

**The Bill Blackwood  
Law Enforcement Management Institute of Texas**

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**Effective Allocation and Distribution of Manpower**

**A Feasibility Study for the Patrol Section of  
The Collin County Sheriffs Office  
McKinney, Texas**

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**An Administrative Research Paper  
Submitted in Partial Fulfillment  
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**By  
Mark Sanderson**

**Collin County Sheriffs Office  
McKinney Texas  
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## **ABSTRACT**

The effective allocation of manpower is essential in providing the most effective response to crime in any jurisdiction. Collin County as well as other areas of the United States is experiencing tremendous rates of population growth. The ever changing number of people creates many challenges for a department that struggles under the weight of the demand to provide increasing levels of protection. Statistical information along with different allocation methods of manpower is analyzed to formulate the best response to the need for service. Issues or determining factors exist in each community that effects the allocation of manpower. Those issues unique to Collin County are the population increases along with traffic and other infrastructure issues related to an increased population. The study shows that with an increase in traffic response times are effected. Growth of the cities within has altered these response times. Along with the increase in vehicle traffic are the addition of roads and traffic controlled devices that have an effect on the response times. Traffic enforcement also becomes an issue to consider in the future. With the increasing traffic on the roadways comes the increase in vehicle related offenses reported to the Sheriffs Office. Traffic surveys show a dramatic increase over a 10 year period on every roadway surveyed in Collin County.

The addition of housing subdivisions creates traffic on county roads once lightly traveled. The study also discovered an increase in calls for service during the same time each day as the increase in traffic is noted. This proves helpful when forming work schedules. The 10- hour shift schedule allows for a overlapping of personnel during the changing of shifts. This will enable a department to identify the peak times of service related calls and adjust the shift changed, or overlapping where needed. The 10-hour schedule is flexible and can be adjusted to meet any changes in the future. The standard 8-hour schedule does not allow for these types of adjustments. Currently the Sheriffs Office operates at a centralized location. Travel distance to patrol districts is several miles. The overlapping found in the 10-hour schedule would allow a supervisor to remove deputies at the end of their shifts without leaving parts of the county with no visible law enforcement. Calls for service at or near the changing of shifts would be dealt with by those deputies that are continuing to work. The overlapping of shifts also provides an increase in manpower during a specific time. That time frame can be adjusted to meet the most demand for service. Deputies will have three days off instead of two. This can be a positive factor used in recruitment of future personnel as well as the retention of current employees. The recommendation of the study is to recommend a time of testing of the 10-hour shift rotation. At the conclusion of testing, evaluate the results and make the necessary adjustments in manpower.

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## **INTRODUCTION**

Over the past several years Collin County has been one of the fastest growing counties in the United States. Because of the changing demographics, the Collin County Sheriffs Office must be able to adapt and plan for the future. A goal of this study will be to examine the current allocation of manpower within the patrol section. The results will be used to either support the current method of allocation or identify and recommend changes.

The patrol section currently is comprised of three 8-hour shifts. Problems occur during the changing of shifts. During the change deputies are removed from their patrol districts for periods of time with no overlapping of personnel. Because of distance, travel from the Sheriffs Office to patrol districts takes several minutes and becomes a problem when responding to calls for service during the changing of shifts. Another problem is that deputies responding to calls for services late into their shifts are often required to work overtime. The amount of overtime/compensatory time often becomes a problem to manage.

The purpose of the research is to develop a work schedule that improves the response to calls for service and provides a continual level of protection during each twenty-four hour period. Is there another work/shift schedule that could produce a more effective allocation and distribution of manpower for the Collin County Sheriffs Office? Other agencies in Collin County are experiencing issues related to rapid growth. Surveys of area law enforcement agencies will be conducted. Many agencies in Collin County have changed or reconstructed their work schedules in the past few years. This is in response to the changes that take place when populations increase. Articles in law

enforcement periodicals and journals will be searched for relevant information relating to the allocation of manpower. Data pertaining to the calls for service and populations will be collected. This information will be useful in determining trends that will be helpful when directing the proper allocation of manpower. Ten and twelve hour shift work schedules are in use in agencies in and around Collin County. Data regarding those types of shifts will also be collected.

The anticipated outcome of the research will be to provide information to assist in effective patrol shift schedule for the Collin County Sheriffs Office. A possible benefit could be the improvement in morale of deputies assigned to patrol. Over time responding to calls late into their shift frustrates deputies. Arriving home late on a continual basis can also be a form of frustration. Late calls also prevent deputies from completing reports related to those calls responded to earlier during their shift. Shifts that have no overlapping feature tend to cause these types of problems. A work schedule that addresses these types of issues can result in a reduction of stress in deputies. Shifts that are longer than the traditional eight hours often give deputies three days off rather than two days off. Research may indicate three days off to also improve family life and health related issues.

The expected implications of this research may be far reaching for the Collin County Sheriffs Office. The current system used to schedule manpower for patrol has been in place for a long period of time. During that time Collin County and the Sheriffs Office has changed dramatically. It is important that the Sheriffs Office be flexible and willing to change as the communities they are entrusted to protect and serve change. This study may also assist other departments who are experiencing the same or similar

problems with manpower in searching for other avenues to better serve not only their communities, but provide a better work environment for their employees.

## **REVIEW OF LITERATURE**

The purpose of the research is to develop a work schedule that improves the level of service by using resources or information that is applicable to the specific circumstances of Collin County. Statistical information from area law enforcement agencies will be helpful in determining the appropriate allocation of manpower. It is important to state the differences that exist between an urban and rural law enforcement agency. Both agencies are responsible for the peace through the enforcement of laws, but the methods vary. The differences are based on call priorities, geographical differences, operating procedures, and responsibilities of the departments. Even though these differences are real, there are common issues both agencies face when allocating manpower. The population growth in Collin County is a main issue that affects many aspects of the area. According to the McKinney Courier-Gazette, "Collin County will surge from its current count of 577,100 to more than 1 million people." Most of the growth in population historically moves into an incorporated city within the county. Does this have any affect on the Sheriff's Department whose primary jurisdiction is the rural area?

The increase in traffic due to the expansion of roadways and increases in traffic signals can cause travel to be more congested. The result is that it takes longer to drive from one end of the county to the other than it did ten or fifteen years ago. Response times change and have an affect on the methods and placement of manpower. Patrol deputies use the same roadways to respond to calls. Calls for service have been

analyzed to determine the call volume and identify peaks in calls for service. The allocation or shift structure of area departments will be evaluated. Their purpose for change, if any, will be examined and compared to any similar issues comparing departments are faced with. The specific requirements for service provided by the Collin County Sheriffs Office will also be used to justify manpower. Today, the Sheriffs Office offers more pro-active services to the citizens than it did ten years ago. Pro-active law enforcement requires more resources than that of a reactive approach to providing service. In the past the deputy's main requirement was to respond to calls for service and assist other agencies with traffic related issues such as accidents. Today, deputies are encouraged to identify and interact with suspected drunk drivers, monitor and enforce traffic laws, and work some types of traffic accidents. Deputies assist investigators with narcotic related activity that may occur in his or her area of patrol. Registered sex offenders are monitored by patrol deputies. This along with the demographics of growth and traffic patterns must be considered when determining manpower allocation issues. It has been a common understanding that a Sheriffs Office patrol section would not be affected by the growth of the cities within the county. The growth of the cities does affect the way we operate and must be considered when making the determinations of providing levels of service. The Collin County Sheriffs Office currently operates under a community-policing concept. Community-policing requires the strong visual appearance of marked patrol units. Neighborhoods are the primary focus when describing community policing. This concept is a challenge to any Sheriffs Office. Jurisdiction or areas of responsibilities of the patrol deputy usually encompass more territory than a neighborhood. Keeping a strong visual patrol

presence can be a challenge when area is measured in miles rather than blocks. It is very difficult to gain the most up-to-date statistical information on the growth of Collin County. The Council of Governments lists the growth from April 2000 to July 1, 2002 to have increased 15.3%. Data collected today is most often outdated in a few months. This information indicates that any planning must include the unknown future.

The Texas Department of Transportation conducts traffic surveys to determine the number of vehicles that drive upon a roadway in a given time frame. Information from 36 locations around Collin County has been obtained for 1990 and 2002. The information indicates a dramatic increase in traffic on the roadways of Collin County (Texas Dept. of Highways and Public Transportation Survey Map, 1990-2004). This information is to be expected with the increase in population. The most congested times of the day are during the “rush hour,” 5:00pm – 7:00pm. The response time for a uniformed deputy driving a marked patrol car in 1990 would be different in 2002. No information exists at this time for 2004, but it can be assumed that the numbers have increased from the 2002 figures, adding to the congestion. These figures represent vehicle traffic on State Highways and farm to market roads. Due to the increase in housing developments in rural areas, the traffic on the county roads has also increased substantially.

When allocating manpower it is also important to know when the calls for service are at the highest. Calls for service for the year 2003 were collected. The data shows calls for service peaked from 4:00pm – 5:00pm and continued on a constant increased level until 11:00pm. (See Appendix A)

Scheduling and allocating police manpower in the nation's cities has become a complex and tedious task (Heller, 1974, p. 42). This is also true for county law enforcement agencies that serve a rapidly growing jurisdiction. In a 2003 Telemasp Bulletin the writer states at least once a month LEMIT receives an inquiry that ask the question, "How many police officers do we need?" The article describes a typical jurisdictional subdivision as a neighborhood (Telemasp Bulletin). A patrol area for the average deputy encompasses many miles not just a neighborhood or two. This distance issue combined with the obstacles described above should be considered when determining the numbers and locations deputies are to be stationed. Resources are available to aid a department in determining the amount of manpower required. The Police Personnel Allocation Manual for Sheriffs Departments lists some of those models. Proactive or self-initiated time is figured into most of the models. This can be difficult to determine. Adequate police protection is often determined by whoever is looking at the issue at any given time. It is a manner of human judgment and community resources. Before such models are accurately it would have to be determined what level a department is willing to participate in proactive or self-initiated patrols. The cost factor would be an issue not only Collin County but also in all jurisdictions that operate within budgetary constraints. This point serves as another example of a need to plan for the future.

Work schedules for area law enforcement agencies are analyzed. Most of the urban agencies in Collin County have changed from the traditional eight-hour shifts over the past few years. Reasons given for the change were to boost or add to the level of manpower on the street at any given time and the overlapping of shifts to avoid short

periods of times where no units are on the street. Although the functions may differ, many of the area agencies are confronted with the same issues as the Sheriffs Office due to the increase in population. In an article titled "A 12 hour Solution," Edward C. Byrne noted that a Wisconsin Police Department changed from the traditional eight-hour shift to meet the specific demands for the community. The new schedule wiped out the need for added manpower and created staffing levels that allowed community based policing to become more than a token effort. (p.103). this is relevant and must be considered since the Collin County Sheriffs Office currently considers community based policing methods.

## **METHODOLOGY**

The statistical information regarding growth rate and calls for response will be evaluated and compared to the current shift structure of the Sheriffs Office. The purpose is to build the most effective shift to respond to the demand for service and allow for self-initiated or proactive law enforcement. The study may recommend a more effective way to organize the patrol shifts. The 10-hour shift rotation may solve problems that are unique to the Sheriffs Office and increase the number of deputies on duty during peak times of calls for service. The City of Allen currently uses the 10-hour shift for patrol for similar reasons effective for the Sheriffs Office. Other options such as a power shift have been used in the past and showed to be difficult to maintain with current staff levels. The Phoenix Arizona study listed several advantages of the 10-hour shift, which will be discussed later.

## **FINDINGS**

Currently the patrol section of the Collin County Sheriffs Office provides service to the unincorporated and incorporated areas of the county. Several small cities are

incorporated but do not have a law enforcement agency. The Sheriffs Office provides all of the service required. Additional duties have been added over the past few years. In the past deputies responded to motor vehicle accidents only in support of a DPS trooper. Today, the deputy is often the primary unit and takes whatever action is required. The community is now aware that the Sheriffs Office responds to calls for traffic related offenses so the calls for service in that area are increasing. With the increase in traffic and population this issue is expected to increase the demand for time or service needed by the patrol deputy. According to the traffic patterns surveyed by the Texas Department of Transportation highway and farm to market roads in Collin County, a 105.7% increase in traffic from 1990 to 2002 is shown. The 2002 study is the most current study available at this time. With the current growth rate the numbers probably have increased dramatically from the 2002 study. With the growth of each city in the county, traffic lights along with constant roadway construction changes the flow of traffic across the county. Congestion must be considered when determining the number and placement of deputies across the county. For these reasons one deputy for each patrol district may no be enough to maintain the proper time of response in the future. As indicated earlier peak times for calls for service coincide with the highest rate of congestion on the roadways throughout the county.- In Collin County, rush hour last longer than an hour. Deputies avoid portions of the highways during this time because of the traffic. Response times to calls for service are altered due to the increase in traffic. The allocation and placement of deputies is very important during this time because of their increased response time.

Shift change from the afternoon (B) shift to the night (C) shift is at 11:00pm. The units assigned to a district are also the units that are responsible for self-initiated activity as well as responding to calls in their district. Any call that requires a back up requires a deputy from another district to assist. When this occurs the district does not have a marked unit during that time. Because the deputy can travel several miles to assist, the time away from his or her district can be long. All district units must travel to the Sheriffs Office where the vehicle is used by the next shift. Two of the current patrol districts are as much as 17 miles away from the Sheriffs Office. Patrol units start from a centralized point in the county. Calls for service during this time in those areas are difficult to manage. Since the eight hour shift does not employ an overlap it is common for deputies to work longer than their eight-hour shift each week. Over the course of a year overtime adds up and often becomes a problem. With the growth and increase in demand, a shift structure that can be moved or changed to adapt to the conditions would be an asset. This is the difference between the ten-hour shift and the twelve-hour shift. The ten-hour shift employs the overlapping. The twelve-hour shift does not. According to the City of McKinney the 12-hour shift can be difficult to maintain when not operating at full strength. The overlapping can be used or changed to meet the times for the most demand for service. The increases in calls are the result those off work arriving home as well as accidents and traffic related issues, and a general influx or increase in the population. Traffic related calls can be time consuming. Cell phone traffic increases during this time requiring an increase in demand for service for deputies and dispatchers answering the phones. These issues were irrelevant when determining the patrol levels in the past.

During a field test of the ten-hour shift by the Phoenix Police Department in 1980 several advantages were noted. An increase in arrest, an improvement in officer moral, decrease in response time, and an improved recruitment and retention rate were the result of the field test. One disadvantage was with support activities such as vehicle availability. The comparisons in this study were noted because the issues may also be similar for the Collin County Sheriffs Office. The current change concerned with operating on an 8-hour shift places the change during peak times for calls for service. A shift change or rotation that would allow the change at another time would be beneficial. Since patrol deputies are spread out over the entire county, the placement of the most manpower during these times would increase efficiency.

## **DISCUSSION/CONCLUSIONS**

The purpose of the study is to re-evaluate the current shift and manpower allocations. Data collected shows the county has changed dramatically over the past decade and continues to change at an unknown rate. Is the structure of the patrol shifts and manpower allocated to patrol sufficient and applied in the most effective manner?

The 8-hour shift does not allow for the flexibility to place the most manpower on the street during the peak times for service. By nature or design, it causes all units to return to out-of-service status while the oncoming shift becomes available for duty. The numbers of patrol cars have been obtained year to year with the 8-hour shift in mind. As a result there may not be enough vehicles to change to another type of rotation. One possibility would be to place two deputies in each car during peak times for calls for service. This would allow one car or unit to respond to the calls where a back-up unit is

required. Nearby patrol units would not be pulled away from their districts and be allowed to remain free for self-initiated or proactive patrols.

It has been somewhat surprising at how difficult it was to locate a current and accurate population of Collin County. The different resources often had data that was outdated or in conflict with others. Data given one week is often outdated by the next. It did however underscore the importance of population increases and its role in the placement of manpower. Entities within Collin County quote the increase as a major issue. In the recent state of the county address, County Judge Ron Harris mentioned the increase in population as one of the main issues facing county government this year. County Court Order #2004-201-03-23 describes a long term goal of Collin County is to plan for the growth in the future. Just as an increase in customers determines the allocation of manpower in a private business, it also determines the allocation to a law enforcement agency that provides service to the increasing number of citizens.

The original purpose of the study is to determine and develop a work schedule that improves the response to calls and provides a continual level of protection. The data collected suggest a changing jurisdiction from years past. The number of new homes, growth of cities and towns within the county, and the tremendous increase in traffic do affect the service provided by the Sheriffs Office. The municipal law enforcement agencies have grown but continue to call on the Sheriffs Office from time to time for assistance. Modern technology (i.e. emails and cell phones) has increased the contact with the public. As a result more time is spent interacting with the public. One side effect of these increases is the need for updated or improved radio service and additional dispatchers.

The 10-hour shift allows for the overlapping that is needed at shift change. The overlapping adds additional manpower with existing personnel. With the growth issues it is possible that the peak times for service could change in the future. The 10-hour rotation can be adapted for the change. The overlap or shift changes can be moved or changed around to meet the need. During the shift changes the deputies going on duty can respond to calls allowing the deputies going off duty to be free to do so. Should a major incident occur at or near a shift change, the number of responding deputies would be at the highest? In the post 911 world it is wise to find our areas of weakness or vulnerability and make changes. Currently a major incident during a shift change could put a patrol at a disadvantage. Any organized effort to disrupt service would notice that vulnerability. The 10-hour shift may solve that issue. The reduction of overtime during shift changes would be reduced or eliminated. Deputies could have more time to complete the reports during a 10-hour shift as opposed to the 8-hour shift. The oncoming shift can relieve deputies enabling them to make time for those reports.

Three days off may serve as a recruitment tool and aid in the retention of employees in this highly competitive job market. It is accepted that other divisions or sections within an agency have traits about their assignments that employees are attracted to. Patrol jobs should be no different. A law enforcement agency and community benefit from a trained, motivated and enthusiastic employee. The community will benefit from a highly motivated and enthusiastic deputy working a 10-hour shift.

The 12-hours shift would not allow for the overlapping that is necessary to solve issues Sheriffs Offices have. Deputies would continue to work over and acquire

overtime and working more than 12 hours a day may eventually cause fatigue. This may not be the result with other agencies when their specific circumstances are applied.

Based on the findings of this study the 10-hour shift with overlapping shift changes at the appropriate times would answer the current problems and place additional officers on the street. A sample of a typical 10-Hour shift is included in this study in Appendix B. A survey to all patrol personnel with details of a “test” plan would be an effective approach to the change. Calls for service along with self initiated activity could be monitored during the test period and compared to the current efficiency of the current (8-hour) allocation. The changes can be made with no additional equipment at the start. The need of additional cars could also be studied during the test period, as well as the effectiveness of two man patrols. Human Resources can be contacted prior to the test. The accumulation of sick time, personal time, holidays, and vacation time would be adjusted to meet the new 10-hour workday.

Even though the information contained in the research has been specific to the Collin County Sheriffs Office, the principles and or lessons learned can be applied to any agency that is experiencing growth or needing to change and adapt. As the population growth continues in areas of our country the Law Enforcement community must be able to adapt and change to meet the demand for service. Research indicates these changes can be costly. It may also require administrators and supervisors to “think outside the box” concerning ways and methods to meet this demand. The research result of this study recommends the changing of what has been considered the traditional work shift (8 hour shift rotation). The same result may not be the same for another department, but when you evaluate your personnel to specific

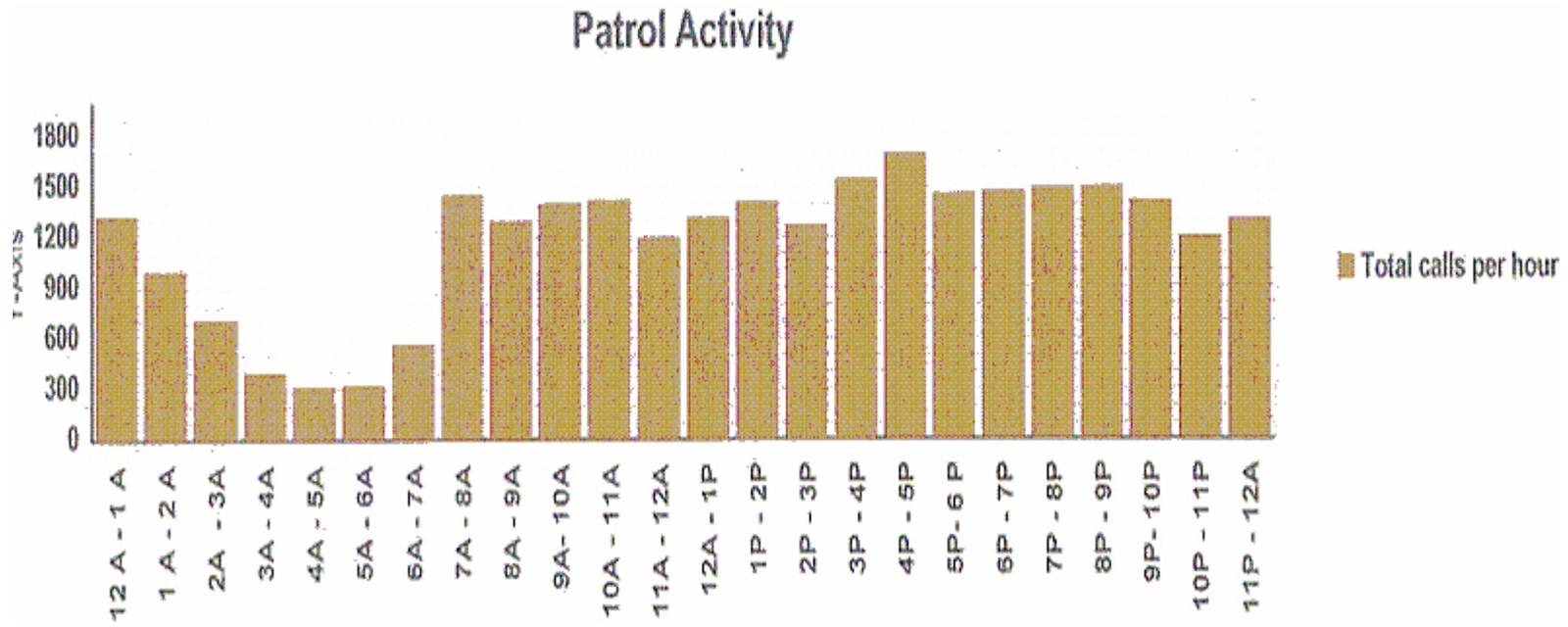
circumstances of a community, the results will guide you to the most appropriate allocation of manpower. Many departments and governmental agencies that are located in areas with a continual increase in population have multi year plans for providing service. Law Enforcement should also plan for the extended future and update its needs estimates for the future. The addition of manpower can be expensive but the impact on a budget can be softened or reduced if added on an incremental basis over an extended period of time. This cannot be accomplished without a regular review of needs and applying current resources in the most effective manner.

Adjustments should be common to an increasing public served by law enforcement. A time of testing would show results. The goal is to solve issues and provide a high level of service.

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# Appendix A



APPENDIX B

September	1	2	3	4	5	6	7
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
<b>A Shift 0700-1700</b>							
Deputy 1	X	X	X				
Deputy 2				X	X	X	
Deputy 3	X	X					X
Deputy 4			X	X	X		
Deputy 5						X	X
Deputy 6	X						
Deputy 7		X	X	X			
Deputy 8					X	X	X
Deputy 9	X	X	X				
Deputy 10			X	X	X		
Deputy 11	X					X	X
<b>B Shift 1400-0000</b>							
Deputy 1							
Deputy 2							
Deputy 3							
Deputy 4							
Deputy 5							
Deputy 6							
Deputy 7							
Deputy 8							
Deputy 9							
Deputy 10							
Deputy 11							
<b>C Shift 2100-0700</b>							
Deputy 1							
Deputy 2							
Deputy 3							
Deputy 4							
Deputy 5							
Deputy 6							
Deputy 7							
Deputy 8							
Deputy 9							
Deputy 10							
Deputy 11							
<b>Deputies/Supervisor</b>							
0700-1400	/	/	/	/	/	/	/
1400-1700	/	/	/	/	/	/	/
1700-2100	/	/	/	/	/	/	/
2100-0000	/	/	/	/	/	/	/
0000-0700	/	/	/	/	/	/	/

