

Institutional Issues

Puget Sound Help Me (PuSHMe) Operational Test Task 1 Technical Memorandum

Final Report - August 1996

Prepared for the

Federal Highway Administration
Washington State Department of Transportation
Washington State Patrol

Prepared by

David Evans and Associates, inc.

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IBI Group
Motorola Space and Technology Systems Group
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1.0 INTRODUCTION

Safety is a major goal of the National ITS Program. To promote safety, the Federal Highway Administration (FHWA) funded a series of Field Operational Tests to evaluate two low-cost emergency and assistance communications and rapid response devices and supporting services. This type of mayday service allows a motorist to report an incident to a service center which alerts a service provider who dispatches aid to the scene. Mayday services can meet the national ITS goal of improving safety by “improving [emergency medical] and roadway service response, reducing the number of fatalities and the severity of injuries resulting from a collision, and reducing the number of pedestrian and vehicle collisions secondary to an incident.”¹

The implementation of these technologies will take place in the current E-911 / Emergency Service arena. This arena has its own protocols, technologies, regulations, liability and legal risks and regulations. These are the institutional issues a new mayday service will need to address. This report documents and analyzes the institutional issues surrounding successful implementation of in-vehicle Global Positioning System (GPS) equipped mayday devices as defined by the Puget Sound Help Me (PuSHMe) Field Operational Test conducted in Seattle, Washington.

1.1 PROJECT ORIGIN

The Puget Sound Help Me Operational Test originated in 1993 when the FHWA released a request for participation in the Intelligent Transportation Systems (ITS) Field Operational Test. This request sought offers from the public and private sectors to form partnerships to conduct operational tests in support of the National ITS Program.

Operational tests serve as a transition between research and development (R&D) and full scale deployment of ITS technologies. An operational test integrates existing technology, R&D products, institutional, and perhaps regulatory arrangements to test new technological, institutional, or financial elements in a real world test. The tests permit an evaluation of how well newly developed ITS technologies work under real operating conditions and assess the benefits and public support for the product or system.

The request called for the U.S. Department of Transportation (USDOT), through the FHWA, to create cooperative ventures with a variety of public and private partners including State and local governments, private companies, and universities. The request indicated a need to advance the National ITS Program in the area of emergency notification and personal security (driver and personal security). Evaluation was deemed to be an integral part of each operational test and critical to the success of the National ITS Program.

In response to this request, David Evans and Associates, Inc. (DEA), the IBI Group, the Advanced Technology Branch of the Washington State Department of Transportation (WSDOT) and the Washington State Patrol formed a partnership to conduct an operational test of an Emergency Notification and Personal Security system. The

¹ National ITS Program Plan, USDOT, Fuller, Robertson, eds. March 1995.

University of Washington was asked to provide an independent evaluation. Negotiations with several technology providers resulted in the participation of XYPOINT and Motorola.

1.2 PROJECT PARTNERS AND ROLES

The PuSHMe project team consisted of a consortium of three public agencies, five private corporations and an academic institution. The Federal Highway Administration (FHWA), the Washington State Department of Transportation, and the Washington State Patrol sponsored the project, provided support and approved the various work elements. The private sector contributed approximately 18 percent of the budget. DEA was the prime contractor and had overall management responsibility. The IBI Group, Inc. assisted DEA with project implementation, integration, administration, and management. In addition, IBI Group led selected technical activities primarily associated with system integration and interfaces between the two technology providers and the University of Washington. Motorola and XYPOINT were the technology providers and provided emergency notification devices and customer response center systems. RSPI provided response center experience and expertise.

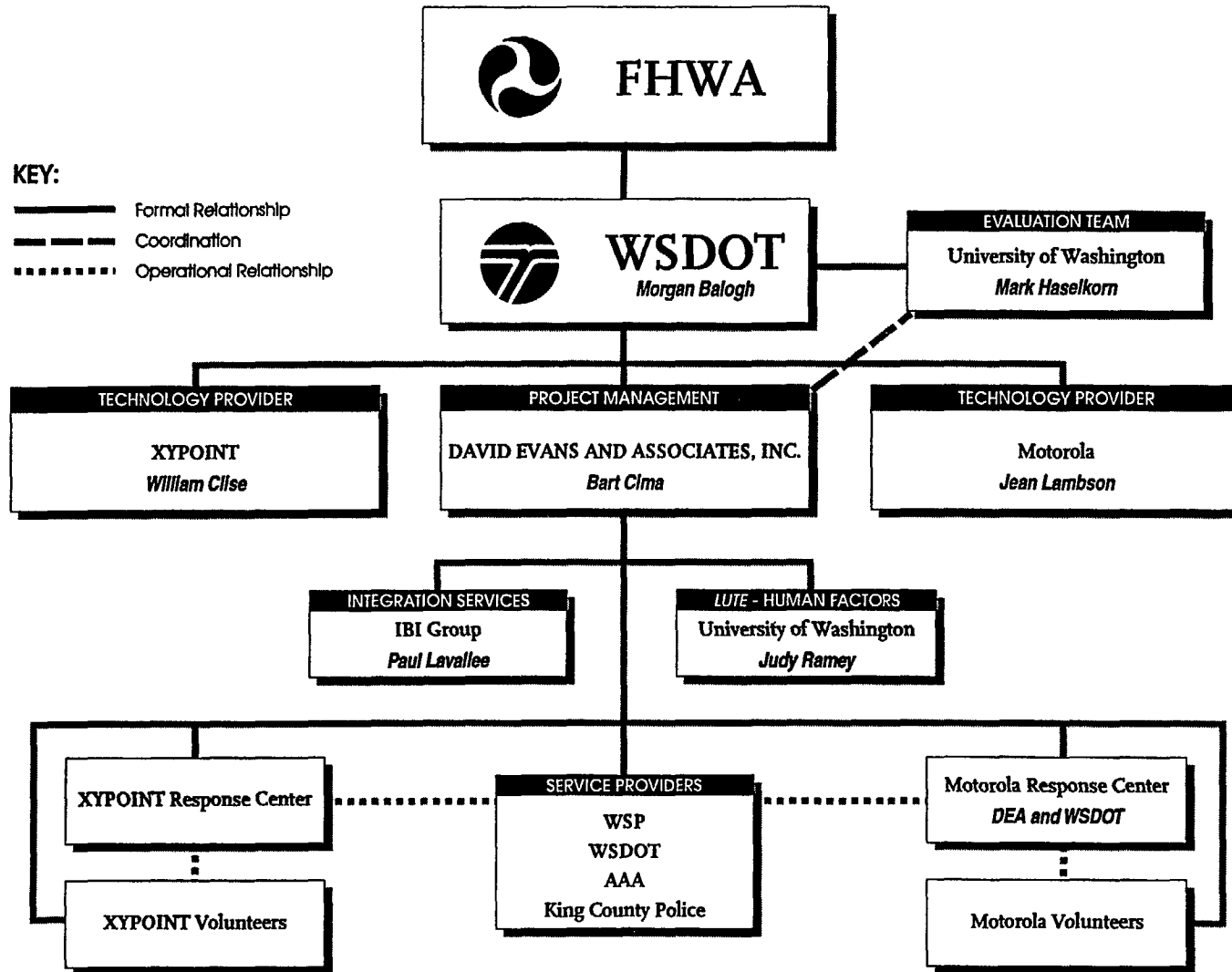
Two groups at the University of Washington participated in the PuSHMe project. The primary role of the Laboratory of Usability Testing and Evaluation (LUTE) which is part of University of Washington's Technical Communications Department, was to determine the requirements of the response center personnel. This effort included determining the requirements necessary for response centers and technology providers to support a mayday service.

The Evaluation Team consisted of staff from the Technical Communication Department at the University of Washington. This independent evaluation team determined with the project team the PuSHMe test objectives, prepared the project's evaluation plan, assisted DEA in the development of the field testing plan, evaluated the data collected as part of the User Group Deployment, and will prepare an evaluation report.

AT&T Wireless Services was not a signatory of the PuSHMe memorandum of understanding. However, they donated cellular air time, installed the Motorola emergency notification devices and provided access to the Puget Sound region's Compressed Digital Packet Data (CDPD) network.

Figure 1.1 shows the organizational chart. This chart also describes the relationships between the members of the project team. During the project, the project team participated in bi-weekly conference calls to discuss relevant issues.

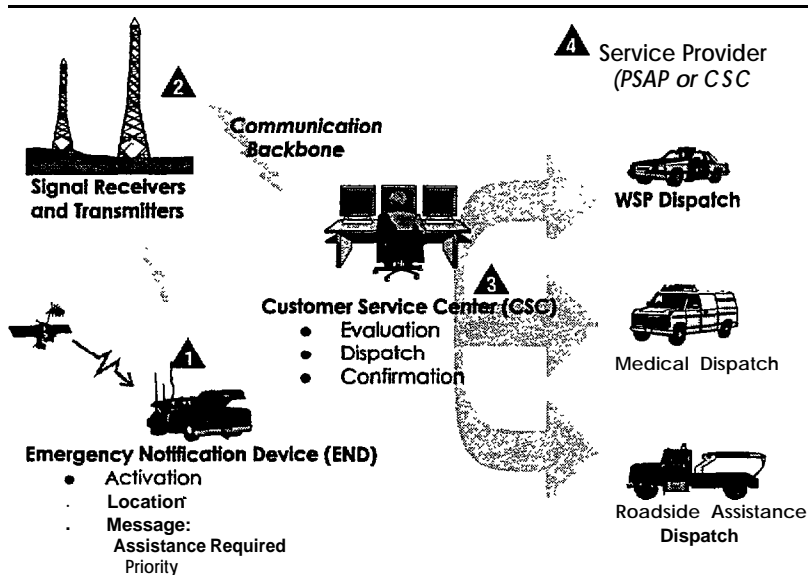
**Figure 1.1:
Organizational Chart**



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1.3 MAYDAY OPERATIONAL OVERVIEW AND CONCEPT

Figure 1.2:
PuSHMe System Concept



As shown in **Figure 1.2**, a typical mayday call involves a customer needing assistance, pushing a button on their device, their problem and location being transmitted to a service center, the service center calling the appropriate service provider, and service being dispatched to the scene. The mayday call would arrive with Global Positioning System (GPS) data that provides the exact location of the caller. The mayday operator

would be located in a Customer Service Center (CSC) that maintains a database of customer information (e.g. medical information, emergency contacts, etc.). The CSC, operated as a subscription service, allows quick access to customer information in an emergency. The service provider is a Public Safety Answering Point (PSAP), commonly known as a E-911 center, or another CSC that dispatches aid or communicates medical advice.

Regional mayday systems can provide a wide range and delivery of services. While these systems have some of the characteristics of alarm, incident response or emergency services, they go beyond these. Unlike home alarm companies, the operators of a mayday system will usually be contacted directly by a customer and not an automated alarm system. Unlike auto clubs or an ambulance service, the mayday operator will not, in most cases, directly dispatch service. However, calls on a mayday system may include automotive, personal injury, criminal, or traveler assistance calls. The types of calls a mayday operator will need to respond to will be more varied than most of these established private subscription services.

A PuSHMe system could offer benefits to both the customer and the PSAP community. The customer benefits from having a PuSHMe system by knowing that, when necessary, they can signal an alert with the push of a button and be assured that the mayday service provider will know their exact location and provide a customized response. A PuSHMe service can offer several benefits to the PSAP community. Better location data, personal medical histories, pertinent personal information, and duplicate call reduction or consolidation are some of these benefits. This type of service, if delivered effectively, will provide better information in emergency situations to PSAPs while reducing customer stress in an emergency.

1.4 PUSHME TECHNOLOGIES OVERVIEW

The Puget Sound Help Me (PuSHMe) project evaluated two GPS-equipped mayday prototype technologies: a Motorola system employing an analog cellular phone and a XYPOINT system utilizing a two-way pager operating on the Cellular Digital Packet Data (CDPD) protocol network. Each device has three main buttons that designate the type of emergency. This allows the CSC to prioritize and tailor their response based upon the users perception of their problem. The Motorola device uses Police, Automobile, Traveler's Assistance, and a hidden panic button. The XYPOINT device uses the following emergency buttons: Emergency, Medical, and Automobile. The XYPOINT device also has Yes and No keys to communicate with the CSC.

The basic functions of the two devices are similar. A user sends an emergency call to a Central Service Center by pressing a button on the device. The CSC receives and processes the call and sends location, incident and subscriber information to the appropriate emergency service. In obtaining and refining information, the Motorola device has a cellular phone link that provides voice contact between the user and the CSC. The XYPOINT device has a display screen that the CSC can use to ask the user questions. The user responds using the device's "Yes" and "No" keys.

Both the Motorola and the XYPOINT systems use GPS technology to locate callers and map based Geographic Information Systems (GIS) to display the location of callers. The GPS information for both systems was also *differentially* corrected. Differential correction is necessary to improve positioning signal accuracy provided by the GPS satellites deployed by the United States Government. With uncorrected GPS, data is accurate within 100 meters. Differential correction can provide accurate location information within three meters. GPS data is provided in latitudinal and longitudinal coordinates. GIS system takes the coordinates and ascribes them to points on a map. GIS is also capable of providing landmarks and routing information. Together, these allow the CSC operators to give real-world locations to service providers when reporting mayday calls.

Both mayday systems also provide customer databases that link data generated when a call is received to pre-entered customer information. This information can include automobile, medical, and other relevant personal information. In the event the user cannot communicate, these databases can provide important emergency information.

1.5 PUSHME FIELD OPERATIONAL TEST OVERVIEW

The PuSHMe project included usability, marketability, technological and institutional evaluation. The PuSHMe partners were responsible for designing tests and facilitating the data collection, conducting the tests of the devices, and providing the data to the Evaluation Team. The Evaluation Team was responsible for setting sample sizes, defining the evaluation tests, and processing and evaluating the data. Tasks were carried out as set forth in the *Detailed Evaluation Plan* (November 17, 1995).

The usability evaluation determined how the participating users interacted with the devices. This portion addressed whether people understood the buttons, if they could use the system under duress and their general reactions on how the devices and system operated. This information was gathered through direct experience with the devices and interviews with users and questionnaires.

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The marketability evaluations identified the demand, the market, and what public / private partnerships could best meet such a demand for an in-vehicle mayday system. The evaluation created a series of hypothetical mayday systems and used them to determine what choices and options users would most value in a mayday system. The best possible public / private service provision scheme was then determined.

The technological evaluation included three types of tests: the Partial Field Test, the Full Field Test, and the Specific Tests. These tests were conducted over a seven month period between November, 1995 and May, 1996. The specific tests were:

- The Partial Field Operational Test which included roughly 200 volunteers using the devices daily to provide a measure of how quickly and reliably the system could accept, recognize and prioritize a call.
- The Specific Tests which analyzed the specific functions of the devices. The Specific Tests included the dropped carrier, moving, topographic interference, location specific, and nation-wide tests.
- The Full Field Operational Test which simulated and evaluated mayday calls from start to finish, including the dispatch of emergency services.

1.6 REPORT STRUCTURE

This report details the institutional issues for the initiation and operation of an in-vehicle mayday Customer Service Center (CSC) and the provision of service by examining the existing institutional issues faced by CSCs and Public Safety Answering Points (PSAPs). The report focuses on establishing such a system in the Puget Sound region, but the institutional frameworks and lessons learned could be useful to mayday systems elsewhere in the United States. Establishing and operating a PuSHMe style system, whether operated by as private or public service needs to address a wide range of issues including: initiating and maintaining contact with area PSAPs; liability protections; legal protections; training for operators; certification; and a knowledge of the area. This report is divided into the following sections:

- **Section 2.0** - describes the roles and protocols of typical PSAPs;
- **Sections 3.0 and 4.0** - provide a background of the current existing services, including technologies, staffing, training, protocols, operating agreements and certification of PSAPs and CSCs, as well as PSAP cellular call loads;
- **Section 5.0** - provides an overview of legal issues for public and private service centers including safeguards against liability litigation, licensing and privacy issues with existing laws, and representative case-histories;
- **Section 6.0** - describes the results of a focus group on mayday technologies and issues;
- **Section 7.0** - presents lessons learned from the PuSHMe Full Field Operational Test (simulation that took a call from its inception (device activation) to the arrival of emergency service); and
- **Section 8.0** - recommendations for the implementation of a mayday CSC including licensing, liability insurance, training, operational criteria, and service provision.

2.0 THE ROLE AND OPERATION OF A PSAP

Public Safety Answering Points (PSAPs) receive millions of emergency calls per year. Two trends have resulted in a significant increase in the number of Enhanced 9-1-1 (E-911) calls regarding roadway incidents. First, the total number of auto-related incidents (accidents and other road-related incidents) are on the rise as urban vehicle-miles traveled have grown over the last decade. Second, the usage of cellular phones is rising. Most mobile E-911 calls in the Puget Sound area are routed to the Washington State Patrol (WSP). About 50 percent of the calls need to be redirected to other emergency response agencies. In addition, the WSP receives a high volume of duplicate calls reporting the same road incident, which clog the E-911 lines several times a day. Recent studies reveal that each minute of auto related incident blockage can create up to eight minutes of traffic congestion in the off-peak period and up to 50 minutes in the peak period. Duplicate calls and transfers reduce the E-911 agencies' ability to effectively and quickly deal with incident calls, causing longer response time and increasing congestion. In general, decreasing the response times will increase safety. Mayday technologies have features that may decrease the number of duplicate calls and transfers that E-911 centers receive as well as features that may provide more accurate location and other pertinent information.

Time is a critical factor in defining emergency situations. Each call needs to be handled consistently to ensure that a rapid response is provided. Each PSAP has a set of standard call answering protocols, but neither regional nor national standards exist. The development of these standards is underway, but consensus will not be reached in the near term.

A mayday service requires a good working relationship with the PSAP community to operate effectively. This is the community that will receive mayday requests for service and dispatch emergency aid. This chapter defines what a PSAP is and outlines the protocols for receiving, transferring, processing, and closing an emergency call for several PSAPs in the Puget Sound region. Generic data items necessary to properly process an emergency call are identified.

2.1 WHAT IS A PSAP?

A Public Safety Answering Point or PSAP is commonly known to the general public as an E-911 center. When a person dials 9-1-1 on a telephone, this emergency call for assistance is automatically routed to a PSAP. A PSAP takes information from callers and dispatches emergency service, if necessary. PSAP operator and service dispatcher duties can be split among teams or handled by one person, depending on the work load. PSAPs also have roles beyond answering E-911 calls and dispatching service. In addition to this, a typical PSAP will often:

- facilitate communications between emergency response field units;
- take messages for officers and investigators;
- run vehicle and criminal checks for officers;
- give medical advice or instructions;
- take reports on incidents or situations;
- console distressed callers; or

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- provide road condition or other information when appropriate.

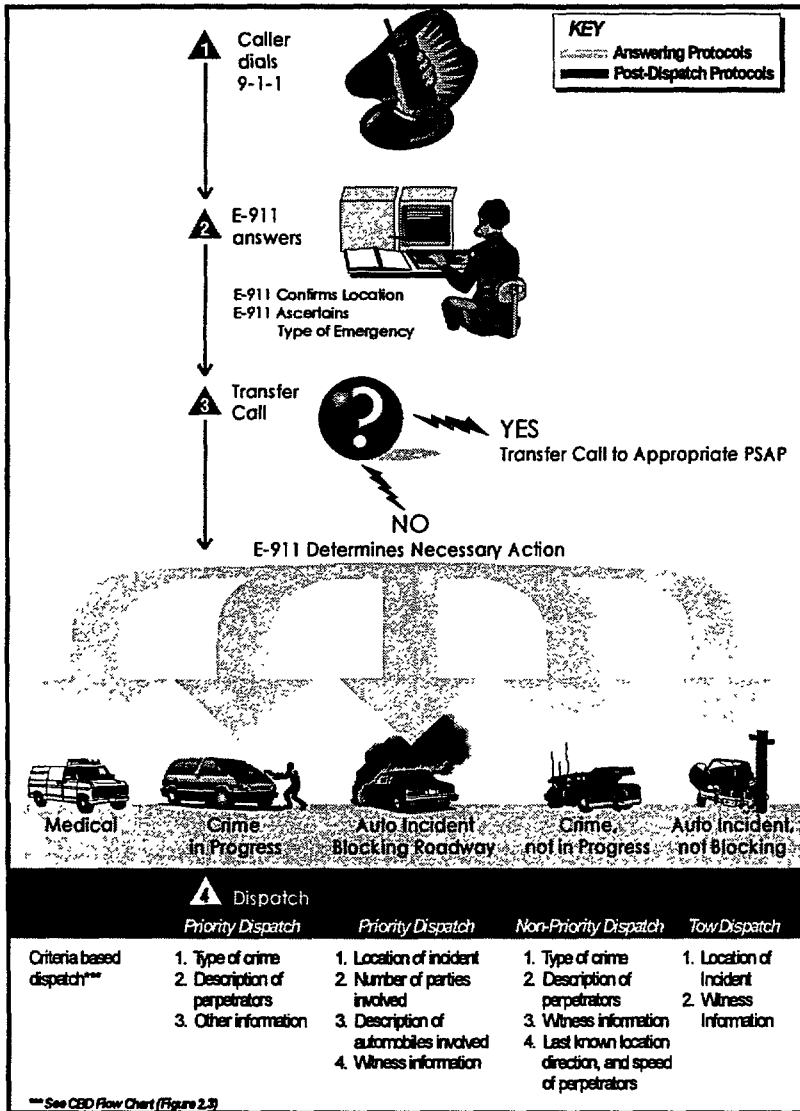
The PSAP operators and dispatchers have different duties, functions and training depending on the mission of their agency. For example, the Washington State Patrol (WSP) handles vehicle and roadway emergencies only on major state highways. Medical calls are transferred to a center that handles medical emergencies. The King County (Seattle, Washington) operators and dispatchers use detailed protocols to handle medical incidents. Their operators can give medical advice or instructions while emergency help is on the way.

Each PSAP operates within a defined jurisdiction. When a call is placed from another jurisdiction it is transferred to the appropriate PSAP. Sometimes PSAPs can borrow resources from or share them with another PSAP to combine coverage and increase efficiency in the event of disaster or personnel shortage. The PSAP operators and dispatchers must be aware of jurisdictional boundaries and agreements in order to quickly and correctly respond to or transfer a call.

Although each PSAP follows their own protocols for handling calls, the process for handling calls is similar. Most PSAPs use Computer Aided Dispatch (CAD) systems to assist the operators in taking information, tracking calls, and dispatching assistance. CAD systems route calls to operators, store call information, display active and dispatched response units, and perform other functions. Upon answering the call, the operator enters the caller's information into the CAD system. The call is now an active incident. PSAPs update each event on their CAD system. The CAD system also provides a list of the current resources (i.e. response units) in the field and their current assignments. The status of each resource is noted, generally in color coded text for a quick visual interpretation (e.g. green highlighted text representing a clear resource, yellow representing a resource enroute to an incident, and blue a resource currently engaged at an incident). Radio contact between the response centers and their resources provide continual updates. These updates are entered into the CAD system allowing all the personnel in the center to see the activity and keep updated on the status of resources. PSAPs confirm response by radio contact with their resources. Upon confirmation from the resource, PSAPs change the status of incidents from active to closed in their CAD system.

2.2 ANSWERING PROTOCOLS

Figure 2.1:
Typical PSAP Call Flow



Calls received at a PSAP generally come over the phone from a person in distress. The PSAP operator must answer the call consistently and professionally. Answering protocols are designed to determine the state of caller, the nature of the emergency, and the location of the emergency. This allows the operator to determine the type of assistance to be dispatched and the jurisdiction of the emergency service best suited to respond. The typical protocols for a PSAP are shown in Figure 2.1. In a typical call, the caller dials 9-1-1, reaching the appropriate PSAP. Staff at the PSAP identify what the problem is, who is calling and where they are calling from. If they are calling regarding a problem in

another jurisdiction, the call is immediately re-routed. If the call is in the PSAP's jurisdiction, the appropriate service is dispatched. Figure 2.2 illustrates specific protocols for an example PSAP. The protocols are flexible, allowing the operator to respond to the situation. The most critical information is the location of the emergency. Rapid call transfer is critical for rapid aid dispatch. By and large, the protocols specific to the agency are designed to determine whether a call is one they handle and, if not, the appropriate PSAP to forward it to. Using agency protocols, operators are usually able to screen and transfer calls in under a minute.

It is very difficult to predict the factors involved in an individual emergency. A simple disabled vehicle call can quickly change to a multi-car pile-up or a life-threatening injury which may necessitate immediate help. For this reason, E-911 operators are often

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trained to provide medical triage and CPR information over the phone, even if the agencies themselves do not handle medical calls.

Many PSAPs that handle medical calls will use Criteria Based Dispatch (CBD) methodologies that provide protocols to follow for different types of health related emergencies. **Figure 2.3** shows the CBD flow for King County, Washington, and the categories of different emergencies covered. There are separate protocols for each of these categories. These protocols can be found in **Appendix A**. **Figure 2.4** shows the general CBD flow for the Snohomish County Police and Auxiliary Communications Center (SNOPAC) in Snohomish County, Washington, north of Seattle. This center handles health related emergencies as well as police and fire. Details of these health related emergencies can be found in **Appendix B**.

Figure 2.2: Sample Protocols

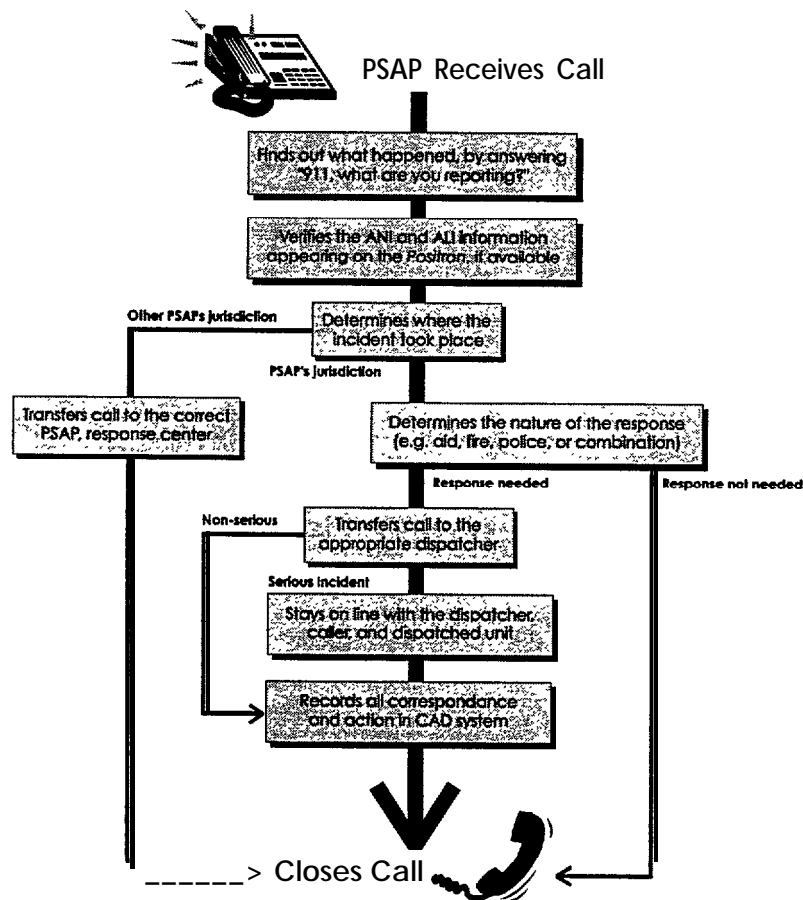
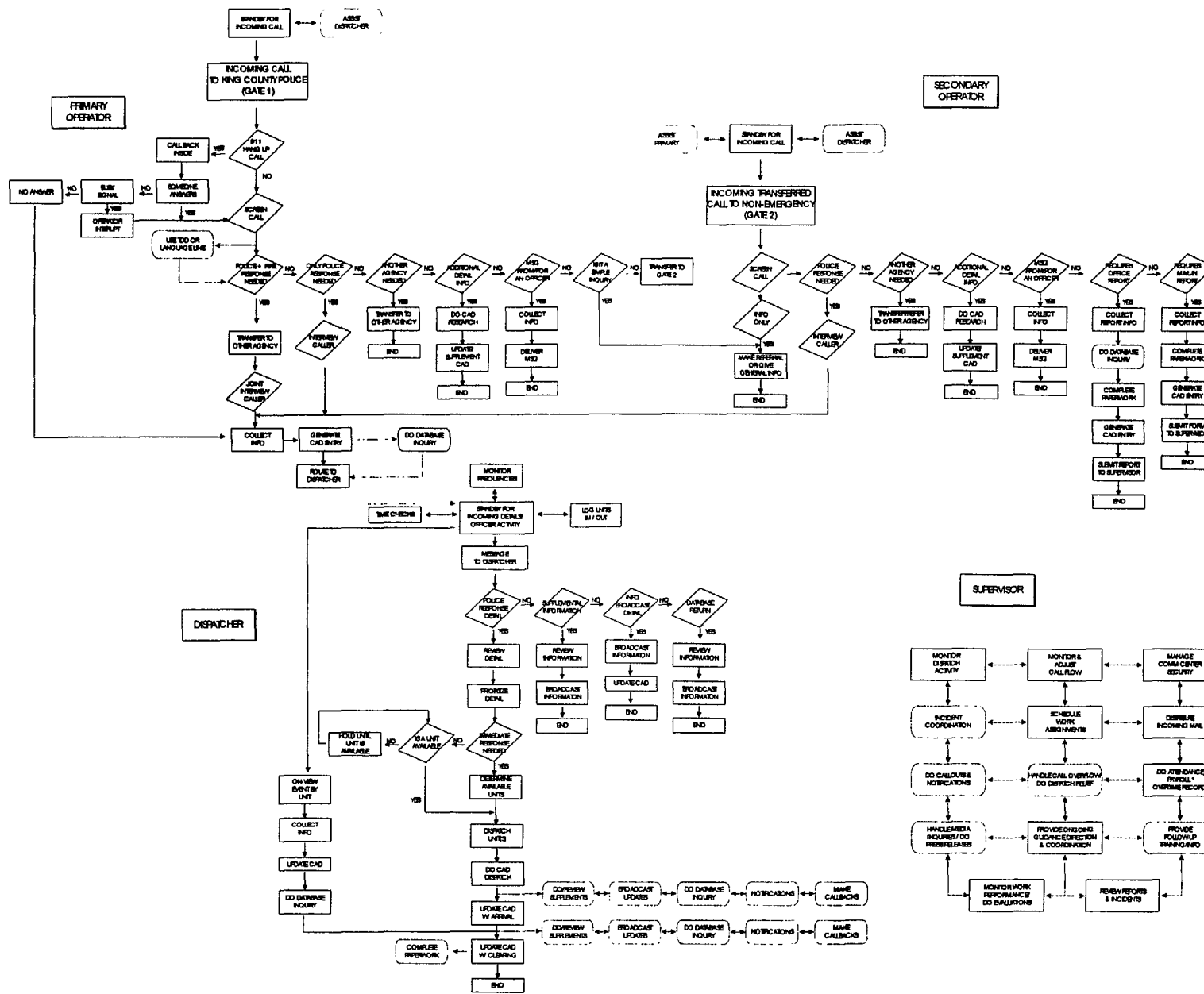
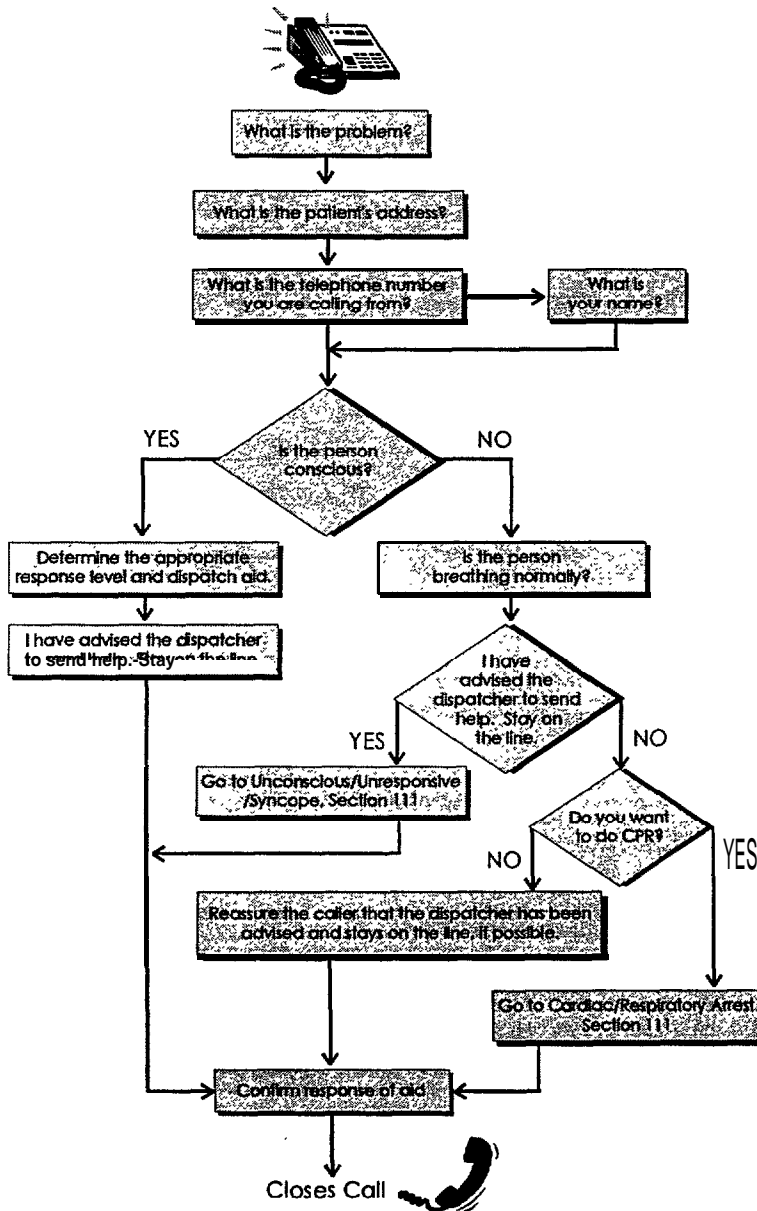


Figure 2.3:
King County Call Flow



2.3 TRANSFER PROTOCOLS

Figure 2.4:
SNOPAC Criteria Based Dispatch



Transfer protocols provide agencies with ground rules for transferring a call from one PSAP to another. This usually happens when a PSAP has received a E-911 call that is not in their jurisdiction or for an emergency type to which they do not provide a response. Transfer protocols ensure that a call will be transferred to the proper jurisdiction with the proper information in the fastest way possible.

Calls that have come in on the special 9-1-1 lines can be transferred with the push of a button. The caller is directly transferred to the appropriate PSAP and the operator goes on to another call. When calls come in using a regular seven digit number (i.e., not 9-1-1) the caller is generally given the seven digit number of the appropriate PSAP. The caller must then hang up and redial.

When these calls are transferred, no verbal information is exchanged between the PSAP operators. Caller number and location information is

transferred through the E-911 system. An E-911 system transfers data with calls that enter the PSAP through the E-91 1 trunk lines. Currently these lines are accessed only by dialing 9-1-1, that routes an emergency call to the nearest response provider. Work is currently in process to provide seven digit call access to the E-911 system to allow services, like mayday services, to be able to specifically direct calls to PSAPs that are not in the area from where the call is being physically made.

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When a call is transferred, the original PSAP operator leaves the loop as quickly as possible and the new operator takes the call with any E-911 information. This reduces potential confusion caused by having too many people on the line at one time.

For CSCs that monitor building alarms, the alarm company operator calls the PSAP directly using a seven digit number, often without voice contact with the subscriber. The emergency is often passed onto the PSAP before the alarm is verified or the subscriber is contacted. The alarm companies do try to verify the alarm. Often the alarm is going off when no one is in the building. The alarm company provides the address, the subscriber's information and the alarm type to the PSAP. PSAPs have different protocols for responding to these alarms due to the high rate of false alarms. Many cities have statutes fining subscribers for false alarms over a certain number (see Section 5.5). Many police departments will stop going to certain addresses in response to an automated alarm. In most cities, police treat automated alarms as a low priority.

2.4 POST DISPATCH RESPONSE

After dispatching emergency response units, the operator often has several tasks to complete. The operator may need to get personal ~~information~~ ^{information from} the caller (name, address, daytime phone) or give detailed medical ~~triage advice~~ ^{triage advice}. In many cases, the caller is involved in an evolving situation (a crime ~~or other event~~). The operator will stay on the line to monitor the progression of the event, gather further information, and update the response units. It is also common for the operator to stay on the line to comfort the caller until service arrives.

Criteria Based Dispatching (CBD) continues to be in effect after dispatch. As Figures 2.3 and 2.4 indicated, the actual dispatch of service happens as soon as the type and the severity of the medical emergency is ascertained. However, the operator's job regarding triage may continue until emergency service arrives on the scene. The operator / dispatcher may need to communicate CPR or other event related medical procedures.

Upon arrival, the emergency response units will notify the dispatcher. The responders will then provide updates or ask the dispatcher questions. This may include running criminal record checks, automobile registration checks, medical backgrounds, etc. Finally, the emergency response unit will clear the call and enter back into active duty, allowing the dispatcher to send them to another call.

2.5 INTERAGENCY AGREEMENTS

Interagency agreements establish physical boundaries as well as liability for calls among the PSAPs. PSAPs are affected by two types of interagency agreements: those between agencies (e.g. police, fire, etc.) and those between PSAPs. Agencies enter into agreements with each other to govern the handling of calls that cross jurisdictions or occur in special handling areas. In some instances, the units for one jurisdiction are not allowed to cross into another jurisdiction's territory. In others, joint operating agreements exist that allow services to operate within their agreed upon boundaries. These agreements facilitate travel for units between non-contiguous sections of a jurisdiction or set parameters for handing off moving emergencies. PSAPs need to be

aware of these agreements when dispatching service – especially in the case of a moving event.

PSAPs have unofficial operational agreements regarding the transfers of calls. As mentioned in Section 2.3, the basic aim in transferring a call is to transfer it as quickly as possible, so most transfers involve little or no information exchange – the PSAP simply transfers the caller directly. Since most calls come in by dialing 9-1-1, any E-911 information to the new PSAP is transferred via the 9-1-1 call transfer system (see Section 3.5.4). Only in rare instances is it necessary to call the original PSAP and obtain information because the call is transferred before much information has been gathered. The simplicity of this procedure makes formal written interagency agreements unnecessary.

Agencies can also enter into arrangements to provide minimal coverage. One example of this is The Washington Cities Insurance Alliance (WCIA), a group of 80 agencies that have entered into a mutual insurance pact. Six of these agencies are PSAPs. Claims payable by one agency in the alliance are paid for by a pool of money maintained by the alliance as a whole.

3.0 EXISTING PSAP CHARACTERISTICS

3.1 PUBLIC CENTERS OBSERVED

A Public Safety Answering Point (PSAP) acts as the public's liaison to emergency services provided by city, county, and state agencies. These centers provide call answering and dispatch services for Washington State Patrol (WSP), city and county police, fire and aid departments. Currently, PSAPs within the Puget Sound region operate autonomously with their own policies, technologies and training requirements. This chapter provides an overview of the existing operations of PSAPs in this region, and examines the following subjects:

- Coverage and Responsibilities;
- Call Demands;
- PSAP Call Characteristics;
- Technology;
- Staffing Requirements; and
- Training and Certification.

A total of six public response centers were observed in this effort. These represent a range of centers varying in size, location, jurisdiction, mission, and level of technology (see Figure 3.1).

The PSAPs observed were:

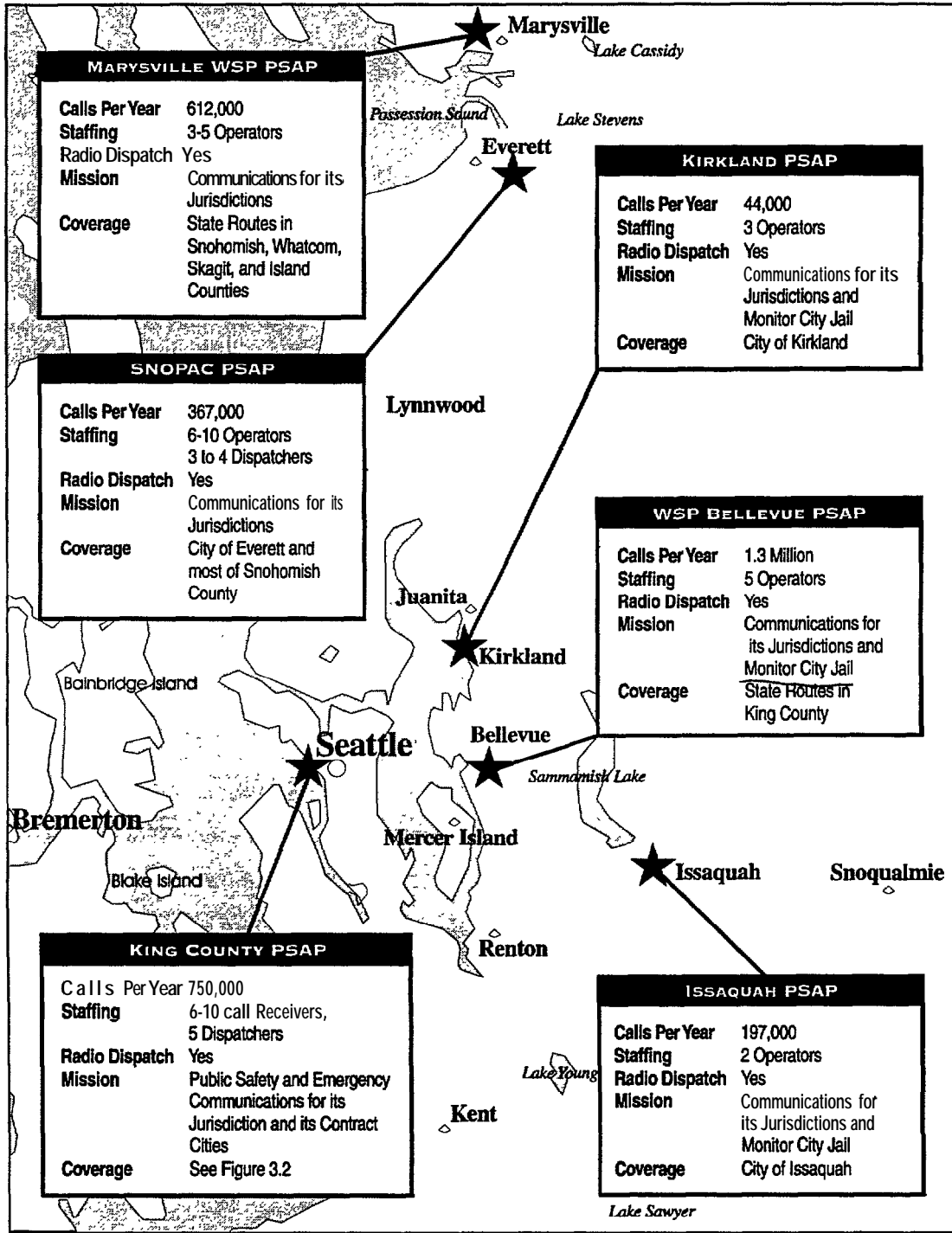
- Washington State Patrol (Bellevue);
- Washington State Patrol (Marysville);
- King County Police Communication Center PSAP;
- Issaquah (PSAP);
- Kirkland (PSAP); and
- SNOPAC (Snohomish Police Staff and Auxiliary Service Center).

This chapter details the operation, staffing, layout, and other characteristics of these PSAPs. The information illustrates PSAPs' diverse methods of operation.

3.2 PSAP OVERVIEW

This section provides a general description of the observed PSAPs, including their coverage and responsibilities. Coverage and responsibilities define the jurisdiction and mission of a PSAP. Coverage in small cities is usually fairly clear and defined. However, the larger centers often contend with confusion in coverage because jurisdiction boundaries are not always logical or contiguous. Some examples of this are Washington State Patrol, whose coverage areas are state routes and highways which cut through other jurisdictions or King County Police, whose coverage is unincorporated King County (see Section 3.2.3). The commonality of these responsibilities causes centers to be fairly similar when providing this service, although differences still exist between centers.

Figure 3.1: Observed PSAP Locations



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3.2.1 Washington State Patrol (Bellevue)

The Bellevue WSP PSAP receives 1.3 million phone calls per year. This is more than any other PSAP in the state. The Bellevue WSP staffs their center with three to five employees each shift, performing both call receiving and dispatching duties. Each call receiver/dispatcher covers dispatching for a different subsection of King County.

The Bellevue WSP coverage includes all designated state routes in King County. The WSP's responsibility is to provide communication services to citizens, state patrol troopers and other service providers in its jurisdiction. The WSP only dispatches state patrol units to state emergency incidents on state highways.

3.2.2 Washington State Patrol (Marysville)

The Marysville WSP PSAP receives 612,000 calls per year and staffs their center with three to five employees each shift. The staff handles both call receiving and dispatching duties. Each call receiver/dispatcher covers dispatching for a different subsection of the coverage area.

The Marysville WSP coverage includes all designated state routes in Snohomish, Whatcom, Skagit and Island Counties which comprise the northwest corner of Washington state. The responsibility of WSP is to provide communication services to citizens, troopers, and other service providers in its jurisdiction. The WSP only dispatches state patrol units to state roadway emergency incidents on state highways.

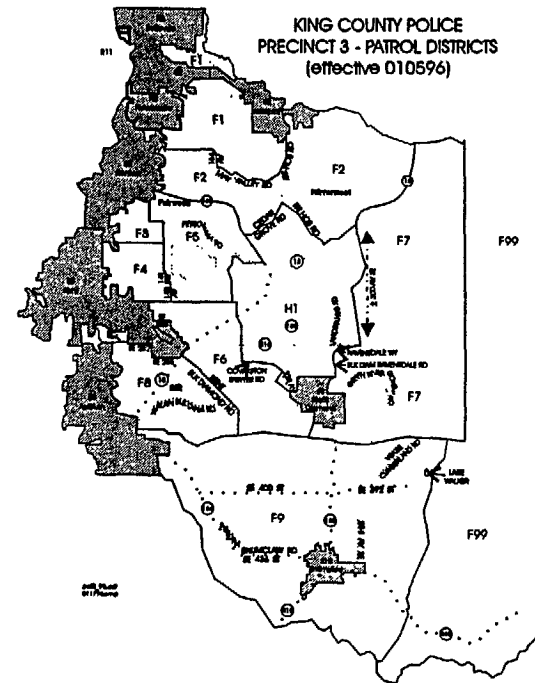
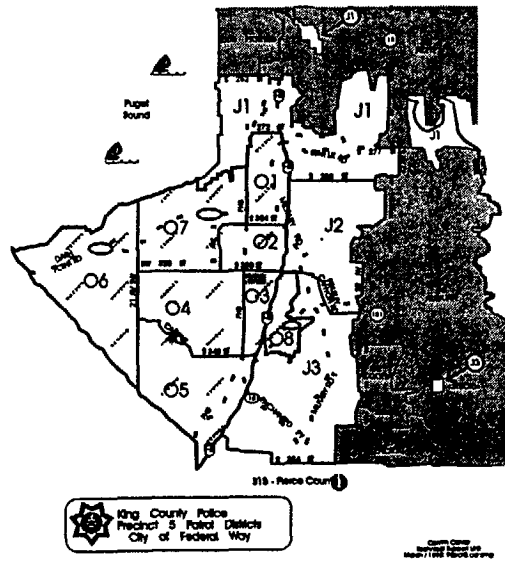
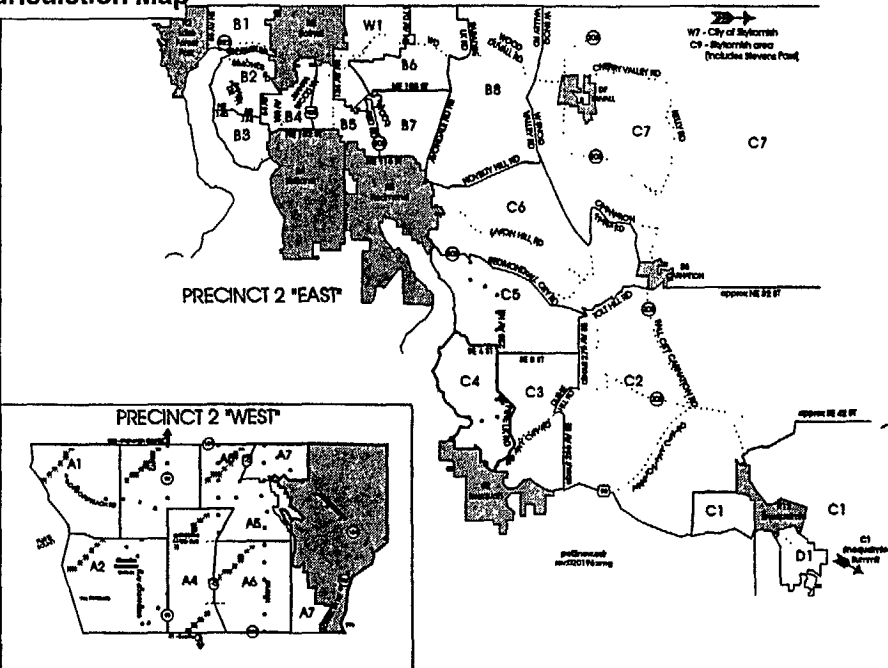
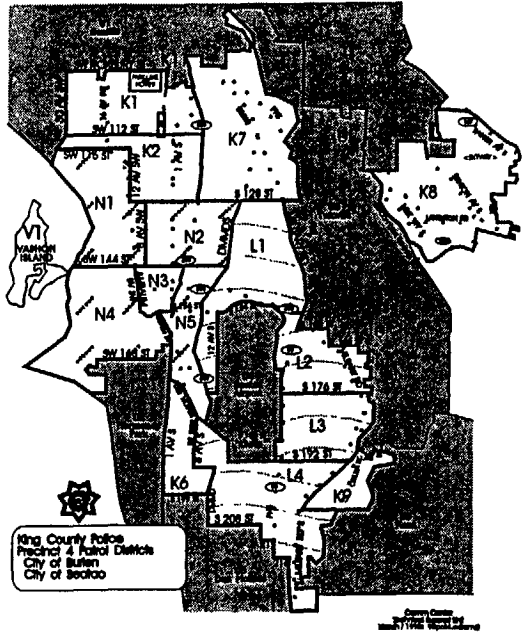
3.2.3 King County Police Communication Center PSAP

The King County PSAP receives approximately 750,000 calls per year. King County services these calls with six to ten call receivers and five dispatchers per shift. The five dispatchers are directly linked to associated police units in four precincts and three contract police department. King County has two types of call receiving: primary (emergency) and secondary (non-emergency). Primary calls are handled on the E-91 1 phone lines, while secondary calls are transferred to a normal phone line. Secondary calls are handled on a separate line to keep the E-91 1 lines free. Two thirds of all calls that the center receives are primary calls. The center also handles disaster response for the Office of Emergency Management (OEM).

Figure 3.2 shows the jurisdiction of the King County Police which encompasses unincorporated King County. Several incorporated areas surround and isolate unincorporated areas, creating islands of jurisdiction within the county. King County has several operating agreements that allow King County patrol cars to pass through other jurisdictions.

The King County Police jurisdiction is divided into four precincts. Precinct 1 is reserved for King County Police headquarters. The County's coverage includes unincorporated King County including contracts with various small cities. In addition, they also dispatch police for the small outlying cities of Duvall Carnation, and Black Diamond. King County Police does not dispatch fire and aid units. The mission statement of the King County Police Communication Center is to provide quality public safety and

Figure 3.2
King County Jurisdiction Map



LEGEND
Shaded and Hatched Areas not served by King County Police

NOTE: PRECINCT 1 IS THE KING COUNTY HEADQUARTERS

emergency communications services to the citizens, officers and other service providers of King County and its contract cities, assisting in achieving the Department's goal of promoting, preserving, and protecting quality of life, security and safety.

3.2.4 Issaquah PSAP

The Issaquah PSAP has two people who perform both call receiving and dispatching duties. Issaquah uses a radio dispatch system and police officers have 800 megahertz portable radios.

The coverage area for the Issaquah PSAP is limited to the City of Issaquah . The responsibility of the Issaquah PSAP is to provide communication services to citizens, officers, and other service providers within incorporated Issaquah. They provide dispatching on police related response incidents. In addition, this center monitors the city jail.

3.2.5 Kirkland Police Communication Center PSAP

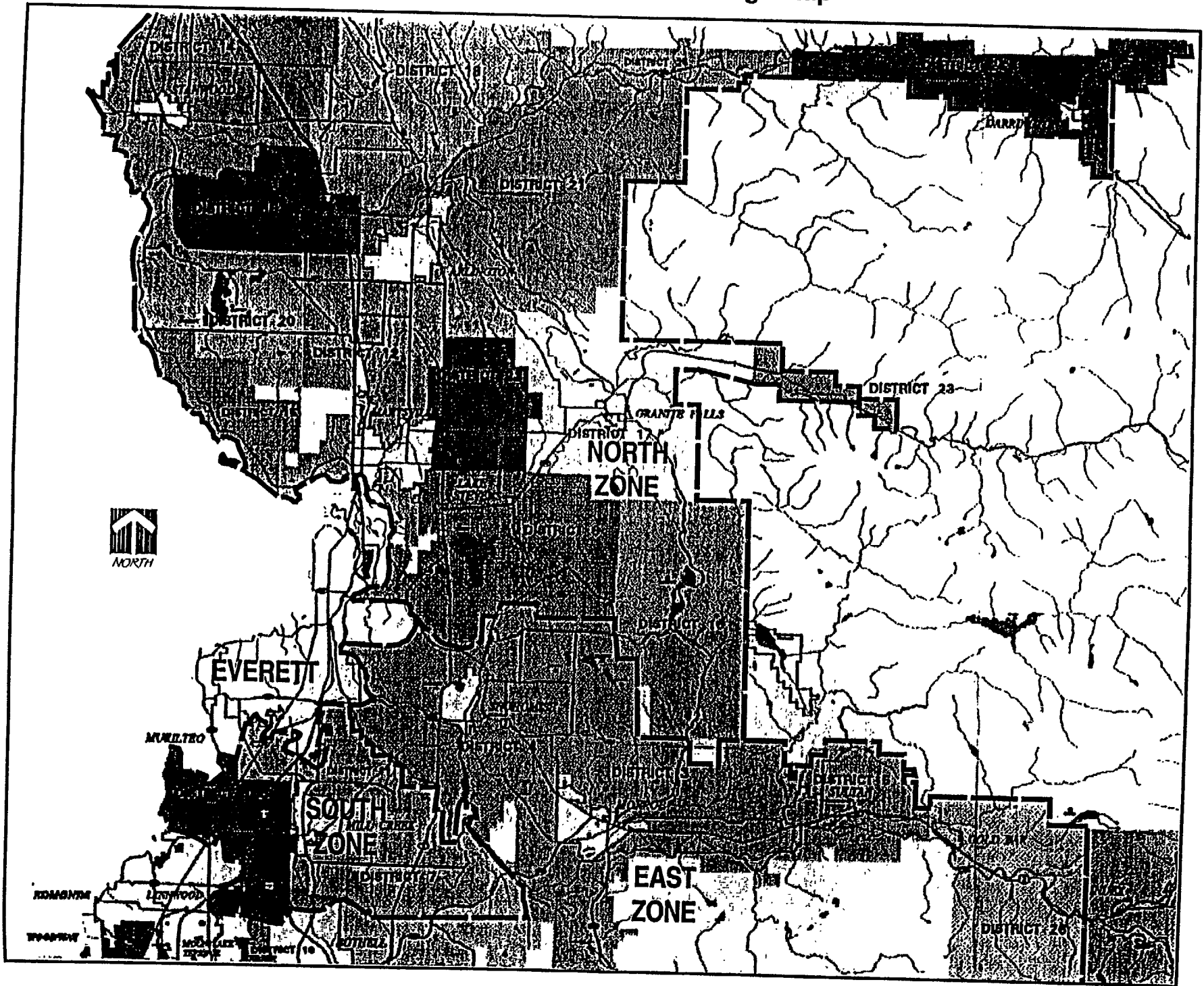
Kirkland PSAP has three people per shift. Generally, one acts as a call receiver, one acts as a dispatcher, and one performs both duties. They also have a new 800 megahertz radio system.

The coverage for the Kirkland PSAP is limited to the City of Kirkland. This center also monitors the city jail. The responsibility of the Kirkland PSAP is to provide communication services to citizens, officers and other service providers of Kirkland. Kirkland PSAP dispatches police units only and excludes fire and aid response.

3.2.6 SNOPAC (Snohomish Police Staff and Auxiliary Service Center) PSAP

SNOPAC provides service to residents of Snohomish County, north of Seattle. SNOPAC employs between six to ten call receivers and four dispatchers per shift. Dispatching at SNOPAC is divided into dedicated regions (see **Figure 3.3: Coverage Map**). SNOPAC has dedicated dispatchers for three separate zones in addition to two dedicated dispatchers for the City of Everett Police. The Everett zone has two call receivers that can also fill in as dispatchers when necessary. SNOPAC has two dedicated fire and aid dispatchers and one person who acts as both dispatcher and receiver for fire and aid.

Figure 3.3: SNOPAC Coverage Map



SNOPAC provides service to residents of Snohomish County. The coverage area is divided into three districts and the City of Everett. The Southwest portion of the county is covered by a different center. The responsibility of SNOPAC is to provide communication service to citizens, officers, fire units, paramedics and other service providers within incorporated and unincorporated Snohomish County. They provide dispatch service for police, fire and medical aid calls.

3.3 CALL DEMANDS

Several factors influence the volume of calls a PSAP receives including:

- geographical size (area);
- setting (urban, suburban, rural);
- population density; and
- type of service (e.g. police, medical or fire).

The volume of calls received by the six observed PSAPs is provided in Table 3.1. The table shows the total number of calls and number of cellular calls to the center. The Washington State Patrol at Bellevue received the highest volume of total calls logging approximately 1.3 million calls over last year, averaging over 3,600 calls a day. Seven hundred of these calls per day were from cellular telephones. Table 3.1 shows the daily average volume of calls received for each of the six centers. These demands or call loads, directly affect staffing, facility size, and technologies.

Table 3.1: Volume of Calls Received (1994 - 1995)

Public Safety Answering Points	All calls to center		Cellular calls to center		
	Approximate for one Year	Average per Day	Approximate for one Year	Average per Day	Percent Cellular
WSP (Bellevue)	1,300,000	3,600	240,000	700	19%
WSP (Marysville)	612,000	1,700	72,000	200	12%
King County	750,000	2,100	36,000	100	5%
City of Issaquah	197,000	540	no record	no record	N/A
City of Kirkland	44,000	130	no record	no record	N/A
SNOPAC (Snohomish County)	367,000	1,000	no record	no record	N/A

Source: Response Centers Statistics

3.4 CELLULAR CALL PROCESSING

Currently, the cellular phone is the most common means of reporting a vehicle-related incident. To provide a baseline for measuring the effectiveness of a mayday system, data characterizing over 350 cellular E-911 calls was recorded at the Washington State Patrol and King County Public Safety Answering Points. Data captured included the length of the calls, the number of calls transferred, the number of duplicate reports, the

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difficulty of verifying a caller's location, and the protocols used by the operators. This section examines the data recorded at the communication centers and discusses the operating conditions of the centers.

3.4.1 Methodology

Cellular call data was collected by observers over a two week period. Observers visited three Public Safety Answering Points, WSP (Bellevue and Marysville) and King County Police. WSP and King County were chosen because of the high volume of cellular calls that they receive. Data from all cellular calls was recorded during each center's peak hours of operation. The Marysville WSP PSAP was observed during the hours of 8:00 to 4:00 for one day. The Bellevue WSP was observed three days, in the morning during rush hour from 7:30 to 10:00 and in the afternoon rush hours from 3:00 to 6:00. King County was observed between 10:00 a.m. to 3:00 p.m. on two days and from 2:00 p.m. to 7:00 p.m. on a third day.

Data on a total of 367 cellular E-911 calls was recorded during our observations. The WSP, Bellevue and Marysville PSAPs accounted for 95 percent of these calls. For each E-911 cellular phone call the following information was noted (when relevant):

- Time in (the time the call was answered by a receiver);
- Time transferred (the time the call was transferred by a receiver);
- Repeat call (the number of repeat calls for a given incident);
- Time closed (the time the call was hung up by a receiver);
- Type of call (if available);
- Location verification (when ever the call receiver asked more than 3 questions about location we noted this as difficult location verification); and
- Protocols (the call-handling structure which a receiver followed).

From this information, the calls were classified into three types:

- 1) Incidents - any call a receiver resolved (usually dispatched), excluding calls that were transferred or considered a duplicate call.
- 2) Transfers - calls that were transferred to another PSAP or agency.
- 3) Repeats - all duplicate calls for a single incident.

For each classification, the number of occurrences were tallied and the average length of each call type calculated. In addition, a breakdown of the differences in response time for the individual centers is provided. These statistics are summarized in the next section.

3.4.2 Summary of Observations

Figure 3.4 shows the distribution of incident, repeat and transfer cellular calls in the observed centers by call completion time in seconds. The average durations for cellular calls were 125, 30 and 47 seconds respectively. Incidents took an average of 125 seconds to complete, however 70 percent of the calls took a minute or less. Some very involved calls lasted in excess of fifteen minutes.

Table 3.2 shows the average amount of time the call receivers spent for each call type at the three communication centers observed. Incidents averaged just over two minutes per call, and shows that the centers handle calls on average quite efficiently. Over 30% of calls observed lasted longer than two minutes, incident calls that were non-emergency were only 15 to 30 seconds. This lowers the average. Transfer calls averaged 47 seconds. Repeat calls averaged 30 seconds. Table 3.3 shows the frequency distribution for these statistics.

Table 3.2: Average Duration of Call for Observed E-911 Cellular Calls

Call Type:	Time (seconds)
Incidents	125
Transfers	47
Repeats	30

Source: PuSHMe Observation Data

Figure 3.4: Cellular Call Completion Times in Seconds

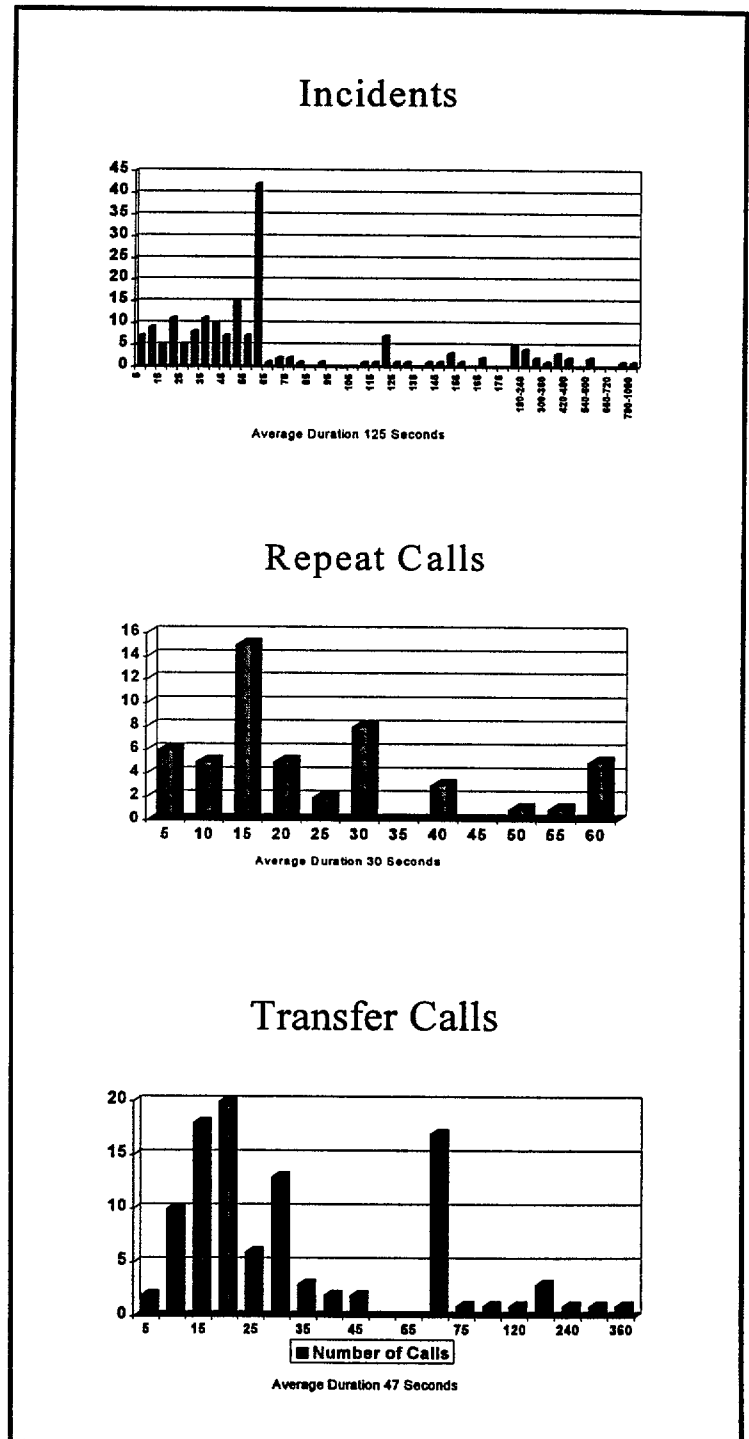


Table 3.3: Type of E-911 Cellular Calls Observed

Call Type:	Total Number	Percent
Total Calls	367	100
Incidents	185	50
Transfers	106	29
Repeats	76	21

Source: PuSHMe Observation Data

Table 3.4: Average Length of Cellular Call for Observed E-911 Centers

Call Type:	Time (seconds)	
	.WSP (Bellevue)	King County
Incidents	144	105
Transfers	41	53
Repeats	36	

Source: PuSHMe Observation Data

Table 3.5: E-911 Cellular Calls Observed

E-911 Cellular Calls Observed	
Number of incident locations difficult to verify	111
Percent of incident locations difficult to verify	30%

Source: PuSHMe Observation Data

difficult to locate. A call was determined difficult to locate if the operator needed to ask more than three times for location information. The 30% figure is high when compared to land-line calls. On most land-line calls, phone number and caller location information are provided immediately. Most cellular calls do not currently have these capabilities, making it necessary for the 9-1-1 operator to refine the location by asking questions.

3.5 TECHNOLOGIES

Technologies are employed by response centers to keep pace with increasing call demands. Advanced technologies can increase call capacity and help manage the response units in the field. A response center's needs are determined by their area

Table 3.3 shows the total E-911 cellular calls observed and the distribution by call type.

Table 3.4 shows the average call time for each center. The average length of an incident call varied between 144 seconds and 105 seconds between centers. Transfers and repeats varied between 36 and 53 seconds. Factors influencing the wide range in the call length for incidents depends on the types of call a center receives. For instance, the WSP generally receives only calls for automobile incidents along a relatively small number of routes making service easier to provide and track. On the other hand, King County Police may receive cellular calls for auto incidents and any other emergency, such as burglary, suicide, etc. in remote or difficult to describe locations.

Thirty percent of the cellular calls observed needed additional verification of location. **Table 3.5** presents the instance of cellular emergency calls that were

coverage, population and the service they provide. Most centers are custom designed to fit these needs. This leads to a wide variety of system configurations. The basic equipment of all response centers is the communication system. In E-9-1-1 centers, the E-9-1-1 phone system is used to take outside calls or transfer calls to other PSAPs and radio systems are used to communicate with field units. Additional technologies compliment these communication systems for increased system functionality and efficiency. The common technologies are described in this section.

3.5.1 Computer Aided Dispatch

Computer Aided Dispatch (CAD) Systems store data from a call, facilitate dispatch, track an incident, and maintain information on the activity of response units in the field. CAD systems are text- or map-based and are custom designed to fit response centers needs. Each system can display on computer consoles a wide range of data including: caller name, location, call type, priority and comments. Most PSAPs use CAD systems and, in the event of CAD failure, have a backup system of documenting calls on paper forms.

Protocols for caller status on updates, response confirmation, and call closing using CAD are different at each PSAP. However, the structure of tracking incidents is similar. When a call receiver enters information from a call into the CAD system it is entered as an active incident. PSAPs update these incidents on their CAD system. These screens have a list of the available response units and their current assignments. The status of each resource is generally noted in color-coded text for a quick visual interpretation (e.g. green text representing a clear resource, yellow representing a resource enroute to an incident, and blue a resource currently engaged at an incident). Radio contact between the PSAPs and their resources gives operators continual updates on incident status. These changes are entered by an operator into the CAD system, allowing all the personnel in the center to see the activity and keep updated on the status of response units. PSAPs confirm incident response by radio contact with their resources. Upon confirmation from the resource, PSAPs change the status of the incident from active to closed in their CAD system.

3.5.2 Automatic Location Identification

Automatic Location Identification (ALI) identifies the address from which the call originated. In locations where ALI is implemented when a call is received from a land-based telephone line, call originating location information is automatically provided to the response center. This information may include business or resident name and address, that helps identify the caller. Call receivers may use the displayed address in order to direct police or fire assistance when callers are unable to communicate clearly and verify their location. Phone companies supply and maintain this information. ALI is part of an enhanced 911 service. Currently, cellular phone services do not provide ALI. However, Federal laws and regulations are requiring that cellular phones provide this information for 9-1-1 calls in the future. (See Section 5.4.1.3). It is uncertain when this capability will be available in all areas.

3.5.3 Automatic Number Identification

Automatic Number Identification (ANI) identifies a call's originating phone number. Identification of the caller's phone number may identify the type of phone sending the call (e.g. cell phone, land lines, or highway phone / call boxes). A good use of this technology is when callers hang on the operators or are otherwise disconnected.

They can be called back by the center and an emergency can be confirmed.

Implementing ANI for cellular phones. Currently, in Washington state, cellular ANI coverage is limited to King County. When this technology will be fully available is uncertain. US West Communications and GTE supply and maintain this technology for land-line phone in the Puget Sound Region.

3.5.4 E-911 Call Transfer System

The 9-1-1 Call Transfer System (CTS) is a feature with a display screen and a button keypad. A CTS device displays the ALI and ANI of incoming calls on its screen when the information is available. The buttons on the keypad are preprogrammed with numbers of other area response centers. Should the call need to be transferred, the CTS can forward the call and information directly to another response center by the push of a button. Some CTSs can also build a database or history of calls made to the center. This allows the center to know the frequency of E-911 calls made from a given location.

The main limitation to CTS is that the systems are built to operate in the E-911 network. Each PSAP has both the E-911 dial-in line and any number of seven digit lines. When a call is received over the E-911 trunk lines, it is routed directly through the PSAP's CTS, which interprets the ANI/ALI information and allows calls to be transferred with information intact. When calls come in over the seven digit lines, they are outside the emergency network and cannot be accessed by CTS. Given that E-911 calls are automatically routed, it is impossible for someone to call into a PSAP's E-911 system without actually being in their jurisdiction. This means that currently, alarm companies or other CSCs must call PSAPs over the seven digit lines and subsequently are not being brought into the CTS. Currently, work is being done to establish sets of seven digit numbers that will access the E-911 lines of PSAPs, but there is no date set on the completion of this task.

3.5.5 ACCESS Database

The ACCESS Database is a national police and FBI database that contains police records, driving records, warrants, outstanding fines, criminal histories, etc. PSAPs are connected and routinely use the system. Law enforcement centers rely on this system for background checks on suspicious parties. Operators and dispatchers can get information from ACCESS for officers in the field.

3.5.6 Tape Recorders

Tape recorders allow a response center to record and replay the conversation that transpired during a call. This technology can be used for both radio and telephone calls.

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Some centers use recorders for playback of the last few calls, while other centers document and archive all recorded calls. All the centers observed had a master recorder that recorded all phone and radio conversations in the center. Taped PSAP transactions are often used in court in criminal cases and in legal disputes concerning PSAP or agency actions.

3.5.7 Uninterrupted Power Supply and Backup Power Systems

Uninterrupted Power Supply (UPS) provides a backup power supply in case of short term power failures and protects equipment from electrical spikes. All the centers observed employed a UPS of some type. A UPS can generally provide power for up to two hours. Most PSAPs also have a supply of backup power generators that can provide power for up to 48 hours.

3.6 STAFFING

Larger centers like SNOPAC and King County, divide tasks between call receiving and dispatching. King County further divides the call receiving task into primary and secondary call receiving. At the smaller centers (VVSP, Kirkland, Issaquah), employees work both as call receivers and dispatchers. Many centers also have dispatchers dedicated to specific regions within their jurisdiction. All the centers observed had at least one supervisor on duty at all times. The function of each of these positions is shown in **Table 3.6**.

Table 3.6: Staff Functions

Call Receiver	Call Dispatcher	Supervisor
Answers calls	Dispatches response services	Oversees and manages the center
Records incident data	Records incident data	Acts as a resource to call receivers and dispatchers (in difficult situations)
Tracks incidents and response units	Tracks incidents and response services	Coordinates training
Provides communication support to response services (e.g. incident update, background checks)	Provides communication support to response services (e.g. incident update, background checks)	Schedules lunches, breaks, etc.

Table 3.7 shows the current staffing arrangements for an average shift by center.

Table 3.7: Staffing

PSAP	Call Dispatchers	Call Receivers	Specialist/ Dispatcher Receiver	Supervisor	Total Staff	
					perShift(a)	
WSP (Bellevue)			3 - 5	1	4 - 6	29
WSP (Marysville)			3 - 5	1	4 - 6	18
King County	5	6 - 10		1	10 - 14	101
Issaquah			2	(b)	2	7
Kirkland	1	1	1	(b)	3	12
SNOPAC (Snohomish Co.)	4	6 - 10		1	11 - 15	84

source: PSAPs supervisors

a) based on observed 8 hour shift

b) call receiver or dispatcher acts as supervisor

3.7 TRAINING AND CERTIFICATION

There is movement in government and the emergency response industry by groups like the National Emergency Number Association (NENA) and The Association of Public Safety Communications Operators, international Inc. (APCO) to set guidelines for training and certification. These groups, however, have been focusing on PSAPs in their discussions. It is unclear at this time how these movements may affect mayday CSCs in the future. The current training and certification criteria faced by the observed groups is detailed in this section.

3.7.1 Training

Washington State's Criminal Justice Training Center is in the process of finalizing their emergency operator training program. This program is not yet mandatory, but may become so in the next few years. This program is based on Oregon's training program that started in 1993. California, New Mexico, Illinois, Connecticut and New Jersey have similar training programs.

Currently, training varies by PSAP and by the type of position. Centers usually train for call receiving before dispatching. Some PSAPs require an extended time as a call receiver before becoming a dispatcher. However, centers may train for both positions at the same time. In addition to the training described below, operators also receive on-going training in seminars and workshops and have CPR and other medical triage training. A call receiver generally begins with no past experience, whereas, dispatchers generally have previous work experience in public service (e.g. paramedics, firefighters, receivers, etc.). Training practices currently in place for six PSAPs in Washington are shown in **Table 3.8**.

Qualities cited as desirable in PSAP staff are:

- good customer service skills;
- good verbal communication skills;
- basic computer skills;
- ability to work flexible hours;
- ability to handle large volumes of calls; and
- ability to deal with stressful situations.

Table 3.8: Training

Response Center	Orientation	Call Receiving	Call Dispatch	Observation On the Job	Supervised In-Class Labs	Manual	Check-list
PSAP							
WSP (Bellevue)	Yes	1 month	1 month	2 weeks	varies		
WSP (Marysville)	14 weeks	1 month	1 month	2 weeks	varies		
King County		2 months	2 weeks	18 weeks	2 months	8 days	Yes
Issaquah							Yes
Kirkland					varies		Yes
SNOPAC (Snohomish County)	6 weeks			up to 8 weeks	varies	6 weeks	

The following is a brief description of training programs for the PSAPs observed.

- WSP (Bellevue)* All WSP specialists attend a one month general orientation to the Marysville WSP PSAP, computer instruction, call receiving, and dispatching training.
- King County* Two weeks of classroom training, generally eight weeks in class and two days of observation. Followed by three months of supervised call receiving (e.g. on-the-job training). To become a dispatcher requires at least 18 months of call receiving experience and one year of dispatch training, including two weeks in the classroom, 18 weeks on-the-job training, and one year probationary review.
- Issaquah* There is no formal training program, but they have a “things you should know” training checklist.
- Kirkland* A training manual and on-the-job training.
- SNOPAC* Training labs, mentors, observation, and supervised on-the-job training. Training also involves learning to answer TDD calls (from the hard of hearing).

3.7.2 Certification

Currently there is no state certification for general call receiving and dispatching. However, dispatchers who provide medical coaching (e.g. CPR or baby delivery over the phone) are required to take a course in Criteria Based Dispatching (CBD). Criteria based dispatch provides a procedural framework for dispatch of medical units, a continuing training for emergency medical dispatchers and a quality improvement program.

Several state and national organizations are working to create standard training and certification for the different types of PSAPs. Most of these efforts have just begun and it will be several years before any consensus is reached. Potential standardization could be at city, county, or state level. One such organization, the Washington State Criminal Justice Training Center (CJTC) is working with a number of groups to consolidate call receiving and dispatcher training for people who provide emergency services in the State of Washington. CJTC has prepared a draft handbook called "Telecommunication 1: Call Receiver Training". A course based on this book includes 40 hours of basic training. PSAPs would supplement this basic training. Reasons for consolidating training are to standardize call receiving and dispatching, to compensate for budget cuts (one state program is less expensive than several specialized one), and to keep up with new technologies.

This Washington State certification program proposal is based on the Oregon program which requires certification for everyone who answers an E-911 phone line. Operators must be recertified every two years to use the ACCESS system. The current plan for Washington would involve only fire and police response centers; but it may later include private response centers according to Bob Oenning, Washington State E-911 Coordinator.

4.0 EXISTING PRIVATE SECTOR CUSTOMER SERVICE CENTER CHARACTERISTICS

4.1 CENTERS OBSERVED

Like a PSAP, a Customer Service Center (CSC) receives calls for assistance. Some CSCs dispatch their own vehicles, while others act as an intermediary between the caller and the PSAP. Most CSCs provide emergency services or emergency notification services to subscribers.

Some examples of currently operating private sector CSCs are:

- Automobile assistance;
- Home security;
- Commercial and industrial alarm services; or
- Medical Aid.

The customer base for CSCs could be private membership (e.g. auto clubs or home alarm systems) or public referral (e.g. ambulance services). Reasons subscribers pay for these services include personal security, convenience and peace of mind. This chapter provides an overview of the following characteristics for three types of CSCs:

- Coverage and Responsibility;
- Call Demands;
- Baseline Data;
- Technologies;
- Staffing Requirements; and
- Training and Certification.

CSCs with alarm service, automobile assistance, and medical aid services are potentially components of a mayday style system. Representative CSCs from each of these were observed to examine how such services operated:

- Shannon Ambulance (Everett)
- AAA Auto Service (Seattle)
- ADT Security (Seattle)

4.2 COVERAGE AND RESPONSIBILITY

Like PSAPS, private CSCs have different coverage areas and missions. Coverage areas can be defined by the company or regulations. More often they are defined by the company. Subscribers or users of the service are then chosen from the coverage areas. Missions of private CSCs relate to the particular service they provide. This section describes the coverage areas and responsibilities of the three private service providers.

4.2.1 AAA

The Automobile Association of America (AAA) is a national automotive assistance company. AAA is the largest provider of roadside service in Washington State with

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500,000 charter members. The Seattle AAA communication response center employs 20 call receivers and four dispatchers per shift dispatching the AAA in-house fleet in addition to other contracted trucks. AAA uses a CAD system with a modem link to send incident information directly to contracted tow truck companies and pagers to send detailed incident location and subscriber information to their in-house drivers.

A significant feature of the AAA response center is the use of a large magnetic map of the area to keep a visual update of their current response calls. AAA call receivers locate incidents and provide directions to drivers using a CD-ROM based, white pages directory called ProPhone that provides them with the exact address of certain landmarks.

AAA's Bellevue CSC provides coverage for members anywhere in western Washington during the day and all of Washington and Idaho at night. During the day, Western Washington and Idaho are served by a limited hours center. The responsibility of the AAA communication center is to provide communication services to members, AAA fleet, and other service providers in its coverage area.

4.2.2 ADT Security

ADT provides security monitoring services for approximately 50,000 customers, businesses and government agencies. ADT receives signals from alarm systems in customers' buildings. They employ seven call receivers per shift. ADT does not dispatch units, but notifies PSAPs when an alarm is received. ADT uses computers to record information about calls, but does not have a CAD system.

The Seattle ADT handles calls for a six-state region, including Washington, Oregon, Idaho, Montana, Utah and Wyoming. ADT provides service for home/business security, industrial processes, fire alarms, and systems monitoring. Its operators receive calls or alerts from subscribers and their responsibility is to contact the appropriate public agency (e.g. police or fire).

4.2.3 Shannon Ambulance

Shannon Ambulance provides medical transport for stable patients, ALS (Advanced Life Support for life threatening emergency calls), and BLS (Basic Life Support for non-life threatening emergency calls) to the public and hospitals. Shannon Ambulance employs one operator/dispatcher per shift, using a personal computer and a paper card system for recording information and filing data. The majority of their calls are received from hospitals (e.g. patient transfers).

Shannon Ambulance's coverage includes Snohomish and northern King Counties. Shannon also has a contract with the City of Everett to handle their medical aid calls. As a private provider, they are not limited to their coverage area and will often dispatch units to other areas, when available. Although Shannon does dispatch ambulances, they are not responsible for primary medical care and therefore do not necessarily have to follow CBD protocols.

4.3 CALL DEMANDS

Private CSC call loads are influenced by the type of service it provides and the number of subscribers it has. These demands or call loads directly affect staffing, facility size, and technologies. For example, AAA, which has a subscriber base of 500,000 members in Washington, receives 280,000 calls per year. **(See Table 4.1)** Shannon Ambulance, which primarily serves hospitals and a very limited dedicated service area (Everett) only has 13,000 calls per year. AAA employs 20 operators per shift, while Shannon only employs one.

Table 4.1: Average Volume of Calls Received (1994 - 95)

Customer Service Center-	All Calls to center	
	For One Year	Average Daily Calls
Shannon Ambulance	13,000	35
AAA Auto Service	280,000	800
ADT Security	280,000	800

Source: Response Centers Statistics

Table 4.1 shows the average volume of calls received last year by each center observed. The observed CSCs had no means of tracking cellular calls, so the number of cellular calls is not available.

4.4 TECHNOLOGIES

Technologies increase call capacity and help manage the use of resources, which may increase efficiency and improve service. CSC's needs are primarily determined by the type of service they provide, their call demands, their coverage area. This leads to a variety of configurations for CSCs. While CSCs primarily rely on communications systems, additional technologies make these systems more usable and increase efficiency. Table 4.2 shows the response centers observed and the technologies each employs. Perhaps a larger issue is the technological limitations currently placed on a CSC. These limitations effect the CSCs ability to quickly contact a PSAP. Under the current E-911 structure a CSC must dial into a PSAP using a seven digit number. Dialing 9-1-1 automatically routes the calls to the nearest E-911 center that correspond to the CSC and not the scene of the emergency. Seven digit calls are treated as lower priority than those coming in dialing 9-1-1. Telecommunications companies are currently working to set up a series of seven digit numbers that will effectively interface with the E-911 system, but no timeline has been set on the implementation of this feature.

Table 4.2: Technology

	CAD	UPS	Radios	Tape Recorders	Cell Phone	Pagers
CSC						
Shannon Ambulance		■	■	■		■
AAA Auto Service	■	■	.		■	■
ADT Security		■	■	■		

A secondary issue is finding the correct service provider to call. The three CSCs had different methods to locate a service provider when one was needed. ADT had the appropriate service providers for each building in their customer database and could quickly dial the provider when an incident occurred. Shannon Ambulance rarely needs to call a secondary provider and has no set database, due to their relatively small service area. AAA has a service provider database, but their service is not linked to GPS or a fixed location.

4.5 STAFFING

AAA divides tasks between call receiving and dispatching. At a smaller center like Shannon Ambulance, employees work both as call receivers and dispatchers. ADT has only call receivers, no dispatchers. Each center observed had at least one supervisor at all times. **Table 4.3** shows the current staffing arrangements by center. The function of each of these positions was detailed in Table 3.7.

Table 4.3: CSC Staffing

Customer Service Center	Call Dispatchers	Call Receivers	Dispatcher f Receiver	Supervisors	staff per Shift=	staff
AAA Auto Service	4	20		(b)	24	50
ADT Security		7		(b)	7	-
Shannon Ambulance			1		1	15

source: Response center supervisor

a) based on observed 8-hour shift

b) supervisors were one of center staff

4.6 TRAINING AND CERTIFICATION

There is movement in government and the emergency response industry by groups like the National Emergency Number Association (NENA) and The Association of Public Safety Communications Operators, International Inc. (APCO) to set guidelines for training and certification. These groups, however, have been focusing on PSAPs in their discussions. It is unclear at this time how these movements may affect mayday CSCs in the future. The current training and certification criteria faced by the observed groups is detailed in this section.

4.6.1 Training

Washington State's Criminal Justice Training Center is in the process of finalizing their emergency operator training program. California, New Mexico, Illinois, Connecticut and New Jersey have similar training programs. These programs are not mandatory for private CSCs, but they can attend for a fee.

Training varies by CSC and by the type of position. Centers usually train for call receiving before dispatching. Some CSCs require an extended time as a call receiver before becoming a dispatcher. Centers may train for both positions at the same time. A call receiver generally begins with no past experience, while dispatchers generally have previous work experience in response service.

Qualities cited as desirable in recruits:

- good customer service skills;
- good verbal communication skills;
- basic computer skills;
- ability to work flexible hours;
- ability to handle large volumes of calls; and
- ability to deal with stressful situations.

The following is a brief description of training programs for the CSCs observed.

<i>Shannon Ambulance</i>	Supervised on-the-job training.
<i>AAA Auto Service</i>	A week and a half of class and observation for a few days
<i>ADT Security</i>	Three days of practice in class and a couple of days of observation.

4.6.2 Certification

Currently there is no state certification in Washington for general call receiving and dispatching in a CSC.

4.7 OPERATIONS OF A SAMPLE CSC

ADT provides security and monitoring services to its customers over a six state area from its Seattle CSC. ADT's monitoring services include industrial monitoring (e.g. chemical levels for manufacturing) as well as building security and fire. The service receives and verifies calls and alerts local PSAPs or CSCs to dispatch service. This section uses ADT's operations and protocols as examples of a working CSC.

4.7.1 Operations

ADT Seattle receives an average of 800 calls per day. Calls are prioritized into three groups of seventeen levels automatically:

- **Levels 1-5** are high priority (e.g. break-in, medical emergency, attack).
- **Levels 6-9** are supervisory calls (e.g. too much oxygen in water, boiler temperature too high, mechanical difficulties with manufacturing).

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- **Levels 10-17** are lesser supervisory calls (e.g. alarm not turned on).

ADT's alarms are preceded to send one of these alarm levels depending on the emergency. Half of their daily calls are high priority calls. They can generally alert service providers of high priority calls in under 30 seconds.

Most of ADT's alarm systems use telephone lines to transmit calls. Some larger customers have direct links to ADT's CSC. All of their communications and computer systems are redundant, providing backup in case of partial or total system failure.

The ADT customer data base includes the name and address of the subscriber, location of the alarms and the appropriate PSAPs or CSCs to call in case of an emergency. When the call comes up on their screen, the database information comes with it, allowing them to quickly and easily identify the appropriate service provider to call.

4.7.2 Protocols and Service Provider Notification

ADT has internal protocols to deal with all 17 call levels. These protocols are proprietary. However, three general call types (burglary, panic and fire) can be described here. For burglaries, ADT generally tries to confirm the call before or while they are notifying a service provider. For panic calls, ADT notifies the service provider immediately and does not try to verify the call. For fire, ADT notifies the service provider immediately and then tries to verify the call.

ADT generally notifies the service providers directly, over the phone. They provide the alarm location, type, and pertinent customer information. ADT will then, if necessary, call the customer to inform them that their alarm has gone off.

4.8 COMPARISON BETWEEN CSCS AND PSAPS

There are many differences between a CSC and a PSAP. Most of these center around mission and call type. CSCs are private enterprises providing service to subscribers or paying customers. PSAPs are publicly run and provide service to any people within their coverage area. The following differences were exhibited between the observed PSAPs and CSCs:

- CSCs respond to a more limited range of incidents than PSAPs
CSCs contract with their customers to provide a certain number of services for a fee. PSAPs respond to all emergency calls that come over the E-911 lines – even if this response is to transfer the call to another PSAP.
- CSCs have a lower call volume than PSAPs
CSCs serve a limited customer base and respond to a limited set of incidents, PSAPs respond to all emergency calls. Further, PSAPs are reached by dialing by 9-1-1 which is very familiar to people and easily dialed in an emergency.
- PSAPs often participate in calls longer than CSCs
PSAPs often track calls long after the service has been dispatched. They are responsible for keeping track of field units, helping aid investigations and providing communications services for field units. Some CSCs, like AAA,

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track their field units' activities, but rarely directly participate in the calls after dispatch.

- PSAP operators tend to have more duties than CSC operators

Same as above.

- PSAP operators have more training than CSC operators

Due to the nature of the emergencies they serve, PSAP operators tend to be trained longer and have to meet higher criteria to become an operator.

5.0 LEGAL ISSUES

Operating an emergency notification service requires a knowledge of the history of liability concerns, litigation and regulations. Avoiding litigation while providing a service centered around responding to an emergency is a challenge. This section examines the liability issues that confront both publicly and privately operated PSAPs by examining both the institutional issues and legal challenges.

5.1 PSAP LIABILITY ISSUES

Publicly operated PSAPs have a history of lawsuits regarding their operation, call transfers, response time and advice. Historically, PSAPs and E-911 services have prevailed against almost all challenges raised in the courts for malpractice or negligence. **Table 5.1** lists several court challenges to publicly operated emergency response services and whether the court ruled in favor of, or against, the PSAP. Table 5.1 shows that even in cases of extreme negligence the agency responsible for the PSAP was often not held liable.

**Table 5.1:
Court Challenges to Publicly Operated Emergency Response Services**

CASE	YEAR	STATE	CAUSE OF ACTION	SELECTED FACTS	RESULT
DeLong v. Erie County	1982	NY	Negligence	PSAP call receiver failed to properly record callers address, ask name of caller, determine exact location of call, repeat address for verification, and follow up when “no such address” was reported. Victim killed.	Call receiver found grossly negligent; no government immunity applied.
Trezzi v. City of Detroit	1982	MI	Negligence	Police dispatcher gave low priority rating to several calls for assistance. Police did not respond for 90 minutes. Victims died.	Suit dismissed due to state government immunity statute.
Brooks v. Herndon Ambulance Service, Inc.	1985	FL	Negligence	Dispatcher failed to recognize life-threatening implications of symptoms, and sent distant ambulance to scene when closer service available. Victim died.	PSAP not liable: not cause of death.

Table 5.1 continued on next page.

Table 5.1: Continued

CASE	YEAR	STATE	CAUSE ACTION	-SELECTED FACTS	RESULT
Archie v. City of Racine	1988	WI	Constitution violation	Dispatcher misdiagnosed problem and failed to send rescue unit after two calls for help. Victim died.	PSAP not found liable. No rights violated under U.S. Constitution.
Wanzer v. District of Columbia	1990	DC	Negligence	Dispatcher told stroke victim to take aspirin and failed to dispatch ambulance. Victim died.	Public duty doctrine. No negligence was found.
Cleveland v. Fulton County	1990	GA	Constitution violation	Dispatcher failed to properly transfer E-91 1 call to neighboring jurisdiction's dispatch agency. VICTIM died.	No rights violated under U.S. Constitution.
Lewis v. City of Indianapolis	1990	IN	Negligence	Call to E-91 1 went unanswered for 10 minutes, resulting in response time delay. Victim died.	No special relationship existed. No negligence.
Koher v. Dial	1995	IN	Negligence	Dispatcher failed to dispatch ambulance after assuring wife of heart attack victim he would do so.	County was judged obligated to help, case proceeded to trial. Trial Pending.

Despite these legal challenges, there are very few suits brought to trial against PSAPs. There are suits that are started against PSAPs, but the vast majority of these are dismissed on technicalities or settled out of court. While suits may be inevitable, the PSAP must be prepared to defend its actions and protocols.

- Base for “*” Lega’ Defense’
- Protocols for call handling
 - Training Programs with Medical Triage
 - Ample Record Keeping

The PSAP’s base legal defense includes call handling protocols, training programs, verbal medical triage, and record-keeping. This section describes two avenues of defense for a PSAP: the Public Duty Doctrine and consistent operating procedures.

5.1.1 The Public Duty Doctrine

A strong defense for the PSAPs is the Public Duty Doctrine’ which holds that a "special relationship must exist between two parties in order for liability or negligence to be ascribed. There is significant legal precedence to show that courts do not consider calling and being serviced by a E-911 center as constituting a special relationship. This

2 Lazar, R.A.: “The Dispatch Standard of Care - A Matter of Principle?” JEMS, May 1993, pp 9-11.

has held in court, even when the PSAP was clearly at fault.³ Table 5.1 cites 3 cases (*Trezzi v. City of Detroit*, *Wanzer v. District of Columbia*, and *Lewis v. City of Indianapolis*) where the Public Duty Doctrine was used as a basis for a ruling to dismiss the suit against the PSAP.

5.1.2 Protocols

Despite the Public Duty Doctrine, PSAPs must provide adequate proof that calls are handled in a professional and consistent manner. Credible proof can be provided by having protocols, training procedures and ample record keeping. In the first and last cases cited in Table 5.1 (*DeLong v. Erie* and *Koher v. Dial*), where the PSAP was found liable for gross negligence, protocols had clearly been disregarded.

Consistent protocols for call answering, transfer and processing are vital to the operation of a PSAP. The PSAP should be able to defend its actions, showing that the procedure to answer a call is efficient and sufficient to handle any *reasonable* situation. Although there are currently no standard protocols for PSAPs, groups like the National Emergency Number Association (NENA) and The Association of Public-Safety Communications Officials (APCO) are working to develop them. PSAPs should monitor the progress and directions of these groups and construct their protocols to be consistent with them.⁴

5.1.3 Training

Protocols should be taught to PSAP operators in a well planned training program. The training program should cover the operation of the equipment, the protocols for call answering and incident information gathering, the protocols for call transfer to other agencies, the protocols for dispatching units and emergency medical triage. Stress management is also a useful component. Training both ensures that operators understand their responsibilities and competency, as well as demonstrating a commitment to quality service.

5.1.4 Call Recording and Surveillance

Most PSAPs routinely record their calls. These recordings are used to internally review the service of the PSAP, as evidence in legal cases either involving or not involving the PSAP. Often recordings of calls are used in legal cases (especially in domestic violence cases) that do not involve PSAP liability. For example, SNO-PAC receives 3,000 requests per year for tapes. PSAPs store tapes from 30 days to several years, depending on their protocols and standards. Call recording legal issues beyond liability are examined in Section 5.3.

³ *ibid.*

⁴ Both NENA and APCCYs progress in Cellular 9-1-1, Mayday or other protocols can be monitored through their home pages on the World Wide Web. NENA can be reached at <http://hvrwww.nena-9-1-1.org> and APCO at <http://hvrwww.apcointl.org>.

5.1.5 PSAP Operation Conclusions

PSAPs employ a combination of procedural protocols to simultaneously ensure quality service provision and to defend themselves against a liability suit. The Public Duty Doctrine can further protect PSAPs from legal challenges, but without set training and operational protocols courts may be more likely to find a case as gross negligence. Although most PSAPs are able to defend against court challenges with a standard set protocols, PSAPs are not guaranteed a court victory. In some cases of gross negligence PSAPs have been held liable for damages.

5.2 ISSUES SURROUNDING PRIVATE SECTOR CSC OPERATION

Issues surrounding the private operation of a CSC are similar to a PSAP. However, the types of legal challenges and their defenses differ. The Public Duty Doctrine does not apply to CSCs, which removes a significant legal defense for private CSCs. The CSC also provides a subscription-based service that is contractual. Typically, contracts for home security system monitoring come with riders that limit the liability of the service provider. Private CSCs will need to implement similar contractual language.

The contract language best protecting the service companies clearly states:

- that the service charge is not for insurance and it was the customer's responsibility to contract separately for insurance;
- that the company is not liable for installation, repair, operation, service provision, personal injury or emergency service dispatch related losses;
- that the liability is limited whether the losses are due to breach of contract or negligence, and either performance or nonperformance;
- that liability is limited to either a set dollar amount or an amount relating to the service charge;
- that the customer has the option of increasing the service's maximum liability for a fee; and
- for any goods purchased, the terms of any warranty are given, and the fact that any other warranties express or implied are excluded (important for liability under the Uniform Commercial Code, as it relates to the sale of goods).

Contract documents are generally a reliable defense against a lawsuit. Liability concerns facing CSCs include product warranty, product liability, breach of contract, gross negligence and fraud. **Table 5.2** details several direct challenges to privately operated CSCs.

Table 5.2: Court Challenges to Privately Operated Service Centers

CASE	YEAR	STATE	CAUSE OF ACTION	SELECTED FACTS	RESULT
Rector v. Michigan Security Systems, inc.	1979	MI	implied warranty	Remote control transmitter failed to function when victim dragged from car during robbery.	Evidence supported that some defect was present when device left alarm company - litigation proceeded to trial.
Douglas W. Randall, Inc. v. AFA Protective Systems, Inc.	1981	PA	Negligence	Service's employees turned down sensitivity level of burglar alarm, so could not detect entry of person into store. Result burglary.	Contract limitation clause not enforced due to gross negligence.
Dubovsky & Sons, Inc. v. Honeywell	1982	NY	Negligence	Received alarm signals & dispatched guard who reported no trouble. Result burglary.	Limitation clause was upheld.
Hanover Ins. co. v. D 8 W Central Station Alarm co.	1990	NY	Negligence	Service received three alarm signals in four hours; told guard who investigated, but could not get into building, to go to another call. Burglary was in progress.	Gross Negligence ruled -the alarm company may not limit its liability for gross negligence by contract.
Elizabeth E. v. ADT Security Systems West, Inc.	1992	NV	Negligence	Restaurant employee raped during break-in pushed panic button ADT representative had informed the store that they were serviced when in fact, this feature had not been purchased.	Since there was a question as to whether the alarm company negligently misrepresented features of system, the case was allowed to continue on the basis of fraud.
Fox Electric Co. v. Tone Guard Security	1993	TX	Negligence; breach of express implied warranty	Fire destroyed building & contents worth in excess of \$500,000.	Court upheld the contract, limited liability to amount of service charge for six months, or \$250, whichever was lesser.
Elsken v. Network Multi-Family Security Corp.	1995	OK	Breach of contract; breach of warranty; negligence; deceptive trade practices	Alarm company failed to properly respond to intrusion alarm; only advised apartment manager of alarm and resident killed.	Liability provision in contract upheld even if victim hadn't read contract.

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Protection against legal suits for private centers primarily rests upon exclusionary clauses in contract documents. In addition to this, private centers need to protect themselves by following the same precautions as public centers. Private centers should have standard protocols, transfer techniques, training programs and policies. Private centers should record their calls with the added precaution of obtaining consent for recording of calls in the contract.

The issue of an alarm company's liability for losses suffered by a customer, due to the failure of the system itself to function properly, is often resolved by a ruling on the enforceability of the contract provisions regarding liquidated damages. These provisions limit the liability of the alarm company to a certain amount by attempting to limit reasonable compensation for actual damages. These provisions are generally upheld where actual damages were difficult to ascertain. For example, when systems fail to raise alarms due to defective equipment, improper installation, or improper maintenance of equipment, liquidated damages clauses are generally upheld. The courts reason that alarm companies should not be held liable as if they were insurers.

To illustrate, in *Electric Company v. Tone Guard Security*, 861 S.W2d 79 (Tex Ct. App. 1993), (Table 5.2) a liquidated damage clause limited the company's liability to six monthly subscriber payments, or \$250, whichever was lesser. This was deemed reasonable by the court. The subscriber payments were not a premium for theft insurance and this was made clear in the contract. The charges were based only on the value of services rendered in installing the system and were unrelated to the value of the property lost.

Limitation of liability clauses restrict the amount of damages a customer can collect in the event of a loss, regardless of the size of the loss. Courts have ruled that when a contract is freely *bargained* for it is valid. However, when a customer can prove that a contract was not freely bargained for, the contract is ruled *unconscionable*. This can happen when contract documents are unclear, overly restrictive or in some way exhibit a lack of good faith in the bargaining process. In most cases, alarm companies' limitation of liability clauses have withstood court challenges.

In cases where companies failed to respond appropriately to alarms or calls, liquidated damages clauses in contracts have generally been held valid. The courts reason that parties are free to contract as they wish.

5.2.1 Successful Contract Limitations

The sales/service contract can successfully be used to limit a company's liability. However, the various causes of action specified in the limitations clause must be comprehensive. The negligence claim is not limited, if an ordinary negligence claim is brought and the contract provision only limits damages for breach. No limitation applies, if a contract specifies that actions against the company are limited for maintenance problems and the system wasn't operable in the first place. The language must be drafted carefully to allow for all contingencies.

As long as the language is clear and easily seen, the clients failure to read a residential alarm services contract prior to signing it will generally not render the contract unenforceable. (Some states may have different laws to this effect.) To maintain evidence of bargaining in good faith, the limitation should be either on the front page of

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the contract or close to where the party signs. If this is not the case, the limitation clause should be clearly referenced.

Subsequent research indicates that contract limitations on liability of service or goods providers are upheld, as long as they are specified in the contract and are clear and unmistakable. However, there are a few exceptions to this conclusion. These limitations are detailed below.

5.2.2 Unsuccessful Contract Limitations

A contract clause will usually not be held to limit gross negligence (often defined as the failure to exercise even slight care), or willful and wanton behavior actions against an alarm company. These exceptions are always said to exist for public policy reasons. A court will not let a party contract out of liability for its own gross negligence or fraud, as in the case of intentional misrepresentation.

Washington's standard of gross negligence has been held to mean "negligence substantially and appreciably greater than ordinary negligence.....[the] correlative failure to exercise slight care", (*Jones v. Widng*, 499 P2d 209, 212 Wash. Ct. App 1972) Cases have held that an employee's negligent misjudgment is insufficient to reach this standard and therefore could be guarded against in a contract. However, if a litigant could show facts to support the gross negligence standard, the action would proceed to court. It is still difficult to win in court, as the litigant has to show a causal connection between the alarm company's failure and the loss that occurred.

Contract clauses that limit damages to a liquidated amount have been held unenforceable where the language was construed as a *penalty*. For a liquidated damages clause to be enforceable, courts generally have to find that damages are difficult to ascertain at the time of the making of the contract, and that the amount decided upon is a "reasonable endeavor by the parties to estimate fair average compensation for any loss that may be sustained" (*Fireman's Fund Insurance Co. v. Morse Signai Devices* 151 Cal. App. 3d 687, 688 [Cal. Ct. App. 1984]). Generally, companies will specify the liquidated damages amount as a function of the service charge, (e.g., six months, 10% of the year, etc.). Because of the difficulty in ascertaining what the damages could be, courts are often lenient in these requirements, and the clauses are generally upheld.

The court might find the contract unconscionable if one party is weaker in the contract bargaining process and has no choice but to accept the contract the way it is written. Because of this, some courts have held that a contract has to provide for *extended* liability if the party wishes to purchase it. This clause should be included in the contract, giving the user a choice as to how much liability they want. This clause will help avoid a court determining the contract unconscionable.

Finally, some companies employ exculpatory clauses that absolve the company of any and all liability. For such a clause to be enforceable, it must be expressed in "sufficiently clear, unequivocal and unmistakable language" (*Dubovsky & Sons, inc. v. Honeywell, inc.*, 454 N. Y.S.2d 329 [N. Y. App. Div. 1982]). However, these clauses are also held unenforceable where unconscionable or against public policy. This means the courts often find that one party needed protection in the bargaining process and that the clause was "commercially unreasonable and the party had no meaningful choice but to accept

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its inclusion in the contract” (*Nahra v. Honeywell, inc.*, 892 F. Supp. 962, 970 [N. D. Ohio 1995]). To rebut this finding, the alarm company would have to show that the party did have a choice and was faced with alternatives. Again, a clause offering higher liability protection, for increased premiums, will help avoid this unconscionability finding.

5.2.3 Liability to Non Contracting Parties

At least one court has held that the an alarm service company did not have a *duty of care* to firefighters fighting a fire on a subscriber’s property, where it was alleged that the firefighter died due to the service’s negligence. In this action, the contract’s liability limitation of \$250 as to the consequences of any failure of the system, barred the homeowner from recovering more than that from the alarm company. Therefore, absent a duty, and state law to the contrary, actions can not be maintained by others injured in an incident on a subscriber’s property. (*Edwards v. Honeywell, inc.*; 50 F.3d 484 (7th cir, 1995))

5.2.4 Liability for Goods or Materials Sold

If the contract involves a sale of product, the Uniform Commercial Code sets legal limits on liability and accountability. Each state has adopted at least parts of this code and state law must be read to see what the requirements are. At the minimum, the exclusion or modification of warranties must be by writing and conspicuous and contractual modification or limitation of liability is generally acceptable unless the limitation or exclusion is unconscionable. An example of a warranty is presented in the next section.

5.2.5 Illustrative Examples of Contract Documents Upheld in Recent Cases

The following sections present a series of contract documents that were upheld in recent court cases. These illustrate successful contract language regarding general liability limitation, personal injury liability limitation, limitations acknowledgments and warranties. The following are merely examples and exact wording should be tailored by the new service to its individual needs.

5.2.5.1 General Liability Limitation

One of the better examples of an overall liability limitation in a service contract came from *Nahra v. Honeywell, inc.*, 892 F. Supp. 962 (N.D. Ohio, 1995). In this case, the customer brought an action for breach of contract and negligence against the security service for property damage caused by a burglary. This was due to the alleged failure of the service. The court held that the parties contract:

- contained a limitation of liability clause instead of a liquidated damage clause;
- was neither contrary to public policy nor unconscionable;
- and that the terms of contract expressly limited the security services' liability for negligence, regardless of the tort claim formulated.

The limitation clause, with original emphasis, is shown in **Figure 5.1**.

Figure 5.1: Liquidated Damages and Honeywell's Limits of Liability

It is understood and agreed by the parties hereto that Honeywell is providing a system designed to reduce the risk of loss; that the payments provided herein are based solely on the value of the services as described herein and are unrelated to the value of any property located on Customer's premises: that Honeywell is not liable for 'losses' which may occur in cases of malfunction or nonfunction of the system or of the installing, monitoring, repairing, signaling, handling or dispatching of the service, even if due to Honeywell's negligence or failure of performance; that Honeywell is not an insurer; and that insurance, if any, covering personal injury and/or property loss or damage on customer's premises shall be obtained and or maintained by Customer. Customer understands that Honeywell offers several levels of protection and services and that the system described in the Schedule of Service and Protection has been chosen by Customer after considering and balancing the levels of protection afforded by various systems and the related costs.

IT IS AGREED THAT IT IS IMPRACTICAL AND EXTREMELY DIFFICULT TO FIX ACTUAL DAMAGES WHICH MAY ARISE IN SITUATIONS WHERE THERE MAY BE A FAILURE OF SERVICES PROVIDED, DUE TO THE UNCERTAIN VALUE OF CUSTOMER'S PROPERTY OR THE PROPERTY OF OTHERS KEPT ON THE PROTECTED PREMISES WHICH MAY BE LOST, STOLEN, DESTROYED, DAMAGED OR OTHERWISE AFFECTED BY OCCURRENCES WHICH THE SYSTEM OR SERVICE IS DESIGNED TO DETECT OR AVERT. INABILITY OF CONTRACTOR TO GUARANTEE POLICE AND FIRE DEPARTMENT RESPONSE TIME, AND ESTABLISHING A CASUAL CONNECTION BETWEEN THE SYSTEM OR SERVICE PROBLEMS AND CUSTOMER'S POSSIBLE LOSS. THEREFORE IF ANY LIABILITY IS IMPOSED ON HONEYWELL, SUCH LIABILITY SHALL BE LIMITED TO AN AMOUNT EQUAL TO THE ANNUAL SERVICE CHARGE OR \$10,000, WHICHEVER IS LESS. THIS SUM SHALL BE PAID AND RECEIVED EITHER (i) AS LIQUIDATED DAMAGES AND NOT AS A PENALTY, OR (ii) AS A LIMITATION OF LIABILITY APPROVED AND AGREED UPON BY THE PARTIES. THE PAYMENT OF THIS AMOUNT SHALL BE HONEYWELL'S SOLE AND EXCLUSIVE LIABILITY REGARDLESS OF WHETHER LOSS OR DAMAGE IS CAUSED BY THE PERFORMANCE OR NONPERFORMANCE OF OBLIGATIONS UNDER THIS CONTRACT OR BY NEGLIGENCE, ACTIVE OR OTHERWISE, OF HONEYWELL, ITS EMPLOYEES, AGENTS OR REPRESENTATIVES. NO SUIT OR ACTION SHALL BE BROUGHT AGAINST HONEYWELL MORE THAN ONE (1) YEAR AFTER THE ACCRUAL OF THE CAUSE OF ACTION THEREFORE.

If Customer wishes Honeywell to increase the amount of the liquidated damages as provided above, Customer may obtain from Honeywell an additional amount of liquidated damages by paying an additional monthly service charge to Honeywell.

Nahra v. Honeywell, Inc., 892 F. Supp. 962 (N.D. Ohio, 1995)

5.2.5.2 Personal Injury and Limitation Acknowledgment

Additionally, other contracts have further defined 'losses' as:

-death, loss or damage, irrespective of cause of origin, resulting directly or indirectly, to persons or property.

Eisken v. Network Multi-Family Security Corp., 49 F.3d 1470 (10th Cir. 1995)

This illustrates the need to make clear that limitation includes liability for personal injury. Also, in this case, the signature was required on the front page of the contract, and the limitation clause was on the back page, so a provision was included directly above the signature line stating:

RESIDENT ACKNOWLEDGES THAT RESIDENT HAS READ AND UNDERSTANDS ALL OF THIS RESIDENT AGREEMENT INCLUDING THE TERMS AND CONDITIONS ON THIS SIDE AND THE REVERSE SIDE, PARTICULARLY PARAGRAPH 3.0 LIMITATION OF LIABILITY AND AGREES TO THE AMOUNTS SET FORTH THEREIN.

Eisken v. Network Multi-Family Security Corp., 49 F.3d 1470 (10th Cir. 1995)

In this case, the provision was important and helped defeat a claim made that the limitation should not be valid because the resident had not read it.

5.2.5.3 Warranty

An example of a warranty clause is found in *Leon's Bakery, Inc. v. Grinnell Corp.* 990 F. 2d 44 (2nd Cir. 1993).

WARRANTY

Seller agrees that for a period of one (1) year after completion of said installation it will at its expense, repair or replace any defective materials or workmanship supplied or performed by Seller. Upon completion of the installation, the system will be turned over to the Purchaser fully inspected, tested and in operative condition. As it is thereafter the responsibility of the Purchaser to maintain it in operative condition, it is understood that the Seller does not guarantee the operation of the system. Seller further warrants the products of other manufacturers supplied hereunder, to the extent of the warranty of the respective manufacturer.

ALL OTHER EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS OR OTHERWISE ARE HEREBY EXCLUDED.

Leon's Bakery, Inc. v. Grinnel Corp., 990 F.2nd 44 (2nd Cir. 1993)

It is important in this type of clause to note that the purchaser is responsible for the system that is in his control.

5.2.6 CSC Legal Conclusions

CSCs need to protect themselves both contractually and procedurally from legal actions. Liability limitations in contract wording need to include language clearly stating:

- that the service charge was not for insurance and it was the customer's responsibility to contract separately for insurance;
- that the company was not liable for installation, repair, operation, service provision, personal injury or emergency service dispatch related losses;
- that the liability was limited whether the losses were due to breach of contract or negligence, and either performance or nonperformance;
- that liability is limited to either a set dollar amount or an amount relating to the service charge;
- that the customer has the option of increasing the service's maximum liability for a fee; and
- for any good purchased, the terms of any warranty are given, and the fact that any other warranties express or implied were excluded (important for liability under the Uniform Commercial Code, as it relates to the sale of goods).

Procedural safeguards in operation need to include:

- Protocols for call handling;
- Training Programs with Medical Triage;
- Interagency Agreements; and
- Ample Record Keeping.

As a service, a CSC may be sued at some time during their existence. These provisions will help a service to withstand a suit.

5.3 LICENSING

Mayday systems are new applications of technologies. Washington State has no specific statutes concerning mayday service center operators, but some other states, like California, do require licensing of alarm company operators and monitors Cal. *Bus. & Prof. Code* Sec. 1590 (*West* 1996). New CSCs should research applicable statutes in states within their coverage areas.

Currently, mayday systems do not fall under existing state or local licensing structures in Washington state. The closest peers are electronic security alarm and ambulance services. State and Federal governments and most states do not regulate or license these type of services. They are covered almost entirely by municipal and county codes. This section describes the King County and City of Seattle codes for security alarm companies. However, most of these do not apply to a mayday system because the codes are written to specifically cover real property. Black's Law Dictionary defines Real Property as "land and generally whatever is erected or growing upon or affixed to land." Real property does not apply to the vehicles and individuals covered by Mayday systems.

5.3.1 Electronic Security

Chapter 12.32 of the King County Code (KCC) regulates electronic security devices. This chapter prohibits “the installation or use of any electric, electronic, or mechanical security device which gives automatic notice to the communications center of the King County department of public safety, . . . except by Federal, state, or local government agencies”. Having a private service center answers this prohibition. This chapter also provides for civil penalties for false alarms. *KCC 12.32.050*.

5.3.2 Security Services

Chapter 6.24 of the KCC provides for licensing of private security services. A license is required for contract investigative agencies, contract guard or patrol agencies furnishing private security services in unincorporated King County. *KCC 6.24.020*. Private security functions include all privately employed guards, investigators, detectives, patrolmen, or other personnel performing similar security functions. *KCC 6.24.010*. Though monitoring is arguably a security service, at present, it not included under this licensing code. This is similar to Washington state law, which regulates only security guard services. *Wash. Rev. Code 18.170 (1994)*.

The Seattle Municipal Code (SMC) regulations that require licensing of a private monitoring company only apply to alarms installed on real property. Chapter 10.08 defines an alarm system monitoring company as any “individual, partnership, corporation, or other form of association that engages in the business of monitoring property, burglary, robbery, or panic alarms, and reporting any activation of such alarm systems to the Seattle Police Department”. *SMC 10.08.140(A)*. Property, and burglary alarms are defined as systems for the detection and reporting of unauthorized entry, or property damage, upon real property. *SMC 10.08.140(J)* Robbery and panic alarms are defined as systems activated by an individual when the system is installed on real property. *SMC 10.08.140(K)*. Since this section is not applicable to a system installed in a vehicle, this leaves only the need to obtain a business license under the applicable codes. However, there might also be a need for a burglar alarm license if a mayday service will include the sale, rent or lease of a product marketed as a burglar alarm.

5.3.3 Burglar Alarm Business

Chapter 6.08 of the SMC provides for licensing of a burglar alarm business. This requires a burglar alarm dealer’s license for anyone who engages in “the business of selling, leasing, renting, servicing, inspecting, installing, maintaining, or repairing alarms or alarm systems for the purposes of preventing or detecting burglaries or robberies”. *SMC 6.08.010*. The only exception is that the license is not required for the “purpose of installing wires or equipment to convey electric current”. *SMC 6.08.010*. The license requirements are covered under *SMC 6.08.020*. This chapter also provides for a warranty and service contract, *SMC 6.08.040*, and for instructions provided for use of the system, *SMC 6.08.050*.

5.3.4 Licensing Conclusions

The applicability of the above licensing requirements depend on how the new mayday system is designed and presented. If the system is sold on the basis of its ability to detect and locate stolen cars and upon location notify the Seattle Police, then there may be some applicability. However, the mayday systems will not be installed or activated on real property. This provision excludes the candidate mayday systems from the requirements of this particular Seattle ordinance. It is conceivable, though, that these regulations will be used in the crafting of new ordinances to license and regulate mayday-style services.

Perhaps the most important aspect of licensing a mayday system is the fact that only local regulations that govern the operation of peer systems. This may mean that nationally operated in-vehicle mayday services will need to comply with local ordinances in order to operate in certain areas. This is true for nationally operated alarm services. These alarm services have control over where their alarms are tripped, however, due to the fact that they are attached to buildings. A mayday equipped vehicle could end up in any jurisdiction in any city. Nationally operated services will need to track new local regulations as they come about.

5.4 PRIVACY

A mayday service utilizing the technologies encompassed by the mayday systems may be put in the position of listening in on conversations, using Caller ID technologies or recording calls. A new CSC will need to understand the legality of these activities and what is considered consent in a given situation. This section examines these issues and gives an overview of Federal and Washington State privacy law.

5.4.1 Caller ID

Caller ID is a service phone companies offer that allows the recipient of a telephone call to obtain the number of the caller by means of an electronic device. This service has been made possible by a new digital switching technology and has been received with varying degrees of acceptance in the states. There has been mention of possible invasions of privacy and whether or not the identification of the calling party is an invasion of that party's right to privacy. In Washington, Caller ID is legal and not considered a privacy invasion.

5.4.1.1 Federal Privacy Rights

The United States Constitution regulates only the Federal government against unreasonable search and seizure. *U.S. Const. Amend. IV*. For the U.S. constitution to be used as a basis for regulating Caller ID, privacy violation by the state must first be shown. The plaintiff would also have to show that a telephone number is a federally protected personal interest. Many decisions have held that a telephone number is not among the select privacy interests protected by the Federal constitutional right to privacy. *People of State of California v. F.C.C.*, 75 F.3d 1350, 1362 (9th Circle. 1996). Under this analysis, a caller identification service is not a Federal constitutional violation.

Federal law provides a general prohibition on trap and trace device use. 18 U.S.C.A. Sec. 3121 (*West Supp.* 1996). (A trap and trace device is what captures the electronic impulses which identify the originating number of an incoming wire or electronic communication.) However, exceptions are made when the device is used by a provider of electronic or wire communication service in the operation of the service, or as a protection to the provider or user of that service. 18 U.S.C.A. Sec. 3121 (b)(1) (*West Supp.* 1996). Exceptions are also made where the consent of the user of the service is obtained. 18 U.S.C.A. Sec. 1321(b)(2). This has been interpreted to mean that when a customer purchases the new caller identification service, consent has been given to a trap and trace device, and no violation of the statute has occurred. *Ohio Domestic Violence Network v. Public Utilities Com'n*, 638 N.E.2d 1012 (Ohio 1994).

5.4.1.2 Washington State Privacy Law

In Washington, an explicit constitutional right of privacy does exist. However, Caller ID is similar to a trap and trace device which has been held not a violation of privacy rights under Washington law. *State v. Riley*, 846 P.2d 1365 (1993). The trap and trace device does not enable anyone to hear or record the content of any communication. For these reasons, the court held trap and trace devices were not intercepting private communication.

Moreover, Caller ID is looked upon favorably in the providing of emergency services. It is seen as an opportunity to benefit rescuers; for example, the battered woman or abused child that is unable to complete a plea for help. *California v. F.C.C.*, 75 F.3d 1350,1359 (9th Cir. 1996). Caller ID is part of upgraded emergency service operations being implemented across the country, generally referred to as an enhanced 911 system. Washington has adopted a statute establishing an enhanced E-911 coordination office to participate in efforts to set uniform national standards for implementation of automatic number identification. *Wash. Rev. Code 38.52.535 (1994)*. Washington policy is very favorable toward the use of caller identification in the provision of emergency services.

On the other hand, Washington has also enacted safeguards for the caller identification systems. No city, town or county may enact ordinances *mandating* automatic number identification for a private phone system. *Wash. Rev. Code 35.21.895, and Wash. Rev. Code 36.32.475*. The Washington Administrative Code also provides that any 'caller identification service provided by a telecommunications company shall include the option for calling parties to block the delivery of their numbers, names, or locations". *Wash. Admin. Code 480-80-049 (1995)*. This blocking option does not extend to the "delivery of caller numbers, names, or locations to a E-911 or enhanced E-911 service, or other emergency service". *ibid*. Regulations also permit a PSAP to make a reverse search of information in the automatic location identification data base, if necessary because of apparent emergency. *Wash. Admin. Code 480-120-350 (1995)*. This applies only to PSAPs. Therefore, governmental emergency service centers can receive information, even if the calling party has a block on their telephone. A mayday service would not be able to override the block.

5.4.1.3 **Caller ID and Cellular Phones**

Currently, cellular ANI and ALI coverage is not provided by all cellular systems. In the past there was no mandate for ANI/ALI provision by cellular services. However, both Federal and Washington State laws and regulations are requiring that cellular phone companies provide ANI information. (RCW 82.14B) (See Figure 5.2) These provisions apply immediately to new cellular service, but do not set a target date for existing service. Many cellular networks are adding these capabilities, but it is uncertain how long it will take for ANI / ALI capabilities to be universal.

Figure 5.2: RCW 38.52

Any person as defined in RCW 82.04.030 owning, operating or managing any facilities used to provide wireless two-way telecommunications services for hire, sale or resale which allow access to 911 emergency services shall provide a system of automatic number identification which allows the 911 operator to automatically identify the number of the caller.

Section 5, HB 2601

5.4.1.4 **Caller ID Conclusion**

Automatic location identification is used in the state by PSAPs. Caller ID is used in the State of Washington by private parties, and commercial businesses. Both ALI and Caller ID are legal in the state. In the case of a privately operated CSC, users give their consent to use Caller ID when they subscribe to the service. The Washington Privacy Act clearly requires consent in the intercepting or recording of private communication. *Wash. Rev. Code 9.73.030(1)(b)* (7994). In addition, in Washington, line traps and Caller ID are exempted from the State Privacy Act. In the case of a line trap, a telephone number by itself is not even a communication for purposes of the statute governing interception of private communication. *State v. Riley, 846 P.2d 1365 (1993)*. Additionally, the only common carrier automatic number caller or location identification service that has been approved by the Washington Utilities and Transportation Commission is exempt from Washington's Privacy Act. *Wash. Rev. Code 9.73.070 (2)(a)(1994)*. Therefore, line traps and Caller ID services do not violate privacy rights.

A private mayday service would be authorized to use Caller ID services. According to the phone company, anyone can receive Caller ID services, for a charge of \$5.95 a month and the proper equipment. However, a private service is likely not authorized to use the automatic location identification systems used by E-911 services. This means that if someone has put a block on their phone, the number will come through as anonymous on a Caller ID box, whereas, blocks cannot be placed on E-911 calls. This should not make a difference when calls coming in to a CSC or PSAP are placed by subscribers with no blocks on their lines.

5.4.2 **Recording and Rights of Privacy**

The issue of the invasion of privacy rights by the potential surveillance and recording of a criminal in a mayday equipped vehicle warrants exploration. State and Federal laws

govern when privacy rights are or are not infringed by recording or monitoring. For the most part, a mayday service should be able to record or monitor situations when the device has been activated or permission for activation has been given by the user or proper authorities. State and Federal precedents are examined in this section.

5.4.2.1 Washington State Privacy Law

Washington state law governs the “intercepting, recording or divulging [of] private communication . . . [the] consent required . . . [and] exceptions”. *Wash. Rev. Code Sec. 9.73.030* (1995). The statute specifies:

- (V) Except as otherwise provided in this chapter, it shall be unlawful for any individual, partnership, corporation, association, or the state of Washington, its agencies, and political subdivisions to intercept, or record any:
 - (a) private communication transmitted by telephone, telegraph, radio, or other device between two or more individuals between points within or without the state by any device electronic or otherwise designed to record and/or transmit said communication regardless how such device is powered or actuated, without first obtaining the consent of all the participants in the communication;
 - (b) Private conversation, by any device electronic or otherwise designed to record or transmit such conversation regardless how the device is powered or actuated without first obtaining the consent of all the persons engaged in the conversation.
 - (2) Notwithstanding subsection (1) of this section, wire communications or conversations (a)of an emergency nature, such as the reporting of a fire, medical emergency, crime, or disaster, or (b)which convey threats of extortion, blackmail, bodily harm, or other unlawful requests or demands, . . . or (d)which relate to communications by a hostage holder or barricaded person as defined in *RCW 70.85.100*, whether or not conversation ensues, may be recorded with the consent of one party to the conversation.

Wash. Rev. Code Sec. 9.73.030 (7994)

5.4.2.2 One Party Consent

In a situation, where a recording is being made of a vehicle owners call for help, or a recording is made of communications including threats, etc., and one of the car occupants has consented to the recording, that recording is not illegal under the Washington State Privacy Act. *State v. D.J. W. 882 P.2d 7799, (Wash. Ct. App. 1994), review granted 892 P.2d 7088*. The statute, *RCW 0.73.030(2)*, specifically grants this “one party consent” exception in an emergency situation. Mayday services would therefore be protected in the recording emergency calls.

5.4.2.3 Private Communications

In *D.J. W.*, the defendants were convicted of selling drugs, and their conversation with an informant was not held to be private conversation within the meaning of the statute, even though it took place in an automobile. The court stated, “no evidence suggesting [the subject] . . . entered automobile . . . out of desire to keep conversation private. Rather they entered the automobile because doing so was necessary to complete the transaction with Glass [the informant], who remained inside the automobile at all times during the recorded transaction”. *State v. D.J. W.* 882 P. 2d 1199, (Wash. Ct. App. 1994). The defendants had not picked Glass in particular, but were willing to talk to anyone willing to buy their drugs. Therefore, in this case, the conversations themselves were not deemed private, so the Privacy Act was not violated. The Act only applies to private conversations.

In further defining private communications, a defendant’s calls to a police station in which he confessed the murder of his wife to a police dispatcher were not “private communications” for purposes of the provisions of the statute because the defendant had no reasonable expectation of privacy in making such calls to the police. *State v. Boniila*, 598 P.2d 783, (Wash. Ct. App. 1979). The “reasonable expectation of privacy standard” further separates constitutional conduct from unconstitutional invasions of privacy.

5.4.2.4 Summation State Law

Recording conversation and actions in an emergency situation, with the consent of one of the parties in a vehicle, is not prohibited. This is because of an emergency exception to Washington’s Privacy Act. Mayday systems, therefore, can legally record events in progress for use in court proceedings.

Recording actions of criminal behavior in a vehicle, with no consent, is most likely not prohibited, either. There remains some question as to the recording of any oral communications, and the suspects reasonable expectations of privacy surrounding those communications.

5.4.2.5 Federal Law

Washington State law is somewhat more restrictive than Federal law, so Federal law does not preempt the state’s privacy laws. Under Federal law, one party consent is deemed sufficient in most all situations:

It shall not be unlawful under this chapter for a person not acting under color of law to intercept a wire, oral, or electronic communication, where such person is a party to the communication or where one of the parties to the communication has given prior consent to such interception unless such communication is intercepted for the purpose of committing any criminal or tortuous act in violation of the Constitution or laws...18 U.S.C.S. Sec. 2510 (d)

Therefore, under Federal law, as long as one party to a communication consents, there is no Federal violation in recording that communication. *State v. Biemacki*, 465 N. W.2d 732 (Neb. 1991).

5.4.2.6 Constitutional Right to Privacy

Most of the constitutional rights cases attempt to answer the question of what is a reasonable expectation of privacy. A person's right to keep personal affairs private, including conversation, depends on whether there is a reasonable expectation of privacy at the time and under the circumstances involved. *State v. Bonilla*, 598 P.2d 783, 785 (*Wash. Ct. App.* 1979).

When a suspect has taken a vehicle, and is on public streets, it can be argued that he should have no reasonable expectation to privacy. Therefore, there would be no constitutional violation in the use of video cameras to record his actions. It should also be noted that courts have held that where a mobile telephone is being used, operated utilizing radio transmissions, there is no reasonable expectation of privacy. The reasoning is that anyone with a scanner tuned to the same frequency could pick up the call. *U.S. v. Rose*, 669 F 2d 23 (*1st Cir.*, 1982).

5.4.2.7 Statutory Privacy Act Exceptions

There are specific exemptions for specific emergency personnel under the Washington Privacy statute. *RCWA 9.73.090* states:

Certain emergency response personnel exempted from *RCW 9.73.030* through *9.73.080-Standards-Court Authorizations-Admissibility*

- (1) The provisions of *RCW 9.73.030* through *9.73.080* shall not apply to police, fire, emergency medical service, emergency communication center, and poison center personnel in the following instances:
 - (a) Recording incoming telephone calls to police and fire stations, licensed emergency medical service providers, emergency communication centers, and poison centers.

Wash. Rev. Code Sec. 9.73.090 (1995)

This statute does not define an emergency communication center, or emergency response personnel, but this exemption could arguably apply to a monitoring company that is recording incoming calls. This would offer an additional basis of protection for the recording of those incoming calls.

PSAPs are excepted from Washington's Privacy Act and can trap and trace calls if necessary. *Wash. Rev. Code 9.73.070 (2)(b)(1994)*. CSCs are limited to the use of automatic number, caller, or location identification services that have been approved by the Washington Utilities and Transportation Commission. *Wash. Rev. Code 9.73.070 (2)(a)(1994)* Given the nature of the mayday service technologies, this should not be a hinderance to their ability to provide service.

5.4.3 Privacy Conclusion

This has been an overview of constitutional, Federal and state privacy rights. This research shows that new mayday systems should be free from legal suits filed over call recording or Caller ID privacy issues if:

- the customer has consented to the recording of an emergency communication in their contract with the CSC;
- the parties remain in a public area, where there should be no reasonable expectation of privacy; and / or
- a crime is being committed during the call.

If one of these conditions are not met, state statute provides for a civil action and recovery of damages by the person filing the suit. If the CSC is found to have violated a person's right of privacy, damages can include actual damages, pain and suffering, and attorney fees. *Wash. Rev. Code 9.73.060 (1994)*.

5.5 FALSE ALARMS

There has been a comparison of future mayday systems to existing burglar alarm companies. False alarms from burglar systems have been a major problem for law enforcement agencies and PSAPs. There is a definite and vocal concern that mayday systems may provide a similar number of false alarms. The King County Code (KCC 12.32) allows one false alarm with no penalties. The second false alarm is subject to a fine of \$50 and the third \$100. After the third, the sheriff can order the disconnection of the alarm system.

These alarms are defined as protecting real property and, again, do not directly relate to a mayday system. However, the possibility for false mayday alarms should be addressed. If the mayday systems begin to generate frequent false alarms that are reported to the PSAPs, regulation of such alarms may follow.

5.6 THEFT DETERRENTS

Currently, there are no regulations in King County regarding stolen vehicle deterrent or recovery schemes. False alarms from these systems will have the same concerns covered in Section 5.5. LoJack (USA) and MOBILETRAC (Canada) are two examples of systems that use alarm and mayday technologies to track stolen vehicles. LoJack tracks vehicles after they have been stolen and provides location information to the police. MOBILETRAC combines car alarm technology with mayday technology that sends an alert to their CSC. The car has a keypad which allows the owner to disarm the alarm with a Personal Identification Number (PIN) quickly, thus avoiding false alarms. Using GPS, the CSC then watches the vehicle, if it remains stationary the CSC assumes it is a false alarm. If it moves, the CSC assumes it is being stolen. The CSC then calls the owner and advises them of the status. If it is determined that the car is being stolen, the CSC can disable the vehicle remotely. These are two examples of these applications.

6.0 PSAP FOCUS GROUP

A focus group was held on March 5, 1996 which discussed the handling of E-911 cellular phone calls and interfacing with mayday CSCs. The focus group was conducted by LUTE and attended by PuSHMe project staff, PSAP operators, supervisors and other E-911 professionals. The purpose of the focus group was to obtain feedback on the institutional and operational aspects of a mayday style system. PuSHMe staff presented scenarios of how a mayday CSC could potentially handle a certain situation detailing the processes and procedures involved. The group would then comment on the scenario, pointing out positive and negative results or impacts. A list of scenarios is found in **Appendix D**. In addition, further issues were raised during a free form discussion held after the presentation of the scenario. Prompted by the scenarios, the focus group discussed several potential impacts of a mayday system. This section details these issues and the focus group's concerns.

6.1 INCIDENT LOCATION INFORMATION

Currently, location information received from cellular callers is obtained by an operator questioning the caller. This method of identifying incident location can be time consuming and tedious. One call receiver from the King County PSAP stated that getting location information is sometimes "like extracting a tooth." Often times a cellular caller can give an approximate location of the incident area, which is sufficient. However, serious medical and police situations require the precise address or location of the incident, which cellular callers often cannot give. Since 30 percent of the cellular calls received cannot confirm their location quickly (see Table 3.5), this requires a process of extracting location information which consumes critical time.

Mayday devices make use of Global Positioning System (GPS) technology which automatically provides the mayday response center with a precise location of the caller, which could reduce location identification confusion. With the location information at the CSC, the mayday operator would only have to verify the incident location and pass the information on to the PSAP. This factor alone may save precious time in situations when callers can't immediately identify their position accurately.

The group was very favorable toward GPS location technology. However, they were skeptical about cellular phone and network reliability. They were afraid users may occasionally be disconnected or unable to get through due to busy networks and that these factors would affect the relevance of location information.

6.2 VOICE CONTACT

Currently, PSAPs have voice contact with people witnessing or involved in an incident. Call receivers use the tone and tenor of the caller as a barometer for the incident. One call receiver from WSP explained that their job is highly intuitive and built on experience with callers. She explained, without voice contact they would be "blind" to a situation and would be hesitant to dispatch a response unit because they would lack confidence in the information.

Two mayday technologies are being tested, each having a different means of communication. One system incorporates a cellular phone, which allows voice contact with the CSC and the potential to establish a three way contact with a PSAP. The other system being tested supports data only communication (no voice contact). The caller has a text display screen which displays questions sent by the CSC. The user can answer these questions by pressing a yes or a no button.

Concerns were raised by the focus group about a non-voice system. The focus group was adamant about the importance of being able to talk to the person placing the call, especially if the caller is the person requiring assistance. The E-911 operators were unaccepting of data only communication. Data only communication removes audible cues that operators use to assess a situation. They described their jobs as highly intuitive and dependent upon voice of the caller and background noise and explained that they would be hesitant to dispatch units to such a call. The focus group felt that they might not be provided with critical information from a data-only device in a vehicle based emergency.

The focus group also said that in the event of an emergency they would take whatever information was available. They would probably dispatch units even with this relative lack of information, however. The participants agreed that just being aware of an incident was the most important thing for them. Discussion about data only devices generated a proposal for the CSC to provide a cellular phone number for the mayday data-only customers to the PSAP, the participants were more comfortable with this proposal.

6.3 TRANSFER CALLS

Transfer calls are a regular occurrence at response centers. CTSs expedite redirection of misdirected calls to the proper center. However, time is consumed extracting incident location information and identifying the right PSAP to handle the call. The average time consumed for a transferred call is 47 seconds (see Table 3.2). This is a considerable amount of time during an emergency.

The addition of a mayday system could decrease the amount of transfer calls PSAPs receive. For example, each time a private center receives a call, one less call goes through a PSAP. Currently, transfer calls often slow the response and waste the PSAP's valuable time. A CSC can receive a call and transfer it directly to the proper PSAP or resolve the call themselves. This removes one transferred call from the PSAP which would have received the call. Transfers amount to about 30 percent of the incoming calls (see Table 3.3). This could reduce the amount of transfer calls a PSAP receives, freeing up the lines for other emergency calls and increasing the amount of time call receivers have for actual incidents.

The focus group was concerned that a third-party private response center, would slow down the whole emergency process. In addition, they expressed concern regarding private response centers making judgment calls about emergency incidents. The group was also concerned about the ability of the CSC to identify the appropriate PSAP.

6.4 REPEAT CALLS AND DATA RECORDING

Serious incidents have the ability to generate large volumes of repeat calls (calls for the same event). Repeat callers account for 21 percent of the cellular calls the response centers receive (see Table 3.3). This is one in every five, however the statistic is deceptive because these types of calls come into the center in a burst surrounding an incident. For example, during a serious incident a call receiver's lines may flood with incoming repeat calls, which make it difficult to answer all the lines. This poses a serious problem because E-911 calls concerning other incidents are left waiting or unable to connect.

The average length of time spent processing a repeat call was 30 seconds (see Table 3.2). These bursts generally last two to fifteen minutes. An intense burst could involve 100 phone calls coming in over a ten minute period with each call averaging 27 seconds. The result is a significant delay to E-911 call receiving.

A mayday system could act as a filter for repeat calls of a single incident. A CSC could stop a repeat call at their center, thus cutting the amount of repeats the PSAPs receive. The mayday operators could take down the information from the repeat callers and compile it into one report and transfer any unique ones to the PSAPs. Reducing PSAPs' repeat call load may keep lines manageable, ensuring expedient response to other emergency calls.

The group was favorable to the idea of reducing repeat calls and to having good witness information. However, they were reluctant to categorically dismiss calls coming from a given area after an incident had been reported. Their major reservation was the fear of missing secondary accidents or perhaps direct witnesses who could provide valuable information. They also expressed concerns about the delay and increase in human error when a call is passed from the private center to the public center rather than going to the public center directly.

6.5 RESPONSE CENTER EFFICIENCY

The observed response centers ran efficiently. However interviews with numerous PSAP supervisors and call receivers revealed that some could operate more efficiently with improved technology. A mayday system could potentially improve the region's E-911 efficiency by providing services such as:

- GPS location information;
- reduction of repeat and transfer calls; and
- complete caller profile information.

These services could work together to reduce call volumes to PSAPs and increase call receiving response. This could directly increase service to the public by enabling faster response times.

The focus group was cautious about adding another service center to the E-911 system. **They felt that** another CSC may slow response time. However, the potential reduction in **CSC** work load by a mayday system was well received. The group agreed that mayday **systems would** need to be created to take advantage of these features.

PSAP

6.6 PERSONAL SECURITY

Cellular phones are increasing in use for automobile personal security. Mayday technology can offer personal security to users by providing GPS technology that automatically updates a center of a caller's location. Another feature is the three call buttons which are programmed by call type: emergency, medical, or roadside assistance. This allows the response center to immediately know the nature of the call, thus increasing the speed at which the call is handled. In addition, mayday system could offer a panic button for incidents like a car jacking.

The participants were concerned about getting calls to follow suspected carjackings or stolen cars. Jurisdictions have different protocols to follow regarding felony stops or felony pursuits. Many jurisdictions, such as Kirkland, do not engage in high-speed pursuits. They will follow at the speed limit and break off if the suspect speeds away. The jurisdictions cited liability and safety concerns and reasoned that they could keep the suspect under surveillance and catch them later more successfully than they could chase them down. A related concern was that people would activate their units and follow suspected criminals to provide location and other information. The participants were concerned that this could lead to a high-speed pursuit or a shooting.

6.7 FALSE ALARMS AND THEFT

The focus group was also concerned about false alarms. Many municipalities have codes governing allowable limits of false alarms on existing alarm systems (see Section 5.5). PSAPs receive a great number of false alarms from alarm companies that occupy their time and the time of field units. This has led to regulations and laws requiring disconnection of building alarms after three false alarms and the low priority of alarm company alerts. This decreases the effectiveness of the alarms. Mayday systems will only be successful if their calls are treated with the priority the call warrants. False alarms could severely impact both the mayday and E-911 systems' abilities to process valid emergency calls.

The group also discussed stolen car tracking and recovery systems. The group was interested in the ability to easily locate a stolen car, however they were also concerned about tracking. Again, they were concerned with the possibility of high speed chases. Systems like LoJack and MOBILETRAC (see Section 5.6) have different ways of dealing with this. LoJack tracks cars that are reported as stolen. MOBILETRAC has alarm disabling features and will track a suspected stolen car, but will only act on it when it is confirmed. MOBILETRAC can also disable the vehicle, making a high speed pursuit impossible.

6.8 FOCUS GROUP CONCLUSIONS

In general, the focus groups were enthusiastic about the advantages of an in-vehicle mayday system. The ability to obtain information about events and the potential to reduce the number of repeat or misdirected calls were well received. However, the group had several concerns regarding the operations of a new mayday system. Their major concerns dealt with additional call handling delay, the operations of a new system and the potential for false alarms. Despite these reservations, the group was primarily

interested in learning about incidents as quickly as possible. They agreed that mayday systems could provide faster incident notification in some instances.

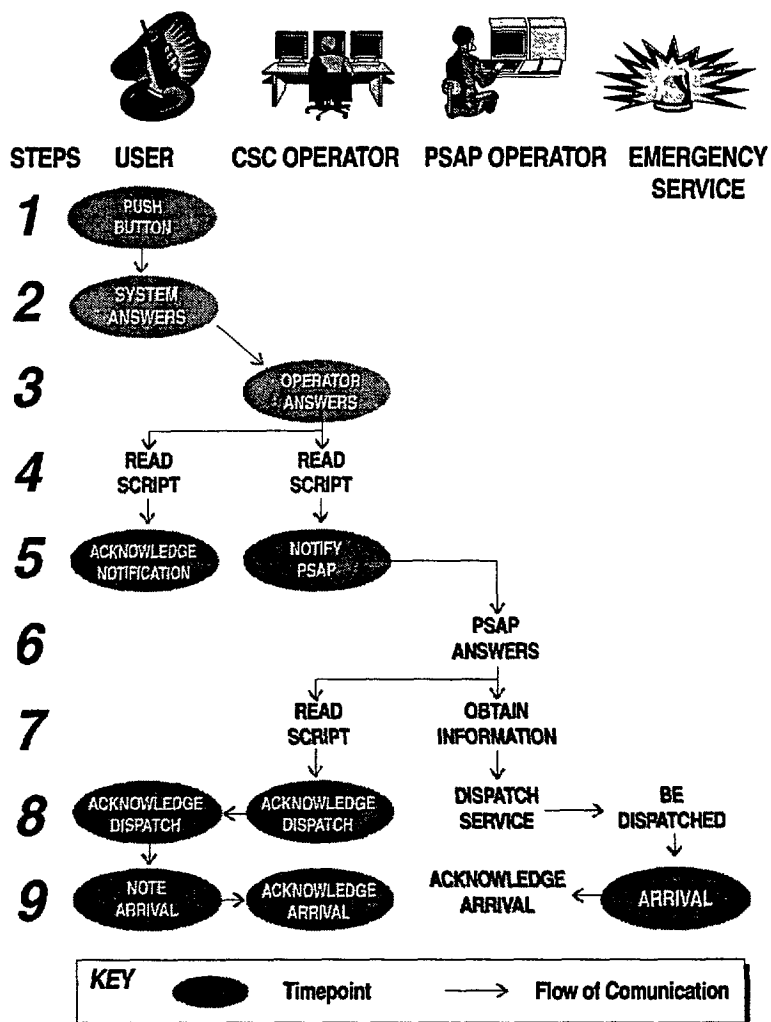
7.0 FULL FIELD TEST PROTOCOL ASSESSMENT

The Full Field Operational Test for the PuSHMe project was designed to simulate an emergency call from its inception to the arrival of emergency service. Approximately 175 of the tests evaluated the value of the information generated from the mayday devices, the usability of the mayday devices, and the abilities of the operators using the XYPOINT and Motorola technologies to communicate with the service providers. This exercise involved users making a call to the service center, the service center recognizing their call, the service center passing the call on to a Service provider, and the Service provider dispatching service to the scene. The Full Field Test established protocols to pass data on to the Service provider.

7.1 FULL FIELD TEST STRUCTURE

The Full Field Operational Test relied on a series of scenarios. Mayday device users and CSC Operators were provided scripts to follow. After receiving the call, the mayday CSC operators routed the emergency to either the King County Police, the American Automobile Association or the WSDOT Incident Response Team, based on the nature of the simulated event. The service provider operators would then determine the details of the PuSHMe call and dispatch service. At key points, times were recorded by all participants except the service provider operators, who filled out forms when time permitted. **Figure 7.1** shows a general flow of the test with example time points.

Figure 7.1: PuSHMe Full Field Test Flow



7.2 PUSHME DEVICE USER RESPONSIBILITIES

Each PuSHMe device user was sent into the field with a script providing a scenario, a location, and a dialog (see **Appendix E, Figures 1 and 2**). The script provided details of the scenario (information and verbiage) as well as time points for recording the key points in a mayday call. For the Motorola device, the time points included the time the button was pushed, the time connected to the system, the time the call was answered, the time emergency services were notified, the time service was dispatched, the time service arrived, and the time the call was closed. For the xyPOINT device, the time points recorded the time the button was pushed, the time of first reply, the time the emergency services were notified, the time service was dispatched, the time service arrived, and the time the call was closed. Device users made the call and followed the script. When emergency service arrived, the PuSHMe driver gave the field unit a response form (**Appendix E, Figure 6**).

7.3 CSC'S RESPONSIBILITIES

The CSC operator was given a script similar to the user's script, but with the location information removed (see **Appendix E, Figures 3 and 4**). The CSC operator also had a CSC Overview that listed the appropriate service provider to be contacted for each test (see **Appendix E, Figure 5**). The CSC operator answered the call, followed the script, called the appropriate service provider, identified the call as a PuSHMe simulation, gave the required information (location, incident, car and driver information), notified the driver when service was dispatched and closed the call when service arrived.

7.4 SERVICE PROVIDER DISPATCHER'S RESPONSIBILITIES

The service provider dispatchers answered calls from the PuSHMe CSCs. The calls were identified as a PuSHMe simulation and the dispatchers notified field units. The dispatcher then completed a form (**Appendix E, Figure 6**) requesting feedback on the usefulness of the PuSHMe information.

Much of the standard information requested by the E-911 operators was omitted when a call was turned over to the King County Police. For example, if the simulated incident was for a stabbing, a detailed description of the suspect, the location of the wound and other details were intentionally left out. What was conveyed was the type of incident, the location, and the personal details about the caller and the vehicle.

The decision to use a lower level of revealed data was made for a variety of reasons. First, the tests were designed to isolate critical PuSHMe data - the location and customer information data. Long, detailed scenarios, conducted under low stress situations, could potentially cloud the performance evaluation of the system by providing skewed time data. Second, information about the suspect would be conveyed to the officers over radio which is heard by other non-participating agencies and could be acted on improperly. Third, the agencies in the focus groups and individual interviews indicated that in such an event (where such a large amount of information would need to be exchanged) the caller should be patched directly to the service provider, a feature neither system could support at the time of testing.

7.5 EMERGENCY RESPONSE RESPONSIBILITIES

The field units for AAA, WSDOT Incident Response, and the King County Police responded to calls over the radio in a standard fashion. The call was identified as a PuSHMe simulation, the emergency vehicles proceeded to the location of the PuSHMe driver, did not use emergency lights or sirens, and filled out a form presented to them. This form was identical to the form provided to the Dispatcher, as shown in Appendix E, Figure 6.

7.6 TEST VARIATIONS

There were two variations of the PuSHMe Full Field test. The main test allowed users to refine the GPS information. Users went to a location, the CSC operator would communicate their location provided by the GPS system and the user would refine the location. For example, the CSC operator might ask the user if they were on the east or the west side of a street. PuSHMe mapping programs displayed large emergency icons on maps that had thin lines for roadways where the CSC could tell the street the user was on, but not the side or orientation of the car. Blind tests were performed to simulate situations in which the user has no idea of, or is unable to communicate, their location. Units were dispatched using the first GPS location only.

7.7 TEST LIMITATIONS

Limitations of the Full Field Operational Test were that there was:

- no measurement done for peak cell / peak hour usage;
Peak cell or peak hour usage could impact the ability of a call to get through, especially with a flood of repeat calls.
- no highly detailed event specific discussion;
Detailed event specific discussion between the user and the CSC, the CSC and the service provider, and the service provider and the field units would provide a more realistic sense of a call's processing time.
- no factoring for stress; and
Stress on the part of the caller could impact their ability to relate pertinent information in an unusual or emergency situation. Stress in the service provider can likewise effect the handling of the call.
- the system lacked the ability to transfer calls directly to the service providers.
The system's lack of direct voice call forwarding capabilities did not allow the CSC to put the service provider in direct contact with the user. The PSAPs repeatedly requested this capability in interviews and focus groups.

These features affect the operation of a PuSHMe style system. With the exception of voice transferring, the limitations are variable and contingent on several factors independent of the design and operation of a PuSHMe system. These limitations would also impact direct E-91 1 calls. However, these factors mean that the duration of a

PuSHMe full field simulation will not directly equate with the duration of an actual emergency.

7.8 RESULTS AND LESSONS LEARNED

The statistical analysis of the Full Field Operational Test is being conducted by the independent evaluator, but several lessons were learned through establishing the testing protocols and conducting the test. Learning the data needs and protocols of just a few service providers demonstrated the differences in their operations. AAA was interested in the vehicle description, the customer's name, the location and a-brief description of the situation. King County Police required much more information depending on the emergency. They required the same information as AAA, plus criminal or event information which could become very involved. WSDOT Incident response requested the vehicle location and description only. In general the needs for voice contact, adequate mapping, call processing speed, and pre-existing protocols for each service provider were very important to the successful handling of a call.

7.8.1 Voice Contact

For Full Field tests the cellular phone technology was highly useful. Emergencies and location information were quickly communicated. The two-way pager technology necessitated a series of questions to refine the location and relate the problem. In situations where the user has no idea of their location, the phone based technology allows the operator to ask important refining questions, which improves the type of information the CSC presents to the service provider.

7.8.2 Accurate and Adequate Mapping / Differential GPS

Differential correction of GPS data and adequate mapping were also very important. For both of the participating technologies, the database was inconsistent in its accuracy. In some parts of the region, the vehicle was spotted on the map very close to its actual location and in others it could be up to a mile off. This was not a GPS error, but a mapping error because, in certain locations, vehicles showed up on CSC maps consistently in the same incorrect location. If the location was being incorrectly read by GPS it would vary from call to call. A mayday system will rely on the GPS information being corrected and fed to accurate maps that are read and interpreted by operators.

7.8.3 Processing Speed

Another issue is the speed at which location and incident type can be determined. If the mayday device takes more than a few minutes to determine location and incident type, then it may add an unacceptable amount of time to a call. The average cell phone call at a PSAP today takes about two minutes to dispatch service. This is with 30 percent of the calls having less than accurate location information. Mayday service automation could provide a faster response by directly sending information to the service providers through the CSCs. With this type of automation, the user would call the CSC which would process their information and pass the call or send a fax to a service provider with no CSC operator involvement. The service provider would get the location information

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and the incident type, along with the subscriber's personal information. If it was attached to a phone, there would be voice contact. If it was a pager system there would be a call back number that the service provider could dial to contact the user. This could facilitate faster processing, providing the service provider more information than they have today and the voice contact they desire.

7.8.4 Institutional Lessons

The institutional lessons learned in the PuSHMe Full Field Operational Test were the need for protocols for information transfer, an understanding of the data needs of the service providers, and a clear understanding of jurisdictional boundaries. Operationally, the PuSHMe devices performed as expected.⁵ GPS data and communications technologies operated as they were designed. It was learned that direct voice communication with the user was useful in refining location and situation information.

The main challenges of the PuSHMe project proved to be institutional. Coordinating the PuSHMe Full Field test with area PSAPs and response agencies was a logistical undertaking involving approximately 20 meetings, several iterations of protocols, scheduling of test dates, understanding geographic boundaries and answering agency expectations. This was a limited test using only a few service providers for a few days. The establishment of a permanent private emergency service center could be much more involved.

The goal of both the CSC and the service provider is the rapid and complete servicing of an emergency call. It is clear that if one or more mayday systems enter into a service provider's jurisdiction, the private service centers and the PSAPs need to be clear about their expectations of service, protocols for information gathering and dissemination, acceptable technologies, liability transfers, and the acceptable levels of involvement that private service providers can have in an emergency situation. This will take the form of a negotiated agreement with each service provider individually or with all of the service providers in the region.

⁵ This is a preliminary assessment using anecdotal evidence received as of 9 April, 1996. The actual assessment of the PuSHMe technologies will be released in the Fall of 1996.

8.0 RECOMMENDATIONS FOR IMPLEMENTING A MAYDAY CUSTOMER SERVICE CENTER

Implementation of a new mayday CSC requires addressing several complex institutional issues and coordination of multiple levels of communication. A mayday CSC will not only handle calls internally, but will route them to external service providers. This chapter presents recommendations for the implementation of a mayday CSC based on the findings presented in this report. This chapter recommends that new mayday CSCs:

- form relationships with the regional emergency service providers;
- deploy devices and/or the service;
- establish operating protocols;
- adhere to applicable state certification and training criteria;
- compose liability releases and legal contract language; and
- be knowledgeable of the area's geography and jurisdictions.

This is in addition to the normal business licenses, advertising and other business relationships any venture must complete.

Before any CSC begins operations, they must establish their mission and determine what level of technology is necessary to provide service. The new CSC and area service providers should have a good idea what capabilities their systems have and what formats are most useful for data transfer. The new CSC must establish:

- a clear understanding of what the new CSC will do (what services it will provide, the technologies employed, internal protocols);
- what levels of technology are currently used and if upgrading is possible or planned; and
- what external protocols are necessary to relay information to service providers.

8.1 DEPLOYMENT OF DEVICES OR SERVICE

Devices should be deployed after the new service has determined what will provide the best service for the customers. The end system should operate with the goal of facilitating rapid and effective emergency service provision. At a minimum, the PuSHMe tests and focus groups have determined an in-vehicle mayday system should provide:

• Mayday System Feature	Function
• a voice link or the capacity to point to a voice link	to provide direct contact between the subscriber and the service provider.
• a map based GIS system	to provide the service provider with accurate street address for the incident.
• differentially corrected GPS	information to locate the incident accurately.
• an ability to self-categorize calls (cf. the three buttons on the Motorola and XYPOINT devices);	to prioritize and correctly respond to the call.
• a customer information database	to provide the service provider with caller and vehicle information.

8.2 PROTOCOLS FOR TRANSFERS

Protocols will be affected by the current operating procedures of the local service providers. Although individual service providers and regions will have unique operating procedures, PuSHMe research has shown that the models presented in Figures 2.2 through 2.4 should provide a good base for preliminary operational planning. The goal of the CSC should be to establish a set of procedures that can be used for as many service providers as possible. This involves defining the core information necessary to transfer a call quickly and efficiently, as well as tracking a call after the transfer has occurred. For example, if the call is successfully transferred, but the service provider loses the caller before a call back number can be identified, or if the caller loses consciousness – the CSC may be required to provide additional location, subscriber or other information about the case quickly.

Transfer protocols will also play a large part in determining who has liability for the call at any given time. Ownership and responsibility for a call will need to be understood at all points of a call. Transfer protocols should be backed up by written policies regarding the execution of the protocols and what constitutes a successful transfer of responsibility.

Since it is currently impossible for the CSC to dial 9-1-1 directly, CSCs should determine if there is a seven digit number they can call when dialing the PSAP that will patch them into the E-91 1 system. This will raise the priority level of the CSC's call in the PSAP and will allow the PSAP to use their CAD system on the call. Transfer protocols must include at a minimum:

- caller location;
- incident type (a specific as practicable);
- caller information (description, pertinent medical history); and
- vehicle description.

These four elements will provide the service provider with the core information it needs to respond to an incident. PSAPs have requested that direct contact (via phone) with the caller be a feature of the new mayday systems. It is recommended that the transfer protocols include either the direct voice contact or the ability to obtain such contact by providing call-back cellular phone numbers.

8.3 STATE, LOCAL AND COUNTY CERTIFICATION AND TRAINING CRITERIA

Washington State's new emergency operator training program may become mandatory in the future, but is currently optional. In each area, certification and training criteria differs both in form and planning. In addition, counties and municipalities may have different regulations that may apply to a new CSC. At the time of this writing, several states' certification programs are about two years away from implementation. The content of these certification programs can only be speculated, but it is conceivable that they will include standardized training of CSC operators and call answering protocols. New should contact relevant state E-91 coordinators and obtain information regarding existing or planned applicable criteria. It is unclear how local criteria may effect national services. There is a possibility that national services may need to attain certification in several local jurisdictions.

8.4 INTERNAL TRAINING POLICIES

An internal training program provides a portion of legal defense in liability suits by demonstrating that the CSC has taken a well-reasoned approach to responding to calls and have trained their staff in the implementation of these approaches. Training programs also help ensure that consistent quality service is provided for the customers, which can be instrumental in avoiding a legal suit. An established, consistently applied training program with graduating criteria should be developed for each CSC.

The three observed CSCs in this report had a range of on-the-job and classroom training programs taking less than a week. The observed PSAPs, on the other hand, had training programs lasting over two months. Given that the mayday CSCs will be handling emergency calls more in the style of a PSAP, but will not be handling or monitoring emergency vehicles, training for mayday staffers will probably be somewhere between one week and two months. The exact lengths and content of training should be designed to meet the needs of the CSC. At a minimum, CSC operators should be trained in:

- the policies of the company, regarding all internal policies, privacy policies, etc.;
- protocols of the company pertaining to the operation of the center and the handling of calls;
- the operations of the software and hardware;
- some degree of medical triage;
- the jurisdictions served by the service center, regarding the proper PSAPs or CSCs to transfer a given call to; and

- any other items specific to the operations of the center.

8.6 LICENSING

Currently the State of Washington does not license private service providers, but are creating programs to do so. Licensing criteria is often a municipal and/or county function. As with the certification and training criteria, the new CSC should contact the relevant state E-91 1 coordinators and obtain information on relevant regulations and regulatory agencies.

Business licensing is necessary to operate in a city, county, or state or provide interstate service. For operation within the King County area, a new service provider will need to obtain a City of Seattle Business License from the City and a Unified Business Identification number and a Federal Employer's Identification Number from the State of Washington.

8.6 LIABILITY / LEGAL DISCLAIMERS AND RELEASES

CSCs will need the full coverage of liability limitation and warranty language in their contract documents. As discussed in Chapter 5, private service providers will need to use contract language to limit liability. Liability limitations include damages or other losses incurred while the system is in operation. Liability language should be comprehensive, but not overly penalizing to the user. Liability limitation clauses should be clear and accessible with options available for the level of liability coverage.

The CSC liability disclaimer and release should include:

- that the service charge was not for insurance and it was the customer's responsibility to contract separately for insurance;
- that the company was not liable for installation, repair, operation, service provision, personal injury, or emergency service dispatch related losses;
- that the liability was limited whether the losses were due to breach of contract or negligence and either performance or nonperformance;
- that liability is limited to either a set dollar amount or an amount relating to the service charge;
- that the customer has the option of increasing the service's maximum liability for a fee; and
- for any good(s) purchased, the terms of any warranty, and the fact that any other warranties express or implied were excluded (important for liability under the Uniform Commercial Code, as it relates to the sale of goods).

8.7 SERVICE PROVIDER COMMUNICATIONS

The new mayday CSC will need to communicate with area service providers to transfer calls and call for service. When handling a subscriber call, the base mayday service will need to receive GPS data, incident type and subscriber information; determine the appropriate Service provider (if any); then transmit any relevant information. The CSC should also be able to provide a direct voice connection between the service provider

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and the customer or be able to provide the service provider with a customer call-back number. This base service may be augmented by other services to provide a total service package.

Service providers will require that CSCs use the equipment necessary to answer, process and transfer emergency calls. All CSCs and PSAPs currently use voice phone lines as their primary method of information exchange. Some accept faxes or information over modems. The CSC should know the capabilities or limitations of the various service providers when transferring information. This allows CSCs to both take advantage of new technologies used by PSAPs as well as ensures that the CSC is communicating with technologies supported by the PSAPs. Recommended equipment for a new mayday CSC includes:

• a differentially corrected GPS system	This provides the CSC with the most accurate location (latitude / longitude) information.
• the computer system needed to operate a map-based GIS	This allows the CSC to operate maps.
• mapping software and map databases	This allows the CSC to provide real-world information (streets information, etc.) to locate an emergency based on the differentially corrected GPS data.
• adequate database of landmarks to aid in refinement of location	This allows the CSC operator to provide refining information to aid in location.
• adequate database of PSAPs and service providers by location	This allows the CSC operator to direct the call to the correct PSAP or service provider;
• phone connections to talk to service providers	This allows the CSC to call PSAPs or other CSCs.
• fax capabilities	This allows the CSC to send and receive faxes from PSAPs or other CSCs.
• direct line transfer capabilities for voice, or provisions for voice contact for service provider to customer communication	This allows the service provider operators to talk directly with the caller while service is on the way to provide additional help or obtain additional information.
• uninterrupted and backup power supply equipment	This allows the CSC to continue operation in a power outage or natural disaster.

8.8 COMPARISON BETWEEN A MAYDAY CSC AND EXISTING PRIVATE SERVICE PROVIDERS

The mayday services are comparable to other service providers such as alarm companies, ambulance services and auto clubs. This report has provided various descriptions of the operations of these types of services to provide a loose model for the implementation of a mayday service center.

Currently, a mayday service center would not fall under any of the regulatory codes for these businesses in King County, Washington. Each of the regulations is worded in a way that excludes the type of service provided by a mayday center. Alarm company

regulations are written to apply to real property. Ambulance service regulations are written to apply to the provision of medical transportation and not to dispatch or receive calls. Similarly, automotive clubs are likewise only licensed with regards to providing tow services.

Alarm companies provide a very good example of contract documentation that outlines what services will be provided and limits liability. Alarm companies also provide a service that is automatically relayed even when the customer is not on the premises. This makes it difficult to verify an alarm and leads to a high number of false alarms. A mayday service is less likely to have this high an instance of false alarms because the system needs to be deliberately, rather than automatically triggered. If a driver accidentally triggers a mayday mechanism the mayday CSC will answer the call and determine it to be a false alarm by checking with the driver.

Mayday services also are not designed to provide end-result medical care or automotive services and for this reason they are dissimilar from ambulance services or auto clubs. Currently there is no certification required for the CSC operators to dispense triage advice, but CPR or other emergency medical triage training is highly encouraged in the event of PSAP overload or other situation that involves a time lag between call reception and transfer. Usually the mayday operator should be able to receive and transfer a call before this type of advice would be necessary.

There is a potential that mayday service centers will become regulated in the future. Scrutiny of licensing these other services can provide an idea of what this future regulation will look like. However, given discussions with E-91 1 coordinators in the Pacific Northwest by the PuSHMe team, mayday CSC regulations will probably require the operators to receive state emergency operator and medical technician training and certification.

Finally, mayday service centers will be providing service providers with more information than existing service centers. Protocols for this level of information exchange will need to be established. Existing protocols with alarm companies probably will not be sufficient.

8.9 CONCLUSION

The new mayday CSC will need to meet the needs and requirements of governments, PSAPs and customers in order to be effective and successful. Protocols, licensing, certification, training programs, device features / deployment, liability wavers, insurance and technologies must be designed to provide the correct service provider with vital information quickly and effectively. In the future, when PSAPs and CSCs become standardized, the development of a mayday CSC may become easier and interfaces more robust. For the foreseeable future, however, CSCs need to keep abreast of national and local trends in service provision, specifically E-91 1 service, and regulations to anticipate changes in standards or laws.

Appendix A
King County Criteria-Based Dispatching Checklist

ALL CALLS MEDIC/AID

- What is the problem?
- Address/location -- house or apt? Name of business?
- Call back number – RP name (optional)

SR: AGE SEX CONDITION MED HISTORY MEDS.

- Conscious/responsive
- Decreased LOC?
- SOB? Respiratory distress? Talk in full sentences?
- Syncope? (When sitting up?)
- Diaphoresis?
- Severe/ Uncontrolled bleeding?
- Sudden Onset? How did this happen?
- Mechanism? Weapons involved?
- Pregnant?
- Medical history, meds taken?
- Potential for deterioration.....

ALL CALLS MEDIC/AID --

ABDOMINAL PAIN --

ALLERGY --

ANIMAL BITES --

BLEEDING – NON TRAUMA --

BREATHING DIFFICULTY --

CHEST PAIN / DISCOMFORT/ HEART PROBLEM—

CHOKING

DIABETIC

ENVIRONMENTAL EMERGENCIES

SYN/MISCARRIAGE

HEADACHE

MENTAL/ EMOTIONAL/ PSYCH.

BURNS: Thermal/electrical/chemical

DROWNING

FALLS/ INDUSTRIAL ACCIDENTS/ CUTS

ALL CALLS FIRE

Address/ location—Business name

Apt complex/ apt number

What do you see? FLAMES/SMOKE/EXPLOSION/ODO

Whereabouts in the bldg? Inside/outside?

Extent? Is the cause known?

RP in immediate danger?

Is bldg being evacuated? How many still ins

Anyone injured?

Fire close to other structures?

RP NAME, PHONE, ADDRESS.

- ALL CALLS FIRE

- ALARMS – commercial / residential -

- APT FIRES -

- BOMB THREATS SIGNAL 55 -

- CHEMICAL SPILL -

- DUMPSTER FIRE -

- EXPLOSION -

- GRASS/ TIMBER/ BRUSH FIRES -

- SERVICE CALLS ASSISTS -

- STRUCTURE FIRES -

- VEHICLE FIRES -

- WASH DOWN ILLEGAL BURN -

- BLOOD RUN -

- MVA/ VEHICLE FIRES I-90 -

- FELONY FLIGHT -

- COMBINED CALLS -

- NEUROLOGICAL/ HEAD INJURIES

VEHICLE FIRES

Where? Address?

Where about is the vehicle? How close to structures?

Anyone trapped in the vehicle?

Is this a PC/truck/tractor trailer?

If a commercial vehicle, is the cargo hazardous materials

Do you know the cause?

Flames or smoke visible? Extent?

Is everyone well clear of the vehicle?

If this was caused by an accident, how many people are injured?

VEHICLE FIRES

- WASH DOWN ILLEGAL BURN
- BLOOD RUN
- MVA/VEHICLE FIRES I-90
- FELONY FLIGHT
- COMINED CALLS

ALL CALLSMEDIC/AID

- What is the problem? What's going on?
- Address/location of the incident.
Business name/apt complex and apt #.
- Time delay – In progress/just occurred/report

Suspect/vehicle description, plate, DOT?

How many people involved?

Weapons? What type?

Injuries?

Drugs/alcohol involved?

Code 1 -- at your convenience

Code 2 – urgent

Code 3 – emergency

Code 4 – all under control

ALL CALLS

--

ALARMS – commercial / residential

ASSULT

ABANDONED AUTO

ABDUCTION

ANIMAL PROBLEMS

AIRCRAFT CRASH

BURGULARY (in progress)

BOMB THREAT 10-55

CAR PROWL

CIVIL COMPLAINT

CIVIL DISTURBANCE

DOA POSSIBLE NATURAL

DISTURBANCES PARTIES

DOMESTIC VIOLENCE

DWI/DUI RECKLESS DRIVING

ESCAPED PRISONER

FOUND BODY

FRAUD FRAUDULENT RETURNS

GAMBLING

GAS DRIVE OFF

HARASSMENT THREATENING/OBCENE CALLS

HIT AND RUN INJ/NON INJURY

HOLD UP PANIC BUTTON ALARMS

❖ Usually banks, stores, convenience stops

Where at? Name of business?

Address? Phone number?

Type of alarm, and what does it cover?

Alarm co. name, op number, call back number

If after hours, has the sub been contacted?

Responding? ETA? Type of Vehicle?

❖ Note business hours/non-business hours for procedure

Dispatch: Alert tones closes the air

When all units in position, Spt will advise

To put a line into the business

- HOLD UP/PANIC BUTTON ALARMS

- HOMICIDE/MURDER

- HOSTAGES

- HBD SUBJECT

- JUVENILE PROBLEMS

- LOST CHILD

- MALICIOUS MISCHIEF

- MENTAL 2-20

- MISSING PERSONS

- MVA INJ/NON-INJURY

- NARCOTICS – VUCSA ACTIVITY

- OVERDOSE POSINING

- PROWLER

- RAPE SEX OFFENSES

- STRONGARMED/ ROBBERY

- SHOTS FIRED PERSON SHOT

- SHOPLIFTER

- STOLEN VEHICLE STOLEN PLATES

- SUICIDE – DIRECT CALL

- SUICIDE – 2ND PARTY RELAY

- SUSPICIOUS VEHICLE/PERSONS

- SUBJECT W/ GUN

- THEFT OF / FROM BLDG

- TMVOP-OVERDUE VEHICLE

- TRESPASSER UNWANTED SUBJECT

Appendix B
Snohomish County Criteria-Based Dispatching Checklist

All Callers - Interrogation

1. What is the problem?
2. What is the address of the patient?
3. What is the telephone number you are calling from?
4. What is your name? (Optional)
5. Is the person conscious (able to talk)?

(If no): Go directly to Question #6

(If Yes): Go directly to Other conditions.

6. Is the person breathing Normally? If uncertain; Go and see if the chest rises, then come back the phone.

(If no): Go directly to Unconscious and not breathing normally below.

(If yes): Go directly to Unconscious and breathing normally below.

7. I have advised the dispatcher to send help.* - **Stay on the line.** (Do not pull the caller on hold, unless (necessary)

Unconscious and breathing normally: Dispatch MEDIC response.

Do you want to do CPR? – **I'll help you!**

(If no): Reassure the caller that the dispatcher has been advised* and stay on the line, if possible.

(If yes): Go to Cardiac/Respiratory Arrest, Section III. Determine appropriate age group.

Unconscious and breathing normally: Dispatch BLS response.

Go directly to Unconscious/Unresponsive/Syncope, Section II. (dispatch MEDIC response if needed)

Other Conditions:

Determine appropriate response level and dispatch aid

I have advised the dispatcher to send help* - Stay on the line. (do not put the caller on hold, unless necessary)

* Local agency protocols for acceptable wording should be followed

Revised 6/18/91

Background Information	Bleeding (Non-traumatic)
<p>Non-traumatic bleeding may be associated with many medical problems</p> <p>Patients may be critical due to :</p> <ul style="list-style-type: none">• The amount of blood lost, or• The underlying problem causing the blood loss. <p>Critical symptoms associated with bleeding:</p> <p>Syncope or near syncope associated with bleeding is usually secondary to a large loss of blood and requires paramedic evaluation and treatment to replenish to lost blood.</p> <p>Diaphoresis (sweating) is associated with shock due to loss of blood from the cardiovascular system.</p> <p>Vomiting red or dark red blood usually signified a rapid loss of blood secondary to either an ulcer or an esophagus problem. Vomiting coffee ground-like materials usually indicates a much slower bloodloss and less critical.</p> <p>Black tarry stool usually is associated an ulcer with significant blood loss.</p>	<p>Vaginal bleeding in the pregnant woman who is greater than twenty (20) weeks pregnant can be very serious and requires paramedic evaluation.</p> <p>Hemoptysis (coughing up blood) is significant if the amount is greater than ½ cup and may cause airway problems. Many bleed without any serious results.</p> <hr/> <p>Noncritical Instances of bleeding may be epistaxis (bloody nose), spontaneous rupture of a varicose vein or other localized bleeding that is controllable.</p>

Dispatch Criteria				Bleeding (Non-traumatic)	
4M1	Unconscious/ not breathing	4R1	Bleeding w/o MEDIC criteria	4Y1	Vaginal spotting
4M2	Diaphoretic	4R2	Vomiting coffee ground-like substance	4Y2	Nosebleed w/o MEDIC/BLS Red criteria
4M3	Syncopal episodes (multiple)	4R3	Weakness		
4M4	Syncope/ near syncope when sitting	4R4	Vaginal bleeding w/o syncope, <20 wks pregnant		
4M5	Vomiting blood (red/dark red)	4R5	Rectal bleeding w/o MEDIC criteria		
4M6	Black tarry stool	4R6	Uncontrolled nosebleed		
4M7	Vaginal bleeding, >20 weeks pregnant	4R7	3 rd party report, caller not w/ patient		
4M8	Coughing up blood (red/dark red), > ½ cup Blood				
4M9	Lower abdominal pain, women 12-50 yrs., if associated w/ dizziness or syncope or heavy vaginal bleeding (3 pads/hour)				
Medic Response		BLS Red Response		BLS Yellow Response	

Vital Points	
<ul style="list-style-type: none"> • Is the patient sweaty? • How does the patient feel when he/she sits up? • Is the patient vomiting? If yes, what does the vomit look like? How much and how long has he/she been vomiting? • Are the patient's bowel movements different than normal? If yes, how would you describe them? • What part of the body is the bleeding from? • Has there been vaginal bleeding, any more than normal? • Is the patient coughing up blood? If yes, how much? What does the blood look like? 	<ul style="list-style-type: none"> • If patient is a woman between 12-50 years ask: Is there a possibility of pregnancy? • Is the patient feeling weak? • Does the patient have any other medical or surgical history? Required (*) TB Screening <ul style="list-style-type: none"> ❖ Does the patient have an on-going cough? If yes, <ul style="list-style-type: none"> ❖ How long has the cough lasted? ❖ Has it lasted more than 3 weeks? ❖ Is the patient coughing up blood? ❖ Does the patient have a history of breathing problems?

Pre-arrival Instructions		Short Report	
<ul style="list-style-type: none"> • Have patient lie down, except if nosebleed • Nothing by mouth • If external bleeding, use clean cloth and apply pressure directly over it. Do not remove • If nosebleed, pinch end of nose and do not release 	<ul style="list-style-type: none"> • Do not flush the toilet. • Gather patient meds 	<ul style="list-style-type: none"> • Age • Sex • Chief complaint • Dispatch criteria used to determine response ❖ TB related symptoms • Pertinent related symptoms • Medical/surgical history, if relevant • Other agencies responding 	

Vital Points

Breathing difficulty can occur anytime air flow or the exchange of oxygen and carbon dioxide is impaired. The body attempts to overcome this impairment by increasing the treatment may be critical to reverse the process that is occurring in the patient.

Critical factors that should have paramedic assistance:

Chest pain with difficulty breathing may be due to a myocardial infraction, pulmonary edema, pulmonary embolus or pneumonia.

Inhaled substances may cause considerable lung damage and should have paramedic evaluation.

Persons who can not talk in full sentences because of difficulty breathing have a significant impairment and should have paramedic evaluation.

Pulmonary embolism often occurs in the setting of recent childbirth, broken legs with casting or recent hospitalization.

Children with asthma under the age of 12 are often very ill requiring paramedic intervention.

Drooling or difficulty swallowing associated with breathing difficulty may be epiglottis or an allergic reaction and should have paramedic evaluation and assistance.

Breathing Difficulty

Non-critical causes of breathing difficulty may be asthma (with any critical symptoms), hyperventilation and the common cold/bronchitis. Breathing difficulty may be relayed as shortness of breath, pain with breathing or inability to get a deep breath secondary to pain or rarely hyperventilation. Past history of breathing difficulties may be very helpful in determining the need for MEDIC or BLS intervention.

Dispatch Criteria		Breathing Difficulty	
5M1 Unconscious/ not breathing	5R1 < 50 yrs, w/o MEDIC criteria	5Y1 O2 bottle empty	
5M2 Difficulty breathing, > 50 years	5R2 Tingling or numbness in extremities/around mouth	5Y2 Stuffed nose, cold symptoms	
5M3 Difficulty breathing, w/ chest pain	5R3 3 rd party report, caller not with patient	5Y3 Patient assist	
5M4 Inhale substance			
5M5 Unable to talk in full sentences			
5M6 Recent childbirth/broken leg/hospitalization (2-3 months)			
5M7 Children < 12 yrs.: History of asthma or history of respiratory problems			
5M8 Drooling/difficulty swallowing			
5M9 Asthma, unresponsive to medication			
Medic Response	BLS Red Response	BLS Yellow Response	

Vital Points	
<ul style="list-style-type: none"> • Is the patient short of breath or does it hurt to breathe? • Is the patient able to speak in full sentences? • Is the patient experiencing any other problems right now? • Does the patient have to sit up to breathe? • Has the patient ever had this problem before? • What was the patient doing just prior to when he/she became short of breath? <p>If sudden onset, ask: Has the patient been hospitalized recently for childbirth or a broken leg?</p> <p>Or, If female: Does she take birth control pills?</p> <p>Could the patient be having an allergic reaction?</p>	<ul style="list-style-type: none"> • Is the patient drooling or having a difficult time swallowing? • Is the patient on asthma medication, or has he/she used them? • Does the patient have any other medical/surgical history? • Is the patient on oxygen? <p>Required (*) TB Screening</p> <ul style="list-style-type: none"> ❖ Does the patient have an on-going cough? <p>If yes</p> <ul style="list-style-type: none"> ❖ How long has the cough lasted? ❖ Has it lasted more than 3 weeks? ❖ Is the patient coughing up blood? ❖ Does the patient have a history of breathing problems?

Pre-arrival Instructions	Short Report
<ul style="list-style-type: none"> • Keep patient calm. • Patient may be more comfortable sitting up • Do not allow patient to exert him/herself. • Gather patient meds, if possible. 	<ul style="list-style-type: none"> • Age • Sex • Chief complaint • Dispatch criteria used to determine response ❖ TB related symptoms • Pertinent related symptoms • Medical/surgical history, if relevant • Other agencies responding

Vital Points**Choking**

Choking is one of the most common causes of airway obstruction. You should consider choking anytime a person who has been eating is reported down or in a child under 6 years of age.

Critical symptoms of choking:

Inability to talk – This suggests that the person is unable to move any air due to complete obstruction of the airway.

Cyanosis – This suggests that there is no air exchange due to complete obstruction of the airway.

If there is any suggestion of airway obstruction by the RP, the pre-arrival instructions for **Choking** should be accessed immediately.

Dispatch Criteria				Choking
8M1 Unconscious/ not breathing	8R1 Able to speak or cry	8Y1 Airway cleared, patient assist		
8M2 Unable to talk or cry	8R2 Exchanging air w/ no breathing difficulty			
8M3 Turning blue				
Medic Response		BLS Red Response		BLS Yellow Response

Vital Points
<ul style="list-style-type: none"> • Does the chest rise? • Does the air enter freely? • Is the patient able to speak or cry? • Is the patient turning blue?

Pre-arrival Instructions	Short Report
<ul style="list-style-type: none"> • CHOKING Instruction, Section III. Determine appropriate age group. 	<ul style="list-style-type: none"> • Age • Sex • Chief complaint • Dispatch criteria used to determine response • Pertinent related symptoms • Medical/surgical history, if relevant • Other agencies responding

Dispatch Criteria		Motor Vehicle Accident (MVA)	
25M1 Unconscious/ not breathing	25R1 Injury accident, no MEDIC criteria	25Y1 Minor Injury, patient walking	
25M2 Decreased level of consciousness	25R2 Roll-Over	25Y2 Evaluation requested by qualified personnel:	
25M3 Chest pain prior to accident	25R3 3rd party report, caller not w/ patient	• Police	
25M4 Confirmed or unknown injuries with following mechanisms:		• Fire Dept	
• Vehicle (car/motorcycle) vs. immovable object			
• Vehicle vs. vehicle (Head-on/T-bone)			
• Car vs. pedestrian			
• Car vs. motorcycle or bicycle			
• Victims trapped			
• Victims ejected			
25M5 MCI Criteria			
Medic Response	BLS Red Response	BLS Yellow Response	

Vital Points

<ul style="list-style-type: none"> • Did the caller stop or drive by? • How many patients are injured? • Are the patients able to respond to you and follow simple commands? • Can the patient describe where their pain is located? • Describe what happened? • Are all of the patients free of the vehicle? Is anyone trapped in the vehicle? 	<ul style="list-style-type: none"> • Was anyone thrown from the vehicle? • Are there any hazards present? <ul style="list-style-type: none"> • Fire? • Water? • Wires down?
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Pre-arrival Instructions

<ul style="list-style-type: none"> • Do not move (if no hazards). • If bleeding, use clean cloth and apply pressure directly over it. DO NOT REMOVE! • If unconscious, Unconscious/Breathing Normally – Airway Control (Trauma) instructions, Section III, 	<ul style="list-style-type: none"> • Gather patient meds, if possible.
---	---

Short Report

<ul style="list-style-type: none"> • Age • Sex • Chief complaint • Dispatch criteria used to determine response • Pertinent related symptoms • Medical/surgical history, if relevant • Other agencies responding • Danger to field units, if present
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**CARDIAC/RESPIRATORY ARREST/
LARYNGECTOMY AND TRACHEOSTOMY PATIENTS
(Neck Breathers)**

LARYNGECTOMY – Patients who have had a laryngectomy (the surgical removal of all or part of the larynx) have a permanent opening at the base of the neck called a stoma, which connects the airway (trachea) to the skin of the neck. Patients with a complete laryngectomy will have no air flow from the nose and mouth.

PARTIAL LARYNGECTOMY – In patients with a partial laryngectomy, there can be some air flow from the nose and mouth and the chest will not rise during ventilation, unless the caller covers the patient's nose and mouth with one hand.

For all of the above the method of ventilation is to perform direct mouth-to-stoma ventilations. Do not instruct the caller to tilt the person's head back, instead keep the head straight.

1. Does anyone there know CPR? (Trained bystanders may still need instructions. Ask!)
2. Get the phone NEAR to the person, if you can.
3. Listen carefully, I'll tell you what to do.
 - Get him/her FLAT on his/her back on the floor.
 - BARE the chest
 - Kneel by his/her side
 - KEEP THE HEAD STRAIGHT
 - COMPLETELY COVER the HOLE IN THE NECK with your mouth and FORCE 2 deep BREATHS
 - Make sure the CHEST RISES.
 - THEN, COME BACK TO THE PHONE! If I'm not here, stay on the line.
4. Did the Chest rise?

(If yes): Continue with Step 4, Cardiac/Respiratory Arrest/Adults
(If no): Listen carefully, I'll tell you what to do next

 - COVER the person's MOUTH AND NOSE with your HAND
 - COMPLETELY COVER the HOLE IN THE NECK with your mouth and FORCE 2 deep BREATHS
 - THEN, COME BACK TO THE PHONE! If I'm not here, stay on the line.

5. Did the chest rise?

(If yes): Continue with Step 4, Cardiac/Respiratory Arrest/Adults.
(If no): Repeat Step 4, EMPHAZIDE TIGHTLY COVERING patient's mouth and nose.

If the chest still does not rise to Obstructed Airway/Adults

Dispatch Criteria				Animal Bites	
3M1	Unconscious/ not breathing	3R1	Controlled bleeding	3Y1	Swelling at bit site
3M2	Uncontrolled bleeding	3R2	3 rd party report, caller not w/ patient	3Y2	Bite below neck, non-poisonous
3M3	Difficulty breathing				
3M4	Serious neck and face bites				
3M5	Bite from poisonous animal				
Medic Response		BLS Red Response		BLS Yellow Response	

Vital Points	
<ul style="list-style-type: none"> • Is the patient bleeding? • Does the bleeding stop when you apply pressure • Is the patient short of breath or does it hurt to breathe? • What part of the body was bitten? • What type of animal bit the patient? • How long ago did they receive the bite? • Is there an swelling around the bite? • Is the animal contained? 	<ul style="list-style-type: none"> • Has animal control been notified?

Pre-arrival Instructions		Short Report	
<ul style="list-style-type: none"> • Contain the animal, if possible • Keep patient calm and still • If bleeding, use clean cloth and apply pressure directly over it <p>Do not remove</p>		<ul style="list-style-type: none"> • Age • Sex • Chief complaint • Dispatch criteria used to determine response • Pertinent related symptoms • Medical/surgical history, if relevant • Other agencies responding • Danger to field units, if present 	

Critical animal bites in King County are rare since there are no poisonous snakes indigenous to our county.

Critical animal bites requiring paramedic evaluation:

Uncontrolled bleeding is bleeding that cannot be controlled by direct pressure with a clean cloth or sanitary napkin.

Paramedics should not be dispatched until the RP has Attempted to control bleeding without success.

Bites around the face or neck are considered critical because of the possibility of airway obstruction. Therefore, very superficial bites of the face or neck are not critical and do not require paramedic dispatch.

Difficulty breathing suggests that either the airway is compromised or, in the case of a poisonous animal, that the ability to breath is compromised.

Other animal bites that do not fit into critical symptomatology should have BLS evaluation.

Resources: **Poison control – 526-2121**

Responding unit should call Poison Control directly, when possible.

Callers – Interrogation

1. What is the problem?
2. What is the address of the patient?
3. What is the telephone number you are calling from?
4. What is your name? (Optional)
5. Is the person conscious (able to talk)?

(If no) : Go directly to Question #6

(If yes): Go directly to other conditions

6. Is the person breathing Normally? If uncertain: Go and see if the chest rises then come back to the phone.

(If no) : Go directly to Unconscious and not breathing normally below.

(If yes): Go directly to Unconscious and breathing normally below.

7. If have advised the dispatcher to send help* - **Stay on the line.** (Do not put the caller on hold, unless necessary)

If conscious and not breathing normally: dispatch **MEDIC** response.

8. Do you want to do CPR? – **I'll help you!**

(no): Reassure the caller that the dispatcher has been advised* and stay on the line, if possible.

(yes): Go to Cardiac/Respiratory Arrest, Section III. Determine appropriate age group.

If Conscious and breathing normally: Dispatch **BLS** response

Go directly to **Unconscious/Unresponsive/Syncope**, Section II. (dispatch **MEDIC** response if needed.)

Conditions:

One appropriate response level and **dispatch** aid

Advised the dispatcher to send help* - **Stay on the line.** (Do not put the caller on hold, unless necessary)

Agency protocols for acceptable wording should be followed.

Callers – Interrogation

1. What is the problem?
2. What is the address of the patient?
3. What is the telephone number you are calling from?
4. What is your name? (Optional)
5. Is the person conscious (able to talk)?

(If no) : Go directly to Question #6

(If yes): Go directly to other conditions

6. Is the person breathing Normally? If uncertain: Go and see if the chest rises then come back to the phone.

(If no) : Go directly to Unconscious and not breathing normally below.

(If yes): Go directly to Unconscious and breathing normally below.

7. If have advised the dispatcher to send help* - **Stay on the line.** (Do not put the caller on hold, unless necessary)

If conscious and not breathing normally: dispatch **MEDIC** response.

8. Do you want to do CPR? – **I'll help you!**

(no): Reassure the caller that the dispatcher has been advised* and stay on the line, if possible.

(yes): Go to Cardiac/Respiratory Arrest, Section III. Determine appropriate age group.

If Conscious and breathing normally: Dispatch **BLS** response

Go directly to **Unconscious/Unresponsive/Syncope**, Section II. (dispatch **MEDIC** response if needed.)

Conditions:

One appropriate response level and **dispatch** aid

Advised the dispatcher to send help* - **Stay on the line.** (Do not put the caller on hold, unless necessary)

Agency protocols for acceptable wording should be followed.

Appendix C
Focus Group Participation

OVERVIEW

FOCUS GROUP MEETING

The focus group meeting was conducted by LUTE (Judy Ramey, Erin Schulz, and Matt Shobe) on March 5, 1996 at the University of Washington, Loew Hall, Room 355.

Attendees

Public Representatives:

Rana Hoover, Dispatcher, Issaquah PSAP
Sue Chapin, Supervisor, King County PSAP
Jerrod Strid, Dispatcher, King County PSAP
Bob Oenning, Director, E-91 1 (Olympia)
Debbie Henderson, Supervisor, WSP (Marysville)
Kandy Roseth, Supervisor, Kirkland Police Department
Judy Cothorn Supervisor, SNOPAC
Morgan Balogh, WSDOT
Marlys Davis, E-91 1 (King County); she attended the last half of the meeting, but did not participate

PuSHMe Representatives

Jean Lambson, William Clise, Jane Bissonette, Bart Cima, Jim Benson, Mark Haselkorn, and Kathy Semple.

Invited, but did not attend:

Vickie Crawford, WSP (Bellevue)
Roy Kittleson, WSP (Bellevue)
Vicki Wise, Supervisor, Issaquah PSAP
Marge Williams, E-91 1 (Snohomish)
Ruth McMullen, Dispatcher, Kirkland PSAP

Agenda

Part I

Judy Ramey gave a brief introduction.
Erin Schulz gave an overview of the meeting.
Matt Shobe described the PuSHMe technologies.
Erin Schulz presented nine scenarios (one at a time) to the public representatives for their response. The PuSHMe partners were observers, not participants, during these scenario discussions.

Part II

We had a free form discussion on issues the PuSHMe partners and public representatives brought up.

Appendix D

Focus Group Scenarios

Medical Emergencies with access to the phone

Scenario 1

- The private operator gives you the following information over the phone:

A driver is having a heart attack on SB I-5 at mile marker 167. The driver is a 58 year old, male, conscious and breathing erratically. The license # of the car is ABC 123, WA state. It is a Red, 1982, Chevrolet Cavalier. The subscriber's cellular phone number is 206-555-4343.

- The operator then transfers the call directly to you and disconnects

Focus: *How would you expect medical emergencies (with phone) to be handled when you have communication with the caller?*

Participants' comments

- Medical calls should go directly to an aid dispatcher. Fire departments and large PSAPs usually dispatch aid units.
- The only time a non-aid PSAP (a PSAP that does not dispatch aid) should get a medical call is when a vehicle is blocking or police are needed.
- If non-aid PSAPs receive aid calls, they want to know the call type ("e.g., "medical") and location information so they can transfer the call to the correct aid dispatcher.
- Some PSAPs use mile marker information (e.g., at mile marker 199) and others use exit information (e.g., just south of Exit 145B).
- Calls from the private operator should come in as "911" calls, not "7-digit" calls. PSAPs cannot automatically transfer 911 calls.
- They (public representatives) are concerned about the delay that might occur with private, third party communication centers.
- They are skeptical about cellular phone reliability. That is, they expect cellular callers to have difficult time getting through on their cellular phone or to be periodically disconnected.
- Some thought it would be better for the private operator to stay on the line to reassure the caller while the caller is being transferred.

Scenario 2

- The private operator gives you the following information over the phone:

We have a medical emergency on SB I-5 at mile marker 199. The driver is a 32 year old, female. The license # of her car is DEF 789, WA state. It is a Blue, 1992, Ford Explorer. She does not have access to a phone.

The data entry screen in your CAD system looks like:

TYPE :	LOCATION :		
REMARKS :			
LIC :	LIS :	COL :	
VYR :	MK :	NAME :	
CELL PHONE :			

Focus: *How would you expect medical emergencies (no phone) to be handled if you had no communication with the caller and you received information in the order you would enter if in your CAD system?*

Participants' Comments

- PSAPs are concerned that a third party call will slow down the whole emergency response process.
- They were very adamant about the importance of being able to talk to the person needing aid. They said, "...loss of voice is a real problem."
- They are hesitant about allowing private operator would know who is pressing the "911 button" if the operator can't confirm the caller's ID through voice communication.
- They are sure people are going to hit the wrong button all the time. Their fear is that an unarmed aid car, for example, is going to be dispatched to a dangerous scene.
- They are concerned about false alarms.
- They want DIRECT voice contact with the driver.

Downloading information directly to CAD

Scenario 3

- The private operator downloads the following information directly to your CAD system:

TYPE: Med Choke LOCATION: King Dome parking Lot
REMARKS: 12 year old. female, conscious, and breath-erratically
LIC: GHI 345 LIS: WA COL: Red
VYR: 1990 MK: Honda NAME: Civic
CELL PHONE: NA

- You have no telephone communication with the driver, but can call the private operator.

Focus: How would you fee/ about receiving data directly in your CAD system as opposed to receiving the infonnation over the phone?

Participant's comments

- They don't believe information can be downloaded because it is illegal.
- There is a security issue if a modem is hooked up to a State system.

Informing the WSP and WSDOT

Scenario 4

- The private operator gets a call from a subscriber whose car is broken down on the 520 bridge deck.
- The private operator calls for a tow truck.
- The private operator gives you the following information:

Disabled vehicle (not blocking) on EB 520 bridge deck. Service is on the way. The driver is John Smith. The license # of the car is MNO 321, WA State. It is a Blue, 1972, Volkswagen Bug.

Focus: How would you expect communication among the private communication center, the WSP and WSDOT to occur?

Participants' comments

- If a car is disabled and not blocking, the WSP needs to be informed. The WSP needs to be informed of incidents on State Routes so they don't send a service truck unnecessarily.
- If the accident is in a crucial area (e.g., 520 bridge), they will send the DOT tow truck so people driving by know it has been taken care of. By doing so, they can prevent redundant calls from coming into the WSP.
- They use different protocols for every highway.

- It is a “major training issue” that the private response personnel understand the protocols and agencies involved on every highway and road.
- They are concerned that the private operators make the right decisions. For example, if it is up to the private operator to decide what calls to report to the WSP, the operators must be able to distinguish a “duplicate call” from a “similar” call.
- All PSAPs have a different definition of what a “critical” call is. For example, a critical call for Issaquah is every call. A critical call for King County is more defined (e.g., a blocking car or injury accident).
- Details about each call are crucial. For example, a non-blocking car could be a rollover and require additional assistance.
- They want a call back number (if possible) for the person with the disabled vehicle.

Handling reported accidents and duplicate calls

Scenario 5

- A subscriber reports an accident on I-5 to the private operator.
- The private operator reports the accident to you and provides an approximate location of the accident.
- The private operator receives 5 more calls about the same accident.
- The private operator consolidates the information from all 5 calls and updates you with one call.

Focus: How would you expect duplicate calls to be handled?

Participants’ comments

- They are concerned about the delay and increase in human error when a call is passed from the private center to the public center rather than going to the public center directly.
- Aid dispatchers will not dispatch for “possible” injuries; they will only dispatch if injuries are confirmed.
- They want to know who is reporting what accident in case they have to contact them later.
- Private companies should keep records on calls (audio tapes) for at least 90 days in case the tape is needed for legal purposes.
- If a private operator receives multiple calls about the same accident, they would expect the operator to clarify the location of the accident, get witness information, and determine whether or not injuries are involved.

- The approximate location of the accident is fine for police, but aid dispatchers need the exact location.
- They are not confident that private operators will be able to clearly distinguish a duplicate call from a unique call.

Possible Police Situations

Scenario 6

- The private operator gives you the following information over the phone:

We have a 2 car, non-injury accident on the SE corner of 50th and University Way. The driver reporting the accident is Jane Smith. The license # of the car is CBA 444, WA state. It is a Brown, 1982, Toyota landcruiser.

- You have no telephone communication with the driver but can call the private operator.

Focus: How would you handle police calls similar to this one?

Participants' comments

- They want voice communication with the caller.
- In this scenario they would want the following information: injury or non-injury, blocking or non-blocking, disturbance or non-disturbance, and DWI or no DWI.
- Often people report injuries when there are no injuries and vice versa.
- If there are no injuries, it is non-blocking, with no disturbances, and no DWI, then it will not be a priority call for police.
- PSAP operators would not disconnect from private operators or callers until they had all the information they needed and a call back number.
- If an accident occurs in a busy area (e.g. the university district), the PSAP is likely to get many calls about the incident from the shop owners and others in the area.
- If this scenario involved injuries, the aid dispatcher would need very specific information from the caller in order to use the criteria based dispatching protocols (CBD). Aid dispatchers use specific triage techniques when answering a call.

TRAINING

Scenario 7

- The State of Washington recently established a certification program for dispatchers and call receivers
- The certification program is optional
- All private communication center personnel elect to become State certified

Focus: What sort of training would you expect private response center personnel to have?

Participants' comments

- They expect private operators “to know the area really well” such as landmarks, etc.
- They like the idea of having both a data link and a voice link. Voice communication is absolutely necessary.
- If a private center is going to be liable, then they must be trained.
- They would expect the private center personnel to be trained through a State program if one existed.
- They said State standards and an accreditation program are going to be developed for the State of Washington.
- They do not necessarily understand why the private center has to exist.
- They think it will be great to get the ANI and ALI information on cellular calls.

HANDLING STOLEN VEHICLES

Scenario 8

- The private operator gives you the following information over the phone:

We have located our subscriber's stolen car. It is at 5678 Englewood Drive. The owner of the car is Kate Jones. The license # of the car is KLM 222, WA State. It is a Red, 1990, Volkswagen Rabbit.

- You can contact the subscriber and/or the private operator directly.

Focus: How would you handle a car theft?

Participants' comments

- They need to know if the stolen car is occupied.
- They need to know the details on how the stolen car was located.
- If the stolen car is occupied and moving, it is “a whole different situation.”
- They would need the case number associated with the stolen car, assuming the stolen car was reported to police.
- If a stolen car is recovered, the private operator or the owner of the car must inform police.
- Not all “stolen” cars are actually stolen.
- In order for police to act on an occupied stolen, they need written consent from the owner of the car.

Handling stolen vehicles

Scenario 9

- The private operator gives you the following information over the phone.

The caller (subscriber) is being followed by a stalker. She reported the stalker to the police last week. The subscriber is afraid to pull over or stop the car. She is currently going N on I-5 and approaching the Snohomish County line. The driver is Sue Jones. The license # of her car is QRS 111, WA State. It is a Blue, 1993, Ford Taurus. The car following her is green with the License # LMN 222.

- The private operator establishes a 3-way telecommunication link with you, the private operator, and the driver.
- The private operator continues to update you with the current location of the driver.
- The driver is nearing the county line.

Focus: How would you handle a moving emergency?

Participants' comments

- They would prefer that the caller dial 911 first, then the PSAP operator can call the private operator to get the location of the caller.
- They want a call-back number for the caller.
- They are concerned that the caller will be confused about whether to use the “911” button or to dial 9-1-1.

- If the caller were to dial 9-1-1, the PSAP operator would give him or her directions to the nearest police station.
- The PSAP operator wants direct contact with the caller.

Appendix E: Full Field Testing - Forms and Documentation

Figure 1
Motorola User Script

PuSHMe Full System Test Log

Test Code: MOT017

3/13/96	Test #: 22	Vehicle: Bronco	612-3795
Location: End of NE 138 th St.			

Scenario: Two people beat you with baseball bats:
PuSH: EMER button

GPS Time

(Time button PuSHed)	
(Time connected)	
CSC: PuSHMe, What are you reporting?	
User: Full system test # ,<Test Code> I've been beaten.	
CSC: When did this happen?	
User: Fifteen minutes ago	
CSC: Are you breathing normally?	
User: YES	
CSC: (Confirms name, location, vehicle from User Profile)	
User: (Responds appropriately.)	
CSC: I am notifying the police.	
User: (Wait for operator to return)	
CSC: Service dispatched	
User: (Hit END)	
User: (Emergency service arrives – call CSC on cell phone at 440-4787)	
CSC: PuSHMe Center	
User: This is test _____, Service arrived at _____:_____	
CSC: Thank you	
(Time call closed)	

Give paperwork to emergency service personnel.
CSC phone number : (206)440-4787

Figure 2
xyPoint User Script

PuSHMe Full System Test Log

Test Code: MOT017

xyPoint

3/13/96	Test #: 22	Vehicle: Taurus	163
Location: NE 168 th St and 204 Ave NE.			

Scenario: Your vehicle has been vandalized:

PuSH: 911 button

GPS Time

(Time button PuSHed)	
(Time connected)	

CSC:	Confirmed 911	
User:	YES	
CSC:	Can we call you on you cell phone?	
User:	YES	
CSC:	Can you confirm incident @ "LOCATION"?	
User:	(Respond appropriately.)	
CSC:	(Operator calls PSAP)	
CSC:	Service notified.	
CSC:	Service dispatched	
CSC:	Has dispatched arrived?	
User:	NO (until dispatched service arrives)	
User:	YES (when dispatched service arrives)	
CSC:	Disconnecting	
CSC:	PuSHMe	

(Time call closed)	
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Give paperwork to emergency service personnel.
CSC phone number : (206)328-6000

Figure 3
Motorola CSC Script

PuSHMe Full System Test Log

Test Code: MOT017

Motorola

3/13/96	Test #: 22	Vehicle: Bronco	612-3795
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Scenario: Two people beat you with baseball bats:

PuSH: EMER button

		GPS Time
	(Time button PuSHed)	
	(Time connected)	
CSC:	PuSHMe, What are you reporting?	
User:	Full system test # ,<Test Code> I've been beaten.	
CSC:	When did this happen?	
User:	Fifteen minutes ago	
CSC:	Are you breathing normally?	
User:	YES	
CSC:	(Confirms name, location, vehicle from User Profile)	
User:	(Responds appropriately.)	
CSC:	I am notifying the police.	
User:	(Wait for operator to return)	
CSC:	Service dispatched	
User:	(Hit END)	
User:	(Emergency service arrives – call CSC on cell phone at 440-4787	
CSC:	PuSHMe Center	
User:	This is test _____, Service arrived at _____:	
CSC:	Thank you	
	(Time call closed)	

Figure 4
XyPoint CSC Script

PuSHMe Full System Test Log (CSC)

Test Code: SEN025

xyPoint

3/13/96	Test #: 22	Vehicle: Bronco	85
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Scenario: Your radio has been stolen:

PuSH: 911 button

GPS Time

(Time button PuSHed)	
(Time connected)	

CSC:	Confirm 911	
User:	YES	
CSC:	Can we call you on your cell phone?	
User:	NO	
CSC:	Are you in imminent danger?	
User:	(Respond appropriately)	
CSC:	Emergency in Progress?	
User:	(Respond appropriately)	
CSC:	Can you confirm, incident @ "LOCATION"?	
User:	(Respond appropriately)	
CSC:	Can you go to a phone & dial 911?	
User:	NO	
CSC:	(Operator calls PSAP)	
CSC:	Service notified.	
CSC:	(Other questions are asked)	
User:	(Respond appropriately)	
CSC:	Service dispatched	
CSC:	Has dispatched arrived?	
User:	NO (until dispatched service arrives)	
User:	YES (when dispatched service arrives)	
CSC:	Disconnecting	
CSC:	PuSHMe	

(Time call closed)	
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Figure 5
CSC Directions

CSC Overview Motorola

3/13/96

Bronco

612-3795

Test #	Test Code	Scenario	PSAP
22	MOT017	Two people beat you with baseball bats.	KCP
23	MOT004	You have been hijacked.	KCP
24	MOT046	You've smashed your fingers in the vehicle door.	WDOT

Honda

612-2873

Test #	Test Code	Scenario	PSAP
22	MOT041	You saw a cyclist get hit by a car.	WDOT
23	MOT050	You saw a cyclist get hit by a car.	WDOT
24	MOT035	A car ran into your vehicle. Your right arm is broken.	WDOT

Morgan's

612-3792

Test #	Test Code	Scenario	PSAP
22	MOT081	You see a stalled Chevrolet with its hood up at the side of the road.	AAA
23	MOT091	You have a flat tire and no spare.	AAA
24	MOT077	You see a stalled Chevrolet with its hood up at the side of the road.	AAA

Taurus

612-3791

Test #	Test Code	Scenario	PSAP
22	MOT048	Your passenger suffered a heart attack.	WDOT
23	MOT053	You saw a cyclist get hit by a car.	WDOT
24	MOT044	You have broken your leg.	WDOT