LAW ENFORCEMENT ASSISTANCE ADMINISTRATION(LEAA)

POLICE TECHNICAL ASSISTANCE REPORT

SUBJECT	Design and Implementation Study for a Computer-Assisted Dispatch and Police Information System
REPORT NUMBER	77-085-173
FOR	Bellingham, Washington Police Department

Population	43,000
Police Strength(Sworn)	63
(Civilian)	24
Total	87
Square Mile Area	21

CONTRACTOR	Public Administration Service 1776 Massachusetts Avenue, N. W. Washington, D. C. 20036
CONSULTANT	R. James Evans
CONTRACT NUMBER	J-LEAA-002-76
	January, 1978

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I. INTRODUCTION

The Bellingham, Washington, Police Department requested technical assistance in the form of a study, a system design, and implementation criteria for a computer-assisted dispatch (CAD) and police information system.

The project objective was to provide an external, unbiased study and evaluation covering the implementation of a proposed 911 system, a countywide dispatch service, and a future computerization of the telephone and dispatch operation.

The consultant assigned to the project was Mr. R. James Evans, and those involved in processing the request included:

Requesting Agency:	Mr. Terence Mangan, Chief of Police, Bellingham, Washington
Regional Planning Agency:	Mr. Dewey Desler, Executive Director, Northwest Regional Council, Bellingham, Washington
State Planning Agency:	Mr. Jack Ickes, Technical Assistance Supervisor, Olympia, Washington

Background

Bellingham, Washington, is the county seat of Whatcom County and has a population of approximately 43,000; its land area is 21 square miles. The county, which has a population of 93,600, covers 2,180 square miles and contains several towns smaller in size than Bellingham whose police departments range in size from one to seven members. The unincorporated areas of the county are policed by the Whatcom County Sheriff's Department. Radio dispatch service for most of the small towns in the county is provided by this department.

The Sheriff's Department has 35 sworn officers and 19 civilians and operates 41 radio-equipped vehicles and two motorcycles.

The Bellingham Police Department, with 63 sworn officers and 24 civilian personnel, operates 13 marked police vehicles, 10 unmarked cars, 4 motorcycles, and 2 motor-scooters.

A tentative agreement has been reached between the City of Bellingham and the Whatcom County Board of Commissioners toward the consolidation of certain services related to law enforcement. Two

of the areas to be consolidated in 1978 are the communications (radio and telephone, including a 911 center) and the records of each department. The new communications center will be located in remodeled quarters in the basement of the county building. The center will be adjacent to the civil defense area and will have excellent physical security.

The implementation of the 911 common telephone number for Whatcom County is planned to coincide with the centralized communications center. A prior 911 study, funded by the Northwest Regional Council, included four counties in Northwest Washington and provided the criteria necessary for the forthcoming implementation in Whatcom County.

Methodology

The technical requirements of the task included numerous meetings with personnel related to communications, data processing, and record systems. These were conducted on-site during the period December 5-10, 1977. The tasks, briefly stated, included:

1) Meetings with the Bellingham Chief of Police and Deputy Chief to discuss major issues involved in the problem.

2) Meetings with personnel of the records division to determine the type of records that should be in a data file.

3) Meetings with the Director of Electronic Data Processing for the City of Bellingham. The purpose was to determine existing data work for the police department and possible future requirements.

4) Meetings with personnel from the Northwest Regional Council regarding system design and specifications.

5) Meetings with the communications engineers employed by both city and county to discuss specifications for new consoles, tape recorders, and computer-aided dispatch equipment. This was necessary to assure a compatibility of future equipments.

6) Tour of existing communications centers for the Bellingham Police, Fire, Emergency Medical and the Sheriff's Department. The proposed new communications center in the basement of the court house was visited.

7) Review the 911 plan for the county.

The implementation of the computer-assisted dispatch (CAD) system will eventually follow the consolidation of city and county communications, since Federal funding is required to assist the two agencies

with the purchase.

Personnel interviewed during the on-site visit included the following:

Sheriff Bernie Reynolds,
Whatcom County, Washington

Mr. Terence Mangan,
Chief of Police,
Bellingham, Washington

Mr. Harold Raymond,
Deputy Chief of Police,
Bellingham, Washington

Ms. Dixie Hansen,
Records Division Superintendent,
Police Department,
Bellingham, Washington

Mr. Jim Bannerman,
Information Director,
Bellingham, Washington

Mr. Dewey Desler,
Executive Director,
Northwest Regional Council,
Bellingham, Washington

Mr. Larry Fehr,
Law and Justice Planner,
Northwest Regional Council,
Bellingham, Washington

Mr. Gary Almy,
Communications Technologist,
Bellingham, Washington

Mr. Tony Santos,
County Radio Engineer
Bellingham, Washington

II. ANALYSIS OF THE PROBLEM

The primary objective of this assignment was to conduct a study of the existing police communications in Whatcom County, the proposed consolidated communications center, and methods of automating the center's activities and records.

The ideal method of consolidating a number of communications functions is to have all of the updating and new functions occur at one given point in time; however, this seldom happens because of budget restrictions and long-range planning. In the case of consolidation of city and county communications in Bellingham, there are several major projects that have been planned or are being planned, all of which will eventually materialize into a very efficient and effective county center. These projects are as follows:

1) Consolidation of city and county communications into one center;

2) The countywide 911 telephone number implementation; and

3) Automation of center activities and records.

The consolidation of existing communications of the city and county into one major center is planned for mid-1978. The 911 telephone number should be implemented at approximately the same date; however, this requires many changes in central office equipment, some of which is now in progress. An ideal time frame for 911 implementations is near the publication of new telephone directories providing the citizens with immediate directory training. This method coupled with news articles will greatly enhance citizens' knowledge and use of 911. The automation of the communications center and police records cannot coincide with the opening in 1978 due to financial restrictions and the possibility of future Federal funding. Compatibility of hardware items is being considered for future installations.

Existing Communications Systems

A. Bellingham Police Department

The Bellingham Police Department communications center is modern and up to date. It is located adjacent to the complaint desk that serves the walk-in traffic. A receptionist serves as a telephone-operator and a complaint-taker and assists the dispatcher as a backup person for all emergency calls. There are four incoming telephone truck lines, two listed as emergency in the telephone directory and two that serve as overflow lines on a

trunk-hunting basis.

The radio control console was purchased in 1976 and has two operator positions, one of which is presently manned. The center is manned 24 hours a day, seven days a week, and handles a present dispatch load of 24,000 messages per year. The regular telephone messages for the city and county offices are connected via a centrex telephone system which has proved very effective and which will be continued after the consolidation of communications.

The center has a number of peripheral equipment items such as TV monitors for the jail area, a teletype terminal, and a CRT terminal, both on the state computer network (ACCESS), a radio pager system for staff and detectives, a battery charger system for officers' portable radios, a manual car status system covering all patrol cars, an alarm panel to various businesses in the city, and a 10-channel tape recorder that provides recorded information on the four telephone lines plus the car and station radio channels. This recorder can be expanded to a maximum of 20 channels.

The operator of the center is geared to an event slip that was recently developed and put into service (See Figure 1). The event slip becomes the basic information document for the entire police record system. An event number is assigned to every call situation, whether telephoned to the center by a citizen or given verbally to the desk officer or the street officer. The completed form is then transferred daily to the records section, and the information it contains is entered into the city computer. A monthly computer record is provided for police management information. This event slip will be used in the new control center until a computer-aided dispatch (CAD) is installed. The same format and information will be stored in the CAD file.

B. Whatcom County Sheriff's Department

The Sheriff's Department communications center has the responsibility of dispatching to the majority of small towns within the county in addition to its own units. The dispatcher has a responsibility of answering the emergency telephone calls from the public in addition to dispatching messages to the patrol and service vehicles throughout the county. The center is equipped with a computer terminal for obtaining information from both state and Federal files. The centrex telephone system is used for all non-emergency calls. The communications center is presently adjacent to the records section. Both of these operations will be moved to the new consolidated center area.

C. Fire Communications

The Bellingham City Fire Department presently dispatches for

GRID

BELLINGHAM POLICE
Radio Dispatch

EVENT NO. 77

ASSIGNED UNIT	ASSISTING UNIT	REPORTED EVENT	ACTUAL EVENT

BUSINESS/FIRM NAME or COMPLAINANT NAME (Last-first-middle initial)

LOCATION/STREET ADDRESS

DAY OF WEEK CODE
1 2 3 4 5 6 7

COMPLAINANT/CALLER FIELD UNIT ☐

RECEIVED

ADDRESS

DISPATCHED

VICTIM/COMMENTS SAME AS COMPLAINANT ☐

ARRIVED

CLEARED

VEH LIC	LIC STATE	MAKE	MODEL	COLOR(S)

DISPOSITION	REPORTS	TYPE
1. Arrest Made	1. Accident	1
2. Cancelled by Radio	2. Citation	2
3. Civil Case--No Police Action	3. Case Report	3
4. Contact Made--Followup Required	4. Arrest Report	4
5. Gone on Arrival	5. Vehicle	
6. Refer to Other Agency	6. No Report	
7. Settled by Contact	7. FIR	
8. Unfounded		

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the majority of fire departments in Whatcom County. Citizens' calls are received via telephone, a radio call box, referral from police agencies, or by a gamewell call box system. After a call for service is received, the proper unit or units are alerted via radio or intercom. All radio equipment is redundant in operation and has an emergency power capability if the main power fails.

When the 911 common telephone number is installed, citizens' calls for fire assistance will be referred immediately from the police consolidated center.

D. Emergency Medical Services (EMS)

The EMS system is now located at the Bellingham City Fire Department radio dispatch center. Calls for medical assistance are received now via telephone or one of the fire networks and are dispatched to one of several city or county ambulances over the existing fire radio channels.

The ambulances are equipped with the UHF biomedical frequencies and equipment for immediate radio contact and data transmission to the hospitals.

When the 911 telephone call system is installed, all citizens' calls for medical assistance will be referred to the EMS operator. Referral is accomplished with a single button on the telephone instrument that provides fast and reliable transfer.

E. Law Enforcement Area Radio Network (LEARN)

Four counties in Northwest Washington have implemented a fire-frequency UHF radio system. The system is composed of repeater radio stations that are tone operated. All police agencies use this system for inter-agency contact and, in some cases, for basic base and mobile use. This system will be a part of the operation of the new radio center.

F. Western Washington University

This state university campus located in Bellingham has its own radio dispatch system and police agency. Calls received on campus for police assistance are dispatched to an on-duty officer. Back-up assistance may be requested from the Bellingham Police Department or the Sheriff's Department. It has not yet been determined if the university dispatch operation will be moved to the new police center, but if not, the emergency 911 calls from the campus received at the downtown police center will be referred the

same way fire and EMS calls are.

G. Other Agencies

All agencies operating within Whatcom County will be connected into the communications center. Some of these are the Washington State Patrol, the Border Patrol, the State Forestry Division, CB operations, etc. The control center will be directly adjacent to the emergency services (Civil Defense) center, and any other emergency radio or telephone systems will terminate at that location.

Proposed Consolidated Dispatch Center

The new combined police dispatch center will be located in a secure area in the basement of the county biliding. The dispatch area is planned to be approximately 16 by 25 feet, adjacent to the emergency services area (See Figure 2). Plans calls for three new control consoles and one tape recorder. The control consoles will have an eight-channel capability for transmitting and receiving. Extra channel equipment for future expansion will be purchased. The tape recorder will be capable of 20-channel operation. Desk recall recorders to be placed upon each console desk will also be purchased. Specifications for these are now being prepared, and design criteria were discussed with the radio engineers during the on-site visit. These specifications are being oriented toward making the equipment compatible with the future CAD terminals.

The existing control console and the tape recorder at the Bellingham Police Department center will be updated and moved into the center.

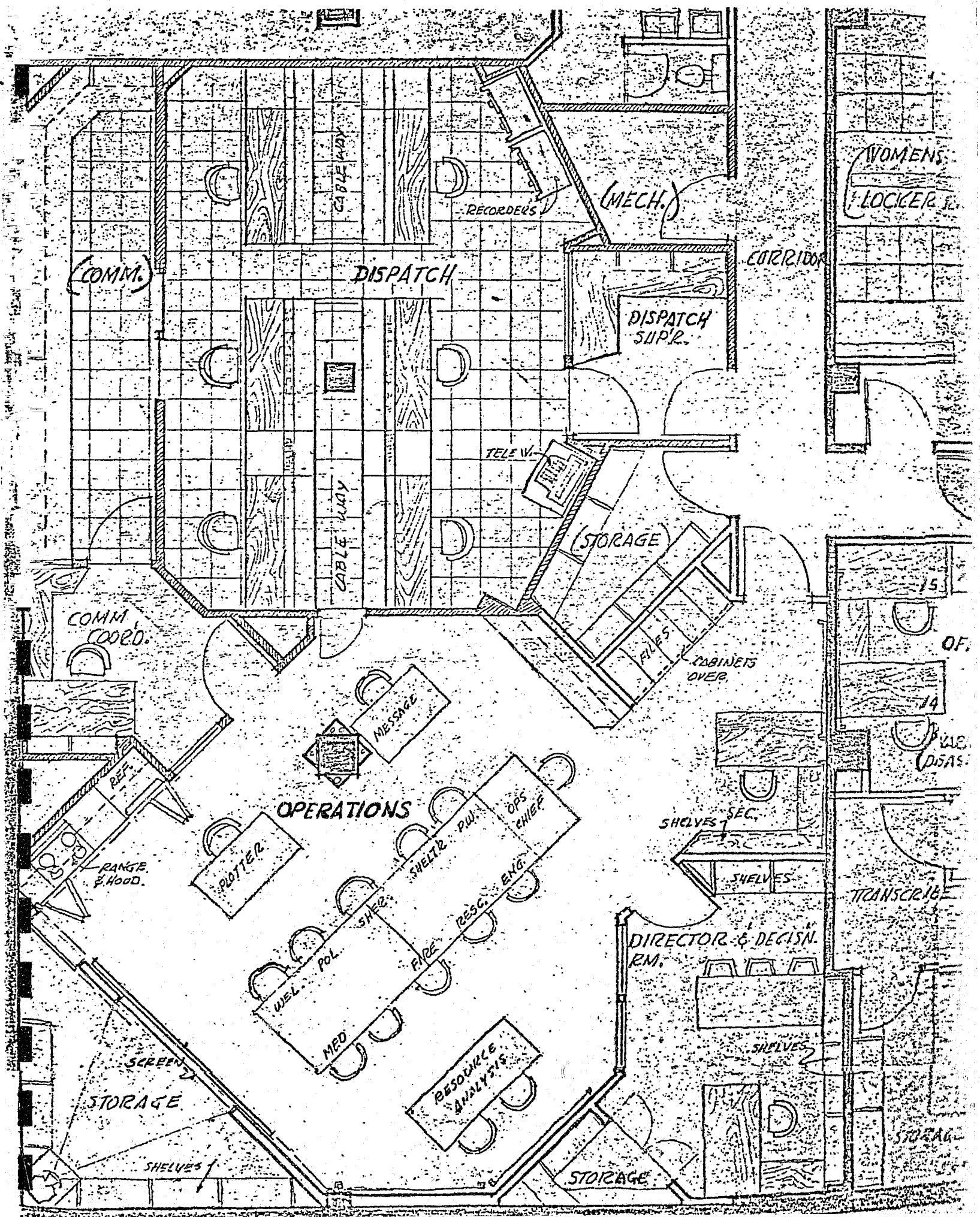
When the 911 emergency number is implemented within the center, it is possible that an additional telephone operator may be required to answer and screen the calls before passing them to the dispatcher. This operator may not be required after the CAD system is installed, since the amount of manual documenting work is reduced considerably by automation.

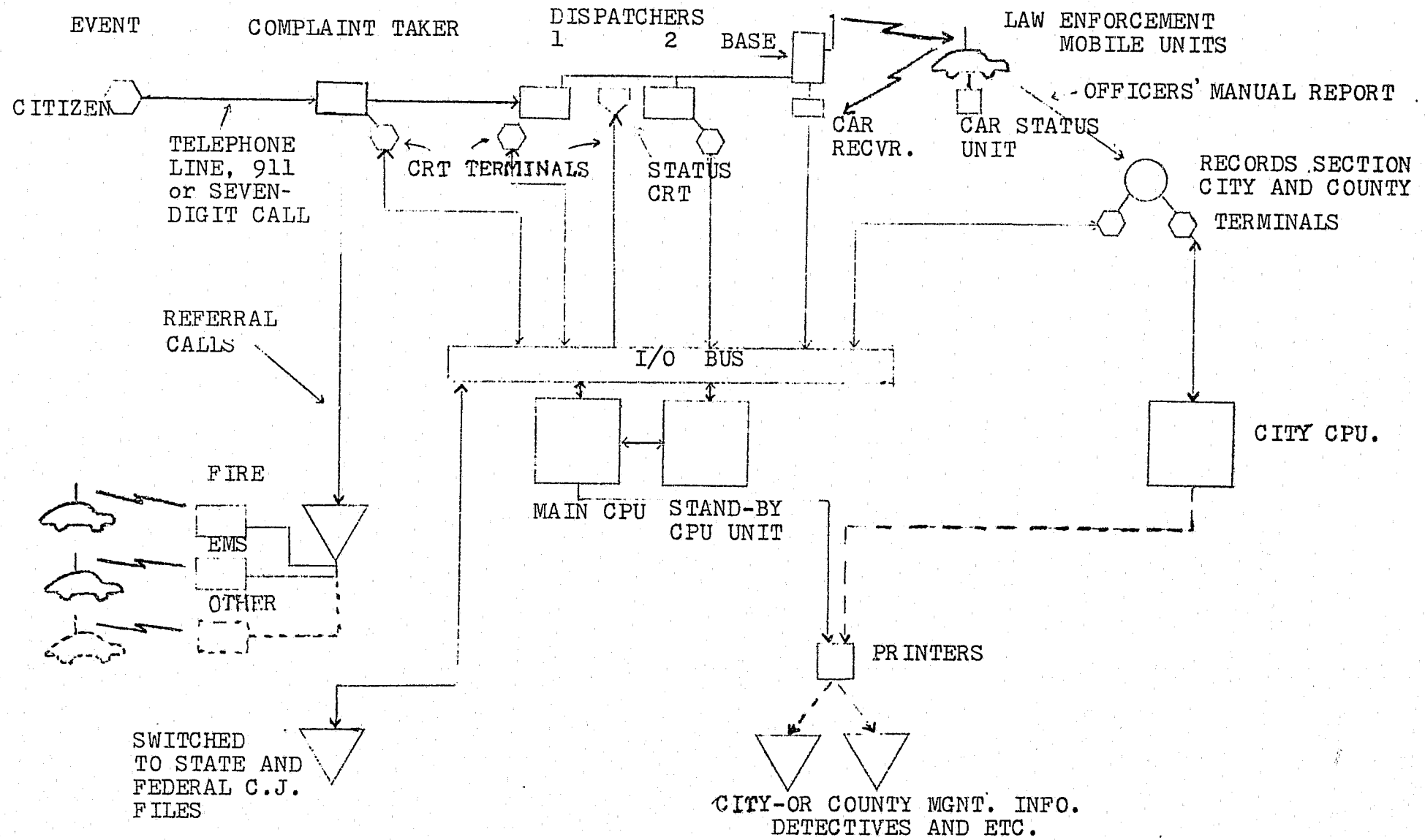
The information flow through the consolidated control center after final implementation of all phases is indicated in Figure 3.

911 Telephone Number Study and Plan

A 911 study was conducted in 1975 by the Pacific Western Engineering Corporation. The study was funded by the Northwest Regional Council for a four-county area. Each county was furnished with a separate recommendation, and in counties where the three-digit number was recommended for implementation, the telephone companies are preparing for equipment changes.

FIGURE 2- FLOOR PLAN





EVENT FLOW CHART,
911-C A D — DISPATCH
SYSTEM.

FIGURE 3 - COMMUNICATIONS FLOW CHART

The study indicated that Whatcom County should proceed with the 911 implementation, and it is this consultant's opinion that city and county officials should press for simultaneous installations of the 911 and the consolidated control center, if at all possible.

The use of the 911 three-digit telephone number in many areas of the country has reduced the time required for a citizen to report an event (See Figure 4 - Emergency Response Cycle). This would greatly enhance the control center capability.

The use of "no-coin" requirements in pay phones should be implemented whever possible to provide a further reduced response time to the citizen during emergencies.

Automation of New Control Center and Records

The Bellingham Police Department and the Whatcom County Sheriff's Department have done a considerable amount of research during the past year in the area of record automation. This research covered both the communications area and the record area for both departments.

Whatcom County has the majority of its crime in the western section, which lies between Seattle, Washington, and Vancouver, Canada. Interstate 5 is the main highway north and south across the western part of the county.

The requirement for improved communications for all emergency services has been prompted by the increased number of U.S. and Canadian citizens traversing the western section of the county.

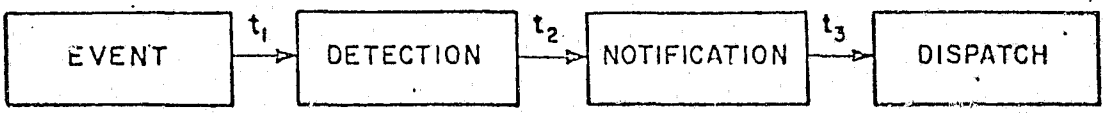
Computer-Assisted Dispatch (CAD)

The city communications center activities and message routing were reviewed at length by the consultant in an effort to determine the most cost-effective CAD system design for the area population and crime rate.

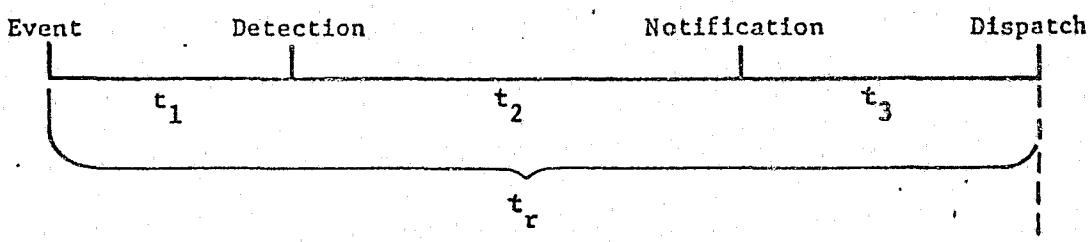
The event ticket (Figure 1) now used by the Bellingham Police Department appears to contain all of the basic items necessary to dispatch a vehicle within the city. The grid information which divides the city into areas (See Figure 5) may require some modification for the computer format to be used by the Sheriff's Department. The computer will be programmed to automatically assign event numbers, dates, and times of receipt and dispatch.

The actual dispatch slips or event slips presently are forwarded to the records section each day. These are then processed and the information verified prior to being entered into the city

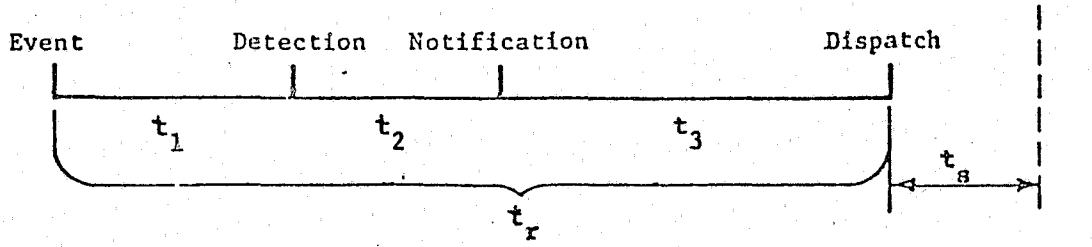
Figure 4 - Emergency Response Cycle



RESPONSE CYCLE DEFINITION



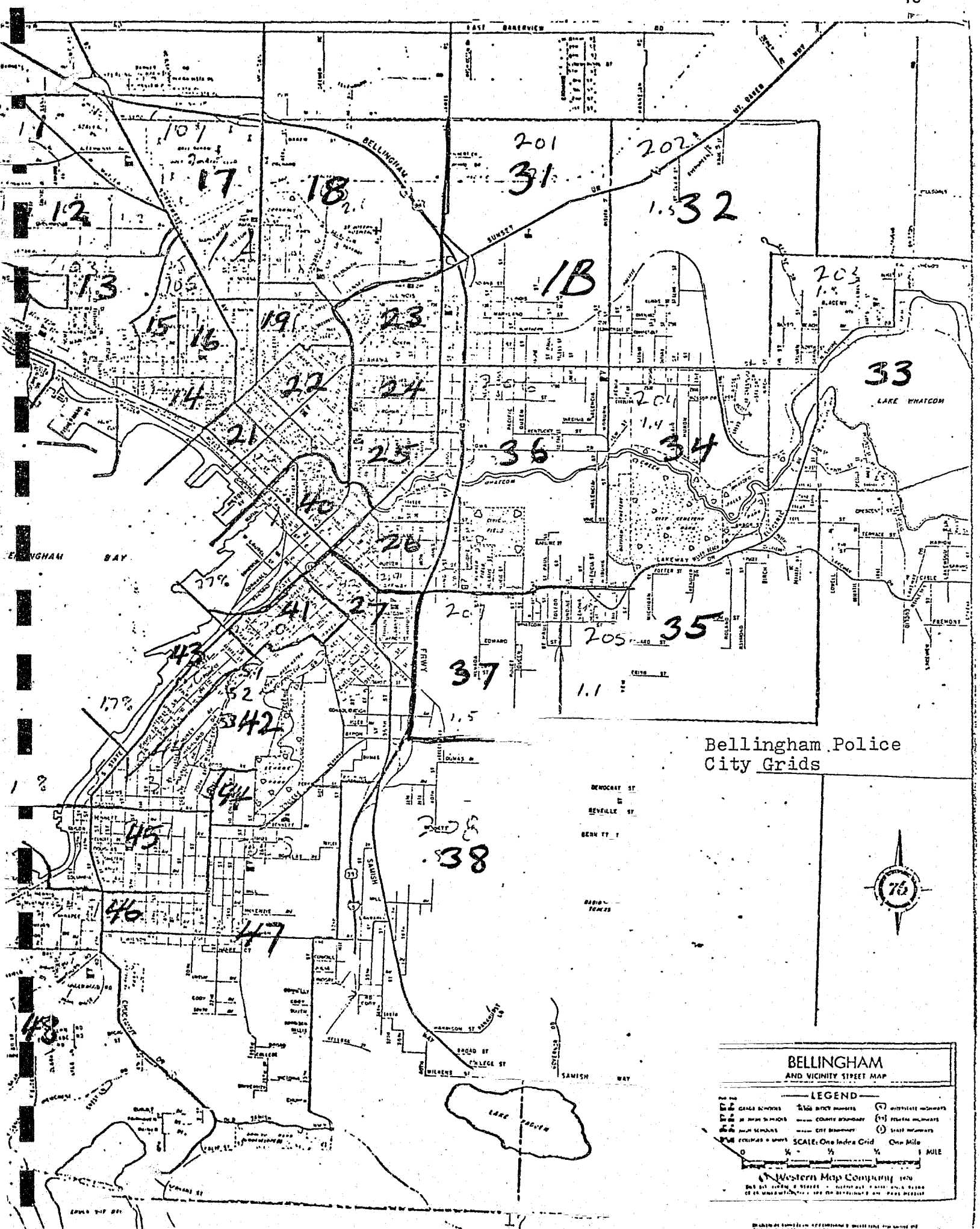
RESPONSE CYCLE TIMING WITHOUT 911



TIMING WITH CENTRAL DISPATCH AND 911

Note: From report of Franklin Institute Research Laboratories on Single Emergency Telephone Number, March 1970.

FIGURE 5 - CITY GRIDS



computer file. The process criteria used in the city records section are shown in Appendix A - Dispatch Slip Process. A review of the process indicates that many of the manual operations now necessary will be automated by use of the CAD system.

The follow-up information required on many reports will be continued and entered into a computer file by the records section.

Both the Sheriff's dispatch center and the city center have cathode ray tube (CRT) terminals for input and output to the state and Federal criminal justice files. This service will be continued in the new center and will require some modifications when the CAD system is installed. Normal operation of the CAD switching network result in dual use of one CRT terminal for both the CAD and state and Federal files.

The status of police vehicles at the present time is a manual operation both at the city and county centers. This feature can be automated in the CAD system, thus decreasing the manual workload of the operators.

Police vehicles (or emergency vehicles) can be equipped with a digital status terminal or a data terminal for automatic status reporting by the user of the vehicles. The digital status terminal will send one of several preprogrammed messages and the car designator via data over the car radio to the dispatcher. A data teletype terminal used in a vehicle is much more costly than the status terminal; however, it allows the user to actually send and receive messages to the dispatcher, the state and Federal criminal justice files, and to other vehicles.

The two systems now operating each utilize one dispatcher per shift on a 24-hour basis. The emergency telephone calls are normally answered by the dispatcher and occasionally during rush hours by a second person. The two dispatchers should be adequate for the dispatching function in the new center. The personnel expansion requirement will be discussed in III. Findings and Conclusions.

Management Information System

The present event ticket furnishes Bellingham police management personnel with some crime data. This is published monthly and can readily be expanded into the CAD system with a daily, weekly, or monthly printout. The Sheriff's Department would also have this data available from the dispatch center and the CAD storage files.

The present data is located in the city computer file. The equipment is programmed by two full-time city employees. The maintenance on the central processing unit (CPU) and associated items is performed by the IBM company, using a technical staff located

in Bellingham.

Deputy Chief Raymond of the Bellingham Police Department provided excellent written and verbal background concerning the consolidated communications center. A copy of a paper prepared by the department on the proposed concept of the communications center and its operation is included as Appendix B.

The only internal influences to the problem that were apparent to the consultant were:

1) Space requirements at the new center location for the CAD hardware at the time of implementation and future expansion requirements for the next 5 or 10 years. One apparent expansion might be the addition of the fire and emergency medical radio dispatch operation, although at this time the consultant believes that call referral to these departments will provide the citizen with excellent response to emergencies. If space is not available for the CAD hardware adjacent to the new operating center, then it may be advisable to locate it in the existing EDP area in the city hall.

2) The second influence may relate to city, county, and Federal funding for the CAD project. A decision may be necessary either to purchase or lease the hardware, including required maintenance. Use of programming personnel now employed will reduce expenditures. Existing vendor software systems will reduce original implementation costs.

3) A third influence on the proper operation fo the communications center (with 911 and CAD) will be the financial burden of additional personnel if required. The telephone and dispatch functions can usually be combined through electronic switching to save manual operations. A number of cities of approximately 100,000 population have CAD centers operating with only two operators handling emergency telephone and dispatch operations.

III. FINDINGS AND CONCLUSIONS

The on-site review of the existing communications systems in Bellingham and several consultations with responsible personnel have produced a number of potential conclusions that may be followed in upgrading of the Whatcom County emergency services. The problem and objectives were basically to provide an unbiased study and system design for CAD that will be compatible with the needs of the coordinated communications center. The following conclusions were derived from analysis of the problem:

FINDINGS: The proposed dispatch center is adequate for the communications operation (but not CAD hardware).

CONCLUSION: There should be additional space provided for the CAD hardware adjacent to the dispatch room (see Figure 2). The CAD hardware room should be separate from the dispatch area, and both areas should be designed to meet the following criteria:

1) Security of center to unauthorized personnel.
2) Direct telephone lines to all emergency departments that will react to 911 emergency calls. These should be one-button automatic switching lines.
3) Cheerful shades of wall and floor coverings in the dispatch area.
4) Air conditioning in both CAD and dispatch areas.
5) Adequate lighting with dimming reostats. In some areas, the local power companies have consultants who provide excellent recommendations free of charge.
6) Acoustical treatment of all walls and ceilings to minimize operator fatigue and reduce reverbration from audio devices. Telephones should have low-ringing buzzers or chimes.
7) Flooring in the dispatch and CAD equipment room should be of the raised type used in computer installations. This permits easily routed cables and wires.
8) AC circuits should be separately fused to each radio console and separate circuits to the CAD hardware room. This prevents a complete system failure when system shorts occur in a piece of equipment.
9) The console equipment should be so placed in the room configuration that allows ease of maintenance. This factor will vary with regard to the make of equipment procured.

10) The consoles should be placed in a configuration to prevent the operators from talking directly towards each other. This will prevent unwanted voices from being transmitted over the air (See Figure 6, a suggested equipment layout).
11) The telephone operators/dispatchers should be equipped with a telephone headset and mike that can be switched from telephone to radio. This saves time in picking up a telephone handset and saves several manual operations, thus reducing operator fatigue and improving response time.
12) Prior planning of the center should include an expansion capability for at least 10 years.
13) The center should have an emergency fire exit, which is not indicated on the floor plan in Figure 2.

FINDING: The proposed 911 plan should have an early implementation date.

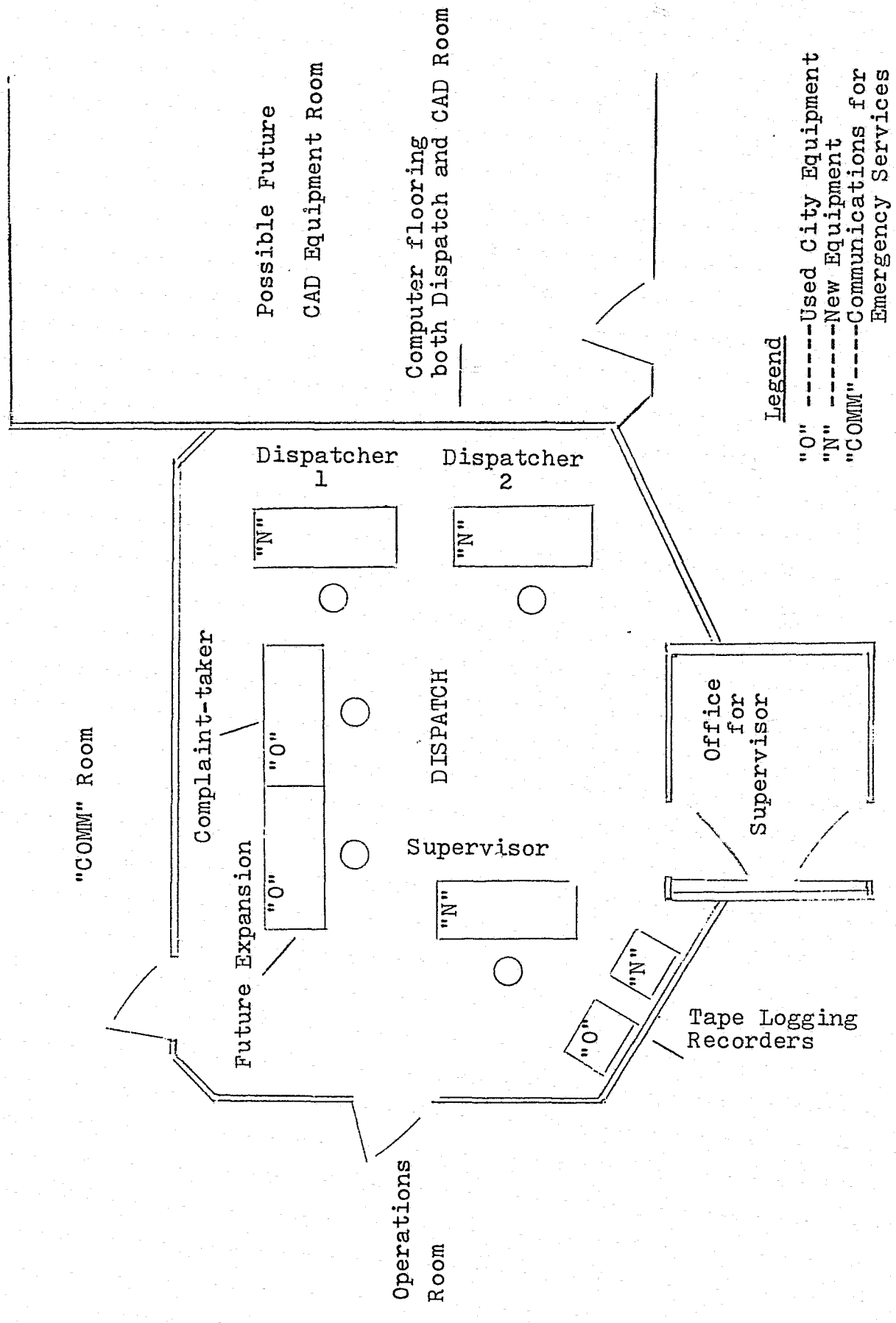
CONCLUSION: The city and county should actively seek a 911 implementation date that coincides with new center activation. The 911 telephone number will reduce citizen response time. If coincidental conversion is not practical, then the center plans should include the console space for operating the larger 911 instrument and the required panel space for installation at a later date.

FINDING: CAD and management information data plans can be implemented in a compatible working arrangement with the new center.

CONCLUSION: A number of conclusions have been formulated relative to the CAD concept, and each will be outlined below.

1) The new communications center can best be explained by use of an information flow chart (see Figure 3). The left-hand section indicates the event that has happened and the citizen placing a telephone call to the complaint-taker (may be the same person as the dispatcher) uses the CRT keyboard to bring up a preprogrammed format. Each vacant area on the format will be completed as the complaint-taker questions the citizen. Information recorded into the computer will be very similar to that now appearing on the event slip (see Figure 1). The computer will assign all dates and times

FIGURE 6 - SUGGESTED DISPATCH EQUIPMENT LAYOUT



as required. If both a telephone operator and a dispatcher are used in the control room, then the completed event format will appear on the dispatcher's CRT screen. The dispatcher will have a separate CRT for status and other special information in addition to his regular CRT with keyboard. He will immediately determine which patrol unit from the status CRT. The dispatcher then verbally transmits the event to the selected vehicle. If a vehicle or officer is not available in the affected area, then a unit is selected from an adjacent area (also shown on the status CRT). If there is not a unit or officer available, the event is switched by the dispatcher into the call stacking queue. The stacked calls as well as the car status will appear on the status CRT and can be continuously viewed by the dispatcher. The CAD system will alert the dispatcher to any major call events that are stacked either by an audible alarm or a flashing of the event on the CRT. When the patrol officer completes the call, he will use his mobile status to indicate completion. The status CRT will indicate his car number and his status action. In some cases he may use the voice radio to supply further information. The patrol officer is shown on the right side of the chart with a status unit in his patrol car. At the end of his shift, the officer will file a complete report with the records section, where the event will be marked to the final report through the use of a CRT terminal in the records section.

The foregoing information assumes that the citizen-reported event required action by a police officer. If the event call was for another emergency agency, it would be immediately switched to the proper office. Calls for fire and EMS assistance should carry a high priority along with major crimes when accepted by the complaint-taker. In some departments the complaint-taker accepts all emergency calls and enters the information on a CRT format for the specific agency. A CRT in the agency then displays the information for the dispatcher. There are advantages and disadvantages to all systems. Each central dispatch committee should decide which method will provide the fastest citizen response with minimum errors.

The records section, after coding and entering the officer's report into the computer, will be responsible for all follow-up information to the report. The event number becomes the key to all reports.

2. The final portion of the flow chart indicates the production of management information data that is generated by each event and may be printed as desired either daily, weekly, bi-weekly, or monthly. The present reports from the city computer are on a monthly basis. Some experimentation is required due to the high cost of paper and the numerous divisions, such as detectives, that require report information in some form for follow-up action.

3. The use of vehicle or officer status can become one of the primary sources of information to reduce response time. The use of the car status unit provides a number of useful functions. One is the emergency signal that can be activated when an officer's life is in danger. This may appear on the CRT screen as a flashing message, alert tone, or bell. Some other status data signals which are typical are 10-4 — OK on message; clear—ready for assignment; assigned—may be used after receipt of event; at scene—indicated at scene of event; out of car—indicating officer out of car; out of car on air with portable—officer available for verbal contact, other messages may be programmed in the car unit. Each message, including voice messages, will be preceded by the car or officer's call number and will appear on the CRT screen.

   The consultant does not advise the use of data terminals or printers in the vehicles due to the high cost and the limited number of vehicles used on a shift. The vehicles were estimated for each shift (normal) as follows:

   Bellingham Police --- 15 units

   Sheriff's Department --- 15 units

   Small cities --- 8 units

4. The storage of final record information after management use should be stored either in a tape deck file or in one of the storage files presently used by the city.

The CAD system is known as a real-time system whereby information is being entered, queried, or retrieved constantly, whereas final record storage items are not required on a real-time basis and could best be stored by the use of microfilm or some type of computer file readily available. The CAD files can be used for this long-term storage, but retrieval of large quantities of information may delay the fast action required in the emergency center.

5. The proposed CAD system concept is shown in Figure 7; it will provide an easier, less complicated, better organized telephone and dispatching function. The CAD system has a digital computer (may be one of many makes of mini-computers; however each radio dispatch equipment vendor uses a certain unit that is compatible with his other peripheral items and his software package), an operator CRT with keyboard (these are used at the complaint-takers' and dispatchers' stations), and the normal storage facitities.

   The CAD system is organized to put preprogrammed information before the center operators upon demand, but it is not allowed to make any decisions for the operator. It allows the dispatcher to assign the "right" unit or units at the proper time and keeps a timely detailed status of all units under his control.

   Some of the information that can be stored is as follows:

   a) Event forms and file

      The blank event form is displayed at the touch of a key on the CRT keyboard. The event after information entry is filed in the computer storage for several operator shifts and may be recalled at any time for observation or change. Transfers from complaint-taker to dispatcher is virtually instantaneous.

   b) Street address file

      This file contains street addresses and serves as a call verification. This file and related files are important to fire

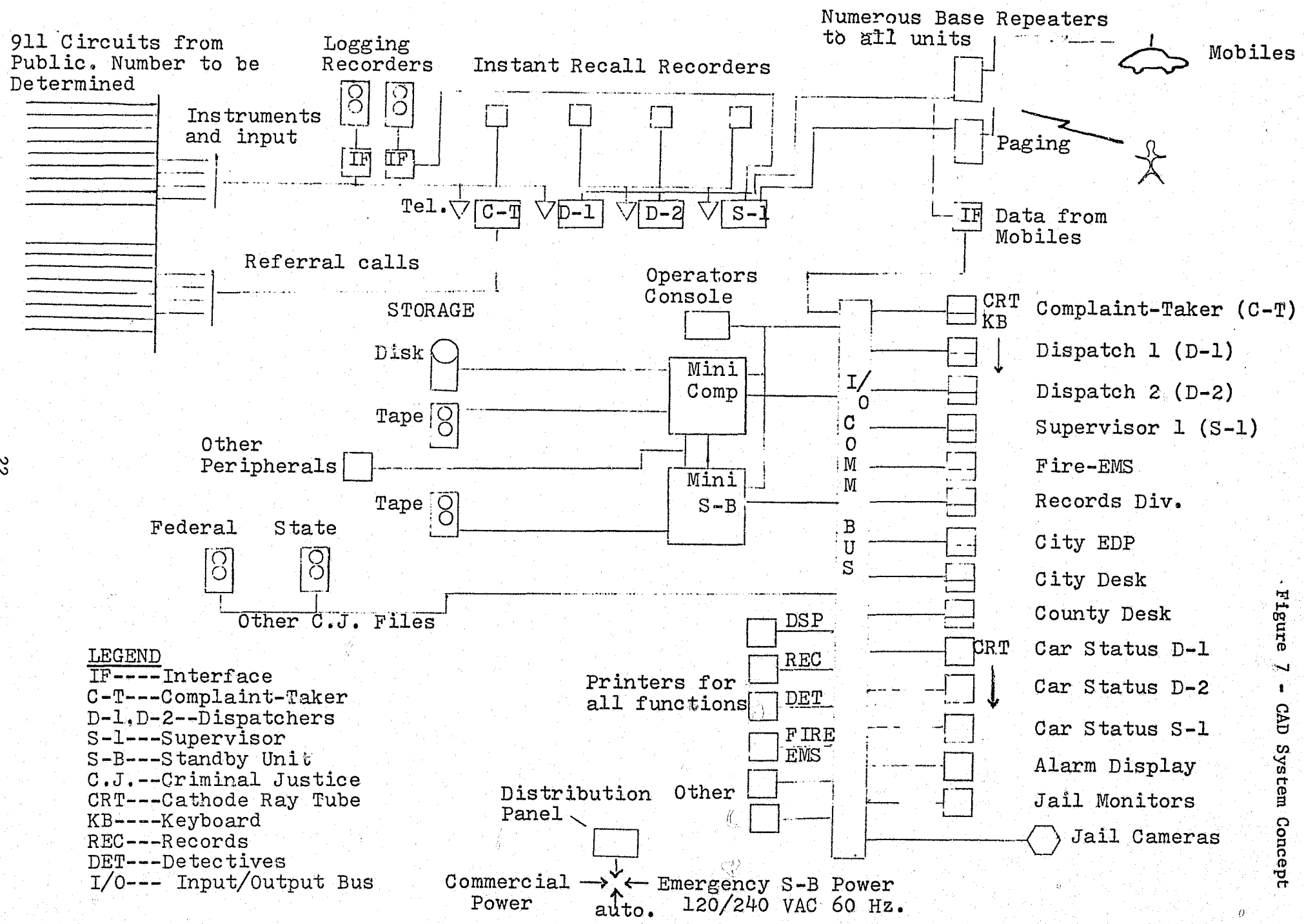


Figure 7 - CAD System Concept

operation, but quite costly. (Microfilm with projection is a low-cost manual replacement for a dispatch office.)

c) Daily event and unit activity file

Since all events and unit responses are filed, the information is transferred to magnetic tape in usable form for management information.

d) Status display

A second CRT display without keyboard is located at each dispatcher's position and contains a short summary of each unit under the dispatcher's direction. The dispatcher may change the unit status or it may be changed automatically by the mobile digital status unit.

e) Inquiries

The dispatcher may make inquiries from his keyboard and through a simple key change he may query the state and Federal files.

f) Logging

A hard copy file is maintained of all events at the time they are entered. This serves as a computer backup.

The input/output (I/O) bus is a communications interface device for many functions that must take place in the control center. Necessary modems and line controllers are not shown on the CAD system concept block diagram and will vary with each vendor's concept of technical operation.

FINDING: Specifications and purchase can best be expedited by use of a Request for Proposal (RFP).

CONCLUSION: A technical specification is very difficult to prepare for a CAD system and will usually be written in such a manner as to preclude some vendors. Each vendor of CAD systems uses a particular make of mini-computer, terminal, files and software; therefore, a technical specification will pinpoint a certain vendor or will result in a request for a vendor to assemble

many different items and expensive software not familiar to him.

The consultant recommends a functional specification that will state exactly what functions are required in the CAD for use in formulating an RFP to be sent to a number of vendors. An RFP will state many of the following items:

1. An index for ease of subject location.
2. Purpose of RFP.
3. Project timing.
4. Project funding.
5. Vendor's payment schedule.
6. Bidder's conference.
7. Proposal submission and opening.
8. Proposal evaluation.
9. Notification of award.
10. Proposed format.
11. Vendor's work plan.
12. Project schedule and costs.
13. Personnel to be assigned.
14. Corporate information.
15. Project insurance.
16. Warranties.
17. Maintenance (local or out of town).

Each of the above items will contain several subheadings and may be reduced or expanded as required.

The vendor's conference is recommended to allow a free decision of all phases of the project. This is usally two or three weeks after the RFP is sent to vendors.

The functional specification would become a part of the RFP. The final result should produce a good operating system at the lowest possible cost. The city and county officials may require the aid of the city EPD director and the local radio engineers in preparing the functional specification.

FINDING: System and maintenance cost estimates vary.

CONCLUSION: The Bellingham Police Department has acquired several cost estimates for the CAD system, and these may be used for budget requirements. The exact system costs cannot be made until all terminal facilities, backup units, and storage requirements are determined. Some present cost estimates are as follows:

a) terminals (CRT) --- $2,000 - $3,000 each
b) mini-computers --- $25,000 - $50,000 each
c) printers --- #1,500 - $3,000 each
d) disk storage 50-100 mb. -- $25,000 - $50,000 each
e) mag-tape units --- $9,000 - $15,000 each
f) software---varies per package.
g) maintenance --- 1% of hardware cost.

Other factors to consider are the hardware installation, the warranty, training of operators and technicians if locally serviced, program personnel, operators' manuals, system software and hardware manuals, file protection, and future expansion capability. The evaluation committee should consider the vendors' maintenance program, whether available locally or at some remote point.

FINDING: Operator requirements may vary.

CONCLUSION: The number of operators that will be required will vary, depending upon the work load. One method that can be followed and may save future personnel costs is to start the center with existing personnel of the Police and Sheriff's Departments, i.e., two dispatchers with the addition of a center supervisor for the 8 a.m. to 5 p.m. shift. If the workload due to 911 calls and the CAD implementation requires additional personnel, such as a separate complaint-taker, then this position should be added. Some departmental personnel with dual training should be available for emergency situations such as activation of the Emergency Services section.

FINDING: The street index storage requirement may not be cost effective in the CAD computer.

CONCLUSION: If the results of the RFP indicate too great a cost for storage of street index information, the center may install a microfilm projector with all street information at a very nominal cost. This storage device can also hold many other types of information such as special orders for police or Sheriff's officers. The projector cost is $250 and up. To this basic cost will be added the microfilming, handling, binding, updating, etc.

IV. RECOMMENDATIONS

The following specific recommendations are provided to assist the Whatcom County Coordinated Communications Committee in the automation of the new center:

1. Implement the 911 common telephone number to coincide with the opening of the new center.

2. Proceed with plans to implement a computer-assisted dispatch system at the earliest possible time.

3. Plan to install vehicle data input devices in all patrol cars that would become a function of the CAD system.

4. Implement a management information system as a part of the CAD plan.

5. Form a technical committee immediately to start preparation of CAD functional specifications.

6. Use a request for proposal (RFP) approach to purchasing the CAD system.

7. Plan for additional space in the control center area for CAD hardware and dispatch expansion in the future.

8. New purchases of dispatch consoles should allow flexibility for the addition of CAD equipment at a later date.

9. All permanent records should be filed in the city computer or microfilmed rather than allowed to exist in the "real-time" CAD file.

10. The communications supervisors and radio engineers for the city and county should be funded to visit existing CAD systems serving approximately the same population. This would provide excellent background for specifications, purchase and evaluation of the Bellingham CAD system.

11. The communications committee should develop a time frame for CAD planning that would be realistic in terms of funding the system.

DISPATCH SLIPS

DISPATCH SLIPS are filled in by the DISPATCHER any time that an officer is assigned to a call. These are kept in order, at the Dispatch Desk, until the end of shift and at that time the slips are turned over to the Events Desk in the Bureau of Records.

It is the responsibility of the Events Desk Clerk to verify that all of the slips from the shift just ended have been turned in, and in addition, that they are in correct numerical order. If it is found that a slip is missing, a check should be made with the Dispatcher on duty to see if the slip is still at the Dispatch Desk. If it is still needed there, for any reason, a slip of paper should be inserted in place of the missing Dispatch Slip indicating where it is and the reason it is missing.

Once that it has been verified that the slips are in proper order, the clerk prepares the slips to be filed (the white copy) and sent to Information Services (the yellow copy) by checking to be sure that all necessary information has been entered by the Dispatcher and by coding. This is done as follows;

1) To verify completion of slip

A) EVENT NUMBER - Assigned by the Dispatcher to each call requiring coverage by police officer. These are assigned in numerical sequence from January 1st to December 31st of each year. BE CERTAIN that this number is easily read on both copies of the Dispatch Slip (white & yellow).

B) The GRID NUMBER is the area of the city in which the event took place.

C) The ASSIGNED UNIT number is the computer number assigned to the officer or non-uniformed person answering the call.

EXAMPLE:

- 1B - Indicates Chief of Police
  1B93 - (93) is the computer number of Chief Mangan
- 2B - Indicates Captains & Sergeants
  2B30 - (30) is the computer number of Capt. Kveven, this would indicate that Capt. Kveven was dispatched on this call.
- 3B - Indicates Detectives
- 4B - Indicates Patrol Officers
- 969 - Three digit numers such as this indicate a non-uniformed employee was assigned to the call.
- 9B - Indicates a report called in by WWSC
  9B11 - Would indicate a WWSC with their officer #11 being assigned.

D) Reported & Actual Event Numbers refer to the type of call or offense as indicated on page ___ following.

E) LOCATION is the address to which the officer was dispatched.

F) DAY OF WEEK should be circled.

G) Dispatcher stamps date & time in each of these 4 boxes as each call progresses.

H) Computer number of person in dispatch who handled the call.

I) One number in each of these sections must be circled to indicate action taken by officer.

J) TYPE number is circled by EVENTS DESK clerk. Type is determined by comparing Reported or Actual Event number (C) with list on page _____.

Each of these above items MUST be entered on the Dispatch Slip. It is the responsibility of the Events Desk clerk to insure that this is done.

The following two items may or may not have an entry.

K) A name of person or business who called in the report. If a name is entered, the last name, followed by the first and middle name should be entered.

L) Additional information may be entered in this area at the discretion of the Dispatcher

2) Coding for Information Services

A) Underline (in red) one name, of person or business, on line K or in area L.

B) Type of offense (J) should be circled.

The yellow copy is separated from the white, it is kept in correct numerical sequence and it is submitted to Information Services for their entry into the computer.

The white copy is kept in the Records Bureau, they are kept in correct numberical sequence, and they are matched to any written reports which have been submitted for indexing & filing.

POLICE REPORTS

At the end of each officer's shift, any reports that he/she has written will be turned over to the Shift Sergeant for approval. After the Sergeant has read each report and signed it, he will submit it to the Records Bureau where copies will be made of it for proper disbursement.

A) See outline for copying procedures on page _____.

The original written report is kept in the Records Bureau. The only exception to this is in the case of Juvenile Reports. Duplicate copies are kept for Bureau files. (Original Juvenile Reports are always sent to Juvenile Probation)

These reports that are to be kept on file in the Bureau are put into correct numerical order. They are matched to the Dispatch Slips of the same Event Number. After indexing they will be attached together and filed.

The indexing consists of the typing of file cards, picking up names and various offenses, so that each event will be easily referenced.

A) NAMES - A card should be typed for all persons who are directly involved in the event; informants, suspects, victims, arrestees, etc.

B) OFFENSE - A card should be typed for any of the various offenses listed on page ___ following. Burglary & Larceny offenses are further broken down as to the catagory of item taken, such as Burglary - cash.

As each name is picked up on a file card a small check mark in red should be made beside the name in the report so that the clerk can keep track of names and be certain that none are missed.

Following is an example of a Burglary Report and the index cards..

BELLINGHAM POLICE DEPARTMENT — COMPLAINT REPORT

Page Of

1. ARREST	2. OBS / DISP / CALL	3 OFFENSE/EVENT DESCRIPTION	4. EVT. NO.
Ø	✓	Burg	77-Ø1111

TOWN SECURE ON				6. DISCOVERED/OBSERVED ON				7. REPORTED ON				RECORDS ONLY
MO	DA	YR	DOW	TIME	MO	DA	YR	DOW	TIME	MO	DA	YR	DOW	TIME	OFFENSE
			M	1600	4	1	77	M	2200	4	1	77	M	2200	

8. LOCATION OF OCCURRENCE	9. GRID	LOCATION
ST PAUL ST	36	

10 CODE V-Victim, W Witness, I Informant (List All Victims, all Witnesses, all Informants, in that order) CIRCLE CODE IF ADDITIONAL PAGES ARE NEEDED

CODE	NO	LAST NAME	FIRST	MIDDLE	SEX	RACE	AGE	CHECK DAY PHONE BELOW
V		DOE	J Wr		M	W		

RESIDENCE ADDRESS	CITY	STATE	ZIP	RES. PHONE (AREA CODE)
900 ST PAUL	B'ham	W	98225	734-1210

BUSINESS ADDRESS	CITY	STATE	ZIP	BUS. PHONE (AREA CODE)

CODE	NO	LAST NAME	FIRST	MIDDLE	SEX	RACE	AGE	CHECK DAY PHONE BELOW
		Sm V	WILLIAM		M	W	19	

RESIDENCE ADDRESS	CITY	STATE	ZIP	RES. PHONE (AREA CODE)
ST PAUL	B'ham	WA	98225	734-1210

BUSINESS ADDRESS	CITY	STATE	ZIP	BUS. PHONE (AREA CODE)

11 CODE S-Suspect, A-Arrestee, C-Contact (List all of each, in that order Circle CODE if additional pages are needed.)

CODE	NO	LAST NAME	FIRST	MIDDLE	SEX	RACE	AGE	CHECK DAY PHONE BELOW

RESIDENCE ADDRESS	CITY	STATE	ZIP	RES. PHONE (AREA CODE)

BUSINESS ADDRESS	CITY	STATE	ZIP	BUS. PHONE (AREA CODE)

HAIR	EYES	HEIGHT	WEIGHT	D.O.B.	AKA/NICKNAME	DRIV. LIC. & STATE

OBSERVABLE PHYSICAL ODDITIES	WARRANT OR CIT. NO.

CLOTHING WORN	CHARGE NO(S).

CODE	NO	LAST NAME	FIRST	MIDDLE	SEX	RACE	AGE	CHECK DAY PHONE BELOW

RESIDENCE ADDRESS	CITY	STATE	ZIP	RES. PHONE (AREA CODE)

BUSINESS ADDRESS	CITY	STATE	ZIP	BUS. PHONE (AREA CODE)

HAIR	EYES	HEIGHT	WEIGHT	D.O.B.	AKA/NICKNAME	DRIV. LIC. & STATE

OBSERVABLE PHYSICAL ODDITIES	WARRANT OR CIT. NO.

CLOTHING WORN	CHARGE NO(S).

12 VEHICLE — USED IN CRIME ( ) STOLEN ( ) RECOVERED ( ) ARREST/OTHER ( ) LOCAL ( ) ELSEWHERE ( )

YEAR	MAKE	MODEL	COLOR(S)

LICENSE NO	ST	VIN/FRAME

REGISTERED OWNER

IDENTIFYING CHARACTERISTICS

13. STOLEN PROPERTY STATEMENT

MOTOR VEHICLE ( ) OTHER PROPERTY ( ) BOTH ( )

I, the undersigned, hereby declare this to be a true and correct report: I am the owner or person in legal possession of the reported property and I do not give any permission to use or take this property. I (will) (will not) testify in court, under oath, to the facts herein. I understand that I may be charged with an offense "Obstructing Justice" (R.C.W. 9.69.060) by filing a false report.

SIGNATURE X _____

14. REPORTING OFFICER	COMP. NO	15. REVIEWING OFFICER	COMP. NO

16 ADDITIONAL COPIES TO

_____ CHIEF _____ INVESTIGATIONS _____ PROSECUTOR'S OFFICE _____ INFORMATION SERVICES

_____ DEPUTY CHIEF _____ TRAFFIC _____ CITY ATTORNEY _____ OTHER _____

_____ PATROL _____ FELONY REDUCTION _____ COURT LIAISON _____ OTHER _____

EVENT NO. 77-Ø1111

P OPERTY/NARR. IVE SECTION

17 ACIC/NCIC PUT/CHECKED YES ( ) NO ( ) 18. BY MILLER 19. IMPOUND YES (✓) NO ( ) NO. D1234 EVT. NO. 77-01111

20 VI CE YES (✓) NO ( ) 21. IF BURGLARY: FORCE USED YES (✓) NO ( ) POINT OF ENTRY WINDOW (✓) DOOR ( ) ROOF ( ) OTHER

22 PERTY. (TOTAL VALUE) RECOVERED $ STOLEN $ 300.00 DAMAGED $ PROPERTY FOLLOWUP ( )

23 OPERTY CODE S – Stolen R – Recovered L – Lost F – Found E – Embezzled D – Damaged (Use All Applicable Codes. For Example, If Property Both Stolen and Recovered, Code S/R) PROPERTY RELEASED TO:

24 CO

ITEM No.	QUAN	DESCRIPTION:	ARTICLE NAME, BRAND NAME, COLOR, MATERIAL, MODEL, CONDITION	SERIAL NO.	VALUE
1	1	Sound	STEREO, CA WALNUT FINISH turntable Missing 10"x3"x24"	17934D	200.00
2	1		GUITAR/SEARS/DARK WOOD/ NAME "BILL" on side	—	100.00

R. IS ATCHE TO 900 ST PAUL, MADE CON. C T , John, who reported when HE VED HOME 2200 HRS on 4-1-77 HE FOUN BACK BEDROOM WINDOW OPEN. HE CONTACTED PD. HE FOUND ABOVE ITEMS MISSING. HE IS OWNER OF STEREO, ROOMMATE SMITH IS WNER OF GUITAR.

CHECKED FOR EVIDENCE & FOUND BLUE MATCHBOOK WITH NAME "GRAND MOTEL" ON IT. NEITHER VICTIM HAD SEEN IT BEFOR Impounded UNDER D1234 & HELD FOR EVIDENCE. NO FINGERPRINTS FOUND ON WINDOW – NO OTHER EVIDENCE.

DATE

EVENT NO.

BURGLARY-Sound 4/1/77 77-01111

205

Turntable/RCA/Walnut/10"x3"x24"/value $200

victim: DOE, John
900 St Paul St.
734 1210

You would make a card for items falling into each catagory of stolen items.

BURGLARY-musical 4/1/77 77-01111

205

Guitar/SEARS/dark wood/value $100

victim: SMITH, William
900 St Paul St.
734 1210

SMITH, William 4/1/77 77-01111

205

900 St Paul
734 1210

You would make a card for each victim, suspect, informant, arrestee, etc. Victim DOE was not picked up because his name had already been underlined in red on the Dispatch Slip and will be picked up by Information Services.

OFFENSE CATAGORIES

AWOL

ABDUCTION

ARSON

ASSAULT

AUTO THEFT

BOMB THREATS

CHILD ABUSE

DRUGS

FORGERY & COUNTERFEITING

EXTORTION

FRAUD & EMBEZZELMENT

GAMBLING

HOMICIDE (MURDER)

KIDNAPPING

LICENSE VIOLATIONS

LIQUOR VIOLATIONS

LITTERING

LOST ITEMS

MISSING PERSONS

MENTAL

PHONE CALLS, OBSCENE

PROWLERS

RAPE

ROBBERY

SEX OFFENSES

SUICIDE

SURVEYS

THREATS

TRESPASSING

VANDALISM

WEAPONS

WORTHLESS CHECKS

PROTECTIVE CUSTODY

BURGLARY CARDS CATEGORIES

AUTOMOTIVE - - accessories, engines, transmissions, tires, etc. - includes mo
C B Radios or cycle equip
ent

CAMERAS - - includes photographic equipment and supplies

CASH - - currency, coin collections, notes, money orders, checks, etc.

CLOTHING - - includes all wearing apparel except furs

DRUGS

FURS

GARDEN EQUIPMENT - - includes lawnmowers

GROCERIES - - includes cigarettes

HOUSEHOLD ARTICLES - - includes TV's, furniture , dishes, etc.

JEWELRY - - includes precious metals

LIQUOR

MARINE - - outboard motors, boat supplies, etc.

MUSICAL INSTRUMENTS

NO LOSS - - includes attempts

OFFICE EQUIPMENT - - typewriters, adding machines, calculators, etc.

RADIOS

SOUND EQUIPMENT - - includes tape decks, stereo tapes, speakers, etc.

SPORT EQUIPMENT - - fishing gear, camping equipment, golf clubs, etc.

TOOLS - - includes power tools

WEAPONS - - Fire arms

MISCELLANEOUS - - all others - for example: keys, flash lights, etc.

LARCENY CARDS - CATEGORIES

ANIMALS - - includes accessories and foodstuffs

AUTOMOTIVE - - accessories, engines, transmissions, tires, etc. and motorcycle equipment

BICYCLES - - includes accessories

C B RADIOS

CAMERAS - - includes photographic equipment and supplies

CASH - - currency, notes, credit cards, checks, food stamps, wallets, etc.

CLOTHING - all wearing apparel except furs

DRUGS - - includes doctor's bags

FURS

GARDEN EQUIPMENT - includes lawnmowers

GROCERIES - - includes cigarettes

HOUSEHOLD ARTICLES - - includes TV's, furniture, dishes, etc.

JEWELRY - - includes precious metals and watches

LIQUOR

MARINE - - includes all boat supplies and equipment, except outboard motors

MOTORS - - includes outboard motors and all unattached motors

MUSICAL INSTRUMENTS

NO LOSS - - Attempts

OFFICE EQUIPMENT - - includes typewriters, adding machines, calculators, etc.

RADIOS

SOUND EQUIPMENT - - includes tape decks, stereo tapes, speakers, etc.

SPORT EQUIPMENT - - fishing gear, camping equipment, golf clubs, etc.

TOOLS - - includes power equipment

VENDING MACHINES - loss of contents and/or machine

WEAPONS - - Fire arms

MISCELLANEOUS - - all others - for example: keys, flashlights, etc.

A "FOLLOWUP" is a term applied to any information received regarding an event AFTER the original report has been made.

There are many different items that this term will apply to. The following is a list of some of these;

Additional reports

Impound Slips

Pictures

Checks

Receipts

Correspondence

CCDRs

Breathalyzer Report

Teletypes

Record Check requests

ETC.

As these items are turned in to the Event Desk they should be placed with the original event with the MOST RECENTLY DATED item on top. The dispatch slip and original event should be at the back, or bottom, of each event.

As these events are attached to the previous event reports each must be read and checked carefully to ascertain if any NEW names or NEW information ~~are~~ included. If you find that this is true, file cards must be typed for each of the names and/or items mentioned. In this way the card file is kept current with the new and additional information.

When attaching FOLLOWUP material to the event, be sure that each item is stapled firmly so that nothing will be lost or misplaced. When handling small items, such as pictures, it is best to place these into an envelope and tape the envelope to a piece of typing paper with the event number on it. Then staple this to the event. Also, small items such as checks, etc, should be taped to typing paper. This prevents loss.

In addition, when new material is added to the event, PULL the old staples and replace with new, through all the material. In this way, when the time arrives that material needs to be copied or microfilmed, we need only remove two or three staples rather than dozens.

Appendix B - Proposed Communications Concept

Emergency Dispatch Center (EDC)
Bellingham-Whatcom County

I. Introduction

The following presentation is an idealized concept of the administration, staffing, and technical support required for the operation of a 911 emergency dispatching facility for all emergency services in Whatcom County: police, fire, sheriff, and emergency medical.

It assumes that all problems related to funding and political and administrative control have been resolved and that the following support has been provided:

1. Administrative supervision reposes in the EDC administrator.

2. Operating staff consists of 13 trained and cross-trained personnel.

3. Sufficient hardware with software development to provide record generation, call prioritization, alarm and signal interface, ACCESS interface, and on-line event and unit status.

4. A physically and environmentally secure site.

The primary EDC objective is to provide easier, more readily accessible service to the citizens of Whatcom County, wherever they might reside. The goal to attain this objective is the establishment of sufficient incoming 911 lines to EDC so that all calls are answered before the fourth ring and that, when answered, there is either an immediate unit response to the scene of the emergency or that the caller receives sufficient assurance that the matter is being, or soon will be, attended so that no second call on that matter will be necessary.

The secondary, and equally as important, objective is to provide as good, or better, agency and unit service than is presently provided by the several agencies now conducting their own, or participating in those conducted by others, dispatch facilities. The goal to achieve this objective is to train and to cross-train all persons associated with or employed by EDC in communications, both technical and personal, sensitivity, EMT, and the varying needs and requirements of each of the participating agencies.

By responding immediately to all incoming calls, EDC will provide the service necessary to maintain public service. But, just as importantly, understanding and being able to respond to the needs of the participating agencies and of their field units will insure their support and continued participation.

Goal support for these two objectives will be as follows:

1. Eight 911 lines with provision for expansion to 12, if necessary.

2. One incoming limited service line from each participating agency.

3. One on-line mini-computer with disk drive and with disk storage sufficient for the system with all peripherals necessary for access and output. An additional mini-computer disk drive and storage for minimum down-time capability.

4. Two 911 call reception stations each with 911 lines only and with CRT/keyboard data entry/display devices.

5. Two dispatch stations, each with 911 backup lines, limited agency lines, separate radio transmitting/receiving capability on all required frequencies, and with CRT/keyboard date entry/display devices.

6. Full audio tape monitoring capability on all incoming lines and on all radio frequencies.

7. A physical site removed from the ongoing operations of all participating agencies and with access limited to those only concerned with the dispatch function or administration, and physically and environmentally secure from any interference or service failure.

If the necessary resources were provided, the following files and capabilities would be established through software development:

1. Verification. Each new incoming call record would be compared to all active call records, such comparison to be made by responding agency code, location code, and event code. Active call records would be those in "stack" awaiting first dispatch activity or those in "pending" awaiting additional dispatch activity.

2. "Stack." Newly verified call records will be compared to any prior calls waiting in "stack." Comparison will be made on agency and event codes to determine each call's relative urgency to other calls in "stack," and each call record will reside in "stack" in keeping with this priority and be extracted in the "most urgent call" order.

3. "Pending." Call records, once removed from "stack" by the dispatcher and to which a field unit and some

sort of field activity has been assigned, will be held in "Pending" awaiting final disposition.

4. "Holding." Call records having been removed from "pending" and having had final disposition entered, will be termed no longer active and will be placed in "holding." At this time, the complete call record will be output to hardcopy by printer and will provide Dispatch a means of reaccessing the completed record for further entry, if necessary, and will establish a means of EDC control.

5. Event Status. All call records in "pending" will have partial display on the Event Status section of all EDC CRTs. In this way, 911 call receivers can determine the ongoing status of previously handled calls while dispatchers, having the same capability, will be enabled to recall active records for amendment or updating.

6. Unit Status. A Unit File, relating to all units available by each participating agency, will be available in storage. Also available will be a Beat or Sector File describing overall division and sub-divisions for which each participating agency is responsible. By means of records generated at Dispatch (or elsewhere, if desired) at significant times (shift change, for example), the unit or units responsible for particular area or areas will be automatically supplied by the system in the Unit Status section of the Dispatch CRT(s) when each call record is displayed on that CRT from "stack."

7. Alarm-Signal Interface. All possible incoming police and fire alarms will interface with the system so that the incoming signal will be machine read, a pertinent call record created, verified, and placed in "stack." All such records will, additionally, signal affected agencies or units and provide hardcopy printout of pertinent information. All manual/semi-automated systems presently employed will be maintained in EDC in the event of system failure or programmed downtime.

8. ACCESS Interface. All inquiries of DMV, WACIC, and NCIC will be handled through the Dispatch station CRT(s) and will have ACCESS information displayed in the Inquiry section of those CRTs. Additionally, hardcopy printout of both inquiry and response will be maintained separately from EDC records and control purposes.

II. EDC Procedures.

With this kind of development, then, the following procedures would be followed by EDC personnel in handling all calls affecting the EDC function:

A. 911 Call Reception. Primary responsibility for all incoming 911 calls would be at the 911 call reception station(s). Secondary (or backup) responsibility would be at the Dispatch station(s).

1. An incoming 911 call would appear on a numbered line at all EDC stations. The 911 call receiver would answer the call by activating the proper button. The call receiver would first determine what service (law enforcement, fire, emergency medical) was required and make a key entry on this, thus producing the proper data entry format (or mask) on the data entry section of the call receiver's CRT. The call receiver would then enter the 911 line number which would cause the machine to add the EDC station number. The 911 call receiver would then enter the location and the event, the latter by code. At this point, the machine would enter the responding agency, by code, while the call receiver would enter the caller's name and address, if possible. Up until this point, only the call receiver's CRT would display the collected data.

2. The call receiver would then, by key, cause certain portions of this collected data to be compared to all calls, if any, then present in either "stack" or "pending." The compare would be made on agency, location, and event. If the compare were made, it would indicate that the call information was about to be, or already was, assigned to the responsible agency and the call receiver would be advised of this by a blinking data entry mask. He could then redefine available information from the caller and configure the data entry section as for a new message, or would advise the caller that the call was already being handled by EDC.

   If the compare were not made, that is if there were no similar call either waiting to be dispatched in "stack" or were being worked by Dispatch and in "pending," the call would be "verified." The call record in front of the receiver would then bear a machine-entered "call received" time and a master control number. When the call was "verified," the call receiver would key the call record to "stack," could configure his CRT for a new call or hold the present record, and could allow the caller to go off the line unless he felt further information by the caller should be given to Dispatch. In that event, he could ask the caller to wait on "Hold" and leave the line himself for other calls, or

stay on the line until Dispatch came on to handle the call.

3. When received in "stack," each call, as previously described, would be compared to any other calls present in "stack", and all would be ranked according to their previously determined urgency. Such urgency could be related to the nature of the call and, possibly, its location relative to the responding agency. All calls would remain in "stack" until such time as displayed on any active Dispatch CRT.

4. The Dispatch CRT, when active, would automatically display the next urgent call present in "stack," as previously described. That is, with no call records present in "stack," a call record just verified by call receiver entry would immediately display on the active Dispatch CRT after passing through "stack," while call(s) in "stack" would hold there until Dispatch CRT displayed it. The dispatcher would then note the call information being presented on the CRT data display section, consult the Unit Status display, and call the available unit. This Unit Status display would be provided automatically by agency as the call record moved from "stack" to the Dispatch CRT display. When radio contact was made with a proper field unit, the dispatcher could regain contact with the caller by accessing the 911 line as displayed and in this way provide the responsible field unit with additional or updated information. When satisfied that the field unit had sufficient information with which to proceed on the call, the dispatcher would key in the assigned unit's code. This would then enter a "time dispatched" entry into the call record. When satisfied that all available information from the caller had been obtained, the dispatcher could release the call and, by keying, place the call record into the "pending" file.

5. Each record in "pending" would be displayed on the Event Status section of the CRT. Further information regarding that event or further information regarding its status could be made by recalling the call record to the data entry section of the CRT. This would be done by consulting the Event Status display, finding the proper record, entering its master control number and a key to return the record to data display, and then amending or updating the record.

6. Call records returned to data display and entry would be held in "pending" until such time as a final disposition code was entered. When this was done and the

record keyed for removal from the data display section, the machine would enter a "time cleared" entry and the call record would go to the "holding" file. At the same time, a hardcopy printout would be provided in EDC and this record would provide visual means of reaccessing the call record, if needed, and provide EDC supervision an ongoing log of EDC activity.

B. Alarm-Signal Interface. All present police and fire alarms would be present in EDC in two modes, the present manual semi-automated system and a fully automated computer system.

1. All incoming alarms generating an electronic signal unique to its particular function or location would cause a machine-created call record to be generated and place in "stack." Each of these records would probably be of highest priority and would, therefore, be either immediately displayed on the active Dispatch CRT or would display on the first active CRT available. In either event, the insertion of the call record into "stack" would immediately and automatically notify the affected agency and its available units of the call. In particular applications (fire, emergency medical), it could also through hardcopy printout give them all immediate record information corresponding to that available.

2. When displayed on the Dispatch CRT, the dispatcher could confirm, by means of radio or available intercom, that the notification of the affected units had been made, could verify that the units were responding to the location as presented on the data display, and supply whatever additional information might become available to responding units.

3. All call records thus generated could them be handled, arrival, disposition, clearance, etc., as were calls taken by means of 911 lines.

C. Field Unit Calls. All calls to EDC from field units, whether by radio or by telephone, will be handled at Dispatch station(s) only.

1. Field units, whether as a result of their own perceptions or as a result of information received from other persons, would call Dispatch and provide the information necessary for call record generation.

2. Each such call received at Dispatch will cause the dispatcher to generate a record in a means very similar to handling a 911 call. A code for the kind of service requested will be keyed in which will cause an entry format for that service to be displayed. A

code related to the incoming radio frequency would be entered by the dispatcher while a code for the dispatcher's CRT will be machine-entered into the record. The dispatcher would then obtain and enter location and event information, then key the record for verification.

3. Verification will be similar to that described with 911 call verification. If the compare is made, the dispatcher advised the field unit that the information will be or is being handled already, and will be informed of this by the blinking data entry mask. If this is not the case, that is, no compare is made, the dispatcher will note that "time received" and the master control number have been entered and now appear on the display.

4. Once verified, the dispatcher would then key the call record to "stack." If other "stack" calls preceeded the new record in urgency, the new record would not reappear and the dispatcher would advise the field unit to "Standby." When the call record described did reappear, the call would then be handled as would any other call until placed in "holding."

D. Administrative Assignment. Dispatch stations only will have internal telephone lines available to all participating agencies. These lines will be used by the various agencies whenever they find it necessary to assign or redeploy the field units normally assigned to the EDC function. Such assignment or redeployment may be done by means of these dedicated lines or, in the case of supervisors or of the units themselves, may be done by radio.

1. When a dispatcher receives a call, either by telephone or by radio, which in some significant way affects the availability of field units for any participating agency, or which alters or otherwise affects the area or function for which that unit is responsible, he will by keying, produce a unit status record on the data entry section of the Dispatch CRT. This record will be called up by entry of the administrative record key and the agency and unit codes.

2. The dispatcher will then enter the redeployment or reassignment information and return the record to the Unit Status file.

3. In this way the availability of this unit for calls or its availability for calls originating in particular areas or jurisdictions can be amended without affecting the overall information available in the Unit File. At the same time, keying or automatic display of Unit

Status by agency will continue to reflect the actual availability of field units.

E. ACCESS Interface. This function of the system allows on-line inquiry to be made of all files available through ACCESS in Olympia, but without the need to prepare a paper tape before sending.

1. All necessary message formatting will be done by the system.

2. Inquiry of various available files would be done only by dispatchers using the Inquiry section of the Dispatch CRT(s).

3. Dispatchers would enter all necessary variable information in the order and mode required for teletype inquiry.

4. ACCESS response would be made in the Inquiry section of the Dispatch CRT(s).

5. All inquiries and responses would be duplicated on the teletype in Records for filing and control purposes.

III. Staffing

As presently envisioned, staffing for the best available EDC service lies in two areas. They are:

1. Operations.

2. System support.

Operations staff would consist of 13 dispatcher— call receivers, all completely trained in the technical support devices available in the facility. In addition, they would receive extensive training in the art of communication and the need for sensitivity when dealing with distraught or emotionally overwrought persons. All personnel should also be fully EMT trained so as to be able to provide immediate telephone assistance for callers of emergency medical incidents. This training will additionally provide the EDC personnel with considerable confidence and training in handling other types of emergency situations.

Systems support would consist of supervision, software, and equipment support. All three could undoubtedly be addressed by means of part-time service for other disciplines available, or made available, by other local governmental agencies.

1. Supervision. With proper systems design and with proper control through software systems and through checking of audio monitoring tapes, limited on-site supervision, and checking of record and ACCESS listings, supervision could be maintained and budget development done on a part-time basis from the agency having overall responsibility for the EDC.

2. Software support. The Bellingham City Council's ad hoc Data Process Committee recommended the immediate hiring of an assistant to the City's Data Process Manager. Such person, if hired during the design phase of this system, would assume a temporary but major responsibility in the overall design and implementation phase of the project, with a collateral assignment, once the EDC operation began, of software updating and maintenance. Since it was the Committee's recommendation that such individual have a computer science background with systems analysis and programming training and, hopefully, experience, the burden of the costs could be spread between departments or agencies.

3. Equipment support. The city's Radio and Alarm Division has already assumed a major role and has developed some expertise in the maintenance of much of the equipment to be found in the EDC. Additionally, they do have an individual with some background in EDP equipment maintenance who could be further trained in the equipment to be employed in this system. Alternatively, maintenance could be contracted out on a preventative basis, although emergency support would undoubtedly have to come from the Seattle area.

END