, however, that some

modification of the current squad system would be desirable from an efficiency point of view. While this raises some supervision issues, the experience of other departments shows them to be surmountable, and the improved overall morale may actually contribute to that effort.

As the City grows and the financial climate improves, the department will add personnel. The research and deployment analysis clearly indicate these personnel can be more effectively deployed using a 4-10 schedule. It is only under extreme shortage (as now exists in two patrol divisions) that the additional efficiency must be sacrificed for operational necessity.

Another conclusion of importance when discussing the addition of personnel, is that recruitment, particularly of certified officers from other agencies, is likely to be easier. The 4-10 schedule would be another potential benefit the prospective employee would consider.

As far as other department units are concerned, probably only those with around-the-clock operations are well-suited for 4-10 schedules. Most others simply have too much interaction with the 5-day world or are too small to effectively operate on a 4-10 schedule. Data Services and the Service Dog Unit are possible exceptions. These units both have unique circumstances (see commanders memos, appendix A) that should permit efficient, perhaps improved, operation on a 4-10 schedule.

The single-most challenging factor the Tucson Police Department faces when considering the implementation of a 4-10 plan today, is the potential increase in Records' workload. With the likelihood of no new positions for at least one year, it is important to recognize that virtually all of the agencies implementing a 4-10 plan experienced this increase.

One way for the department to examine and evaluate the operation of a 4-10 schedule with Tucson's actual conditions, and not risk overburdening the Records function, is a test program.

## RECOMMENDATIONS

It is recommended that one patrol division (South or East), one civilian unit (Identification), and one sworn support unit (Service Dog Unit) be used to test a 4-10 schedule for at least six months.

Thorough monitoring during the test and complete evaluation should be conducted to determine this agency's actual experience with the factors identified by commanders and the research as those warranting comparison between the two types of schedules.

## IMPLEMENTATION PLAN

1. Obtain necessary approval from the City Manager and Mayor and Council.
2. Arrange for the necessary alterations to procedures and programming so that the payroll accounting system can accommodate either 4-10 or 5-8 schedules. Properly made, these changes should alleviate the need for additional Payroll personnel (as described in Ms. Keggereis' memo, appendix A).
3. Form a development and evaluation committee consisting of the following personnel from the Field Operations Bureau: the Bureau Commander, the Division and Assistant Division Commanders, one patrol sergeant, and one patrol officer. The following personnel from the non-patrol test units: the Division Commanders and Section Heads. The following staff personnel: The Management Analyst, one Planning Officer, the Planning supervisor, and the Budget Analyst.
4. Develop the necessary reporting requirements and computer programs in Planning to statistically evaluate the test division for service delivery performance, overtime costs, sick leave use, industrial injury frequency, etc.
5. Develop the necessary deployment schedule to maximize projected service-delivery performance and minimize the personnel and supervisory concerns. Evaluate and consider a combination of 4-10 and 5-8 schedules. Thoroughly evaluate the court overtime potential and vehicle needs of any schedule under serious consideration.
6. Implement the 4-10 schedule in one patrol division and two support units, continually monitoring the test and producing monthly statistical reports for commanders (and others) to evaluate the cost/service results.
7. Completely evaluate the test.
8. Assuming no significant problems develop that force the early termination of the test, determine whether the 4-10 schedule should be discontinued or implemented in all patrol divisions and other appropriate units. Determine what staffing level is too low to effectively operate a 4-10 in any patrol division.