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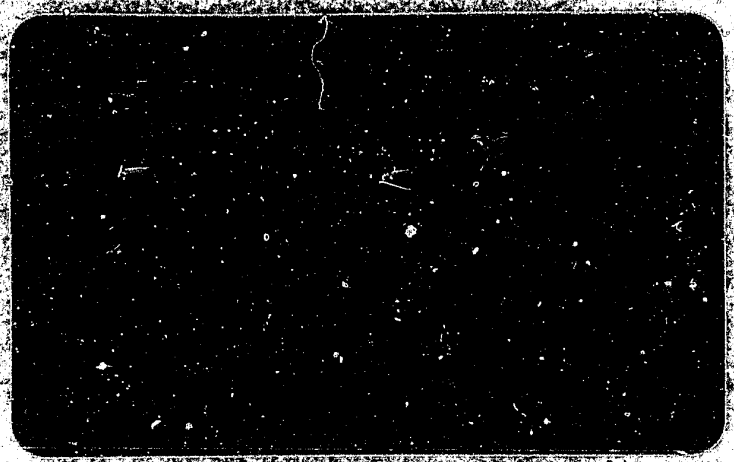

ROYAL CANADIAN MOUNTED POLICE

OTTAWA

CANADIAN POLICE INFORMATION CENTRE

POLICE USER PROFILES

MOBILE RADIO DATA

SYSTEM DEVELOPMENT

JANUARY, 1976

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CPIC PROJECT TEAM
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ROYAL CANADIAN MOUNTED POLICE
OTTAWA

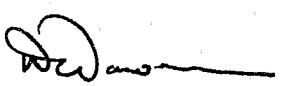
PREFACE

The purpose of this report is to discuss, in global terms, the general characteristics of the Canadian Police Community. The major similarities and differences have been documented, as interpreted by the CPIC Project Team.

The information presented in this document is based upon responses to the User Requirements Questionnaire (Appendix "B"). The Questionnaire was sent to a total of 313 police agencies across Canada. Responses were received from 71% of the agencies, representing 55 different police organizations. This information was supplemented by material obtained from in-depth interviews with 23 police agencies. The interview process included agencies in each profile category developed (rural, small urban, medium urban and large urban). In addition, R.C.M.P. at the Sub-Division and Division levels were interviewed and discussions held with personnel from the Ontario Provincial Police.

In several areas, the information presented is through necessity very generalized and brief. Due to shortage of data, time limitations and unavailability of collection facilities, this was unavoidable. In addition, the scope of the documentation is such that many of the items covered by themselves could be treated as in-depth studies. It is felt that the simplifications do not detract from either the content or intent of the report.

The Project Team would like to acknowledge with thanks, the co-operation received from all respondents and agencies interviewed. In addition, the assistance provided by S/Insp. K. Cocke, Vancouver Police Department, Mr. D. Kaun, Calgary Police Department and Insp. B. Scarth, Telecommunications Branch, R.C.M.P. was invaluable in the development of this documentation.



D. Dawson
for CPIC/MRDS Project Team

January 1976

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PART I

USER PROFILES

SECTION 1 - PROFILE CATEGORIES

I.1.1 Introduction

In establishing realistic User profiles which identify the differences encountered in the requirements of a Mobile Data System across the Police Community, a comparison of all agencies responding to the User Requirements Questionnaire was performed. This was tempered with the results obtained from in-depth interviews, plus operational knowledge of the police organization.

The resultant categorization is a set consisting of four (4) basic groups:

1. Rural
2. Urban - Small - population 0-50 thousand people
3. Urban - Medium - population 50-100 thousand people
4. Urban - Large - population greater than 100 thousand people.

Provincial policing (i.e. Ontario Provincial Police (OPP), Quebec Police Force (QPF) and the RCMP at the Division level) and RCMP Sub-Divisions were considered separately in generating the profiles. This is due to the fact that in each case, these agencies are structured such that the administrative and organizational function is provided from a Headquarters location over a number of "detachments" which provide policing at the level as identified by the profile categories. The responses received from RCMP Telecoms Sections and RCMP Airport Detachments were excluded in development of the profiles as these were assumed to be special activities within the Police Operation.

Profile categories were established primarily in terms of population and square miles of coverage. The Rural Profile consists of those agencies which identified a definite rural responsibility by their response to Questions I-2 and I-3, and/or by agency designation. Small Urban Agencies service

those communities having a population under fifty thousand (50K): Medium Urban Agencies are those servicing a centre with a population between fifty and one hundred thousand (50-100K): and Large Urban Agencies are those servicing a population centre greater than one hundred thousand (>100K).

I.1.2 Assumptions

Several assumptions were applied to the statistical information utilized to develop the User Profiles. These are:

1. Population, coverage area and population densities for each profile category are presented in terms of maximum, minimum and average figures. The data available was not sufficiently accurate to provide anything other than generalized distributions. Therefore, the mean variance and standard deviation could not be calculated with any degree of confidence.

2. Agencies (detachments) responsible for both urban and rural policing were treated as rural and not included in the Urban profile. The Prince George City Detachment (RCMP) was the sole exception to this procedure due to the large municipal population serviced.

3. Population figures used in the categorizing were as provided by the questionnaire responses. When a population range was indicated, the following values were applied:

- under	5,000	-	5,000 was used
5,000-	10,000	-	7,500 was used
10,000-	25,000	-	17,500 was used
25,000-	50,000	-	37,500 was used
50,000-	100,000	-	75,000 was used
over	100,000	-	taken as stated

4. The square mileages were taken from the questionnaire responses. In cases where square mileages were not provided, these agencies were not included in the calculation of square mile averages or population densities.

5. In calculation of population densities, agencies that did not provide either mileages or populations (or both) were excluded from the calculations.

6. The growth rate was based on the figures provided in the questionnaire responses. Those agencies not responding were excluded in calculating the average for that category. When a range was provided, the mid-range value was taken. The five-year average for each agency was utilized in calculating the category average.

7. Offence Activities are expressed per 1,000 population. The figures are based on the stated 1974 case loads. Agencies not responding were excluded from the population base used for calculations. Offence categories were established in accordance with the Statistics Canada definition. The category "Other" includes Federal Statutes other than Criminal Code, Provincial Statutes and Municipal By-Laws.

8. The increase in offence activity was calculated by subtracting the 1973 figure from the 1974 figure and dividing by the 1973 value. Agencies not responding were excluded.

9. The figure derived for the average number of radio equipped vehicles was calculated by totalling the number in each category and dividing by the agencies responding to that question. Vehicles included in the total are automobiles, trucks and motorcycles as identified in Question I-7.

I.1.3 User Profiles

The general characteristics of each of the User Profiles developed from the Questionnaire responses will be discussed separately.

I.1.3.1 Profile 1 - Rural

This group consists in total of RCMP rural detachments. Sample size was 109 detachments across Canada. The population distribution within this group ranges from a low of 2,600 to a high of 37,500. This distribution is shown in Figure I.1A. Average population for this profile is calculated to be 18,068. Population growth rate across this group will be 6.2% per year, based on a five-year estimate.

The population in this category is quite stable with the exception of a limited number of areas which encompass resorts. In these cases, large seasonal fluctuations are encountered. Thus, the population base can be considered stable with the occurrence of a transient factor during tourist seasons. There is a general population drift from the rural environment to urban communities.

The square mileage for the rural policing function ranges from 50 square miles to 207,076 square miles with an average of 6,468 square miles. The distribution is shown in Figure I.1B.

Utilizing these figures, the population density for the rural category ranges from a low of .08 persons per square mile to a high of 441 persons per square mile. The average density is calculated to be roughly 25 persons per square mile.

The offence activities investigated in 1974 by agencies in this category are as follows:

Criminal Code	81 per thousand
Traffic	104 per thousand
Other Offences	29 per thousand

Rural communities in large populated areas or near large population centres tend to have a higher offence activity than those in sparsely populated areas, or remote from population concentrations.

Using the figures provided for the years 1973 and 1974, the increase in offence activities has been calculated to be:

Criminal Code	57%
Traffic	15.5%
Other	16.8%

Effectively, all vehicles utilized by an agency performing a rural police function are radio equipped. It is the exception for a police agency performing this type of policing to have a vehicle that is not radio equipped. It was calculated, based on the figures provided by the respondents, that the average number of radio equipped vehicles in the rural environment is six (6) per agency. This can be expected to increase by an average of one per year.

I.1.3.2 Profile 2 - Urban Small

This group is made up of thirty-six urban centres, each having a population less than fifty thousand (50K). Agencies responding included twenty-one Police Departments and fifteen RCMP Detachments. The population ranges from a low of 3,500 to a high of 42,000 with a calculated average of 19,780. The distribution is shown in Figure I.2A. The population growth rate for this category is estimated to be 6.6% based on five-year figures.

The population fluctuation in these centres has a tendency towards being rather dynamic. This is due to the fact that they often service the rural community. Therefore, on weekends the policing population increases dramatically (in some instances by a factor of three).

The square mileage of the small urban policing function ranges from 2 square miles to 210 square miles. The average square mileage is calculated to be 21.2 square miles. The square mileage distribution is shown in Figure I.2B.

Utilizing the population and square mileage figures provided, the range of population density has been calculated as having the low as 83 persons per square mile, with a high of 8,750 persons per square mile. The average has been calculated to be 2,257 people per square mile.

The offence activities investigated in 1974 by agencies are as follows:

Criminal Code	76 per thousand
Traffic	186 per thousand
Other Offences	111 per thousand

Using the figures provided for 1973 and 1974, the increase in offence activities is calculated to be:

Criminal Code	22.5%
Traffic	9.4%
Other	1.8%

In all but a few cases, vehicles utilized by the police agencies in the small urban environment are radio equipped. It was calculated based upon the responses that the average number of radio equipped vehicles in the small urban community is 6 per agency. The yearly increase is estimated to be 1 car per year.

I.1.3.3 Profile 3 - Urban Medium

This group consists of seventeen urban communities, each having a population between fifty thousand and one hundred thousand (50-100K). There were twelve Police Departments and five RCMP Detachments making up the set of respondents. The population low is 56,000 and the high is 84,000. The calculated average is 71,142. The population distribution is given as Figure I.3A. The yearly population growth rate has been estimated as 7.8% based on the five-year figures provided. Population fluctuation encountered in this category is the least of any of the categories. There are slight seasonal variations as well as general week-day increases depending on proximity to other populated areas. The population base of the individual municipalities is relatively stable.

Through the process of regionalization or amalgamation with adjacent communities, the population increase encountered by the police community in this category is extremely unstable. If either regionalization or amalgamation occurs, the result is one large force and the elimination of the smaller forces.

The square mileage of police responsibility varies from a low of 8 to a high of 9,123, with an average of 683 square miles. This figure is somewhat distorted at the high end due to the fact that one RCMP respondent has a jurisdictional area of 9,123 square miles. When this agency is not considered the area reduces to 1,262 square miles at the upper bound and the average becomes 155.8 square miles. The area distributions are as shown in Figure I.3B.

The population density varies from a low of 8.2 persons per square mile to a high of 9,375. The average is 2,181 persons per square mile. Again elimination of the one extreme case increases the lower bound to 47 persons per square mile and increases the average to 2,318.

The offence activities investigated in 1974 by agencies in this profile category are as follows:

Criminal Code	76 per thousand
Traffic	204 per thousand
Other Offences	28 per thousand

Using the figures provided for 1973, the increases in offence activities are calculated to be:

Criminal Code	20.6%
Traffic	11.5%
Other Offences	7.7%

The majority of agencies performing a police function in the medium sized urban environment, equip all cars with radios. There were some agencies which identified that they provided personal portables for all men rather than utilizing radio equipped vehicles. Some other agencies identified that some special function vehicles were not provided with radio units. The calculated number of radio equipped vehicles to be found in police agencies serving these centres average 25. The yearly increase on this base is expected to be 3 cars.

I.1.3.4 Profile 4 - Urban Large

This profile includes all police agencies serving population areas greater than one hundred thousand ($\geq$ 100,000). The respondents make up a set of twenty-two different agencies consisting of nineteen Police Departments and three RCMP Detachments.

Population ranges from 104,215 persons to 1,977,000 with an average of 307,642. The largest centre is well above the second largest in terms of population (the second highest being 577,923). If this one municipality is not included in the averaging, the calculated average population is 228,150. Population growth rate can be expected to be 7.1% based on five-year

figures provided. The police agencies serving these communities are faced with high population fluctuation on a daily basis. Most centres have surrounding suburban communities (bedroom communities). This results in large population increases during the working day and on weekends. The population distribution for this category is shown as Figure I.4A.

The policing area encountered in this category ranges from a low of 15 square miles to a high of 1,088 square miles. The average square mileage is 219.7. The distribution of areas is shown in Figure I.4B.

Population density in this group is the highest of the profile groups. It ranges from a low of 152 persons per square mile to a high of 10,405 persons per square mile with an average of 3,805.

The offence activities investigated in 1974 by agencies in this profile category are as follows:

Criminal Code	83 per thousand
Traffic	229 per thousand
Other Offences	14 per thousand

The increases in offence activities has been calculated to be:

Criminal Code	23%
Traffic	9%
Other Offences	7.7%

All agencies in this profile category identified that the majority (if not all) of their vehicles are radio equipped. Some agencies did identify that there were some vehicles not equipped. These vehicles were frequently identified as being utilized for special functions (e.g. vans, trucks) or special assignments.

The average number of radio equipped vehicles utilized by a police agency serving this size community is 109. It can be assumed that the average yearly increase will be 10 cars.

I.1.4 Comparison of User Profiles Categories

The four user profiles developed are as shown in Table 1. Profiles of the Ontario Provincial Police and Quebec Police Forces are included as separate categories. Comparison of the User Profiles will be discussed in the following paragraphs.

I.1.4.1 Population

The Rural and Small Urban profiles have similar population characteristics. The average population policed for these two groups can be considered to be the same. There is a definite demarcation between the remaining profiles in terms of population serviced by the respective police agencies.

I.1.4.2 Jurisdictional Area

There are definite characteristics displayed when considering the policing area for each profile category. Rural policing areas are by far, the largest. Because of small population densities, the rural jurisdiction tends to cover more geographical area. Often much of this area is utilized for agricultural purposes or else is uninhabited. In order to maintain a realistic police to population ratio, jurisdictional coverage is large.

Small urban centres have the lowest average coverage area with large centres having the largest (within the Urban categories). Small urban centres are often service communities to rural populations and tend to have well defined boundaries. The average value obtained for the medium urban profile is dis-

torted since Prince George City Detachment has a combined municipal and rural responsibility.

Medium sized communities tend to have jurisdictional areas which are only slightly less than the large urban profile. They are frequently the major service and distribution point for a large geographic region or else a satellite community to a major industrial and/or business centre.

The large urban community profile has the largest jurisdictional area. This category includes agencies responsible for policing amalgamated communities, regional policing, as well as for policing large cities. Therefore, population characteristics include both the high rise, high density component and the dispersed or sprawling component.

The coverage area for each category gives an indication as to the amount of mobility required by the police department servicing this area.

I.1.4.3 Population Density

There is a definite trend seen between the different profile groups, from low density for the rural operation to high density for large urban centres. This influences the operational techniques utilized by the police agency. Large municipalities having high density core areas utilize foot patrols and/or motorcycle patrols in addition to mobile patrols to increase the effectiveness of the patrolman. Small urban communities and some of the smaller, medium sized centres also tend to use foot patrols due to the smaller coverage areas. In rural operations, the majority of patrol is by car. Budgetary constraints also influence the method of patrol utilized. The area of responsibility for the individual patrolman is frequently determined by a combination of population density, realistic beat size and manpower constraints.

I.1.4.4 Growth Rate

The growth rate across all profile groups is similar. It will range between 6 and 8 percent based on the estimates provided by the responding agencies. Medium and Large urban centres appear to be experiencing more rapid growth than the Small urban and rural communities.

I.1.4.5 Offence Activity

The offence activities investigated for the user profile groups indicate the relative weightings to each activity. Criminal code offences per thousand population is effectively transparent to type of environment (roughly 80 for each group). Traffic offences tend to increase with increasing population densities and community size. Offence activities listed as "Other" are found to be much higher in small urban areas than in all other profile categories. These communities provide the services to a dynamic population (the rural community on week-ends, and/or resort areas). Thus, offences related to Provincial Statutes (e.g. Liquor Act, Motor Vehicle Act), Municipal By-Laws and Federal Statutes (e.g. Customs and Excise, Narcotics, Indian Act) tend to have a higher occurrence rate due to the transient population.

I.1.4.6 Increases in Offence Activity

The increase in offence activity appears to be constant across the three urban groups. It appears that rural agencies will encounter much greater increases (by roughly a factor of two (2)). In analyzing the data on a probabilistic basis, it was found that the rural profile category did in fact display the same characteristics with respect to increase in offence activity as did the Urban categories. In this case, the sample size and variations encountered across the sample group distort the results.

I.1.4.7 Radio Equipped Vehicles

The average number, as well as the yearly increase of cars, is the same for both the rural and small urban agencies. The yearly increase in this equipment will be approximately 10%. As the population density of any community increases, so does the number of cars utilized by the police agency for that community. The increase does not appear to bear a linear relationship to the population density.

The ratio of population serviced per radio equipped vehicle for each of the profile categories has been calculated from the raw data. The population as reported by each respondent was divided by the number of radio equipped vehicles reported (i.e. automobiles, motorcycles and trucks). The high, low and average values obtained are as shown:

PROFILE	HIGH POPULATION/ R.E. VEHICLE	LOW POPULATION/ R.E. VEHICLE	AVERAGE POPULATION/ R.E. VEHICLE
Rural	7500	603	2428
Small - Urban	4687	1094	3370
Medium - Urban	4687	1530	3088
Large - Urban	6731	1351	3280

From a comparison of these figures, it is seen that the rural operation utilizes more vehicles per capita than do the other profile groups. This is logical since the rural operation is generally more distributed in area and that area is generally lower in population density. Therefore, a greater degree of mobility is required. The vehicle is the primary means of transportation and almost all are radio equipped to meet the communications requirements of this type of operation.

All of the urban agencies can be considered to have similar population : radio equipped vehicle characteristics.

A lower vehicle per capita utilization can be maintained due to the smaller jurisdictional coverage areas encountered, as well as the population density characteristics. Many medium and large urban agencies use beat patrols to provide coverage in the core areas of the community. Several agencies identified that communications' requirements are met through use of personal portables rather than by vehicles equipped with radios. It was also noted that in medium and large urban centres, there is a higher incidence of vehicles not equipped with radios. This is due partially to the improved communications services available in the larger centres.

The ranges in population : radio equipped vehicle ratios encountered across all profile groups is caused by many factors. These include agency policy, operational philosophy, operational requirements, availability of funding, as well as geographical and population factors.

	RURAL	URBAN			PROVINCIAL	
		SMALL	MEDIUM	LARGE	OPP	QPF
NUMBER OF						
AGENCIES	109	36	17	22	REPRESENTS 190	-
MUNICIPAL	-	21	12	19		
RCMP	ALL	15	5	3		
POPULATION				(a)		(d)
HIGH	37,500	42,000	84,000	1.977M	7.7M	6.03M
LOW	2,600	3,500	56,000	104,215		
AVERAGE	18,068	19,780	71,142	307,642		
JURISDICTIONAL AREA			(c)	(b)	(e)	(e)
HIGH	207,076	210	(1,262) 9,123	1,088	400,000	500,000
LOW	50	2	8	15		
AVERAGE	6,468	21.2	(155.8) 683	219.7		
POPULATION DENSITY			(c)	(a)		
HIGH	441	8,750	9,375	10,405		
LOW	.08	83	(47) 8.2	152		
AVERAGE	25	2,257	(2,318) 2,181	3,805	19.25	12.06
GROWTH RATE (PER YEAR) (FIVE YEAR ESTIMATE)	6.2%	6.6%	7.8%	7.1%	5%	-
OFFENCE ACTIVITIES INVESTIGATED					(f)	(f)
CRIMINAL CODE	81	76	76	83	11	5.4
TRAFFIC	104	186	204	229	35	86
OTHER	29	111	28	14	8	1
INCREASE IN OFFENCE ACTIVITY					(f)	(f)
CRIMINAL CODE	57.0%	22.5%	20.6%	23.0%	12.5%	1.8%
TRAFFIC	15.5%	9.4%	11.5%	9.0%	3.3%	20.0%
OTHER	16.8%	1.8%	7.7%	7.7%	15.0%	-
AVERAGE NUMBER OF RADIO EQUIPPED VEHICLES	6	6	25	109	8	-

TABLE I.1

POLICE USER PROFILES

NOTES FOR TABLE I.1 - POLICE USER PROFILES

(a) The population high is that quoted by the Montreal Urban Community Police. The next highest population stated was 577,923. The Montreal Urban population figure is also reflected in the values calculated for the high and average population density.

(b) The high values encountered for coverage area in the Large Urban profile is due to the fact that several of the Ontario respondents are Regional Police Departments (roughly 25% of the total respondents).

(c) The high values encountered for coverage area in the Medium Urban profile is a result of the Prince George RCMP Detachment jurisdictional boundaries. This effect is also reflected in the value calculated for population low in the category. The figures given in brackets are the values obtained with the Prince George Detachment excluded from the group.

(d) The population figure for the QPF profile was obtained from the 1971 Census figures.

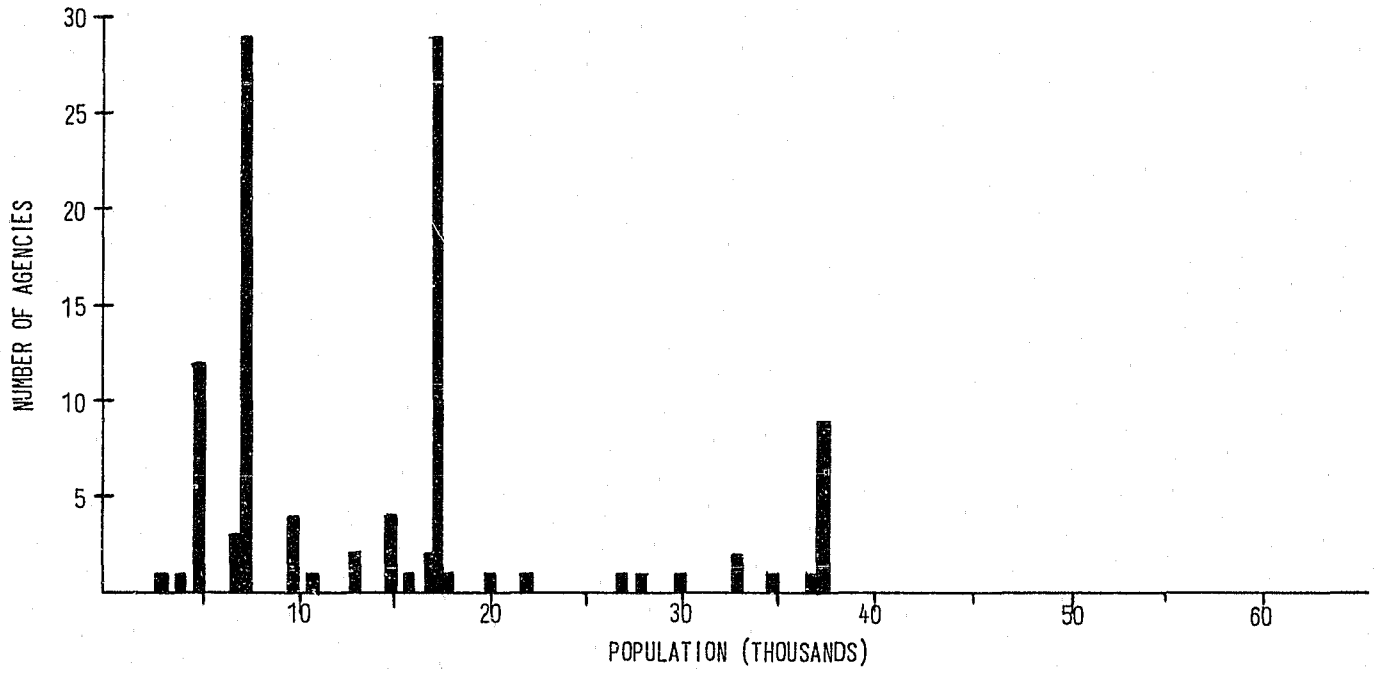
(e) The square mileage quoted for the OPP and QPF profiles are the square mileages of the respective provinces.

(f) The values shown under the headings Offence Activities Investigated and Increase in Offence Activity for the QPF and OPP are much lower than the values obtained in the other categories since calculations were done on the basis of total provincial population. Thus, a smoothing and reducing effect is encountered.

F I G U R E I . 1

POPULATION AND JURISDICTIONAL DISTRIBUTIONS
FOR THE RURAL ENVIRONMENT

A. POPULATION



B. JURISDICTIONAL AREA

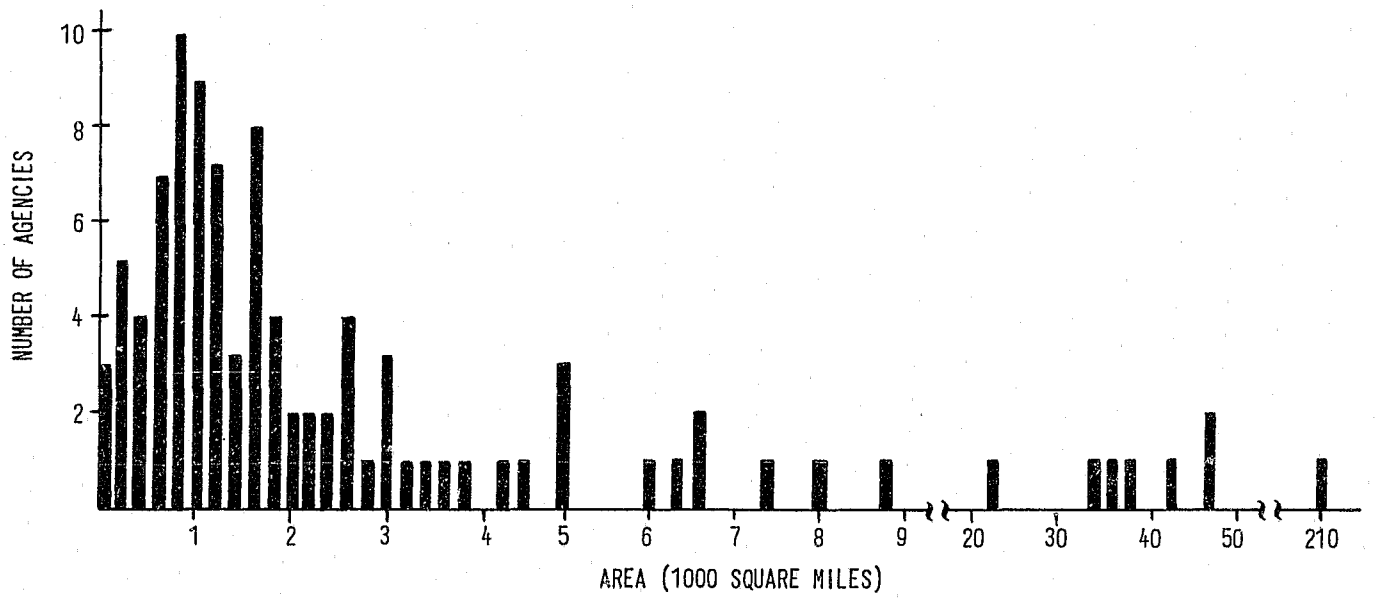
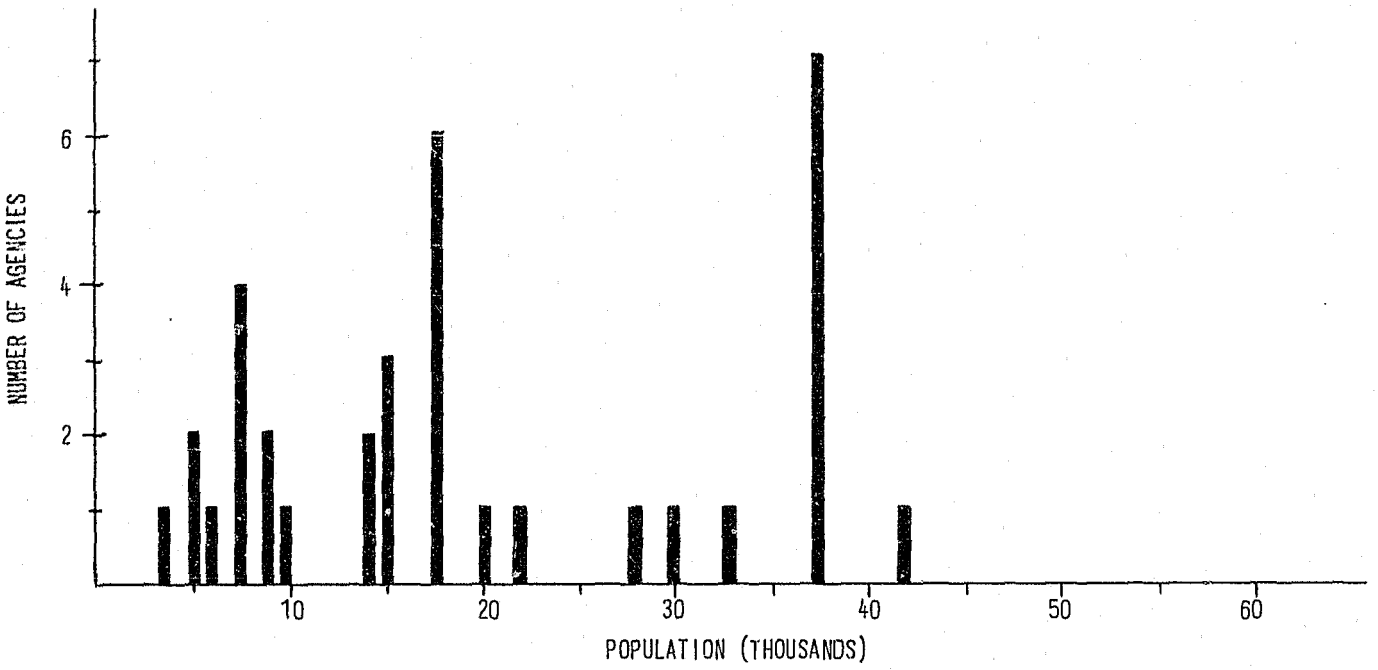


FIGURE I.2

POPULATION AND JURISDICTIONAL DISTRIBUTIONS FOR SMALL URBAN COMMUNITIES

A. POPULATION



B. JURISDICTIONAL AREA

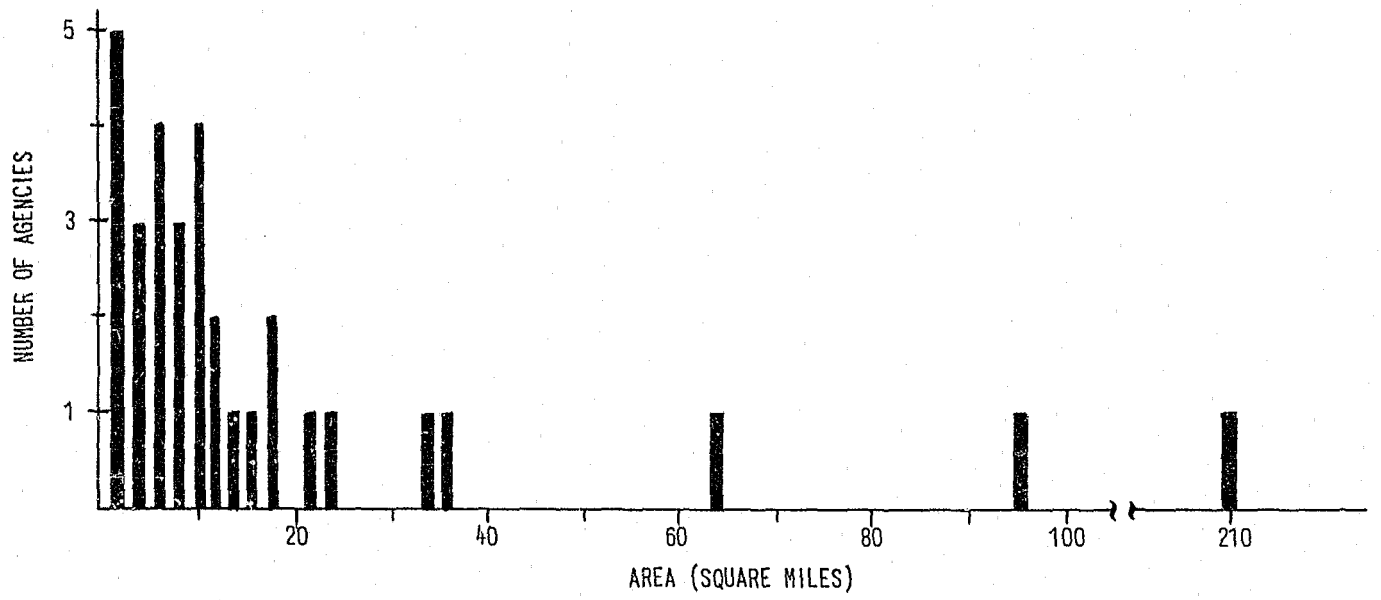


FIGURE I.3

POPULATION AND JURISDICTIONAL DISTRIBUTIONS FOR MEDIUM SIZED URBAN COMMUNITIES

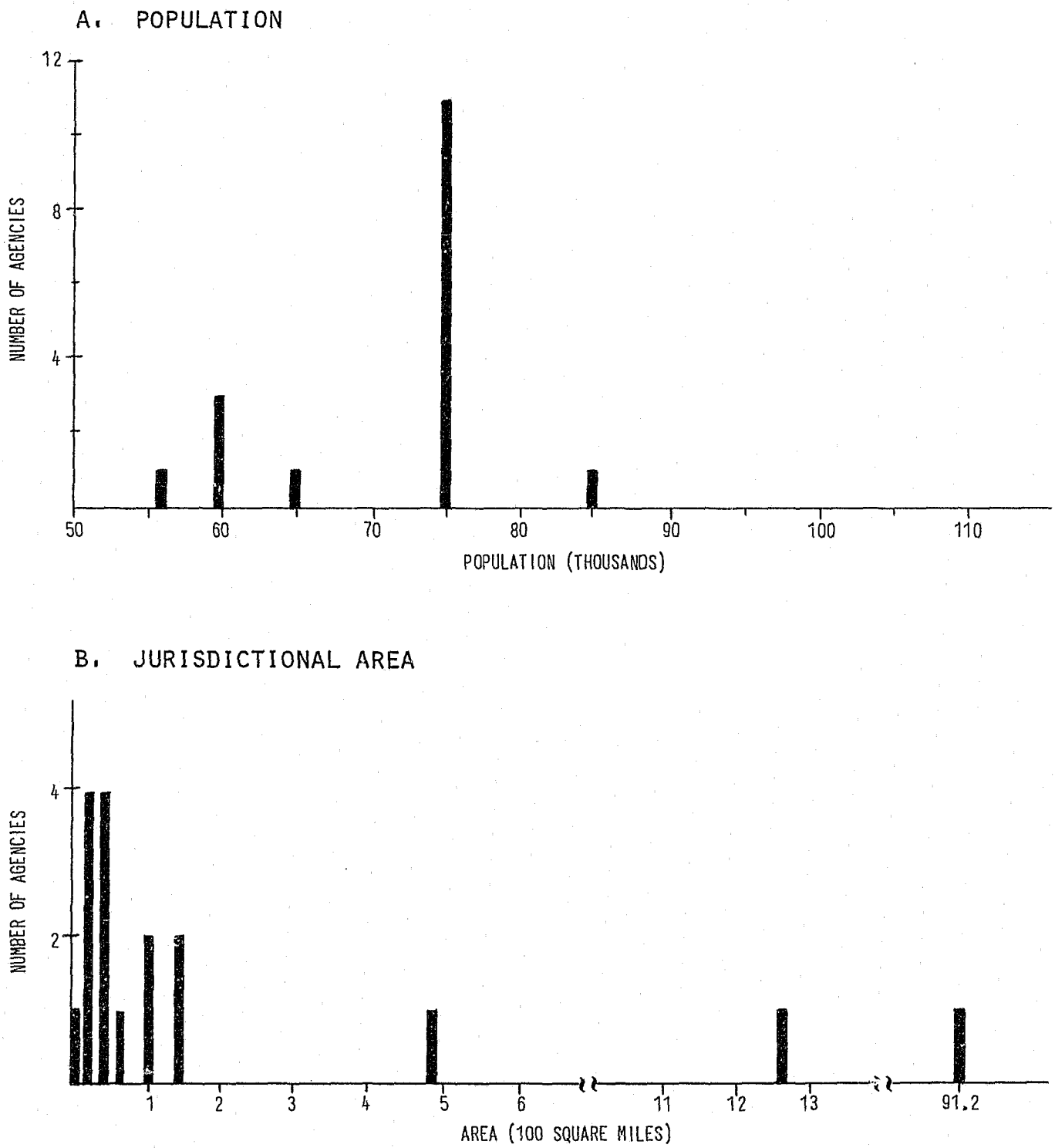
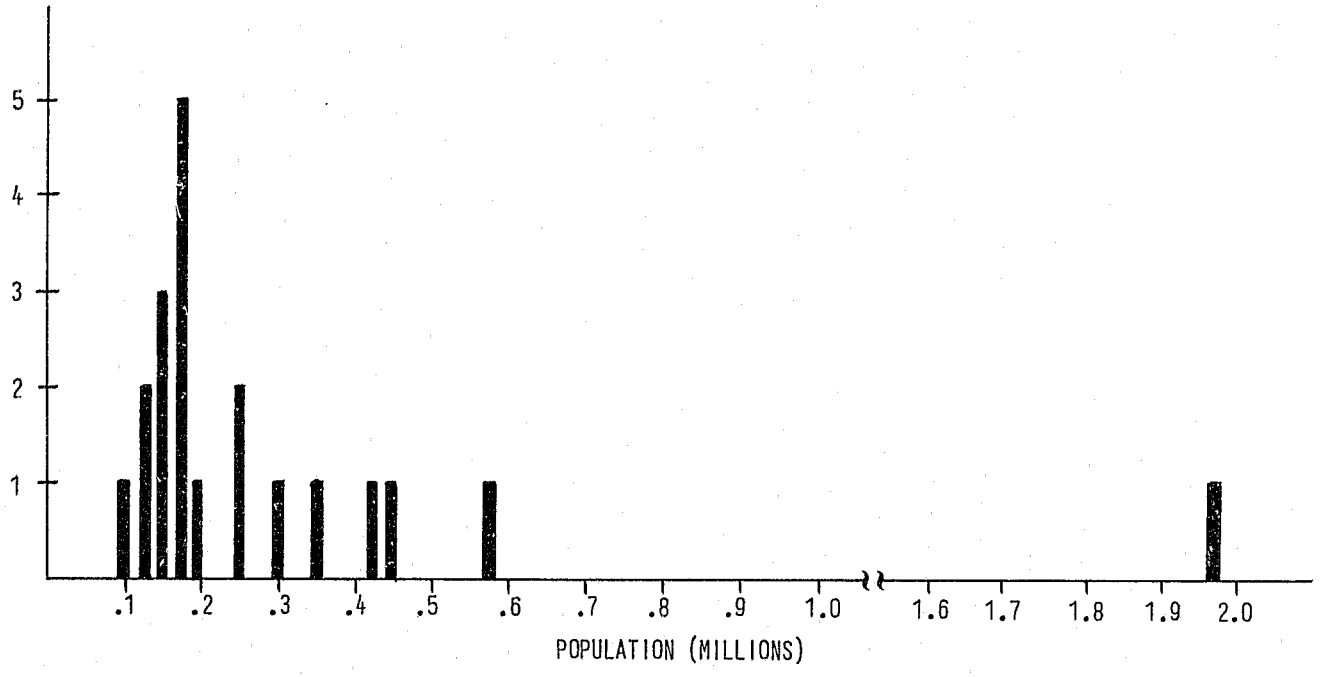


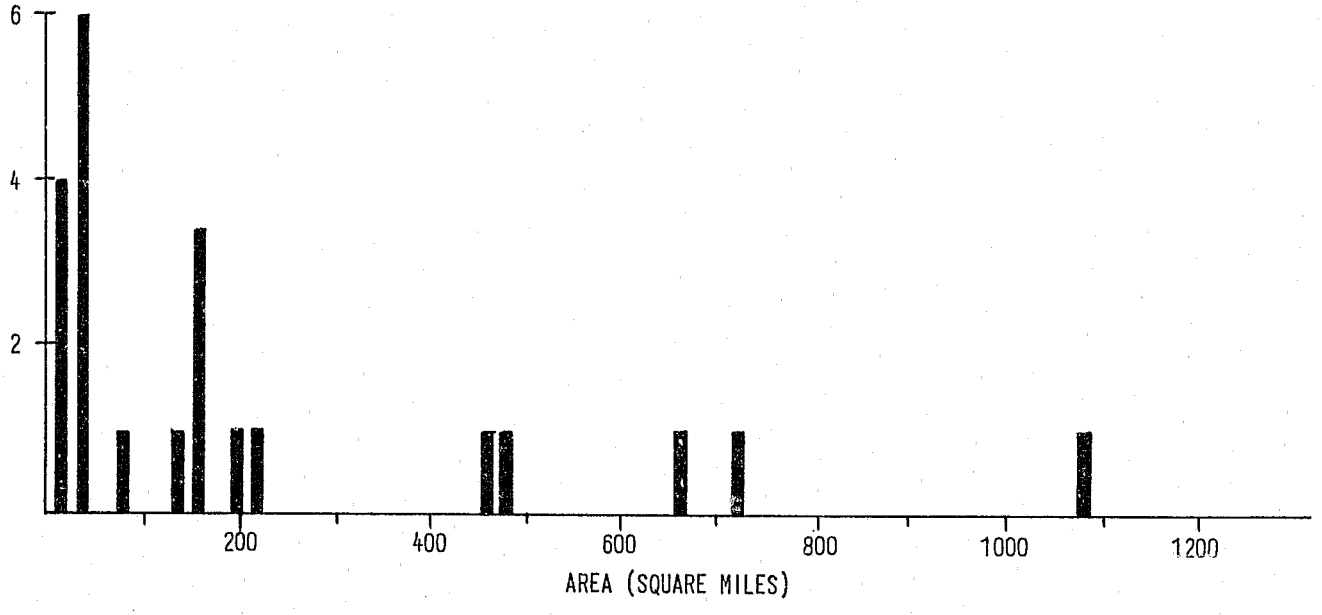
FIGURE I.4

POPULATION AND JURISDICTIONAL DISTRIBUTIONS FOR LARGE URBAN COMMUNITIES

A. POPULATION



B. JURISDICTIONAL AREA



SECTION 2 - EXTERNAL FACTORS

I.2.1 Geographical Considerations

The geography of the police coverage area can have a number of characteristics which may significantly influence operations. First, size of coverage area can influence department size and structure. Urban police departments tend to have a more complex operational structure than rural agencies. The size of the jurisdictional area will also influence the communications system requirements of the police agency. Representative average areas can be assumed to be 6,468 square miles, 21 square miles, 156 square miles, and 220 square miles, respectively, for the rural, small urban, medium urban and large urban forces. The high and low values (as per Table 1) should be utilized as indications of the extremes encountered in each category.

Police jurisdictions include all shapes (e.g. square, circular, rectangular, long and thin, etc.). The headquarters of a police agency is not necessarily found at the geographical centre of its jurisdiction. Shape can influence operational procedures. It can be assumed, that all shapes will be encountered across the Canadian Police Community.

In addition to size and shape of the jurisdiction, the topography is important in determining operational requirements. Topography affects operational response times and thus the methods required to provide the necessary mobility. In the course of the interviews, all topographical variations were encountered. Several agencies were responsible for municipalities surrounded by water, others had major hills or mountains within the jurisdictional boundaries; still others were located in prairie regions.

I.2.2 Meteorological Considerations

The Canadian environment encompasses all variations of weather and climatic conditions. The meteorological nature

of Canada is a major factor in determining both manpower and equipment requirements. Agencies are subject to extremes at both ends of the climatic scale. Thus, average values with regards to weather conditions must be supplemented with the frequency of variation and the degree of variations in these conditions.

I.2.3 Environmental Considerations

The organization of the various communities across Canada vary extensively. The User Profiles were developed to reflect the different types encountered. In general, the rural communities have a basic road and highway matrix, being serviced primarily by Provincial or Federal facilities. Transportation is provided primarily by personal vehicle or by a simple transportation service. Communications services are much more basic than in the case of larger urban centres. Multi-subscriber telephone service still exists in many communities, and in some provinces (e.g. Ontario and Quebec) independent telephone companies still exist. Communications with the police are sometimes provided by Zenith numbers for after-hour calls. Alternate calling by electronic secretary, mobile telephone or alternate published listings is also utilized. This means that an agency remote from the community must deploy the required personnel to service the complaint.

As population density increases, the complexity of the community structure increases. High concentrations of population are likely to mean sophisticated transportation, communications and power systems. In terms of policing, several features of the transportation system may strongly affect operations. A complex road system, limited access high speed multi-lane throughways, rapid transit systems, all play an important role in determining the policing operation.

Public communications systems also tend to get more complex as population density increases. The number of phones per capita, age of the telephone plant, number of trunk lines, existence of emergency service numbers (e.g. 9-1-1) are all parameters which are influenced by size of community. This, in turn, influences the policing function.

I.2.4 Operational Considerations

A number of communities have separate agencies responsible for various policing levels (i.e. municipal, provincial, federal and special police authorities). This occurs in situations such as harbour cities where special harbour police patrol the harbour area, the RCMP is responsible for international movements of people and goods and enforcement of federal statutes and a municipal force is responsible for the municipal policing. Airports, provincial roadways, certain international areas such as embassies, and large military establishments all cause jurisdictional overlap.

Functional jurisdictional boundaries also exist. Police teams structured for specialized enforcement, such as drugs and customs and excise, are not constrained by specific geographical boundaries. This can occur both internally within a police agency or between police agencies. The Detective Division operation is an example of the internal functional specialization.

In all user profile groups, the police community operates very closely with other emergency services (i.e. fire and ambulance). In all cases, there is some form of co-ordination between services. In rural areas and small urban centres, the telephone is generally the means used by the police to communicate with other emergency services. In large communities there is often a single emergency centre from which all calls are

directed. This centre can be under the control of the police department but is not necessarily always the case. Many communities are utilizing or planning to utilize this emergency number service (e.g. 9-1-1, or a seven digit emergency number). In many cases, communications between the police and other emergency service agencies is via direct line. There are a limited number of instances where the police and fire department utilize a common radio frequency for operational purposes. The general feeling obtained during the interview process was that a common channel was not desirable.

Rather than sharing facilities on a regular basis, "mutual-aid" arrangements are made when assistance is required. Hotline service is generally the method utilized to achieve this. Although not a very common situation, some Canadian police forces reported mutual-aid pacts to cover communications requirements.

I.2.5 Legislative Considerations

The policies of a police department are determined largely by a legislative body, be it municipal, provincial or federal. The political philosophy of the legislature will affect the organization, budget, planning and priorities of the force. In most provinces, there exists or will shortly exist a Police Commission, which determines the direction and standards that policing within the province will take.

The philosophy of regionalization resulting in the establishment of one police authority in the place of a number of smaller police departments, is presently being applied in several provinces. In this case, the police agency is responsible to a regional government body.

In a number of urban areas, an amalgamation of police forces has taken place, or is being planned. In this case, a number of municipalities are combined under one metropolitan

government and the police department absorbs what used to be autonomous departments.

I.2.6 Sociological Considerations

Social environment has a great effect on the operations of any police force in Canada. Factors affecting these operations include; population densities, economic conditions, cultural inclinations, ethnic concentrations, transient populations, political attitudes and occupational environment (e.g. mining, heavy industry, farming). The effects are reflected by types of offences, volumes of offences, police community relations, etc. They influence the manpower requirement, operational procedures, support service, equipment requirements and other aspects of the police agency.

I.3.1 Organization

I.3.1.1 Philosophy

In the past, police forces have tended to operate as separate entities, isolated from each other and having very little planning and operational interaction. Because of the increasing capability of criminals to travel extensively, information exchange between police forces has become a necessity.

Satellite communities are springing up in close proximity to large centres, bringing with them increased requirements for urban policing and taxing police resources to the maximum. Departments have had to alter patrol strategies to provide adequate coverage to sprawling residential areas. Once a community becomes too large for adequate coverage from a central point, there is a tendency to create divisional stations or precincts. These act as a sub-dispersal point for patrol personnel. Current philosophy is to maintain a central dispatch to handle results of calls for service, even if the need to have decentralized management resources is recognized.

Police forces generally reject 'regionalization or amalgamation' of forces. The small forces to be absorbed see it as a loss of autonomy and control over their area of responsibility. The larger forces quite often feel that they will have to deal with the problem of retraining officers and providing additional staff related services. In addition, major reorganization is necessary to absorb existing personnel. Space to accommodate newly acquired staff is often a problem.

This feeling is in part supported by the small municipal governments adjacent to large urban centres. The small community sees an increased tax burden with very little, if any, gain in return. The large community sees benefits by improving

services with minimal tax increases. Small communities which are not immediately adjacent to large urban centres see no need to expand their own facilities. They are usually adjacent to provincial service agencies (RCMP, OPP, QPF) and can call on these resources if necessary at no direct expense to them.

Most police administrators aspire to providing the best of equipment possible for their personnel, new communications equipment, adequate mobile transportation, personal protective equipment and adequate training. The largest constraints they face are financial. A good number of police administrators would like to be able to 'attack' the enforcement problem head on but are restricted to maintaining a 'status quo' due to lack of resources.

I.3.1.2 Accommodation

Traditionally, police accommodation has been a part of a total civic services complex and a totally integrated municipal service. The problem this creates is lack of space to expand facilities. As a police department grows in size, its support functions grow proportionately; more vehicles to store; new operational expansions such as records services and their related storage requirement; adequate space to separate the functional areas of a police operation. This usually dictates the requirement for a separate police building.

Invariably, all departments interviewed were in some stage of planning for new or remodelled quarters. Approximately one-third of the small departments and over one-half of the larger departments surveyed indicated some planned upgrading of the communications centre. Delays in implementation of new communications facilities result from new accommodations being planned or built.

I.3.1.3 Specialization

Small forces serving populations under 10,000 do not as a rule separate into functional entities. As the force grows, specialized units start to appear. Usually, the first is a break-off of Criminal Investigation Branch (C.I.B.) and Traffic from General Patrol. As growth continues, more definitive specialities such as Drugs, Scenes of Crime and Identification appear. Separation continues to the level of Management (or Administrative) - Operational split. The largest forces frequently create specialty squads such as riot, bomb disposal, tactical, canine units, etc.

The RCMP has developed functional entities as part of the total organization structure. These entities support small detachment units which within themselves have no specialization. The Force is organizationally divided into Divisions, typically on a provincial basis. The Divisions are further broken down into Sub-Divisions. The Sub-Division provides administrative and much of the specialized operational support to its Detachments. Some of the highly specialized support functions appear at the Divisional level.

I.3.1.4 Manpower

The size of a Police Force is related both to the population of its policing area as well as its case load. Size varies across the country and is due to numerous factors including proximity to other populated areas and the economy of the particular area. These factors are a main cause of higher or lower case loads. Financial constraints applied by governing bodies also influence department size.

Rural Police Forces typically range in size from 1 policeman for every 350 people to 1 per 850. Police Departments responsible for Urban policing typically range in size from 1

policeman per 550 population to 1 per 750. Rural police to population ratios are generally larger than urban police to population ratios.

Police vehicles are generally utilized by more than one individual. RCMP detachments have approximately 4 officers per vehicle, while municipal departments vary from 3.3 to 7.1 personnel per vehicle. The municipal departments in medium sized cities have a higher personnel to vehicle relationship (6.6:1) than those in large cities (3.3:1).

I.3.1.5 Staff Support

Large forces require a great deal of staff support functions. These cover a broad range and include operational and administrative records, personnel functions encompassing recruiting, training and morale or grievances, identification services, budgetary and planning support groups, plus routine day to day administrative staff. If the force is decentralized on a functional or geographical basis, these services are to a large extent duplicated in each division on a smaller scale.

I.3.1.6 Operation

Foot patrols initially were the principal means of performing the police function in urban communities. The public contact aspect was an effective method of policing the community as far as preventive policing was concerned. As the community became more mobile and spread out, demands for police mobility increased. Many departments found it necessary to do away with foot patrols and mobilize the personnel in cars for greater coverage. As a result of patrol mobility, more sophisticated communications systems became necessary. Additionally, inability to contact the patrolling officer and vice versa lead to a decline in foot patrols. Police organizations recognized that the loss of foot patrols limited public contact. With the trend towards

Personal Radio Equipment (portables) departments are re-establishing foot patrols where possible or practical. The trend today in urban communities is to structure for a combination of vehicle and foot patrols integrated by highly sophisticated communications.

The rural community has always required mobility by the police department. Foot patrols have therefore always been very rare on an organized basis.

Safety of officers is becoming an issue with many departments, especially in the large metropolitan areas where the public seems more inclined to challenge the policeman's authority in a given situation. There is also an increase in the use of firearms by those committing offences. For this reason, police unions and for that matter, some police administrators, are opting for two-man patrols particularly in the evening and night-time hours.

I.3.1.7 Patrol Equipment

The main patrol vehicle used by all Departments is the automobile and most are radio equipped. Special vehicles such as vans, boats, snowmobiles, etc. are also used depending upon the geographical location. These vehicles are in most cases without radios, portable equipment being placed on the man instead.

Agencies servicing medium and large urban centres utilize motorcycles in conjunction with automobiles to increase the mobility of their operations. In a large percentage of departments, these motorcycles utilize radio equipment. In some areas, motorcycles are operated by other than sworn police personnel (i.e. commissionaires, cadets, etc.). Within the RCMP, motorcycle use is very limited except for extremely heavy traffic areas or for special purposes. The use of motorcycles

in most police departments is decreasing.

The communications equipment installed or mounted in the front area of police automobiles usually consists of radio control head(s), microphone and siren/loudhailer combination, also with an attached microphone. Also located in the automobile are fire extinguisher, Vascar equipment (in some agencies), dash pads,and shotguns mounted between the driver and passenger (in some agencies).

PART II

COMMUNICATIONS

PROFILES

NOTE

TABLE II.1 (Page 54) is a summary of the Communications Equipment characteristics of the different User Profiles. This should be read in conjunction with PART II.

SECTION 1 - ORGANIZATION

II.1.1 Philosophy

The latest philosophy being applied across the Canadian Police Community is that of a centralized communications system. The general structure utilizes the concept of one central communications centre, which controls all of the dispatch and information transactions for the agency. Divisions (precincts, detachments, etc.) have the capability of monitoring and supervising all activities within their area of responsibility but except in special activities situations, the prime control is from the central location. This central location handles all complaints received by the police department.

The different functional tasks of the Com-Centre may be combined such that each position is multifunctional, or else split, where each position handles only one aspect of the operation. Configuration is dependent upon a number of parameters, including agency size, com-centre size, volume of activity and equipment configuration.

In large agencies, the dispatch function is usually separated from the complaint taker function. Emergency listing such as 9-1-1 or equivalent is often utilized. In cases where the detachment (division, precinct) receives a complaint, this is passed on to the communications centre for handling, recording and dispatching.

There is a general trend by the Canadian Police Community towards utilization of Personal Radio Equipment (portables) to provide continuous communications capability to the police officer. This philosophy is being applied by agencies in all profile categories. The application of this technology has greatly reduced the feeling of isolation often felt by the patrolman. Several variations of this philosophy are encountered. Some agencies have eliminated the use of a car mounted mobile

unit entirely and communicate via a personal portable assigned to the man; other agencies have installed a mobile/portable radio unit which plugs into a car mounted chassis for use within the car, and is removed and serves as a portable when the man leaves his vehicle. The most common policy, and the trend that appears to be developing is that of supplementing the mobile radio unit with a personal portable. When the man is in the car, the mobile unit is utilized; upon leaving his vehicle, he switches to the portable radio to maintain the necessary contact with the com-centre.

II.1.2 Plans

In general, the communications services for most police departments are presently being reviewed or changed. There is a large amount of modernization being undertaken. Across the four population groups, the planned changes to the radio system ranges from 34% for both rural and small urban agencies to 70% for agencies in medium sized urban centres.

Most of the activity involves the radio communication system. However, there is also a great deal of modification to the communications centre itself. Radio system changes may simply involve the addition of frequencies, the adoption of larger numbers of personal portables or changing the utilization of allocated frequencies. In some instances, it involves a major overhaul of the radio structure. Similarly, centre plans may involve the addition of new work stations, a move to a different communications centre, or changes to the telephone system utilized by the agency.

II.1.3 Ownership and Maintenance Considerations

The majority of police agencies own their radio equipment. The high percentages found in rural and small urban population groups are due primarily to the large number of RCMP

respondents. Of the agencies surveyed, 20 percent of those in the medium and large urban categories rent their equipment.

Maintenance of the radio equipment is handled by the police force in the case of RCMP serviced areas. In most other situations, the equipment is maintained either by service contract or by the municipal electrical department. This arrangement is working well with all agencies interviewed and will likely remain this way in the future. During the interviews, it was noted that there was a tendency for Agencies in the Maritime provinces to lease equipment from the Provincial Telephone Company.

SECTION 2 - SYSTEM CONFIGURATION

II.2.1 System Description

Complaints are received primarily through the telephone position for all population groups analysed. The percentage ranges from 73% for the smallest population group (≤10K) to 85% for the largest (>100K). The second most common method by which complaints are received is in person. Agencies in rural and small urban communities receive up to 17% in this fashion while, medium and large urban centres receive 8-9% in person.

Communications between police departments are handled predominantly by CPIC terminal (37-55%) and telephone (26-36%). The requirement for radio communications between police agencies exists but is not a major consideration. This requirement is not likely to change in the future.

Communications between the communications centre and the field force is achieved using a radio system. System complexity is determined by the size of the organization as well as the topography of jurisdictional area. The majority of agencies policing major urban centres utilize several radio channels. These channels may be assigned on a functional basis (e.g. Detective, Traffic, Patrol), geographically (by zone), or both. Police communications in the small urban communities are generally provided by a single channel. In rural policing, multichannel systems are frequently utilized. These are usually assigned geographically rather than functionally.

There appears to be two operational modes being applied by the police community. Some agencies have established one channel of the radio system for information traffic over which all queries to the Data Base are made. The remaining channel(s) are used for voice traffic. The other alternative is to permit data queries on any channel available. Each type of operation is expected to exist in future system operation.

In most large urban and rural operations, semi-duplex system configurations are found. This utilizes two transmitting frequencies, one by the base and one by the mobiles. At any given time, the base may both transmit and receive. In medium or small urban centres, simplex system operation is most predominant. This operation utilizes only one frequency which is timeshared by the base and mobiles. At any given time, communication in only one direction is possible. Combinations of these two types of operation are also found in some police agencies. This occurs more frequently in police departments servicing medium and large urban centres. It is usually a result of multichannel requirements due to department size and operational requirements.

II.2.2 Equipment

The configuration of the communications system of any Police Force includes base station(s), mobile radios and repeaters when required. In terms of base stations and mobile radios, most equipment is supplied by Motorola or Canadian General Electric. Canadian Marconi and other equipment manufacturers are found in a limited number of cases. Appendix "A" lists the equipment held by Questionnaire respondents.

Most agencies utilize a mix of equipment in meeting their communications needs (e.g. the base station supplied by one manufacturer and the mobile radios by another). There is a wide variation in age of equipment across the Police Community.

There are two basic radio mounting configurations presently being utilized in vehicles. The dash mounted radio in which the complete unit is installed in the console area of the vehicle and the trunk mounted unit in which the control head is mounted on the dash, and the radio mounted in the trunk. Of the two configurations, the most common is the case of the communications equipment being located in the

trunk space of the patrol car. It is likely that any major unit required for mobile data radio systems will also be located there.

The trunk space in most vehicles is generally in a dusty condition due to the driving requirements, the amount of emergency and road emergency equipment required, and the general usage requirements of the trunk space. Thus, all equipment must be capable of operation under the same environment as the present police radio gear.

There is presently sufficient space for a mobile terminal in most patrol cars. By rearranging equipment in the small number of cars which presently have space limitations, such equipment can be mounted. All departments appear to be aware of the space limitations for any additional equipment in the front portion of the vehicle and consequently the overall size of a terminal device should be closely weighed against the space available in the vehicle.

It was suggested by several agencies that the possibility of modifying the dashboard of police vehicles be considered, so that a mobile terminal could be an integral part of the car dashboard.

II.2.3 System Structure

The system structures encountered in the police community vary extensively. Structure is largely determined by organization, policy, budgetary constraints and operational requirements. Agencies generally restructure when required to meet operational objectives. The volume of calls for service, the volume of dispatches, and increase in manpower, all influence structure. Regionalization or amalgamation with other agencies will also result in restructuring of the communications system.

The two basic structures which can be applied across the user profile categories are as shown in Figure II-1 and Figure II-2. Figure 1 shows the nodes and links encountered in the rural and small urban categories. Figure 2 shows the nodes and links encountered in the medium and large urban agencies.

The node and link requirements for the Rural and Small Urban categories are as shown in Figure II.1.

The com-centre for these agencies normally consists of one or two personnel performing the functional duties of a telephone operator, complaint-taker and dispatcher. A small percentage of the larger agencies within this group may have separate telephone/switchboard operators who route incoming calls to the appropriate area.

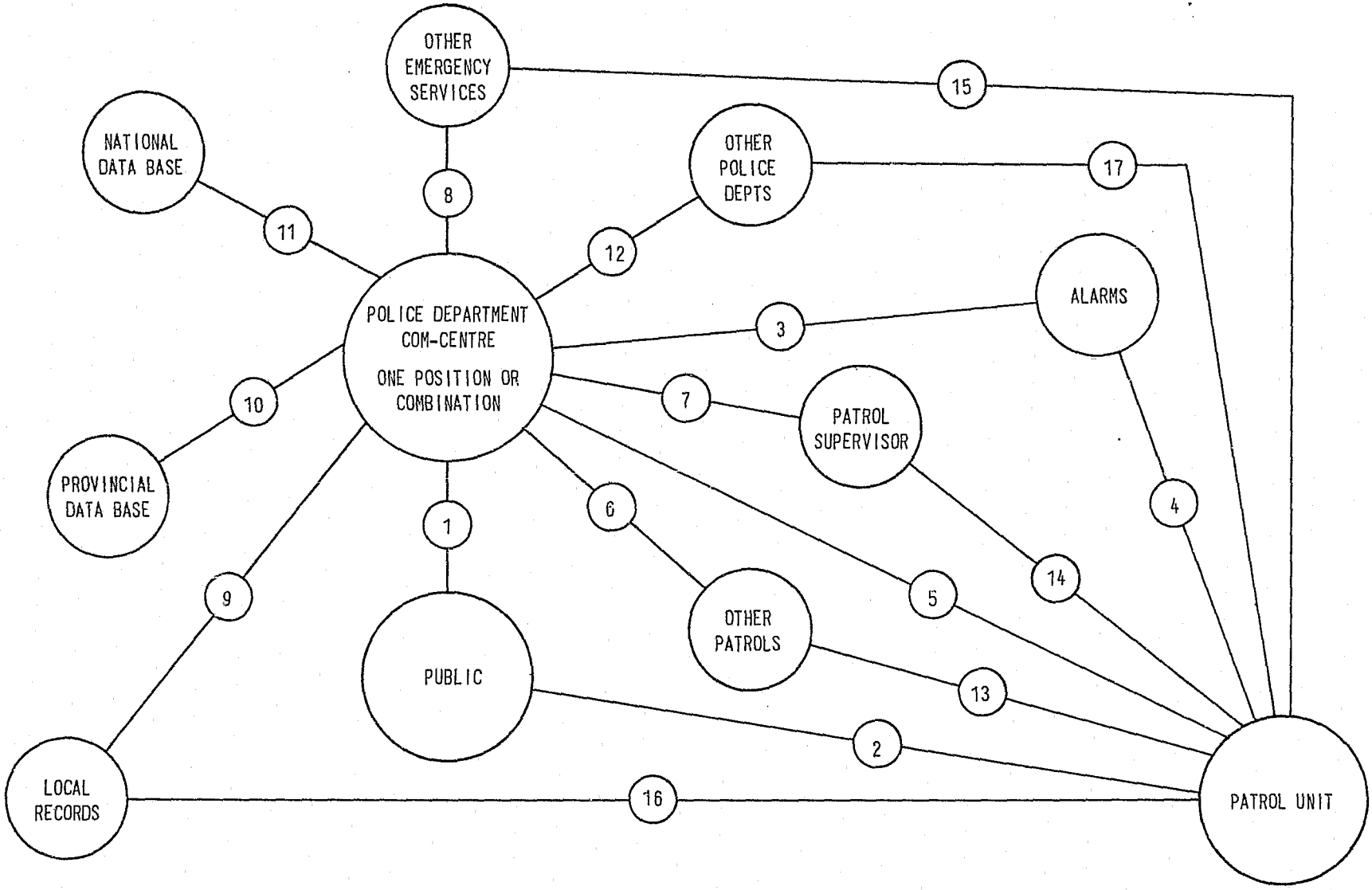


FIGURE II.1

NODAL DIAGRAM OF THE COMMUNICATIONS SYSTEM STRUCTURE ENCOUNTERED IN RURAL AND SMALL URBAN AGENCIES

LINK 1 - PUBLIC -- POLICE DEPARTMENT

The means by which the public contact the police for service and the approximate percentage that each is utilized is:

Telephone	74%
In Person	16%
Patrolman Contact	8%
Other (Mail)	2%

When a call for police service is received in the com-centre, the details are recorded on the following media (percentages being approximate):

Note Pad	26%
Preformatted Form	80%

As indicated by the percentages, some agencies utilize both media.

The method of recording the details are as follows:

Handwritten	34%
Typed	38%
Handwritten and Typed later	41%

The above percentage figures indicate a combination of recording methods utilized within any one agency. This was substantiated during the interview process.

Not all calls for service are recorded as complaints. Of those that are logged, the following percentages show the split between immediate dispatch, routine dispatch and no dispatch:

Immediate Dispatch	45%
Routine or Eventual Dispatch	42%
No Dispatch	13%

LINK 2 - PUBLIC -- PATROL UNIT

Patrolmen receive information and requests for service from the public while on patrol. The details of any request for service received this way are generally passed to the com-centre by the patrolman.

When the patrolman reports an event to the com-centre personnel as a result of public contact, the means used are:

Radio	73%
Telephone	6%
Other	21%

The most common method given in the "Other" category was found to be by report upon the patrolman's return to the station.

LINK 3 - ALARMS -- COM-CENTRE

Approximately 62% of the agencies in the rural and small urban categories have business alarms terminating in their com-centres. These alarms are usually connected by way of telephone lines to a panel located in the com-centre. When triggered, a visual and/or audio tone indicates the alarm condition.

LINK 4 - ALARMS -- PATROL UNIT

Although most business alarms are connected directly to the police department, or to an agency providing security

protection, some provide a visual or audio indication only. As part of the patrolman's normal duties, he checks for these alarms. When an alarm has been triggered, the patrolman takes the necessary action with advice by radio to the com-centre of the alarm condition and his status.

LINK 5 - COM-CENTRE -- PATROL UNIT

Messages between the com-centre and the patrol unit are normally transmitted by radio. Telephone or personal contact is utilized in cases when the message must be kept confidential, the radio system is not available, or the message text could tie up the radio channel for extended periods of time.

When a radio message is transmitted to a patrol unit the message text is heard by other patrols as well as the patrol supervisor. Therefore, a patrolman, either on foot or mobilized, has radio contact not only with the com-centre, but also with other patrols (LINK 13) and his patrol supervisor (LINK 14).

LINK 6 - COM-CENTRE -- OTHER PATROLS

The methods and/or means used are the same as those listed under LINK 5.

LINK 7 - COM-CENTRE -- PATROL SUPERVISOR

Messages are passed to the patrol supervisor in the same manner as used to communicate with the patrol units (LINK 5). The patrol supervisor frequently communicates with all units under his command by radio or in person, and generally monitors the assignments of all of his units.

LINK 8 - COM-CENTRE -- OTHER EMERGENCY SERVICE

Communication, in both directions, is generally by telephone although some agencies utilize some form of a hot-line arrangement.

The majority of Police Departments do not dispatch for any other emergency services. A small percentage of Police Agencies do answer emergency telephone calls and route them to the appropriate agency.

Some areas utilize a common police-fire radio channel arrangement that enables the fire department to switch to the police channel when on fire calls. This is not a common arrangement across the police community.

LINK 9 - COM-CENTRE -- LOCAL RECORDS

Local records in rural and small urban agencies are usually accessed manually as a result of requests received by mail, telephone and computer terminal from other police agencies or from requests received via radio from patrolman.

LINK 10 - COM-CENTRE -- PROVINCIAL DATA BASE

Although most Provinces do not, as yet, have a data base, several are planning or are in the process of implementing systems. Data bases which are available are usually accessed by the Police Forces by way of telephone. The present trend indicates future access via a computer terminal for Provincial data.

LINK 11 - COM-CENTRE -- NATIONAL DATA BASE

The only national data base available at this time is CPIC. Information is accessed by the police agencies through

computer terminal. All queries from the operational force are normally passed to com-centre personnel by radio and queried from that point on the terminal. All responses are returned to the operational force in the reverse manner.

LINK 12 - COM-CENTRE -- OTHER POLICE DEPARTMENTS

There are various media used to communicate with other police agencies. The most common methods are as indicated, with approximate percentages:

Computer Terminal	40%
Telephone	36%
Telex	3%
*Radio	16%
Other (Mail)	5%

*Radio usage between different Police agencies is almost non-existent. The above radio percentage (16%) indicates communications between RCMP detachments.

LINK 13 - PATROL UNIT -- OTHER PATROLS

Communication between patrolmen is usually by radio. Most agencies prefer that messages between patrol units go through the com-centre so that the dispatcher is aware of patrol unit status and can control activities or provide assistance if necessary.

LINK 14 - PATROL UNIT -- PATROL SUPERVISOR

Communication between the patrol and the patrol supervisor is by radio and in person.

LINK 15 - PATROL UNIT -- EMERGENCY SERVICE

Communication is normally through the com-centre, however, direct contact is sometimes made by the patrolman. In these cases, it is generally in person contact. Some agencies do share a common radio channel with fire and ambulance, however, this is not a common arrangement.

LINK 16 - PATROLMAN -- LOCAL RECORDS

Although a patrolman normally accesses the local records by radio request through the com-centre, he can obtain information directly by telephone or in person.

LINK 17 - PATROL -- OTHER POLICE DEPARTMENTS

Communication of this type is usually through the com-centre. Telephone or computer terminal is the most common method utilized. Contact is sometimes made directly by the patrolman, either in person or by telephone.

Some agencies do share a common radio channel, however, this is not a common arrangement.

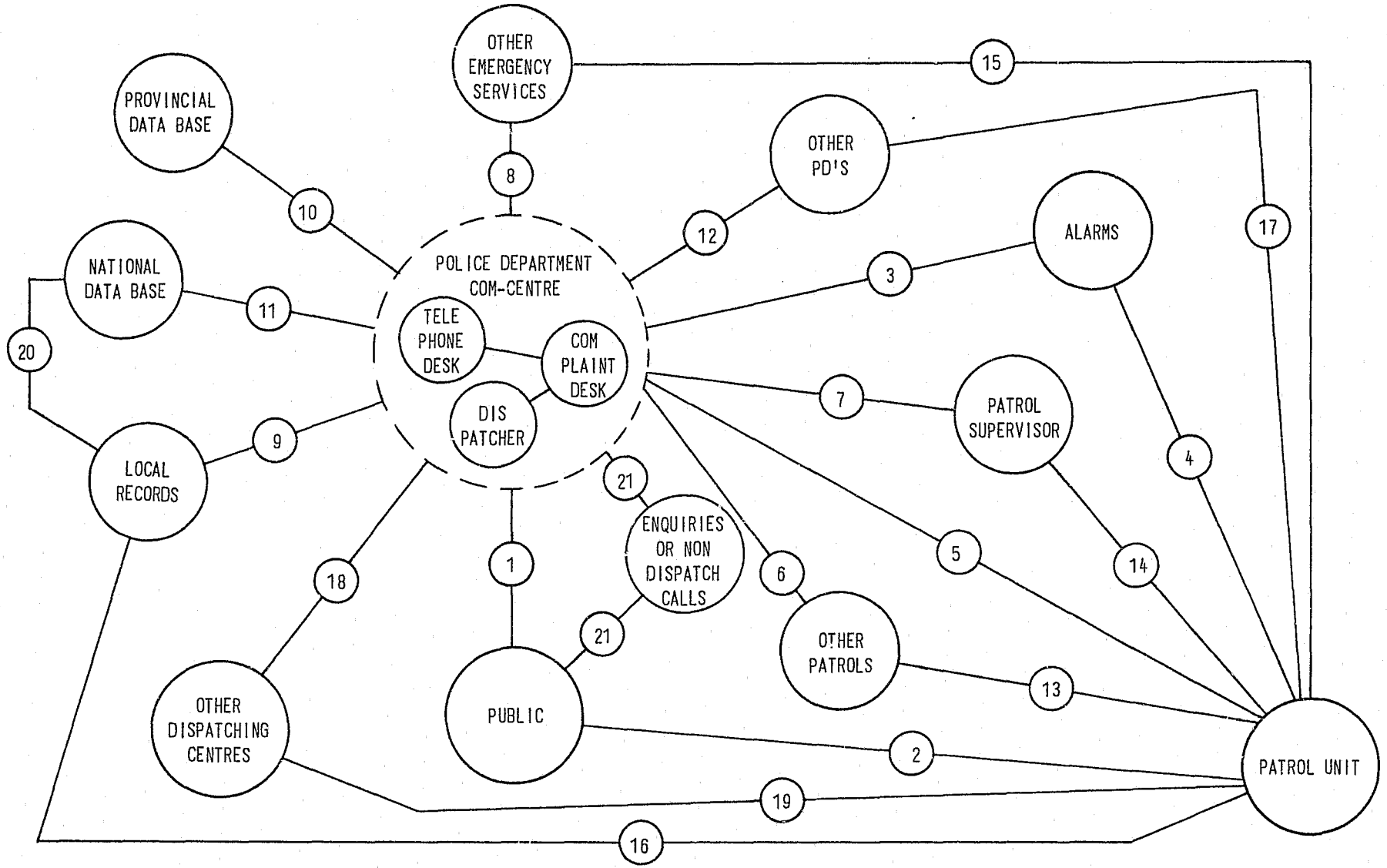


FIGURE II.2

NODAL DIAGRAM OF THE COMMUNICATIONS SYSTEM STRUCTURES ENCOUNTERED IN MEDIUM AND LARGE URBAN AGENCIES

The node and link requirements for the Medium and Large Urban categories are as shown in Figure II.2. Percentages are approximate.

LINK 1 - PUBLIC -- POLICE DEPARTMENT

Public contact with the police department is achieved in a number of ways when service or assistance is required. Police agencies on the average have identified the following means by which calls for service are received from the public:

Telephone	84%
In Person	9%
Patrolman Contact	6%
Other	1%

The number of calls for service in these profile categories ranges greatly. Agencies serving medium urban centres receive from 20,000 to 100,000 calls per year while agencies in large urban centres handle up to 500,000 calls for service.

Although many calls for service are of an emergency or urgent nature, others require no dispatch of a unit. The average breakdown as reported by the agencies is:

	Medium	Large
Immediate Dispatch	43%	22%
Routine/Eventual Dispatch	51%	50%
No Dispatch	6%	28%

As is seen from the percentages, large urban centres tend to resolve a great number of occurrences over the telephone without dispatch of a unit.

LINK 2 - PUBLIC -- PATROL UNIT

Requests for services can be made directly to the patrolman by the public. In general, these requests are reported by the patrolman to the com-centre personnel by way of radio. Several agencies identified that reports are submitted when the patrolman returns to the police station. The least used method was the telephone. There is greater variation in the method used across agencies located in medium urban centres with more consistent use by radio in large urban centres.

LINK 3 - ALARMS -- COM-CENTRE

Approximately 70% of the agencies in the medium and large urban profile groups have some form of alarm terminating in their com-centre, although agencies in the large centres are less likely to have the arrangement. These alarms usually consist of a lightboard. When an alarm condition occurs (when lit), a dispatch is made. The use of private security agencies to monitor business alarms is becoming more prevalent in medium and large communities. In this case, the security agency contacts the police department when an alarm has been received and verified as valid.

LINK 4 - ALARMS -- PATROL UNIT

Some alarms are of the audio or visual type mounted on the exterior of the premises. When activated, the public notifies the agency. In instances when these are observed or heard by the patrolman, he acts immediately with notification to the dispatcher.

LINK 5 - COM-CENTRE -- PATROL UNIT

Communication is normally by way of radio transmissions, however, the telephone is sometimes utilized. The telephone is usually used for passing of confidential messages. In these cases, the patrolman is requested by the dispatcher to call the station. If the patrolman happens to be at the station, messages are passed in person.

All radio dispatches made to a patrol unit are heard by the patrol supervisor and any other patrolling units operating on the same frequency.

LINK 6 - COM-CENTRE -- OTHER PATROLS

Communication requirements and methods are the same for this link as for LINK 5.

LINK 7 - COM-CENTRE -- PATROL SUPERVISOR

The methods used for this interaction are the same as for patrolmen as described under LINK 5.

LINK 8 - COM-CENTRE -- OTHER EMERGENCY SERVICE

Emergency Services includes fire, ambulance, rescue units, poison control and so on. All police departments in the medium and large urban categories dispatch separately from the other emergency services. However, some do share the phone desk cperation. In this case, calls are routed by an operator to the appropriate department for servicing.

Although dispatch is separate from other emergency services, many agencies in urban centres have a common frequency that is used by fire and ambulance when these services are deployed. In some cases, they do operate on the police channel.

LINK 9 - COM-CENTRE -- LOCAL RECORDS

Local records are accessed in various ways depending on the agency. The most typical means of access at present is by radio, telephone or in person. Manual extraction of the required or requested information by com-centre personnel does occur. Access of automated records by computer terminal is being utilized by some large agencies. This method will most likely become more common in the future.

LINK 10 - COM-CENTRE -- PROVINCIAL DATA BASE

The procedure generally encountered is as follows: The patrolman requests information via radio to the com-centre. A telephone call is made from the com-centre to the data centre and the response is relayed by radio to the patrol-man by the dispatcher. This area appears to be changing rapidly with the advent of computerized Provincial data bases. It can be expected that terminals will be installed in many Police Departments, when automated Provincial data bases are available.

LINK 11 - COM-CENTRE -- NATIONAL DATA BASE (CPIC)

Agency structures vary in that in some departments, all CPIC requests are made by the patrolman on an information channel directly to the records department while others utilize the com-centre personnel. In all cases, the link to CPIC is exclusively by computer terminal.

LINK 12 - COM-CENTRE -- OTHER POLICE DEPARTMENTS

Police departments use a variety of methods to communicate. On the average, the most common are:

Computer Terminal	53%
Telephone	35%
Telex	4%
Radio	4%
Other (Mail, Personal Contact)	4%

LINK 13 - PATROL UNIT -- OTHER PATROLS

The majority of Departments apply the policy that all car to car conversations are to be minimized and any messages are to pass through the com-centre. This ensures that the com-centre can maintain control over field operations. Although person to person contact occurs periodically, patrolmen normally communicate via radio. This results in increased co-ordination between field units and enables a patrolman to provide voluntary back-up or cautionary information in regards to an assignment.

LINK 14 - PATROL UNIT -- PATROL SUPERVISOR

The patrol supervisor controls and directs patrols under his command and consequently must be aware of all assignments and the current status of all units. This is presently accomplished by monitoring all radio messages to and from his units. Thus, the patrol supervisor is not only aware of activities but may also assign back-up units or act as back-up himself.

LINK 15 - PATROL UNIT -- EMERGENCY SERVICES

Although communication is normally through the com-centre,direct contact is sometimes made by the patrolman. In these cases, it is generally in person contact. Some agencies do share a common channel with fire and ambulance

but this is an exception rather than a rule.

LINK 16 - PATROL UNIT -- LOCAL RECORDS

Communication is normally accomplished using radio between the patrol unit and the dispatcher. The patrolman requests information and responses are returned over the same media. Some Departments have computer terminals for both the national data base (CPIC) and local data bases in their records section. The patrolman, by changing frequencies, can radio directly to an operator in the records section for any query he wants made. The subsequent response is returned over the same channel. The patrolman returns to the normal operational frequency for communications with the dispatcher. Requests are also made by telephone to the records department. The patrolman may also generate a request by going to the records department and requesting in person.

LINK 17 - PATROL UNIT -- OTHER POLICE DEPARTMENTS

Only a very limited number of agencies have a common channel with other police agencies. In most cases, messages are relayed through the com-centre for urgent matters and by telephone by the patrolman himself for non-urgent messages.

LINK 18 - COM-CENTRE -- OTHER DISPATCH CENTRES

Multiple dispatch centres within the same police agency is not a common configuration. Those agencies that do have more than one dispatch centre communicate between centres on a common channel for urgent matters and by telephone for routine messages.

LINK 19 - PATROL UNIT -- OTHER DISPATCHING CENTRES

Although most departments utilize one central dispatching centre or com-centre, some departments do have separate dispatching centres. Communication in these cases is possible by changing radio frequency. Occasionally, patrols have to proceed into different dispatch districts or may require communications with patrolmen from these districts. This also is normally done by a frequency change.

LINK 20 - RECORDS -- NATIONAL DATA BASE (CPIC)

This interaction is accomplished exclusively by computer terminal in agencies structured such that all CPIC queries are transmitted to the records department via an information channel. Other agencies are structured so that com-centre personnel do most CPIC queries.

LINK 21 - PUBLIC -- GENERAL ENQUIRIES

Many calls received by police agencies are of a non-dispatch type. These calls may be requests for information or providing information which involves report taking. All calls of this nature are routed to a general enquiry desk for recording and action as required. In several agencies, a special telephone number is listed for general enquiries

		RURAL		SMALL URBAN		MEDIUM URBAN		LARGE URBAN	
		NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
AGENCY	MUNICIPAL	0	0	22	61	12	71	18	82
	R.C.M.P.	109	100	14	39	5	29	4	17
EQUIPMENT	C.G.E.	57	38	13	36	5	25	6	25
	MOTOROLA	86	59	14	39	8	40	13	54
	MARCONI	4	3	4	.11	3	15	1	4
	OTHER	0	-	5	14	4	20	4	17
LINKAGE	RADIO	70	75	14	54	6	46	5	23
	MICROWAVE	10	11	1	4	0	-	0	-
	LANDLINE	13	14	10	38	7	53	17	77
	OTHER	0	-	1	4	0	-	0	-
OWNERSHIP	OWN	99	92	29	81	12	75	9	64
	RENT	8	7	7	19	4	25	5	36
	OTHER	1	1	0	-	0	-	0	-
MAINTENANCE	SELF	103	90	15	38	5	26	5	23
	MUNICIPALITY	3	3	2	5	2	11	2	9
	COMMON CARRIER	2	2	1	3	1	5	2	9
	CONTRACT	6	5	20	50	11	58	13	59
	OTHER	1	1	2	5	0	-	0	-
PLANS**	RADIO	52	48	14	39	12	71	19	86
	COM-CENTRE	26	24	14	39	10	59	19	86
MUTUAL AID PACT		25	23	13	36	11	65	8	36
RECEPTION**	FADING	35	32	7	19	5	29	3	14
	NOISE	42	39	8	22	4	24	11	50
	DEAD SPOTS	74	68	12	33	9	53	2	9
	OTHER	27	25	5	14	1	6	2	9
REQUIREMENT FOR VOICE SECURITY		83	76	32	89	16	94	22	100
PRIORITY	VOICE	79	82	22	61	9	53	18	82
	DIGITAL	17	18	7	19	6	35	3	14
PORTABLE RADIO**	NOW	227	2*	124	3*	87	5*	710	32*
	FUTURE	458	4*	255	7*	284	17*	3,000	143*

* PER AGENCY

** PERCENTAGES ARE CALCULATED ON THE TOTAL NUMBER OF AGENCIES WITHIN EACH GROUP (RURAL, SMALL URBAN, ETC.)

TABLE II.1

COMMUNICATIONS EQUIPMENT CHARACTERISTICS

SECTION 3 - SPECIAL CONSIDERATIONS

II.3.1 Communications Accuracy

There is no doubt about the key role that communications plays in the effectiveness of policing. Two aspects of communications which are critical to its effectiveness are accuracy and response time. Most police communications consist of instructions, requests for resources, descriptions of vehicles or persons, information requests of vehicles or persons, names, addresses and street information. Special action and brevity codes are often used, the most popular of these being the 10 code or variations of it.

During the normal course of police operations, a number of enquiries and responses are typically made using a combination of coded and plain language phrases. Depending upon the results of these enquiries, certain police actions may be initiated. The possibility of severe actions exists. For this reason, it is imperative that communications be as accurate as possible.

There are many different types of communications media used by police forces. These include telephone, telex, data services, mail and mobile radio. Of these, the mobile radio communications is seen as having a number of potential problems in terms of accuracy particularly if digital transmission modes are employed. Mobile radio messages, even in analogue-voice form, tend to be reasonably 'noisy'. The mobile operator is generally unable to control the environment from which he is required to operate. However, when mobile radio voice communication is unclear, the officer receiving the message simply asks for a repeat until he feels certain that he understands what is being said.

Mobile radio digital communications may be presenting messages on video displays or on hard copy printers. Messages which are received may appear accurate when in fact they contain

errors. This will adversely affect the patrolman's ability to perform his duties. In addition, it will negate any benefits which may be derived from utilizing this type of communications. Therefore, it is essential for any digital system utilized by the Police Community to have error detection/correction features which will minimize the occurrence of message error.

II.3.2 Response Times

Response time is important to police operations from a number of points of view. First, the amount of time taken for the police to arrive at the scene of a complaint (complaint response time) is important. A reduction in response times increases the probability of apprehension where criminal offences are involved. Response times are also important where assistance is requested by the public. Therefore, the lower the complaint response time, the higher the confidence of the public in its police force. Activities affecting response times are shown in Figure II.3

The response times of agencies in the rural profile cannot be expected to be the same as that for agencies policing urban communities. This is due primarily to the jurisdictional coverage, area involved and available manpower. There are also wide variations of response time within rural policing situations. The predominant factors are population density and patrol size. Large organized urban agencies have typical response times of three to five minutes. Again, this time is largely dependent upon the jurisdictional boundaries, the organization of patrols within this area and manpower resources.

Communications delay is defined as the total time required for moving a message or information by means of a communications network. Utilization of organized data tech-

niques should result in a reduction of communications delay. If communications delays are excessive, the police officer may not initiate requests for information. This results in a reduction in his ability to deal with field situations.

II.3.3 Communications Problems

Most police forces have some type of communications coverage problem. The nature of the problem differs from the rural and small urban police communities to the large urban agencies. In rural areas, dead-spots in the coverage area are a significant problem being reported by approximately 70% of the forces. In addition, there is a lack of general coverage in many rural areas. The large urban forces complain more of noise and interference than dead-spots. Fading is generally a problem with a decreasing incidence in the larger more urban centres. Solar and atmospheric noise is encountered, causing a degradation in communications.

In medium and large urban communities, the existence of highrise buildings, shopping centres, industrial sites, etc. have an adverse affect on the ability to communicate. The community's building profile creates signal blockage and interference due to signal reflection. Industrial activity and man-made noise causes interference. A generalized value of 20 dB increase in noise level between the urban and rural environment has been recorded.

A number of Departments, particularly the larger ones, or ones near large centres, report overcrowding on the present channels and in some cases, the periodic inability to communicate over the radio because of lack of air time. Urban police agencies are faced with a significant problem in acquiring additional frequencies, as much of the available spectrum has been assigned to other services.

II.3.4 Communications Security

Voice security over mobile radio communications has the straight-forward objective of keeping police mobile radio communications confidential.

Respondents in all categories identified the need for communications privacy. For medium and large urban agencies the response was 100 percent requiring this feature. The majority of agencies identified monitoring by the public and the news media as the prime problem.

Mobile radio data systems, because of the utilization of digital data, cannot be easily monitored by existing monitoring devices. In addition, this format provides the capability of incorporating cryptographic techniques to the communications system.

II.3.5 Voice/Data Priority

Voice communications across all profile groups is essential. No agency contacted identified that data communications should totally replace the present voice capabilities. Voice communications has been found to be the most desirable way for a patrolman to obtain immediate contact with his fellow officers, the communications centre, or supervisory personnel. Voice communications reduces the feeling of isolation which a patrolman could and does encounter during the course of his duties.

The majority of agencies view mobile radio data techniques as a means to supplement voice and provide more information to the field forces. In the larger urban areas, this method will also serve to relieve the channel congestion presently encountered.

Voice must always have priority over digital data in the Canadian Police Community. The majority opinion of agencies across all profile categories identified this requirement.

II.3.6 Backup

The term "backup" includes the necessity to provide for emergency or alternate communications facilities if the main or normal system experiences failure; to provide the means by which a smooth transfer to a manual process can take place of events in process, resource status, and new incoming events. It also provides for the ability to restore an automated system to real-time status by reloading all activity to the status held prior to breakdown and "picking up" all activity handled manually in the interim.

In order to meet these needs, certain provisions must be made in the design stage.

II.3.6.1 Communications Backup

The radio part of any communications system should be able to operate independent of any involvement with the computerized command and control components. Each department will have to decide for itself the degree of redundancy required to ensure its ability to communicate to its resources. This may include 'mutual aid' contracts with other civic services or other police forces. It may provide for the ability to command the field force from a mobile com-centre or it may simply be having standby equipment available for immediate installation if needed.

II.3.6.2 Power Supply Backup

Some form of alternate power supply should be considered in support of the police communications system. While full dupli-

cation is likely the most desirable, a department can adequately function on less than full power supply if planning is carried out to identify those non-critical parts of the system which can be shut down and still leave adequate communications, albeit, degraded.

II.3.6.3 Computer and Peripherals Backup

Again, full duplexing of equipment would be desirable to protect against loss of system components due to breakdown. However, having some of the more critical components on hand and easily installed will usually be sufficient to maintain essential communications.

In order to provide data backup for restoration of system status, there must be some form of logging arrangement with periodic checkpoints taken. In the event of a system failure, the manual takeover, the backup logging will allow the system to be restored to a real-time state when equipment is again functioning.

II.3.7 Support Systems

A policeman's ability to do his job is enhanced by the amount of information at hand. Support 'information systems' are basically the storage, indexing for fast retrieval and rapid access of a great diversity of data. The pressures of the community on the police agency determines the amount of data that has to be dealt with on a daily basis. The resultant data sources may be on site or at other locations.

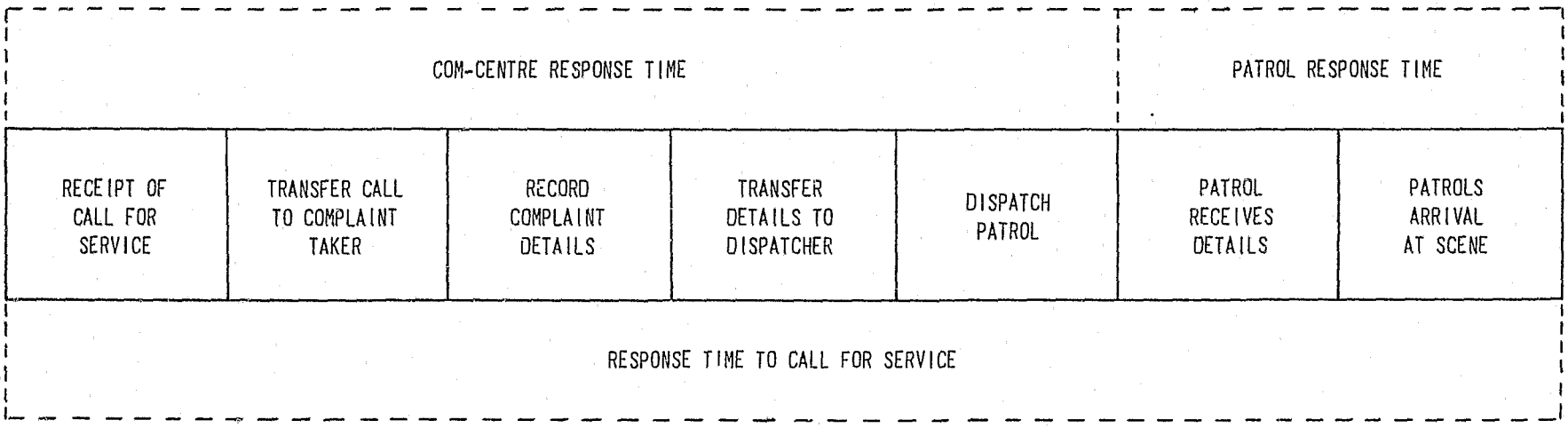
Some examples of data sources include: daily publication lists, directories (city address, phone), general administrative lists (tow trucks, ambulance), centralized records and computerized information bases. Methods of access to these data sources are by: Telex, computer terminal, card index systems,

microfiche readers.

The field force access to these support systems is via the communications system and the radio dispatchers. The application of a mobile data terminal can enhance the access capabilities of the field force.

A good deal of the work involved in providing support information is in the gathering together of the many elements. This necessitates extracting from files, compiling lists, publishing and distributing, updating for currency and cancellations of out of date items. The requirement for constant updating of existing information is a major portion of the long term workload that can be expected.

The trend is towards automated information systems, however, with the exception of one or two large departments, plans are poorly defined at present.



F I G U R E I I . 3

ELEMENTS OF RESPONSE TIMES ENCOUNTERED ON CALLS FOR SERVICE

PART III

FUNCTION PROFILES

SECTION 1 - COMPLAINT TAKING FUNCTION

III.1.1 Function Overview

Identification of occurrences that require some type of police action can be received by telephone, mail, in person, telex, computer terminal or radio. Therefore, there must be a functional activity which interacts with these media. This is normally designated the complaint taking function. The function of complaint taking may be physically separate and isolated from all other activities of the communications centre, however, it must be organizationally integrated with all other functions.

The complaint taking function includes all the initial processing related to occurrences as well as the processing of messages and information received at a police communications centre. One element of the complaint taking function is to be able to direct complaints, messages, etc. to the other functional areas, both internal and external to the com-centre. Therefore, this dictates the ability to decide the destination of information.

Complaint details must be able to be recorded. This includes information such as complainant's name, address, phone number, address of the occurrence, type of occurrence and any additional details which may be of assistance to the responding patrol units(s). As well, the function must be able to add elements of information which will be useful to the department both operationally and historically. These include such items as event codes, priority code, time of receipt, complaint number, district and zone, and operator number.

The complaint taking position must have access to organized information sources. These sources may take the form of directories or files which allow the verification of details, recognition of duplicate reporting, identification of business references, and information on other emergency

services.

The complaint taking function must be able to determine the urgency of a complaint and in cases of extreme urgency have some method of circumventing normal routine to allow faster than normal processing. The normal flow point for this function's operations is to a dispatcher. Figure III-1 illustrates the broad job flow.

The complaint taking function includes the gathering and routing of information which is used to brief oncoming shifts of patrols, thereby making them aware of important or continuing events which may involve them. The person performing the complaint taking function must also be able to brief replacement personnel performing the complaint taking function.

III.1.2 Activity Descriptions

Calls are received from the public, patrolling policemen, other departments, alarm companies, etc. These may be information requests in which case, they must be answered or routed to the appropriate function. If they are occurrences requiring action, they must be recorded.

Recording may be achieved by keying information into an automated system through a terminal device or by manually transferring details to paper.

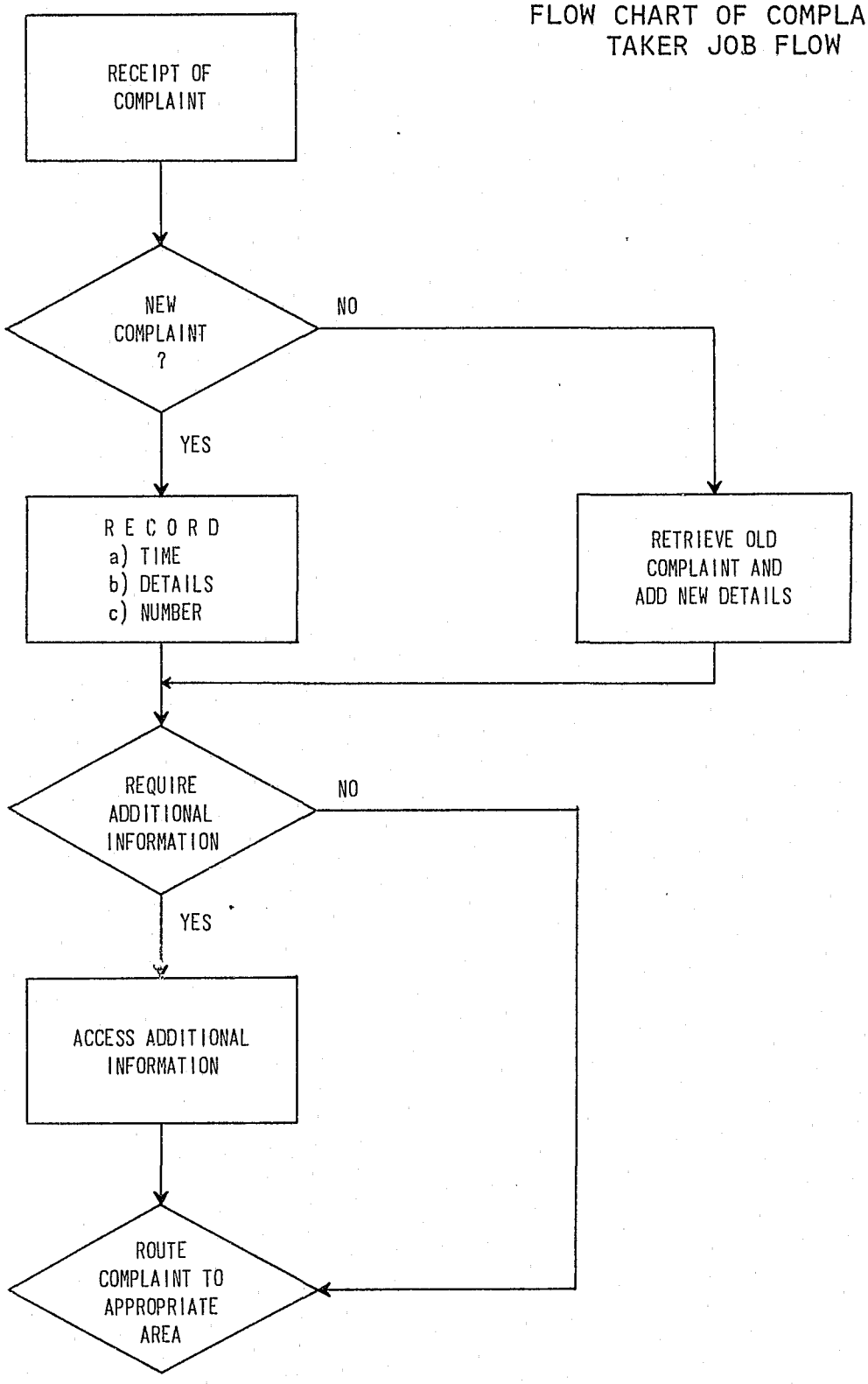
Additional details must be added by the individual who has done the recording. This includes insertion of:

Priority Coding	Event Details
Event Coding	District and Zone Selection
Time-Date Stamping	Operator Identifier
Event Numbering	Additional Details

These elements are defined and described in the following paragraphs.

FIGURE III.1

FLOW CHART OF COMPLAINT TAKER JOB FLOW



Priority Coding

For some police agencies, a set of priority classifications may not be necessary. However, in most agencies, especially in the larger urban centres, it is required.

Priority Coding generally consists of a predetermined set of occurrence (event) types classified in terms of immediacy of processing. For example, crimes of a serious nature, such as attack on a police officer, rape and bank alarms require immediate police assistance and are therefore designated a high priority (e.g. Priority 1). At the other end of the spectrum are the type which generally require police action if for no other reason than to foster good public relations. This event type includes complaints about barking dogs, parking problems and so on.

In general, priority remains the same and consistent with the type of event, however, exceptions do occur. For example, a barking dog is a low priority. If the dog is reported as rabid and attacking someone, the immediacy of the situation becomes far greater than a generalized barking dog and is therefore assigned a higher priority. Similarily, rape reported several hours after its occurrence is far less immediate than one in progress and therefore generally receives lower priority.

Event Coding

Some police agencies do not require coding of occurrence (event) types due to the low volume of events. However, most agencies utilize a classification scheme primarily for statistical analysis. As a side benefit, this results in improved operational discipline on the radio system.

Some examples of event codes are:

01 - Officer in Trouble - Priority 1 (HIGH)
82 - Dog Complaint - Priority 4 (LOW)

The numbers assigned to an event can vary from agency to agency. It would result in a higher degree of standardization within the Police Community if the codes were uniform. Standardization throughout all agencies would lead to improved Uniform Crime Reporting.

Time_and_Date_Stamping

Synchronized time clocks (Simplex Type) are presently used to record beginning and completion times of certain activities. These activities include:

a) receipt time of call
b) time dispatcher receives call details
c) time dispatch is made
d) time policeman has completed the call.

The complaint taker generally records the time that the call is received. Some agencies have the complaint taker function record the time at which the complaint is passed to the dispatch function.

Event_Numbering

Usually, this is a sequential number assigned by the complaint taker to each call for service. Some agencies number incoming phone calls whether dispatchable or not while others number only calls dispatched.

Event_Details

Complainant's Name - Self explanatory
Complainant's Address - Self explanatory

Complainant's Phone No. - Self explanatory

Address of Occurrence - This could be a house or business address, company name, set of street intersections, known landmarks, parks, schools, etc.

Details of Occurrence - This coincides with the event code and acts as a more definitive statement of clarification. For example, an event code may be "82" which is a dog complaint. The detail may state: "Owner's gone for weekend, dog chained outside and is continuously howling and barking."

District and Zone Selection

This type of selection is germane primarily to agencies with a large coverage area. The concept presented here involves a geographical splitting of the jurisdictional area being policed by the agency. Much work is presently being done in this area by the management of many of the police agencies in Canada.

Basically, two levels of splitting can occur:

1. District - Large patrol areas which tend to be semi-independent in terms of operations and administration (i.e. resources are assigned to the large area but are individually allocated within the confines of the area as needs arise).

2. Zone - The district is subdivided into patrol areas generally based on workloads, natural and other boundaries, communities, etc. The zone subset generally occurs only in large densely populated municipal areas.

Several basic methods of assignment selection can be utilized. These include: Manual selection by district for agencies not subdivided to the zone level (e.g. a split into North, South, East and West districts); Manual selection by district for agencies which do subdivide to zone, as determined by either the call taker or the dispatcher for that district; Manual selection to the zone level based upon the address of the occurrence; Automatic selection to the zone level based on the address entered.

Operator Identifier

This is an identifier assigned to each individual receiving calls for service. It may take the form of a permanently assigned number, combination of alphabetic characters, alphanumeric or may simply be the name of the individual.

Additional Details

This is a free format area set aside to denote special circumstances connected to the call for service. This information could be: a description of vehicle(s) involved; a description of a weapon involved; a description of a person(s) involved; the direction of escape.

The area may also be used as "NOTE" area containing items such as: this is a chronic complainer; this address has been the source of previous problems (e.g. guns, known criminals);

the person is known to be mentally disturbed; a vicious dog lives there; the owner will meet you there; do not call at the complainant's home.

Directing of a call may be accomplished by electronic transfer, mechanically or by manual means. If the call is directed to an external function such as another emergency service, the complaint taking function should have the ability to remove any recorded information from the internal processing flow.

The complaint taking function encounters activities which require Dual or Multiple responses (more than one emergency service is required). The process requires determining if: it is a police matter; it should be referred to another agency; another agency should be involved, if so which one(s) - fire, ambulance, poison.

Access to organized information sources is necessary to allow the complaint taker assistance in several decision making processes. These could include access to:

Address History Files

In a manual system, this is very difficult to do as it generally relies on the memory of the complaint taker and/or the dispatcher. It is therefore extremely difficult to achieve any level of quality (on a manual basis) in a large municipality due to the volume of calls for service. Usually only unique incidents are remembered and those only for a short period of time. Some carding systems have been created but maintenance generally degrades the quality of information fairly quickly. In a computerized communications system, the maintenance can be categorized or all records kept for a period of time and checked to each new incoming call for service. Another option is the creation of a separate file pointing to previous problem addresses.

The main thrust of the address history is to identify potentially dangerous situations for policemen so they may be informed prior to attending a complaint (call for service).

Business Reference Lists

This is a cross-reference list of businesses by company name and by address. It contains the names and phone numbers of people to contact if an occurrence arises which requires the presence of a responsible person for that business.

Special Attention File

This contains such items as residential property checks when people are on holidays, missing persons, etc. Access to previously recorded complaints/events would allow duplicate events to be recognized.

Duplicate Event File

Occasionally, numerous people will call in to report a single event. This file would enable the call taker to identify it as an event previously reported. Once the event enters the system, it need not be re-entered.

Briefing File

Gathering of briefing material involves a holdback of information which may be of assistance to following shifts of patrolmen. Some events are by their nature not concluded within a shift period. Events which have caused repeated responses and indications of more could be passed on. Similarly, particular crimes (e.g. purse snatching) in a particular area could be passed on. The complaint taking function may be required to gather this information over the course of a shift and route

CONTINUED

1 OF 3

it to a supervisor either during his shift or prior to the end of shift.

Where calls of an urgent nature are being taken, such as bank robbery alarms or car chases, the complaint taker may wish to introduce a monitor into the call. This could be the dispatcher who could begin immediately assigning units or a supervisor who may wish to operate in a "command" mode.

III.1.3 Task Inventory

The tasks performed by the Complaint Taking Function cover a wide range of activities. The extent to which one individual performs these tasks is established by agency policy, organizational structure and operational philosophy. The tasks are as listed.

> The complaint taking function receives complaints and reports of occurrences. Means by which complaints are received include: telephone, telex, radio, computer terminal, in person, alarm boards and mail.
>
> The complaint taking function records receipt of complaints and information provided by the complainant.
>
> The complaint taking function accesses organized information sources. Sources include business reference files, address history files, address directories, special attention files, duplicate event files, complaint disposition files, national data files and provincial data files. Purpose for accessing these sources is to ensure validity of information received, provisioning of additional information, and/or elimination of redundant and non-applicable information.
>
> The complaint taking function inserts additional information to complaints received. Information that could be added includes priority codes, event codes, zone or district identifiers, event numbers, date-time indicators, and operator identifiers. This task also includes the capability of

recalling complaints and/or occurrences for the purpose of adding additional details that could assist in the resolving of events.

The complaint taking function decides where to direct complaints for processing. The decision could be to route the complaint to another emergency service external to the police agency; to the report taking desk for further handling internally; to the dispatcher function for assignment; or any other route defined by the organization structure and policy of the agency.

The complaint taking function directs complaints to the appropriate function either internal or external to the agency. This is a natural extension of the preceding task. Typical functions to which complaints are directed include the dispatch function, a monitor position, a report taking function , an information desk position, and other emergency service functions.

The complaint taking function records the time at which the complaint or occurrence is forwarded to the functional area. This is primarily a task associated with the records and management aspects of the police agency.

The complaint taking function gathers and directs briefing material in support of the on-going operational function of the police agency. This briefing material is utilized by supervisory and management personnel to identify special events of note, by operational field personnel for information purposes, and for personnel in subsequent shifts as a means of updating and identifying on-going activities.

The complaint taking function introduces a monitor into any incoming call where it is felt necessary. Although this is not presently a task commonly included in the complaint taking task inventory, it is felt to be a desirable feature for new systems. This activity permits the introduction of more experienced personnel or personnel who are able to assist in the recording, interpreting and resolution of occurrences.

SECTION 2 - DISPATCH FUNCTION

III.2.1 Function Overview

The dispatch function can be described as the interface between the complaint taking function and the patrol function. Radio is the principal means of establishing the communication link. Complaint calls received from the complaint taking function are transcribed into a form appropriate for radio transmission and dispatched to the patrolling unit. Because the dispatch function is the most immediate interface between the field force and the controlling office, it can be considered the operational hub of the communications system.

The dispatch function includes a sorting and distribution of work to the field force to maintain economy in the deployment of manpower and efficiency in response time. In order for the dispatch function to perform work distribution, information concerning the state of readiness of the field force must be available. This information is usually called "Status". In addition to the complainant's name and address, information such as the priority of the complaint and the nature of the incident must also be available so that appropriate decisions can be made.

The dispatch function is a responsive function. The ability of the Patrol Unit to obtain the necessary resources needed to perform his tasks (e.g. assistance, other emergency services) are highly dependent upon the responsiveness of the dispatcher. The dispatch function must be aware of and capable of anticipating the safety requirements of the patrol units who have been assigned or have encountered situations that may be dangerous. Proper decisions and speedy response are of paramount importance in these instances.

While there may be supervisory personnel available, it is often necessary for the dispatch function to assume an immediate directing and co-ordinating role in organizing field

forces to meet certain situations. This role may be continued until the supervisory function takes over. It is therefore necessary that the transfer of command be smooth in order to prevent confusion in the instructions given to the field force. As a result, the dispatch and supervisory functions are sometimes combined.

Since this function may be placed under considerable stress during emergency situations, careful selection of psychologically stable personnel is essential.

A wide variation in the dispatch function role is encountered across the police community. Departments may combine the dispatch function with other functions such as the complaint taking function. These variations may be found as part of a permanent organization structure or they may be random combinations that occur for short periods of time to meet certain situations. Variations may result from a department's operating philosophy as reflected in its policies, or from the magnitude of the workload that the department is required to handle. In very small departments, one person may alternately function as complaint taker, dispatcher and patrol. In larger agencies, it is typical to find more functional specialization on a permanent basis.

III.2.2 Activity Descriptions

The dispatch function is the function through which most occurrence activity identified for police action is routed, for resolution by the operational field units. It receives input and provides output. In order to do this effectively, this function must be able to interpret the inputs, add and modify them as required to meet his user's needs and assign and direct activities of the operational units in an efficient manner.

Complaint occurrence inputs are received from the complaint taker function. These inputs, in most cases, have been formatted so as to contain a priority, event designation, event details, time and date stamping, district and zone selection, complaint taker identifier, and additional details pertinent to that complaint. The format and information are as recorded by the complaint taker function and therefore as established by the police agency. The dispatch function may receive complaints directly from other sources, mainly the patrol function, other dispatch functions (internal or external to the com-centre) and other emergency services. In these cases, the position involved either assumes the duties of the complaint taker function for that period or else routes the information to the complaint taker function for preparation.

The dispatch function receives information from the patrol function. This information includes status information, location information, functional messages and operational requests. Frequently, a code system is utilized for relaying much of this information. Information types are described in the following paragraphs.

Status

Status information is defined as that information transmitted from the patrol function which identifies the service condition of that unit. The purpose of this information is to indicate the serviceability of the unit. Types of status information include:

In Service/Available
Out of Service
At Scene
En Route
Assigned

There are many more status conditions which can be and are used in the police community. The majority of agencies in the Canadian Police Community utilize the 10 code system (or variations of it) to indicate the patrol status condition.

In some instances a substatus or qualifier to the status condition is provided for clarification purposes. For example, an "OUT OF SERVICE" condition could be followed with a qualifier such as Garage, Escorts, Lunch, etc. These could also be considered as operational information. This information is also relayed in coded form.

Location

The patrol function periodically reports his location to the dispatch function. The periodicity can be random or fixed and is as established by agency policy. In most cases, location information is provided in conjunction with status, functional messages or operational requests. Location identification can be general to the point of identification of zone or district or specific to the point of street, block, intersection, or address. This is flexible and can vary with patrol activity.

Functional Messages

Functional messages pertain to messages indicating requirement for information or acknowledgement of information. Generally, they do not change or affect serviceability. Although the function messages are fixed format and can be coded, the responses generally cannot be. Examples of functional messages include:

Acknowledgement
Vehicle query
Stopping a vehicle

Person query
APB repeat
Stolen Vehicle Listing

Operational Requests

Operational requests pertain to messages identifying a need for operational assistance. Generally, they do affect or change serviceability. In this context, functional messages can become operational requests but operational requests can seldom become functional messages. Possible operational messages include:

- emergency
- request for backup
- request for emergency services (i.e. fire, ambulance)
- relaying of operational messages to the com-centre or other patrol units.

Additional details must be added to the complaint occurrence inputs received by the dispatch function. This includes insertion of priority coding changes, event reclassification, identification of resource(s) allocated, additional details to the complaint record, complaint resolution details, date and time stamping, and operator identifier. These items are described individually in the following paragraphs:

Changes of Priority

Subsequent to or during the dispatch process, the priority of an event can change. For example, a report of a suspicious person could escalate into a "hold-up alarm" and a "man-down" into a homicide. As a result, although the original priority is still on record, there is a priority revision made.

Event Reclassification

This normally occurs once the complaint is being serviced by the patrol function and investigation reveals that the event differs from that reported (e.g. a complaint recorded as a disturbance is actually an assault). The other situation when an event can be reclassified is upon receipt of additional information as a result of a duplicate complaint call.

Identification of Resource(s) Allocated

Patrol unit(s) assigned to the complaint occurrence are logged by a unique identification. This could be an identification related to the unit, the personnel making up the unit, or any other identifier which indicates to the dispatcher who is working on the complaint. This permits the dispatch function to correlate activities with patrol units.

Additional Details to the Complaint Record

As was the case for the Complaint Taker function, this is a free format area set aside to denote special circumstances connected to an activity. This information could include: vehicle descriptions, weapon descriptions, person descriptions, or any other information that might assist the patrol function. This field may also be used for "NOTES" by the dispatch function to identify such items as; previous dispatch, known dangerous individuals at this location, cautionary notes to warn the patrol unit of possible trouble, and so on.

Complaint Resolution Detail

Some departments have found it desirable for the dispatcher function to record the outcome of the complaint activity as reported by the patrol function. This could be in the form

of short statements or by utilizing a disposition code established by the agency. Examples of types of statements that are used are: Gone on arrival, report to be submitted, area checked negative, unable to locate, offender located and dealt with. Using this method, the history of the complaint occurrences is readily available if required for referral.

Date and Time Stamping

This activity is identical to that of the Complaint Taker function. Typically, the dispatch function will record time complaint activity is assigned and the time that the patrol function has completed the activity. In some agencies, the time that the patrol unit arrives at the scene of the activity is also recorded so that response time can be measured.

Operator Identifier

This is an identifier assigned each individual involved in the dispatch function. It may take the form of a permanently assigned number, individual's name or initials, or a position number.

Resources are dispatched to handle complaint activities identified to the police agency. Resource deployment is based upon status of field units, location, type of complaint and any other information regarding the field units operational activities. The dispatch function frequently involves a decision making process as to which patrol unit amongst available units is most capable of resolving a complaint activity.

The dispatch function encompasses passing the request for service to the appropriate patrol function, providing all information required by the patrol function to perform his duties and identifying to the patrol units all new or additional details pertaining to an activity.

The dispatch function, as part of his deployment responsibilities must select and assign activities on the basis of district and zone. In many agencies, the responsibility for district and zone allocation of both the complaint occurrence and the field units are the responsibility of the dispatcher.

The requirement to allocate and reallocate workload so that patrol units and/or zones are not overburdened is generally the responsibility of the dispatch function. In these instances, complaint assignment can cross zone or district boundaries so that complaint occurrences can be handled with reduced response time.

The dispatch function assists the field units in the performance of their activities. This assistance can be in the form of coordination and assigning backup units when identified as required, arranging for other emergency service (fire, ambulance, etc.), making information requests to other data sources (e.g. local records, motor vehicle branches, CPIC), or relaying messages from patrol units to other areas (including other patrol units). Assistance can also be in the form of automatically identifying and arranging backup units for those complaint occurrences which require it.

Broadcast messages and other information messages (generally any message which is intended for use by several or many of the patrol units) are made by the dispatch function. Messages identifying an "alert" condition, contingency plans, all points bulletins, and so on, are included in this category. These are messages which have to be repeated several times, either on request or automatically, to inform the field units in a certain zone, district, or throughout the area of a major event or activity which has wide ranging effect on the patrol function.

III.2.3 Task Inventory

The primary tasks of the Dispatch Function involve activities that relate work commitments of the police agency to operational field personnel. In addition, there are tasks associated with the dissemination of information to and from the field resources. The extent to which an individual (position) performs these tasks is dependent upon the organization of the agency and the operational philosophy applied by management. The tasks are as listed.

The dispatch function receives recorded complaints and reports of occurrences. These are events which have passed through the complaint taking process. In most cases, the information has been formatted in some fashion for ease of handling.

The dispatch function inserts additional information to the event occurrences received. Information that could be added include additional information as a result of duplicate complaint checks, data base queries, changes to priority codes, changes to event codes, date/time indicators, revision to original information, zone and district codes, and operator identifiers. In addition , the dispatcher may be utilized as a monitor position to the complaint taker function. Information as a result of this activity will be inserted by the dispatcher to the complaint record. This task activity includes the capability of recalling occurrence records for the purpose of adding details that are related to that event.

The dispatch function receives status information related to the operational state of each field unit. Information includes unit status, qualifiers to status, location and functional messages. Also included in this category are information messages identifying activity progress and special attention areas (e.g. vehicle out of service, special assignment).

The dispatch function communicates with the patrol function on an ongoing basis. This task is inherent in the majority of the tasks performed by this function.

The dispatch function assigns activities to the appropriate area for resolution. This task includes the introduction of a monitoring position for purposes of command and control, or assistance, the identification for resources to other emergency service organizations and the directing of identified occurrences to special units for processing.

The dispatch function accesses organized information sources. Sources include special attention lists, business reference lists, duplicate event files, complaint disposition files, local records, provincial and national data bases, patrol unit identification lists, and so on. Purpose for accessing these information sources is to ensure validity of information, providing additional information and/or elimination of redundant information.

The dispatch function directs and assists the field units in the performance of their duties. Direction may be to the level of providing the interface between the field unit and the operational command position, or it may be performing the operational command function. This is dependent upon agency structure and operational philosophy. The assignment; updating and changing of patrol activities is part of the directing task.

Assistance is provided on request by obtaining information for the field unit, obtaining Emergency Services, assigning backup units and routing messages to other areas (including other patrol units). In addition, the dispatch function disseminates Broadcast messages. APB's, contingency plans and so on to the field units.

The dispatch function records and logs all communications with the field units. Although this is becoming a minor task with the advent of automated recording devices, many agencies still utilize the dispatch function to some degree.

The dispatch function gathers and directs briefing material in support of the ongoing operational function of the police agency. The briefing material is utilized by supervisory and management personnel, by field personnel, and for personnel in subsequent shifts as a means of updating and reviewing activities which have occurred or are still ongoing.

SECTION 3 - INFORMATION SUPPORT FUNCTION

III.3.1 Function Overview

The purpose of the information support function is to provide information support to all other functions related to police operations. Although the information support function has always existed in some form in police agencies, it is only recently that it has become identifiable as a separate entity. With the advent of automated record systems, computerized data bases and other readily accessible information sources, coupled with the need for the patrol function to have ready access to such information, this activity has become important as a real time service to all functions related to the field operations.

The information support function serves as the source point for information required by the complaint taker, the dispatcher, the patrol units and the supervisory functions. The types of information provided include all information supportive to the operational activities in process. Responses to queries to local, provincial and national data bases, agency files such as business reference listings, address history files, complaint and case disposition records and special attention files, or municipal files such as address listings are all included in the information provided by this function.

This function plays an important role in the overall activities of the police agency. As such, it must work in close relationship with the other functional positions in order to derive maximum benefit. Many agencies have incorporated this function into other functional activities (e.g. provided query capabilities to the dispatcher, complaint taker or both) or have located it in the record department of the agency. Regardless of the philosophy applied, the basic functional requirements still remain.

III.3.2 Activity Descriptions

Support information is required by all of the functional positions within a police agency. The complaint taker requires information for address verification, address history checks, to obtain business reference listings, identify special attention files and so on. Any pertinent information obtained is recorded in the complaint occurrence report prior to routing this report to the appropriate area for handling.

The dispatcher frequently requires information prior to or subsequent to assigning the activity. This could necessitate a query of the local records, provincial data base(s) or CPIC data base to check a person, vehicle, property or outstanding warrants. In addition, the need to identify any special activity requirements, occurrence history files or contingency plan could arise. In some agencies, the dispatch function will also direct all queries orginating from the patrol units to the information function for processing (although point in fact the two functions could be the responsibility of the same individual).

The patrol function is the recipient of the majority of information requested by other functions, generally in the form of additional details to the complaint or activity assignment. In addition, the patrol unit requires information as a result of processing assigned activities or carrying out general patrol duties. Requests for checks to the local, provincial or CPIC data bases occur frequently and as more data sources are created, requests will increase. Dependent upon the communications and organizational structure, requests are made directly to the information support function or routed through the dispatch function. With the introduction of a mobile terminal device, requests directly to the data base desired will be possible. In this case, some type of check or confirmation upon receipt of a positive response will be

necessary to ensure that the patrolman is not placed in a dangerous situation without the police agency being aware of it.

In addition, the information support function serves as the recipient of completed activity reports and complaint dispositions. Upon termination or completion of a field activity, the resultant report and all information pertaining to that activity is handled and recorded by this function. This information is then available for supervisory purposes, statistical analysis purposes, activity history files and briefing purposes.

III.3.3 Task Inventory

The extent to which the functional tasks are separated from other functions within a police agency is dependent upon the size, structure and operational philosophy of the agency. It appears that as more computerized record systems and information bases becomes available, the trend will be towards utilizing a separate individual (or individuals) to perform these tasks. The tasks are as listed.

> The information support function accesses information sources and formalized data bases. The purpose of this task is to provide information upon request to the operation areas. These areas include the complaint taker function, the dispatch function, the patrol function and the supervisory functions.
>
> The information support function directs information to the appropriate areas. The provisioning of information is normally initiated by request. For some information , routing of information may be as established by operational policy (e.g. the periodic routing of activity reports to the supervisory functions, the routine directing of statistical information to the management and records sections of the agency).

The information support function records operational information and stores it for information purposes. This provides the means of recording and storing complaint dispositions, activity reports, briefing reports and any other operational information an agency wants to maintain.

SECTION 4 - PATROL FUNCTION

III.4.1 Function Overview

The patrol function can be broadly defined as the visible entity of the police department which serves the public in a protective, preventative and investigative role. Activities may be assigned, a result of general patrol, or initiated through public contact. A patrol unit normally is assigned an event as a result of a com-centre match of resource to event.

The time from event assignment to a patrol unit until event disposition is only a portion of the overall patrol function. Frequently, many activities are being performed concurrently with the assigned event. In addition, patrol activities are being performed between assignments from police headquarters.

Although police agencies across Canada vary greatly in size, as well as organizational structure, the patrol functions are similar in all cases. Large urban agencies tend to divide their jurisdictional area into well defined districts and/or zones with a patrol supervisor assigned to each. Rural agencies divide their jurisdictional area into general districts which usually have flexible boundaries. Therefore, the patrol function for each type of agency varies only in coverage area: the patrol function in large urban centres having a well defined patrol area; the patrol function in the rural environment having a variable patrol area. Patrol units are generally assigned to a patrol area (such as a district or zone) for a given shift period.

The patrol function usually communicates with other areas and resources of the police agency via radio. Radio equipment may be mobile radio, personal portable, or both. Communications during the shift include requests for information, identification of status, operational co-ordination with other patrol units, and request for support services (both internal and external to the police agency).

The patrol function is responsible for all complaint disposition related to activities undertaken during the course of the patrol. Disposition ranges from short statements regarding the outcome of an activity to a formal report which is utilized by other sections within the agency for further processing. All agencies require their patrol units to record and submit activity documentation. The procedures followed vary greatly between Police Departments and are determined by organizational and operational police.

III.4.2 Activity Description

The patrol function is usually assigned to a patrol area and briefed at the start of each shift by the supervisory function. When possible, any pertinent information regarding special conditions or activities which could affect the patrol are identified at this time. During the course of the shift, complaint occurrences identified to the police agency are assigned to him by the dispatch function. Events are also identified as a result of public contact or normal patrol activity. In these cases, the patrol unit records event details and identifies the occurrence to the dispatch function. Activities undertaken by the patrol unit over the course of his patrol include, complaint disposition, investigative work, providing of backup to other units (on a voluntary or assigned basis), assistance to other emergency services, and general patrol duties (crime detection and prevention).

The patrol unit reports information to the dispatch function on a periodic basis to inform the dispatcher of his activities. During patrol and between specific event assignments, the unit may change its status or service condition many times (e.g. in service, coffee, lunch, car service, out of vehicle, court, available). When the service condition of the unit changes, it must be reported to the dispatch function

in order that all resources can be controlled. In addition to status identification, the patrol function reports location, status of assigned activities and all other operational information required by agency policy. A coded format such as the 10 code or an alphanumeric code is frequently used by an agency as a means to report this information quickly and efficiently.

The patrol function must provide some form of identification to the dispatcher when requesting information or prior to receipt of messages. This may be simply car or unit number, patrolman name or both. In many instances, the dispatcher comes to recognize the voice and speech characteristics of the patrol units under his control, which serves as a basic form of identification.

Information requests are made by the patrol unit in order to obtain supportive details for activities assigned or in process. These requests require responses from sources either internal or external to the police agency or both. Response must be prompt and accurate. Requests are generally made to the appropriate area via the dispatch function. In some agencies, a separate information channel is established to connect the patrol unit directly to the information support function (usually located in the records department). Any requests requiring access to an information base (i.e. local records, provincial data base, CPIC data base) are made utilizing this channel.

In addition to information requests the patrol function generates requests for investigational support, assistance in resolution of an event (backup) and services from other departments both internal and external to the police agency. All of these requests are generally routed through the dispatch function.

The patrol function records details on the activities undertaken over the course of his shift. This documented information is then retained by the agency and patrol unit for future reference. Information related to activity times are recorded. Time of complaint or activity assignment, arrival time at scene and clearance times are recorded to enable measurement of response times, complaint durations and other indices related to operational performance. This information is also important if further police or judicial action is necessary. As the patrol function is responsible for complaint disposition, it is important that details be recorded for this purpose. Disposition may be a brief statement such as Gone on Arrival (GOA), Settled Prior to Arrival (SPA), and unable to locate. These can be passed to the dispatch function who records it on the original complaint form. For other complaints, a long formal report is necessary to record all details of the occurrence. This terminates activity for the patrol function. Other sections within the agency can utilize the information for further processing.

III.4.3 Task Inventory

The tasks which are performed by the patrol function are extensive. The inventory list presented is therefore very generalized and serves only to highlight the task areas. There is a wide variation across the police community in the way that tasks are handled. The major factors influencing task activities include jurisdictional size, type of environment serviced, type of policing performed, organizational structure and operational policy.

> The patrol function performs protective, preventative and investigative duties. Activities may be assigned, initiated by public contact or a result of general patrol. The patrol function responds to the events identified by these sources either personally or by directing them to the appropriate area.

The patrol function records information related to the performance of the patrol responsibilities. This includes recording details of the assignment, additional details related to assigned events, event details resulting from general patrol and public contact, and all other operational information which is required in performing the patrol function.

The patrol function reports information related to patrol status and on-going activities. Information includes operational status, location, functional messages, new complaints generated as a result of public contact, changes to service condition, date and time information and patrol identifier.

The patrol function accesses and receives information from organized information sources. Sources include special attention lists, complaint disposition file, local records, provincial and national data bases. Purpose for accessing these information sources is to obtain additional information for operational purposes.

The patrol function identifies the need for support as required. This requirement is generally identified to the dispatch function. This includes identifying the requirement of backup patrol units, emergency situations, the requirement for emergency services (fire, ambulance, etc.) and special service support (e.g. canine section, identification services).

The patrol function provides assistance to other units involved in the police function. This includes providing backup support either voluntarily or as requested, providing assistance to other agencies upon request and serving as a team member on an activity requiring multiple deployment of units.

The patrol function prepares and submits reports on activity occurrences handled over the course of the patrol shift. This task includes preparation of complaint dispositions, occurrence reports and general patrol reports.

The patrol function gathers and directs briefing material in support of the on-going operational function of the police agency. Purpose of this is to provide the supervisory function information for briefing subsequent shifts as to outstanding activities,identifying conditions existing within the patrol area that could affect future patrol activities, and information related to equipment malfunctions

SECTION 5 - COM-CENTRE SUPERVISOR FUNCTION

III.5.1 Function Overview

The control and supervision of the com-centre operation is the responsibility of the com-centre supervisor function. This includes ensuring the continual availability and effective operation of all equipment and personnel within. The functions of the com-centre include complaint taking, dispatch and information support.

The com-centre supervisor is aware of all com-centre activities and on-going field activities. In many cases, this function assumes command of any major event that is identified to the police agency. Therefore, familiarity with all facets of the functional tasks within the com-centre is required. Since command of the patrol function could be assumed, this position must also have in-depth knowledge and experience in field operations.

The com-centre supervisor is the interface between the operational level and management. Reporting, especially in large agencies is to a duty officer (watch commander). This function is responsible for the preparation of briefing material to other supervisory functions, the com-centre supervisor on the subsequent shift and upper management.

In agencies servicing large urban communities, this position is usually well defined and separate from any other. In small urban centres and the rural environment, agencies utilize one individual to perform this function in addition to other police functions.

III.5.2 Activity Description

The first activity that is undertaken after being briefed by the previous shift supervisor is to confirm the operational status of the com-centre. The supervisor ensures

that all functional positions are occupied and all equipment malfunctions have been identified. Deficiencies are recorded and on-duty personnel briefed of any operational conditions that will affect their duties. If repairs are required, these are scheduled such that the affect on operations will be minimal.

This function must ensure that personnel in the com-centre are aware of all contingency plans, procedures and routines that must be followed and that they are followed, if and when the need arises. Dissemination of contingency plans, broadcasts, all points bulletins (APB's), etc. required by the patrol function are under the control of the com-centre supervisor.

The com-centre supervisor is responsible for ensuring maximum efficiency of the com-centre activities. To assess performance, he may analyse complaint queuing times, dispatch queues response times, activity times, workloads and any other indicators available. Complaint queuing and queuing time identifies the number of complaints that are being held for processing and how long each complaint is held. Dispatch queues indicate the number of activities waiting for dispatch. The dispatch queuing time can also be measured. Response times can be used to measure the performance of the different functional activities. The response time to service a call by a complaint taker can be measured, the time to process the call from complaint identification can be calculated, and so on. Utilizing date and time stamping, these response times are calculated readily.

The com-centre supervisor identifies deficiencies and problem areas to the management of the police agency. Frequently, he recommends alternative methods to resolve these problems. He is also responsible either directly or indirectly in the assessment of com-centre personnel and the resolution of personnel problems which arise.

The com-centre supervisor is usually responsible for assuming command and control of the patrol function when required by extenuating operational conditions. On occasion, he may change assignment priority, event code, patrol unit deployment and so on. This is normally done in co-ordination with the patrol supervisor function and dispatch function.

As an on-going process, the com-centre supervisor gathers and records information for briefing purposes. Briefing material is directed to administrative personnel on items such as volume of complaints received, response times, types of activity, areas where events are occurring, shortages of resources and operational information. Much of this same information is utilized to brief the patrol supervisors and the com-centre supervisor on the subsequent shift.

III.5.3 Task Inventory

The tasks associated with this function are extremely variable. The inventory presented is generalized by necessity and illustrations and examples are used only to indicate typical activities. The size, organizational structure and operational policy of an agency all play a major role in defining the range of tasks associated with this function and the flexibilities permitted.

> The com-centre supervisor function supervises the activities and operations associated with the com-centre. This includes the assignment of duties to functional positions, the briefing of personnel, the performance of or assistance in personnel performance reviews and the optimization of com-centre performance.
>
> The com-centre supervisor function provides information related to the operation of the com-centre and functions associated with the com-centre to police administration and management. Information provided includes equipment and functional deficiencies recommendations for improvements, performance indicators and activity statistics.

The com-centre supervisor function co-ordinates the activities of the com-centre with other activity areas within the police agency. This task is accomplished through briefings, liaison and co-ordination meetings with supervisory personnel responsible for other activity areas.

The com-centre supervisor function assumes command and control of operational field units when required as a result of major events that affect overall patrol operations. This includes the assignment, reassignment and deployment of field units (normally in consultation with the patrol supervisor function).

The com-centre supervisor gathers and prepares briefing material for other supervisory and administrative functions within the agency. The purpose of this task is to provide information on the short term regarding on-going activities associated with the com-centre operation.

SECTION 6 - PATROL SUPERVISOR FUNCTION

III.6.1 Function Overview

The patrol supervisor function can be defined in general terms as the function responsible for directing and controlling the patrol resources. To do this, the position must be aware of all activity assignments within his area of responsibility.

The objective of the patrol supervisor function is to provide direction and control to the resources under his command and to maximize resource utilization and services rendered.

The term patrol supervisor is more or less self-explanatory. All departments utilize personnel in this capacity. Small agencies and departments servicing rural areas normally utilize one position which performs the tasks associated with several functional positions (e.g. a duty NCO responsible for supervising the entire operation of the department). In some cases, the patrol supervisor function is performed by the senior members on patrol. Large agencies tend to have separate positions designated as patrol supervisor, each responsible for the patrol resources in a specified area or district. This person spends the majority of his time on patrol in the district of responsibility.

The patrol supervisor frequently performs a patrol function in addition to the supervisory function. He constantly monitors the assignments given his units and depending upon the seriousness of a situation, or the experience of the personnel involved, will attend the scene to give assistance and supervision. As a result of his experience, the individual in this functional position is often called by the units under his command for advice and direction.

III.6.2 Activity Description

When a supervisor comes on duty, he is briefed of the occurrences, activities and operational factors which have occurred and could influence field operations during the shift. This briefing is normally by the patrol supervisor coming off-duty, although other supervisory personnel might perform this activity in lieu of or in addition. It is the responsibility of the patrol supervisor to pass on all information obtained from briefings received to units under his command.

The patrol supervisor is also responsible for identifying the operational condition of his units. In situations where deficiencies are identified, corrective action must be taken.

The patrol supervisor usually performs his duties from a patrol vehicle, returning to the station only for administrative purposes, briefings and co-ordination of activities. He is in constant contact with the units under his command. He may alter assignments, redistribute workload, authorize activity status and control deployment of his units.

The patrol supervisor is aware of the status condition and location of his units at all times. Where assistance is required or supervision is necessary,the patrol supervisor provides this in the form of backup or by assigning other units to assist. If during the course of the shift, the patrol supervisor finds that workload is becoming too heavy, response times are becoming too long and activity in his coverage area is high, he may request additional resources.

The patrol supervisor function co-ordinates activities with the com-centre supervisor function. Generally, he is responsible to the duty officer or watch commander. When

deficiencies or problem areas are encountered in his patrol district, these are identified to police agency management. Frequently, he makes recommendations as to possible methods of resolving these problems. As supervisor, this function is usually responsible for or assists in the performance evaluation of the patrol personnel under his command.

On a continual basis, the patrol supervisor gathers and records information for briefing purposes. Briefing material is prepared for administrative personnel, other supervisory functions within the police department, and the patrol supervisor of the subsequent shift.

III.6.3 Task Inventory

The tasks associated with this function are extremely variable. Scope, responsibility and flexibility are dependent upon the police agency. Factors influencing the task inventory include agency size, organizational structure, operational policy and policing activity. The task inventory presented is very general. Illustrations and examples are used only to indicate typical activities.

> The patrol supervisor function supervises the activities and operations associated with the patrol functions. This includes shift briefing, deployment of personnel within the patrol area, involvement in personnel performance reviews, on-the-job training and development and optimization of patrol performance.
>
> The patrol supervisor function provides information related to the patrol operation for police administration and management use. Information provided includes equipment and operational deficiencies recommended solutions, performance indicators and activity statistics.
>
> The patrol supervisor function co-ordinates the activities of the patrol units under its command with other activity areas within the police agency. This includes the identification of units available

for assistance, the assignment of patrol units to other duties, and the control and deployment of patrol units in processing activities.

The patrol supervisor function gathers and prepares briefing material for other supervisory and administrative functions within the agency. The purpose of this activity is to provide information regarding on-going activities associated with the patrol function.

SECTION 7 - SYSTEM FUNCTION

III.7.1 Function Overview

The primary purpose of the system is to serve as the interconnection between the functions and provide the means for interaction. In addition, the system provides supportive features to meet operational,organizational and administrative requirements of the department. Considering the overall structure graphically, (refer to Figure III.2), the non-system functions can be considered as the nodes, with the system serving as the interconnecting links. The extent of interconnection and the degree of interaction over these links determines system flexibility and capacity.

The interaction requirements and organization of a police operation is determined primarily by the management personnel. Overall policy relating to configuration and operational practices is dynamic in nature, and the system must be capable of reflecting this. The basic functions will always be the same, it is the methods and interconnection of these functions that will vary.

System structures range extensively across the Canadian Police Community. In general, it has been found that the smaller the police agency, the more basic the system. In most agencies having a small number of personnel, several of the functions are handled by one person, (e.g. complaint taker and dispatcher). Therefore, although the same system requirements exist, the complexity of the interactions, and therefore the links, are reduced. In addition, due to smaller scale of operation, several of the activities, such as logging, statistical data collection, deployment of field personnel and recording status can be performed manually.

In large agencies system complexity tends to increase. In several large municipalities, communications of data information is totally separate from the on-going operational traffic.

Thus the dispatch function is bypassed completely for field queries to the available data bases. In other municipalities all traffic is handled by the dispatcher and the information support function is combined with the dispatch function.

In many agencies servicing medium to large population areas there is more than one individual required to perform the function (e.g. multiple complaint taker position, multiple dispatchers). This does not change the function tasks, but could introduce additional supervisory requirements. It also means that a transfer capability must be built into the system. Situations are also encountered where the number of positions required to perform a function is variable with time of day, or amount of activity (volume). Functional requirements are met by personnel performing one primary function but also assuming the tasks of a different function for short periods of time on both a scheduled basis or aperiodically. For example, a dispatcher could assist the complaint taker during peak activity periods by assuming his tasks.

Physical configuration plays an important role in determining system requirements. In some agencies, the complaint taker and dispatch functions are separate from each other. This results in a more complex link to permit intercommunications. Generally, as police agencies increase in size, the spatial separation of all functions increases. Communications needs therefore change. A more complicated configuration to provide supervisory and monitoring capability is utilized, with the necessity of more operational summaries, and status briefing information.

As the size of the agency increases, the methods utilized to record and store information regarding complaints, events and status become more complex. Instead of personnel utilizing manual methods or memory, the system should assume this role. This permits the personnel responsible for each function the

opportunity to operate more effectively by freeing him from storing, remembering and recalling the information necessary to do his tasks.

III.7.2 Activity Descriptions

Several activities are generally included in the scope of the system function, since they are common to most, if not all of the functions. By considering them as part of the system package, a level of continuity across the police operations can be achieved.

Timing

Each of the main functions (i.e. complaint taker, dispatch,patrol) reference a time clock for some aspect of its tasks. The complaint taker records the time that the call is received, perhaps the time of call completion and possibly the time the complaint is passed to the dispatcher. The dispatcher in turn records time of dispatch. The patrolman could record the time that the activity was assigned and in addition, the time of completion. These times are utilized in measuring arrival times, call durations, queuing times, service times, and response times, and other times that provide an indication of both system performance and operational performance. By utilizing a common clock, the system provides a synchronized clock source.

Complaint/Activity Numbering

Utilizing the system to provide numbering of complaints and activities, a chronological history of the police operations is established. The occurrence of dual complaint numbers can be minimized and in cases of multiple position operations, the process of opening a complaint file is simplified. If this capability is provided by the system, then a file can be originated at any of the main function positions without creating

the problems of dual assignment or a break in the numbering scheme utilized.

Identification Coding

All of the functions require some form of identification. Presently, this is most often accomplished in the com-centre by initials, and by means of a code for field units. Voice recognition is also utilized between the dispatcher and patrol function. Identification is necessary so that information can be directed to the persons involved in an activity, as well as determining who is a valid user. In addition, identifiers can be utilized for personnel performance assessment purposes. Finally, identification is necessary to enable tracing of a complaint or activity through the system.

Utilization of identification coding at a system level will permit the same capabilities. Field unit coding could be assigned on an equipment or personnel basis. Assignment within the centre could be by terminal device.

Monitoring

Monitoring is required throughout the complaint recording, assignment and handling process. The complaint taker function encounters situations where the ability to introduce a monitor position into the complaint taking process is desirable. The supervisory functions require the capability of monitoring the system to be aware of ongoing activities and critical situations. Monitoring provides the ability to offer advice or assistance if necessary, as well as assume control of an activity. Monitoring is required between field units for supervisory reasons, as well as to permit field units the capability of backing up each other when needed.

Broadcast

The most important activity of the system is to provide communications between the functions. In many cases, communications is required between two positions only (e.g. from one dispatcher to one patrol unit). There is also a requirement for broadcasting information. An All Points Bulletin is broadcast by the dispatcher(s) to all patrol units simultaneously. In other situations, this capability is necessary to simultaneously inform a selected group of patrol units. This enables the dispatcher or duty commander to deploy and control a team of patrolmen in performing an activity.

A variation of this is the capability of transmitting a prepared message on request from the field unit. The need for information such as stolen vehicle listings, patrol bulletins and other "canned messages" exists in most agencies, and requires the dispatcher to repeat the same information to different patrol units periodically. Incorporating this capability into the system so that the dispatcher is required to prepare it only once will result in improved dispatcher efficiency.

Access to Organized Data Bases

One of the major requirements to enable the patrolman to successfully perform his function is the ability to access information sources in real time. This requirement is presently being met through the dispatcher. In several of the larger agencies a separate information support function has been established which is independent of the dispatcher. This permits the patrolman to make a voice request for information which is then processed by the dispatcher and/or information function. When the response has been obtained, it is relayed back to the patrolman by voice. This arrangement places an additional task on the dispatcher (to the extent that a separate function has been established). In most agencies, the number

of queries made is much less than the number that the patrol units would like to make. By incorporating this activity into the system, the requirements of the field units will be much better served.

III.7.3 Task Inventory

The tasks which any system performs can be categorized. The degree of system flexibility then becomes contingent upon the capabilities and scope built into each category. The tasks are as listed.

> The system provides communications between the separated functional elements. Communication can include the capability of broadcast messages, call monitoring, dispatch monitoring, call transferring, message switching, status traffic, communications to selective units, and transmission of selective information.
>
> The system provides the ability for functions to record and log information. This task includes the capability of recording status and status changes, recording and logging of complaint information, revising and updating information, recording special activity data, recording times of activity occurrence and recording and logging supervisor and administrative data.
>
> The system provides the means by which the separate functions may access organized information sources. This task includes interacting with local, municipal, provincial or national data bases, automated data processing systems and information sources internal to the system itself.
>
> The system provides the means by which the functions identify themselves. This includes unit and/or function identification, verification, and identification of attempted access by invalid users.
>
> The system provides the ability of generating the statistics and operational information necessary to assist the supervisory functions. Statistical data such as system response time, communications response time, patrol response time, deployment of

patrols, queue lengths encountered by functions, are included as part of this task. In general, all information necessary to maintain an operational condition on a short term real time basis falls within the scope of this task.

The system provides the ability of generating statistical information necessary to assist the administrative functions. This includes all long term historical information utilized by the Administration to ascertain a police operation. Data such as activity statistics, manpower resources, crime activities, complaints, etc. fall in this area.

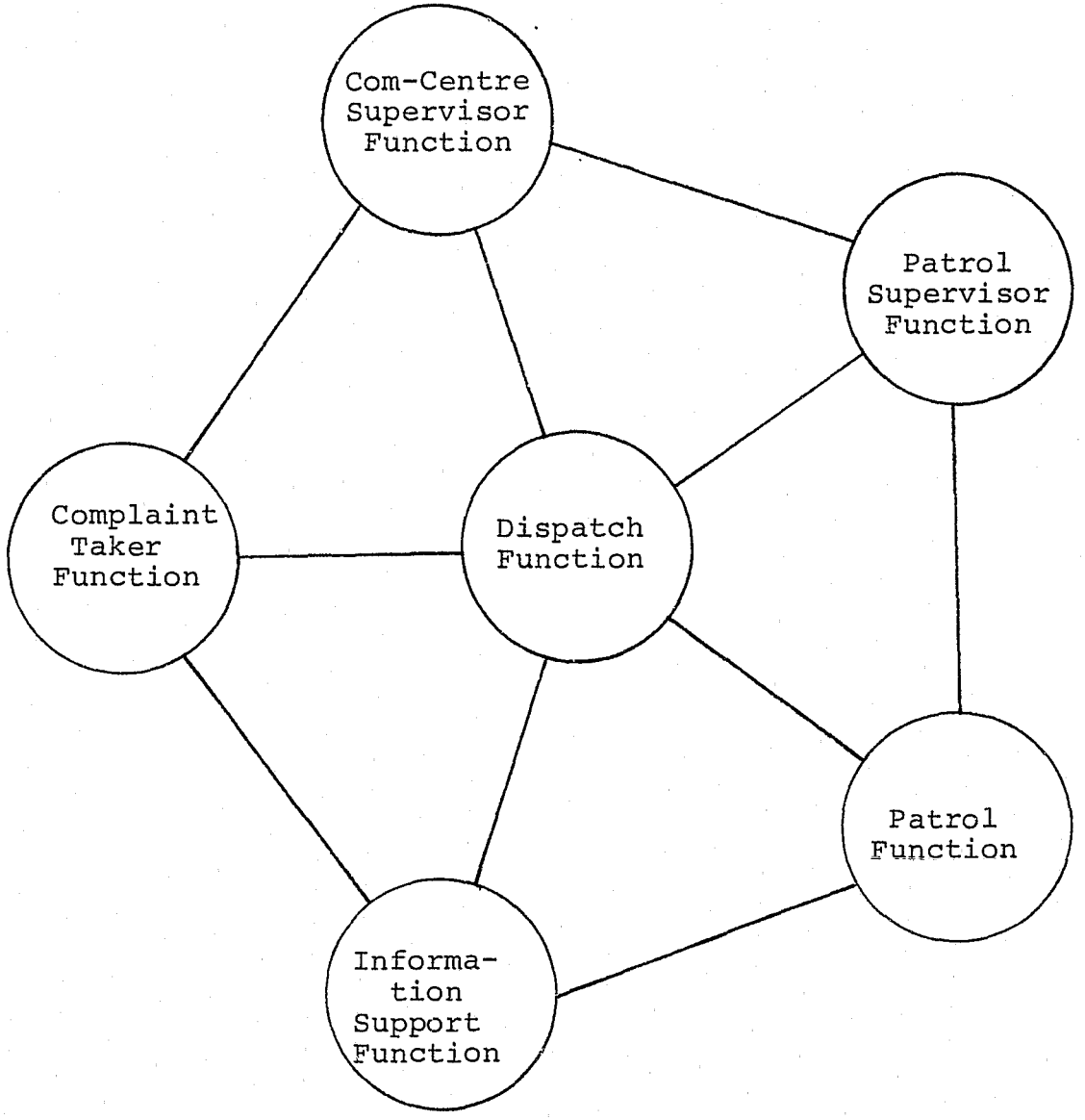


FIGURE III.2

NODAL DIAGRAM OF THE SYSTEM INTERCONNECTION OF FUNCTIONS

APPENDIX "A"

EQUIPMENT HELD

BY

QUESTIONNAIRE RESPONDENTS

NOTES:

1. The names, model numbers and other information in this report are as reported by the various agencies responding to a questionnaire, "MOBILE DATA SYSTEM DEVELOPMENT - USER REQUIREMENTS QUESTIONNAIRE" circulated to them.

2. Although some of the model numbers, shown in Tables 1, 2 and 3 appear to be serial numbers, they have been listed for any value they may be as reported by the agencies.

3. As reported by the various agencies responding to the questionnaire, the majority of the BASE STATIONS are Motorola (68%) followed by General Electric (25%). Marconi (6%), Other (1%).

   In agencies serving populations under 50K, the manufacturer of the base station equipment is:

Motorola	(49%)
General Electric	(37%)
Marconi	(7%)
Other	(7%)

   Agencies serving populations between 50K to 100K reported their base equipment as:

Motorola	(47%)
General Electric	(25%)
Marconi	(9%)
Other	(19%)

Agencies in the Province of Ontario report:

Motorola	(75%)
General Electric	(8%)
Marconi	(8%)
Other	(8%)

Agencies in the Province of Quebec report:

General Electric	(39%)
Motorola	(31%)
Marconi	(15%)
Other	(15%)

4. Mobiles - The suppliers of the mobile equipment (radio units in the vehicles) were found to be:

Motorola	(44%)
General Electric	(40%)
Marconi	(8%)
Other	(8%)

It was identified by 26% of the respondents that a combination of different mobile equipment makes are utilized. Of these agencies, 19% have a mix of Motorola and General Electric mobile radio units.

5. Base and Mobile Combinations - There is a number of departments who report a mix of manufacturer equipment, between the base unit and the mobile units within their radio system, that is one supplier for the base station with one or more different manufacturers supplying the mobile units. Agencies having one supplier for their entire system report the manufacturer as

Motorola	(27%)
General Electric	(12%)
Marconi	(3%)

The remaining 58% of the agencies have a mixed system.

6. Antennae (see Appendices A, B & C) - It was found that 58% of the agencies have various models of SINCLAIR antennae. Other manufacturers of antennae being used are: Phelps-Dodge, Decibel and Andrews. As with other pieces of radio equipment in the various police departments, there is a mix of antenna makes in 18% of the departments.

7. Ownership of Equipment - The following is a breakdown of equipment ownership in relationship to the size of the department:

		OWN	RENT
a)	Rural	91%	7%
b)	Urban (small to medium)	81%	19%
c)	Urban (medium to large cities)	71%	24%
d)	Large communities	41%	23%

8. Maintenance of Equipment

a)	Rural	94% maintain their own
b)	Urban (small to medium)	42% maintain their own
		with 56% contracting maint.
c)	Urban (medium to large cities)	30% maintain their own
		65% by contract
d)	Large Urban cities	23% maintain their own
		59% by contract.

Of those agencies who contract their maintenance, it was found that the preference in Western Canada was towards private firms or the municipal engineering department while agencies in Eastern Canada utilized their

Provincial Telephone Companies.

9. Problem Areas

a) Rural

Fading - 32%
Noise - 38%
Dead Spots - 68%
Other - 25%

The majority of problems listed as Other was found to be overcrowding of present channels.

b) Urban (small to medium)

Fading - 19%
Noise - 22%
Dead Spots - 33%
Other - 14%

c) Urban (medium to large)

Fading - 30%
Noise - 24%
Dead Spots - 53%
Other - 6%

d) Large Urban Centres

Fading - 14%
Noise - 50%
Dead Spots - 9%
Other - 9%

TABLE 1

ALL G.E. BASE STATIONS AND MAKES AND MODELS OF ASSOCIATED MOBILE RADIOS AND ANTENNAE

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
*GENERAL ELECTRIC	ROYAL COMM. II	MARCONI	DT56	SINCLAIR	234
*GENERAL ELECTRIC	4EC76A23	G.E.	4EC77A14	SINCLAIR	310-C2
*GENERAL ELECTRIC	CC DM 76 YAU 66	G.E.	EXTC RG56TAU66 RK56TAU66	SINCLAIR	210A4
GENERAL ELECTRIC	-	MOTOROLA	-	-	-
*GENERAL ELECTRIC	FM-56LAU66	-	-	AST-291	GAIN 3&L
*GENERAL ELECTRIC	DM56RAS66	-	-	-	-
GENERAL ELECTRIC	-	MOTOROLA	MOCOM 70	PHELPS-DODGE SINCLAIR	440-509 201
GENERAL ELECTRIC	-	MOTOROLA	-	-	-
*GENERAL ELECTRIC	101A6804	G.E.	-	SINCLAIR SINCLAIR	217 210A4
GENERAL ELECTRIC	D016W FKS6LFS66	G.E.	ME13W	TRYLON	-
GENERAL ELECTRIC	D036NY	G.E.	RK56TK566	-	-
GENERAL ELECTRIC	101A680A	-	-	-	-
GENERAL ELECTRIC	4ERC25D2	G.E. MARCONI	- -	SINCLAIR PHELPS-DODGE	217 440-509

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 1 - CONTINUED

PAGE TWO OF THREE

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
GENERAL ELECTRIC	NSO6MAS66	-	-	DELHI	HDX-32
*GENERAL ELECTRIC	T133N	G.E.	T133N	SINCLAIR	217
GENERAL ELECTRIC	-	G.E..	-	AVIATION ELECTRIC	44-509
GENERAL ELECTRIC	T133N	MOTOROLA	CP23DEN	-	-
*GENERAL ELECTRIC	ROYAL EXEC	G.E.	-	-	-
*GENERAL ELECTRIC	ROYAL EXEC	-	-	-	-
*GENERAL ELECTRIC	4EC39A10	MOTOROLA	CTCN6138A SH188	DELHI	AX-68
*GENERAL ELECTRIC	RK56TKS66	MOTOROLA	MOCOM 70	ANDREWS	224
GENERAL ELECTRIC	-	CMC G.E.	SQ15 -	SSB/HF	-
GENERAL ELECTRIC	ROYAL EXEC FK566FS66	CMC G.E.	CH25 ROYAL EXEC RK56TKS66	SINCLAIR	203HK
GENERAL ELECTRIC	T133N	G.E.	MT33N	-	-
GENERAL ELECTRIC	-	MOTOROLA	-	SPILSBURY & TINDALL	-
*GENERAL ELECTRIC	AK56YAS56 SK56-KBS56	G.E.	RK56TBS66 PE56, RCS56 RCU56	SINCLAIR YAGI	229 206

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 1 - CONTINUED

PAGE THREE OF THREE

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
GENERAL ELECTRIC	FM56LAS66 RK56TFS66	-	-	SINCLAIR	201
GENERAL ELECTRIC	AGT DIAL CONVERTER	MOTOROLA	MOCOM 70	SINCLAIR	233
*GENERAL ELECTRIC	REC #ER48A TRANS #ET740	MARCONI JOHNSON MOTOROLA	DT75 & DT45 504 & 540 80BY	SINCLAIR	201
GENERAL ELECTRIC	F133N 4ECC28A1	G.E.	RG56TKS66	SINCLAIR PHELPS-DODGE	217 440-509
GENERAL ELECTRIC	T133	G.E.	MT33	SINCLAIR	203HK
GENERAL ELECTRIC	4ECC28A1	G.E.	RC-56TBS66	PHELPS-DODGE G.E.	4021 EY12A
GENERAL ELECTRIC	MASTR	MOTOROLA	70	SINCLAIR ANDREWS	233 224
*GENERAL ELECTRIC	-	MOTOROLA	XT 1204A	SINCLAIR	-

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 2

ALL MOTOROLA BASE STATIONS AND MAKES AND MODELS OF ASSOCIATED MOBILE RADIOS AND ANTENNAE

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
*MOTOROLA	MOTRACT CU3HHT	-	-	-	-
-	MT56TCS55	-	JG56TCS55	SINCLAIR DECIBEL	229 222
*MOTOROLA	MOCOM 35 MOCOM 70	MARCONI	DT-75 DT-70	SINCLAIR	233
MOTOROLA	CL43BBB-1100AM	MOTOROLA	MD33CFA-1100A	SINCLAIR	210A4
*MOTOROLA	MICOR BASE	MOTOROLA	MOCOM 30W	SINCLAIR	229A
*MOTOROLA	MODCOM	G.E.	RK56RJ55	SINCLAIR	201
MOTOROLA	-	-	-	SRL DB	SRL210C2 DB222
MOTOROLA	-	-	-	DB GAIN	210C2
MOTOROLA	C73RTB3105	MOTOROLA	MOCOM 70 HT 220	SINCLAIR DB PROD	210A4 224E
MOTOROLA	SC73RCB-3106KDM	MOTOROLA	MT33BRA 1200 AK SH306	DB	224
*MOTOROLA	MOTRAC 20	MOTOROLA	27 MOCOM	SINCLAIR	210-C-4
*MOTOROLA	ML43/GGB110B CD43/15433 SL4366B-010400-1 ML43CHB-1130A	MOTOROLA	CDU3/15433 CT43GGU-111A	SINCLAIR PHELPS-DODGE SINCLAIR ANDREWS	229 210-C-4 217 224
MOTOROLA	-	MOTOROLA	SL43EBB1190A MT1370AE	SINCLAIR	233
*MOTOROLA	MOCOM 70	G.E.	ROYAL EXEC	SINCLAIR	233
MOTOROLA	SL43BBB-1190A-FPL	G.E. MOTOROLA	RK56TKS66 CU43BBN1190	SINCLAIR	217

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 2 - CONTINUED

PAGE TWO OF SIX

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
*MOTOROLA	CT43DGU	G.E.	ROYAL EXEC	SINCLAIR	233
*MOTOROLA	MU43HHT1190E-3	-	-	SINCLAIR	203
*MOTOROLA	SL43BBB-1170AN	G.E.	56TKS66	PHELPS-DODGE	OMNI
MOTOROLA	-	G.E.	-	-	-
*MOTOROLA	-	MOTOROLA	-	-	-
*MOTOROLA	RB51GAB-1-60H	MOTOROLA G.E.	MOCOM 70 ROYAL EXEC	PHELPS-DODGE	440-509
*MOTOROLA	CD43/15433-1SSMCS	MOTOROLA	MT-1370A	ANDREWS	155 MCS
MOTOROLA	ML43GGB-1110-R2	MOTOROLA	MU43HHT	-	-
MOTOROLA	ML43GGB-1110-B2	MOTOROLA	-	SINCLAIR	233
*MOTOROLA	CD/15433	MOTOROLA	P.R.E.	SINCLAIR	233
*MOTOROLA	SL431366-1190BCP	G.E.	4EC67A13	PHELPS-DODGE	440-509
MOTOROLA	ML43GGB-1118BU	G.E.	197A9047P3	-	-
*MOTOROLA	ML43GGB-1110A	MOTOROLA	MU43HHT-1190E-3130	ANDREWS SINCLAIR	150-2 217
*MOTOROLA	M143GGB1110A	G.E. MOTOROLA	ROYAL EXEC MOCOM 70	-	-
MOTOROLA	ML43996-1110-B2	-	-	-	-
MOTOROLA	SM03CNB-11D0AEN	G.E.	MT33N	SINCLAIR DB	217 268
MOTOROLA	ML43663B-1110A-PH47	MOTOROLA	MD333MT-1190B-PH46	MOTOROLA SINCLAIR	¼" WAVED WHIP 217
MOTOROLA	SL43BBB1190C	MOTOROLA G.E.	CP23DEN (PORT) RK56TK566	COMMUNICATIONS PRODUCT	440-509

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 2 - CONTINUED

PAGE THREE OF SIX

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
*MOTOROLA	AT-1201A	-	-	-	-
*MOTOROLA	MOCOM 70	-	-	MOTOROLA	HI-GAIN
MOTOROLA	SL43BBB1190C	G.E.	RG56TBS66	SINCLAIR	203
*MOTOROLA	RL4366B	MOTOROLA G.E.	CU43 VHF/FM	COMMUNICATIONS PRODUCT	440-509
MOTOROLA	ML43GGB-1110B-PH47	MOTOROLA G.E.	MD33CMT-1190-PH46 197A9047P3	-	-
MOTOROLA	SM03CHB-1100AEN	G.E.	RK56TKS66	-	-
*MOTOROLA	-	MOTOROLA G.E.	TWIN V MOCOM 70 ROYAL EXEC	SINCLAIR	217
*MOTOROLA	SL43BBB-1190AFPL	MOTOROLA	CH 23 DEN 1134	ANDREWS	224
*MOTOROLA	ML43GG-1110BU	MOTOROLA	MOCOM 70	ANDREWS	224
MOTOROLA	-	G.E.	-	-	-
MOTOROLA	SM3GNB-1100-AEN	MOTOROLA	SL43BBB1190C	COMMUNICATIONS PRODUCT	440-509
MOTOROLA	XT1200A	MOTOROLA	MOCOM 70	SINCLAIR SINCLAIR	233 229
MOTOROLA	-	G.E.	-	-	-
MOTOROLA	ML43GGB-1110B-2	MOTOROLA	MU43HHT1190E-3	-	-
MOTOROLA	MOCOM 35	-	-	SINCLAIR	217
MOTOROLA	342-509	-	-	-	-
MOTOROLA	MOCOM 35	G.E.	ROYAL EXEC	-	-
*MOTOROLA	SL43BBB-1190-AFPL	MOTOROLA G.E.	RK56TKS66	-	440-509

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 2 - CONTINUED

PAGE FOUR OF SIX

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
*MOTOROLA	ML43GGB-1110BB	MOTOROLA G.E.	CU43BBW-1180AU RK56TKS66	SINCLAIR	219
MOTOROLA	BS152ML	-	-	DELHI	DMXHD 48
MOTOROLA	SL43BBB-1190A-APL	MOTOROLA G.E.	MOCOM 70	SINCLAIR ROHN	217 -
MOTOROLA	ML43Q08	MOTOROLA G.E.	MOTRAC ROYAL EXEC	SINCLAIR	217
*MOTOROLA	XT-1201A	G.E.	ROYAL EXEC	-	-
MOTOROLA	MC43CHB-1130A	MOTOROLA G.E.	- -	ANDREWS	217
MOTOROLA	CL43GGB-1110B	MOTOROLA G.E.	- -	-	-
*MOTOROLA	ML43GGB-1110A	MOTOROLA G.E.	- -	SINCLAIR	217
MOTOROLA	-	MOTOROLA	-	-	-
*MOTOROLA	SL43BBN1190CFPL	G.E.	BK56TKS66	SINCLAIR	233
*MOTOROLA	-	MOTOROLA	-	-	-
*MOTOROLA	BS116ML	-	-	-	-
MOTOROLA	-	MOTOROLA G.E.	-	SINCLAIR	217
MOTOROLA	MOCOM 70	G.E.	101A6804	-	-
*MOTOROLA	XT1392AM	MOTOROLA G.E.	CU43HHT1130E/36 RK56TK566	SINCLAIR	217
MOTOROLA	ML43GGB-1110BU	MOTOROLA	-	-	-
*MOTOROLA	ML43GGB-11104	-	-	SINCLAIR	217

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 2 - CONTINUED

PAGE FIVE OF SIX

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
*MOTOROLA	MOCOM 70	MOTOROLA G.E.	U/XL43CHB-1110A ROYAL EXEC	-	-
*MOTOROLA	MT1201A	G.E. MOTOROLA	- -	-	-
*MOTOROLA	ML43GGB-1110-B2	G.E.	RK56TKS66	COMM. PRODUCTS ANDREWS	67509 410C4
MOTOROLA	ML43GGB-1110A	-	-	HI-GAIN	-
MOTOROLA	ML43GGB-1110B-PH47	MOTOROLA	CL43GGB-110A-PH46 MD33CMT-1190B-P446	AVIATION ELECTRIC	440-509
*MOTOROLA	MOCOM 70	MOTOROLA G.E.	HT220 ROYAL EXEC	SINCLAIR	229, 217 AND 6012
MOTOROLA	MOCOM 70	G.E.	EXEC	SINCLAIR SINCLAIR YAGO	224A SRL212EB HDTWIN
*MOTOROLA	ML4366B-1110BV	G.E.	EM25E	SINCLAIR	217
MOTOROLA	-	G.E.	-	SINCLAIR	217
*MOTOROLA	MLL3GGV-1110BY	G.E.	MS1805	SINCLAIR	217
*MOTOROLA	M223FFV-1170AN	MOTOROLA	ML43GGB-1110BU	SINCLAIR	217
*MOTOROLA	MV33RB9-1200A	MOTOROLA	CT3GGU-15433 CT43GGT-1110C RL4362-0020	ANDREWS	224
MOTOROLA	SL43BRN-1190 EBM-182	MOTOROLA	R43-62-002 TA270-2F MOCOM 70	SINCLAIR	233
MOTOROLA	MOCOM 70	G.E.	ROYAL EXEC	-	-

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 2 - CONTINUED

PAGE SIX OF SIX

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
*MOTOROLA	ML43GGB-1110A	MOTOROLA	CH23DEN-114A/W M223FFV-1170AN TU356AC-2	SINCLAIR	217FM
MOTOROLA	SL43BBN-1906-FPL	G.E.	K56TKS66	PHELPS-DODGE	440-504
*MOTOROLA	ML43GGB-1110BV	MOTOROLA	-	-	-
*MOTOROLA	-	MOTOROLA	H120	-	-
MOTOROLA	CL43BB1190	PYE MOTOROLA	F30FM MOCOM 35	SINCLAIR MOTOROLA ANTENNA SPEC	229 MTAD9501A ASPC 201
*MOTOROLA	TUD1290AK	G.E. MOTOROLA	RS56FAS66 MOCOM 70	MOTOROLA	-
MOTOROLA	XN1019B	-	-	-	-
MOTOROLA	SL43BBB-1190CFPL	G.E.	RK56TKS66	-	-
MOTOROLA	MOCOM 70	G.E.	T133N	SINCLAIR SINCLAIR	217 210 C4
MOTOROLA	MT1201	MOTOROLA	CU43GGT	SINCLAIR SINCLAIR	210 C4 217
*MOTOROLA	ML43GGB-1110A	MOTOROLA	CH23DEN-11134B/W M223FFU-1170AN	SINCLAIR	217
MOTOROLA	-	-	-	-	210A2
MOTOROLA	MT1201A	-	-	-	-

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

TABLE 3

ALL OTHER MAKES OF BASE STATIONS AND MAKES AND MODELS OF ASSOCIATED MOBILE RADIOS AND ANTENNAE

BASE		MOBILE		ANTENNA	
MAKE	MODEL NUMBER	MAKE	MODEL NUMBER	MAKE	MODEL NUMBER
MARCONI	DJ-86-7M	MARCONI MOTOROLA PYE	DT34-25WATT M243-OCN-1130K MF25FM-25WATT	HI-GAIN	
*MARCONI	DJ96	MARCONI	DT34 DT56	HI-GAIN	
MARCONI	DJ84-28 WATTS	-	-	-	-
MARCONI	CH25	MARCONI	CP34	SPILSBURY AND TYNDALL	-
*MARCONI	DK56	MARCONI	DT56	SINCLAIR	210A4
*MARCONI	CMC-CU010A	MOTOROLA DISTACOM PYE	MOCOM 70 COMMAND 3 MF25	SINCLAIR SINCLAIR	201 233
*MARCONI	DT85 DT56	-	-	SINCLAIR DECIBEL	206 DB224
MARCONI	RJ85	INTER-SYSTCOMS G.E.	VTR10 TP1	ANTENNA SPEC SINCLAIR	DIC.A DB 2333DB
*PYE	-	-	-	C PATERN	310-A4
STORNO	CQF672-25	STORNO	CQM672-10	DECIBEL C & S	DB224 10 DB YAG1

* INDICATES THOSE AGENCIES PLANNING TO REPLACE OR EXTENSIVELY MODIFY THEIR PRESENT RADIO SYSTEM

APPENDIX "B"

USER REQUIREMENTS

QUESTIONNAIRE

MOBILE DATA SYSTEM DEVELOPMENT

USER REQUIREMENTS QUESTIONNAIRE

This Questionnaire consists of Parts I to IV; you may wish to separate these Parts for convenient distribution to the applicable Divisions or Sections within your Department for their completion.

Please ensure all Parts are completed and returned as one package on, or before June 6, 1975 to:

The Commissioner
R.C.M. Police
1200 Alta Vista Drive
Ottawa, Ontario
K1A 0R2

ATTENTION:

Officer in Charge
Facilities Planning & Research Branch
Canadian Police Information Centre

RCMP Temp - 858 (5/75)

INTRODUCTION

The Questionnnaire has been organized into four main sections. Each section has a general theme in terms of the type of information which it is requesting. The four sections are: General Questions, Communications Centre related questions, Field Operations related questions, and Reporting and Statistics related questions.

Every effort has been made to keep the Questionnaire as short as possible. However, as can be appreciated, certain details must be resolved in order to develop a system of this type. It was felt that no fewer questions could be asked than have been included in this Questionnaire.

In sending you this Questionnare, we are not asking that you initiate any extensive studies for the purposes of providing information. We are only asking that you make a reasonable effort to provide a "best answer" in light of your circumstances. In this regard, it should be noted that estimates are very valuable for the purposes of our Study. In addition, we ask that if the wording of questions is such that it is difficult for you to determine the intent of the question, then note this on the Questionnaire. Likewise, if a question is ambiguous, make some assumption which enables you to provide an answer. Note the assumption which you have made on the Questionnaire.

Arrangements will be made to interview randomly selected Police Departments by an Interview Team from this project. These interviews will be conducted within the next few months.

Unfortunately, all interested Departments cannot be interviewed at this time. If, however, you have any questions or feel you could offer assistance in regard to this project, please feel free to contact this group through the following address:

The Commissioner
R.C.M. Police
1200 Alta Vista Drive
Ottawa, Ontario
K1A 0R2

ATTENTION:

Officer in Charge
Facilities Planning & Research Branch
Canadian Police Information Centre

or by contacting Mr. K.R. (KEN) THOMAS, Telephone Number (613) 993-9740, Extension 274; or via CPIC Terminal, ORI No. IC90868.

Would you like your Department to be considered for interviews:

YES _____ NO _____

NAME OF DEPARTMENT: _____

ADDRESS: _____

TELEPHONE: _____

CPIC TERMINAL ORI NUMBER: _____

If further information shcuild be required in regard to this project, who in your Department would we contact for:

A) ADMINISTRATIVE INFORMATION

NAME: _____

POSITION: _____

PHONE: _____

B) OPERATIONAL INFORMATION

NAME: _____

POSITION: _____

PHONE: _____

C) COMMUNICATIONS INFORMATION

NAME: _____

POSITION: _____

PHONE: _____

GLOSSARY

The definitions of the various terms in the Glossary are directly related to their use in this Questionnaire.

The terminology used by various Police Forces differs, however, the meaning is usually the same. The terminology used in this Questionnaire may not be that used by your Force, however, by the use of this Glossary, it is hoped that the terms used can be related for answering of the questions.

Also included are terms that are common to the Telecommunications and Computer fields. These terms may not be familiar to your personnel involved in completing this Questionnaire, and are supplied as an aid or ready reference to them.

A. POLICING TERMS

A.1 COMPLAINT

For the purpose of this Questionnaire, complaint refers to the initial request for police service and method of recording information received from the public. Also referred to as incident or occurrence reports.

A.2 CASE

Refers to any file opened on lengthy investigative matters usually ending in court proceedings or possible court proceedings and recorded as statistics.

A.3 OPERATIONAL INFORMATION

Refers to the information that is required by police officers to do their job such as:

i) Stolen Vehicle Files
ii) Wanted Persons Files
iii) Criminal History Files
iv) Vehicle Registration Files

B. COMMUNICATION

B.1 DIGITAL MESSAGE
For purposes of this Questionnaire, digital message is a message prepared by a mobile terminal device for transmission in high speed digital pulses.

B.2 SIMPLEX
A simplex radio channel is one in which messages may be transmitted only in one direction. An example of this is a system in which the mobile radios may send messages to the base on one channel but may not receive messages from the base on the same channel.

B.3 DUPLEX
A duplex radio channel is one in which messages may be transmitted in either direction on the radio channel. An example of this is a radio system in which the vehicle may send or receive messages without switching channels.

B.4 MOBILE TERMINAL
A mobile terminal permits the entry and receipt of information in a digital format to or from the vehicle.

B.5 STATUS KEYS
The term STATUS refers to messages covering service conditions of patrols such as out-of-service and in-service. Status keys refer to the specific keys on a mobile terminal used exclusively for status messages.

B.6 FUNCTION KEYS
The term refers to the specific keys on a mobile terminal keyboard used for function messages. A Function Message can be an acknowledgement of a message (e.g. 10-4) or a predefined formatted request such as person check, vehicle check, emergency, etc.

B.7 CRT (CATHODE RAY TUBE)
Is a television-like picture tube used in visual display terminals.

B.8 MUTUAL AID PACT
For purposes of this Questionnaire, refers to an agreement made with another Department or Force for communications services and/or field operations.

C. COMPUTING TERMS

C.1 AUTOMATED STATUS REPORTING
Refers to the automatic transmission of pre-determined status messages to the dispatcher from the mobile terminal when a particular status key is depressed.

C.2 AUTOMATED VEHICLE LOCATION SYSTEM
Is the means by which the dispatcher is automatically advised of vehicle location without the patrol officer reporting this information.

C.3 COMPUTER AIDED DISPATCHING SYSTEM (CAD)
A computer aided dispatching system is one in which a computer would be installed to keep track of the details required for a dispatcher to perform his function.

C.4 DATA BASE
For purposes of this Questionnaire, data base is any collection of information that is stored and accessed either by way of computer equipment or manually.

C.5 AUTOMATED INTERFACE
Is the connection of, or means by which, one computing device is connected to another, for example, terminal to computer to data base.

C.6 COMPUTER AIDED REPORT PREPARATION
The details of a complaint and action taken can be formatted and printed out by the computer for later use by the patrolman.

C.7 COMPUTER AIDED OFFICER SCHEDULING
The use of a computer to prepare shift schedules of patrolmen as well as vehicle assignment, district assignment, etc.

P A R T	T I T L E
I	GENERAL
II	COMMUNICATIONS CENTRE
III	FIELD OPERATIONS
IV	REPORTING AND STATISTICS

MOBILE DATA SYSTEM DEVELOPMENT

PART I

GENERAL

This part of the Questionnaire seeks to determine the major developments in your police force which have taken place or are likely to take place in the near future as well as general statistical information.

I-1 Indicate if any of the following are under consideration for implementation or are presently installed:

	PRESENT	PLANNED
A) GENERAL		
a) Amalgamation with another Police Force.	_____	_____
b) Any plans which could affect the Communications, Dispatch or Command and Control areas of your Department, please describe in general terms.	_____	_____
B) COMMUNICATIONS		
a) Replace or extensively modify (Upgrade) 'Radio System'	_____	_____
b) Relocate or extensively modify 'Communications Centre'	_____	_____
c) Include Fire and/or Ambulance 'Phone Desk Operations' with those of Police	_____	_____
d) Breaking up Fire and/or Ambulance 'Phone Desk Operations' from those of Police	_____	_____

_____

_____

_____

_____

	PRESENT	PLANNED
C) DISPATCH		
a) Include Fire and/or Ambulance 'Dispatch Operations, with those of Police	_____	_____
b) Breaking up Fire and/or Ambulance 'Dispatch Operations' from those of the Police	_____	_____
c) 'Automated Status Reporting' from the cars	_____	_____
d) Install a 'Vehicle Location System'	_____	_____
e) Install a 'Computer Aided Dispatching System'	_____	_____
D) OPERATIONAL FORCE		
a) Install 'Mobile Terminals in Vehicles' including;		
i) Status Reporting	_____	_____
ii) Inquiry/Response	_____	_____
iii) Dispatch and other Communications	_____	_____
E) ADMINISTRATIVE		
a) Provide 'Computer Aided Report Preparation'	_____	_____
b) Provide 'Computer Aided Officer Scheduling'	_____	_____

I-2 What is the square mileage of the area that your Department is responsible for;

_____

I-3 What are the geophysical characteristics of your area (shape, terrain, large bodies of water etc.)

_____

_____

_____

_____

I-4 Indicate the number of cases that your Department investigated for;

TYPE OF OFFENCE	1972	1973	1974	(ESTIMATED) 1975
Criminal Code	____	____	____	____
Traffic Offences (Provincial and/or Municipal)	____	____	____	____
Other Statutes (Federal, Provincial and/or Municipal)	____	____	____	____

I-5 What is the population within your area of responsibility at the present time and what would you expect the population to be in 5 years including any amalgamations that might take place during this time:

	PRESENT	5 YEAR FUTURE
a) Under 5,000	_____	_____
b) 5,000 - 10,000	_____	_____
c) 10,000 - 25,000	_____	_____
d) 25,000 - 50,000	_____	_____

e)	50,000 - 100,000	_____	_____
f)	100,000 - 250,000	_____	_____
g)	Over 250,000	_____	_____

I-6 What is the projected yearly population growth rate in your area (including any expected amalgamation) for the next 5 years;

		1975	1976	1977	1978	1979
a)	Under 5%	____	____	____	____	____
b)	5% - 10%	____	____	____	____	____
c)	11% - 20%	____	____	____	____	____
d)	21% - 30%	____	____	____	____	____
e)	31% - 50%	____	____	____	____	____
f)	Over 50%	____	____	____	____	____

I-7 Indicate the number of radio equipped and non-radio equipped units in your Department;

TYPE OF UNIT	RADIO	NO RADIO
Automobiles	_____	_____
Motorcycles	_____	_____
Boats	_____	_____
Aircraft	_____	_____
Other (Specify) _____	_____	_____

I-8 What is the projected increase in number of vehicles for the next 5 years;

TYPE OF UNIT	RADIO	NO RADIO
Automobiles	_____	_____
Motorcycles	_____	_____
Boats	_____	_____
Aircraft	_____	_____
Other (Specify) _____	_____	_____

I-9 Indicate number of active mobile radio equipped units by activity assignments;

	NUMBER OF UNITS	
ASSIGNMENT	PEAK	AVERAGE
a) Patrol	_____	_____
b) Detective (GIS)	_____	_____
c) Traffic	_____	_____
d) Special Activity (Drugs, morality, etc.)	_____	_____
e) Administrative	_____	_____

I-10 Does your Department utilize;

a) Basically one-man mobile patrols YES _____

b) Basically two-man mobile patrols YES _____

I-11 Does your Department have any plans to change to;

a) Basically one-man mobile patrols YES _____

b) Basically two-man mobile patrols YES _____

MOBILE DATA SYSTEM DEVELOPMENT

PART II

COMMUNICATIONS CENTRE

This part of the Questionnaire seeks to identify general information about your radio system components, statistical information and flow of information, performance characteristics as well as utilization of your radio system both present and future.

PART II

II-1 What percentage of complaints from the public do you receive by:

a) Telephone _____%

b) In Person _____%

c) Patrolman Contact _____%

d) Other (Specify) _____

_____

_____

II-2 When a patrolman, either mobile or foot patrol, receives a complaint through patrolman contact while away from station, how does patrolman pass details of complaint back to station;

a) Radio _____%

b) Telephone _____%

c) Other (Specify) _____

_____

_____

II-3 Do outside alarms terminate at your station (e.g., Bank, Store, Fire, Jail, Other);

YES _____ NO _____

If yes, who 'actions' these alarms?

a) Telephone Operator _____

b) Complaint Taker _____

c) Dispatcher _____

d) Other (Specify) _____

II-4 How do you communicate with other Police Departments, Agencies (Fire, Ambulance);

a) Computer Terminal _____%

b) Telephone _____%

c) Telex _____%

d) Radio _____%

e) Other (Specify) _____

_____

_____

II-5 Would your Department require a facility to transmit digital messages simultaneously to:

a) All vehicles equipped with mobile terminals _____

b) All vehicles equipped with mobile terminals in a particular zone or district _____

c) All vehicles equipped with mobile terminals on specific assignments (i.e. traffic, drugs) _____

d) Other dispatching centres _____

e) Other (Specify) _____

_____

_____

PART II

II-6 Does your Department have or plan to have within next 5 years, an automated interface with any of the following systems;

	PRESENT	5 YEAR FUTURE
a) Local Data Base	_____	_____
b) Provincial Data Base	_____	_____
c) National Data Base	_____	_____

If yes to any of above, what type of information do you obtain or expect to obtain;

_____

_____

_____

_____

II-7 Does your Department have a 'Mutual Aid Pact' with other Police Departments or agencies for emergency communication services;

YES _____ NO _____

If yes, with whom: _____

_____

_____

PART II

II-8 How many 'Dispatching Centres' does your Department have;

_____

If more than 1 dispatching centre, how are they divided;

a) Geographically _____

b) Functionally _____

c) Other (Specify) _____

II-9 Does your Department assign separate personnel to the 3 different positions of telephone operator, complaint taker and dispatcher;

YES _____ NO _____

a) If yes, what is the maximum number of personnel assigned to each position at one time;

i) Telephone Operators _____

ii) Complaint Takers _____

iii) Dispatchers _____

b) If no, which of the following combinations does your Department utilize and what is the maximum number of personnel assigned to each combination position at one time;

MAXIMUM NUMBER OF PERSONNEL

i) Complaint Taker/Telephone Operator as one position

YES _____ _____

ii) Dispatcher/Complaint Taker as one position

YES _____ _____

iii) Telephone Operator/Complaint Taker/Dispatcher as one position

YES _____ _____

iv) Other (Specify) _____

_____

_____

II-10 If more than one person employed as dispatcher, how is the workload distributed;

a) By number of units, if so how many units per dispatcher. _____

b) By district or zone. _____

c) By radio frequencies. _____

d) By assignment to first dispatcher available.

_____

e) Other (Specify) _____

_____

_____

II-11 If more than one person employed as complaint taker, how is the workload distributed;

a) By district or zone, if so how many districts or zones per complaint taker. _____

_____

b) By type of complaint. _____

_____

c) By assignment to first complaint taker available.

_____

_____

d) Other (Specify) _____

_____

II-12 What is the total number of complaints received;

a) Maximum number in one hour _____

b) Average number per hour _____

c) Average number per day _____

d) Yearly for;

i) 1972 _____

ii) 1973 _____

iii) 1974 _____

II-13 What percentage of complaints received require:

a) Priority or immediate dispatch of unit or units.

_____%

b) Routine or eventual dispatch of unit or units.

_____%

c) No dispatch of unit or units.

_____%

II-14 Are complaints time-stamped (date and time);

YES _____ NO _____

If yes, when do complaints become time-stamped and by who;

		WHEN TIME-STAMPED	TIME-STAMPED BY
a)	Upon receipt	YES _____	_____
b)	Upon unit being Dispatched	YES _____	_____
c)	Upon units arrival at scene	YES _____	_____
d)	Upon clearance		
e)	Other (Specify)		
	_____	YES _____	_____

II-15 How do you record complaints received via the telephone;

a) Note Pad YES _____

b) Preformatted Forms YES _____

i) Single Copy YES _____

ii) Multi-Copy YES _____

c) Other (Specify) _____

_____

II-16 Are your complaints:

a) Handwritten YES _____

b) Typed YES _____

c) Initially handwritten and typed at a later time YES _____

II-17 Do you assign complaint priorities;

YES _____ NO _____

If yes, who assigns priorities;

a) Telephone Operator _____

b) Complaint Taker _____

c) Dispatchers _____

d) Watch Commander _____

e) Patrolman in Car _____

f) Patrol Supervisor _____

g) Other (Specify) _____

II-18 Does your Department use Complaint Numbers;

YES _____ NO _____

II-19 Does your Department use Case numbers;

YES _____ NO _____

II-20 How does your Department number complaint and case;

	COMPLAINT	CASE
a) Consecutively	_____	_____
b) Identified by activity (e.g. traffic, criminal code, etc.)	_____	_____

c) Other (Specify) _____

_____

II-21 Is Case number related to Complaint number in any way;

YES _____ NO _____

If yes, how _____

_____

_____

II-22 Who assigns Case and Complaint numbers;

	COMPLAINT	CASE
a) Complaint Desk	_____	_____
b) Telephone Operator	_____	_____
c) Dispatcher	_____	_____

d) Other (Specify) _____

_____

PART II

II-23 How does your Department record the status of vehicle/ patrolman;

a) Board _____

b) Card _____

c) Scratch Pad _____

d) Memory _____

e) Other (Specify) _____

_____

II-24 Who makes the decision to provide backup unit(s) on a call;

a) Dispatcher _____

b) Complaint Taker _____

c) Watch Commander (Duty NCO, etc.) _____

d) Patrol Supervisor _____

e) Other (Specify) _____

II-25 Is there a requirement for Radio Communication between DISPATCHER and;

a) Other dispatching centres within your Department

_____

b) Patrol cars dispatched from other centres within your department. _____

_____

c) Other agencies (other police departments, Fire, Ambulance etc.) _____

_____

d) Other (Specify) _____

_____

II-26 Number of radio transmissions per hour, per channel that originate from;

	PEAK/HOUR	AVERAGE/HOUR
a) Dispatcher		
Channel 1	_____	_____
Channel 2	_____	_____
Channel 3	_____	_____
Channel 4	_____	_____
Channel 5	_____	_____
Channel 6	_____	_____
Channel 7	_____	_____
Channel 8	_____	_____
b) Vehicle		
Channel 1	_____	_____
Channel 2	_____	_____
Channel 3	_____	_____
Channel 4	_____	_____
Channel 5	_____	_____
Channel 6	_____	_____
Channel 7	_____	_____
Channel 8	_____	_____

II-27 What is the average length of time for transmissions originiating from (do not include status messages);

a) Dispatcher _____ Seconds

b) Vehicle _____ Seconds

II-28 What percentage of all transmissions would be status information;

a) Less than 5 % _____

b) 6 - 10% _____

c) 11 - 20% _____

d) 21 - 30% _____

e) 31 - 40% _____

f) 41 - 50% _____

g) More than 51% _____

II-29 What are the model numbers and manufacturers names of your present radio equipment (Base station and mobile radio units);

MANUFACTURER	MODEL NUMBER
_____	_____
_____	_____
_____	_____
_____	_____

PART II

II-30 How many base stations and/or base repeater stations in your present system and how many planned within next 5 years;

	PRESENT	5 YEAR FUTURE
a) Base Stations	_____	_____
b) Base Repeater Stations	_____	_____

II-31 How is your dispatch centre conrected to base stations or repeaters:

a) Radio Link _____

b) Microwave Link _____

c) Land Line _____

d) Other (Specify) _____

II-32 What type and model of antennae does your Department utilize (include antenna for base and repeater stations);

TYPE	MODEL
_____	_____
_____	_____
_____	_____

II-33 How many radio channels presently in your system;

_____

PART II

II-34 How many radio channels available in vehicles;

_____

II-35 How does your Department operate these channels;

a) Simplex _____

b) Duplex _____

c) Other (Specify) _____

II-36 What is the maximum number of portable radios that might be utilized at one time by members of your Department;

a) Present _____

b) In 5 years _____

II-37 Does your department own or rent your communication system;

a) Own _____

b) Rent _____

c) Do you expect to change from a) or b) above within the next five years.

_____

II-38 Who maintains your radio system or equipment;

a) Your Department _____

b) City or Municipality _____

c) Common Carrier _____

d) Contract _____

e) Other (Specify) _____

II-39 Do you presently encounter any severe problems on present radio system such as;

a) Fading _____

b) Noise _____

c) Dead-Spots _____

d) Other (Specify) _____

II-40 Have any 'Propagation' studies been conducted on your radio system;

YES _____ NO _____

If yes, it would be very beneficial to this project if you could attach a copy of propagation study to this questionnaire.

II-41 How many frequencies assigned to your present communications sytems;

_____

II-42 Will you be requesting any additional frequencies;

YES _____ NO _____

If yes,

a) How many _____

b) When _____

It would be appreciated if you could attach a frequency plan of your present system to this questionnaire.

II-43 ATTACHED:

Copy of Propagation Study YES _____ NO _____

Copy of Frequency Plan YES _____ NO _____

II-38 Who maintains your radio system or equipment;

a) Your Department _____

b) City or Municipality _____

c) Common Carrier _____

d) Contract _____

e) Other (Specify) _____

II-39 Do you presently encounter any severe problems on present radio system such as;

a) Fading _____

b) Noise _____

c) Dead-Spots _____

d) Other (Specify) _____

II-40 Have any 'Propagation' studies been conducted on your radio system;

YES _____ NO _____

If yes, it would be very beneficial to this project if you could attach a copy of propagation study to this questionnaire.

II-41 How many frequencies assigned to your present communications sytems;

_____

II-42 Will you be requesting any additional frequencies;

YES _____ NO _____

If yes,

a) How many _____

b) When _____

It would be appreciated if you could attach a frequency plan of your present system to this questionnaire.

II-43 ATTACHED:

Copy of Propagation Study YES _____ NO _____

Copy of Frequency Plan YES _____ NO _____

PART III

III-1 Does your Department use Patrol Supervisors in the field;

YES _____ NO _____

If yes, how many patrol cars does he supervise; _____

III-2 Does Supervisor have to know when one of the cars he is responsible for is dispatched;

YES _____ NO _____

If yes, on what type of call is supervisor advised;

a) All dispatches _____

b) Priority dispatches _____

c) Emergency dispatches _____

d) Other (Specify) _____

_____

III-3 Is your Patrol Supervisor always assigned the same vehicle for his patrols;

YES _____ NO _____

PART III

III-4 What other information is required by the Patrol Supervisor;

_____

_____

_____

_____

_____

_____

III-5 Do you use or plan to use a message code system (e.g., 10 code);

YES _____ NO _____

If yes, what code system do you use or plan to use?

_____

_____

_____

III-6 Are your cars assigned by districts or total coverage;

a) District _____

b) Total Cover _____

c) Other (Specify) _____

CONTINUED

2 OF 3

MOBILE DATA SYSTEM DEVELOPMENT

PART III

FIELD OPERATIONS

This part of the Questionnaire deals with the "Field Operations" of your police force, which includes the organization of your patrols, the types of patrol supervision you use, the specific types of patrol reporting which you use, and other details of how your field officers do their work.

III-7 Is there a requirement for Radio Communication between patrolman in vehicle and;

	VOICE	DIGITIZED DATA
a) Other patrol cars without going through base station	_____	_____
b) Other patrol cars operating on a different frequency	_____	_____
c) Other agencies (police, fire, ambulance etc.) directly from patrol car	_____	_____

d) Other (Specify) _____

_____

III-8 Computer aided dispatching systems will respond automatically to transmissions such as; sign-on, request for time, etc., automatically. Given this, what other types of response would be required from dispatcher, or CAD system.

_____

_____

_____

_____

III-9 CAD Systems can range from basic to complex with regard to equipment and its use. Indicate your preference for:

a) Status Box (1 way communication only) _____

b) Status Box combined with Mobile Teleprinter (for 2 way communication) _____

c) Fully interactive terminal consisting of full keyboard and display (for all text messages) _____

d) Terminal with keyboard and display plus teleprinter for hard copy _____

III-10 Mobile Terminal keyboards contain separate keys that are used exclusively for status and functional information or messages. Indicate by numbering each in order of your usage priority;

STATUS		FUNCTION	
a) Available	_____	a) Acknowledgement	_____
b) Enroute	_____	b) Request to Talk	_____
c) At Scene	_____	c) Emergency	_____
d) Out of Vehicle	_____	d) Send Backup Unit	_____
e) Detailed	_____	e) Stopping a Vehicle	_____
f) Clear	_____	f) Visitor in Vehicle	_____
g) At Station	_____	g) Person Query	_____
h) Other (Specify)	_____	h) Vehicle Query	_____
_____	_____	i) Other (Specify)	_____
_____	_____	_____	_____
_____	_____	_____	_____

III-11 Would you expect a terminal to work with the car engine off;

YES _____ HOW LONG _____

NO _____

If yes, would you expect;

a) Total terminal capability _____

b) Status information only _____

c) Display only _____

d) Other (Specify) _____

_____

III-12 The message displayed on the screen of a mobile terminal can be cleared automatically by transmitting certain replies or status information. The message that was cleared from the screen could be re-called or displayed again when or if required;

a) What type of message should automatically clear the display screen;

i) Acknowledgement of message _____

ii) Enroute _____

iii) At Scene _____

iv) Out of Service _____

v) Out of Vehicle _____

vi) Other (Specify) _____

b) Should messages or displays that have been cleared from screen be recallable by patrolman;

YES _____ NO _____

c) Should display screen be cleared only by patrolman depressing a given key and never automatically as in a) above.

YES _____ NO _____

III-13 When a mobile terminal unit transmits a status of 'At Scene' a reminder such as a flashing indicator can be displayed on the dispatcher's display screen if this unit is out of service at scene exceeding a given or expected period of time.

Would your Department require a feature as described above;

YES _____ NO _____

If yes, should this time period be set by;

a) Patrolman or dispatcher depending on type of complaint scene.

YES _____ BY WHOM _____

b) Fixed period of time for all 'At Scene' statuses regardless of type of complaint scene.

YES _____

III-14 If indicator has been activated, should there be some type of alarm sounded at the Dispatchers display screen after a pre-determined period of time;

YES _____

PART III

III-15 When messages are destined for a car terminal, they are stored and an indication given on the terminal.

A) What type of indication would you prefer for Routine and Priority messages;

	Routine Message	Priority Message
a) Steady Light	_____	_____
b) Flashing Light	_____	_____
c) Tone	_____	_____
d) Buzzer	_____	_____
e) Other (Specify) _____	_____	_____

B) Should there be a type of external alarm if there is no response to the indication of a waiting message on car terminal;

YES _____

How long before alarm is activated (in minutes)

_____

NO _____

If yes, what type of external alarm would you prefer;

a) Beacon turned on _____

b) Siren turned on _____

c) Horn activated _____

d) Portable attachment to Patrolman activated

_____

e) Other (Specify) _____

C) If yes to A and/or B above, should patrolman be able to deactivate these features before they are activated;

a) Internal indicator YES _____ NO _____

b) External Alarm YES _____ NO _____

III-16 What types of information or features, not mentioned in this portion of the questionnaire would you require on in-car terminals;

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

MOBILE DATA SYSTEM DEVELOPMENT

PART IV

REPORTING AND STATISTICS

The questions in this part of the Questionnaire relate to the "Command and Control" aspects of policing and the "Administrative" issues to which "Mobile Data Systems" apply.

IV-5 In an emergency situation, would you like the dispatcher to have control over functions and equipment in the vehicles;

a) Horn _____

b) Siren _____

c) Ability to Listen to Conversation in the car

_____

d) Turn off the Radio _____

e) Turn off the Terminal _____

f) Other (Specify) _____

_____

IV-6 Is the patrolman who is dispatched to the scene, responsible for any investigation:

a) On short investigative matters only _____

b) Turns all investigative matters over to detectives, GIS, etc. _____

c) Occasionally becomes involved in investigation;

_____

d) Usually conducts any investigation required;

_____

e) Other (Specify) _____

_____

IV-7 How much of a patrolmans time is spent at the station reporting 'CLEARED' complaints:

a) Less than 5 % _____

b) 5 - 9 % _____

c) 10 - 24% _____

d) More than 24% _____

IV-8 Do you foresee a need for complaint disposition or complaint clearance from terminal equipped units;

YES _____ NO _____

IV-9 Do you foresee the need for some type of formatted complaint report, printed out by the computer on request and used by patrolman or investigator for concluding remarks;

YES _____ NO _____

If yes;

a) From mobile terminal only _____

b) From station terminal only _____

c) Both _____

PART IV

IV-1 What information is required to identify messages transmitted from a patrol car;

a) Patrolman identity YES _____

b) Patrol car identity YES _____

c) Other (Specify) _____

_____

IV-2 If your Department went to a combination of voice and digital communications;

A) What types of messages would you foresee being strictly;

a) Voice _____

_____

_____

b) Digital _____

_____

_____

B) What percentage of all present communication messages could be;

a) Voice _____

b) Digital _____

C) What, in your opinion, would be the maximum message length, in words (assuming 6 characters per word) for digital messages on in-car terminal display screen;

NUMBER OF WORDS _____

D) Using one radio channel for a combination of voice and digital messages, which type of communication should have the higher priority;

a) Voice _____

b) Digital _____

IV-3 Does your Department have a requirement for voice privacy on message transmissions:

YES _____ NO _____

If no, do you foresee a requirement for voice privacy within next 5 years;

YES _____ NO _____

IV-4 Is there a requirement for anyone in your Department being able to monitor digital message transmissions;

YES _____ NO _____

If yes, who; _____

_____

_____

IV-10 CAD systems can be used for information gathering. This information can fall into two categories. Historical or statistical reports and immediate or emergency printed alarms.

The report information can take the form of number of cars, complaints per hour, shift by priority, as well as times for complaint dispatch, arrival at scene, clearance. Historical reports can be maintained as a log of complaints, cars, personnel and times.

Printed alarm information can cover such situations as complaint queue by priority, major crimes or events, emergency statuses, police car accidents, excessive complaint clearance times.

A) What type of ROUTINE report information would you foresee your department requiring for either supervisory or administrative purposes;

a) Administrative _____

_____

_____

_____

_____

b) Supervisory _____

_____

_____

_____

_____

B) What type of ALARM information would you foresee your department requiring for supervisory or administrative purposes:

a) Administrative _____

_____

_____

_____

_____

b) Supervisory _____

_____

_____

_____

_____

IV-11 One of the prime benefits of mobile terminals is that they give the patrolman the ability to query data bases directly from his vehicle. This not only relieves the dispatcher of the duties of acting upon each query, but also allows the patrolman to receive the information much faster with less human intervention.

Due to the fact that many of the responses received from a CPIC query can result in a large output of information, much of which would not be required in the patrol car by the patrolman, several abbreviations of output messages could be used for display on the mobile terminal.

PART IV

A) Would your patrolmen require a full text response from a query or an abbreviated form with the ability to receive full text message at a later time, similar to your present method;

a) Full text message _____

b) Abbreviated form of message, with the ability to obtain full text response later _____

B) If you prefer the abbreviated message, what information would the patrolmen require for immediate display, in regards to a query on;

a) VEHICLES

i) "NOT ON FILE" _____

ii) "POSSIBLE HIT ON FILE" _____

iii) "POSSIBLE HIT-DANGEROUS" _____

iv) Other (Specify) _____

_____

_____

b) PERSONS

i) "NO HIT" _____

ii) "POSSIBLE HIT-DANGEROUS" _____
"POSSIBLE HIT-MISSING" _____
"POSSIBLE HIT-ESCAPEE" _____

iii) "WARRANT (PROV) ONLY" _____

iv) Other (Specify) _____

_____

_____

c) CRIMINAL RECORDS

i) "NO HIT" _____

ii) "POSSIBLE HIT-VIOLENT" _____
"POSSIBLE HIT-ESCAPEE" _____
"POSSIBLE HIT-ATTEMPTED SUICIDE" _____
"POSSIBLE HIT-MENTAL HISTORY" _____

iii) Other (Specify) _____

_____

_____

IV-12 If abbreviated messages are displayed on mobile terminals, would you require the full text message to be printed out for all "HITS" on the;

a) Dispatchers Terminal _____

b) Supervisors Terminal _____

c) Other (Specify) _____

If full text on "HIT" messages is required, should this information be printed out;

a) Automatically _____

b) On request only _____

IV-13 What areas not covered in this Questionnaire would you like to see included as part of this study on 'CAD Systems and Mobile Terminals';

END