CHAPTER 1

RADIO SYSTEMS

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1. GENERAL INFORMATION.

a. Purpose. The purpose of this chapter is to describe the California Highway Patrol (CHP) standards and policies for radio communications systems and equipment, and to provide guidelines for reporting system and equipment outages, and system inadequacies.

b. Objectives. The Department's objective is to provide highly reliable statewide radio communications to support field and communications personnel. Integral to meeting this objective is the establishment of and adherence to standards for equipment acquisition, equipment usage, and equipment maintenance.

c. Responsibility. Telecommunications Section (TS) is the Office of Primary Interest (OPI) for the management, design, acquisition, and support for the overall statewide radio communications systems and equipment. Each field Division and Area commander is responsible for the overall control, operation, and inventory of their respective system and equipment assigned to their command. All system or equipment deficiencies or outages should be reported in accordance with this chapter and/or Highway Patrol Manual (HPM) 60.1, Communications Operations Manual. Area commanders or their designee may generate work orders (CHP 272, Radio Trouble Report) for maintenance and/or repair of communications equipment by California Governor's Office of Emergency Services Public Safety Communications (PSC) personnel. Major projects shall be coordinated with TS.

d. Policy. The Department's radio communications system and equipment will be managed, operated, installed, and maintained in accordance with this chapter. Any operation and/or installation of nondepartmental radio communications systems or equipment, or other deviation from the scope of this chapter, must be reviewed and approved by Executive Management.

2. CALIFORNIA HIGHWAY PATROL RADIO SYSTEMS.

a. General. The Department manages and operates two statewide fixed radio system networks and one mobile radio subsystem. The two fixed systems are referred to as the low band system, also known as the CHP main radio system, and the ultra high frequency band (UHF) system. There is also a mobile radio subsystem which is referred to as the vehicular repeater system (VRS), also known as the extender system. The departmental radio system and all associated radio equipment is installed, maintained, and repaired by PSC.

(1) Public Safety Communications receives a fixed cost to maintain departmental radio and microwave equipment.

(2) The Annual Maintenance Service Program provided by PSC includes 24-hour per day, seven days per week, routine and emergency maintenance service. In addition, all labor, travel, and replacement parts are included in the cost.

(3) Preventive maintenance for radio equipment and systems is included in fixed-cost maintenance, as well as costs associated with interference problem solving, technician training, and development of maintenance standards.

b. Low Band Very High Frequency. The low band very high frequency (VHF) system is the main voice radio system for all normal and daily CHP operations. Each primary radio channel is a dedicated frequency pair designated by a color, for a specific geographic area. For example: Red, Black, or Turquoise. The secondary channel, referred to as Blue, is a statewide common channel. The low band system and equipment operation procedures are described in HPM 60.1.

(1) The Federal Communications Commission (FCC) has allocated and licensed over 59 low band VHF frequencies (39-45 Megahertz [MHz]) to the CHP.

(2) Some Areas must share the same primary channel with other Areas and/or field offices, and some Areas have exclusive use of a primary channel. The actual radio traffic load on a given primary channel determines the assignment of primary channels. Telecommunications Section can evaluate the usage of each channel throughout the state, when requested. When the channel load reaches an unacceptable level, action may be taken to implement a new channel in the affected Area. Local field commanders should notify TS if their assigned primary channel appears to be unacceptably overloaded.

(3) Each low band channel has a designated “S Channel” frequency for car-to-dispatch transmissions, and a designated “C Channel” frequency for dispatch-to-car and car-to-car transmissions.

c. Ultra High Frequency Band. The primary purpose of the UHF system is for dignitary protection operations and details which provide personal security for the Governor and other dignitaries. The UHF channels, which do not have statewide or general coverage like the low band system, are also used for special CHP field operations and for contract dispatching services for other state agencies. The FCC has allocated/licensed six UHF frequency pairs (453 - 465 MHz) to the CHP. These frequencies are not exclusive for statewide use and are to be used only in their licensed area(s).

d. Vehicular Repeater System. The purpose of the VRS is to provide extended radio communications capability of the vehicle's high-powered mobile radios through the use of a portable radio and vehicular repeater. The VRS can be enabled when the vehicle is stationary. The VRS should be disabled prior to the vehicle getting underway. Improper use and/or activation of the VRS can cause radio system operational problems.

e. Radio Frequency Usage.

(1) Transmission is prohibited on any licensed FCC frequency unless the Department has the authority and/or a formal agreement specifically authorizing the use of that frequency.

(2) Telecommunications Section is the OPI for coordinating the use of radio frequencies within the Department, and for processing all requests for the use of frequencies not authorized for CHP use.

(3) Local commands must contact TS to coordinate a Frequency Use Agreement (FUA) if they wish to arrange for the use of another agency's radio frequency. This is also the case if other agencies express a desire to use a CHP frequency. This will require authorization from TS and approval by Information Management Division (IMD).

3. FACILITIES RADIO EQUIPMENT.

a. General. Most CHP facilities are equipped with radio communications equipment necessary to meet their primary operational objective. Each type of facility has different radio communications equipment and system requirements. This section will describe the standard equipment and installation policy for the Department's office facilities.

b. Communications Center. The communications center is the primary control point for the radio system servicing their respective operational dispatch area. Each communications center requires specific equipment, different from other CHP facilities, to meet their operational objective. California Highway Patrol communications centers are normally equipped with the items listed below:

(1) Typically, one radio console operator position for each primary operational channel is installed in the communications center for dispatching CHP mobile units.

(a) Operator Positions. Communications centers may be equipped with additional console operator positions necessary to meet the needs of the center. The number of additional consoles is based on the specific types

of radio traffic that must be handled, such as Freeway Service Patrol or UHF.

(b) Backup Consoles. A communications center without a spare console terminal may be equipped with a backup dispatch console unit to control only the essential dispatch control circuits during periods when the main console is inoperative.

(2) Audio Logging Recorder. Each communications center will be equipped with an audio logging recorder to record only authorized communications center positions. An authorized communications center position is defined as one equipped with a radio dispatch console terminal and/or a voice telephone terminal that answers and makes communications center-related calls. The audio logging recorder capacity will be determined by the number of authorized communications center positions responsible for handling radio and telephone calls. Watch officer position(s) assigned to communications center commands are authorized position(s) providing they answer or originate telephone calls related to the operation of the communications center. Administrative telephones may also be recorded when justified, if equipment is available. Communications Centers Support Section is the OPI for Audio Logging Recorders.

(3) Monitor Receivers and Dedicated Circuits.

(a) The receiver and/or control equipment will be installed in the radio equipment room and the audio control circuit(s) terminated on the console accordingly.

(b) A dedicated monitor/receiver may be used when a communications center needs to monitor a channel on a constant basis, and a scanning receiver is not practical. To acquire a monitor receiver, a communications center commander must submit a written request to Executive Management for review and approval through channels to TS. They should include the operational requirements supporting the request and the receive frequency information.

(c) The Department has agreements with various state and local agencies to provide dispatch services. In such cases, the requesting agency may extend the control circuits from their operating system to the CHP communications center and terminate the circuit(s) at the console or install their radio at the communications center for connection to the radio console.

(d) Operational direct or multiparty intercom lines, sometimes referred to as hotlines or intercoms, are normally terminated on the dispatch console

for immediate and brief exchanges of essential and critical information. These hotlines or intercoms may be direct wire line circuits, radio links, or Voice over Internet Protocol. All requests to establish a hotline or intercom link with an allied agency shall be submitted through channels for approval by Executive Management.

(4) Scanning Monitor Receiver. A multiple-band scanning monitor receiver (scanner) may be requested and installed at each communications center console position. In communications centers with two or more console positions, the receive audio will be interfaced with the console, if the console and rack space allows, for routing the audio to the headset.

(5) Radio Interoperability. Departmental radio interoperability is achieved through the use of JPS Interoperability Solutions, Audio Controller Units (ACU-1000), located in all CHP communications centers and nine departmental Rapid Response Vehicles (RRV). The RRVs are Chevrolet Tahoes equipped with interoperable communications equipment that can provide command and control capabilities in the event of catastrophic damage to localized CHP infrastructure or incident command capability.

(a) Purpose. The purpose of the Audio Controller Unit (ACU)-1000/ACU-T Modular Interconnect system is to provide a radio interoperability platform for the CHP to use when conducting specialized operations with federal, state, local, and other emergency response agencies. Interoperability is the ability to share information in real time between multiple, separate entities or agencies. In the emergency services realm, interoperability is critical to initial response and emergency services of all types.

(b) Operations. Operationally the ACU-1000 system serves two purposes:

1 It allows field personnel to create a localized radio system for mutual aid and interoperability between participating agencies. The localized radio system is established by cross-connecting the different radio channels from the radio equipment connected to the ACU-1000 unit. This localized radio system comprises various radio frequency bands and, when they are connected in this manner, enhances the safety of participating agencies through real time, field unit-to-unit, and direct voice communication interoperability. These local radio systems may be connected to communications center main CHP radio channels using the dispatch-controlled radio console system.

2 It allows communications center personnel access to the interconnected network of the ACU-1000. This option can only be

utilized if field personnel are working with the ACU-1000 Wide Area Information System (WAIS) controller program. This bridges the direct voice communications between the field personnel at an event, dispatchers at the communications center, and command personnel in Emergency Operation/Command Centers.

(c) Usage. There are three types of operations related to the ACU-1000 channel: Independent Channel, Channel Patching, and Radio Cross-Connecting.

1 Independent Channel. Utilized as an independently selected channel, it provides dispatch personnel the option of communicating with field personnel who are working an incident on radio channels configured by the field.

2 Channel Patching. Connects the ACU-1000 channel to a CHP channel using the patching function in the main radio console. This shall be used by Public Safety Dispatchers or Public Safety Dispatch Supervisors as needed, based upon the needs of specialized communications events or incidents. Communications center personnel should seek guidance if they are unfamiliar with channel patching and ACU-1000 operations.

3 Radio Cross-Connecting. The different radios that are directly connected to the ACU-1000 are completed by using the ACU-1000 WAIS Controller program or the ACU Controller program. This shall be performed at the direction of and/or with guidance from trained TS personnel, who can be contacted by telephone at (916) 843-4200.

(d) Testing. Testing of specific radio interoperability equipment will be coordinated by TS annually.

c. Division Offices. Division office facilities are not designated as a secondary dispatch control point and are generally not equipped with radio communications equipment. There may be an occasional exception with some emergency telecommunications equipment being installed. It is the responsibility of each Division to be aware of the existence of any emergency equipment assigned to them and how to operate and maintain each item. Questions and requests for assistance should be directed to TS.

d. Area Offices. Local Area commands are designated as secondary control points for their respective Area if their communications center is out-of-service. The standard local Area office equipment is listed below:

(1) Low Band Very High Frequency Base Station. The standard station is equipped with transmit and receive capabilities on the primary and secondary C Channels. Each Area office is equipped with a fixed receiver in order to monitor their respective primary S Channel radio traffic. The base station equipment is installed in the radio equipment room.

(2) 700 Megahertz Base Station. In addition to the standard low band VHF base station, each Area office is equipped with a 700 MHz base station radio. The 700 MHz base station radio will allow each Area to communicate directly to the portable radios that are within range of the Area office, as well as other Area offices within the Division. The base stations will be capable of communicating with field units utilizing encryption to ensure secure communications when necessary.

(3) Additional Nonstandard Equipment. Some Area offices have additional radio equipment (base station or receivers) installed for local area interoperability.

(4) Remote Nondispatch Console. The console controls the transmit and receive capabilities of the local base station. The nondispatch console is normally installed in a sergeant's office. Each Area should designate a primary location for normal operations and a secondary location for local Area Emergency Operations Center for temporary emergency operations. Each local Area may have their secondary location prewired for their nondispatch console by submitting a request to TS.

(5) Scanning Monitor Receiver. Scanners are commonly used to monitor local allied agency channels and they are normally installed near the nondispatch console.

(6) Radio Monitor Speaker System. This system is installed to monitor radio traffic throughout the office facility. Each Area commander has the option of having a radio monitor speaker system and may select the rooms and/or exterior areas for a radio monitor speaker to be installed. The Area commander may determine what frequency(ies) will be broadcast through the radio monitor speaker system.

e. Class "A," "B," and "C" Commercial Vehicle Enforcement Facility. These facilities are not designated as alternate control points. Pursuant to HPM 82.6, Commercial Enforcement Manual, vehicles are equipped with radio communications equipment with the same capabilities as a local Area office facility. In circumstances when an Area office cannot assume the alternate control point responsibility from a communications center, the inspection facility can perform as an alternate for an Area office. The standard radio communications equipment is listed below:

(1) Low Band Very High Frequency Base Station. The standard station is equipped with transmit and receive capabilities on the primary and secondary C Channels. Each inspection facility is equipped with a fixed receiver in order to monitor their respective primary S Channel radio traffic. The base station equipment is installed in the radio equipment room.

(2) 700 Megahertz Base Station and Crossband System. In addition to the VHF low band base station, each Commercial Vehicle Enforcement Facility also has a 700 MHz base station to communicate on both departmental 700 MHz channels and on regional interoperability channels. The 700 MHz base station is permanently linked to the low band base station to allow for low band radio traffic to be rebroadcast on a dedicated 700 MHz channel. This will allow employees in range of the base to use portable radios to contact dispatch.

(3) Remote Nondispatch Console. A console controls the transmit and receive capabilities of the local base station. The nondispatch console is normally installed near the scale control panel. A combination desktop base station/console may be used in facilities with inadequate equipment room space.

(4) Monitor Scanning Receiver. Scanners are used to monitor local allied agency channels and are normally installed near the nondispatch console.

(5) Radio Monitor Speaker System. Speaker systems are installed to monitor the radio traffic throughout a scale facility. Each commander has the option of having a radio monitor speaker system and may select the rooms and/or exterior areas for a radio monitor speaker to be installed. Commanders may determine what frequency(ies) will be broadcast through the radio monitor speaker system.

f. Class “D” Commercial Vehicle Enforcement Facility. These facilities are small and rarely have sufficient space for a complete radio base station package. Class “D” facilities may be equipped with a small desktop base station consolette radio unit. These radio units are low powered and the performance range is very limited. The radio communications equipment’s primary use will be for coordinating commercial vehicle enforcement activity and for relaying emergency information to the communications center when the telephone system is either impractical or not accessible.

g. Air Operations Base/Facility. Air operations facilities are located at airports or other Federal Aviation Administration (FAA) approved aircraft landing facilities. They may be equipped with a variety of radio communications capabilities to meet the mission requirements. These capabilities can include radio communications on all public safety and aircraft radio bands. Additional radio equipment outside the

scope of this chapter must be formally requested through channels for review and approval by Executive Management. The standard air operations base radio equipment is listed below:

(1) Aircraft Band Radio. This multiple-channel transceiver radio unit will be operated only on the licensed frequency(ies) for the specific air operations base location, as indicated on the FCC license. Each assigned FCC frequency will only be used in accordance with FCC rules and regulations, which are located in Title 47 of the Code of Federal Regulations. Other nonlicensed aircraft band frequencies may be programmed in the radio for monitoring purposes only, providing the channel is programmed to receive only and not to transmit.

(2) Low Band Very High Frequency Base Station. This station is usually a multiple-channel desktop base station consolette unit capable of transmitting and receiving on CHP assigned C Channel frequencies.

(3) 700 Megahertz Base Station and Crossband System. In addition to the VHF low band base station, each air operations base has a 700 MHz base station to communicate on both departmental 700 MHz channels, and on regional interoperability channels. The 700 MHz base station is permanently linked to the low band base station to allow for low band radio traffic to be rebroadcast on a dedicated 700 MHz channel. This will allow employees in range of the air operations base to use a portable radio to contact dispatch.

(4) Scanning Monitor Receiver. Multiple-band scanners capable of receiving all public safety bands and the aircraft band.

h. Investigations/Task Force Offices. These offices are not designated as alternate control points and are not equipped with radio communications equipment. If there are special circumstances or unique operational requirements necessary to meet the operational objective of the investigations unit or task force requiring telecommunications support, a formal request must be submitted through channels to Executive Management for review and approval.

i. Academy Operations. The Academy uses a nondispatch communications console installed in the Staff Services office to control a low band base station and a 700 MHz base station for radio communications with Academy security and to conduct academy activities. The 700 MHz base station is configured with connectivity to dispatch allowing for direct radio communications from portable radios that are within range of the Academy.

j. Non-California Highway Patrol Office Facilities. Radio communications equipment is not normally installed in non-CHP facilities. In some cases, such as County Office of Emergency Services Command Centers, CHP radio

communications equipment is installed for emergency radio communications with the Department. If radio communications equipment needs to be installed in a non-CHP facility to meet an operational objective, a formal request must be submitted to Executive Management for review and approval.

4. VEHICLE RADIO EQUIPMENT STANDARDS.

a. Policy. All mobile radio equipment and installations will be in accordance with this section and HPM 31.1, Fleet Operations Manual. Any radio equipment installation conducted outside the scope of this section must be submitted for approval, through channels, and reviewed and approved by Executive Management.

b. Enforcement Vehicles - Marked. All enforcement vehicles (sedans, specially marked patrol vehicles, trucks, and motorcycles) that are marked with the appropriate CHP identification decals and markings, regardless of the vehicle color scheme, and equipped with the Emergency Warning Light/Siren System, are considered marked enforcement vehicles. The standard radio equipment installation is listed below:

(1) Radio. The low band VHF radio transceiver (motorcycle - 30-watt radio) provides two-way mobile communications.

(2) Control Heads.

(a) All vehicles have a control head to operate all radio and emergency warning light/siren functions.

(b) All motorcycles have a control head to operate the radio functions.

(3) Vehicle Repeater System Automatic Vehicular Repeater/In-Trunk Repeater. One is installed per vehicle and equipped on the standard control frequency for interfacing portable radio communications with the CHP low band radio system.

(4) Scanning Monitor Receiver. A multiple-band scanner may be installed in all enforcement vehicles, except motorcycles. Scanners provide CHP patrol units with the ability to monitor other agencies that transmit on different radio bands. Each command will be responsible for managing the scanner channel program, but TS has access to a computer database program to assist with field scanner programming. If an Area or Division command requires a scanner, requests should be submitted to Fleet Operations Section (FOS) when ordering the vehicle.

c. Consolidated Patrol Vehicle Environment. Enforcement vehicles equipped with the Consolidated Patrol Vehicle Environment (CPVE) system contain a variety of communications equipment. The standard equipment installation for a CPVE system is listed below:

(1) Radio. The CPVE system includes a low band VHF transceiver, a high band VHF transceiver, a UHF transceiver, and a 700/800 MHz transceiver.

(2) Vehicle Repeater System. The CPVE system uses a full duplex digital 700 MHz repeater that is not compatible with other fleet vehicle systems. One is installed per CPVE system.

(3) Scanning Monitor Receiver. A multiple-band and multiple-mode scanner may be installed in all enforcement vehicles, except motorcycles. Scanners provide CHP patrol units with the ability to monitor other agencies that transmit on different radio bands. Each command will be responsible for managing the scanner channel program, but TS has access to a computer database program to assist with field scanner programming. If an Area or Division command requires a scanner, requests should be submitted to FOS when ordering the vehicle.

d. Enforcement Vehicles - Unmarked. All unmarked enforcement vehicles (Commissioners, chiefs, investigative, dignitary and protective services, uniformed commanders) equipped with the Emergency Warning Light/Siren System are considered unmarked enforcement vehicles. The standard radio equipment installation is as follows:

(1) One low band VHF radio transceiver.

(2) One control head per vehicle to operate all radio and emergency warning light/siren functions.

(3) One VRS Automatic Vehicular Repeater/In-Trunk Repeater per vehicle equipped on the standard control frequency.

(4) Scanning Monitor Receiver. A multiple-band scanner is usually installed in unmarked enforcement vehicles. Each command will be responsible for managing the scanner channel program. Investigative vehicles may have the scanner installed in the rear trunk or another location in the vehicle.

(5) Investigative Vehicles. These vehicles may be equipped with a switch to disable the radio audio speaker.

(6) Dignitary and Protective Services Vehicles. These vehicles may be equipped with a UHF radio unit and/or a headset/earplug jack to allow the radio speaker to be muted.

e. Nonenforcement (Administrative) Vehicles. All vehicles not equipped with the Emergency Warning Light/Siren System are considered nonenforcement (administrative) vehicles. The standard radio equipment installation is:

(1) One low band VHF mobile radio transceiver.

(2) One multifunctional radio control head.

f. Special Purpose Vehicles. Special purpose vehicles are vehicles equipped with the Emergency Warning Light/Siren System which respond to emergency incidents. The Department deploys special purpose vehicles for different operational objectives. Each special purpose vehicle may require radio equipment outside the scope of the standard equipment and installation. The Department's special purpose vehicles include, but are not limited to: air operations support and fuel trucks; Emergency Incident Management Vehicles; Command, Communications, and Blood and Alcohol Testing; Mobile Blood and Alcohol Testing; Prisoner Transportation; and Multidisciplinary Accident Investigation Team.

g. Aircraft. California Highway Patrol aircraft have different operational objectives than the mobile fleet and may be equipped with a variety of radio communications equipment. These aircraft perform operational missions for other public safety agencies; consequently, radio communications equipment that can communicate on the different radio bands is necessary to perform these missions. In addition to communicating on different public safety radio bands, the aircraft require the necessary flight radio communications and navigation equipment. The FAA and the FCC have strict guidelines, rules, and regulations regarding the equipment type, placement, and use of radio equipment installed in aircraft. Only approved FAA and FCC equipment will be installed in the aircraft.

h. Non-California Highway Patrol Vehicles. California Highway Patrol-owned radio communications equipment may be installed in non-CHP government (local, state, and federal) owned vehicles provided the purpose is for public safety and the coordination of CHP-related activities. Each case must be reviewed and approved by Executive Management. All requests approved by Executive Management will be limited to the standard nonenforcement vehicle installation package, unless otherwise directed.

i. Mobile Radio Programming. California Highway Patrol low band frequencies are programmed in the mobile radios. Each command may have a mobile radio program personality configured for their specific operational Area. If an additional

radio program personality is required, a formal request, describing the different configuration, must be submitted to TS.

(1) The CHP may have other FCC allocated allied frequencies programmed in the mobile radios. If a command has an operational need to have non-CHP public safety frequencies in their radio personality, a formal request accompanied by a Memorandum of Understanding (MOU) and an FUA from the licensee, with a copy of their FCC Station & Mobile license, must be submitted to TS for review and approval by IMD.

5. PORTABLE RADIOS.

a. General. This section describes the purpose and use of the portable radio. The portable radio is provided to allow an officer to have radio communications capabilities away from the mobile unit (vehicle/motorcycle). It can be used to communicate directly to another portable radio, via a vehicle's repeater, or directly to an allied agency mobile or portable radio unit.

(1) Multiband Portable Radio. The multiband portable radio is used for operating the vehicle radio system while outside the car. These radios are programmed with state and nationwide law enforcement mutual-aid channels.

(2) Ultra High Frequency. The UHF portable radio is for use with the UHF radio system. The UHF portable radio can be programmed with UHF mutual-aid channels. The UHF radio system and the UHF portable radio require the selection of repeater sites prior to transmitting.

b. Policy. Officers assigned to road patrol carry either a multiband portable radio or a 700 MHz portable radio during their tour of duty. Portable radios will be worn in accordance with HPM 73.5, Uniform/Grooming and Equipment Standards. Personnel having a need to use a departmental portable radio will exercise extreme care and judgment in protecting it from damage. The radio will be kept properly secured when it is inappropriate to wear the radio to perform departmental duties. The portable radio will only be worn and used with the approved departmental accessories and equipment. Each radio user is responsible for operating the radio on the appropriate channel in accordance with Department policy and procedures, FCC rules and regulations, state and nationwide mutual-aid policy and procedures, and the guidelines, procedures, conditions, and restrictions of the allied agency's radio system.

c. Issuance.

(1) Portable radios are issued to commands, not individual personnel. The initial distribution of portable radios to commands is based on the number of uniformed personnel assigned to the location.

(a) The distribution of multiband portable radios will equal only the uniformed strength of the command. There will be no overage distributed.

(2) Distribution of portable radios to command personnel and ongoing accountability for the equipment is the responsibility of the commander. When personnel transfer to another command, the portable radio is retained at its assigned command.

(3) The Academy will be issued a quantity of portable radios sufficient for needs within the cadet training program.

(4) Refer to Chapter 5, Telecommunications Equipment Accountability and Inventory Control, of this manual, for policy regarding inventory accountability.

6. SPECIAL OPERATIONS AND EVENTS (COMMAND POST). Telecommunications Section is available to assist the field with special events and/or emergency incident telecommunications needs, and should be contacted during the earliest planning stages.

7. NONSTANDARD CALIFORNIA HIGHWAY PATROL SYSTEM AND EQUIPMENT. In some cases, nonstandard CHP systems and equipment may be appropriate to meet an operational objective. If a commander has a need to use a radio system and/or equipment other than as addressed in this manual, a formal request will be submitted through channels to Executive Management for review and approval prior to the use or installation of any radio system or equipment.

8. RADIO COVERAGE PROBLEMS.

a. General. As the Department's patrol responsibilities increase and expand into new geographical areas, it is very likely that adequate radio coverage will not exist. In some cases where radio coverage has existed in the past, unexpected technical problems may occur which will reduce the overall performance of the radio system. If an Area experiences immediate loss of radio coverage, the problem shall be reported to their respective communications center in accordance with HPM 60.1.

b. Radio Coverage Criteria. When inadequate radio coverage is not due to faulty radio equipment, a new radio site may need to be developed. The problem area

must meet the radio coverage criteria listed below before a new radio site can be developed:

(1) An individual dead spot must be five miles or more in length and/or be an area of repeated incidents and/or part of a regular (daily) patrol beat.

(2) The problem area consists of numerous (three or more) short dead spots on one stretch of roadway, such as to produce "spotty coverage." The roadway involved must be part of a regular (daily) patrol beat.

(3) A problem area may consist of beats frequently patrolled inside buildings requiring radio communications and are recognized as "dead spots."

c. Field Responsibility and Procedures. Field commands are responsible for reviewing the radio coverage within their command Area. If the field command determines that inadequate radio coverage is not the result of an inoperative system or equipment, an informal field coverage survey should be conducted by the Area to define the actual problem area. Field commands should follow the steps listed below:

(1) Conduct an informal field radio survey using a patrol car. Prior to conducting the survey, the local radio technician will verify the performance of the mobile radio and the performance of the fixed radio system. If only motorcycles are having the problem, a motorcycle unit should conduct the survey. If only portable radios are having the problem, portable radios should be used to conduct the survey in the area having the problem.

(2) Conduct radio checks with the communications center every half mile in the affected area and record the results of the transmission. The transmission result should indicate if it is a two-way problem or a one-way problem, and identify if the problem exists from car to station or from station to car, or both.

(3) A report should be produced to include the vehicle unit number that was used in the survey, the mobile operator's name and ID number, the communications center operator's name and ID number, the transmitter(s) used, the date and time, the CHP operating frequency, the base station transmitter used for each transmission check, the existing weather conditions, and location of each radio check.

(4) After completing the initial survey, a spot check in the same affected area on an adjacent Area's primary frequency should be conducted and the results recorded.

(5) The reported problem area should be overlaid on a map of the respective county. The map should also indicate the Area boundaries.

d. Notification of Known Coverage Problem. If the problem area does not meet the radio coverage criteria for action, the Area should develop a Standard Operating Procedure (SOP) and briefing item to notify the officers of the known coverage problem. If an adjacent Area's primary frequency covers the affected area, the SOP and briefing item should recommend using the adjacent Area's frequency when patrolling in the affected area.

e. Formal Report. If the Area's survey results reveal the coverage problem does meet the criteria, the Area should submit their formal report and map(s) to TS.

9. LOANING OF CALIFORNIA HIGHWAY PATROL RADIO EQUIPMENT. The Department does not routinely loan out radio communications system and equipment resources on a long-term basis. In some cases, radio system and equipment resources are provided or loaned to other public safety agencies if there is a benefit to the operation of the Department. Each case will be reviewed and approved by Executive Management. If a Division or Area receives a request from an allied agency, the request should be forwarded, with their Area and Division's recommendation, through channels to Executive Management. If the request is approved, TS will coordinate the installation of the CHP radio equipment with the requesting agency. The requesting agency will be responsible for the installation cost. The CHP will be responsible for any maintenance of equipment and system modifications to the CHP radio equipment. The agency will be responsible for inventorying the CHP radio equipment each year during the first quarter. If the agency cannot locate, or damages the equipment, they are required to notify the CHP immediately.

10. RADIO EQUIPMENT MAINTENANCE.

a. General. In order to have a reliable radio communications system with minimum unexpected outages, the Department has implemented an annual maintenance program for the various radio system and equipment components.

b. Responsibility. Local commands are responsible for identifying and reporting equipment and/or system problems as soon as practicable. If the radio system and/or equipment become inoperative or defective, or if an Area experiences immediate loss of radio coverage, the problem shall be reported to their respective communications center in accordance with HPM 60.1. Notification should also be made to the local state radio technician. A CHP 272 must be generated and completed by the Area commander or designee. The CHP 272 should have a full description of the problem, and the inoperative system and/or equipment identified by the property or equipment number. After the repair is completed, the local state radio technician should complete their portion of the CHP 272. The Area will electronically forward the completed CHP 272 form to TS at Helpdesk@chp.ca.gov and retain the CHP 272 for a 12-month period.

(1) Communications Center. Communications centers will follow the established procedures outlined in HPM 60.1.

(2) Nondispatch Facility/Office. Each Area office with a remote nondispatch radio console shall be responsible for testing their console monthly for transmit and receive operational readiness. The monthly test shall be documented on a CHP 159, Base Station Monthly Operational Readiness Checklist, and then electronically sent to TS at telecomradio@chp.ca.gov. The original CHP 159 form shall be retained at the Area for three calendar years.

(a) All Areas should report nondispatch radio trouble to their local state radio technician.

(3) Mobile Radio Fleet. All Areas should report mobile radio trouble to their local radio technician. The procedures for mobile equipment repair are:

(a) Public Safety Communications radio technicians will remove and replace defective mobile radio equipment with equipment provided by the CHP automotive technician. The PSC radio technician will give the defective equipment to the automotive technician for processing.

(b) The local command will prepare a CHP 266, Credit Memo - Equipment, indicating the property number of the newly installed equipment, the property number of the equipment replaced, and the vehicle number and license plate of the vehicle in which the equipment is installed, if applicable. The command will immediately forward the defective equipment accompanied with a CHP 266 to the TS Warehouse.

(c) Commands shall update the CHP 57, Motor Vehicle Assignment and Transfer, and forward it to FOS when equipment has been removed from, or added to, a vehicle. A copy of the CHP 57 will be forwarded by FOS to TS, for processing, as per HPM 31.1.

(d) Requests for replacement antennas, scanners, batteries, siren amplifiers, speakers (mobile and motorcycle), motorcycle headsets/body cables, control head microphones (mobile and motorcycle), citizen band radios, computer modem antennas, and mobile radios, etc., should be submitted to the TS Warehouse, via e-mail, to TSEquipRequest@chp.ca.gov.

(4) Portable Radios and Associated Equipment. If portable radios, chargers, or conditioners malfunction, a trouble report should be completed identifying the problem for each item being returned to the TS Warehouse. If replacement equipment is required, the TS Warehouse shall be contacted, via e-mail, at TSEquipRequest@chp.ca.gov.

(5) Aircraft. Refer to HPM 100.7, Air Operations Manual.

(6) Technician Call-Out. If a call-out is deemed critical, the PSC 24-Hour Maintenance Hotline may be reached at (916) 636-3840, or toll-free at (888) 657-6577. All relevant information describing the problem should be provided to the Maintenance Hotline Operator.

11. RADIO USER TRAINING.

a. Commander's Responsibility. It is each commander's responsibility to ensure that all users of CPVE equipped vehicles and vehicles equipped with the Pyramid® 700 MHz VRS are trained on the proper use of each system, as well as the portable radio, prior to field enforcement patrol use.

b. Consolidated Patrol Vehicle Environment Training.

(1) Initial training on the CPVE system is mandatory for all uniformed staff. The training must be completed before any uniformed personnel may use a CPVE system for patrol duties.

(2) The CPVE train the trainer courses allow Division/Area coordinators to utilize trained personnel for the development of a localized training schedule. This provides complete autonomy to each Division/Area to train their personnel.

(3) It is imperative that the training curriculum provided to the Division/Area coordinators and trainers be followed. Additionally, the training must be documented accurately and consistently in the Electronic Training Record System (ETRS).

(4) Initial operator training will consist of a minimum of nine total hours of instruction and hands-on exercises as follows:

(a) Consolidated Patrol Vehicle Environment System Training.

1 One Hour - ReadyGo! online CPVE system overview and theory of operation presentation, with a minimum passing score on the associated test. The completion of this presentation and successful test score are mandatory elements to be completed in advance of the classroom training. This training is located on the CHP Intranet site at http://readygo.chp.ca.gov/CPVE12.17.10/index.htm. Additionally, this training must be completed within 30 days prior to the classroom training. The training certificate provided by ReadyGo! should be printed and brought to the classroom training.

2 Four Hours - CPVE classroom operator training. Provides hands-on exercises, and user interface acclimation.

3 One Hour - Proficiency checklist and instructor ride-along. This element will require the student to demonstrate proficiency with several system operations to the instructor. The instructor will then conduct a brief ride-along with the student to answer any operational questions and review in-motion operations.

a Upon successful completion of this training block, the ReadyGo! certificate and the signed Proficiency Checklist will be stapled and retained in the field training folder for the employee. An ETRS entry will be made as follows:

1/ COURSE TITLE: CPVE INITIAL TRAINING COURSE TRAINING HOURS: SIX

(b) Portable Radio Training.

1 One Hour - ReadyGo! online Motorola portable radio training, with a minimum passing score on the associated test. Completion of this presentation and a successful test score are mandatory elements to be completed in advance of the classroom training. The appropriate training can be found on the CHP Intranet site at: http://home.chp.ca.gov/resources/tech/portableradios.html. Additionally, this training must be completed within 30 days prior to the classroom training. The training certificate provided by ReadyGo! will be printed and filed in the employee's training folder.

2 Two Hours - Motorola APX 8000 portable radio orientation and training. This element will entail a one-hour classroom presentation, as well as a one-hour hands-on session to present the key operational practices for the Motorola APX 8000 portable radio used with the CPVE system and vehicles equipped with the Pyramid® 700 MHz VRS.

a Upon successful completion of the Motorola APX 8000 training, an ETRS entry will be made as follows:

1/ COURSE TITLE: MOTOROLA APX 8000 PORTABLE RADIO INITIAL

2/ TRAINING HOURS: THREE

c. Coordinator Initial Training.

(1) This course is presented by TS staff to Division/Area coordinators to support CPVE field operations. Every command that is assigned a CPVE equipped vehicle should maintain at least one trained CPVE coordinator within the command. Larger commands should maintain a sufficient number of coordinators to adequately address the training and support requirements for the command.

(a) Upon successful completion of the Coordinator Training, an ETRS entry will be made as follows:

1 COURSE TITLE: CPVE COORDINATOR INITIAL TRAINING COURSE

2 TRAINING HOURS: 40.

12. FEDERAL COMMUNICATIONS COMMISSION.

a. General. The FCC is a federal regulatory agency which manages the use of the radio frequency spectrum. They have the authority to enforce the rules and regulations regarding the use of the frequency spectrum.

b. Responsibility. Telecommunications Section is the OPI for all FCC matters. Each commander is responsible for ensuring that their radio communications system and equipment is used in accordance with the FCC rules and regulations. If a commander receives an FCC "Complaint" or "Notice of Violation" directly from the FCC, the FCC document will be immediately forwarded to TS who will handle the issue to conclusion.

c. Policy. All coordination and contact with the FCC will be conducted by TS. If a CHP investigation and/or enforcement action requires FCC involvement, TS should be contacted as soon as possible.

d. Interagency Frequency Use Agreements. Telecommunications Section is the OPI for all interagency FUAs and MOUs. Telecommunications Section will prepare and administer all FUAs and MOUs regarding the use of the Department's FCC allocated frequencies or the use of other allied agencies or licensee's allocated frequencies. Commanders will not enter into any FUA unless authorized by TS and approved by IMD.

13. PLANNING AND BUDGETING.

a. Planning. Operational and administrative plans that include radio support must be submitted to TS for review. Radio projects generally take a significant length of

time to engineer and equip. Any delays in notifying TS can seriously impede the ability to provide adequate and appropriate radio services.

b. Standard Equipment. All radio equipment is budgeted for and purchased by TS. Major equipment and standard systems, such as the mobile and portable radio systems, are replaced at the end of their useful life based on a planned schedule of replacements. Additional equipment must be budgeted and fully justified within the Telecommunications System Budget. Generally, major equipment projects take three years to budget, engineer, purchase, and install.

c. Nonstandard Equipment. Radio equipment that is not part of a standard system, or that requires special features not available on standard equipment, is considered nonstandard. Such equipment should be requested through the normal budget process. All nonstandard requests are reviewed by TS and Executive Management for technical and operational functionality.

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