

<b>Change Order No.</b>	CO002
<b>Date:</b>	4 Aug 2020
<b>Project Name:</b>	Radio System Replacement Project
<b>Customer Name:</b>	Humboldt County
<b>Customer Project Mgr:</b>	Bryan Quenell

**The purpose of this Change Order is to:**

- 1 - Include site development work for Pratt Mountain, Mt. Pierce, Horse Mountain, Trinidad and Courthouse sites. Details in Site Improvement Statement of Work (part of Exhibit C-3 – “Implementation Statement of Work”)
  - 2 - Update equipment list as required per changes required during detailed design review. Equipment list replaced in Exhibit C-2 – “Pricing Summary & Equipment List”
  - 3 – Adds the Big Hill site to the system design and removes the Sugar Pine site from the system design.
  - 4 - Adds the Shelton Buttes site development work identified in ‘Site Development at Shelton Butte Site’ of the Site Improvement Statement of Work (part of Exhibit C-3 – “Implementation Statement of Work”)
  - 5 – Update schedule.
  - 6 – Adds the Shelton Buttes site to the system design and removes Orleans site from the system design.
  - 7 – Requested changes to site locations and antennas have changed the RF coverage as shown in attached updated coverage maps.
  - 8 – Replace Equipment list found in “Pricing Summary & Equipment List” dated December 5, 2018 with attached equipment list dated 1 July 2020
  - 9 – Replace APPENDIX 1 – COVERAGE MAPS with attached Coverage Maps
  - 10 - Replace:
    - Exhibit C-1 – “System Description” dated December 5, 2018
    - Exhibit C-3 – “Implementation Statement of Work” dated December 5, 2018
    - Exhibit C-4 – “Acceptance Test Plan” or “ATP” dated December 5, 2018
    - APPENDIX 1 – Site Development Statement of Work dated December 5, 2018
    - Exhibit C-5 – “Performance Schedule” dated December 5, 2018
- With:
- Exhibit C-1 – “System Description” dated 1 July 2020
  - Exhibit C-3 – “Implementation Statement of Work” dated 3 April 2020
  - Include Exhibit C-4 – “Section 3 Acceptance Test Plan, November 11, 2019”
  - APPENDIX 1 – “Site Improvement Statement of Work” dated 1 July 2020
  - Exhibit C-5 - Humboldt Performance Schedule 1 July 2020
- 11 – Add Tower improvement for Horse Mountain Tower as defined in Structural analysis PE stamped 7/17/20 and ‘20-7136 Horse Tower Mod Drawing’ attached.

<b>Contract #</b>	Motorola CSA, Dec 5, 2018	<b>Contract Date:</b>	18 Dec 2018
<b>Purchase Order #</b>	PO-X70231	<b>Date:</b>	12/20/2018

In accordance with the terms and conditions of the contract identified above between Humboldt County and Motorola Solutions, Inc., the following changes are approved:

**Contract Price Adjustments**

	Price	Tax (estimate)	Total
Original Contract Value:	\$ 5,650,000.00	\$ 173,042.41	\$ 5,823,042.41
Previous Change Order amounts:	\$ 55,593.75	\$ 0.00	\$ 55,593.75
This Change Order:	\$ 491,926.00	\$ (8,629.76)	\$ 483,296.23
New Contract Value:	\$ 6,197,519.75	\$ 164,412.65	\$ 6,361,932.39

**Completion Date Adjustments**

Original Completion Date:	12 August 2020
Current Completion Date prior to this Change Order:	12 August 2020
New Completion Date:	6 June 2022

<b>Changes in Equipment:</b> <i>(additions, deletions or modifications)</i>
1) Replace equipment list in 'Exhibit C-2 Pricing Summary & Equipment List dated December 5, 2018' with attached equipment list dated 5 August 2020.
<b>Changes in Services:</b> <i>(additions, deletions or modifications)</i>
Replace "Implementation Statement of Work" dated December 5, 2018 and Site Improvement Statement of Work in contract with attached 'Exhibit C-3 Implementation Statement of Work dated 3 April 2020 and 'Site Improvement Statement of Work' dated 1 July 2020. Tower modification at Horse Mountain includes: Remote site location cost, Removal of galvanization from tower for welding on the new steel. Safety requirements include a water wagon on site for fire prevention, a six man crew and welding will be done on maximum of one leg at a time.
<b>Schedule Changes:</b> <i>(describe change or N/A)</i>
Replace Exhibit C-5 – "Performance Schedule" dated December 5, 2018, "Performance Schedule" dated 1 July 2020.
<b>Pricing Changes:</b> <i>(describe change or N/A)</i>
\$483,296.23 increase including estimated tax for this change order.
<b>Customer Responsibilities:</b> <i>(describe change or N/A)</i>
Defined in attached 'Exhibit C-3 Statement of Work' dated 3 April 2020 and 'Site Improvement Statement of Work' dated 1 July 2020.
<b>Payment Schedule for this Change Order:</b> <i>(describe new payment terms applicable to this change order)</i>
See EXHIBIT C-2 Milestone Payments for changes

Unless amended above, all other terms and conditions of the Contract shall remain in full force. If there are any inconsistencies between the provisions of this Change Order and the provisions of the Contract, the provisions of this Change Order will prevail.

IN WITNESS WHEREOF the parties have executed this Change Order as of the last date signed below.

<b>Motorola Solutions, Inc.</b>		<b>Customer</b>	
By: <u><i>Kent Martin</i></u>		By: _____	
Printed Name: <u>Kent Martin</u>		Printed Name: _____	
Title: <u>Regional Services Manager</u>		Title: _____	
Date: <u>August 7, 2020</u>		Date: _____	
Reviewed by: <u><i>Brian White</i></u>		Date: <u><i>5 August 2020</i></u>	
Motorola Solutions Project Manager			

COUNTY OF HUMBOLDT, CALIFORNIA

# EXHIBIT C-1 SYSTEM DESCRIPTION

HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

JULY 1, 2020

## RFP#18-100-COMM



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July 1, 2020  
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County of Humboldt, California  
Humboldt County Radio System Replacement Project

# SYSTEM DESCRIPTION

## 1.1 SYSTEM OVERVIEW

The system will provide Humboldt County with a VHF conventional RF system with nine Project 25 digital sites and six analog sites. The system includes conventional simulcast/voting sites, fixed DVRS (Digital Vehicular Repeater System) sites, Ethernet based microwave backhaul links, UHF control links, fault monitoring systems, and dispatch consoles. Listed below in Table 1-1 is a summary of Project 25 digital and analog sites used in the system design.

**Table 1-1: Summary of Sites in the P25 and Analog System**

Site	Power	Link Type	Analog	Project 25
County Courthouse (K2 core, Redundant Prime Site, Dispatch Consoles)	DC	Loop Microwave	Simulcast	North Simulcast
Horse Mountain	DC	Loop Microwave	Simulcast	North Simulcast
Big Lagoon	State-provided Solar Power	Loop Microwave	Simulcast	North Simulcast
Trinidad	DC	Spur Microwave		North Simulcast
Mount Pierce (Main Prime Site)	DC	Loop Microwave	Simulcast	South Simulcast
Pratt Mountain	DC	Spur Microwave	Simulcast	South Simulcast
Big Hill	Solar Power	UHF Link to Horse Mtn	10 Watt DVRS	10 Watt DVRS
Shelter Cove	DC	UHF Link to Pratt		50 Watt DVRS
Shelton Butte	Solar Power	UHF Link to Horse Mtn		10 Watt DVRS

## 1.2 DIGITAL P25 CONVENTIONAL SYSTEM FOR SHERIFF'S DEPARTMENT

The P25 digital system consists of two simulcast cells and three standalone sites. The North Simulcast Cell consists of four sites, while the South Simulcast Cell consists of two sites. The three stand-alone sites will utilize a fixed DVRS to relay received audio to a common comparator, or voting shelf. A single FCC licensed VHF channel pair is required at each site.

In order to reduce the number of transmit frequencies required to support the system, simulcast operation has been used wherever possible. Motorola Solutions has included a loop-based microwave backhaul design to support Ethernet connectivity to each of these locations:

- County Courthouse
- Big Lagoon
- Horse Mountain
- Pierce Mountain

A loop-based microwave system has two dishes at each loop site, with each dish pointed at a different site. Microwave traffic traverses the network in a circular fashion and in the event of a break between two sites due to failure, the loop switching action of the network allows the traffic to reverse its course and travel in the opposite direction in order to deliver its payload traffic. In this manner the loop system is highly redundant by providing diverse paths for traffic delivery.

For site links that are not loop-protected the microwave radios are configured in a hot-standby configuration using redundant microwave radios. Hot-standby microwave links are provided at these locations:

- Pratt Mountain
- Trinidad

In a Hot-Standby configuration, if the primary microwave radio fails the standby unit becomes the primary unit and takes over for delivering traffic to the distant site. Although this method does not provide diverse routing as in a loop switch configuration, it is still redundant and provides for an overall highly reliable microwave backbone network. The overall microwave network is depicted in Figure 1-1.

There are five transmit frequencies: one for the North Simulcast Cell, one for the South Simulcast Cell, and one each for the three DVRS sites. In addition, each DVRS site will utilize a UHF control station as its method to link the VHF repeater into the main system. Each control station will require a distinct UHF frequency pair for a total of three FCC licensed UHF transmit/receive pairs.

The receiver-voting system utilizes one FCC licensed VHF receive frequency across all nine sites. While the two DVRS sites and standalone site will each use the same receive frequency as the simulcast sites, each DVRS and standalone site will utilize a different input Network Access Code (NAC). This NAC is encoded automatically by the user radio equipment and is defined through the initial radio programming.

At the heart of the receiver-voting system is the voting comparator. The voting comparator takes the received audio from all receivers, both simulcast cells, standalone site, and DVRS sites, via the microwave network and performs a comparison between all received audio inputs. The received audio with the lowest bit-error rate (BER) will be selected to be repeated and sent to all sites, both simulcast cells, standalone site, and DVRS sites, for re-transmission in a countywide repeat fashion. In this manner, countywide repeat ensures that users operating within the coverage area of any site will be able to communicate with another user operating within the coverage area of any other site.

The Static Geofence feature is being utilized to provide automatic mode change/mobility or user assisted roaming with announcements as users enter/exit a geographic area. The Static Geofence feature utilizes Global Positioning System (GPS) signals at the user radio to determine the radio's location. When a radio enters a pre-defined geofence area the radio will automatically change modes to the appropriate channel/site that provides radio coverage for that area. Using this feature provides roaming countywide without user intervention.

A single console resource, or channel control window, is utilized at dispatch to communicate with the entire P25 system. The console system is directly connected to the voting comparator and will receive voted audio as well as send transmit audio countywide during transmit.

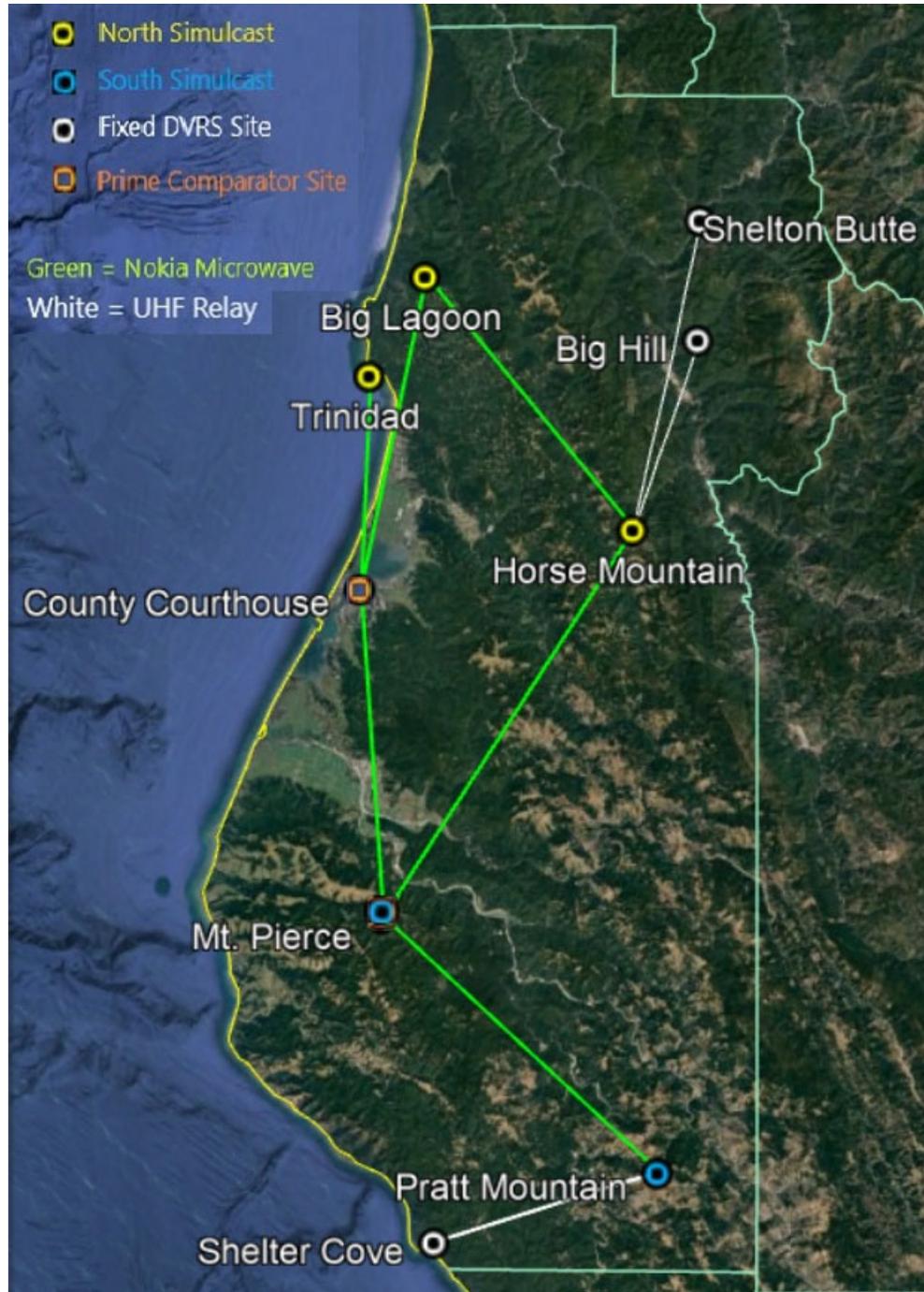


Figure 1-1: Public Safety P25 Digital System Overview.

### 1.2.1 Countywide Repeat

Countywide repeat occurs via a comparator. The comparator votes/combines audio from multiple sites and sends a single voted stream of audio back out to all sites connected to the comparator.

To connect to the comparator and provide countywide repeat, an Internet Protocol (IP) link to a GTR8000 base station is required. Where feasible, microwave is provided to the simulcast sites to provide IP link connectivity. For sites where microwave is not feasible, a VHF DVRS repeater is provided with a co-located UHF control station link to a UHF GTR8000 station located at a site with microwave link connectivity to the comparator. For the BigHill and Shelton Butte sites, Horse Mountain will house the UHF GTR8000s. For the Shelter Cove site, Pratt Mountain will house the UHF GTR8000.

The DVRS is providing P25 VHF voice to users as well as a UHF link with P25 signaling such as PTT-ID and emergency to the comparator.

## 1.2.2 Audio Interrupt/Smart Push-To-Talk Feature

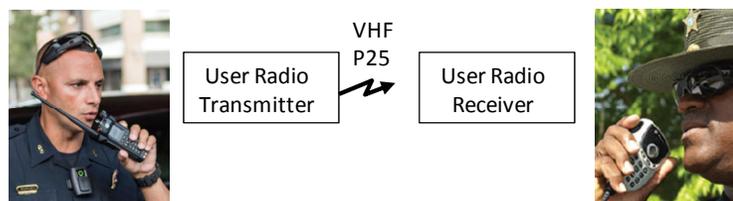
The SmartPTT feature will be activated in the programming for all radios that will use P25 digital conventional. The SmartPTT feature provides a tone to users indicating that the channel is already in use, and prevents a radio from transmitting while the channel is busy. Preventing users from attempting to interrupt audio while another user is transmitting will help to reduce the possibility of collision which could result in missing audio.

As the existing County users operate on an analog system, when multiple users simultaneously transmit, the users can typically hear garbled and mixed audio which is an indicator that multiple radios attempting to communicate on top of each other. In P25 digital operation, when multiple users attempt to communicate simultaneously, the digital bit stream can be corrupted to the point where it is unrecoverable even with error correction and nothing is heard. The SmartPTT feature reduces the possibility of users interfering with each other to allow clear voice transmissions to occur.

## 1.2.3 Digital Operation

### 1.2.3.1 Simplex Operation

Simplex operation is simple unit-to-unit communications without system infrastructure such as a repeater or a simulcast system. It is also referred to as car-to-car, direct, or talkaround. In P25 digital simplex, there is delay between the transmitting radio and the receiving radio associated with the encode/decode of audio and digital processing. This is noticeable when users operating in simplex stand next to each other, and results in a slight echo as users can hear see or hear the other user talking and then hearing the received audio come through their radio speaker a ½ second later. Below is a diagram to show the steps in audio processing within the radios.



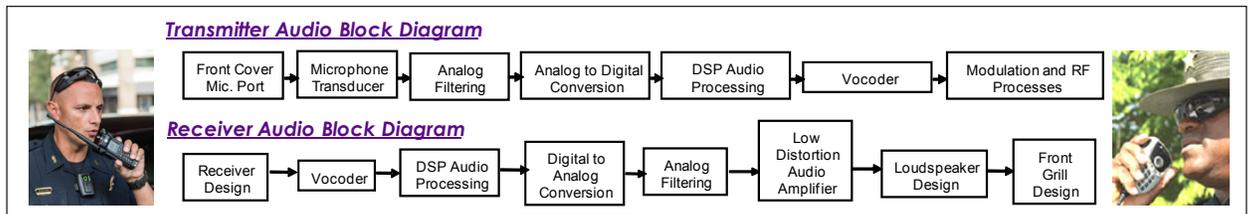


Figure 1-2: Public Safety P25 Digital Simplex.

### 1.2.3.2 Repeater Operation

When operating on the P25 system, the net delay from when a user transmits to when it is heard on another radio is the encode/decode delay that exists in P25 conventional simplex that is shown in the previous section, plus the additional network delay.

Below is a simplified diagram of a user's audio going through a site, via the comparator, and then repeated by being sent to other sites.

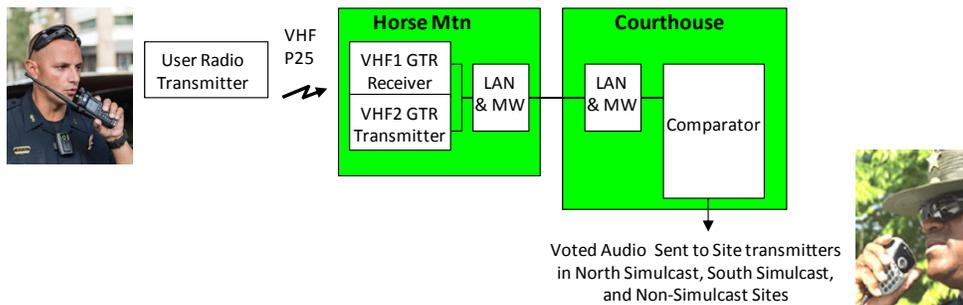


Figure 1-3: Simplified P25 Communications Diagram.

Below is a simplified diagram of a user transmitting to a DVRS site. Effectively, an additional encode/decode delay shown in the simplex diagram in the previous section exists at the DVRS site because the DVRS receiver decodes the audio and sends the signal to an APX that is acting as a site link to a UHF station connected to the comparator via microwave.

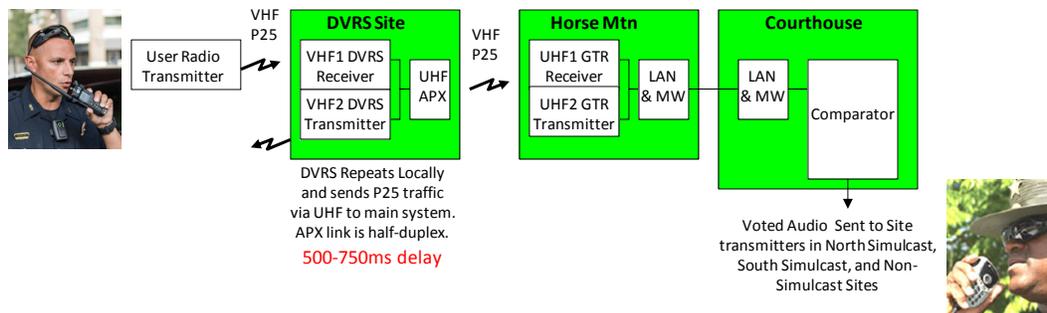


Figure 1-4: Simplified P25 DVRS Operation.

At a DVRS site, audio from a user operating at the DVRS site is received by the DVRS, and transmitted locally without going back to the comparator. In addition to repeating the local audio, the DVRS sends the audio to the comparator so that it can be repeated countywide to all other sites via the

comparator. When a local user is not actively transmitting at a DVRS site, the audio that is transmitted at the DVRS site comes from the comparator via other sites in the system.

Since the receive frequency at all sites is the same, some method of differentiating the DVRS sites from each other as well as the simulcast sites. To accommodate this the DVRS sites will each have a different NAC on the fixed station receive.

## 1.2.4 User Radio Mobility with Geo-Fencing

Static geofencing provides mobility based on GPS and a Google Earth boundary file on the radios supplied with this project. When a radio enters or exits a geographic boundary, a set of pre-programmed actions are automatically executed. The end of this section contains a table of the different actions that can occur. These pre-programmed actions will be determined as part of the Fleetmapping process programmed into the user radios as part of the implementation process.

More than one action can occur when entering or exiting a single geofence and geofences can overlap. When two or more geofences overlap with each other, the radio will prioritize the execution of the actions based on each geofence's priority programmed in the radio. The radio can be programmed with up to 100 geofences. A geofence can be a radius from a coordinate, or a polygon KMZ file from Google earth. A polygon can have up to 100 vertices.

**Table 1-2: Geofence Action Consolidation**

Action	Description	Action type	Entry	Exit
<mode change>	Go to mode with matching zone and channel alias	Continuous	Yes	Revert to user selection
<talkgroup change>	Go to specified talkgroup	Continuous	Yes	Revert to user selection
<text message>	Display specified text message	Momentary	Yes	Yes
<voice announcement>	Play specified voice announcement at specified interval	Both	Yes	Cancels the continuous entry VA and sound the exit momentary tone
<mute site selectable alerts>	Mute all site selectable alerts	Continuous	Yes	Revert to unmute the tones
<intelligent lighting>	Set backlight(s) to specified color.	Continuous	Yes	Revert to normal backlight color.
<status>	Set radio to specified status and send to system	Continuous	Yes	Cancel the sending of status
<message>	Send specified message to system	Continuous	Yes	Cancel the sending of message
<tx power level>	Set TX power to specified level	Continuous	Yes	Revert to normal operation.
<location report>	Send current location to UNS	Momentary	Yes	Yes

When more than one action is to occur, the action occurs according to the following sequence.

**Table 1-3: Geofence Action Consolidation Sequence**

Actions	Enter Sequence	Exit Sequence
<mute site selectable alerts>	1	1
<text message>	2	2
<intelligent lighting>	3	3
<voice announcement>	4	4
<mode change>	5	7
<talkgroup change>	5	7
<tx power level>	6	6
<status>	7	5
<message>	7	5

### 1.3 ANALOG CONVENTIONAL SYSTEM FOR PUBLIC WORKS DEPARTMENT

The analog system consists of a single simulcast cell and one standalone site. The Simulcast Cell consists of four sites: Horse Mountain, Big Lagoon, County Courthouse, Pierce Mountain, and Pratt Mountain. The stand-alone site located at BigHill will utilize a fixed DVRS to relay received audio to a common comparator, or voting shelf. A single FCC licensed VHF channel pair is required at each site.

The analog system will utilize the same microwave network that is being provided for the digital P25 system.

There are two transmit frequencies: one each for the Simulcast Cell and one for the single DVRS site. In addition, the DVRS site will utilize a UHF control station as its method to link the VHF repeater into the main system. The control station will require a distinct FCC licensed UHF transmit/receive pair.

The existing station at Shelter Cove will be retained and will not have Countywide repeat capabilities. The County plans to utilize existing user radios for the analog system, and users will manually switch between the simulcast system and standalone sites.

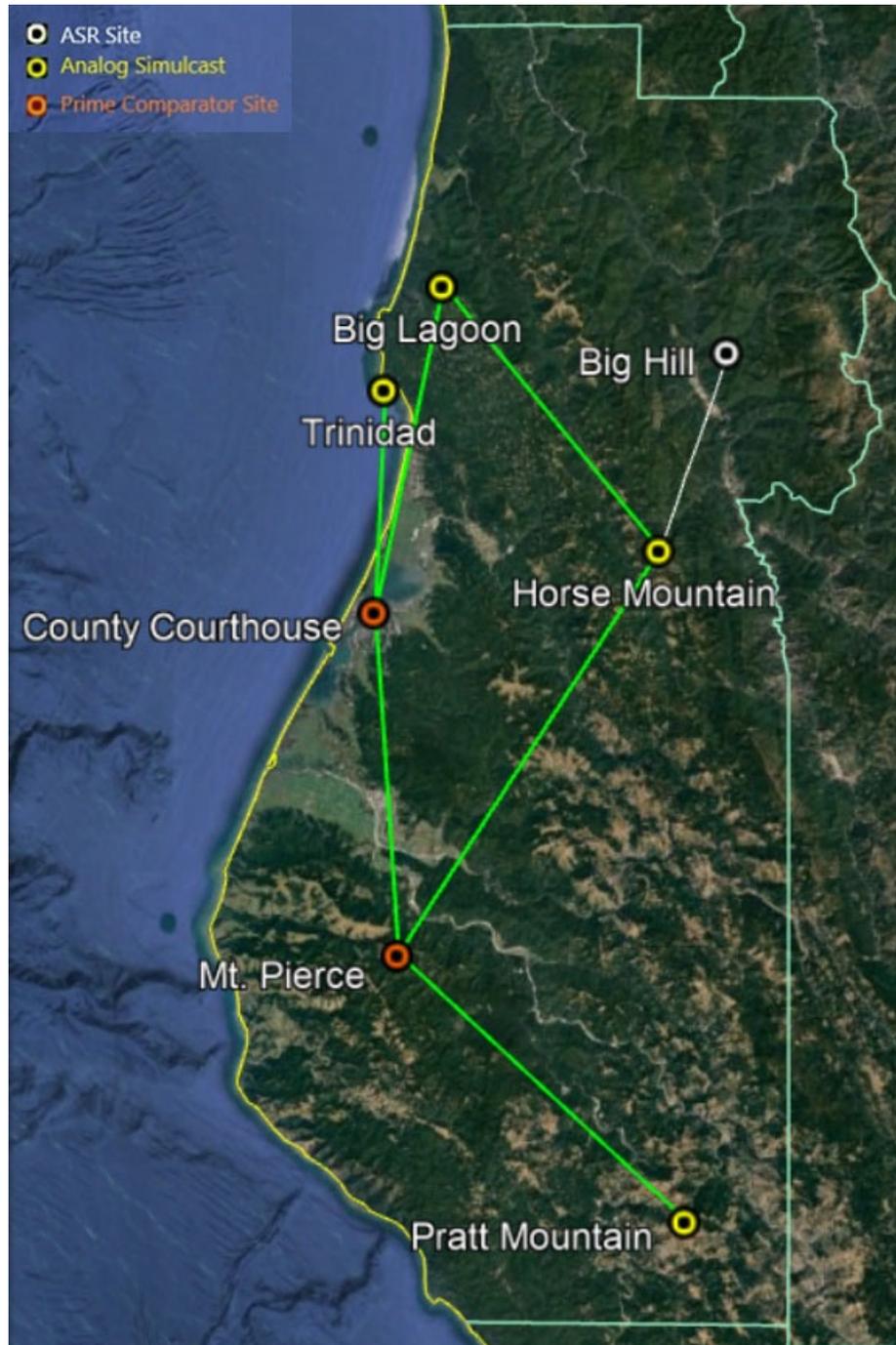


Figure 1-5: Analog System Overview.

## 1.4 FREQUENCY PLAN

Below is the frequency plan with candidate frequencies identified.

**Table 1-4: Frequency Plan**

Site Name	Link	Use	Proposed System					Current TX Freqs	Current RX Freqs
			Twr Ht Ft	P25 TX MHz	P25 RX MHz	Analog TX MHz	Analog RX MHz		
Courthouse	uw loop	N Simulcast	130	155.5875	159.4575	154.8825	159.255	154.74, 155.07, 155.85, 153.9050	155.79, 155.07, 155.85, 155.8950
Trinidad	uw spur	N Simulcast	50	155.5875	159.4575			154.74	155.79
Horse Mtn	uw loop	N Simulcast	100	155.5875	159.4575	154.8825	159.255	154.74, 153.9050	155.79, 155.8950
Big Lagoon	uw loop	N Simulcast	199	155.5875	159.4575	154.8825	159.255	154.74, 153.9050, 151.19	155.79, 155.8950, 159.4575
Mt Pierce	uw loop	S Simulcast	100	155.415	159.4575	154.8825	159.255	154.74, 153.9050, 154.1150	155.79, 155.8950, 154.87
Pratt Mtn	uw spur	S Simulcast	100	155.415	159.4575	154.8825	159.255	154.74, 153.9050	155.79, 155.8950
Shelton Butte	UHF DVRS	DVRS	20	154.2275	159.4575				
BigHill Mtn			100	155.5425	159.4575	151.025	159.255	154.74, 153.9050	155.79, 155.8950
Shelter Cove	UHF DVRS	DVRS	120	154.0925	159.4575			154.74	155.79

Below is the multicoupler/combiner plan at County Courthouse, Mount Pierce, Pratt Mountain and Horse Mountain.

**Table 1-5: Multicoupler/Combiner Plan**

**UHF Frequency Plan**

UHF frequencies have been identified and are provided in a table below. The DVRS links are duplex,

Transmit Frequencies	County CH	Mt. Pierce	Pratt Mtn	Horse Mtn
Sheriff's Office Dispatch	154.74	154.74	154.74	154.74
New Sheriff's Frequency	155.5875	155.415	155.415	155.5875
New Public Works Frequency	155.2825	155.2825	155.2825	155.2825
TAC Channel	155.0700			
Receive Frequencies				
Sheriff's Office Dispatch	155.79	155.79	155.79	155.79
New Sheriff's Frequency	159.4575	159.4575	159.4575	159.4575
New Public Works Frequency	159.255	159.255	159.255	159.255
TAC Channel	155.0700			

and the site monitoring links are simplex. These are all Part 90 public safety channels above 450 MHz that returned no active incumbents within 81 miles of each site from

the center frequency +/- 12.5kHz.

**Table 1-6: UHF Frequencies**

	Shelton Butte	Horse Mountain	Shelter Cove	Pratt
Frequency TX	458.925	453.925	453.95	458.95
Frequency RX	453.925	458.925	458.95	453.95

## 1.5 DISPATCH

The MCC7500 console provides full duplex operation. Console priority means that user audio is not repeated, and the console can take over the channel to speak over the user. When this occurs with a Motorola MCC7500 console, the user's inbound audio is still heard at dispatch while the console is heard by end users.

Console priority and full duplex at the DVRS sites is slightly different. When console priority occurs with a DVRS site, the local user's audio is repeated at the DVRS site, but it is not repeated at other sites. The DVRS user's audio is heard at dispatch while the dispatcher's audio is repeated at all sites, except the originating DVRS. The operation is different because a DVRS repeats locally and relays the link via UHF to the main system.

MCC7500 console solution:

- 4 Operator Positions
- 1 Enhanced Instant Recall Recorder per operator position
- 4 Speakers per operator position
- 15 Radio Resources per operator position
- 5 Conventional Channel Gateway Low Density (4 ports)
- 1 Conventional Channel Gateway High Density (8 ports)

Logging can occur via connection to a CCGW or the local logging port on the dispatch operator position.

## 1.6 RADIO EQUIPMENT BY SITE

The following section provides a description of the equipment at each site type of site.

### 1.6.1 Project 25 and Analog Prime Sites

This conventional radio network design is supported by geographically redundant prime sites featuring the system's RF voting comparators to increase the system's overall fault tolerance & reliability. The prime sites feature all of the conventional multicast system's control equipment. County Courthouse and Mount Pierce have been selected to house the two geo-redundant prime sites. These locations were specifically chosen as both are provided with ring protection as part of the microwave system offering a greater level of reliability. A K2 core is also included, which consists of a conventional controller to facilitate switching between the conventional prime sites.

The conventional prime sites are each comprised of the following primary components:

- One (2) Site Routers
- One (2) Site Switches
- One (1) Analog Conventional GRV 8000 Comparator
- One (1) P25/Digital Conventional GRV 8000 Comparator
- One (1) TRAK 8835 GPS Time/Frequency Reference
- Two (2) Co-Located GTR 8000 Base Radios
- One (1) SDM 3000 Remote Terminal Unit (RTU)

The geographically redundant architecture is primarily supported by the deployment of GRV 8000 comparators at the primary prime site and redundant units, supporting the same channels, at the backup prime site. In the event that connectivity to the primary prime site is lost or the primary comparator fails the redundant backup comparator will automatically become active and resume comparator operation for its associated channel without user intervention.

Motorola’s new GRV 8000 conventional comparators are provided to support the analog and P25/digital multicast channels. This comparator establishes IP based connections to the system’s GTR 8000 base radios to acquire received audio from all base radios associated with each channel. Upon acquiring the received audio from each station, the GRV 8000 compares and combines the signal before redistributing it for transmission by the base stations to ensure the best audio quality is constantly provided to the system’s subscribers. The GRV 8000 comparators are also responsible for coordinating the timing and transmissions of the GTR 8000 base radios to achieve proper phasing for simulcast transmissions.

## 1.6.2 Radio Site Equipment

The RF sites have all been designed to include the following primary components:

- Two (2) Site Routers
- Two (2) Site Switches
- One (1) SDM 3000 RTU
- One (1) TRAK 8835 GPS Time/Freq Reference
- GTR 8000 Base Radios (Per Table 1-7 Indicated quantities)

**Table 1-7: Summary of Radio Stations in the P25 and Analog System**

Site	VHF GTR800	UHF GTR8000	50 Watt DVRS	10 Watt DVRS	
County Courthouse	2				
Horse Mountain	2	1			
Big Lagoon	2				
Trinidad	1				
Mount Pierce	2				
Pratt Mountain	2	1			
BigHill	2			1	
Shelter Cove			1		
Shelton Butte				1	

Each of the radio sites feature Motorola’s versatile GTR 8000 radio configured for analog or P25/digital operation and equipped with the required conventional simulcast software. The analog or P25/digital GTR 8000s will be programmed to communicate with their respective analog or P25 GRV 8000 comparator which in turn provide receive audio voting and coordinate simulcast transmissions to ensure proper timing/phasing is achieved to avoid destructive interference.

The Trinidad site will use a two (2) channel duplexer. One (1) antenna with associated line and connectors has also been quoted to support each site’s duplexer.

The County Courthouse, Horse Mountain, Pierce Mountain, and Pratt Mountain sites will use a transmitter combiner/receiver multicoupler scheme to accommodate additional channels as outlined in Section 1.4 above. Two (2) antennas with associated line and connectors has also been quoted to support each site's combiner and multicoupler.

Please see the system overview drawing for details regarding each location's multicast site equipment and its associated frequency plan.

### 1.6.3 DVRS Sites

In order to extend Humboldt County's coverage in the northern and southern portion of the county, DVRS sites are included in the design. These DVRS sites are connected via a UHF Backhaul.

The DVRS sites consist of:

- VHF Fixed-mount DVRS with duplex antenna system
- UHF APX6500 with Yagi antenna system
- UHF GTR8000 located at a site with microwave for UHF Link (Horse Mtn or Pratt as noted in Table 1-6)

Please see the system overview drawing for details regarding each location's standalone site equipment and its associated frequency plan.

### 1.6.4 Component Descriptions

#### **GTR 8000 Site Repeater/Base Radio**

The GTR 8000 Base Radio consists of a transceiver module, power amplifier module, fan module, and power supply. The transceiver module includes the functionality for the exciter, receiver, and station control. The base radio software, configuration, and network management, as well as inbound/outbound traffic handling, are performed through this transceiver module. On-board serial and Ethernet ports are located on this module for local servicing via CSS. The power amplifier module amplifies the low-level modulated RF signal from the transceiver module and delivers the amplified signal on the path to the transmit antenna. The power supply module supports the transceiver and power amplifier modules.

## GRV 8000 Comparator

The GRV 8000 Comparator ensures the broadcast of the best possible voice signal by combining the best parts of a single signal that has been received by multiple sites in a Multisite (simulcast) system.



The comparator features a digital or analog voting methodology: Frame Diversity Reception. The comparator selects the data frame or signals with the lowest Bit Error Rate (BER) and forwards it. By using the best pieces of each input signal, the result is the best possible composite signal. This signal is then redistributed across the radio IP network to every connected base station for rebroadcasting.

## Radio Frequency Distribution System

The Radio Frequency Distribution System (RFDS) provides interconnect between the base radios and antennas, allowing for a completely contained and more compact installation footprint. The system primarily relies upon a compact single and dual channel VHF duplexers designed by Bird Technologies to meet Motorola's RF requirements. Duplexers allow transmitters and receivers to share a single antenna while also ensuring proper antenna isolation.

The isolation provided by Bird Technologies' 26-36H series duplexers exceed the minimum isolation that is required for repeaters. This eliminates the need to achieve transmit to receive antenna isolation through horizontal or vertical separation of the system's antennas. The 26-36H series duplexers also feature active receiver amplifier to bolster system receive performance.

This combining system is comprised of a special PIM-hardened multi-channel RF Combiner/Filter, special cavity-type window filter, and receive multicoupler.

The receiver multicoupler is a key element of a radio communications system, not only connecting the receivers onto a single antenna but even improving receiver sensitivity. Because the low noise amplifier (LNA) of the multicoupler is placed before all system receivers, it determines the ultimate sensitivity of the entire system.

## RF Site Gateway

The Site Gateway provides an interface that handles all of the IP Network Management traffic between the conventional hub site and the remote RF Sites. The Site Gateway provides the following:

- Media conversion – the gateway converts Ethernet to the selected transport medium.
- Traffic prioritization – the gateway applies a prioritization marking to the packets leaving the site.
- Fragmentation – the gateway fragments large IP packets per industry standards.

## Site LAN Switch

The site LAN Switch provides a LAN interface for site equipment and a LAN port for the site gateway. Through the switch, the service technicians gain access to service the site, and also access the system's Graphical User Interface (GUI).

## TRAK 8835 Simulcast Site Reference

The equipment used to synchronize a simulcast system is the TRAK 8835 which is a Global Positioning Satellite (GPS)-based frequency and time reference unit. This model incorporates a 12 channel GPS



receiver, disciplined oscillator and time and frequency signal generation in a small form factor enclosure.

TRAK 8835 Site Reference (SSR) unit provides the following outputs/features to meet the network time and network transport synchronization requirement of the Analog and Digital system:

- 10 MHz time reference.
- Composite (1pps/5MHz) time reference.
- GPS Referenced Time and Frequency.
- Stratum 1 Accuracy.
- Small Form Factor.
- 10/100 base-T Ethernet Port.
- Network Timer Sever.
- SNMP.
- 48VDC Power Input.

### 1.6.5 Site Monitoring Solution

Motorola is providing its standalone UEM Lite based network fault management (NFM) system to monitor the RF equipment at each of the networked multicast system's sites. This solution offers an SNMP and relay-based monitoring system that is part of the full core/master site. The NFM system is primarily comprised of a server running the UEM Lite server application, an NFM workstation with the UEM Lite client, and six (6) SDM 3000 RTUs. One (1) SDM 3000 RTU will be deployed at each of the six (6) multicast system's sites and will be connected to the site switch to achieve network connectivity. The UEM Lite Server and NFM workstation will be located at the County Courthouse.

The UEM Lite applications provide users with a customizable graphical aggregation of the system's failures and provide the ability to "drill-down" to determine the details surrounding each fault. The standalone NFM system is capable of monitoring/reporting faults experienced by the site's network equipment and GTR 8000 base radios through SNMP management and is capable of monitoring additional site equipment through physical relays. Licensing to provide email-based alarm notification has also been provided to support the NFM system.

Each SDM 3000 RTU is capable of capturing up to 48 relay-based alarms in addition to 8 analog based inputs. 16 separate output control relays can also be configured for use at each location. All physical relay-based connections are achieved through the use of three (3) punchblocks supplied for each site.

Microwave monitoring will be provided by use of the Nokia TSM8000.

TSM8000 Overview:

The Nokia TSM-8000 provides highly reliable fault management and control of modern telecommunications networks. The TSM-8000 is a graphically oriented element management system. It is scaleable through software keys to support small, medium, or large telecommunications networks. The TSM-8000 supports multiple users, multiple networks and multiple protocols. It automatically collects and stores alarm, status and performance data from the monitored transmission system equipment. This information is displayed both graphically and textually. The TSM-8000 also provides comprehensive reports for all current and historical activity for the entire microwave network.

Remote access, alarm paging and e-mail notification are standard features. Custom audible alarms, paging and e-mail notifications keep users updated to network status. As an optional feature the customer can access the TSM-8000 via a Web Browser for remote visibility where its network is available.

## 1.6.6 DC Power Systems

Motorola is using direct current (DC) at all of the RF site communications facilities, where applicable, to power the radio equipment, microwave equipment, and other critical site equipment. The power systems will be based on -48 Volt DC for power and will include a DC to DC converter to allow for 12VDC equipment at BigHill. The system will utilize LaMarche equipment at non-solar sites, which has proven successful in providing highly reliable power systems in mission-critical networks.

The RF remote site wireless communications facilities will remain fully operational in the event of a commercial power failure. This expectation is met by use of an emergency power design strategy that meets Humboldt County's requirements based on travel time and criticality of the sites. The backup battery time for each site is as follows:

- Pratt Mountain – 5 hours
- Horse Mountain – 5 hours
- Mt. Pierce – 5 hours
- Trinidad – 3 hours
- County Courthouse – 2 hours

The design also includes 20% additional capacity to account for future growth. Running a site on DC power with battery backup is the most efficient way to provide continuous power during the period of time between commercial power failure and when power can be restored, or when an alternative source of power can be supplied by a generator. It also reduces the power transients that potentially occur in other systems not "floated" on DC batteries during the small but critical milliseconds or seconds as standby power systems transfer and come on line.

County Courthouse and Mt. Pierce have a combination of DC and AC (alternating current) power requirements. At these sites N+1 inverters are included. These N+1 inverters are fault tolerant and convert -48 VDC power to standard 120 VAC power to power AC only devices.

Note that no power systems for Big Lagoon and Shelter Cove are being provided for these sites as they are State controlled facilities and do not allow separate DC systems in them.

Solar power equipment will be provided by the County for the BigHill and Shelton Butte sites.

- BigHill - DVRS site (configured to use County provided solar powered DC system)
- Shelter Cove – DVRS site (configured to use site owner provided AC power)
- Big Lagoon – Simulcast site (configured to use site owner provided DC power)
- Shelton Butte - DVRS site (configured to use County provided solar powered DC system)

## 1.7 COVERAGE DESIGN OVERVIEW

The following design criteria was utilized for DAQ 3.4 95% reliability:

1. Project 25 Conventional Digital Portable Coverage.

2. Project 25 Conventional Digital Mobile Coverage.
3. Analog Mobile Coverage.

Coverage is designed for a portable worn on the hip (3 ft. height) in a swivel holster for the portable coverage, and a mobile with the antenna mounted in the center roof (5 ft. height) for the mobile coverage.

Motorola Solutions guarantees 95% reliability in the covered area shown on the included maps in Appendix 1. In order to demonstrate this guarantee, Motorola Solutions will perform a coverage test for the design as described in the Acceptance Test Plan (Exhibit C-4). If the sites or assumptions in the coverage design change, the coverage test will change accordingly.

## 1.7.1 System Parameters

The predicted coverage on the maps is based on the availability of the sites located at the coordinates specified in the below site locations with the antenna site equipment parameters shown below. The transmit site coordinates and antenna heights were verified against the information provided in the RFP and its addendums

The table below provides parameters for all sites.

**Table 1-8: Sheriff Digital P25 Site Parameters.**

Site Name	Group Name	Latitude	Longitude	Database Elevation (feet)	Mounting Height (feet)
County Courthouse	North Cell	40°48'11.18" N	124°9'43.7" W	39.3700788	120
Big Lagoon	North Cell	41°10'16.05" N	124°3'46.37" W	1896.33	179
Horse Mountain	North Cell	40°52'27.09" N	123°44'0.84" W	4911.41733	100
Trinidad	North Cell	41°3'15.8" N	124°9'2.7" W	344.4881895	60
Mt Pierce	South Cell	40°25'2.3" N	124°7'13" W	3162.729664	100
Pratt Mountain	South Cell	40°7'13.5" N	123°41'35.76" W	3868.110242	100
Shelter Cove	DVRS	40°2'1.83" N	124°2'25.63" W	2014.435699	112
Shelton Butte	DVRS	41°14'16.4" N	123°37'57.9" W	6177.82	15
BigHill	DVRS	41°5'50.44" N	123°38'50.44" W	3815.616804	20

**Table 1-9: Public Works Analog Site Parameters.**

Site Name	Group Name	Latitude	Longitude	Database Elevation (feet)	Mounting Height (feet)
County Courthouse	Cell1	40°48'11.18" N	124°9'43.7" W	39.3700788	120

Site Name	Group Name	Latitude	Longitude	Database Elevation (feet)	Mounting Height (feet)
Horse Mountain	Cell1	40°52'27.09" N	123°44'0.84" W	4911.41733	100
Mt Pierce	Cell1	40°25'2.3" N	124°7'13" W	3162.729664	100
Pratt Mountain	Cell1	40°7'13.5" N	123°41'35.76" W	3868.110242	100
Big Lagoon	DVRS	41°10'16.05" N	124°3'46.37" W	1896.33	149
BigHill	DVRS	41°5'50.4" N	123°38'8.53" W	3815.616804	20

## 1.7.2 Subscriber Parameters

Portable antenna performance can vary widely depending on the type of antenna used and the location of the portable antenna on the user's body. Similarly, Mobile antenna performance can vary based the location of the antenna on the car or truck. The coverage maps included for portable and radios show the coverage predicted for portable and mobiles operation with the following configuration:

- The 6-Watt Motorola APX 6000 portable with a half wave flexible whip antenna located on the portable. The RF Subsystem was designed to utilize portable radios that are worn in a swivel holster at a height of three (3) feet for coverage and testing purposes. Both transmission and reception shall occur from this position using a remote speaker microphone.
- The 35-Watt Motorola APX 4500 mobile. The RF Subsystem was designed to utilize mobile transceivers mounted in the trunk of a typical sedan with a unity gain antenna mounted in the center of the roof at a height of five (5) feet for coverage and testing purposes.

Deviation from the specified portable/mobile antenna and/or configuration will result in a change of the coverage performance of the portable radio and may can the coverage maps substantially. If the configuration of the portable/mobile and/or its antenna changes, Motorola will have to run coverage maps to determine the change in coverage performance.

## 1.7.3 RF LINK BUDGET (RFP SECTION 7.6.B.2.A)

It is critical to understand the gains and losses within the links, commonly referred to as the link budget. The following sections include the link budget for each Project 25 digital site and analog site. Humboldt County requested a 1dB difference in link budget between inbound/talk-in and outbound/talk-out. We have provided the raw link budgets because we recommend optimization of the link budgets after installation and measurement of the sites and noise.

### 1.7.3.1 Sheriff System Project 25 Digital Link Budget

The link budget data for each site in the proposed system Project 25 digital system is shown in Appendix 3.

## 1.8 MICROWAVE AND UHF LINKS

The microwave and UHF links are designed with paper feasibility studies. Both the UHF links and microwave paths require a physical path survey prior to finalization of the path design. The UHF links may utilize an RF test to confirm the links have adequate signal margin with the obstructions in the path prior to finalization of the link design. The microwave design is based on the Nokia feasibility study, which is included as an appendix to the system description.

Motorola is providing the following for Humboldt County:

- 6 Hops – Backhaul Microwave Network – Wavence split-mount configuration
- Carrier-class reliability to support mission critical and reliable wireless data communications
- High spectral efficiency
- Modular scalability, all equipment proposed are modular and can be scaled
- Design that guarantees advanced queuing, QoS and low latency

The Nokia Wavence, new antennas, waveguide lengths, frequencies and RF bandwidth were used in the feasibility study as required. The feasibility study document provides a preliminary assessment to show, based on the information provided, that all links will meet the required availability as requested. The microwave feasibility study can be found in Exhibit C-1, Appendix 2 – Microwave Feasibility Study

The provided network will utilize the Nokia Wavence with a layer-2 Microwave Service Switch (MSS). The solution utilizes the high capacity and high system gain of the split-mount (MPT-XP-HQAM) and the Microwave Service Switch (MSS-8) providing a MEF 2 and MEF 8 Carrier Ethernet compliant solution. The Wavence radios are designed utilizing seven 6 GHz paths with one RF channel each at 64 to 2048 QAM providing up to 257 Mbps of traffic capacity utilizing fixed modulation technology. Four of the paths are designed using 8032v2 ring switching to provide route protection for the core of the network. The hot-standby spurs off the ring provide equipment redundancy where route protection is not available. The Wavence MPT-XP-HQAM radio transceivers will interface directly with the MSS-8 in the case of a desired Layer 2 solution. The system capacity is scaled to the direction of 32 DS1's per site and Ethernet packet size of 1518-bytes IPv4 frame.

The Wavence system provided installs all indoor equipment in one seven-foot standard aluminum rack providing solutions for congested sites. When indoor equipment is used the Wavence offers the highest rack density permitting sixteen all in-door RF direction within one rack.

The Wavence solution consists of a combination of a radio unit — the Microwave Packet Transceiver (MPT) — and a networking unit — the Microwave Service Switch (MSS), both shown in the figure. Three segments are served: small cell backhaul, short-haul and long-haul. Several types of wireless cell site connection options are required to support mobile network capacity and coverage expansions. Nokia's Wavence solutions support a full suite of wireless frequency options including unlicensed 5.8GHz, for macro cell backhaul, 80 GHz millimeter wave (e-band) solutions for both macro and small cells, unlicensed 60 GHz millimeter wave (v-band) and sub-6 GHz solutions that are typically used to support the backhaul of small cells.

The Nokia Wavence product portfolio offers a comprehensive set of microwave solutions for short-haul, long-haul and small cell backhaul applications for telecom operators, public sectors and large enterprises. Based on a full packet architecture, it offers superior performance with its high radio density and unique multiservice link aggregation capability. This common transport of legacy TDM

and Ethernet traffic positions the Wavence as the ideal product family to seamlessly support backhaul transformation to full packet and provide your network the capacity to evolve.

### **1.8.1 Microwave Links**

The Nokia Wavence microwave network provides the communication links between the Big Lagoon, County Court House, Trinidad, Horse Mountain, Mt Pierce and Pratt Mountain sites. Nokia Wavence microwave radio will be co-located at each site with the Motorola P25 simulcast radio. The Wavence microwave radio will be connected to the Motorola P25 base station via a Cat5e cable providing Ethernet connectivity. The Nokia Wavence network is organized into a 4 node ring with a two hop linear spur. The Wavence EAS v2 cards supporting Ethernet and radio connection located in the Microwave Service Switch (MSS-8) are used to offer two radio directions in the ring and hot standby radio connections for the linear spur. Ring sites are designed with G.8032 V2 Ethernet Ring Protection Switching protocol native to the radio which handles the switching to the opposite direction around the ring in the event of an equipment failure of the radio. All Wavence links proposed operate in the Lower 6 GHz band (5924-6425 MHz).

### **1.8.2 Microwave Link Protection**

The Nokia Wavence microwave radio system provides redundancy at several levels. The main CPU/switch cards (Cor-Evo) located in the Microwave Service Switch (MSS-8) shelf are redundant at every site. The Cor-Evo protects one for one all features including the data plan and network management channel.

Ethernet cards (EAS v2) are used for the incoming Ethernet interface as well as the connections to the outdoor radios (MPT-HQAM). In the case of the ring, two cards are provided to support the two directions around the ring. In the case of a radio failure, the G.8032v2 protocol automatically switches traffic to the opposite direction around the ring. The ring switching is sub 50 ms. In the case of the hot standby and space diversity hot standby links, receivers in switch automatically and without errors.

Transmitters will automatically switch upon a failure detection in less than 50 msec. Also included in each MSS are redundant 32 DS1 interface cards. DS1 circuits from each DS1 card are connected to a protection panel. Decisions on which DS1 signal to take are based on decisions made by the Cor-Evo.

### **1.8.3 Microwave Functional Capabilities**

The Wavence MPT-HQAM radios complies with the required operation range of -27 F to 131 F continuously without direct solar loading and up to 149 F for extended periods without solar loading. The indoor Microwave Service Switch (MSS-8) complies with the required operation from 23 F to 131 F in up to 93% humidity non- condensing. The MSS-8 operates from -40 F to 149 F in 95% relative humidity non- condensing.

## **1.9 SUBSCRIBERS**

The following radio quantities are included with the system:

Sheriff's Office

- 135 APX 6000Li Model 2.5 Portable Radios

- 12 APX 1000 Portable Radios (for Court Bailiffs)
- 100 APX 4500 Mobile Radios
- 4 APX 4500 Control Stations
  - McKinleyville Substation
  - Willow Creek Substation
  - Garberville Substation
  - Public Works Dispatch
- 2 APX 7500 Consolettes
  - Located at SO Dispatch Workstation

#### District Attorney’s Office

- 13 APX 6000Li Model 2.5 Portable Radios
- 13 APX 4500 Mobile Radios

#### Probation

- 30 APX 6000Li Model 2.5 Portable Radios
- 30 APX 4500 Mobile Radios

#### Public Works (Supervisor radios)

- 43 APX 4500 Mobile Radios

## 1.9.1 APX™ 6000Li Project 25 Portable Radio

Motorola is providing the APX 6000Li Portable radio. Motorola designed the APX 6000Li fourth generation P25 portable with direct input from first responders. Engineered with high performance technology and utilizing innovative designs, the APX 6000Li provides users with an ergonomic and rugged device that delivers superior audio performance with real-time information in a smaller package. The APX 6000Li is easy to use, allowing personnel to focus on their job at hand, rather than the technology. In addition, the APX 6000Li equips first responders with the clearest audio of any Motorola portable on the market.

The APX 6000Li is Motorola’s fourth-generation, P25 Phase 2 capable portable radio, created specifically for public-safety first responders who need to communicate on Project 25 systems. It offers outstanding performance in a compact, ruggedly reliable design, with the clearest audio of any Motorola portable on the market. The APX 6000Li improves public safety and emergency response times by incorporating innovative technology and design features developed based on direct input from first responder radio users

The T-Grip design offers a secure grip and easy handling. The full bitmap monochromatic LCD Top Displays allow users to quickly read messages at a glance, and a high-contrast color display screen ensures easy viewing in difficult lighting conditions or when viewing at an angle. The enhanced grooves of the Push-to-Talk (PTT) button allow users to easily locate by “touch.”

Heavy-duty design features provides additional durability. The APX 6000Li meets Submersible IP67 standards. Additionally, the APX 6000Li will function even when immersed in water. Meets all applicable MIL-STD-810C, D, E, F and G standards for withstanding dust, heat, shock, and drops, making it the most reliable portable radio in any situation.

The APX 6000 comes in three different base configurations. These models include:

- Model 1.5 (Dual-Display and no keypad)
- Model 2.5 (Dual-Display with limited keypad)
- Model 3.4 (Dual-display with full keypad)

Motorola is providing the APX 6000Li Model 2.5

## 1.9.2 APX™ 1000 Project 25 Portable Radio

The APX 1000 provides a complete and complementary look and feel to the APX family of P25 radios. Engineered with a simplified control top to ensure ease of use, the APX 1000 is the ideal solution for local government and public works users who require quality P25 functionality.

The APX 1000 is an easy-to-use, reliable radio designed to keep radio users connected, providing them with P25 radio communications while adhering to a budget Humboldt County can afford. It provides users with a customizable radio in a simple, compact design, with the versatility to suit any type of radio user and the attributes of a high-quality Motorola portable radio.

The APX 1000's customizable feature set will provide Humboldt County's users with efficient communications while keeping costs down. Some of its standard features and benefits are identified below:

- **Economical Communications** – A reliable, simplified, and fully customizable P25 radio made to give your users the functionality they need within Humboldt County's budget. The APX 1000 portable radio operates on both on analog and Project 25 conventional systems, and supports a variety of software capabilities and feature sets.
- **Excellent Audio Qualities** – Coordination and communication efforts are intelligible in high-noise environments. Dual-sided two-microphone noise canceling technology ensures clear audio. An AMBE digital voice vocoder provides unmatched speed and voice quality, while reducing costs by requiring less data, memory and power consumption.
- **Uncompromising Design**– The APX1000 meets all applicable MIL-STD-810C, D, E, F and G standards for withstanding dust, heat, shock, and drops, making it the most reliable portable radio in any situation.
- **Simplified Controls** – The multifunction knob provides ease of use by combining volume, channel, and ON/OFF settings in one.

Motorola is providing Humboldt County the following model of APX 1000:

- Model 1.5 (Display and backlit keypad with 3 softkeys).

## 1.9.3 APX™ 4500 Project 25 Mobile Radio

Motorola is providing the APX 4500 Mobile Radio. The APX 4500 brings together powerful technology in a compact, rugged, budget-mobile radio, providing seamless, secure interoperability to a wide variety of agencies. By providing a wide range of budget-configuration options, the APX 4500 offers functionality and security required by public public safety, and mission critical first responders. Its compatible APX 02 Control Head, easy



friendly  
and users.  
friendly  
the  
works,  
responders.  
installation,

APX 4500 Mobile Radio

and durability ensure that users can be safely and effectively complete the mission at hand.

Motorola's APX 4500 offers a sophisticated feature set that meets the needs of public servants, including utilities and public works personnel, public safety, and first responders, while being easy on agency budgets. Some of its standard features and benefits are identified below:

- **Ergonomic Controls** - The compatible O2 Control Head with color display is easy to read and operate in all lighting conditions, from bright sunlight to dark streets. Intelligent lighting notifies users when the radio receives a call, an emergency arises, or when they are out of range. Enlarged multifunctional knobs allow radio users to easily adjust talkgroup and volume settings while wearing bulky gloves.
- **Easy to Install** -The APX 4500's simplified dash mount design makes installation quick and easy.
- **Ruggedized Construction** – Uncompromising durability and world-class quality enables the APX 4500 to withstand wet, dusty, and hazardous conditions. Its IP56 durability rating is the highest level of certification for mobile radios, and it meets applicable MIL-STD 810C, D, E, F, G standards.

#### 1.9.4 APX™ 7500 Project 25 Consolette

Motorola is providing the APX 7500 Consolette for the Console Backup Control Stations. The APX 7500 Consolette provides a low-cost, mid-power wireless dispatch solution as an ideal complement to a modern P25 dispatch center. The APX 7500 Consolette can also be used as an emergency backup station when infrastructure is offline, or for wireless access to different system types for increased interoperability between agencies.

The APX 7500 Consolette's P25 operation and compatibility with legacy systems ensures that communications are clear, continuous, and coordinated across multiple users, agencies and systems.

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## APPENDIX 1 – COVERAGE MAPS

The following coverage maps are included on the following pages:

1. REFERENCE 60 - Digital Portable Inbound - System Description
2. REFERENCE 61 - Digital Portable Outbound - System Description
3. REFERENCE 62 - Digital Portable Roundtrip - System Description
4. REFERENCE 63 - Digital Mobile Inbound - System Description
5. REFERENCE 64 - Digital Mobile Outbound - System Description
6. REFERENCE 65 - Digital Mobile Roundtrip - System Description
7. REFERENCE 66 - Analog Mobile Inbound - System Description
8. REFERENCE 67 - Analog Mobile Outbound - System Description
9. REFERENCE 68 - Analog Mobile Roundtrip - System Description

## **APPENDIX 2 – MICROWAVE FEASIBILITY STUDY**

Microwave Feasibility Study is included on the following pages.

## APPENDIX 3 – LINK BUDGETS

Link budgets are included on the following pages.

# DIGITAL MOBILE LINK BUDGETS - APX4500

County Courthouse		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°48'11.18" N		80 / 135		120 / 135	
Longitude 124°9'43.7" W		Antenna Model RFI COL54-160		Antenna Model RFI COL54-160	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-114.83		-112.72
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-105.17		-102.22
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		6
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		0.4
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-103.37</b>		<b>-108.62</b>
OUTPUT POWER	W	60		10	
OUTPUT POWER	dBm	47.78		40	
TX ANTENNA GAIN	dBd	6		-1	
COMBINED LOSSES	dB	7.5		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>46.28</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>42.476</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>152.65</b>		<b>149.82</b>	

Big Lagoon		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 41°10'16.05" N		199 / 60		see tx / see tx	
Longitude 124°3'46.37" W		Antenna Model RFI                      OA40-41-DIN		Antenna Model see tx                      see tx	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-114.83		-114.34
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-105.17		-100.24
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		4
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-103.37</b>		<b>-113.24</b>
OUTPUT POWER	W	60		10	
OUTPUT POWER	dBm	47.78		40	
TX ANTENNA GAIN	dBd	9		-1	
COMBINED LOSSES	dB	7.59		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>49.19</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>83.01</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>152.56</b>		<b>151.44</b>	

Horse Mountain		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°52'27.09" N		55 / 0		100 / 0	
Longitude 123°44'0.84" W		Antenna Model RFI EA80-41-DIN-T3		Antenna Model RFI EA80-41-DIN-T3	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-114.83		-112.74
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-105.17		-102.19
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		8
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		0.45
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-103.37</b>		<b>-110.64</b>
OUTPUT POWER	W	60		10	
OUTPUT POWER	dBm	47.78		40	
TX ANTENNA GAIN	dBd	8		-1	
COMBINED LOSSES	dB	6.84		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>48.94</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>78.37</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>152.31</b>		<b>148.84</b>	

Mt Pierce		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°25'2.3" N		60 / 60		100 / 60	
Longitude 124°7'13" W		Antenna Model RFI OA40-41-DIN		Antenna Model RFI OA40-41-DIN	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-114.83		-113.3
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-105.17		-99.25
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		3.95
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-103.37</b>		<b>-112.2</b>
OUTPUT POWER	W	60		10	
OUTPUT POWER	dBm	47.78		40	
TX ANTENNA GAIN	dBd	9		-1	
COMBINED LOSSES	dB	7.45		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>49.33</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>85.73</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>152.7</b>		<b>150.4</b>	

Pratt Mountain		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)		
Latitude 40°7'13.5" N		60 / 315		100 / 315		
Longitude 123°41'35.76" W		Antenna Model RFI OA40-41-DIN-T3		Antenna Model RFI OA40-41-DIN-T3		
Link Budget		Units	Outbound		Inbound	
			Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm			-114.83		-112.74
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm			-105.17		-102.19
DIVERSITY GAIN (if applicable)	dB			n/a		n/a
RX ANTENNA GAIN	dBd			-1		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB			-0.8		0.45
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>			<b>-103.37</b>		<b>-111.64</b>
OUTPUT POWER	W		60		10	
OUTPUT POWER	dBm		47.78		40	
TX ANTENNA GAIN	dBd		9		-1	
COMBINED LOSSES	dB		7.45		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>		<b>49.33</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>		<b>85.73</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>		<b>152.7</b>		<b>149.84</b>	

Trinidad		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)		
Latitude 39°49'60" N		60 / 135		see tx / see tx		
Longitude 124°30'0" W		Antenna Model RFI OA40-41-DIN		Antenna Model see tx see tx		
Link Budget		Units	Outbound		Inbound	
			Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE		dBm		-114.83		-114.06
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE		dBm		-105.17		-101.96
DIVERSITY GAIN (if applicable)		dB		n/a		n/a
RX ANTENNA GAIN		dBd		-1		6
COMBINED GAINS/LOSSES OR NOISEDEG		dB		-0.8		2
<b>REQUIRED MINIMUM POWER</b>		<b>dBm</b>		<b>-103.37</b>		<b>-109.96</b>
OUTPUT POWER		W	60		10	
OUTPUT POWER		dBm	47.78		40	
TX ANTENNA GAIN		dBd	6		-1	
COMBINED LOSSES		dB	4.25		0.8	
<b>TRANSMITTED POWER</b>		<b>dBm</b>	<b>49.53</b>		<b>38.2</b>	
<b>ERP</b>		<b>W</b>	<b>89.74</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>		<b>dB</b>	<b>155.9</b>		<b>151.16</b>	

Shelter Cove DVRS		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°2'1.83" N		112 / 0		see tx / see tx	
Longitude 124°2'25.63" W		Antenna Model RFI EA40-41-DIN		Antenna Model see tx see tx	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-114.83		-112.89
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-105.17		-100.79
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		5
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		2
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-103.37</b>		<b>-107.79</b>
OUTPUT POWER	W	50		10	
OUTPUT POWER	dBm	46.99		40	
TX ANTENNA GAIN	dBd	5		-1	
COMBINED LOSSES	dB	4.38		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>47.61</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>57.67</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>150.98</b>		<b>145.99</b>	

<b>BigHill</b>		<b>Base TX Antenna Height (ft) / Az (deg)</b>		<b>Base RX Antenna Height (ft) / Az (deg)</b>		
<b>Latitude</b> 41°2'18.7" N		20 / 30		see tx / see tx		
<b>Longitude</b> 123°44'54.89" W		<b>Antenna Model</b> Telewave                      ANT150F2		<b>Antenna Model</b> see tx                              see tx		
<b>Link Budget</b>		<b>Units</b>	<b>Outbound</b>		<b>Inbound</b>	
			Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm			-114.83		-117.0
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm			-105.17		-103.27
DIVERSITY GAIN (if applicable)	dB			n/a		n/a
RX ANTENNA GAIN	dBd			-1		2.5
COMBINED GAINS/LOSSES OR NOISEDEG	dB			-0.8		-3.64
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>			<b>-103.37</b>		<b>-109.40</b>
OUTPUT POWER	W		10		10	
OUTPUT POWER	dBm		40		40	
TX ANTENNA GAIN	dBd		2.5		-1	
COMBINED LOSSES	dB		7.16		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>		<b>35.34</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>		<b>3.42</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>		<b>138.71</b>		<b>147.6</b>	

Shelton Buttes DVRS		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 41°14'17.49" N		15 / 270		see tx / see tx	
Longitude 123°37'58.19" W		Antenna Model Telewave ANT150F2		Antenna Model see tx see tx	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-114.83		-113.54
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-105.17		-104.78
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		2.5
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		-1.34
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-103.37</b>		<b>-105.93</b>
OUTPUT POWER	W	10		10	
OUTPUT POWER	dBm	40		40	
TX ANTENNA GAIN	dBd	2.5		-1	
COMBINED LOSSES	dB	4.18		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>38.35</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>6.84</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>141.19</b>		<b>144.13</b>	

# DIGITAL PORTABLE LINK BUDGETS - APX6000

County Courthouse		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°48'11.18" N		80 / 135		120 / 135	
Longitude 124°9'43.7" W		Antenna Model RFI COL54-160		Antenna Model RFI COL54-160	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-120.51		-112.72
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-111.05		-102.22
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-16.6		6
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-1		0.4
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-93.45</b>		<b>-108.62</b>
OUTPUT POWER	W	60		6	
OUTPUT POWER	dBm	47.78		37.78	
TX ANTENNA GAIN	dBd	6		-16.6	
COMBINED LOSSES	dB	7.5		0	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>46.28</b>		<b>21.18</b>	
<b>ERP</b>	<b>W</b>	<b>42.462</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>142.73</b>		<b>132.8</b>	

Big Lagoon		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 41°10'16.05" N		199 / 60		see tx / see tx	
Longitude 124°3'46.37" W		Antenna Model RFI                      OA40-41-DIN		Antenna Model see tx                      see tx	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-120.51		-114.34
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-111.05		-100.24
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-16.6		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-1		4
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-93.45</b>		<b>-113.24</b>
OUTPUT POWER	W	60		6	
OUTPUT POWER	dBm	47.78		37.78	
TX ANTENNA GAIN	dBd	9		-16.6	
COMBINED LOSSES	dB	7.59		0	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>49.19</b>		<b>21.18</b>	
<b>ERP</b>	<b>W</b>	<b>83.01</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>142.64</b>		<b>134.42</b>	

Horse Mountain		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°52'27.09" N		55 / 0		100 / 0	
Longitude 123°44'0.84" W		Antenna Model RFI EA80-41-DIN-T3		Antenna Model RFI EA80-41-DIN-T3	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-120.51		-112.74
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-111.05		-102.19
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-16.6		8
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-1		0.45
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-93.45</b>		<b>-110.64</b>
OUTPUT POWER	W	60		6	
OUTPUT POWER	dBm	47.78		37.78	
TX ANTENNA GAIN	dBd	8		-16.6	
COMBINED LOSSES	dB	6.84		0	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>48.94</b>		<b>21.18</b>	
<b>ERP</b>	<b>W</b>	<b>78.37</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>142.39</b>		<b>131.82</b>	

Mt Pierce		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°25'2.3" N		60 / 60		100 / 60	
Longitude 124°7'13" W		Antenna Model RFI OA40-41-DIN		Antenna Model RFI OA40-41-DIN	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-120.51		-113.3
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-111.05		-99.25
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-16.6		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-1		3.95
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-93.45</b>		<b>-112.2</b>
OUTPUT POWER	W	60		6	
OUTPUT POWER	dBm	47.78		37.78	
TX ANTENNA GAIN	dBd	9		-16.6	
COMBINED LOSSES	dB	7.45		0	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>49.33</b>		<b>21.18</b>	
<b>ERP</b>	<b>W</b>	<b>85.73</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>142.78</b>		<b>133.38</b>	

Pratt Mountain		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°7'13.5" N		60 / 315		100 / 315	
Longitude 123°41'35.76" W		Antenna Model RFI OA40-41-DIN-T3		Antenna Model RFI OA40-41-DIN-T3	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-120.51		-112.74
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-111.05		-102.19
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-16.6		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-1		0.45
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-93.45</b>		<b>-111.64</b>
OUTPUT POWER	W	60		6	
OUTPUT POWER	dBm	47.78		37.78	
TX ANTENNA GAIN	dBd	9		-16.6	
COMBINED LOSSES	dB	7.45		0	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>49.33</b>		<b>21.18</b>	
<b>ERP</b>	<b>W</b>	<b>85.73</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>142.78</b>		<b>132.82</b>	

Trinidad		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 39°49'60" N		60 / 135		see tx / see tx	
Longitude 124°30'0" W		Antenna Model RFI COL54-160		Antenna Model see tx see tx	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-120.51		-114.06
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-111.05		-101.96
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-16.6		6
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-1		2
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-93.45</b>		<b>-109.96</b>
OUTPUT POWER	W	60		6	
OUTPUT POWER	dBm	47.78		37.78	
TX ANTENNA GAIN	dBd	6		-16.6	
COMBINED LOSSES	dB	4.25		0	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>49.53</b>		<b>21.18</b>	
<b>ERP</b>	<b>W</b>	<b>89.743</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>145.98</b>		<b>134.14</b>	

Shelter Cove DVRS		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°2'1.83" N		112 / 0		see tx / see tx	
Longitude 124°2'25.63" W		Antenna Model RFI EA40-41-DIN		Antenna Model see tx see tx	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-120.51		-112.89
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-111.05		-100.79
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-16.6		5
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-1		2
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-93.45</b>		<b>-107.79</b>
OUTPUT POWER	W	50		6	
OUTPUT POWER	dBm	46.99		37.78	
TX ANTENNA GAIN	dBd	5		-16.6	
COMBINED LOSSES	dB	4.38		0	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>47.61</b>		<b>21.18</b>	
<b>ERP</b>	<b>W</b>	<b>57.67</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>141.06</b>		<b>128.97</b>	

<b>BigHill</b>		<b>Base TX Antenna Height (ft) / Az (deg)</b>		<b>Base RX Antenna Height (ft) / Az (deg)</b>	
<b>Latitude</b> 41°2'18.7" N		20 / 0		see tx / see tx	
<b>Longitude</b> 123°44'54.89" W		<b>Antenna Model</b> Telewave                      ANT150F2		<b>Antenna Model</b> see tx                                      see tx	
<b>Link Budget</b>	<b>Units</b>	<b>Outbound</b>		<b>Inbound</b>	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-120.51		-117.0
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE	dBm		-111.05		-103.27
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-16.6		2.5
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-1		-3.64
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-93.45</b>		<b>-109.40</b>
OUTPUT POWER	W	10		6	
OUTPUT POWER	dBm	40		37.78	
TX ANTENNA GAIN	dBd	2.5		-16.6	
COMBINED LOSSES	dB	7.16		0	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>35.34</b>		<b>21.18</b>	
<b>ERP</b>	<b>W</b>	<b>3.42</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>128.79</b>		<b>130.58</b>	

Shelton Buttes DVRS		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)		
Latitude		15 / 0		see tx / see tx		
41°14'17.49" N		Antenna Model		Antenna Model		
Longitude		Telewave                      ANT150F2		see tx                                      see tx		
123°37'58.19" W						
Link Budget		Units	Outbound		Inbound	
			Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE		dBm		-120.51		-113.54
RX SYSTEM FADED (DAQ 3.4 CPC) SENSITIVITY W NOISE		dBm		-111.05		-104.78
DIVERSITY GAIN (if applicable)		dB		n/a		n/a
RX ANTENNA GAIN		dBd		-16.6		2.5
COMBINED GAINS/LOSSES OR NOISEDEG		dB		-1		-1.34
<b>REQUIRED MINIMUM POWER</b>		<b>dBm</b>		<b>-93.45</b>		<b>-105.93</b>
OUTPUT POWER		W	10		6	
OUTPUT POWER		dBm	40		37.78	
TX ANTENNA GAIN		dBd	2.53		-16.6	
COMBINED LOSSES		dB	4.18		0	
<b>TRANSMITTED POWER</b>		<b>dBm</b>	<b>38.35</b>		<b>21.18</b>	
<b>ERP</b>		<b>W</b>	<b>6.84</b>		<b>0.13</b>	
<b>MAXIMUM PATH LOSS</b>		<b>dB</b>	<b>131.80</b>		<b>127.11</b>	

# ANALOG MOBILE LINK BUDGETS - APX4500 - 12.5kHz - DAQ3.0

County Courthouse		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°48'11.18" N		80 / 135		120 / 135	
Longitude 124°9'43.7" W		Antenna Model RFI COL54-160		Antenna Model RFI COL54-160	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-113.6		-112.4
RX SYSTEM FADED (DAQ 3.0 CPC) SENSITIVITY W NOISE	dBm		-98.4		-96
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		6
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		0.4
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-96.6</b>		<b>-102.4</b>
OUTPUT POWER	W	100		10	
OUTPUT POWER	dBm	50		40	
TX ANTENNA GAIN	dBd	6		-1	
COMBINED LOSSES	dB	7.5		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>48.5</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>70.79</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>148.1</b>		<b>143.6</b>	

Horse Mountain		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°52'27.09" N		55 / 0		100 / 0	
Longitude 123°44'0.84" W		Antenna Model RFI EA80-41-DIN-T3		Antenna Model RFI EA80-41-DIN-T3	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-113.6		-112.43
RX SYSTEM FADED (DAQ 3.0 CPC) SENSITIVITY W NOISE	dBm		-98.4		-95.98
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		8
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		0.45
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-96.6</b>		<b>-104.43</b>
OUTPUT POWER	W	90		10	
OUTPUT POWER	dBm	49.54		40	
TX ANTENNA GAIN	dBd	8		-1	
COMBINED LOSSES	dB	6.93		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>50.61</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>115.14</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>147.21</b>		<b>142.63</b>	

Mt Pierce		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°25'2.3" N		60 / 60		100 / 60	
Longitude 124°7'13" W		Antenna Model RFI                      OA40-41-DIN		Antenna Model RFI                      OA40-41-DIN	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-113.6		-112.94
RX SYSTEM FADED (DAQ 3.0 CPC) SENSITIVITY W NOISE	dBm		-98.4		-92.99
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		3.95
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-96.6</b>		<b>-105.94</b>
OUTPUT POWER	W	100		10	
OUTPUT POWER	dBm	50		40	
TX ANTENNA GAIN	dBd	9		-1	
COMBINED LOSSES	dB	7.45		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>51.55</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>142.89</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>148.15</b>		<b>144.14</b>	

Pratt Mountain		Base TX Antenna Height (ft) / Az (deg)		Base RX Antenna Height (ft) / Az (deg)	
Latitude 40°7'13.5" N		60 / 315		100 / 315	
Longitude 123°41'35.76" W		Antenna Model RFI OA40-41-DIN-T3		Antenna Model RFI OA40-41-DIN-T3	
Link Budget	Units	Outbound		Inbound	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-113.6		-112.43
RX SYSTEM FADED (DAQ 3.0 CPC) SENSITIVITY W NOISE	dBm		-98.4		-95.98
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		0.45
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-96.6</b>		<b>-105.43</b>
OUTPUT POWER	W	75		10	
OUTPUT POWER	dBm	48.75		40	
TX ANTENNA GAIN	dBd	9		-1	
COMBINED LOSSES	dB	7.45		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>50.3</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>107.17</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>146.9</b>		<b>143.63</b>	

<b>Big Lagoon</b>		<b>Base TX Antenna Height (ft) / Az (deg)</b>		<b>Base RX Antenna Height (ft) / Az (deg)</b>	
<b>Latitude</b> 41°10'16.05" N		199 / 60		see tx / see tx	
<b>Longitude</b> 124°3'46.37" W		<b>Antenna Model</b> RFI                      OA40-41-DIN		<b>Antenna Model</b> see tx                      see tx	
<b>Link Budget</b>	<b>Units</b>	<b>Outbound</b>		<b>Inbound</b>	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-113.6		-114
RX SYSTEM FADED (DAQ 3.0 CPC) SENSITIVITY W NOISE	dBm		-98.4		-94
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		9
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		4
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-96.6</b>		<b>-107</b>
OUTPUT POWER	W	100		10	
OUTPUT POWER	dBm	50		40	
TX ANTENNA GAIN	dBd	9		-1	
COMBINED LOSSES	dB	7.59		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>51.41</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>138.36</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>148.01</b>		<b>145.2</b>	

<b>BigHill</b>		<b>Base TX Antenna Height (ft) / Az (deg)</b>		<b>Base RX Antenna Height (ft) / Az (deg)</b>	
<b>Latitude</b> 41°2'18.7" N		20 / 0		see tx / see tx	
<b>Longitude</b> 123°44'54.89" W		<b>Antenna Model</b> Telewave                      ANT150F2		<b>Antenna Model</b> see tx                                      see tx	
<b>Link Budget</b>	<b>Units</b>	<b>Outbound</b>		<b>Inbound</b>	
		Base StationTX	SubscriberRX	SubscriberTX	Base StationRX
RX SYSTEM STATIC SENSITIVITY W NOISE	dBm		-113.6		-116.87
RX SYSTEM FADED (DAQ 3.0 CPC) SENSITIVITY W NOISE	dBm		-98.4		-97.24
DIVERSITY GAIN (if applicable)	dB		n/a		n/a
RX ANTENNA GAIN	dBd		-1		2.5
COMBINED GAINS/LOSSES OR NOISEDEG	dB		-0.8		3.64
<b>REQUIRED MINIMUM POWER</b>	<b>dBm</b>		<b>-96.6</b>		<b>-103.38</b>
OUTPUT POWER	W	10		10	
OUTPUT POWER	dBm	40		40	
TX ANTENNA GAIN	dBd	2.5		-1	
COMBINED LOSSES	dB	7.23		0.8	
<b>TRANSMITTED POWER</b>	<b>dBm</b>	<b>35.27</b>		<b>38.2</b>	
<b>ERP</b>	<b>W</b>	<b>3.37</b>		<b>6.61</b>	
<b>MAXIMUM PATH LOSS</b>	<b>dB</b>	<b>131.87</b>		<b>141.58</b>	



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## APPENDIX 4 – SYSTEM DRAWINGS

The following system drawings are included on the following pages:

1. Humboldt System Diagram
2. Big Lagoon Rackface
3. Horse Mountain Rackface
4. Mt Pierce Rackface
5. Shelton Butte Rackface
6. Pratt Mountain Rackface
7. Shelter Cove Rackface
8. BigHill Rackface
9. Trinidad Rackface

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Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
TRINIDAD	NETWORK	1	1	CLN1868	2930F 24-PORT SWITCH
TRINIDAD	NETWORK	2	1	T8547	SITE ROUTER & FIREWALL- DC
TRINIDAD	NETWORK	2a	1	CA03445AA	ADD: MISSION CRITICAL HARDENING
TRINIDAD	NETWORK	2b	1	CA03448AA	ADD: STATEFUL FIREWALL
TRINIDAD	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
TRINIDAD	CCGW	3a	1	CA01619AA	ADD: DC POWER
TRINIDAD	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
TRINIDAD	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOXCO, 48VDC INC
TRINIDAD	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
TRINIDAD	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
TRINIDAD	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
TRINIDAD	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
TRINIDAD	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
TRINIDAD	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
TRINIDAD	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
TRINIDAD	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
TRINIDAD	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
TRINIDAD	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
TRINIDAD	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
TRINIDAD	CONV_GTR	8h	1	X265AM	BR PRESELCATOR, 150-174 MHZ
TRINIDAD	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
TRINIDAD	RFDS	9	1	DS2636H0101	DUPLEXING SYSTEM,137-174 MHZ 1 CHANNEL INPUT ISOLATORS AC
TRINIDAD	ANTENNA	10	1	DSCOLS4160	OMNI, MEANDER COLLINEAR 6.0 DBD, 150-160 MHZ, PIM RATED
TRINIDAD	UPPERJUMPR	11	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
TRINIDAD	UPPERJUMPR	12	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
TRINIDAD	JUMPER	13	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
TRINIDAD	MAINLINE	14	100	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
TRINIDAD	MAINLINE	15	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
TRINIDAD	MAINLINE	16	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
TRINIDAD	MAINLINE	17	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
TRINIDAD	ANTACC	18	5	DSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
TRINIDAD	SURGE	19	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
TRINIDAD	LOWERJUMPR	20	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
TRINIDAD	LOWERJUMPR	21	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
TRINIDAD	LOWERJUMPR	22	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
Trinidad	DC Power	21	1	DSDCPSX2002S	48V, 200A DC POWER SYS, 84X23X22 RA
Trinidad	DC Power	22	3	DSDCR50	50AMP DC RECTIFIER, DCPS50A
Trinidad	DC Power	23	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
Trinidad	DC Power	24	2	DSWL4GM155F	BATTERY, 155AH 48VDC STRING CONSIST
Trinidad	DC Power	25	1	DSP4ALMB80D1B	INVERTER BREAKER
SUBSCRIBER	RADIO ACCE	1	135	PMNN4486	BATT IMPRES 2 LIION R IP68 3400T
SUBSCRIBER	RADIO ACCE	2	12	PMNN4448AR	BATTERY PACK, MAH,BATT IMP STD IP67
SUBSCRIBER	RADIO ACCE	3	15	PMNN4486	BATT IMPRES 2 LIION R IP68 3400T
SUBSCRIBER	RADIO ACCE	4	5	PMNN4448AR	BATTERY PACK, MAH,BATT IMP STD IP67
SUBSCRIBER	RADIO ACCE	5	147	NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A,
SUBSCRIBER	RADIO ACCE	6	7	NNTN8844A	CHARGER, MULTI-UNIT, IMPRES 2, 6-DI
SUBSCRIBER	RADIO ACCE	7	147	PMMN4069A	IMPRES RSM, 3.5MM AUDIO JACK
SUBSCRIBER	RADIO ACCE	8	147	PMLN7560A	REC ONLY EARPIECE W/TRANSLUCENT TUB
SPARES	SPARES	411	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOXCO, 48VDC INC
SPARES	SPARES	412	1	DLN6886	FRU: GRV8000 SPARE
SPARES	SPARES	413	2	DLN6898	FRU: FAN MODULE
SPARES	SPARES	414	2	DLN6805	FRU: ENERGY EFFICIENT POWER SUPPLY
SPARES	SPARES	415	2	DLN6897	FRU: PA VHF
SPARES	SPARES	416	2	DLN6892	FRU: XCVR VHF V2
SPARES	SPARES	417	6	F4544	SITE MANAGER ADVANCED
SPARES	SPARES	417a	6	VA00905	ADD:24/48 VDC PS TO SM
SPARES	SPARES	417b	6	VA00872	ADD: SDM ASTRO RTU FW CURR ASTRO RE
SPARES	SPARES	418	1	SQM01SUM0205	GGM 8000 GATEWAY
SPARES	SPARES	418a	1	CA01619AA	ADD: DC POWER
SPARES	SPARES	419	1	CLN1868	2930F 24-PORT SWITCH
SPARES	SPARES	420	1	TT3225	Z2 MINI WORKSTATION 258G 8G NON RET
SPARES	SPARES	429	2	T8493	EDGE & HUB ROUTER & FIREWALL - AC
SPARES	SPARES	429a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
SPARES	SPARES	429b	2	CA03448AA	ADD: STATEFUL FIREWALL
SPARES	SPARES	439	1	T7039	GTR 8000 Base Radio
SPARES	SPARES	439a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
SPARES	SPARES	439b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
SPARES	SPARES	439c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
SPARES	SPARES	439d	1	CA01953AA	ADD:POWER EFFICIENCY PACKAGE
SPARES	SPARES	439e	1	CA03111AA	ADD: CEC COMPLIANCE
SPARES	SPARES	439f	1	CA01400AA	ADD: POWER CABLE, DC
SPARES	SPARES	439g	1	X153AW	ADD:RACK MOUNT HARDWARE
SPARES	SPARES	439h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
SPARES	SPARES	439i	1	X530BG	ADD: VHF (136-174 MHZ)
SPARES	SPARES	10	1	T7039	GTR 8000 Base Radio
SPARES	SPARES	10a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
SPARES	SPARES	10b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAST SOFTWARE
SPARES	SPARES	10c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
SPARES	SPARES	10d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
SPARES	SPARES	10e	1	CA03111AA	ADD: CEC COMPLIANCE
SPARES	SPARES	10f	1	X153AW	ADD: RACK MOUNT HARDWARE
SPARES	SPARES	10g	1	X265AP	ADD: BR PRESELECTOR 380-512 MHZ
SPARES	SPARES	10h	1	X640AL	ADD: UHF R2 (435-524 MHZ)
SPARES	SPARES	440	1	T7039	GTR 8000 Base Radio
SPARES	SPARES	440a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
SPARES	SPARES	440b	1	CA01949AA	ADD: ANALOG ONLY CONV SW
SPARES	SPARES	440c	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
SPARES	SPARES	440d	1	CA01953AA	ADD:POWER EFFICIENCY PACKAGE
SPARES	SPARES	440e	1	CA03111AA	ADD: CEC COMPLIANCE
SPARES	SPARES	440f	1	CA01400AA	ADD: POWER CABLE, DC
SPARES	SPARES	440g	1	X153AW	ADD:RACK MOUNT HARDWARE
SPARES	SPARES	440i	1	X530BG	ADD: VHF (136-174 MHZ)
SPARES	SPARES	442	2	T8547	SITE ROUTER & FIREWALL- DC
SPARES	SPARES	442a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
SPARES	SPARES	442b	2	CA03448AA	ADD: STATEFUL FIREWALL
SPARES	SPARES	302	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATIO
SPARES	SPARES	303	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
SPARES	SPARES	304	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
SPARES	SPARES	307	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT
SPARES	APX6500	308	1	M25QSS9PW1 N	APX6500 UHF R1 MID POWER
SPARES	APX6500	308a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
SPARES	APX6500	308b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
SPARES	APX6500	308l	1	GA00631AB	ADD: DVRS MSU ACTIVATION APX MOBILE
SPARES	APX6500	308d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
SPARES	APX6500	308e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
SPARES	APX6500	308f	1	G67	ADD: REMOTE MOUNT MID POWER
SPARES	APX6500	308h	1	G142	ADD: NO SPEAKER NEEDED
SPARES	APX6500	308i	1	G618	ADD:CBL REMOTE MOUNT 10 FEET
SPARES	APX6500	308k	1	G24	ADD: 3Y ESSENTIAL SERVICE
SPARES	DC Power	26	10	DSP4AIELB20D1B	BREAKER 20 AMP FOR DCPS POWER SYSTE
SPARES	DC Power	27	20	DSP4AIELB15D1B	BREAKER 15 AMP FOR DCPS POWER SYSTE
SPARES	DC Power	28	60	DSP4AIELB5D1B	BREAKER 5 AMP FOR DCPS POWER SYSTEM
SITE MOSCAD	MOSCAD	42	6	F4544	SITE MANAGER ADVANCED
SITE MOSCAD	MOSCAD	42a	6	V592	AAD TERM BLCK & CONN WI
SITE MOSCAD	MOSCAD	42b	6	VA00872	ADD: SDM ASTRO RTU FW CURR ASTRO RE
SITE MOSCAD	MOSCAD	42c	6	VA00905	ADD:24/48 VDC PS TO SM
SITE MOSCAD	MOSCAD	43	1	SQM01SUM0205	GGM 8000 GATEWAY
SITE MOSCAD	MOSCAD	43a	1	CA01619AA	ADD: DC POWER
SITE MOSCAD	MOSCAD	43b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
SHELTONB	DVRS	258	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATIO
SHELTONB	DVRS	259	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
SHELTONB	DVRS	260	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
SHELTONB	DVRS	262	1	DDN1576	DVR PROGRAMMING SOFTWARE FOR APX DV
SHELTONB	DVRS	263	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT
SHELTONB	APX6500	264	1	M25QSS9PW1 N	APX6500 UHF R1 MID POWER
SHELTONB	APX6500	264a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
SHELTONB	APX6500	264b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
SHELTONB	APX6500	264l	1	GA00631AB	ADD: DVRS MSU ACTIVATION APX MOBILE
SHELTONB	APX6500	264d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
SHELTONB	APX6500	264e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
SHELTONB	APX6500	264f	1	G67	ADD: REMOTE MOUNT MID POWER
SHELTONB	APX6500	264h	1	G142	ADD: NO SPEAKER NEEDED

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
SHELTONB	APX6500	264i	1	G618	ADD:CBL REMOTE MOUNT 10 FEET
SHELTONB	APX6500	264k	1	G24	ADD: 3Y ESSENTIAL SERVICE
SHELTONB	ANTENNA	265	1	DSANT150F2	TELEWAVE (148-174) BROADBAND FIBERGLASS OMNI ANTENNA
SHELTONB			2	DS245173	245173 COLD SHRINK WEATHERPROOFKIT, 1/2 TO 1/2
SHELTONB			2	DDN1089	L4TNF-PSA TYPE N FEMALE PS FOR 1/2 IN CABLE
SHELTONB			50	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
SHELTONB			2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
SHELTONB			3	DSSG1212B2U	SG12-12B2U, SUREGROUND 1/2", 48"
SHELTONB			1	DSISNEMPC2MA	RF SPD, 125MHZ-1.0GHZ, COAXIAL NUCLEAR EMP, NM ANT NF EQUIPMENT SIDE
SHELTONB			2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
SHELTONB	ANTENNA	276	1	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
SHELTONB			2	DS245173	245173 COLD SHRINK WEATHERPROOFKIT, 1/2 TO 1/2
SHELTONB			2	DDN1089	L4TNF-PSA TYPE N FEMALE PS FOR 1/2 IN CABLE
SHELTONB			50	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
SHELTONB			2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
SHELTONB			3	DSSG1212B2U	SG12-12B2U, SUREGROUND 1/2", 48"
SHELTONB			1	DSISNEMPC2MA	RF SPD, 125MHZ-1.0GHZ, COAXIAL NUCLEAR EMP, NM ANT NF EQUIPMENT SIDE
SHELTONB			2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
SHELTONB	SiteMonitor	394	1	DSTSXNFFP	RF SPD, 698-2700MHZ, DC BLOCK HIGH POWER
SHELTONB	SiteMonitor	395	1	DQBFN	SPD, 100 TO 512MHZ, DIN FEMALE/FEMALE CONNECTOR, PIM RATED
SHELTONB	SiteMonitor	396	1	DSOC69271FNF	OMNIDIRECTIONAL ANTENNA 698?960MHZ, 1710?2700MHZ, FIXED NF CONNECTOR
SHELTONB	SiteMonitor	397	15	DSDLF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
SHELTONB	SiteMonitor	398	1		RG-174 N-Male to SMA-Male (10ft)
SHELTONB	SiteMonitor		1	DSDPKNGLT212018001	NETGUARDIAN LT G2, SNMP, 4 ALM, +12VDC, TMP/BATT, NOVOICE, IT
SHELTONB	SiteMonitor	399	1	DS29170000300	CELLULAR ROUTER, LTE (VERIZON), CELLULAR ONLY W/US ACCESSORY KIT
ShelterCov	RACK	301	1	TRN7343	SEVEN AND A HALF FOOT RACK
ShelterCov	DVRS	302	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATIO
ShelterCov	DVRS	303	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
ShelterCov	DVRS	304	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
ShelterCov	DVRS	305	1	DSEA4041DIN	ELLIPTICAL, EXPOSED DIPOLE ARRAY, 5
ShelterCov	DVRS	307	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT
ShelterCov	APX6500	308	1	M25QSS9PW1 N	APX6500 UHF R1 MID POWER
ShelterCov	APX6500	308a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
ShelterCov	APX6500	308b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
ShelterCov	APX6500	308l	1	GA00631AB	ADD: DVRS MSU ACTIVATION APX MOBILE
ShelterCov	APX6500	308d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
ShelterCov	APX6500	308e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
ShelterCov	APX6500	308f	1	G67	ADD: REMOTE MOUNT MID POWER
ShelterCov	APX6500	308h	1	G142	ADD: NO SPEAKER NEEDED
ShelterCov	APX6500	308i	1	G618	ADD:CBL REMOTE MOUNT 10 FEET
ShelterCov	APX6500	308k	1	G24	ADD: 3Y ESSENTIAL SERVICE
ShelterCov	ANTENNA	276	1	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
ShelterCov	UPPERJUMPR	277	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
ShelterCov	UPPERJUMPR	278	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
ShelterCov	JUMPER	279	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
ShelterCov	MAINLINE	280	110	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL
ShelterCov	MAINLINE	281	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT
ShelterCov	MAINLINE	282	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN
ShelterCov	MAINLINE	283	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
ShelterCov	ANTACC	284	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
ShelterCov	SURGE	285	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH P
ShelterCov	LOWERJUMPR	286	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
ShelterCov	LOWERJUMPR	287	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
PRATTMTN	DC Power	16	1	DSDCPSX2003BS	48V, 200A DC POWER SYS, SEISMIC, 84
PRATTMTN	DC Power	17	4	DSDCR50	50AMP DC RECTIFIER, DCPS50A
PRATTMTN	DC Power	18	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
PRATTMTN	DC Power	19	1	DSP4ALMB80D1B	INVERTER BREAKER
PRATTMTN	DC Power	20	3	DSWL4GM155F	BATTERY, 155AH 48VDC STRING CONSIST
PRATTMTN	NETWORK	1	2	CLN1868	2930F 24-PORT SWITCH
PRATTMTN	NETWORK	2	2	T8547	SITE ROUTER & FIREWALL- DC
PRATTMTN	NETWORK	2a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
PRATTMTN	NETWORK	2b	2	CA03448AA	ADD: STATEFUL FIREWALL
PRATTMTN	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
PRATTMTN	CCGW	3a	1	CA01619AA	ADD: DC POWER
PRATTMTN	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
PRATTMTN	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCKO, 48VDC INC

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
PRATTMTN	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
PRATTMTN	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
PRATTMTN	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
PRATTMTN	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
PRATTMTN	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
PRATTMTN	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
PRATTMTN	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
PRATTMTN	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
PRATTMTN	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
PRATTMTN	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
PRATTMTN	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
PRATTMTN	CONV_GTR	8h	1	X265AM	BR PRESELCOR, 150-174 MHZ
PRATTMTN	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
PRATTMTN	CONV_GTR	9	1	T7039	GTR 8000 Base Radio
PRATTMTN	CONV_GTR	9a	1	CA01400AA	ADD: POWER CABLE, DC
PRATTMTN	CONV_GTR	9b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
PRATTMTN	CONV_GTR	9c	1	CA01949AA	ADD: ANALOG ONLY CONV SW
PRATTMTN	CONV_GTR	9d	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
PRATTMTN	CONV_GTR	9e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
PRATTMTN	CONV_GTR	9f	1	CA03111AA	ADD: CEC COMPLIANCE
PRATTMTN	CONV_GTR	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
PRATTMTN	CONV_GTR	9h	1	X265AM	BR PRESELCOR, 150-174 MHZ
PRATTMTN	CONV_GTR	9i	1	X530BG	ADD: VHF (136-174 MHZ)
PRATTMTN	UHF ASR LINK	10	1	T7039	GTR 8000 Base Radio
PRATTMTN	UHF ASR LINK	10a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
PRATTMTN	UHF ASR LINK	10b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAST SOFTWARE
PRATTMTN	UHF ASR LINK	10c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
PRATTMTN	UHF ASR LINK	10d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
PRATTMTN	UHF ASR LINK	10e	1	CA03111AA	ADD: CEC COMPLIANCE
PRATTMTN	UHF ASR LINK	10f	1	X153AW	ADD: RACK MOUNT HARDWARE
PRATTMTN	UHF ASR LINK	10g	1	X265AP	ADD: BR PRESELECTOR 380-512 MHZ
PRATTMTN	UHF ASR LINK	10h	1	X640AL	ADD: UHF R2 (435-524 MHZ)
PRATTMTN	RACK	11	1	TRN7343	SEVEN AND A HALF FOOT RACK
PRATTMTN	ANTENNA	12	1	DSOA4041DINT3	OFFSET, EXPOSED DIPOLE ARRAY, 9DBD, 136-174MHZ, 3DEG DT, PIM RATED
PRATTMTN	UPPERJUMPR	13	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
PRATTMTN	UPPERJUMPR	14	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	JUMPER	15	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
PRATTMTN	MAINLINE	16	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
PRATTMTN	MAINLINE	17	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
PRATTMTN	MAINLINE	18	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
PRATTMTN	MAINLINE	19	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
PRATTMTN	MAINLINE	20	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	POLYPHASER	21	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
PRATTMTN	LOWERJUMPR	22	25	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	LOWERJUMPR	23	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
PRATTMTN	LOWERJUMPR	24	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	ANTENNA	25	1	DSOA4041DINT3	OFFSET, EXPOSED DIPOLE ARRAY, 9DBD, 136-174MHZ, 3DEG DT, PIM RATED
PRATTMTN	UPPERJUMPR	26	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
PRATTMTN	UPPERJUMPR	27	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	JUMPER	28	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
PRATTMTN	MAINLINE	29	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
PRATTMTN	MAINLINE	30	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
PRATTMTN	MAINLINE	31	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
PRATTMTN	MAINLINE	32	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
PRATTMTN	MAINLINE	33	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	POLYPHASER	34	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
PRATTMTN	LOWERJUMPR	35	25	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	LOWERJUMPR	36	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
PRATTMTN	LOWERJUMPR	37	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	ANTENNA	39	1	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT, 380-400 MHZ, 9.0 DBD
PRATTMTN	UPPERJUMPR	40	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
PRATTMTN	UPPERJUMPR	41	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	JUMPER	42	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
PRATTMTN	MAINLINE	43	110	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
PRATTMTN	MAINLINE	44	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
PRATTMTN	MAINLINE	45	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
PRATTMTN	MAINLINE	46	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
PRATTMTN	ANTACC	47	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	SURGE	48	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
PRATTMTN	LOWERJUMPR	49	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
PRATTMTN	LOWERJUMPR	50	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
PRATTMTN	SURGE	51	1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
PRATTMTN	SURGE	52	1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1-PHASE
PRATTMTN	RFDS		1	DS26700101	DUPLEXER SYSTEM, SINGLE CHANNEL, 450-470, TX WITH ISOLATORS
PRATTMTN	RFDS		1	DSSPD2325D-3	RF Distribution System: PIM-hardened 3Ch TX combiner/filter, Special cavity-type Receive window filter, Best Practices DSRMC06 RX Multicoupler, and two 2--post rack 45 RU color black with ground bar.
NORTH COUR	GTR8000	39	1	T7039	GTR 8000 Base Radio
NORTH COUR	GTR8000	39a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
NORTH COUR	GTR8000	39b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
NORTH COUR	GTR8000	39c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
NORTH COUR	GTR8000	39d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
NORTH COUR	GTR8000	39e	1	CA03111AA	ADD: CEC COMPLIANCE
NORTH COUR	GTR8000	39f	1	CA01400AA	ADD: POWER CABLE, DC
NORTH COUR	GTR8000	39g	1	X153AW	ADD: RACK MOUNT HARDWARE
NORTH COUR	GTR8000	39h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
NORTH COUR	GTR8000	39i	1	X530BG	ADD: VHF (136-174 MHZ)
NORTH COUR	GTR8000	40	1	T7039	GTR 8000 Base Radio
NORTH COUR	GTR8000	40a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
NORTH COUR	GTR8000	40b	1	CA01949AA	ADD: ANALOG ONLY CONV SW
NORTH COUR	GTR8000	40c	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
NORTH COUR	GTR8000	40d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
NORTH COUR	GTR8000	40e	1	CA03111AA	ADD: CEC COMPLIANCE
NORTH COUR	GTR8000	40f	1	CA01400AA	ADD: POWER CABLE, DC
NORTH COUR	GTR8000	40g	1	X153AW	ADD: RACK MOUNT HARDWARE
NORTH COUR	GTR8000	40h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
NORTH COUR	GTR8000	40i	1	X530BG	ADD: VHF (136-174 MHZ)
NORTH CELL	RACK	8	1	TRN7343	SEVEN AND A HALF FOOT RACK
NORTH CELL	GRV8000	9	1	T8341	GRV 8000 COMPARATOR
NORTH CELL	GRV8000	9a	1	CA03084AA	ADD: COMPARATOR
NORTH CELL	GRV8000	9b	1	CA03320AA	ADD: ASTRO 25 CONVENTIONAL SOFTWARE
NORTH CELL	GRV8000	9c	1	CA03316AA	ADD: DIGITAL CONV VOTING SOFTWARE
NORTH CELL	GRV8000	9d	1	CA03085AA	ADD: GEO REDUNDANCY
NORTH CELL	GRV8000	9e	1	CA03111AA	ADD: CEC COMPLIANCE
NORTH CELL	GRV8000	9f	1	CA01400AA	ADD: POWER CABLE, DC
NORTH CELL	GRV8000	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
NORTH CELL	GRV8000	9h	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
NORTH CELL	GRV8000	9i	1	CA01953AB	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	DC Power	6	1	DSDCPSX2003BS	48V, 200A DC POWER SYS, SEISMIC, 84
MTPIERCE	DC Power	7	4	DSDCR50	50AMP DC RECTIFIER, DCPS50A
MTPIERCE	DC Power	8	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
MTPIERCE	DC Power	9	1	DSP4ALMB80D1B	INVERTER BREAKER
MTPIERCE	DC Power	10	3	DSWL4GM180F	BATTERY, 180AH 48VDC STRING CONSIST
MTPIERCE	NETWORK	1	2	CLN1868	2930F 24-PORT SWITCH
MTPIERCE	NETWORK	2	2	T8555	EDGE & HUB ROUTER & FIREWALL - DC
MTPIERCE	NETWORK	2a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
MTPIERCE	NETWORK	2b	2	CA03448AA	ADD: STATEFUL FIREWALL
MTPIERCE	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
MTPIERCE	CCGW	3a	1	CA01619AA	ADD: DC POWER
MTPIERCE	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
MTPIERCE	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOXCO, 48VDC INC
MTPIERCE	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
MTPIERCE	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
MTPIERCE	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
MTPIERCE	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
MTPIERCE	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
MTPIERCE	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
MTPIERCE	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
MTPIERCE	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
MTPIERCE	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
MTPIERCE	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
MTPIERCE	CONV_GTR	8h	1	X265AM	BR PRESECTOR, 150-174 MHZ
MTPIERCE	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
MTPIERCE	CONV_GTR	9	1	T7039	GTR 8000 Base Radio
MTPIERCE	CONV_GTR	9a	1	CA01400AA	ADD: POWER CABLE, DC
MTPIERCE	CONV_GTR	9b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
MTPIERCE	CONV_GTR	9c	1	CA01949AA	ADD: ANALOG ONLY CONV SW
MTPIERCE	CONV_GTR	9d	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
MTPIERCE	CONV_GTR	9e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	CONV_GTR	9f	1	CA03111AA	ADD: CEC COMPLIANCE
MTPIERCE	CONV_GTR	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
MTPIERCE	CONV_GTR	9h	1	X265AM	BR PRESECTOR, 150-174 MHZ
MTPIERCE	CONV_GTR	9i	1	X530BG	ADD: VHF (136-174 MHZ)
MTPIERCE	GRV8000	10	1	T8341	GRV 8000 COMPARATOR
MTPIERCE	GRV8000	10a	1	CA03084AA	ADD: COMPARATOR
MTPIERCE	GRV8000	10b	1	CA03320AA	ADD: ASTRO 25 CONVENTIONAL SOFTWARE
MTPIERCE	GRV8000	10c	1	CA03316AA	ADD: DIGITAL CONV VOTING SOFTWARE
MTPIERCE	GRV8000	10d	1	CA03085AA	ADD: GEO REDUNDANCY
MTPIERCE	GRV8000	10e	1	CA03111AA	ADD: CEC COMPLIANCE
MTPIERCE	GRV8000	10f	1	CA01400AA	ADD: POWER CABLE, DC
MTPIERCE	GRV8000	10g	1	X153AW	ADD: RACK MOUNT HARDWARE
MTPIERCE	GRV8000	10h	1	CA01953AB	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	GRV8000	10i	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
MTPIERCE	GRV8000	11	1	T8341	GRV 8000 COMPARATOR
MTPIERCE	GRV8000	11a	1	CA01400AA	ADD: POWER CABLE, DC
MTPIERCE	GRV8000	11b	1	CA01953AB	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	GRV8000	11c	1	CA03084AA	ADD: COMPARATOR
MTPIERCE	GRV8000	11d	1	CA03085AA	ADD: GEO REDUNDANCY
MTPIERCE	GRV8000	11e	1	CA03111AA	ADD: CEC COMPLIANCE
MTPIERCE	GRV8000	11f	1	X153AW	ADD: RACK MOUNT HARDWARE
MTPIERCE	GRV8000	11g	1	CA01949AC	ADD: ANALOG CONV ONLY SW
MTPIERCE	GRV8000	11h	1	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
MTPIERCE	GRV8000	11i	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
MTPIERCE	RACK	12	2	TRN7343	SEVEN AND A HALF FOOT RACK
MTPIERCE	ANTENNA	13	1	DSOA4041DIN	OFFSET, EXPOSED DIPOLE ARRAY, 9 DBD, 136-174 MHZ, PIM RATED
MTPIERCE	UPPERJUMPR	14	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
MTPIERCE	UPPERJUMPR	15	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
MTPIERCE	UPPERJUMPR	16	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
MTPIERCE	MAINLINE	17	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
MTPIERCE	MAINLINE	18	2	DDN1070	DL360 G6 SERVER, MED TIER, NO-OS
MTPIERCE	MAINLINE	19	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
MTPIERCE	MAINLINE	20	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
MTPIERCE	MAINLINE	21	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
MTPIERCE	ANTACC	22	1	DSVHF50DMPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
MTPIERCE	SURGE	23	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
MTPIERCE	LOWERJUMPR	24	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
MTPIERCE	LOWERJUMPR	25	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
MTPIERCE	ANTENNA	26	1	DSOA4041DIN	OFFSET, EXPOSED DIPOLE ARRAY, 9 DBD, 136-174 MHZ, PIM RATED
MTPIERCE	UPPERJUMPR	27	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
MTPIERCE	UPPERJUMPR	28	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
MTPIERCE	UPPERJUMPR	29	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
MTPIERCE	MAINLINE	30	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
MTPIERCE	MAINLINE	31	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
MTPIERCE	MAINLINE	32	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
MTPIERCE	MAINLINE	33	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
MTPIERCE	MAINLINE	34	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
MTPIERCE	ANTACC	35	1	DSVHF50DMPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
MTPIERCE	SURGE	36	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
MTPIERCE	LOWERJUMPR	37	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
MTPIERCE	LOWERJUMPR	38	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
MTPIERCE	SURGE	39	1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
MTPIERCE	SURGE	40	1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1-PHASE
MTPIERCE	RFDS		1	DSSPD2325D-3	RF Distribution System comprised of: PIM-hardened 3Ch TX combiner/filter, Special cavity-type Receive window filter, Best Practices DSRMC06 RX Multicoupler, and two 2--post rack 45 RU color black with ground bar.
MICROWAVE	MICROWAVE	1	1	DQMWHUMBLTCARF	18.US.822186.04 INCLUDES 1.01-1.03,
MICROWAVE	MICROWAVE	2	1	DQMWHUMBLTCAAD	18.US.822186.04 INCLUDES 1.05, 5.01

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
MICROWAVE	MICROWAVE	3	1	DQMWHUMBLTCANM	18.US.822186.04 INCLUDES 1.07 TSM-8
MICROWAVE	MICROWAVE	4	1	TT3225	Z2 MINI WORKSTATION 258G 8G NON RET
MICROWAVE	MICROWAVE	5	1	DSA019BLK	19" LCD, BLACK, NON-TOUCH
HumboldtPo	APX6000LI	1	135	H98KGF9PW6BN	APX6000 VHF MHZ MODEL 2.5 PORTABLE
HumboldtPo	APX6000LI	1a	3	Q157	ADD: APX DATA CABLE
HumboldtPo	APX6000LI	1b	135	H207	DEL: BATTERY
HumboldtPo	APX6000LI	1c	135	QA05570	ALT: LI-ION IMPRES 2 IP68 3400 MAH
HumboldtPo	APX6000LI	1d	135	Q811	ENH: LI DIGITAL CONVENTIONAL
HumboldtPo	APX6000LI	1e	135	H885BK	ADD: 3Y ESSENTIAL SERVICE
HumboldtPo	APX6000LI	1f	135	QA00782	ENH: APX GPS ACTIVATION
HumboldtPo	APX6000LI	1g	135	QA09012	ADD: MISSION CRITICAL GEOFENCING
HumboldtMo	APX4500	2	100	M22KSS9PW1 N	APX4500 VHF
HumboldtMo	APX4500	2a	100	Q811	ADD: SOFTWARE P25 CONVENTIONAL
HumboldtMo	APX4500	2c	100	GA00804	ADD: APX O2 CONTROL HEAD (Green)
HumboldtMo	APX4500	2d	100	G444	ADD: APX CONTROL HEAD SOFTWARE
HumboldtMo	APX4500	2e	100	G66	ADD: DASH MOUNT
HumboldtMo	APX4500	2j	100	G301	ADD: 3DB ANT 136-174MHZ
HumboldtMo	APX4500	2g	100	B18	ADD: AUXILARY SPKR 7.5 WATT
HumboldtMo	APX4500	2i	100	G24	ADD: 3Y ESSENTIAL SERVICE
HumboldtMo	APX4500	1h	100	QA00782	ADD: ENABLE INTERNAL GPS OPERATION
HumboldtMo	APX4500	1i	100	QA09012	ADD: MISSION CRITICAL GEOFENCING
HumboldtCS	APX4500	3	4	M22KSS9PW1 N	APX4500 VHF
HumboldtCS	APX4500	3a	4	Q811	ADD: SOFTWARE P25 CONVENTIONAL
HumboldtCS	APX4500	3c	4	GA00804	ADD: APX O2 CONTROL HEAD (Green)
HumboldtCS	APX4500	3d	4	G444	ADD: APX CONTROL HEAD SOFTWARE
HumboldtCS	APX4500	3e	4	G66	ADD: DASH MOUNT
HumboldtCS	APX4500	3f	4	G89	ADD: NO RF ANTENNA NEEDED
HumboldtCS	APX4500	3g	4	W382	ADD: CONTROL STATION DESK GCAI MIC
HumboldtCS	APX4500	3h	4	G142	ADD: NO SPEAKER NEEDED
HumboldtCS	APX4500	3i	4	G91	ADD: CONTROL STATION POWER SUPPLY
HumboldtCS	APX4500	3j	4	W665	ADD: CONTROL STATION OPERATION
HumboldtCS	APX4500	3l	4	G24	ADD: 3Y ESSENTIAL SERVICE
HumboldtCB	APX1000	20	12	H84SDD9PW5 N	APX 1000 UHF R2 MODEL 1.5 PORTABLE
HumboldtCB	APX1000	20a	12	H885BK	ADD: 3Y ESSENTIAL SERVICE
HumboldtCB	APX1000	20b	12	QA00782	ENH: APX GPS ACTIVATION
HumboldtCB	APX1000	20c	12	QA04097	ENH: P25 CONVENTIONAL
HumboldtCB	APX1000	20d	12	QA09012	ADD: MISSION CRITICAL GEOFENCING
HUMBOLDT D	AUX_IO	10	1	F4543	SITE MANAGER BASIC
HUMBOLDT D	AUX_IO	10a	1	VA00874	ADD: AUX I-O SERV FW CURR ASTRO REL
HUMBOLDT D	AUX_IO	10b	1	VA00905	ADD:24/48 VDC PS TO SM
HUMBOLDT D	AUX_IO	10c	3	V592	AAD TERM BLCK & CONN WI
HUMBOLDT D	CCGW	11	1	SQM01SUM0205	GGM 8000 GATEWAY
HUMBOLDT D	CCGW	11a	1	CA01619AA	ADD: DC POWER
HUMBOLDT D	CCGW	11b	1	CA02086AA	ADD: HIGH DENSITY ENH CONV GATEWAY
HUMBOLDT D	SWITCH	12	2	CLN1868	2930F 24-PORT SWITCH
HUMBOLDT D	OP_POS	13	1	B1948	MCC 7500E DISPATCH POSITION LICENSE
HUMBOLDT D	OP_POS	13a	4	UA00653AA	ADD: BASIC CONSOLE OPERATION
HUMBOLDT D	OP_POS	13b	4	UA00249AA	ADD: 15 RADIO RESOURCES LICENSE
HUMBOLDT D	OP_POS	13c	4	UA00661AA	ADD: ENHANCED IRR
HUMBOLDT D	OP_POSIT	14	2	B1949	MCC 7500E SOFTWARE DVD
HUMBOLDT D	OP_POSIT	15	4	DSTG221B	TECH GLOBAL EVOLUTION SERIES 22INCH
HUMBOLDT D	OP_POSIT	16	4	DSY7B61AA	HP Z2 MINI ARM WALL VESA MOUNT
HUMBOLDT D	OP_POSIT	17	4	TT3492	Z2 G4 MINI WORKSTATION NON RETURNAB
HUMBOLDT D	OP_POSIT	18	16	B1952	SPEAKER, DESKTOP, USB
HUMBOLDT D	OP_POSIT	18a	16	CA03405AA	ADD: POWER SUPPLY WITH DC CORD
HUMBOLDT D	OP_POSIT	18b	16	CA03406AA	ADD: AC LINE CORD, NORTH AMERICA
HUMBOLDT D	OP_POSIT	18c	16	CA03412AA	ADD: USB CABLE, TYPE C TO TYPE C, 4
HUMBOLDT D	OP_POSIT	19	4	B1941	USB AUDIO INTERFACE MODULE
HUMBOLDT D	OP_POSIT	20	4	B1951	MICROPHONE, DESKTOP, USB
HUMBOLDT D	OP_POSIT	20a	4	CA03412AA	ADD: USB CABLE, TYPE C TO TYPE C, 4
HUMBOLDT D	OP_POSIT	21	8	B1913	MCC SERIES HEADSET JACK
HUMBOLDT D	OP_POSIT	22	4	RLN6098	HDST MODULE BASE W/PTT, 15 FT CBL
HUMBOLDT D	OP_POSIT	23	4	RMN5150A	OVER-THE-HEAD, MONAURAL, NOISE-CANC
HUMBOLDT D	OP_POSIT	24	4	DSTWIN6328A	PROVIDES ONE DUAL PEDAL FOOTSWITCH
HUMBOLDT D	OP_POSIT	25	4	T7885	MCAFEЕ WINDOWS AV CLIENT
HUMBOLDT D	OP_POSIT	26	4	DSUSB31000S	STARTECH USB 3.0 TO GIGABIT ETHERNE

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
HUMBOLDT D	OP_POSIT	27	2	DSF2B56AA	USB EXTERNAL DVD DRIVE
HUMBOLDT D	OP_POSIT	28	4	DSST7300U3M	STARTECH 7 PORT USB 3.0 HUB
HUMBOLDT D	ROUTER	29	2	T8493	EDGE & HUB ROUTER & FIREWALL - AC
HUMBOLDT D	ROUTER	29a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
HUMBOLDT D	ROUTER	29b	2	CA03448AA	ADD: STATEFUL FIREWALL
HUMBOLDT D	RACK	30	1	TRN7343	SEVEN AND A HALF FOOT RACK
HUMBOLDT D	RACK	31	2	DS1101990	SPD, SHIELDED RJ-45 JACK, SINGLE LI
HUMBOLDT D	RACK	32	2	DSTSJADP	RACK MOUNT GROUND BAR, 19 IN FOR TS
HUMBOLDT D	APX7500CON	5	2	RMN5070A	AS. SPECTRA & XTL5000 DESKTOP MIC
HUMBOLDT D	APX7500CON	6	2	HKN6233	ASSEMBLY,ACCESSORY,APX CONSOLETTET R
HUMBOLDT D	ANTENNA	7	2	DSANT150Y10H	TELEWAVE 144-174 MHZ 10DB 6 ELEMEN
HUMBOLDT D	UPPERJUMPR	8	60	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
HUMBOLDT D	UPPERJUMPR	9	8	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
HUMBOLDT D	JUMPER	10	8	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HUMBOLDT D	MAINLINE	11	250	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
HUMBOLDT D	MAINLINE	12	8	DDN1091	L4TDF-PSA 7-16 DIN FEMALE PS FOR 1/
HUMBOLDT D	MAINLINE	13	20	DSSG1212B2U	SG12-12B2U, SUREGROUND 1/2", 48"
HUMBOLDT D	MAINLINE	14	4	DSL4SGRIP	L4SGRIP SUPPORT HOIST GRIP 1/2" LDF
HUMBOLDT D	ANTACC	15	28	MDN6816	STD HANGERS FOR 1/2IN CABLE & EW180
HUMBOLDT D	SURGE	16	2	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH P
HUMBOLDT D	LOWERJUMPR	17	100	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
HUMBOLDT D	LOWERJUMPR	18	4	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
HUMBOLDT D	LOWERJUMPR	19	4	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
HUMBOLDT C	CEN	2	1	SQM01SUM0205	GGM 8000 GATEWAY
HUMBOLDT C	CEN	2a	1	CA01619AA	ADD: DC POWER
HUMBOLDT C	CEN	3	1	CLN1868	2930F 24-PORT SWITCH
HUMBOLDT C	CCGW	4	1	SQM01SUM0205	GGM 8000 GATEWAY
HUMBOLDT C	CCGW	4a	1	CA01619AA	ADD: DC POWER
HUMBOLDT C	CCGW	4b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
HUMBOLDT C	CORE	5	1	TT3492	Z2 G4 MINI WORKSTATION NON RETURNAB
HUMBOLDT C	CORE	6	1	T7885	MCAFEES WINDOWS AV CLIENT
HUMBOLDT C	CORE	7	1	DSTG191B	TECH GLOBAL EVOLUTION SERIES 19INCH
HUMBOLDT C	CCGW	41	1	SQM01SUM0205	GGM 8000 GATEWAY
HUMBOLDT C	CCGW	41a	1	CA01619AA	ADD: DC POWER
HUMBOLDT C	CCGW	41b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
HORSEMTN	DC Power	11	1	DSDCPSX2003BS	48V, 200A DC POWER SYS, SEISMIC, 84
HORSEMTN	DC Power	12	4	DSDCR50	50AMP DC RECTIFIER, DCPS50A
HORSEMTN	DC Power	13	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
HORSEMTN	DC Power	14	1	DSP4ALMB80D1B	INVERTER BREAKER
HORSEMTN	DC Power	15	3	DSWL4GM155F	BATTERY, 155AH 48VDC STRING CONSIST
HORSEMTN	NETWORK	1	2	CLN1868	2930F 24-PORT SWITCH
HORSEMTN	NETWORK	2	2	T8547	SITE ROUTER & FIREWALL- DC
HORSEMTN	NETWORK	2a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
HORSEMTN	NETWORK	2b	2	CA03448AA	ADD: STATEFUL FIREWALL
HORSEMTN	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
HORSEMTN	CCGW	3a	1	CA01619AA	ADD: DC POWER
HORSEMTN	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
HORSEMTN	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOXO, 48VDC INC
HORSEMTN	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
HORSEMTN	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
HORSEMTN	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
HORSEMTN	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
HORSEMTN	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
HORSEMTN	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
HORSEMTN	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
HORSEMTN	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
HORSEMTN	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
HORSEMTN	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
HORSEMTN	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
HORSEMTN	CONV_GTR	8h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
HORSEMTN	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
HORSEMTN	CONV_GTR	9	1	T7039	GTR 8000 Base Radio
HORSEMTN	CONV_GTR	9a	1	CA01400AA	ADD: POWER CABLE, DC
HORSEMTN	CONV_GTR	9b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
HORSEMTN	CONV_GTR	9c	1	CA01949AA	ADD: ANALOG ONLY CONV SW
HORSEMTN	CONV_GTR	9d	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
HORSEMTN	CONV_GTR	9e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
HORSEMTN	CONV_GTR	9f	1	CA03111AA	ADD: CEC COMPLIANCE
HORSEMTN	CONV_GTR	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
HORSEMTN	CONV_GTR	9h	1	X265AM	BR PRESELECTOR, 150-174 MHZ
HORSEMTN	CONV_GTR	9i	1	X530BG	ADD: VHF (136-174 MHZ)
HORSEMTN	ANTENNA	11	1	DSEA8041DINT3	ELLIPTICAL, EXPOSED DIPOLE ARRAY, 8DBD, 136-174MHZ, 3DEG DT, PIM RATED
HORSEMTN	UPPER JUMPR	12	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	UPPER JUMPR	13	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	JUMPER	14	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HORSEMTN	MAINLINE	15	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
HORSEMTN	MAINLINE	16	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
HORSEMTN	MAINLINE	17	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
HORSEMTN	MAINLINE	18	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
HORSEMTN	ANTACC	19	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
HORSEMTN	SURGE	20	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
HORSEMTN	LOWERJUMPR	21	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	LOWERJUMPR	22	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
HORSEMTN	LOWERJUMPR	23	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	ANTENNA	353	2	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
HORSEMTN	UPPERJUMPR	25	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	UPPERJUMPR	26	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	JUMPER	27	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HORSEMTN	MAINLINE	28	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
HORSEMTN	MAINLINE	29	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
HORSEMTN	MAINLINE	30	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
HORSEMTN	MAINLINE	31	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
HORSEMTN	ANTACC	32	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
HORSEMTN	SURGE	33	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
HORSEMTN	LOWERJUMPR	34	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	LOWERJUMPR	35	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
HORSEMTN	LOWERJUMPR	36	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	ANTENNA	38	1	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
HORSEMTN	UPPERJUMPR	39	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	UPPERJUMPR	40	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	JUMPER	41	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HORSEMTN	MAINLINE	42	110	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
HORSEMTN	MAINLINE	43	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
HORSEMTN	MAINLINE	44	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
HORSEMTN	MAINLINE	45	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
HORSEMTN	ANTACC	46	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
HORSEMTN	SURGE	47	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
HORSEMTN	LOWERJUMPR	48	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	LOWERJUMPR	49	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
HORSEMTN	UPPERJUMPR	51	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	UPPERJUMPR	52	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	JUMPER	53	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HORSEMTN	MAINLINE	54	110	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
HORSEMTN	MAINLINE	55	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
HORSEMTN	MAINLINE	56	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
HORSEMTN	MAINLINE	57	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
HORSEMTN	ANTACC	58	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
HORSEMTN	SURGE	59	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
HORSEMTN	LOWERJUMPR	60	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	LOWERJUMPR	61	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
HORSEMTN	SURGE	62	1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
HORSEMTN	SURGE	63	1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1-PHASE
HORSEMTN	UHF ASR LINK	64	1	T7039	GTR 8000 Base Radio
HORSEMTN	UHF ASR LINK	64a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
HORSEMTN	UHF ASR LINK	64b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAST SOFTWARE
HORSEMTN	UHF ASR LINK	64c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
HORSEMTN	UHF ASR LINK	64d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
HORSEMTN	UHF ASR LINK	64e	1	CA03111AA	ADD: CEC COMPLIANCE
HORSEMTN	UHF ASR LINK	64f	1	X153AW	ADD: RACK MOUNT HARDWARE
HORSEMTN	UHF ASR LINK	64g	1	X265AP	ADD: BR PRESELECTOR 380-512 MHZ
HORSEMTN	UHF ASR LINK	64h	1	X640AL	ADD: UHF R2 (435-524 MHZ)
HORSEMTN	UHF ASR LINK	64	2	T7039	GTR 8000 Base Radio

Humboldt County DDR Equipment List

Site	SysSeg	Item	QTY	Nomenclature	Description
HORSEMTN	UHF ASR LINK	64a	2	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
HORSEMTN	UHF ASR LINK	64b	2	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAST SOFTWARE
HORSEMTN	UHF ASR LINK	64c	2	CA01948AA	ADD: CONVENTIONAL SOFTWARE
HORSEMTN	UHF ASR LINK	64d	2	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
HORSEMTN	UHF ASR LINK	64e	2	CA03111AA	ADD: CEC COMPLIANCE
HORSEMTN	UHF ASR LINK	64f	2	X153AW	ADD: RACK MOUNT HARDWARE
HORSEMTN	UHF ASR LINK	64g	2	X265AP	ADD: BR PRESELECTOR 380-512 MHZ
HORSEMTN	UHF ASR LINK	64h	2	X640AL	ADD: UHF R2 435-524 MHZ)
					( RFDS For Horse Mountain)Site RF Distribution System comprised of: Special PIM-hardened 3Ch TX combiner/filter, Special cavity-type Receive window filter, Best Practices DSRMC06 RX Multicoupler, and two 2--post rack 45 RU color black with ground bar.
HORSEMTN	RFDS		1	DSSPD2325D-2	
DA, PW, Prob	SUBSCRIBER		2	13 H98KGF9PW6BN	APX6000 VHF MHZ MODEL 2.5 PORTABLE
DA, PW, Prob	SUBSCRIBER	2a	13	H881	ENH: LI DIGITAL CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	2b	13	H885BK	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	2c	13	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	2d	13	QA09012	ADD: MISSION CRITICAL GEOFENCING
DA, PW, Prob	SUBSCRIBER		3	13 M22KSS9PW1 N	APX4500 VHF
DA, PW, Prob	SUBSCRIBER	3a	13	Q811	ADD: SOFTWARE P25 CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	3c	13	GA00804	ADD: APX O2 CONTROL HEAD (Green)
DA, PW, Prob	SUBSCRIBER	3d	13	G444	ADD: APX CONTROL HEAD SOFTWARE
DA, PW, Prob	SUBSCRIBER	3e	13	G66	ADD: DASH MOUNT O2 WWM
DA, PW, Prob	SUBSCRIBER	3f	13	G301	ADD: 3DB ANT 136-174MHZ
DA, PW, Prob	SUBSCRIBER	3h	13	B18	ADD: AUXILARY SPKR 7.5 WATT
DA, PW, Prob	SUBSCRIBER	3i	13	GA00226	ADD: GPS ANTENNA
DA, PW, Prob	SUBSCRIBER	3j	13	G24	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	3l	13	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	3m	13	QA09012	ADD: MISSION CRITICAL GEOFENCING
DA, PW, Prob	SUBSCRIBER		4	30 H98KGF9PW6BN	APX6000 VHF MHZ MODEL 2.5 PORTABLE
DA, PW, Prob	SUBSCRIBER	4a	30	Q811	ENH: LI DIGITAL CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	4b	30	H885BK	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	4c	30	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	4d	30	QA09012	ADD: MISSION CRITICAL GEOFENCING
DA, PW, Prob	SUBSCRIBER		5	30 M22KSS9PW1 N	APX4500 VHF
DA, PW, Prob	SUBSCRIBER	5a	30	Q811	ADD: SOFTWARE P25 CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	5c	30	GA00804	ADD: APX O2 CONTROL HEAD (Green)
DA, PW, Prob	SUBSCRIBER	5d	30	G444	ADD: APX CONTROL HEAD SOFTWARE
DA, PW, Prob	SUBSCRIBER	5e	30	G66	ADD: DASH MOUNT O2 WWM
DA, PW, Prob	SUBSCRIBER	5f	30	G301	ADD: 3DB ANT 136-174MHZ
DA, PW, Prob	SUBSCRIBER	5g	30	B18	ADD: AUXILARY SPKR 7.5 WATT
DA, PW, Prob	SUBSCRIBER	5i	30	G24	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	5k	30	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	5l	30	QA09012	ADD: MISSION CRITICAL GEOFENCING
DA, PW, Prob	SUBSCRIBER		6	43 M22KSS9PW1 N	APX4500 VHF
DA, PW, Prob	SUBSCRIBER	6a	43	Q811	ADD: SOFTWARE P25 CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	6c	43	GA00804	ADD: APX O2 CONTROL HEAD (Green)
DA, PW, Prob	SUBSCRIBER	6d	43	G444	ADD: APX CONTROL HEAD SOFTWARE
DA, PW, Prob	SUBSCRIBER	6e	43	G66	ADD: DASH MOUNT O2 WWM
DA, PW, Prob	SUBSCRIBER	6f	43	G301	ADD: 3DB ANT 136-174MHZ
DA, PW, Prob	SUBSCRIBER	6h	43	B18	ADD: AUXILARY SPKR 7.5 WATT
DA, PW, Prob	SUBSCRIBER	6j	43	G24	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	6l	43	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	6m	43	QA09012	ADD: MISSION CRITICAL GEOFENCING
COURTHOUSE	DC Power		1	1 DSDCPX2002S	48V, 200A DC POWER SYS, 84X23X22 RA
COURTHOUSE	DC Power		2	3 DSDCR50	50AMP DC RECTIFIER, DCPS50A
COURTHOUSE	DC Power		3	1 DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
COURTHOUSE	DC Power		4	1 DSP4ALMB80D1B	INVERTER BREAKER
COURTHOUSE	DC Power		5	2 DSWL4GM155F	BATTERY, 155AH 48VDC STRING CONSIST
COURTHOUSE	CORE		1	1 SQM01SUM0237	SINGLE ZONE CONV NON-RED CORE
COURTHOUSE	CORE	1a	1	CA02259AA	ADD: Redundancy
COURTHOUSE	CORE	1b	2	CA01896AB	ADD: BACKHAUL SWITCH
COURTHOUSE	CORE	1c	1	CA01663AB	ADD: RACK
COURTHOUSE	CORE	1d	1	CA02258AC	ADD: APPLICATION SERVER
COURTHOUSE	CORE	1e	1	UA00247AA	ADD: UEM LITE SESSION
COURTHOUSE	CORE	1f	1	UA00256AA	ADD: UEM LITE EMAIL NOTIFICATION
COURTHOUSE	CORE	1g	1	CA02635AA	ADD: Fortinet Firewall Appliance

Humboldt County DDR Equipment List

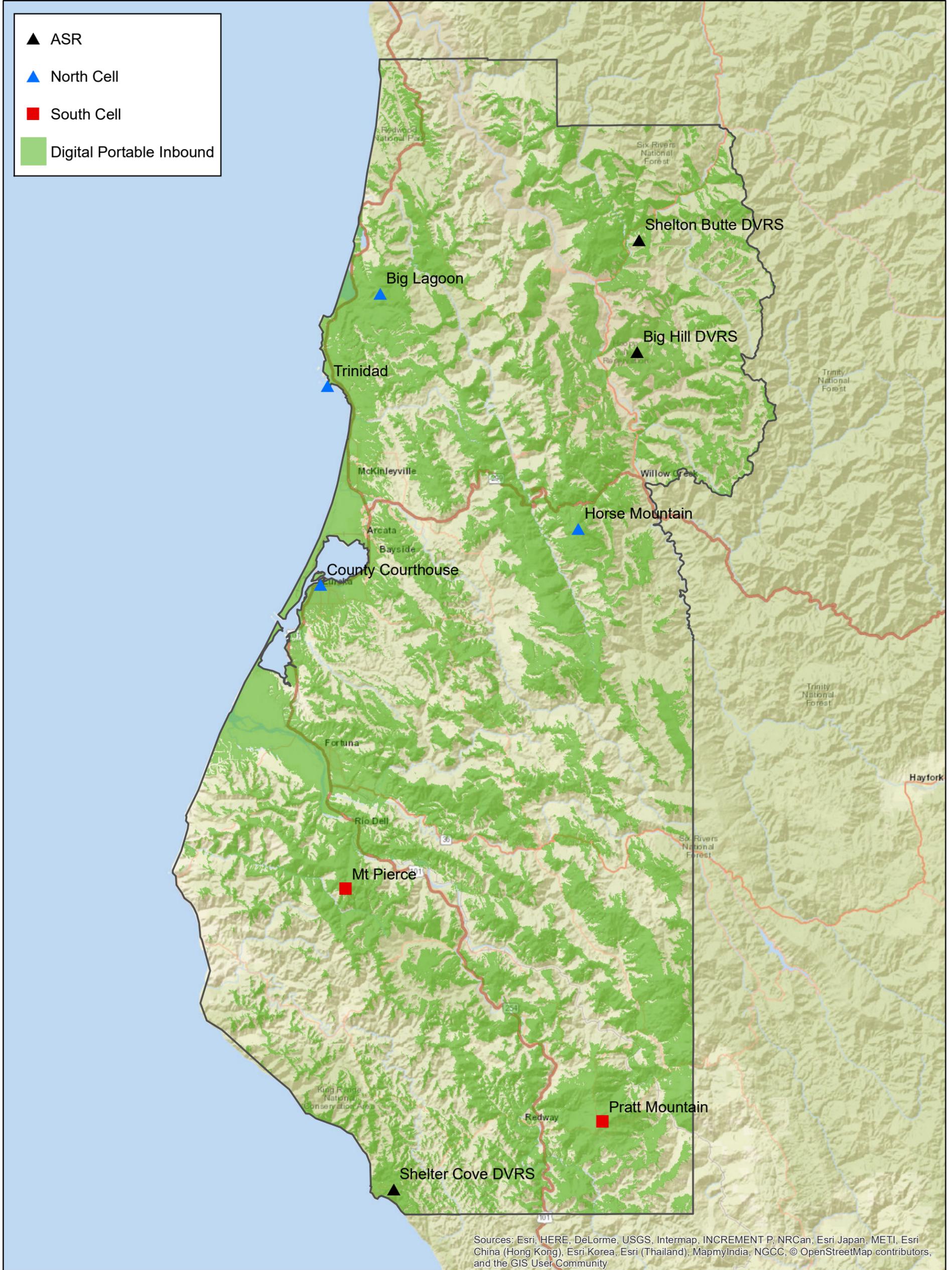
Site	SysSeg	Item	QTY	Nomenclature	Description
COURTHOUSE	MOSCAD	33	1	F4544	SITE MANAGER ADVANCED
COURTHOUSE	MOSCAD	33a	1	V592	AAD TERM BLCK & CONN WI
COURTHOUSE	MOSCAD	33b	1	VA00872	ADD: SDM ASTRO RTU FW CURR ASTRO RE
COURTHOUSE	MOSCAD	33c	1	VA00905	ADD:24/48 VDC PS TO SM
COURTHOUSE	TRAK	34	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOXO, 48VDC INC
COURTHOUSE	TRAK	35	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
COURTHOUSE	TRAK	36	1	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
COURTHOUSE	TRAK	37	1	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
COURTHOUSE	GRV8000	38	1	T8341	GRV 8000 COMPARATOR
COURTHOUSE	GRV8000	38a	1	CA01400AA	ADD: POWER CABLE, DC
COURTHOUSE	GRV8000	38b	1	CA01953AB	ADD: POWER EFFICIENCY PACKAGE
COURTHOUSE	GRV8000	38c	1	CA03084AA	ADD: COMPARATOR
COURTHOUSE	GRV8000	38d	1	CA03085AA	ADD: GEO REDUNDANCY
COURTHOUSE	GRV8000	38e	1	CA03111AA	ADD: CEC COMPLIANCE
COURTHOUSE	GRV8000	38f	1	X153AW	ADD: RACK MOUNT HARDWARE
COURTHOUSE	GRV8000	38g	1	CA01949AC	ADD: ANALOG CONV ONLY SW
COURTHOUSE	GRV8000	38h	1	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
COURTHOUSE	GRV8000	38i	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
COURTHOUSE	ANTENNA	44	1	DSOA4041DIN	OFFSET, EXPOSED DIPOLE ARRAY, 9 DBD, 136-174 MHZ, PIM RATED
COURTHOUSE	UPPERJUMPR	45	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
COURTHOUSE	UPPERJUMPR	46	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	JUMPER	47	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
COURTHOUSE	MAINLINE	48	100	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
COURTHOUSE	MAINLINE	49	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
COURTHOUSE	MAINLINE	50	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
COURTHOUSE	MAINLINE	51	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
COURTHOUSE	ANTACC	52	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
COURTHOUSE	SURGE	53	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
COURTHOUSE	LOWERJUMPR	54	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
COURTHOUSE	LOWERJUMPR	55	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
COURTHOUSE	LOWERJUMPR	56	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	ANTENNA	57	1	DSOA4041DIN	OFFSET, EXPOSED DIPOLE ARRAY, 9 DBD, 136-174 MHZ, PIM RATED
COURTHOUSE	UPPERJUMPR	58	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
COURTHOUSE	UPPERJUMPR	59	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	JUMPER	60	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
COURTHOUSE	MAINLINE	61	100	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
COURTHOUSE	MAINLINE	62	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
COURTHOUSE	MAINLINE	63	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
COURTHOUSE	MAINLINE	64	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
COURTHOUSE	ANTACC	65	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
COURTHOUSE	SURGE	66	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
COURTHOUSE	LOWERJUMPR	67	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
COURTHOUSE	LOWERJUMPR	68	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
COURTHOUSE	LOWERJUMPR	69	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	SURGE	70	1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
COURTHOUSE	SURGE	71	1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1-PHASE
COURTHOUSE	RFDS	72	1	DSSPD2325D-2	( RFDS For Horse Mountain)Site RF Distribution System comprised of: Special PIM-hardened 3Ch TX combiner/filter, Special cavity-type Receive window filter, Best Practices DSRMC06 RX Multicoupler, and two 2--post rack 45 RU color black with ground bar.
ConsoleBac	CONSOLETTTE	21	2	L37TSS9PW1 N	ALL BAND CONSOLETTTE
ConsoleBac	CONSOLETTTE	21a	2	CA01598	ADD: AC LINE CORD US
ConsoleBac	CONSOLETTTE	21b	2	G48	ENH: CONVENTIONAL OPERATION
ConsoleBac	CONSOLETTTE	21c	2	G78	ADD: 3Y ESSENTIAL SERVICE
ConsoleBac	CONSOLETTTE	21d	2	G806	ENH: ASTRO DIGITAL CAI OP APX
ConsoleBac	CONSOLETTTE	21e	2	L999	ADD: FULL FP W/05/KEYPAD/CLOCK/VU
ConsoleBac	CONSOLETTTE	21f	2	W382	ADD: CONTROL STATION DESK GCAI MIC
ConsoleBac	CONSOLETTTE	21h	2	GA05507	DEL: DELETE 7/800MHZ BAND
ConsoleBac	CONSOLETTTE	21i	2	GA05509	DEL: DELETE UHF BAND
BIGLAGOON	NETWORK	1	2	CLN1868	2930F 24-PORT SWITCH
BIGLAGOON	NETWORK	2	2	T8547	SITE ROUTER & FIREWALL- DC
BIGLAGOON	NETWORK	2a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
BIGLAGOON	NETWORK	2b	2	CA03448AA	ADD: STATEFUL FIREWALL
BIGLAGOON	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
BIGLAGOON	CCGW	3a	1	CA01619AA	ADD: DC POWER
BIGLAGOON	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY

Humboldt County DDR Equipment List

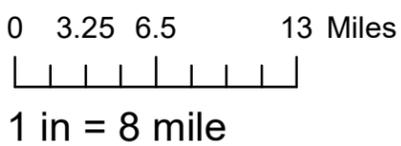
Site	SysSeg	Item	QTY	Nomenclature	Description
BIGLAGOON	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCXO, 48VDC INC
BIGLAGOON	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
BIGLAGOON	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
BIGLAGOON	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
BIGLAGOON	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
BIGLAGOON	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
BIGLAGOON	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
BIGLAGOON	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
BIGLAGOON	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
BIGLAGOON	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
BIGLAGOON	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
BIGLAGOON	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
BIGLAGOON	CONV_GTR	8h	1	X265AM	BR PRESELTOR, 150-174 MHZ
BIGLAGOON	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
BIGLAGOON	CONV_GTR	9	1	T7039	GTR 8000 Base Radio
BIGLAGOON	CONV_GTR	9a	1	CA01400AA	ADD: POWER CABLE, DC
BIGLAGOON	CONV_GTR	9b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
BIGLAGOON	CONV_GTR	9c	1	CA01949AA	ADD: ANALOG ONLY CONV SW
BIGLAGOON	CONV_GTR	9d	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
BIGLAGOON	CONV_GTR	9e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
BIGLAGOON	CONV_GTR	9f	1	CA03111AA	ADD: CEC COMPLIANCE
BIGLAGOON	CONV_GTR	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
BIGLAGOON	CONV_GTR	9h	1	X265AM	BR PRESELTOR, 150-174 MHZ
BIGLAGOON	CONV_GTR	9i	1	X530BG	ADD: VHF (136-174 MHZ)
Big Hill	ANTENNA	353	2	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
Big Hill	ANTENNA	265	2	DSANT150F2	TELEWAVE (148-174) BROADBAND FIBERGLASS OMNI ANTENNA
Big Hill	UPPERJUMPR	354	40	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
Big Hill	SURGE	362	2	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH P
Big Hill	LOWERJUMPR	363	40	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
Big Hill	LOWERJUMPR	364	2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
Big Hill	LOWERJUMPR	365	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
Big Hill	DVRS	366	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATIO
Big Hill	DVRS	367	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
Big Hill	DVRS	368	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
Big Hill	DVRS	371	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT
Big Hill	APX6500	372	1	M25KSS9PW1 N	APX6500 VHF MID POWER
Big Hill	APX6500	372a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
Big Hill	APX6500	372b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
Big Hill	APX6500	372d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
Big Hill	APX6500	372e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
Big Hill	APX6500	372f	1	G67	ADD: REMOTE MOUNT MID POWER
Big Hill	APX6500	372h	1	G142	ADD: NO SPEAKER NEEDED
Big Hill	APX6500	372i	1	G618	ADD:CBL REMOTE MOUNT 10 FEET
Big Hill	APX6500	372k	1	G24	ADD: 3Y ESSENTIAL SERVICE
Big Hill	RFDS	374	1	DS2636H0102	DUPLEXING SYSTEM 137-174 MHZ 2 CHAN
Big Hill	DVRS	387	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATIO
Big Hill	DVRS	388	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
Big Hill	DVRS	389	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
Big Hill	DVRS	392	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT
Big Hill	APX6500	393	1	M25KSS9PW1 N	APX6500 VHF MID POWER
Big Hill	APX6500	393a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
Big Hill	APX6500	393b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
Big Hill	APX6500	393m	1	GA00631AB	ADD: DVRS MSU ACTIVATION APX MOBILE
Big Hill	APX6500	393d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
Big Hill	APX6500	393e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
Big Hill	APX6500	393f	1	G67	ADD: REMOTE MOUNT MID POWER
Big Hill	APX6500	393h	1	G142	ADD: NO SPEAKER NEEDED
Big Hill	APX6500	393i	1	G618	ADD:CBL REMOTE MOUNT 10 FEET
Big Hill	APX6500	393k	1	G24	ADD: 3Y ESSENTIAL SERVICE
Big Hill	SiteMonitor	394	1	DSTSXNFFP	RF SPD, 698-2700MHZ, DC BLOCK HIGH POWER
Big Hill	SiteMonitor	395	1	DQBFN	SPD, 100 TO 512MHZ, DIN FEMALE/FEMALE CONNECTOR, PIM RATED
Big Hill	SiteMonitor	396	1	DSOC69271FNF	OMNIDIRECTIONAL ANTENNA 698?960MHZ, 1710?2700MHZ, FIXED NF CONNECTOR
Big Hill	SiteMonitor	397	15	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
Big Hill	SiteMonitor	398	1		RG-174 N-Male to SMA-Male (10ft)
Big Hill	SiteMonitor		2	DSDPKNGLT212018001	NETGUARDIAN LT G2, SNMP, 4 ALM, +12VDC, TMP/BATT, NOVOICE, IT
Big Hill	SiteMonitor		2	DS29170000300	CELLULAR ROUTER, LTE (VERIZON), CELLULAR ONLY W/US ACCESSORY KIT

# Humboldt County, CA

9-Site (2-Cell, 3-ASR) VHF Phase 1 (FDMA) P25 Simulcast System  
 Painted Area Represents 95% Covered Area Reliability at DAQ 3.4



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

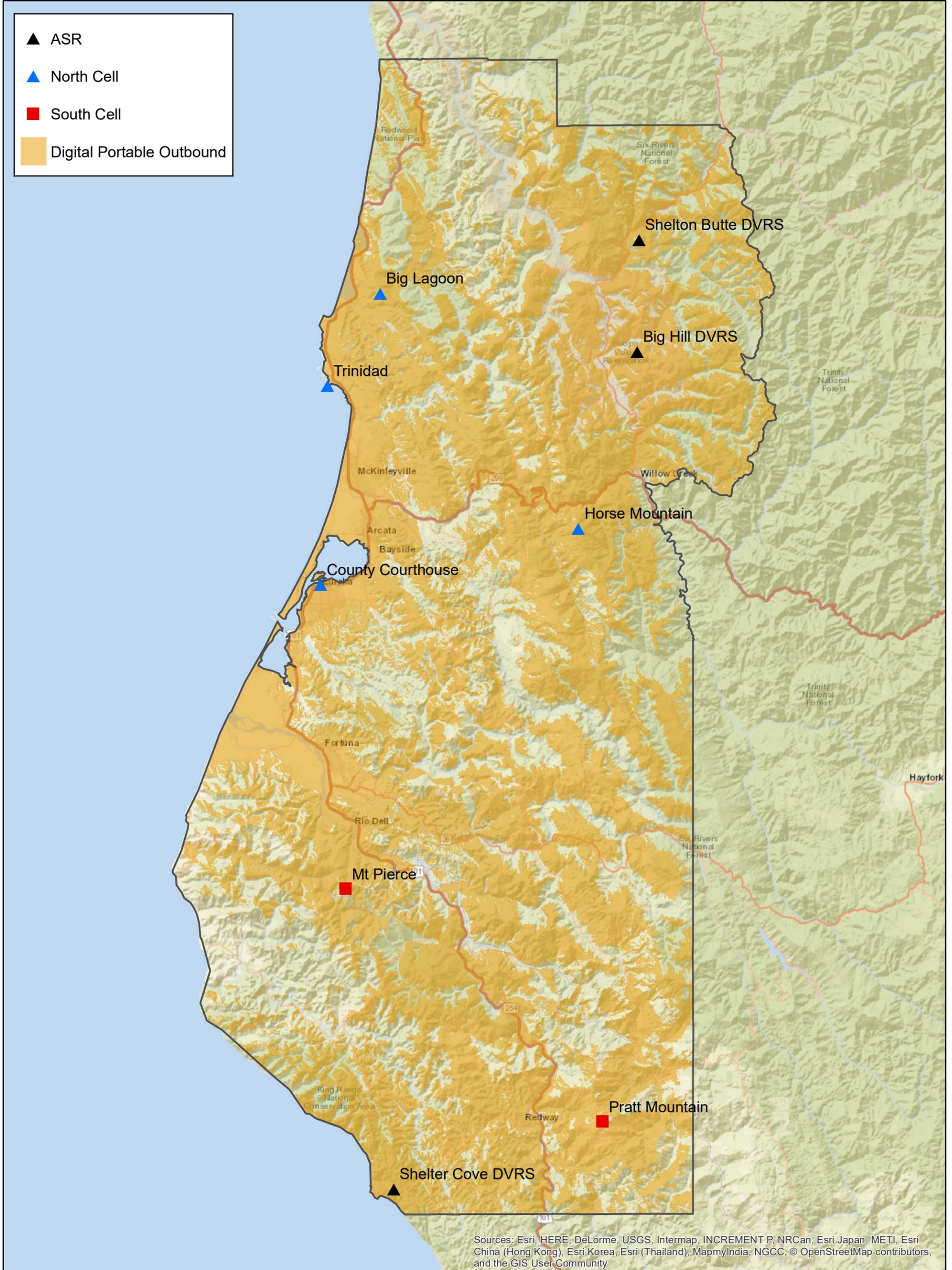


Portable Configuration:  
 APX 6000 Portable, 6W  
 Tx/Rx at Hip in Swivel Case with Remote Speaker Mic  
 Wideband Antenna

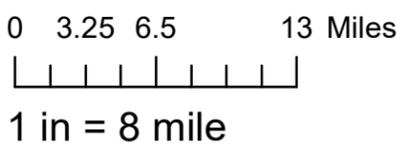
CA - Humboldt County  
 Proposed Sheriff Digital  
 Design 188  
 DFRJ83

# Humboldt County, CA

9-Site (2-Cell, 3-ASR) VHF Phase 1 (FDMA) P25 Simulcast System  
 Painted Area Represents 95% Covered Area Reliability at DAQ 3.4



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

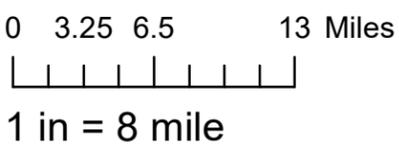
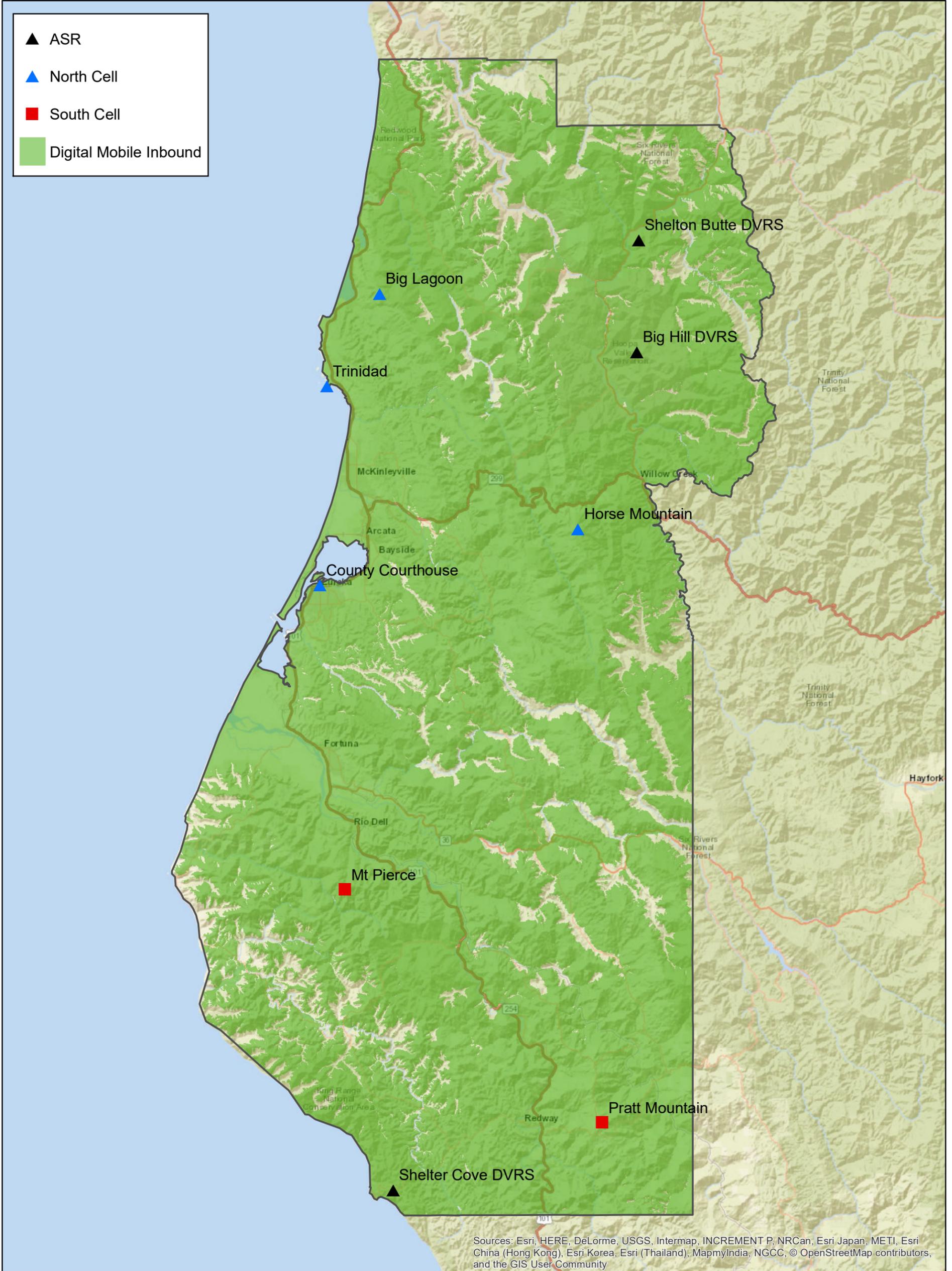


**Portable Configuration:**  
 APX 6000 Portable, 6W  
 Tx/Rx at Hip in Swivel Case with Remote Speaker Mic  
 Wideband Antenna

CA - Humboldt County  
 Proposed Sheriff Digital  
 Design 188  
 DFRJ83

# Humboldt County, CA

9-Site (2-Cell, 3-ASR) VHF Phase 1 (FDMA) P25 Simulcast System  
 Painted Area Represents 95% Covered Area Reliability at DAQ 3.4

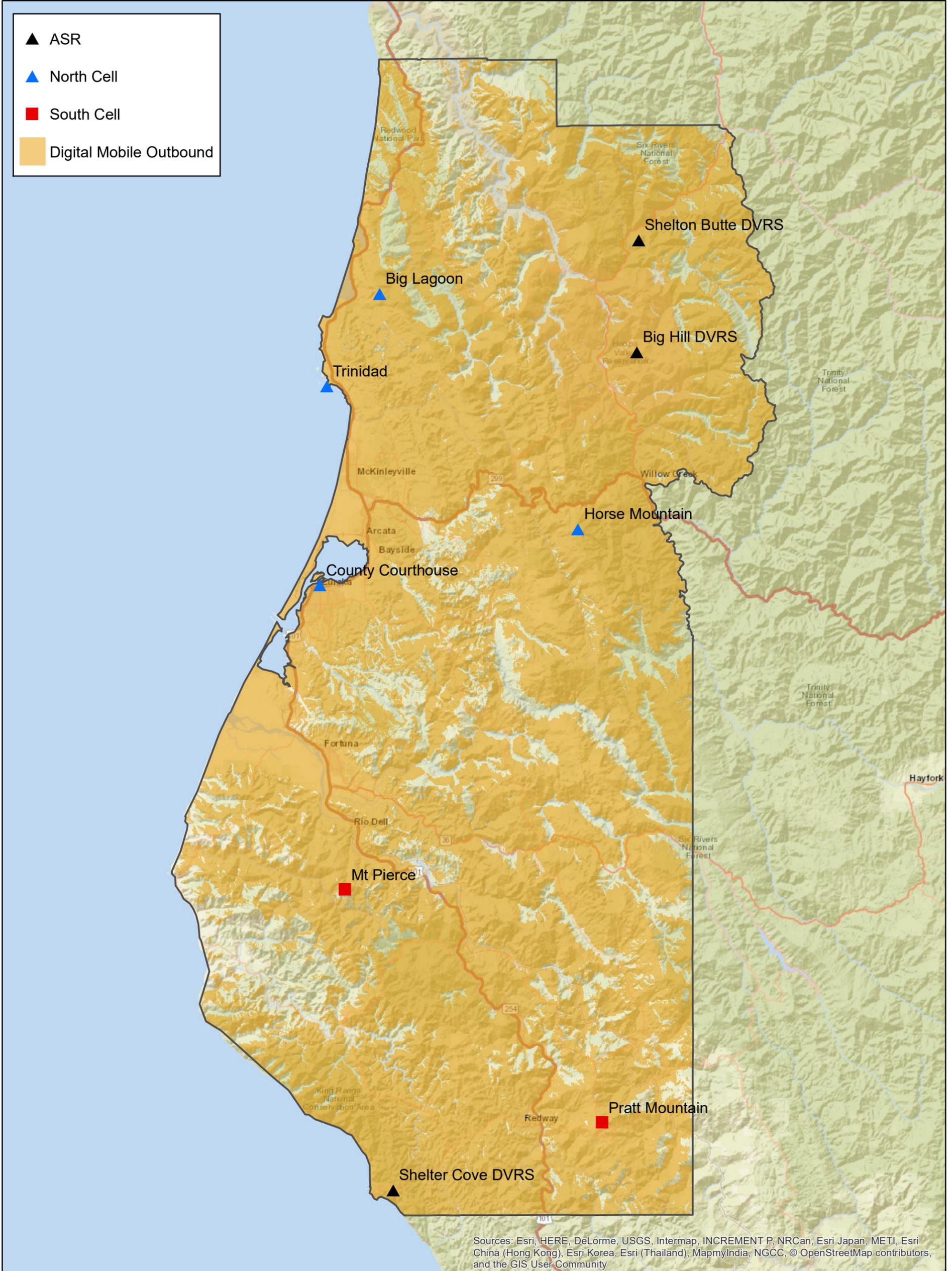


**Mobile Configuration:**  
 APX 4500 Mobile, 10W  
 Tx/Rx Roof Center Mount  
 1/4-Wave Dipole

CA - Humboldt County  
 Proposed Sheriff Digital  
 Design 188  
 DFRJ83

# Humboldt County, CA

9-Site (2-Cell, 3-ASR) VHF Phase 1 (FDMA) P25 Simulcast System  
 Painted Area Represents 95% Covered Area Reliability at DAQ 3.4



**Mobile Configuration:**  
 APX 4500 Mobile, 10W  
 Tx/Rx Roof Center Mount  
 1/4-Wave Dipole

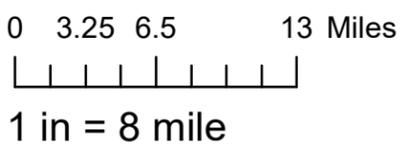
CA - Humboldt County  
 Proposed Sheriff Digital  
 Design 188  
 DFRJ83

# Humboldt County, CA

6-Site (Single Cell, 1-ASR) VHF Analog Simulcast System  
 Painted Area Represents 95% Covered Area Reliability at DAQ 3.0



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

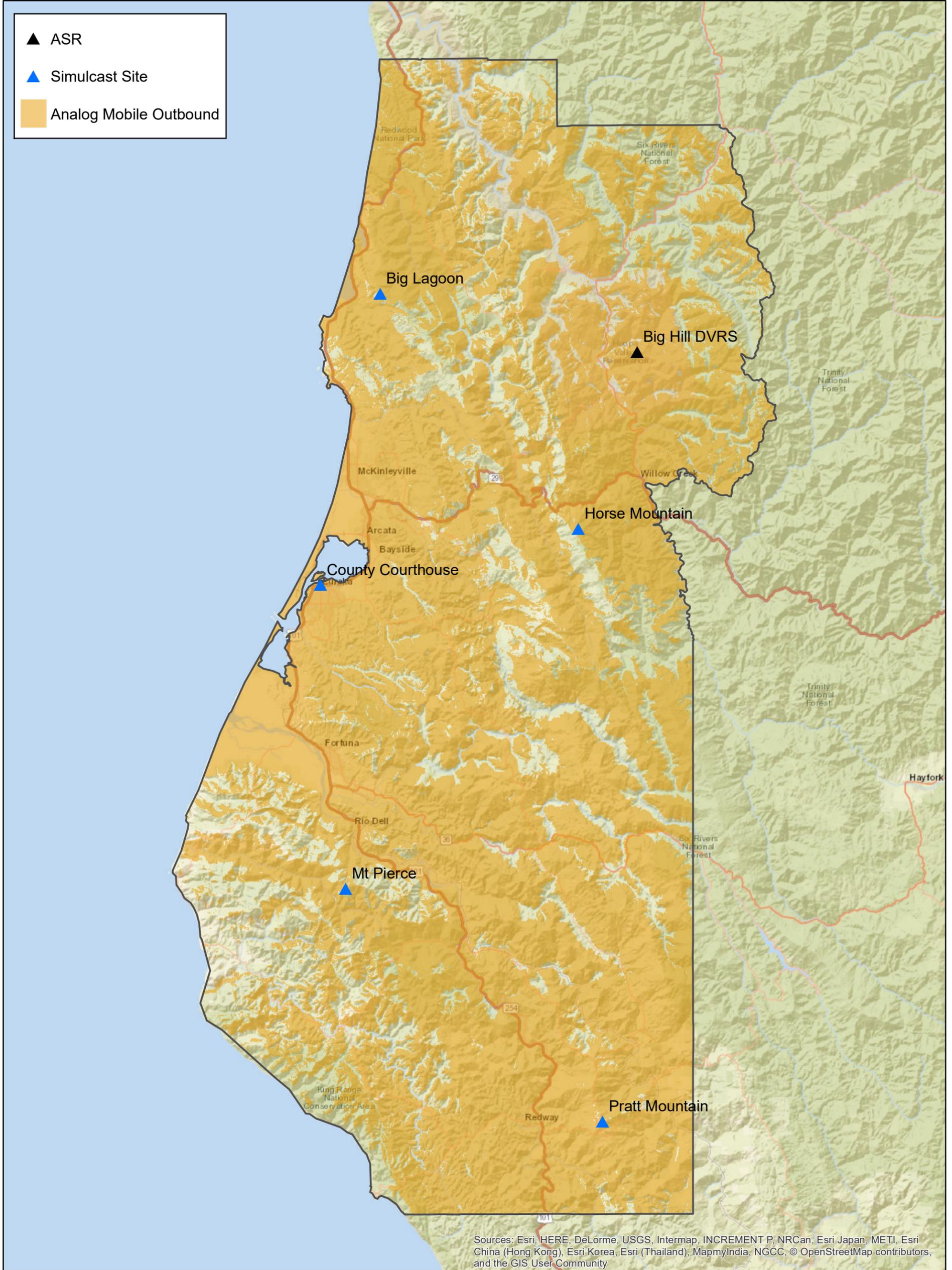


**Mobile Configuration:**  
 APX 4500 Mobile, 10W  
 Tx/Rx Roof Center Mount  
 1/4-Wave Dipole

CA - Humboldt County  
 Proposed PW Analog  
 Design 95  
 DFRJ83

# Humboldt County, CA

6-Site (Single Cell, 1-ASR) VHF Analog Simulcast System  
Painted Area Represents 95% Covered Area Reliability at DAQ 3.0



**Mobile Configuration:**  
APX 4500 Mobile, 10W  
Tx/Rx Roof Center Mount  
1/4-Wave Dipole

CA - Humboldt County  
Proposed PW Analog  
Design 95  
DFRJ83

# SECTION 3

# ACCEPTANCE TEST PLAN

REDUNDANT K CORE

NOVEMBER 11, 2019



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# ACCEPTANCE TEST PLAN

CA\_Humboldt\_County

Redundant K Core

In-Plant Draft

[www.motorolasolutions.com/services/government](http://www.motorolasolutions.com/services/government)

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## 3.1 RADIO TO RADIO FEATURES

### 3.1.1 Conventional Radio Resource Call - Clear Mode

#### 1. DESCRIPTION

Subscribers can communicate to each other through a repeater that is selected via the channel selector on the individual radio.

The signals that are received from the subscriber radio are repeated so that other radios on that channel will be able to hear and participate in the conversation.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1  
RADIO-1 - CONVSITE 1  
RADIO-2 - CONVENTIONAL CHANNEL 1  
RADIO-2 - CONVSITE 1

**VERSION #1.050**

#### 2. TEST

- Step 1. Initiate a CONVENTIONAL CHANNEL 1 call on RADIO-1.
- Step 2. Verify RADIO-2 can monitor and respond to the call on CONVENTIONAL CHANNEL 1.
- Step 3. Initiate a CONVENTIONAL CHANNEL 1 call on RADIO-2.
- Step 4. Verify RADIO-1 can monitor and respond to the call on CONVENTIONAL CHANNEL 1.
- Step 5. Repeat above tests for each repeater channel.

Pass \_\_\_\_ Fail \_\_\_\_



## Radio to Radio Features

### 3.1.2 Conventional ASTRO Emergency

#### 1. DESCRIPTION

Users in life threatening situations can use the Emergency button on the radio to notify the dispatch and other radio users on the channel of an Emergency.

#### SETUP

RADIO-1 - SITE 1  
RADIO-2 - SITE 1

**VERSION #1.070**

#### 2. TEST

- Step 1. Using RADIO-1, initiate an Emergency Alarm by depressing the emergency button.
- Step 2. If a dispatch console is attached, observe that the console shows the alarm. The console will also acknowledge the alarm and cause RADIO-1 to sound an Emergency Alarm acknowledgment.
- Step 3. If no dispatch console is attached, or if the radio is out of range, observe that RADIO-1 will continue to transmit the emergency. RADIO-1 will stop transmitting the Emergency once the emergency has been acknowledged or the retry limit has been reached.
- Step 4. Using RADIO-1, initiate an Emergency Call by depressing the PTT button.
- Step 5. Observe that RADIO-2 displays "EMERGENCY CALL" along with "RADIO-1".
- Step 6. Using RADIO1, clear the emergency by depressing the emergency button for 2 seconds.

Pass\_\_\_\_ Fail\_\_\_\_



## Radio to Radio Features

### 3.1.3 Conventional Radio Resource Via Comparator

#### 1. DESCRIPTION

A comparator will vote all receive capable sites and transmit on specified transmit capable sites. Because a comparator will construct a signal from multiple sites, it is necessary to test each site individually.

#### SETUP

RADIO-1 - SITE 1  
RADIO-2 - SITE 1

**VERSION #1.040**

#### 2. TEST

- Step 1. Disable all sites on the comparator except SITE 1.
- Step 2. Verify communications between RADIO-1 and RADIO-2.
- Step 3. Disable SITE 1 and enable the next site. Change the channel on the subscriber if necessary.
- Step 4. Verify communications between RADIO-1 and RADIO-2.
- Step 5. Repeat steps 3 & 4 until all sites on the comparator have been individually tested.
- Step 6. Enable all sites on the comparator.
- Step 7. Verify communications between RADIO-1 and RADIO-2 with all sites enabled.

Pass \_\_\_\_ Fail \_\_\_\_



## Radio to Radio Features

### 3.1.4 Conventional Radio GeoFence Test

#### 1. DESCRIPTION

A portable subscriber will be programmed to trigger an action when a defined geofence border is crossed.

#### SETUP

RADIO-1 - SITE 1  
RADIO-1 - SITE 2

**VERSION #1.040**

#### 2. TEST

- Step 1. Configure a portable subscriber with a geofence boundary and an action to take when it's has been crossed.
- Step 2. Travel over the boundary and Verify the portable takes the configured action.

Pass\_\_\_\_ Fail\_\_\_\_



## 3.2 SYSTEM RELIABILITY FEATURES

### 3.2.1 Redundant Site Controller Switching - Automatic Switchover

#### 1. DESCRIPTION

The Site Controller subsystem uses two Site Controllers in a redundant configuration. The backup Site Controller is made active either upon the loss of communication to the active Site Controller or upon a user initiated command from the Site Control Manager.

#### SETUP

RADIO-1 – TALKGROUP 1  
RADIO-1 – SITE – SITE 1  
RADIO-2 – TALKGROUP 1  
RADIO-2 – SITE – SITE 1  
RADIO-3 – TALKGROUP 1  
RADIO-3 – SITE – SITE 1

All Radios should be "Site Locked".

**VERSION #1.090**

#### 2. TEST

- Step 1. Verify both Site Controllers are available and in the Normal state.
- Step 2. Power off the active Site Controller (or in the ESS configuration connect to the Active Site controller using CSS and perform a "reset") and verify the backup becomes the new active Site Controller (note events in the event viewer).
- Step 3. Key RADIO-1 and verify that the other 2 subscribers hear the audio.
- Step 4. End the call from Radio 1.
- Step 5. Power up the Site Controller (if it was powered off). Verify the Site Controller returns to the normal state.

Pass\_\_\_\_ Fail\_\_\_\_

## System Reliability Features

### 3.2.2 Comparator Site Link Failure

#### 1. DESCRIPTION

The purpose of this test is to show that if a Conventional site fails, that the rest of the system continues to operate.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1  
RADIO-1 - SITE - CONVSITE 1  
RADIO-2 - CONVENTIONAL CHANNEL 1  
RADIO-2 - SITE - CONVSITE 2

In order to reduce the amount of wait time for the alarm to report, set the Status Tone Timeout timer from 60 seconds to 15 seconds in the Comparator.

**VERSION #1.000**

#### 2. TEST

- Step 1. Remove CONVSITE 3 link to the Comparator.
- Step 2. After the Status Tone Timeout timer has been exceeded, verify that an alarm is given on the Comparator.
- Step 3. Using RADIO-1 and RADIO-2 verify that the system continues to operate at the remaining sites.

Pass\_\_\_\_ Fail\_\_\_\_



## 3.3 MCC 7100/7500 CONVENTIONAL RESOURCES

### 3.3.1 Channel Marker - Conventional

#### 1. DESCRIPTION

A Channel Marker is a distinct, short duration, audible tone over radio and Console speakers. The tone is initiated and cancelled by a console operator. The tone can be initiated only for the talkgroups or conventional channels. On initiation, it is generated periodically when there is no voice activity. The tone can be used for various purposes. The primary purpose of the tone is to inform radio users that the conventional channel or the trunked talkgroup is currently involved in a high priority situation and they should stay off the channel unless they are involved in the high priority situation. The tone also informs the users that a console operator is actively monitoring the talkgroup.

Note that the Channel Marker tone will only start when there is no voice activity for the selected Talkgroup or conventional channel. The channel Marker tone is sent in a current transmission mode of the Console user.

#### SETUP

RADIO-1 CONVENTIONAL CHANNEL 1  
RADIO-2 CONVENTIONAL CHANNEL 1  
CONSOLE-1 - CONVENTIONAL CHANNEL 1  
CONSOLE-2 - CONVENTIONAL CHANNEL 1

VERSION #1.100

#### 2. TEST

- Step 1. Initiate a Channel Marker tone on CONVENTIONAL CHANNEL 1 from CONSOLE-1.
- Step 2. Verify RADIO-1 and RADIO-2 can monitor the Channel Marker tone on CONVENTIONAL CHANNEL 1.
- Step 3. Verify CONSOLE-1 and CONSOLE-2 also monitor the Channel Marker tone on CONVENTIONAL CHANNEL 1.
- Step 4. Initiate a call from RADIO-1 and continue to key longer than the preset Channel Marker tone period for CONVENTIONAL CHANNEL 1.
- Step 5. Verify while RADIO-1 is keyed, the Channel Marker tone is suppressed.
- Step 6. Verify after RADIO-1 de-keys, the periodic Channel Marker tone continues to be transmitted on CONVENTIONAL CHANNEL 1.
- Step 7. Cancel the Channel Marker on CONVENTIONAL CHANNEL 1 from CONSOLE-1.
- Step 8. Verify the Channel Marker is no longer monitored on CONVENTIONAL CHANNEL 1.

Pass \_\_\_\_ Fail \_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.2 Console Priority

#### 1. DESCRIPTION

Console Operator Positions have ultimate control of transmitted audio on an assigned resource. The Console Position has the capability to take control of an assigned voice channel for a channel/talkgroup call so that the operator's audio overrides any subscriber audio. Console priority is a feature that enables dispatchers to gain immediate access to an assigned voice channel so that a central point of audio control exists.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1

RADIO-2 - CONVENTIONAL CHANNEL 1

CONSOLE-1 - CONVENTIONAL CHANNEL 1

**VERSION #1.040**

#### 2. TEST

- Step 1. Initiate a call from RADIO-1 on CONVENTIONAL CHANNEL 1. Keep this call in progress until the test has completed.
- Step 2. Observe that RADIO-2 receives the call.
- Step 3. While the call is in progress, key up CONSOLE-1 on CONVENTIONAL CHANNEL 1.
- Step 4. Observe that RADIO-2 is now receiving audio from CONSOLE-1 on CONVENTIONAL CHANNEL 1
- Step 5. De-key CONSOLE-1.
- Step 6. Verify RADIO-2 now receives RADIO-1 audio.
- Step 7. End the CONVENTIONAL CHANNEL 1 call from RADIO-1.

Pass \_\_\_\_ Fail \_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.3 Alert Tones - Conventional Channel

#### 1. DESCRIPTION

Pre-defined alert tones can be transmitted on the selected Radio Resource to subscribers which can alert members of a channel / talkgroup to a particular event or signify to radio users special instructions are to follow. The Console has the ability to send an Alert-Tone signal on selected conventional or talkgroup resources.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1  
RADIO-2 - CONVENTIONAL CHANNEL 1  
CONSOLE-1 - CONVENTIONAL CHANNEL 1

**VERSION #1.030**

#### 2. TEST

- Step 1. Select CONVENTIONAL CHANNEL 1 on CONSOLE-1.
- Step 2. Select Alert Tone 1 and depress the Alert Tone button.
- Step 3. Verify that RADIO-1 and RADIO-2 hear Alert Tone 1.
- Step 4. Repeat Steps 2-3 for Alert Tone 2 and 3.

Pass\_\_\_\_ Fail\_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.4 Frequency Selectable Conventional Resource

#### 1. DESCRIPTION

A Resource is selected on the console by placing the cursor over the Resource, choosing an area and selecting. The Resource choice area is the region where the name of the Resource is located (Top alphanumeric line of the Resource). When selected, the background of the Radio Resource will turn white and the border will turn green. Choosing the Instant Transmit button will send keying commands to the station.

The Frequency Select option provides the capability to choose up to 16 separate frequencies.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1

CONSOLE-1 - CONVENTIONAL CHANNEL 1

**VERSION #1.020**

#### 2. TEST

- Step 1. Using CONSOLE-1, select the first frequency in the list for the resource.
- Step 2. Select the corresponding frequency on RADIO-1.
- Step 3. Verify communications between CONSOLE-1 and RADIO-1.
- Step 4. Using CONSOLE-1, select another frequency in the list for the resource.
- Step 5. Select the corresponding frequency on RADIO-1.
- Step 6. Verify communications between CONSOLE-1 and RADIO-1.

**Pass\_\_\_\_\_ Fail\_\_\_\_\_**



## MCC 7100/7500 Conventional Resources

### 3.3.5 Call Alert Page - Conventional

#### 1. DESCRIPTION

This test will demonstrate that an MCC7100/7500 console using a Conventional Channel is able to transmit Call Alert pages. Call Alert Page allows a dispatcher to selectively alert another radio unit. The initiating console will receive notification as to whether or not the call alert was received. Units receiving a Call Alert will sound an alert tone and show a visual alert indication. The display will also show the individual ID of the initiating console.

This test can be run using Mixed Mode or MDC1200 Channels.

#### SETUP

RADIO-1 - SITE 1 - CONVENTIONAL CHANNEL 1  
RADIO-2 - SITE 1 - CONVENTIONAL CHANNEL 1  
RADIO-3 - SITE 1 - CONVENTIONAL CHANNEL 1

CONSOLE-1 - CONVENTIONAL CHANNEL 1

#### VERSION #1.040

#### 2. TEST

- Step 1. From CONSOLE-1 create a paging queue containing Call Alerts to RADIO-1, RADIO-2 and RADIO-3.
- Step 2. From CONSOLE-1 start the pages on CONVENTIONAL CHANNEL 1
- Step 3. Verify that RADIO-1, RADIO-2 and RADIO-3 receive the Call Alerts.

Pass \_\_\_\_ Fail \_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.6 Patch Operation - Conventional

#### 1. DESCRIPTION

The Patch feature allows more than one Radio Resource to be grouped simultaneously. This can be used for temporarily merging two or more channels/frequencies together to act as one larger group. Telephones and radio resources can be patched together. In a patch group, the members can receive messages from the console and they can transmit to all other members of the patch group.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1  
RADIO-2 - CONVENTIONAL CHANNEL 2  
CONSOLE-1 - CONVENTIONAL CHANNEL 1 and  
CONVENTIONAL CHANNEL 2

#### VERSION #1.020

#### 2. TEST

- Step 1. Select the tab for patch 1, 2 or 3. Verify that the patch edit button and patch transmit button appear.
- Step 2. Select the "Patch Edit" icon. The selected patch will turn blue.
- Step 3. Select the CONVENTIONAL CHANNEL 1 and CONVENTIONAL CHANNEL 2 Radio Resource by moving the cursor over the Radio Resources' names and selecting them.
- Step 4. Verify that the selected Radio Resources display a "Patch Edit" icon.
- Step 5. Press and hold the "Patch Transmit" icon to initiate the patch transmission.
- Step 6. Verify that the RADIO-1 and RADIO-2 monitor the console outbound audio.
- Step 7. Verify that RADIO-1 can communicate with RADIO-2 even though they are on separate channels.
- Step 8. To knock down the patch, select the Radio Resources by moving the mouse cursor over the resource window and clicking over the patch icon. Repeat this process until all the resources have been removed from the Patch window.
- Step 9. Select the Patch Edit icon and idle the current patch.

Pass\_\_\_\_ Fail\_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.7 Activity Log - Conventional

#### 1. DESCRIPTION

The MCC7100/7500 Console activity log will show all traffic for the resource assigned to that console to include the time, radio alias, Channel, PTT ID and Emergency Call.

The dispatcher has the capability of selecting a logged call within in the "Activity Log Window" for instant transmit on the corresponding logged resource.

This activity log can be logged to a text file for archival purposes.

Note: The log file in the ops will only be seen if you first check Log Activity in Elite Admin application then in folder options uncheck hide hidden system files. The location will be c:\Program Data\MCC7500\MessageMonitorLogs.

#### SETUP

RADIO-1 – CONVENTIONAL CHANNEL 1  
RADIO-2 – CONVENTIONAL CHANNEL 2  
RADIO-3 – CONVENTIONAL CHANNEL 3  
RADIO-4 – CONVENTIONAL CHANNEL 4

CONSOLE-1 – CONVENTIONAL CHANNEL 1,  
CONVENTIONAL CHANNEL 2, CONVENTIONAL  
CHANNEL 3, CONVENTIONAL CHANNEL 4

#### VERSION #1.060

#### 2. TEST

- Step 1. On CONSOLE-1 select the "Show Activity Log" button on the tool bar to open the Activity Log Window.
- Step 2. Initiate calls on RADIO-1, RADIO-2, RADIO-3 and RADIO-4 to log call information and verify calls are displayed in the activity log window.
- Step 3. Select a logged call in the Activity Log Window and verify that the Channel Control Window (CCW) at the top of the Activity log window changes to the corresponding resource. Verify the dispatcher is capable of responding via the instant transmit button.
- Step 4. Open the text file created by the Activity Log and verify call traffic has been archived to the document file.

Pass \_\_\_\_ Fail \_\_\_\_

## MCC 7100/7500 Conventional Resources

### 3.3.8 ID Stacking

#### 1. DESCRIPTION

During normal call operation radio IDs are displayed in the resource window for a particular resource. These IDs are saved in a "Stack" and can be viewed to determine which radios made the previous calls. The stack size can be up to 10 IDs. This test is applicable to the Digital Conventional feature.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1  
RADIO-2 - CONVENTIONAL CHANNEL 1  
RADIO-3 - CONVENTIONAL CHANNEL 1

CONSOLE-1 - CONVENTIONAL CHANNEL 1

**VERSION #1.020**

#### 2. TEST

- Step 1. At CONSOLE-1 view the CONVENTIONAL CHANNEL 1 Resource Window.
- Step 2. Initiate calls from RADIO-1, RADIO-2 then RADIO-3 on CONVENTIONAL CHANNEL 1.
- Step 3. Scroll through the stack to see that the radio IDs are displayed in the order received.
- Step 4. Repeat steps 1-3 for a sample of the remaining OPs as needed.

**Pass\_\_\_\_\_ Fail\_\_\_\_\_**



## MCC 7100/7500 Conventional Resources

### 3.3.9 Status Request

#### 1. DESCRIPTION

Statuses are used to indicate the Radio operator's operational state (e.g. off duty). The information that will be displayed includes the radio alias, hour and minute time stamp, event state and the customer entered translation for the specific status. The Status Request service is supported from a Console using a Conventional channel. The Console will be updated when the Console initiates a Status Request from the resource window. There are sixteen unique statuses in the radio. Each status can have a sixty character text alias in the console data base.

This test can be run using Digital Conventional or MDC1200 Channels.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1

CONSOLE-1 - CONVENTIONAL CHANNEL 1

**VERSION #1.020**

#### 2. TEST

- Step 1. Initiate a status message from RADIO-1.
- Step 2. Verify CONSOLE-1 displays the proper Status text and the operator is audibly alerted to the status.
- Step 3. Using CONSOLE-1 choose the Status Request button on CONVENTIONAL CHANNEL 1. Select RADIO-1 from the list and send the request.
- Step 4. Verify the status text is displayed at CONSOLE-1 for the last status of RADIO-1.

Pass\_\_\_\_ Fail\_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.10 Multi-Select Operation

#### 1. DESCRIPTION

Multi-Select (Msel) allows the console operator to group a number of channels/talkgroups together such that when the general transmit bar is depressed, all of the multi-selected channels/talkgroups will transmit at the same time with the same information. Multi-Select is one way communication call. If a radio user responds to a Multi-Select call the talkgroup the user is affiliated to will be the only one to hear the call. There is no super-group formed, so radio communication is still at the single channel level. Multi-Select is utilized to send an APB to several channels/talkgroups. A Multi-Select has a limit of twenty (20) trunking/conventional resources

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1  
RADIO-2 - CONVENTIONAL CHANNEL 2

CONSOLE-1 - CONVENTIONAL CHANNEL 1,  
CONVENTIONAL CHANNEL 2

#### VERSION #1.030

#### 2. TEST

- Step 1. From CONSOLE-1, create an Msel group with CONVENTIONAL CHANNEL 1 and CONVENTIONAL CHANNEL 2.
- Step 2. Transmit on the Msel using the Msel instant transmit button.
- Step 3. Verify that RADIO-1 and RADIO-2 hear the call.
- Step 4. Initiate a call with RADIO-1.
- Step 5. Verify the call is heard on CONSOLE-1 but not on RADIO-2.
- Step 6. Initiate a call with RADIO-2.
- Step 7. Verify the call is heard on CONSOLE-1 but not on RADIO-1.
- Step 8. On CONSOLE-1 dissolve the Msel.

Pass \_\_\_\_ Fail \_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.11 Radio Check

#### 1. DESCRIPTION

Radio Check allows the console operator to determine if a subscriber is operational or within range. The subscriber sends the acknowledgment that it has received the Radio Check.

NOTE: The status/message line must be added to the Channel Control Window (CCW) of the resource in order for the "ACKNOWLEDGED" indication to be visible.

This test can be run using Digital Conventional or MDC1200 Channels.

#### SETUP

RADIO-1 - CONVENTIONAL CHANNEL 1

CONSOLE-1 - CONVENTIONAL CHANNEL 1

#### VERSION #1.030

#### 2. TEST

- Step 1. Using CONSOLE-1 select the CONVENTIONAL CHANNEL 1 Radio Resource.
- Step 2. From the active Radio Resource select the Radio Check button. Enter the ID or alias of RADIO-1 in the Radio Check window.
- Step 3. Click the "Send" button from the Radio Check window to initiate the Radio Check.
- Step 4. Verify that "ACKNOWLEDGED" is shown on CONVENTIONAL CHANNEL 1's Channel Control Window.
- Step 5. Turn off RADIO-1.
- Step 6. Click the "Send" button from the Radio Check window to initiate the Radio Check on RADIO-1.
- Step 7. Verify that an error message is logged: "Send Radio Check failed: Target not found."

Pass \_\_\_\_ Fail \_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.12 Radio Disable/Enable

#### 1. DESCRIPTION

This test will demonstrate the Radio Disable/Enable service is supported from an MCC7100/7500 console using a Conventional channel. Once the radio is inhibited/disabled, the radio cannot be used to monitor voice channels or for any other radio user initiated activity.

This test can be run using Digital Conventional or MDC1200 Channels

#### SETUP

RADIO-1 - CONVCH 1

CONSOLE-1 - CONVCH 1

#### VERSION #1.030

#### 2. TEST

- Step 1. Verify that RADIO-1 can transmit and receive audio.
- Step 2. From the active Radio Resource on the console select the RADIO INHIBIT/DISABLE icon. Enter the ID or alias of RADIO-1. Click the "Send" button to initiate the RADIO INHIBIT/DISABLE.
- Step 3. Verify that RADIO-1 appears to be powered-down and unable to transmit or receive audio.
- Step 4. Send a Radio Check/Remote Monitor to RADIO-1 and verify that it can still receive and respond to a Radio Check/Remote Monitor but without providing any indication to the radio user.
- Step 5. From the active Radio Resource on the console select the RADIO UNINHIBIT/ENABLE icon. Enter the ID or alias of RADIO-1. Click the "Send" button to initiate the RADIO UNINHIBIT/ENABLE.
- Step 6. Verify that RADIO-1 appears to be powered-up and is able to transmit or receive audio.

Pass\_\_\_\_ Fail\_\_\_\_



## MCC 7100/7500 Conventional Resources

### 3.3.13 Alarm Input / Outputs (Aux I/O Option)

#### 1. DESCRIPTION

The alarm inputs of the Aux I/O can be connected to almost any device that requires or can detect a relay closure. These signals can be simulated and monitored in the factory.

#### SETUP

Connect a multi-meter capable of monitoring closures to the proper pins of the punch block cabled to the Aux I/O. One momentary input and one momentary output should be configured on at least one MCC 7100/7500 console.

CONSOLE-1 - TALKGROUP 1  
CONSOLE-1 - SITE - CONSITE 1  
Aux I/O punch block pinout:

Aux I/O 1 - pins 26,1  
Aux I/O 2 - pins 27,2  
Aux I/O 3 - pins 28,3  
Aux I/O 4 - pins 29,4

#### VERSION #1.010

#### 2. TEST

- Step 1. Using a shorting wire, simulate a relay closure on an input via the punch block.
- Step 2. Verify that CONSOLE-1 momentary input displays the icon designated for an ON\_STATE.
- Step 3. Remove the shorting wire and verify that CONSOLE-1 displays the icon designated for an OFF\_STATE.
- Step 4. Connect the meter to the pins to monitor a relay output.
- Step 5. Verify that the meter reads an open circuit.
- Step 6. Press the output button on the console to initiate a relay closure.
- Step 7. Verify that the meter displays a closed circuit.

Pass \_\_\_\_ Fail \_\_\_\_

## 3.4 SYSTEM MANAGEMENT - K SERIES

### 3.4.1 Console User Capability Profile – Channel Marker Repeat Interval

#### 1. DESCRIPTION

The purpose of this section is to verify that the configuration for Channel Marker repeat interval can be changed.

A Channel Marker is a distinct, short duration, audible tone over radio and Console speakers. The tone is initiated and cancelled by a console operator.

On initiation, it is generated periodically when there is no voice activity.

The tone can be used for various purposes. The primary purpose of the tone is to inform radio users that the conventional channel is currently involved in a high priority situation and they should stay off the channel unless they are involved in the high priority situation. The tone also informs the users that a console operator is actively monitoring the channel.

Note that the Channel Marker tone will only start when there is no voice activity for the selected Analog conventional channel. The channel Marker tone is sent in a current transmission mode of the Console user.

#### SETUP

RADIO-1 CONVENTIONAL CHANNEL 1  
CONSOLE-1 - CONVENTIONAL CHANNEL 1

Note: Verify that CONVENTIONAL CHANNEL 1 has Channel Marker capability

#### VERSION #1.000

#### 2. TEST

- Step 1. Verify communications between Consoles and RADIO-1 on CONVENTIONAL CHANNEL 1.
- Step 2. Initiate a Channel Marker tone on CONVENTIONAL CHANNEL 1 from CONSOLE-1.
- Step 3. Verify that RADIO-1 can monitor the Channel Marker tone at CONVENTIONAL CHANNEL 1's preset period.
- Step 4. From the Configuration Manage, change the Channel Marker Repeat Interval by more than or less than 5 seconds. Download the configuration and restart the Console application.
- Step 5. When the Console is operational, verify communications between CONSOLE-1 and RADIO-1 on CONVENTIONAL CHANNEL 1.
- Step 6. Initiate a Channel Marker tone on CONVENTIONAL CHANNEL 1 from CONSOLE-1.
- Step 7. Verify the Channel Marker interval from RADIO-1 on CONVENTIONAL CHANNEL 1's has changed according to the new settings.

Pass \_\_\_\_ Fail \_\_\_\_



### 3.4.2 Conventional Subscriber - Status Set

#### 1. DESCRIPTION

The purpose of this section is to verify that the configuration for a digital Status Set can be done.

This feature allows you to send data calls (status calls) from your radio to the dispatcher to indicate a predefined condition. Each defined status message can have a 60-character alias. You can have 239 status conditions per Status set.

#### SETUP

RADIO-1 CONVENTIONAL CHANNEL 1  
CONSOLE-1 - CONVENTIONAL CHANNEL 1  
CONSOLE-1 – Status Set 1, Status 1 = “Out of Service”

#### VERSION #1.000

#### 2. TEST

- Step 1. Send Status 1 from the RADIO-1 on CONVENTIONAL CHANNEL 1, the status of “Out of Service” should show up on CONSOLE-1.
- Step 2. From the Configuration Manager change the status text from “Out of Service” to “In Service”. Download the configuration and restart the Console application.
- Step 3. When the Console is operational, verify communications between CONSOLE-1 and RADIO-1 on CONVENTIONAL CHANNEL 1.
- Step 4. Send the Status 1 from the RADIO-1 on CONVENTIONAL CHANNEL 1, the status of “In Service should show up on CONSOLE-1.

Pass \_\_\_\_ Fail \_\_\_\_

### 3.5 SIGNOFF CERTIFICATE

By their signatures below, the following witnesses certify they have observed the system Acceptance Test Procedures.

#### Signatures

WITNESS:

\_\_\_\_\_ Date: \_\_\_\_\_

Please Print Name: \_\_\_\_\_

\_\_\_\_\_

Initials:

Please Print Title: \_\_\_\_\_

WITNESS:

\_\_\_\_\_ Date: \_\_\_\_\_

Please Print Name: \_\_\_\_\_

\_\_\_\_\_

Initials:

Please Print Title: \_\_\_\_\_

COUNTY OF HUMBOLDT, CALIFORNIA

# EXHIBIT C-3

# PROJECT MANAGEMENT PLAN – STATEMENT OF WORK

HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

APRIL 3, 2020

## RFP#18-100-COMM

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EXHIBIT C-3

# PROJECT MANAGEMENT PLAN – STATEMENT OF WORK

## 3.1 INTRODUCTION

This Statement of Work (SOW) provides the most current understanding of the work required by both parties to ensure a successful project implementation. It is understood that this SOW is a working document, and that it will be revised as needed to incorporate any changes associated with contract negotiations, Contract Design Review (CDR), and any other changes that may occur during the execution of the project. The scope of work and deliverables described in this SOW are designed to lead to the successful implementation, testing and cutover of a new conventional radio system. The work to be performed is as specified herein and other work is excluded, and Customer responsibilities will occur within the mutually agreeable schedule.

### 3.1.1 Project Management Responsibilities

Motorola has designated a Project Manager who will direct Motorola's efforts and serve as the primary point of contact for Humboldt County. The Motorola Project Manager will have significant authority to make certain decisions relative to the project on behalf of Motorola, and will have direct access to Motorola's executive management for resolving problems beyond his immediate authority. The responsibilities of the Motorola Project Manager include:

- Starting at contract award, participate with Humboldt County in mutually agreed upon meetings and submitting status reports that identify the action items, as well as activities planned.
- Maintaining project communications with Humboldt County Project Manager and project team members. Motorola will provide a record of correspondence as part of the progress reports provided prior to each progress meeting.
- Managing the efforts of Motorola staff and coordinate Motorola activities with Humboldt County project team members.
- Issuing status reports that include the project status and milestones achieved.
- Measuring, evaluating, and reporting the progress against the Project Schedule.
- Resolving deviations from the Project Schedule.
- Monitoring and managing risks via a Risk Management Plan.
- Maintaining a documentation schedule that identifies and shows the status of documents to be transmitted for review during the next two reporting periods.

- Monitoring the project to ensure that support resources are available as scheduled and as identified in the contract.
- Assuming accountability for all Motorola contractor and subcontractor supplied tasks within the Project Schedule.
- Reviewing and administering change control procedures through Humboldt County Project Manager, commonly referenced as a “Project Change Request” (PCR), issued by the Motorola Project Manager.
- Providing timely responses to issues related to project progress raised by Humboldt County Project Manager.
- Working with Humboldt County Project Manager in designing and approving the format of an action item log to be used in conjunction with the Project Schedule. The purpose of the log is to identify outstanding issues, provide continual status updates on specific tasks and to identify responsibilities of the parties.
- In the event that Motorola must replace or substitute a Project Manager, Motorola will immediately notify Humboldt County of such a change and will provide Humboldt County with a résumé of the person Motorola intends to substitute or change.

Humboldt County will designate a Project Manager who will direct Humboldt County’s efforts and serve as the primary point of contact for Humboldt County. Humboldt County’s Project Manager will have significant authority to make certain decisions relative to the project, on behalf of Humboldt County, and will have direct access to Humboldt County executive management for resolving problems beyond the Project Manager’s immediate authority. The responsibilities of Humboldt County Project Manager include:

- Reviewing the preliminary Project Schedule with Motorola’s Project Manager and assisting Motorola in developing a Project Schedule to defining the detailed tasks and timeline for the completion of Motorola and Humboldt County responsibilities.
- Interfacing with members of Humboldt County team and the Executive Committee to ensure appropriate participation in meetings and timely decisions.
- Providing timely responses to issues related to project progress raised by Motorola’s Project Manager.
- Acting as liaison for and coordinating with other Humboldt County agencies, other governmental agencies and Humboldt County vendors, contractors, and common carriers.
- Approving and releasing payments in a timely manner predicated on project deliverables.
- Assigning one or more personnel who will work with Motorola staff as needed for the duration of the project, including at least one system administrator.
- Ensuring acceptable Standard Change Requests and Approval Letters are approved by authorized signatures.
- Providing building access to Motorola personnel to all facilities where the system is to be installed during the project. Access must be available as necessary to meet the project schedule.

- Reviewing and approving or revising delivered design documents within 7 days of submission.

### 3.1.2 Summary of Work Breakdown Structure

Humboldt County wants to develop and implement the new system as soon as possible. Motorola has provided a tentative project schedule including the below listed tasks.

- Contract Initiation and Kick-off.
- Radio Deployment Plan.
- Design Review.
- Order Processing, Manufacturing, and Staging.
- Site Improvements.
- Microwave.
- Develop Fleetmap and Operational Configuration.
- Mobile and control station Installation
- Infrastructure Installation.
- Systems Integration and Optimization.
- Acceptance Testing.
- Documentation.
- Training.
- Acceptance Testing.
- Warranty Begins.
- Project Completion.

### 3.1.3 Contract Initiation and Project Kickoff

Upon contract award, Humboldt County and Motorola execute the contract, both parties receive all the necessary documentation, and schedule a project kick-off meeting. Contract initiation and project kickoff responsibilities are summarized in Table 3-1.

**Table 3-1: Contract Initiation and Project Kickoff.**

Tasks	Motorola	Humboldt County	Comments
Assign a Project Manager as Single Point of Contact.	X	X	
Assign Resources as necessary.	X	X	
Introduce Team, Review Roles, and Decision Authority.	X	X	
Present Overview of Project Scope and Objectives.	X		
Provide Communication Plan, Risk Management Plan, Change Control Procedures, Preliminary Schedule.	X		

Tasks	Motorola	Humboldt County	Comments
Action Item Log.	X		
Provide Site Access, Necessary Site Permissions, and Resource for Site Walks.		X	
Begin Detailed Site Walks for Civil Work, Design Review, and Transition Planning.	X		

### 3.1.4 Design Review

The purpose of the Design Review is to review and finalize detailed aspects of the project, including the final System Design, Statement of Work, and Schedule. Any changes determined in Design Review will be documented through a Change Order. The Design Review responsibilities are summarized in Table 3-2.

**Table 3-2: Design Review.**

Tasks	Motorola	Humboldt County	Comments
Present requirements and impact on equipment.	X		
Present overall project goals and requirements.		X	
Provide existing fleetmap and code plugs to be used to aid configuration of new system		X	
Present System and Coverage Design.	X		
Provide all rights and agreements necessary for Motorola Solutions to operationally configure, access and deploy the system equipment, including sites and equipment owned by third parties. Any delays in providing such agreements will cause the schedule to be extended one day for each day of delay.		X	
Provide existing system information.		X	
Present preliminary Transition and Cutover plan and methods to document a detailed procedure. Final cut over details may be completed nearer cut over in consultation with the participating user agencies.	X		
Present Equipment Layout Plans and System Design Drawings.	X		
Review Shelter and Compound Configurations.	X		
Review Power Requirements.	X		
Review demarcation between Motorola-supplied equipment and Customer interfaces.	X		

Tasks	Motorola	Humboldt County	Comments
Present Acceptance Test Procedures. Deviations from the proposed ATP will be mutually agreed upon and may represent a change in scope.	X		
Review Preliminary Work Breakdown, Project Tasks and Responsibilities.	X	X	
Review Project Communications Plan.	X	X	
Present Quality Assurance Plan.	X		
Review Detailed Schedule.	X		
Review Training Plan.	X		
Provide Existing Frequency and Site Data for an Intermodulation Study		X	
Perform Intermodulation Study	X		
Resolve Interference caused or received by the Non-Motorola-provided equipment.		X	
Provide Existing Frequency and Radio Information for Sites.		X	
Identify and license frequencies.	X	X	
As mandated by the FCC, Humboldt County, as the licensee, has the ultimate responsibility for providing all required radio licensing or licensing modifications for the system prior to system staging. This responsibility includes paying for FCC licensing and frequency coordination fees. Provide the FCC "call sign" station identifier for each site prior to system staging.		X	
Complete Design Documentation, which may include updated System Description, Equipment List, system drawings, or other documents applicable to the project. Incorporate any deviations from the proposed system into the contract documents accordingly.	X		
Prepare Change Order to Reflect Updated System Design and Documentation.	X		
System design is "frozen" in preparation for subsequent project phases such as Order Processing and Manufacturing.	X	X	
Approve Design Review within 10 days of submission.		X	

### 3.1.5 Order Processing, Manufacturing, and Staging

The order processing, manufacturing, and staging responsibilities are summarized in Table 3-3.

**Table 3-3: Order Processing, Manufacturing, and Staging**

Tasks	Motorola	Humboldt County	Comments
Place and track equipment orders.	X		
Provide warehouse for infrastructure equipment.	X		
Determine equipment shipping locations.	X		
Approve shipping locations.		X	
Ship equipment to either staging or the field.	X		
Setup and rack equipment on a site basis per site plans.	X		
Cut and label cables according to site plans and with to/from information to specify interconnection for field installation and future servicing needs.	X		
Complete the cabling/connecting of the subsystems to each other (“connectorization” of the subsystems).	X		
Assemble required subsystems to assure system functionality.	X		
Load application parameters on all equipment according to input from Systems Engineering.	X		
Complete programming of the Fixed Network Equipment.	X		
Program sample radios for the Factory Acceptance Test.	X		
Inventory the equipment with serial numbers and installation references.	X		
Update system documentation.	X		
Perform Factory Acceptance Test in Elgin, IL for radio infrastructure equipment. Microwave equipment will be staged separately.	X		
Witness and Approve Factory Acceptance Test.		X	
Pack System and Ship Equipment to Field.	X		

### 3.1.6 Site Improvements

Please see the site development statement of work in Appendix 1 for more detail. Below are general responsibilities.

**Table 3-4: Civil Work- Site Development and Construction.**

Tasks	Motorola	Humboldt County	Comments
Existing sites will be utilized. Provide sites with permissions, lease agreements, zoning variances, right of entry, space, power to the top of the rack, cable raceways, and antenna mounting locations as necessary. There will be a day for day schedule extension until all necessary permissions and agreements are complete. It is assumed existing electrical panels have capacity and breakers for DC power.		X	
Provide Existing NEPA studies, Tower Mapping, Foundation/Tower Design, Tower Analysis, and Geotechnical studies.		X	
Perform tower structural analysis. (Antenna inventory, tower mapping, foundation mapping and geotech, if needed, to further evaluate existing towers, are not included.)	X		
Permitting and permitting fees.		X	
Install antenna systems, except at State sites Shelter Cove and Big Lagoon.	X		
Provide alarm monitoring of proposed equipment.	X		
Provide existing alarms to building punchblock (e.g. existing door opening, high temp, etc.).		X	

### 3.1.7 Microwave

The microwave backhaul responsibilities are summarized Table 3-5 below.

**Table 3-5: Microwave.**

Tasks	Motorola	Humboldt County	Comments
Preliminary feasibility studies which are subject to change after physical path surveys. The feasibility study includes (i) a system map, (ii) a path profile, (iii) path performance calculations, and (iv) a technical report.	X		
Site Surveys for installation	X	X	
Physical path surveys to determine or verify site coordinates, ground elevation, on-path obstructions (location and height), tower information, and other parameters required to develop the final design of a radio link. The present and anticipated future effect of on-path obstructions, such as tree growth, is evaluated and incorporated into the path design where applicable. Provide Path Survey Report. The report based on final design and observed conditions observed in the field.	X		
Final path design. The project can move to the implementation stage based on the recommendations within the final design report.	X		
Approve and pay for changes, if any, that are recommended in the final path design.		X	
Frequency Planning, Coordination, Licensing and Engineering - includes frequency selection, prior coordination, interference case resolution, and FCC license application documentation preparation. Interference studies will be conducted utilizing industry accepted methods, hardware, and software to build a database that is as accurate as possible at the time of the study. The deliverable is frequency coordination data sheets (PCN).	X		
Resolution to the frequency plan (Interference Resolution) may require antenna upgrades or other charges in system design.		X	

Tasks	Motorola	Humboldt County	Comments
In the event, that frequency interference is detected during the Acceptance Testing of a radio system, Motorola's total responsibility for correcting the problem is limited to selecting new frequencies.	X	X	
Ice shields are not included at this time and the need to utilize ice shields will be reviewed with Humboldt County prior to installation to determine if Humboldt County would like to purchase them.	X	X	
Installation includes performing the assembly, wiring, turn-up, and testing for the proposed radio system traffic only. Configuration of orderwire, DSI, and fiber interconnect are not included.	X		
Provide Turn-up and Test Documentation Measure and record transmit power Measure and record RSL at 9500MPR radio Record receiver fade margin RFC2544 Ethernet test results LLD for MW Radio	X		
Acceptance tests will be performed in accordance with the standard procedures listed in the applicable Instruction Manuals for the proposed equipment.	X		
Approve acceptance tests	X		

### 3.1.8 Develop Fleetmap and Operational Configuration

The fleetmap process defines the talkgroups and operational configuration of the infrastructure and subscriber radios. The fleetmap development and operational configuration responsibilities are summarized in Table 3-6.

**Table 3-6: Develop Fleetmap and Operational Configuration.**

Tasks	Motorola	Humboldt	Comments
Provide radio programming point of contact.	X		
Provide existing radio template and designate a representative for Humboldt user groups, to make timely decisions on their behalf related to radio programming.		X	
Develop an electronic version of a Master radio programming containing the Humboldt conventional features	X		
Approve the electronic version of the Master radio programming.		X	

Tasks	Motorola	Humboldt	Comments
Provide up to 20 codeplugs for user radio programming.	X		
Program sample radios with approved templates and deliver for Humboldt evaluation.	X		
Approve radio programming.		X	
Radio programming of Motorola provided radios, and alignment as needed. If radios are deployed within 6 months of shipment, factory alignment is sufficient and additional alignment is not required.	X		
Console configuration is included.	X		

### 3.1.9 Mobile and control station Installation

Tasks	Motorola	Humboldt	Comments
Provide mobile installation point of contact to manage installations.	X	X	
Prototype installation in several vehicles. Installation is based upon removal of existing mobiles without equipment relocation. During installation, reasonable modifications to the prototype installations may occur if a Humboldt representative is onsite during the installation process and able to approve a modification.	X		
Approve Prototype Vehicle Installation.		X	
Provide vehicles and control station locations per the mutually agreed schedule.		X	
Control stations will be installed as outlined in the pricing and design review for indoor, outdoor, or consolidated locations.	X		

### 3.1.10 System Installation and Optimization–Fixed Network Equipment

Installation of equipment will occur in existing shelters. The system installation and optimization- fixed network equipment responsibilities are summarized in Table 3-7.

**Table 3-7: System Installation and Optimization- Fixed Network Equipment.**

Tasks	Motorola	Humboldt County	Comments
Install infrastructure equipment per floor plans, rack drawings, and system description.	X		
Install equipment per R56 installation guidelines, NEC, EIA, FAA, and FCC.	X		

Tasks	Motorola	Humboldt County	Comments
Provide backhaul demarcation within 25ft of site routers per network requirements provided by Motorola.		X	
Provide as-built documentation.	X		
Configure, optimize, program and integrate all Motorola provided equipment.	X		
Verify that all equipment is operating properly and that all signal levels are set accurately and measured values are within the design parameters.	X		
Record site optimization data for the as-built.	X		
System Ready for Acceptance Testing.	X		
R56 Site Audits.	X		

### 3.1.11 Acceptance Testing

Acceptance testing will be performed per the Acceptance Test Plan requirements of the RFCSP. Acceptance testing responsibilities are summarized in Table 3-8.

**Table 3-8: Acceptance Testing.**

Tasks	Motorola	Humboldt County	Comments
Perform Factory Functional Acceptance Test.	X		
Witness and Approve Factory Functional Acceptance Test.		X	
Perform Field Functional Acceptance Test.	X		
Witness and Approve Field Functional Acceptance Test.		X	
Perform Coverage Acceptance Test.	X		
Provide Dispatch personnel and vehicles as required per the Acceptance Test Plan and schedule.	X	X	
Provide Coverage Acceptance Test Report.	X		
Approve Coverage Acceptance Test report within 7 days of submittal.		X	
Provide Customer Support Plan detailing the warranty and post-warranty support.	X		
Transition to Warranty/Service.	X	X	

### 3.1.12 Transition

Training is important to the success of the radio project and end user experience. Training needs to occur prior to transition of new equipment or the Project 25 radio network. After training is complete, there will be a readiness review to confirm the network, users, and support team are ready to transition. Transition responsibilities are summarized in Table 3-9.

**Table 3-9: Transition.**

Tasks	Motorola	Humboldt County	Comments
Finalize training schedules.	X		
Conduct the training classes outlined in the Training Plan based on Design Review.	X		
Attend Training Classes and comply with prerequisites.		X	
Review and Update Transition Plan as needed	X	X	
Readiness Review for Cutover.	X	X	
Cutover System.	X		

### 3.1.13 Equipment Removal

Infrastructure equipment removal is not included, except for antenna systems at Pratt, Mount Pierce, and County Courthouse, as noted in the site development Statement of Work. Mobile radios will be removed during mobile installation.

### 3.1.14 Finalize Project

The finalization of project responsibilities is summarized in Table 3-10.

**Table 3-10: Finalize Project.**

Tasks	Motorola	Humboldt County	Comments
Resolve punchlists documented in order to meet all the criteria for final system acceptance.	X		
Provide support, such as access to the sites, equipment and system.		X	
Approve punchlist resolution.		X	
Provide as-built documentation in .PDF System Manual with native documents on the System Manual CD/DVD.	X		

Tasks	Motorola	Humboldt County	Comments
As-builts to include: - System-Level Diagram. - Site Equipment Rack Configurations from staging. - ATP Test Checklists. - Functional Acceptance Test Plan Test Sheets and Results. - Equipment Inventory List from staging. - Maintenance Manuals. - Technical Service Manuals. - Schedule of antenna heights and positions.	X		
Review and Approve as-built documentation.		X	

### 3.1.14.1 General Assumptions

**Unless otherwise noted above, the Motorola proposal is based on the following assumptions:**

- The Work Breakdown Structure and Project schedule with Humboldt County site and resource availability assume all work is to be performed during normal work hours, Monday through Friday 7:30 AM to 5:30 PM, except site development and construction work which is daylight hours. The impact due to Humboldt County (including other contractors) delays in the agreed-upon project schedule has not been included in this scope of work. Changes to this scope of work will be documented through the change order process.
- Motorola cannot be responsible for issues outside of our immediate control such as, improper frequency coordination by others and non-compliant operation of other radios.
- Although Motorola cannot be responsible for any cost impacts occurring from co-channel interference due to errors in frequency coordination by APCO or any other unlisted frequencies, or the improper design, installation, or operation of systems installed or operated by others; Motorola will support Humboldt County in identifying potential mitigation approaches and recommended course of action to resolve.
- If any of the proposed sites cannot be utilized due to reasons beyond Motorola’s control, any changes in costs associated with required site changes or delays will be identified by Motorola for presentation and approval by Humboldt County for the change order process.
- Maximum of 30 days will be required for obtaining approved building permits from time of submission, and a maximum of 60 days will be required to obtain zoning/SUP and NEPA approvals from time of submittal.
- If extremely harsh or difficult weather conditions delay the site work for more than a week, Motorola will seek excusable delays rather than risk job site safety.
- AM detuning or electromagnetic emission studies will not be required.

- Humboldt County has FCC-licensed frequencies for the new system and subsystem equipment that will be installed at the site.
- No hazardous material will be found at sites.
- The cost of non-standard delivery, while not expected, is not included. Examples of non-standard delivery methods include air-lifts, deployment of swamp mats, barge delivery, or the improvements or installation of temporary roads, bridges, or access-ways.
- Existing Humboldt County facilities have adequate space, electrical service, breakers at power panel, HVAC and generator.
- Towers, Cable ladders, and Cable Raceways/Trays at all existing installation locations will have adequate space at time of installation.
- Physical improvements to walls, roofing, flooring, painting, etc. in existing facilities has not been included.
- Existing towers are sufficient to support any new antenna. Tower remediation is not included.
- Sites in conceptual design will be approved for permitting, zoning, FAA, FCC, NEPA.
- Foundations are based on normal soil TIA/EIA-222F, and no underground water, boulders, caverns, or anomalies that prevent the drilling or pouring of foundations.
- Lead paint testing of existing painted towers has not been included.
- Underground utilities are not present in the construction area and as such no relocation will be required.
- Unless otherwise noted, existing utility service and backup power facilities (UPS, generators) have sufficient extra capacity to support the proposed new equipment load.
- Plenum cable and routing is not required.
- As applicable at existing sites, Humboldt County will be responsible for any installation or up-grades of the electrical system in order to comply with NFPA 70, Article 708.

## APPENDIX 1 – SITE DEVELOPMENT STATEMENT OF WORK

The Site Development Statement of Work is included on the following pages.

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## APPENDIX 2 – TRAINING PLAN

### 3.1.15 Training Overview for Humboldt County

In order to achieve the training goals identified by Humboldt County, Motorola will deliver the following courses.

It is necessary that participants bring their laptop computers for all system administrator and technician classes. Materials will be delivered electronically via USB drives.

### 3.1.16 Training Plan – Motorola Facility

Course Title	Target Audience	Sessions	Duration	Location	Date	Participants
<b>ASTRO 25 IV&amp;D System Overview</b> Course#: AST1038 (Self-paced; On-Line) <b>Prerequisite</b>	System Technicians	1	2.5 hours	Online; Self-paced	Prior to Workshops	1
<b>ASTRO 25 Systems Fleetmapping</b> Course#: RDS1017 (Instructor-led)	System Managers & Technicians	1	4.5 days	Schaumburg, IL	Prior to managing	1
<b>ASTRO 25 IV&amp;D Conventional RF Site Workshop</b> Course #: ACS717440 (Instructor-led)	System Technicians	1	3 days	Schaumburg, IL	Prior to maintaining	1
<b>Standalone GTR8000 Conventional Based Radio</b> Course#: AST2006 (Instructor-led)	System Technicians	1	2 days	Schaumburg, IL	Prior to maintaining	1

### 3.1.17 Console Operator Training Plan – Field Class

Course Title	Target Audience	Sessions	Duration	Location	Date	Participants
<b>MCC7500 Console Operator and Admin Train-the-Trainer</b> 1 Training console required Ratio 2 per console Course#: AST1054 (Instructor-led)	Dispatch Console Supervisors	1 (8 hr) Session	1 day	Humboldt County, CA	Prior to cutover	2
<b>MCC7500 Console Operator</b> 1 Training console required Ratio 2 per console Course#: AST1054 (Instructor-led)	Console Dispatchers	2 (4 hr) Sessions	1 day	Humboldt County, CA	Prior to cutover	4 (2 per session)

### 3.1.18 Subscriber Training Plan – Field Class

Course Title	Target Audience	Sessions	Duration	Location	Date	Participants
<b>APX6000 Li Portable and APX4500 Mobile (1 model of each)</b> User Train-the-Trainer Training Utilizing the Interactive End User Tool Kits Course#: AST1059 (Instructor-led)	Trainers	1	1 day	Humboldt County, CA	Prior to training users	10

### 3.1.19 Course Descriptions for Humboldt County

Course descriptions for Humboldt County are included on the following pages.

#### 3.1.19.1 ASTRO® 25 IV&D System Overview

##### AST1038

<b>Course Synopsis and Objectives:</b>	<p>The ASTRO®25 IV&amp;D System Overview course will provide participants with knowledge and understanding of the ASTRO®25 IV&amp;D system. This course will address M, L and K Core systems. System architecture, components and features will be explained. In addition, RF and console sites and their architecture, features and components will be discussed. Finally, call processing for voice and mobile data applications will be covered, and an introduction to applications available in the ASTRO®25 system will be provided.</p> <p>At the end of this course, the participant should:</p> <ul style="list-style-type: none"> <li>▪ Understand the general architecture of an ASTRO®25 IV&amp;D Radio System.</li> <li>▪ Understand key features of available in the ASTRO®25 IV&amp;D Radio System.</li> <li>▪ Understand the components of the ASTRO®25 Zone Core.</li> <li>▪ Understand site components in the ASTRO®25 system.</li> <li>▪ Understand the features, capabilities and components of the MCC 7000 series dispatch consoles.</li> <li>▪ Understand concepts of Mobility and Call Processing in the ASTRO®25.</li> <li>▪ Understand the applications for managing the ASTRO®25 system.</li> </ul>
<b>Delivery Method:</b>	▪ OLT = Online Training.
<b>Duration:</b>	2.5 hours
<b>Participants:</b>	<ul style="list-style-type: none"> <li>▪ Core Technicians.</li> <li>▪ Site Technicians.</li> <li>▪ Console Technicians.</li> <li>▪ Core Managers.</li> </ul>
<b>Class Size:</b>	Class Size varies by region
<b>Prerequisite:</b>	None
<b>Curriculum:</b>	<p><b>M Core/L Core:</b></p> <ul style="list-style-type: none"> <li>▪ System Architecture.</li> <li>▪ System Features and Options.</li> <li>▪ Zone Core Components.</li> <li>▪ Repeater Sites.</li> <li>▪ Simulcast Sites.</li> <li>▪ Console Sites.</li> <li>▪ Conventional Sites.</li> <li>▪ Site Status.</li> <li>▪ Information Types and Paths.</li> <li>▪ Voice and Data Processing.</li> <li>▪ Mobility Management.</li> <li>▪ Applications Overview.</li> </ul>

	<p><b>K Core:</b></p> <ul style="list-style-type: none"> <li>▪ System Architecture.</li> <li>▪ System Features and Options.</li> <li>▪ Zone Core Components.</li> <li>▪ Console Sites.</li> <li>▪ Conventional Sites.</li> <li>▪ Information Types and Paths.</li> <li>▪ Voice and Data Processing.</li> <li>▪ Mobility Management.</li> <li>▪ Applications Overview.</li> </ul>
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### 3.1.19.2 ASTRO® 25 Systems Fleetmapping Workshop

#### RDS1017

<b>Course Synopsis and Objectives:</b>	<p>This workshop addresses topics necessary for the effective planning and mapping of an ASTRO 25 IV&amp;D radio system. During this course, the participants will learn about ASTRO 25 features, capabilities, and restrictions in order to effectively plan for a new or upgraded ASTRO 25 system.</p> <p>After completing the course, the participant will be able to:</p> <ul style="list-style-type: none"> <li>▪ Understand the methodologies used to configure radio users and groups with the goal of optimizing system resources.</li> <li>▪ Enable participants to knowledgeably assist with fleetmapping decisions.</li> <li>▪ Perform the basic planning requirements and complete a simple fleetmap information template.</li> <li>▪ Create a sample fleetmap based on sample operational requirement information.</li> </ul>
<b>Delivery Method:</b>	ILT – Instructor-led training
<b>Duration:</b>	4.5 days
<b>Participants:</b>	Pre-Sale System Owners, Planners, Administrators, and Technicians
<b>Class Size:</b>	Up to 12
<b>Prerequisite:</b>	None
<b>Curriculum:</b>	N/A

### 3.1.19.3 ASTRO® 25 IV&D Conventional RF Site Workshop

#### ACS717440

<b>Course Synopsis and Objectives:</b>	<p>The ASTRO® 25 IV&amp;D Conventional RF Site workshop describes the components in the different ASTRO® 25 IV&amp;D Conventional RF Sites topologies. This course also presents how the different ASTRO® 25 IV&amp;D Conventional RF Sites topologies operate and explains the tools and methods available for troubleshooting components within the different ASTRO® 25 IV&amp;D Conventional RF Sites topologies.</p> <p>By the end of the course, you will be able to:</p> <ul style="list-style-type: none"> <li>▪ Describe the ASTRO® 25 Conventional RF Site components and site configurations.</li> <li>▪ Configure and optimize the GTR 8000 Base Radio, GPW 8000 Receiver, GCM 8000 Comparator, and MLC 8000 Site Link Converter/Analog Comparator.</li> <li>▪ Diagnose and troubleshoot the GTR 8000 Base Radio, GPW 8000 Receiver, GCM 8000 Comparator, and MLC 8000 Site Link Converter/Analog Comparator.</li> <li>▪ Configure, diagnose and troubleshoot the components of the Conventional RF Site Network Transport subsystem.</li> </ul>
<b>Delivery Method:</b>	ILT = Instructor Led Training
<b>Duration:</b>	3 days
<b>Participants:</b>	Site Technicians
<b>Class Size:</b>	Up to 12
<b>Prerequisite:</b>	<ul style="list-style-type: none"> <li>▪ AST1038–ASTRO® 25 with IV&amp;D System Overview.</li> <li>▪ ACT100-E–Bridging the Knowledge Gap–Technicians.</li> <li>▪ NST762–Networking Essentials in Communication Equipment.</li> <li>▪ NWT003–ASTRO® Systems Applied Networking.</li> </ul>
<b>Curriculum:</b>	<p>Module 1: Course Introduction</p> <p>Module 2: Conventional Topologies:</p> <ul style="list-style-type: none"> <li>▪ Topic 2-1: Conventional Subsystems Overview (Distributed/Centralized).</li> <li>▪ Topic 2-2: Conventional Site Architecture.</li> <li>▪ Topic 2-3: Conventional Call Processing Concepts.</li> </ul> <p>Module 3: Component Descriptions:</p> <ul style="list-style-type: none"> <li>▪ Topic 3-1: GTR 8000 Conventional Base Radio.</li> <li>▪ Topic 3-2: GGM 8000 Gateway.</li> <li>▪ Topic 3-3: GPW 8000 Receiver.</li> <li>▪ Topic 3-4: GCM 8000 Comparator.</li> <li>▪ Topic 3-5: MLC 8000 Analog Comparator/Site Link Converter.</li> <li>▪ Topic 3-6: Site Timing Preferences.</li> <li>▪ Topic 3-7: HP 2610/2620 Ethernet Switch.</li> <li>▪ Topic 3-8: Legacy Site Components.</li> </ul> <p>Module 4: Configuration:</p> <ul style="list-style-type: none"> <li>▪ Topic 4-1: Configuration Software/Tools.</li> <li>▪ Topic 4-2: GTR 8000 Base Radio Configuration.</li> <li>▪ Topic 4-3: GCM 8000 Comparator Configuration.</li> </ul> <p>Module 5: Site Links and Network Transport Subsystem:</p> <ul style="list-style-type: none"> <li>▪ Topic 5-1: Supported Link Types.</li> <li>▪ Topic 5-2: Site Gateway.</li> </ul>

- Topic 5-3: Ethernet Switch.
  - Topic 5-4: Configuration of Network Transport Components.
  - Topic 5-5: MLC 8000 Site Link Converter.
- Module 6: Conventional Site Maintenance and Troubleshooting:
- Topic 6-1: GTR 8000 Optimization, Alignments and Verification.
  - Topic 6-2: GCM 8000 Optimization.
  - Topic 6-3: MLC 8000 Optimization.
  - Topic 6-4: Troubleshooting Tools.
  - Topic 6-5: Unified Event Manager.
  - Topic 6-6: GTR 8000 Diagnostics and Troubleshooting.
  - Topic 6-7: G-Series FRU Procedures.
  - Topic 6-8: Troubleshooting RF Site Links.
  - Topic 6-9: Gateway Diagnostics and Troubleshooting.
  - Topic 6-10: MLC 8000 Diagnostics and Troubleshooting.

3.1.19.4 Standalone GTR8000 Conventional Base Radio

**AST2006**

<b>Course Synopsis and Objectives:</b>	<p>This course is designed to give the participants the ability to align, troubleshoot and repair the Standalone GTR8000 Base Station/Repeater to Motorola Solutions recommended service levels. Emphasis is placed on the use of Configuration Service Software (CSS) and its role in configuration, maintenance, diagnostics, alignments, and optimization of the Standalone GTR8000 Base Radio/Repeater</p> <p>Upon completing this course, the participant will be able to:</p> <ul style="list-style-type: none"> <li>▪ Understand basic concepts of the various radio systems supported by the GTR8000 Conventional Base Radio</li> <li>▪ Identify the equipment modules of the GTR8000 Conventional Base Radio</li> <li>▪ Operate and perform routine maintenance on the GTR8000 Conventional Base Radio</li> <li>▪ Understand basic operational theory of GTR8000 Conventional Base Radio components</li> <li>▪ Configure the GTR8000 Conventional Base Radio using Configuration Service Software (CSS)</li> <li>▪ Identify the different backplane connections on the GTR8000 Conventional Base Radio</li> <li>▪ Perform calibration and alignment adjustments for the GTR8000 Conventional Base Radio</li> <li>▪ Troubleshoot problems and identify/replace faulty modules in the GTR8000 Conventional Base Radio</li> </ul>
<b>Delivery Method:</b>	ILT = Instructor Led Training (Field Delivery Only)
<b>Duration:</b>	2 days
<b>Participants:</b>	Maintenance Technicians
<b>Class Size:</b>	Up to 12
<b>Prerequisite:</b>	<ul style="list-style-type: none"> <li>▪ General RF Knowledge and Skills</li> <li>▪ Basic Knowledge of Two-Way Radio systems</li> </ul>
<b>Curriculum:</b>	<p><b>CONVENTIONAL GTR COURSE OUTLINE</b></p> <ol style="list-style-type: none"> <li>1. GTR8000 Base Radio             <ol style="list-style-type: none"> <li>a. Topologies In A Conventional System</li> <li>b. Description</li> <li>c. Configurations</li> <li>d. Capabilities                 <ol style="list-style-type: none"> <li>i. Clear and Encrypted CAI Digital Voice</li> <li>ii. Clear and Encrypted Packet Data</li> </ol> </li> <li>e. GTR8000 Modules                 <ol style="list-style-type: none"> <li>i. Transceiver                     <ol style="list-style-type: none"> <li>1. LED's</li> <li>2. Reset Button</li> <li>3. Intercom Button</li> <li>4. Front Connections</li> <li>5. Rear Connections</li> </ol> </li> <li>ii. Transceiver Option Board</li> <li>iii. Power Amplifier</li> </ol> </li> </ol> </li> </ol>

	<ul style="list-style-type: none"><li>1. LED's</li><li>2. Modules</li><li>3. Input/Output</li><li>iv. Fan<ul style="list-style-type: none"><li>1. LED's</li></ul></li><li>v. Power Supply<ul style="list-style-type: none"><li>1. LED's</li></ul></li><li>vi. Backplane Connections</li><li>vii. AC Power Distribution in the Base Radio</li><li>f. Base Radio Connections to System</li><li>g. Software Applications<ul style="list-style-type: none"><li>i. CSS<ul style="list-style-type: none"><li>1. Accessing CSS</li><li>2. GTR Configuration</li><li>3. Site Configuration</li><li>4. Channel Configuration</li><li>5. Subsite Configuration</li><li>6. Hardware Configuration</li><li>7. Station Configuration</li><li>8. Repeater Configuration</li><li>9. Infrastructure Configuration</li><li>10. Status Report Screen</li><li>11. Status Panel Screen</li><li>12. Hardware/Software Screen</li><li>13. CSS Tools Menu</li><li>14. GTR8000 Alignments<ul style="list-style-type: none"><li>a. ASTRO Simulcast</li><li>b. Frequency Reference</li><li>c. ASTRO Test Pattern</li><li>d. ASTRO BER and RSSI</li></ul></li></ul></li><li>ii. SWDL<ul style="list-style-type: none"><li>1. Performing A SWDL on a GTR8000 Base Radio</li><li>2. Upgrading Software</li><li>3. Converting Software</li></ul></li></ul></li><li>h. Conventional Site Maintenance and Troubleshooting<ul style="list-style-type: none"><li>i. Optimization, Alignment, and Verification</li><li>ii. Troubleshooting Tools</li><li>iii. Troubleshooting Methodology</li><li>iv. GTR8000 Diagnostics and Troubleshooting</li><li>v. FRU Procedures</li></ul></li></ul>
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3.1.19.5 MCC7500 Console Operator

<b>Course Synopsis and Objectives:</b>	<p>This course provides participants with an introduction to the dispatch console, its basic operation and tailored job aids which will be available for assistance in operation. Through facilitation and hands-on activities, the user learns how to perform common tasks associated with the console operation.</p> <p>After completing this training course, you will be able to:</p> <ul style="list-style-type: none"> <li>- Perform basic operational tasks of the dispatch console.</li> <li>- Utilize the provided job aids to perform specific tasks associated with the console.</li> <li>- Understand a high level view of the system configuration.</li> <li>- Understand a high-level overview of the customer system configuration.</li> <li>- Understand general console operation.</li> <li>- Understand proper operating procedures for specific customer features.</li> </ul>
<b>Delivery Method:</b>	ILT - Instructor-led training
<b>Duration:</b>	4 hours
<b>Participants:</b>	Dispatch Console Operators, Supervisors, System Administrators, and Support Personnel
<b>Class Size:</b>	Based on number of Training Consoles available (2 students per Console)
<b>Prerequisite:</b>	None
<b>Curriculum:</b>	<ul style="list-style-type: none"> <li>- Overview</li> <li>- Communicating with Radios</li> <li>- Advanced Signaling Features</li> <li>- Resource Groups</li> <li>- Working with Configurations</li> <li>- Working with Aux IOs</li> <li>- Troubleshooting</li> </ul>

### 3.1.19.6 MCC7500 Console Supervisor

<b>Course Synopsis and Objectives:</b>	<p>This course provides participants with the knowledge and skills to manage and utilize the MCC7500 console administrator functions. Through facilitation and hands-on activities, the participant learns how to customize the console screens. After completing this training course, you will be able to:</p> <ul style="list-style-type: none"> <li>- Understand the menu items and tool bar icons.</li> <li>- Edit folders, multi-select/patch groups, auxiliary input output groups, windows and toolbars.</li> <li>- Add/delete folders.</li> </ul>
<b>Delivery Method:</b>	ILT - Instructor-led training
<b>Duration:</b>	4 hours Operator, plus 4 hours Admin
<b>Participants:</b>	Dispatch Supervisors and System Administrators
<b>Class Size:</b>	Based on number of Training Consoles available (2 students per Console)
<b>Prerequisite:</b>	None
<b>Curriculum:</b>	<ul style="list-style-type: none"> <li>- Introduction</li> <li>- Configurations</li> <li>- Folders and Resource Setup</li> <li>- Customizing Folders</li> <li>- Auto Starting the MCC 7500 Dispatch Console</li> <li>- Editing Preferences</li> <li>- Configuring the Toolbar</li> <li>- Setting Up Aux IOs</li> <li>- Resource Groups</li> </ul>

### 3.1.19.7 APX Portable and APX Mobile Operator Train-the-Trainer

<b>Course Synopsis and Objectives:</b>	<p>This course provides APX radio trainers with an introduction to their radio, its basic operation and tailored job aids available for assistance in operation. The learning experience is a mix of facilitation and hands-on activities to help users perform common tasks associated with their radio operation. Segmentation between user groups (i.e. Police, Fire/EMS, and Public Service) is encouraged to help focus instruction on the specific operational issues of the individual user group. This course is geared for customers who have an experienced dedicated training staff in their organization. It provides the customer's identified training personnel with the knowledge and practice applying training techniques that will enable them to successfully train their students. Trainers will use audio visual (Interactive End User Toolkits–iEUTK), facilitation and “hands-on” activities to facilitate learning events supported by tailored or customized training materials and job aides. They will become proficient in discussing common tasks associated with the operation of the customer's radios.</p> <p>After completing the course the participant will be able to:</p> <ul style="list-style-type: none"> <li>▪ Understand a high-level overview of the customer system configuration.</li> <li>▪ Understand the general radio operation.</li> <li>▪ Understand proper operating procedures for specific customer features.</li> <li>▪ Perform basic operational tasks of the radio.</li> <li>▪ Utilize the provided job aids to perform specific tasks associated with the radio.</li> </ul>
<b>Delivery Method:</b>	ILT - Instructor-led training
<b>Duration:</b>	8 hours
<b>Participants:</b>	APX Trainers, Supervisors and Support Personnel
<b>Class Size:</b>	Up to 15
<b>Prerequisite:</b>	Previous two-way radio and training experience
<b>Curriculum:</b>	<p><b>Basics:</b></p> <ul style="list-style-type: none"> <li>▪ Controls.</li> <li>▪ Top and Side Buttons.</li> <li>▪ Switches.</li> <li>▪ 3 Position toggle.</li> <li>▪ 2 Position Concentric.</li> <li>▪ Home key.</li> <li>▪ Data Key.</li> <li>▪ Display.</li> <li>▪ Front Display.</li> <li>▪ Top Display.</li> <li>▪ Display light.</li> <li>▪ Intelligent Lighting.</li> <li>▪ Push to Talk or Accessory PTT found on the microphone.</li> <li>▪ Hub, hang up box (Mobile).</li> </ul> <p><b>Menu:</b></p> <ul style="list-style-type: none"> <li>▪ Menu Screen Anatomy.</li> <li>▪ Navigating Menu Screen.</li> </ul>

	<ul style="list-style-type: none"><li>▪ Recent Call List (Model 3.5).</li><li>▪ Unified Call List - Contacts (Model 3.5).</li><li>▪ Dual Sided Radio (Model 3.5).</li><li>▪ Dual Mics.</li><li>▪ Dual Speakers.</li><li>▪ Accessory Connector.</li></ul> <p><b>Specific Features:</b></p> <ul style="list-style-type: none"><li>▪ Changing Talkgroups/Channels.</li><li>▪ Changing Zones.</li><li>▪ Mute tones of keypad.</li><li>▪ Talkgroup Call.</li><li>▪ Private Call.</li><li>▪ Accessing Private Call Feature.</li><li>▪ Initiating Private Call.</li><li>▪ Call List Programming.</li><li>▪ Announcement/All Call (Calls involving Multiple Talkgroups).</li><li>▪ Initiating Announcement/All Call.</li><li>▪ Direct/Talkaround.</li><li>▪ Failsoft.</li><li>▪ Radio Profiles.</li><li>▪ Accessing and changing Radio Profile.</li></ul> <p><b>Optional Features:</b></p> <ul style="list-style-type: none"><li>▪ Scan.</li><li>▪ Scan program.</li><li>▪ Priority Scan.</li><li>▪ Dynamic Priority.</li><li>▪ Telephone Interconnect.</li><li>▪ Accessing Telephone Interconnect Feature.</li><li>▪ Initiating a Phone Call.</li><li>▪ Phone List Programming.</li></ul> <p><b>Data Services:</b></p> <ul style="list-style-type: none"><li>▪ Text Messaging.</li><li>▪ Accessing the Text Messaging Feature.</li><li>▪ Creating a Free Form Text Message.</li><li>▪ Sending a "Canned " Text Message</li><li>▪ GPS.</li><li>▪ OTAP.</li><li>▪ Encryption.</li><li>▪ Emergency.</li></ul>
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## Section 1. Statement of Work

### 1.1 Site Improvement Statement of Work

#### 1.1.1 Site Development at Courthouse Site

##### **Site Scope Summary**

- ◆ Engineering services for site drawings and regulatory approvals – Included.
- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.
- ◆ Existing tower to be used for antennas – 60' Self supported Tower.

##### **Responsibilities:**

##### Site Engineering – Motorola Responsibilities:

- ◆ Prepare site construction drawings, showing the layout of various new and existing site components.
- ◆ Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- ◆ Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- ◆ Prepare record drawings of the site showing the as-built information.
- ◆ Perform National Environmental Policy Act (NEPA) Threshold Screening, including limited literature and records search and brief reporting, as necessary to identify sensitive natural and cultural features referenced in 47 Code of Federal Regulations (CFR) Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility “may have a significant environmental impact” and thus require additional documentation, submittals, or work.
- ◆ Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed antenna system. If the tower structure fails the analysis, the cost of any site relocation or modifications to the tower required to support the antenna system will be the responsibility of Humboldt County.  
NOTE: This task does not include mapping, structural measurement survey,

materials testing, geotechnical investigation, and/or other field investigation to acquire the data. If applicable, these tasks will be noted separately in the SOW.

- ◆ Additional structural engineering for equipment room floor analysis and improvement design to bolt down new radio equipment for seismic loading.

#### Site Engineering – County Responsibilities:

- ◆ Preparation, submission and tracking of application for local permit, including fees (zoning, electrical, building etc.) and procurement of information necessary for filing.

#### Site Preparation – Motorola Responsibilities:

- ◆ Provide one-time mobilization costs for the construction crews. Any remobilization due to interruptions/delays that are out of Motorola's control will result in additional costs.

#### Site Preparation – County Responsibilities:

- ◆ Obtain the permits such as electrical, building, and construction permits, and coordinate any inspections with local authorities that may be needed to complete site development work.

#### Antenna and Transmission Line Installation – Motorola Responsibilities:

- ◆ Install 2 antenna(s) for the RF system.
- ◆ Supply and install 2 side arm(s) for antenna mounts.
- ◆ Install 7/8-inch transmission line.
- ◆ Perform sweep tests on transmission lines.
- ◆ Provide and install PVC sleepers and attachment hardware for supporting transmission lines on rooftop every three feet.
- ◆ Supply and install 1 ground buss bar at the bottom of the antenna support structure for grounding RF cables before they make horizontal transition.
- ◆ Supply and install #2/0 stranded copper ground (not to exceed 120 linear feet) for grounding the bus bars to the building ground.

#### Existing Facility Improvement Work – Motorola Responsibilities:

- ◆ Supply (4) and install 30A dual pole breaker and wire for rectifier drops to equipment located max distance 35 cable feet of the panel.
- ◆ Supply and install (1) 30A single pole breaker and wire (3) duplex outlets located max distance within 35 cable feet of the panel
- ◆ Supply and install 30A single pole breaker and wire for inverter drop to equipment located max distance 35 cable feet of the panel.
- ◆ Add Fluorescent lighting fixtures.
- ◆ Install new wall outlets and lighting per local code and site requirements.
- ◆ Install a Motorola supplied primary (SAD/MOV) surge protector on the load side of the ATS.
- ◆ Ground all metallic objects in the interior of the existing room, to meet current Motorola's Standards and Guidelines for Communications Sites (R56) requirements and terminate near equipment locations.
- ◆ Supply 1 cable entry panel with 6 ports for County to install.
- ◆ Supply and install 2 copper ground buss bars.
- ◆ Supply and install 12" wide cable runway.



- ◆ Supply and install Telco board - 48 inches X 96 inches.
- ◆ Supply and install (1) Wall mounted 10 lb CO2 fire extinguisher, (1) Wall mounted 20lb. ABC fire extinguisher
- ◆ Supply and install No smoking, EME signage at the site in accordance with R56 section 5.13
- ◆ Structural floor improvements to the equipment shelter for the bolt down of radio racks to meet install requirements.

**Existing Facility Improvement Work – County Responsibilities:**

- ◆ Supply and install HVAC unit and wire to electrical distribution as needed.
- ◆ Modify wall to accommodate new wall mounted HVAC unit's supply and return.
- ◆ Install new electrical distribution panel per local code and site requirements.
- ◆ Modify wall to accommodate and install new 6 hole cable entry port.
- ◆ Construct new wall and door to isolate equipment room area from exterior door area in penthouse.
- ◆ Provide and install 2” conduit from new equipment room to dispatch 911 closet and from new equipment room to legacy equipment room for connectivity.
- ◆ Provide point of earth ground in equipment room for Motorola’s MGB to connect to building steel.

**Miscellaneous Work – Motorola Responsibilities:**

- ◆ Crane rental and street closure.
- ◆ Removal of 2 antennas, 2 mounts, 2 lines from existing tower in separate mobilization, subsequent to initial install, turn up and successful integration. Haul off and disposal of antennas, mounts and lines.

**NEPA – Motorola Responsibilities:**

**Section 106 Submittal**

- ◆ Includes the packet of information submitted to the SHPO and uploaded to the FCC’s e106 website – Form 620/621, Cultural Resource Phase I Survey, Maps, FCC TCNS Notice of Organizations, construction drawings, letters reaching out to local jurisdictions, historic preservation organizations, Certified Local Governments, and other potentially interested parties inviting comments regarding potential impacts to historic resources, affidavit of public notice published in the local news papers inviting public comments regarding potential impacts to historic resources.
- ◆ Once SHPO has received the submittal in their preferred format, they have 30 days to review the materials. If the SHPO does not respond in that time, the matter can be referred to the FCC through the e106 system. In which the SHPO is notified by the FCC they have 15 days to provide comment, or have forfeited they opportunity to comment.

**Public Notice / Section 106 Initiation Letters**

- ◆ Includes the research and administrative work of drafting and mailing letters inviting comments regarding potential impacts to historic resources, and the publishing fees associated with the Public Notice. These materials are included in the Section 106 Submittal.

**TCNS Filling / Completion and Tribal Consultation**



- ◆ Filling the project in the FCC's TCNS system. Notice of Organizations is provided (processed once a week and sent out on Friday), indicating which Native American Tribes have designated the area in which the propose project is located, as their ancestral territory and we are required to consult with on potential impacts to cultural and historic resources. Tribes are provided with the same packet of information that is provided to the SHPO.
- ◆ Tribes have 30 days (or 35 days if they require the submittal to be mailed, rather than emailed or obtained through the TCNS system). Non-responsive tribes can be referred to the FCC following this period. Referrals are processed on Thursdays of each week. The FCC send out a Notice of Final Contact, indicating to any referred non-responsive tribe they have 15 days to comment on the project, or forfeit their right to comment.

#### California State Required Tribal Consultation

- ◆ The State of California requires similar consultation with State recognized tribes, as the FCC does with Federally recognized tribes. The submittal are handled similarly as stated above, but outside the TCNS system.

#### Archaeological / Architectural Survey

- ◆ Cultural Resource Phase I Survey completed by a professional archaeologist and architectural historian that meets the Department of Interior's definition. Survey included background research of the project area, consultation of SHPO records, field survey, shovel testing, and final report that is included in the submittal packets to SHPO and tribes.
- ◆ This is the only portion that GSS does not handle in house. We utilize subcontractors for this work.

#### Section 106 / TCNS Report

- ◆ The final report GSS provides summarizing the information gathered, and documenting correspondence and concurrence with our findings from SHPO and tribes.

#### CEQA

- ◆ There is significant overlap between environmental factors that could be potentially affected covered under NEPA and CEQA. Additional items included under CEQA, that are not already covered under the NEPA will be evaluated for potential impacts resulting from the proposed work at these sites.

## 1.1.2 Site Development at Horse Mtn Site

### **Site Scope Summary**

- ◆ Engineering services for site drawings and regulatory approvals – Included.
- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.
- ◆ Existing tower to be used for antennas – 100 ' Self supported Tower.



## **Responsibilities:**

### **Site Engineering – Motorola Responsibilities**

- ◆ Prepare site construction drawings, showing the layout of various new and existing site components.
- ◆ Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- ◆ Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- ◆ Prepare record drawings of the site showing the as-built information.
- ◆ Perform National Environmental Policy Act (NEPA) Threshold Screening, including limited literature and records search and brief reporting, as necessary to identify sensitive natural and cultural features referenced in 47 Code of Federal Regulations (CFR) Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility “may have a significant environmental impact” and thus require additional documentation, submittals, or work.
- ◆ Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed antenna system. If the tower structure fails the analysis, the cost of any site relocation or modifications to the tower required to support the antenna system will be the responsibility of Humboldt County. NOTE: This task does not include mapping, structural measurement survey, materials testing, geotechnical investigation, and/or other field investigation to acquire the data. If applicable, these tasks will be noted separately in the SOW.
- ◆ Preparation, submission and tracking of application for local permit, including fees (electrical, building etc.) and procurement of information necessary for filing.
- ◆ Additional structural engineering for shelter floor improvements to bolt down new radio equipment for seismic loading

### **NEPA – Motorola Responsibilities:**

#### **Section 106 Submittal**

- ◆ Includes the packet of information submitted to the SHPO and uploaded to the FCC’s e106 website – Form 620/621, Cultural Resource Phase I Survey, Maps, FCC TCNS Notice of Organizations, construction drawings, letters reaching out to local jurisdictions, historic preservation organizations, Certified Local Governments, and other potentially interested parties inviting comments regarding potential impacts to historic resources, affidavit of public notice published in the local news papers inviting public comments regarding potential impacts to historic resources.
- ◆ Once SHPO has received the submittal in their preferred format, they have 30 days to review the materials. If the SHPO does not respond in that time, the matter can be referred to the FCC through the e106 system. In which the SHPO is notified by the FCC they have 15 days to provide comment, or have forfeited they opportunity to comment.



#### Public Notice / Section 106 Initiation Letters

- ◆ Includes the research and administrative work of drafting and mailing letters inviting comments regarding potential impacts to historic resources, and the publishing fees associated with the Public Notice. These materials are included in the Section 106 Submittal.

#### TCNS Filling / Completion and Tribal Consultation

- ◆ Filling the project in the FCC's TCNS system. Notice of Organizations is provided (processed once a week and sent out on Friday), indicating which Native American Tribes have designated the area in which the propose project is located, as their ancestral territory and we are required to consult with on potential impacts to cultural and historic resources. Tribes are provided with the same packet of information that is provided to the SHPO.
- ◆ Tribes have 30 days (or 35 days if they require the submittal to be mailed, rather than emailed or obtained through the TCNS system). Non-responsive tribes can be referred to the FCC following this period. Referrals are processed on Thursdays of each week. The FCC send out a Notice of Final Contact, indicating to any referred non-responsive tribe they have 15 days to comment on the project, or forfeit their right to comment.

#### California State Required Tribal Consultation

- ◆ The State of California requires similar consultation with State recognized tribes, as the FCC does with Federally recognized tribes. The submittal are handled similarly as stated above, but outside the TCNS system.

#### Archaeological / Architectural Survey

- ◆ Cultural Resource Phase I Survey completed by a professional archaeologist and architectural historian that meets the Department of Interior's definition. Survey included background research of the project area, consultation of SHPO records, field survey, shovel testing, and final report that is included in the submittal packets to SHPO and tribes.
- ◆ This is the only portion that GSS does not handle in house. We utilize subcontractors for this work.

#### Section 106 / TCNS Report

- ◆ The final report GSS provides summarizing the information gathered, and documenting correspondence and concurrence with our findings from SHPO and tribes.

#### CEQA

- ◆ There is significant overlap between environmental factors that could be potentially affected covered under NEPA and CEQA. Additional items included under CEQA, that are not already covered under the NEPA will be evaluated for potential impacts resulting from the proposed work at these sites.

#### Site Preparation – Motorola Responsibilities:

- ◆ Provide one-time mobilization costs for the construction crews. Any remobilization due to interruptions/delays that are out of Motorola's control will result in additional costs.



### Site Components – Motorola Responsibilities:

- ◆ Megger three point grounding test of the site

### Antenna and Transmission Line Installation – Motorola Responsibilities:

- ◆ Install 4 antenna(s) for the RF system.
- ◆ Supply and install 2 side arm(s) for antenna mounts.
- ◆ Install 7/8-inch transmission line.
- ◆ Perform sweep tests on transmission lines.
- ◆ Provide and install six-hole hanger blocks and attachment hardware for supporting transmission lines on the antenna support structure every three feet
- ◆ Supply and install 1 ground buss bar at the bottom of the antenna support structure for grounding RF cables before they make horizontal transition.
- ◆ Removal of 2 RF antennas, 2 mounts, 2 lines and one Microwave antenna, mount, and line from existing tower in separate mobilization, subsequent to initial install, turn up and successful integration. Haul off and disposal of all antennas, mounts and lines.

### Existing Facility Improvement Work – Motorola Responsibilities:

- ◆ Supply (4) and install 30A dual pole breaker and wire for rectifier drops to equipment located max distance 35 cable feet of the panel.
- ◆ Supply (2) and install 30A single pole breaker and wire quad receptacle on cable tray for legacy equipment.
- ◆ Supply and install (1) 30A single pole breaker and wire (3) duplex outlets located max distance within 35 cable feet of the panel.
- ◆ Supply and install 30A single pole breaker and wire for inverter drop to equipment located max distance 35 cable feet of the panel.
- ◆ Supply and install lighting fixtures.
- ◆ 120 / 240 volt, 200 amp, single-phase underground electrical service including trenching and installation of appropriately sized electrical conductors buried 30 inches below grade from utility meter to the service disconnect located on the building
- ◆ Re-wire existing circuits in panel on load side of ATS and relocate them to new 200A panel.
- ◆ Supply and install 200A breaker panel with capacity for 30 circuits.
- ◆ Install a Motorola supplied primary (SAD/MOV) surge protector on the load side of the ATS.
- ◆ Install a Motorola supplied secondary surge protector (MOV) on electrical service side of the Automatic transfer switch (ATS) and connect to alarm panel.
- ◆ Supply and install 2pole 60A disconnect as required by code for inline tap on line side of ATS for secondary surge protector (MOV).
- ◆ Supply and install 1 cable entry panel with 6 ports.
- ◆ Create wall penetration for cable entry panel.
- ◆ Upgrade internal grounding and terminate near equipment locations inside equipment shelter.



- ◆ Supply and install 2 copper ground buss bar(s).
- ◆ Provide additional upgrades to site per Power Quality Guy's audit report, excluding any antenna removal on tower or ice shield protection of existing antennas on tower, anti-static mats for equipment, or separation of gen and equipment room.
- ◆ Structural floor improvements to the equipment shelter for the bolt down of radio racks.
- ◆ Electrical work to correct the single phase wiring between meter/disconnect and ATS/existing shelter.

**Existing Facility Improvement Work – County Responsibilities:**

- ◆ Supply 1 ton HVAC unit
- ◆ Install, power and test HVAC unit, controller and alarms.
- ◆ Modify wall as necessary for installation of HVAC unit (if wall-mounted unit – cut apertures for supply and return; if split system – core drill penetrations for electrical and linesets).

### 1.1.3 Site Development at Mt Pierce (aka Monument Peak) Site

**Site Scope Summary**

- ◆ Engineering services for site drawings and regulatory approvals – Included.
- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.
- ◆ Existing tower to be used for antennas – 100 ' Self supported Tower.

**Responsibilities:**

**Site Engineering – Motorola Responsibilities:**

- ◆ Prepare site construction drawings, showing the layout of various new and existing site components.
- ◆ Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- ◆ Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- ◆ Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed antenna system. If the tower structure fails the analysis, the cost of any site relocation or modifications to the tower required to support the antenna system will be the responsibility of Humboldt County.  
NOTE: This task does not include mapping, structural measurement survey, materials testing, geotechnical investigation, and/or other field investigation to acquire the data. If applicable, these tasks will be noted separately in the SOW.
- ◆ Prepare record drawings of the site showing the as-built information.
- ◆ Perform National Environmental Policy Act (NEPA) Threshold Screening, including limited literature and records search and brief reporting, as necessary to



identify sensitive natural and cultural features referenced in 47 Code of Federal Regulations (CFR) Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility “may have a significant environmental impact” and thus require additional documentation, submittals, or work.

- ◆ Preparation, submission and tracking of application for local permit, including fees (electrical, building etc.) and procurement of information necessary for filing.
- ◆ Additional structural engineering for shelter floor improvements to bolt down new radio equipment for seismic loading

### NEPA – Motorola Responsibilities:

#### Section 106 Submittal

- ◆ Includes the packet of information submitted to the SHPO and uploaded to the FCC’s e106 website – Form 620/621, Cultural Resource Phase I Survey, Maps, FCC TCNS Notice of Organizations, construction drawings, letters reaching out to local jurisdictions, historic preservation organizations, Certified Local Governments, and other potentially interested parties inviting comments regarding potential impacts to historic resources, affidavit of public notice published in the local news papers inviting public comments regarding potential impacts to historic resources.
- ◆ Once SHPO has received the submittal in their preferred format, they have 30 days to review the materials. If the SHPO does not respond in that time, the matter can be referred to the FCC through the e106 system. In which the SHPO is notified by the FCC they have 15 days to provide comment, or have forfeited they opportunity to comment.

#### Public Notice / Section 106 Initiation Letters

- ◆ Includes the research and administrative work of drafting and mailing letters inviting comments regarding potential impacts to historic resources, and the publishing fees associated with the Public Notice. These materials are included in the Section 106 Submittal.

#### TCNS Filling / Completion and Tribal Consultation

- ◆ Filling the project in the FCC’s TCNS system. Notice of Organizations is provided (processed once a week and sent out on Friday), indicating which Native American Tribes have designated the area in which the propose project is located, as their ancestral territory and we are required to consult with on potential impacts to cultural and historic resources. Tribes are provided with the same packet of information that is provided to the SHPO.
- ◆ Tribes have 30 days (or 35 days if they require the submittal to be mailed, rather than emailed or obtained through the TCNS system). Non-responsive tribes can be referred to the FCC following this period. Referrals are processed on Thursdays of each week. The FCC send out a Notice of Final Contact, indicating to any referred non-responsive tribe they have 15 days to comment on the project, or forfeit their right to comment.



#### California State Required Tribal Consultation

- ◆ The State of California requires similar consultation with State recognized tribes, as the FCC does with Federally recognized tribes. The submittal are handled similarly as stated above, but outside the TCNS system.

#### Archaeological / Architectural Survey

- ◆ Cultural Resource Phase I Survey completed by a professional archaeologist and architectural historian that meets the Department of Interior's definition. Survey included background research of the project area, consultation of SHPO records, field survey, shovel testing, and final report that is included in the submittal packets to SHPO and tribes.
- ◆ This is the only portion that GSS does not handle in house. We utilize subcontractors for this work.

#### Section 106 / TCNS Report

- ◆ The final report GSS provides summarizing the information gathered, and documenting correspondence and concurrence with our findings from SHPO and tribes.

#### CEQA

- ◆ There is significant overlap between environmental factors that could be potentially affected covered under NEPA and CEQA. Additional items included under CEQA, that are not already covered under the NEPA will be evaluated for potential impacts resulting from the proposed work at these sites.

#### Site Preparation – Motorola Responsibilities:

- ◆ Provide one-time mobilization costs for the construction crews. Any remobilization due to interruptions/delays that are out of Motorola's control will result in additional costs.

#### Site Components – Motorola Responsibilities:

- ◆ Megger three point grounding test of the site.
- ◆ Supply and Install waveguide bridge, including foundation, all required attachments and hardware (i.e. 3 rungs of single run trapeze kits etc.)

#### Antenna and Transmission Line Installation – Motorola Responsibilities:

- ◆ Install 2 antenna(s) for the RF system.
- ◆ Supply and install 2 side arm(s) for antenna mounts.
- ◆ Install 7/8-inch transmission line.
- ◆ Perform sweep tests on transmission lines.
- ◆ Provide and install six-hole hanger blocks and attachment hardware for supporting transmission lines on the antenna support structure every three feet.
- ◆ Supply and install 1 ground buss bar at the bottom of the antenna support structure for grounding RF cables before they make horizontal transition.

#### Existing Facility Improvement Work – Motorola Responsibilities:

- ◆ Supply and install 2pole 60A disconnect as required by code for inline tap on line side of ATS for secondary surge protector (MOV)



- ◆ Supply and install (4) rectifier drops to equipment located max distance 35 cable feet of the panel and wire to 30A dual pole breakers.
- ◆ Supply and install 30A single pole breaker and wire for inverter drop to equipment located max distance 35 cable feet of the panel.
- ◆ Provide additional upgrades to site per Power Quality Guy's audit report.
- ◆ Install secondary surge protector (MOV) on electrical service side of the Automatic transfer switch (ATS) and connect to alarm panel.
- ◆ Install a primary (SAD/MOV) surge protector on the load side of the ATS and connect to alarm panel.
- ◆ Cable Entry Panel (6 ports per panel)
- ◆ Create wall penetration for cable entry panel.
- ◆ Upgrade internal grounding and terminate near equipment locations (inside 500 Sq. Ft. room)
- ◆ Supply and install 2 copper ground buss bar(s).
- ◆ Add four fluorescent lighting fixtures
- ◆ Electrical work to install new sub panel in the new equipment room, tapping from the existing panel in the main equipment room, including all conduit, conductor, disconnects and enclosures.
- ◆ Perform environmental abatement of black mold in proposed equipment room (old generator room).
- ◆ Demo, remove and haul off existing equipment in generator room and properly dispose. Clean room and prep for new equipment install. Clean/remove peeling paint and re-paint walls; Re-seal roof to prevent future water intrusion and leaks and seal floor with non-conductive epoxy finish.
- ◆ Remove existing louvers from wall openings and seal up wall with CMU and mortar to create air-tight seal in room.
- ◆ Structural floor improvements to the equipment shelter for the bolt down of radio racks to meet temporary install requirements before racks can be re-located to new shelter.
- ◆ 3rd Party Utility Mark Out.

**Miscellaneous Work – Motorola Responsibilities:**

- ◆ Removal of 2 antennas, 2 mounts, 2 lines from existing tower in separate mobilization, subsequent to initial install, turn up and successful integration. Haul off and disposal of all antennas, mounts and lines.

## 1.1.4 Site Development at Pratt Mtn Site

### **Site Scope Summary**

- ◆ Engineering services for site drawings and regulatory approvals – Included.
- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.
- ◆ Existing tower to be used for antennas – 100' Self supported Tower.



## **Responsibilities:**

### **Site Engineering – Motorola Responsibilities:**

- ◆ Prepare site construction drawings, showing the layout of various new and existing site components.
- ◆ Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- ◆ Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- ◆ Prepare record drawings of the site showing the as-built information.
- ◆ Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed antenna system. If the tower structure fails the analysis, the cost of any site relocation or modifications to the tower required to support the antenna system will be the responsibility of Humboldt County.
- ◆ Perform National Environmental Policy Act (NEPA) Threshold Screening, including limited literature and records search and brief reporting, as necessary to identify sensitive natural and cultural features referenced in 47 Code of Federal Regulations (CFR) Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility “may have a significant environmental impact” and thus require additional documentation, submittals, or work.
- ◆ Preparation, submission and tracking of application for local permit, including fees (electrical, building etc.) and procurement of information necessary for filing.
- ◆ Additional structural engineering for shelter floor improvements to bolt down new radio equipment for seismic loading

### **Site Preparation – Motorola Responsibility**

- ◆ Provide one-time mobilization costs for the construction crews. Any remobilization due to interruptions/delays that are out of Motorola’s control will result in additional costs.

### **Site Components – Motorola Responsibilities:**

- ◆ Megger three point grounding test of the site.
- ◆ 120 / 240 volt, 200 amp, single-phase underground electrical service including trenching and installation of appropriately sized electrical conductors buried 30 inches below grade from utility meter to the service disconnect located on the building.

### **Antenna and Transmission Line Installation – Motorola Responsibilities:**

- ◆ Install 3 antenna(s) for the RF system.
- ◆ Supply and install 2 side arm(s) for antenna mounts.
- ◆ Install 7/8-inch transmission line.



- ◆ Perform sweep tests on transmission lines.
- ◆ Provide and install six-hole hanger blocks and attachment hardware for supporting transmission lines on the antenna support structure every three feet.
- ◆ Supply and install 1 ground buss bar at the bottom of the antenna support structure for grounding RF cables before they make horizontal transition.

#### Existing Facility Improvement Work – Motorola Responsibilities:

- ◆ Supply and install (4) rectifier drops to equipment located max distance 35 cable feet of the panel and wire to 30A dual pole breakers.
- ◆ Supply and install 30A single pole breaker and wire for inverter drop to equipment located max distance 35 cable feet of the panel.
- ◆ Provide additional upgrades to site per Power Quality Guy's audit report.
- ◆ Supply and install 2pole 60A disconnect as required by code for inline tap on line side of ATS for secondary surge protector (MOV).
- ◆ Install secondary surge protector (MOV) on electrical service side of the Automatic transfer switch (ATS) and connect to alarm panel.
- ◆ Install a primary (SAD/MOV) surge protector on the load side of the ATS and connect to alarm panel.
- ◆ Supply and install Cable Entry Panel (6 ports per panel).
- ◆ Create wall penetration for cable entry panel.
- ◆ Upgrade internal grounding and terminate near equipment locations (inside 500 Sq. Ft. room)
- ◆ Supply and install 2 copper ground buss bar(s).
- ◆ Provide and install four Fluorescent lighting fixtures.
- ◆ Perform electrical work to correct the single phase wiring between meter/disconnect/ATS and existing shelter.
- ◆ Perform electrical work to replace the single phase panel in the equipment shelter and re-connect existing circuits to the panel and re-connect the feeders to the panel from upstream source. This is required to create more physical space in the panel to connect the circuits for the rectifiers in the DC plant.
- ◆ Structural floor improvements to the equipment shelter for the bolt down of radio racks.
- ◆ 3rd Party Utility Mark Out.

#### Miscellaneous Work – Motorola Responsibilities:

- ◆ Removal of 2 antennas, 2 mounts, 2 lines from existing tower in separate mobilization, subsequent to initial install, turn up and successful integration. Haul off and disposal of all antennas, mounts and lines.

#### NEPA – Motorola Responsibilities:

##### Section 106 Submittal

- ◆ Includes the packet of information submitted to the SHPO and uploaded to the FCC's e106 website – Form 620/621, Cultural Resource Phase I Survey, Maps, FCC TCNS Notice of Organizations, construction drawings, letters reaching out



to local jurisdictions, historic preservation organizations, Certified Local Governments, and other potentially interested parties inviting comments regarding potential impacts to historic resources, affidavit of public notice published in the local news papers inviting public comments regarding potential impacts to historic resources.

- ◆ Once SHPO has received the submittal in their preferred format, they have 30 days to review the materials. If the SHPO does not respond in that time, the matter can be referred to the FCC through the e106 system. In which the SHPO is notified by the FCC they have 15 days to provide comment, or have forfeited they opportunity to comment.

#### Public Notice / Section 106 Initiation Letters

- ◆ Includes the research and administrative work of drafting and mailing letters inviting comments regarding potential impacts to historic resources, and the publishing fees associated with the Public Notice. These materials are included in the Section 106 Submittal.

#### TCNS Filling / Completion and Tribal Consultation

- ◆ Filling the project in the FCC's TCNS system. Notice of Organizations is provided (processed once a week and sent out on Friday), indicating which Native American Tribes have designated the area in which the propose project is located, as their ancestral territory and we are required to consult with on potential impacts to cultural and historic resources. Tribes are provided with the same packet of information that is provided to the SHPO.
- ◆ Tribes have 30 days (or 35 days if they require the submittal to be mailed, rather than emailed or obtained through the TCNS system). Non-responsive tribes can be referred to the FCC following this period. Referrals are processed on Thursdays of each week. The FCC send out a Notice of Final Contact, indicating to any referred non-responsive tribe they have 15 days to comment on the project, or forfeit their right to comment.

#### California State Required Tribal Consultation

- ◆ The State of California requires similar consultation with State recognized tribes, as the FCC does with Federally recognized tribes. The submittal are handled similarly as stated above, but outside the TCNS system.

#### Archaeological / Architectural Survey

- ◆ Cultural Resource Phase I Survey completed by a professional archaeologist and architectural historian that meets the Department of Interior's definition. Survey included background research of the project area, consultation of SHPO records, field survey, shovel testing, and final report that is included in the submittal packets to SHPO and tribes.
- ◆ This is the only portion that GSS does not handle in house. We utilize subcontractors for this work.

#### Section 106 / TCNS Report

- ◆ The final report GSS provides summarizing the information gathered, and documenting correspondence and concurrence with our findings from SHPO and tribes.

#### CEQA

- ◆ There is significant overlap between environmental factors that could be potentially affected covered under NEPA and CEQA. Additional items included



under CEQA, that are not already covered under the NEPA will be evaluated for potential impacts resulting from the proposed work at these sites.

## 1.1.5 Site Development at Trinidad Site

### Site Scope Summary

- ◆ Engineering services for site drawings and regulatory approvals – Included.
- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.
- ◆ Existing tower to be used for antennas – 60' Guyed Tower.

### Responsibilities:

#### Site Engineering – Motorola Responsibilities:

- ◆ Prepare site construction drawings, showing the layout of various new and existing site components.
- ◆ Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- ◆ Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- ◆ Prepare record drawings of the site showing the as-built information.
- ◆ Perform National Environmental Policy Act (NEPA) Threshold Screening, including limited literature and records search and brief reporting, as necessary to identify sensitive natural and cultural features referenced in 47 Code of Federal Regulations (CFR) Chapter 1, subsection 1.1307 that may be potentially impacted by the proposed construction activity. This does not include the additional field investigations to document site conditions if it is determined that the proposed communication facility “may have a significant environmental impact” and thus require additional documentation, submittals, or work.
- ◆ Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed antenna system. If the tower structure fails the analysis, the cost of any site relocation or modifications to the tower required to support the antenna system will be the responsibility of Humboldt County.  
NOTE: This task does not include mapping, structural measurement survey, materials testing, geotechnical investigation, and/or other field investigation to acquire the data. If applicable, these tasks will be noted separately in the SOW.
- ◆ Preparation, submission and tracking of application for local permit, including fees (electrical, building etc.) and procurement of information necessary for filing.
- ◆ Tower mapping (up to 350 ft)
- ◆ Tower Foundation mapping
- ◆ Additional structural engineering for shelter floor improvements to bolt down new radio equipment for seismic loading

#### NEPA – Motorola Responsibilities:



### Section 106 Submittal

- ◆ Includes the packet of information submitted to the SHPO and uploaded to the FCC's e106 website – Form 620/621, Cultural Resource Phase I Survey, Maps, FCC TCNS Notice of Organizations, construction drawings, letters reaching out to local jurisdictions, historic preservation organizations, Certified Local Governments, and other potentially interested parties inviting comments regarding potential impacts to historic resources, affidavit of public notice published in the local news papers inviting public comments regarding potential impacts to historic resources.
- ◆ Once SHPO has received the submittal in their preferred format, they have 30 days to review the materials. If the SHPO does not respond in that time, the matter can be referred to the FCC through the e106 system. In which the SHPO is notified by the FCC they have 15 days to provide comment, or have forfeited they opportunity to comment.

### Public Notice / Section 106 Initiation Letters

- ◆ Includes the research and administrative work of drafting and mailing letters inviting comments regarding potential impacts to historic resources, and the publishing fees associated with the Public Notice. These materials are included in the Section 106 Submittal.

### TCNS Filling / Completion and Tribal Consultation

- ◆ Filling the project in the FCC's TCNS system. Notice of Organizations is provided (processed once a week and sent out on Friday), indicating which Native American Tribes have designated the area in which the propose project is located, as their ancestral territory and we are required to consult with on potential impacts to cultural and historic resources. Tribes are provided with the same packet of information that is provided to the SHPO.
- ◆ Tribes have 30 days (or 35 days if they require the submittal to be mailed, rather than emailed or obtained through the TCNS system). Non-responsive tribes can be referred to the FCC following this period. Referrals are processed on Thursdays of each week. The FCC send out a Notice of Final Contact, indicating to any referred non-responsive tribe they have 15 days to comment on the project, or forfeit their right to comment.

### California State Required Tribal Consultation

- ◆ The State of California requires similar consultation with State recognized tribes, as the FCC does with Federally recognized tribes. The submittal are handled similarly as stated above, but outside the TCNS system.

### Archaeological / Architectural Survey

- ◆ Cultural Resource Phase I Survey completed by a professional archaeologist and architectural historian that meets the Department of Interior's definition. Survey included background research of the project area, consultation of SHPO records, field survey, shovel testing, and final report that is included in the submittal packets to SHPO and tribes.
- ◆ This is the only portion that GSS does not handle in house. We utilize subcontractors for this work.

### Section 106 / TCNS Report



- ◆ The final report GSS provides summarizing the information gathered, and documenting correspondence and concurrence with our findings from SHPO and tribes.

#### CEQA

- ◆ There is significant overlap between environmental factors that could be potentially affected covered under NEPA and CEQA. Additional items included under CEQA, that are not already covered under the NEPA will be evaluated for potential impacts resulting from the proposed work at these sites.

#### Site Preparation – Motorola Responsibilities:

- ◆ Provide one-time mobilization costs for the construction crews. Any remobilization due to interruptions/delays that are out of Motorola's control will result in additional costs.

#### Site Components Installation – Motorola Responsibilities:

- ◆ Supply and install 1 freestanding 24-inch-wide cable/ice bridge from the tower to the shelter (up to 10 linear feet).
- ◆ Conduct 1 three-point ground resistance test of the site. Should any improvements to grounding system be necessary after ground testing, the cost of such improvements shall be the responsibility of Humboldt County.

#### Antenna and Transmission Line Installation – Motorola Responsibilities:

- ◆ Install 1 antenna(s) for the RF system.
- ◆ Supply and install 1 side arm(s) for antenna mounts.
- ◆ Install 7/8-inch transmission line.
- ◆ Perform sweep tests on transmission lines.
- ◆ Supply and install 1 ground buss bar at the bottom of the antenna support structure for grounding RF cables before they make horizontal transition.
- ◆ Removal of one RF antenna, mount, and line from existing tower in separate mobilization, subsequent to initial install, turn up and successful integration. Haul off and disposal of all antennas, mounts and lines.

#### Existing Facility Improvement Work – Motorola Responsibilities:

- ◆ Supply (3) and install 30A dual pole breaker and wire for rectifier drops to equipment located max distance 35 cable feet of the panel.
- ◆ Supply and install 30A single pole breaker and wire for inverter drop to equipment located max distance 35 cable feet of the panel.
- ◆ Supply and install 1 cable entry panel with 6 ports.
- ◆ Create wall penetration for cable entry panel.
- ◆ Upgrade internal grounding and terminate near equipment locations.
- ◆ Supply and install 2 copper ground buss bar(s).
- ◆ Install a primary (SAD/MOV) surge protector on the load side of the ATS and connect to alarm panel.
- ◆ Provide additional grounding upgrades to exterior of site per Power Quality Guy's audit report and electrician's on site meeting with customer's direction



- ◆ Structural floor improvements to the equipment shelter for the bolt down of radio racks.
- ◆ Electrical work to replace the single phase panel in the equipment shelter and re-connect existing circuits to the panel and re-connect the feeders to the panel from upstream source. This is required to create more physical space in the panel to connect the circuits for the rectifiers in the DC plant

## 1.1.6 Site Development at Big Hill Site

### Site Scope Summary

- ◆ Engineering services for site drawings and regulatory approvals – Included.
- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.
- ◆ Existing tower to be used for antennas – 20’ mast attached to shelter.

### Responsibilities:

#### Site Engineering – Motorola Responsibilities:

- ◆ Prepare site construction drawings, showing the layout of various new and existing site components.
- ◆ Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- ◆ Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location.
- ◆ Prepare record drawings of the site showing the as-built information.

#### Site Preparation – Motorola Responsibilities:

- ◆ No work included.

#### Site Components Installation – Motorola Responsibilities:

- ◆ No work included.

#### Antenna and Transmission Line Installation – Motorola Responsibilities:

- ◆ Supply and install 4 antenna(s) for the RF system.
- ◆ Supply and install 1 antenna for the cellular alarm reporting system.
- ◆ Supply and install 2 side arm(s) for antenna mounts.
- ◆ Perform sweep tests on transmission lines.
- ◆ Ground RF cables before they make horizontal transition into shelter.

#### Existing Facility Improvement Work – Motorola Responsibilities:

- ◆ No work included.

## 1.1.7 Site Development at Shelton Butte Site

### Site Scope Summary

- ◆ Engineering services for site drawings and regulatory approvals –Included.



- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.

### **Responsibilities:**

#### Site Preparation – Motorola Responsibilities:

- ◆ Prepare site construction drawings, showing the layout of various new and existing site components.
- ◆ Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).
- ◆ Prepare a lease exhibit and sketch of the site to communicate to the property owner the proposed lease space and planned development at the particular site location. Prepare record drawings of the site showing the as-built information.

#### Site Components Installation – Motorola Responsibilities:

- ◆ No work included.

#### Tower Work – Motorola Responsibilities:

- ◆ No work included.

#### Antenna and Transmission Line Installation – Motorola Responsibilities:

- ◆ Install 2 antennas for the RF system.
- ◆ Install 1 antenna for the cellular alarm reporting system.
- ◆ Supply and install 2 side arms for antenna mounts.
- ◆ Install 7/8-inch transmission line.
- ◆ Perform sweep tests on transmission lines.
- ◆ Ground RF cables before they make horizontal transition into shelter.

#### Existing Facility Improvement Work – Motorola Responsibilities:

- ◆ No work included.

#### Miscellaneous Work – Motorola Responsibilities:

- ◆ No Work included.

## 1.1.8 Site Development at Shelter Cove Site

### **Site Scope Summary**

- ◆ Engineering services for site drawings and regulatory approvals – Not included.
- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.

### **Motorola Responsibilities:**

#### Site Preparation

- ◆ No work included.



### Site Components Installation

- ◆ No work included.

### Tower Work

- ◆ No work included.

### Antenna and Transmission Line Installation

- ◆ Supply and install 1 antenna for the RF system.
- ◆ Supply and install 1 side arm for antenna mounts.
- ◆ Supply and install RF cabling into existing site combining system
- ◆ Install 7/8-inch transmission line.
- ◆ Perform sweep tests on transmission lines.
- ◆ Ground RF cables before they make horizontal transition into shelter.

### Existing Facility Improvement Work

- ◆ No work included.

### Miscellaneous Work

- ◆ No Work included.

## 1.1.9 Site Development at Sugar Pine Mtn Site

**(Work described below includes work already completed prior to execution of change order and site location change to Big Hill in Section Error! Reference source not found.)**

### **Site Scope Summary**

- ◆ Engineering services for site drawings and regulatory approvals – Included.
- ◆ Site acquisition services – Not included.
- ◆ Zoning Services – Not included.
- ◆ Existing tower to be used for antennas – 100 ' Guyed Tower.

### **Responsibilities:**

#### Site Engineering – Motorola Responsibilities:

- ◆ Prepare site construction drawings, showing the layout of various new and existing site components.
- ◆ Conduct site walks to collect pertinent information from the sites (e.g., location of Telco, power, existing facilities, etc.).



1.2 Provide a structural engineering analysis for antenna support structure, if necessary, to support the proposed antenna system. If the tower structure fails the analysis, the cost of any site relocation or modifications to the tower required to support the antenna system will be the responsibility of Humboldt County. County Responsibilities, Unless otherwise specified in this SOW the County will as applicable

- ◆ If required, prepare and submit Electromagnetic Energy (EME) plans for the site (as a licensee) to demonstrate compliance with FCC RF Exposure guidelines.
- ◆ As applicable, coordinate, prepare, submit, and pay for all required permits and inspections for the work that is the County's responsibility.
- ◆ Pay for all utility connection, pole or line extensions, and any easement or usage fees.
- ◆ Pay for the usage costs of power, leased lines and generator fueling both during the construction/installation effort and on an on-going basis.
- ◆ Pay for application fees, taxes and recurring payments for lease/ownership of the property.
- ◆ Provide personnel to observe construction progress and testing of site equipment according to the schedule provided by Motorola.
- ◆ As applicable (based on local jurisdictional authority), the County will be responsible for any installation or up-grades of the electrical system in order to comply with NFPA 70, Article 708
- ◆ Provide property deed or lease agreement, and boundary survey, along with existing as-built drawings of the site and site components to Motorola for conducting site engineering.
- ◆ Provide a right of entry letter from the site owner for Motorola to conduct field investigations.
- ◆ Maintain existing access road in order to provide clear and stable entry to the site for heavy-duty construction vehicles, cement trucks and cranes. Sufficient space must be available at the site for these vehicles to maneuver under their own power, without assistance from other equipment.
- ◆ Arrange for space on the structure for installation of new antennas at the proposed heights on designated existing antenna-mounting structures.
- ◆ If available, provide as-built structural and foundation drawings of the structure and site location(s) along with geotechnical report(s) for Motorola to conduct a structural analysis.
- ◆ Secure power connection to the site, associated permitting and installation of a meter and disconnect within 50 feet of the proposed equipment room location.
- ◆ Provide space, HVAC, backup power (UPS, generator), outlets, grounding, surge suppression, lighting, fire suppression and cabling facilities for the equipment



room per Motorola's R56 specifications. Ceiling and cable tray heights in the equipment rooms should be such as to accommodate 7-1/2-foot equipment racks, and the ceiling should be 9 feet or greater.

- ◆ Confirm that there is adequate utility service to support the new equipment and ancillary equipment.
- ◆ Confirm that the existing generator is sufficient to support the new equipment and ancillary equipment loads.
- ◆ If required, remove or relocate any existing facilities, equipment and utilities to create space for new site facilities and equipment.
- ◆ If required, provide any physical improvements (walls, roofing, flooring, painting, etc.) necessary to house the equipment in the existing room.
- ◆ Supply required standby generator power to support the additional proposed equipment. This power source shall be adequate to back up all radio equipment, future equipment growth, and ancillary equipment such as, but not limited to, interior lighting, tower lighting and HVAC.
- ◆ Supply required UPS Power to support the additional proposed equipment. This uninterruptible power source shall be adequate to back up all radio equipment as well as future equipment growth for AC powered sites, Humboldt disptach.
- ◆ Secure power connection to the room, associated permitting, and installation of a meter and disconnect within 50 feet of the proposed shelter location.

### 1.3 Assumptions, as required:

- ◆ All work is assumed to be done during normal business hours as dictated by time zone (Monday thru Friday, 7:30 a.m. to 5:00 p.m.).
- ◆ All recurring and non-recurring utility costs [including, but not limited to, generator fuel (except first fill), electrical, telco] will be borne by the County.
- ◆ All utility installations shall be coordinated and paid for by the site owner and located at jointly agreed to location within or around the new communications shelter or equipment room, as applicable.
- ◆ Site will have adequate electrical service for the new shelter and tower. Utility transformer, transformer upgrades, line, or pole extensions have not been included, as applicable.
- ◆ Pricing has been based on National codes such IBC or BOCA. Local codes or jurisdictional requirements have not been considered in this proposal.
- ◆ Hazardous materials are not present at the work location. Testing and removal of hazardous materials, found during site investigations, construction or equipment installation will be the responsibility of the County.
- ◆ A maximum of 30 days will be required for obtaining approved building permits from time of submission, and a maximum of 60 days will be required for zoning approvals from time of submittal.
- ◆ No road or site improvements are required for construction vehicle access.
- ◆ If extremely harsh or difficult weather conditions delay the site work for more than a week, Motorola will seek excusable delays rather than risk job site safety.
- ◆ Ground rings installed only in non-rocky soils. Rock excavation costs, if applicable, are excluded.



- ◆ The soil resistivity at the site is sufficient to achieve resistance of 10 ohms or less. Communication site grounding will be designed and installed per Motorola's R56 standards.
- ◆ The existing site has adequate room to expand and install the shelter, including lay down and staging areas, without encroaching on wetlands, easements, setbacks, rights of way or property lines.
- ◆ AM detuning or electromagnetic emission studies will not be required.
- ◆ Protective grating over microwave dishes or the communications shelter has not been included in this proposal.
- ◆ Structural and foundation drawings of the antenna support structure will be made available to preclude the need for ultrasonic testing, geotechnical borings or mapping of existing tower structural members.
- ◆ Lead paint testing of existing painted towers has not been included.
- ◆ On the existing tower, the antenna locations for the proposed antenna system design will be available at the time of installation.
- ◆ The new shelter can be located within 20 feet of the existing tower location and the generator/fuel tank can be located within 25 feet of the shelter.
- ◆ Restoration of the site surroundings by fertilizing, seeding, and strawing the disturbed areas will be adequate.
- ◆ The site has adequate utility service to support the proposed equipment loading. Utility transformer upgrades or step-up or down transformers will not be required.
- ◆ Underground utilities are not present in the construction area and as such no relocation will be required.
- ◆ The existing antenna support structure is structurally capable of supporting the new antenna, cables, and ancillary equipment proposed and will not need to be removed or rebuilt at the existing site. The tower or supporting structure meets all applicable EIA/TIA-222 structural, foundation, ice, wind, and twist and sway requirements. Motorola has not included any cost for structural or foundation upgrades to the antenna support structure.
- ◆ Any existing cable support facilities from the antenna to the cable entry port can be used for supporting the new antenna cables.
- ◆ Structural analyses for towers or other structures that have not been performed by Motorola will relinquish Motorola from any responsibility for the analysis report contents and/or recommendation therein.
- ◆ Foundations for shelter, generator, and fuel tank are based on "normal soil" conditions as defined by TIA/EIA 222-H Footings deeper than 30 inches, raised piers, rock coring, dewatering, or hazardous material removal have not been included.
- ◆ Alarming at existing sites will be limited to new component installations and will have to be discussed and agreed to on a site-by-site basis.
- ◆ The site will have adequate room for installation of proposed equipment, based on applicable codes and Motorola's R56 standards.
- ◆ The existing utility service and backup power facilities (UPS, generators) have sufficient extra capacity to support the proposed new equipment load.
- ◆ A clear obstruction-free access exists from the antenna location to the equipment room.



- ◆ The County does not desire upgrade of the existing site to meet Motorola's R56 standards.
- ◆ The floor can support the proposed new loading. Physical or structural improvements to the existing room will not be required, unless otherwise noted.
- ◆ Electrical panels can support addition of DC power plant and rectifier both in service capacity and breaker availability.
- ◆ "Adequate primary and back-up electrical service.
- ◆ Adequate communications room HVAC, structural integrity, waterproofing.
- ◆ Adequate room for equipment racks and coax.
- ◆ Tower and building are both structurally capable of supporting additional load without steel or foundation modifications.
- ◆ Site Development Schedule assumes the County is providing unencumbered property and gives us the right build - if during the due diligence there are encumbrances or issues, this may impact the new site design and MSI may have to regroup/redesign.
- ◆ Site Development Schedule assumes no soils, NEPA or environmental issues are found during design phase.
- ◆ Site Development Schedule assumes no zoning approvals or jurisdictional permitting problems (maximum 60 days).

## 1.4 Completion Criteria

- ◆ Site development completed per issued for construction (IFC) construction drawings, project requirements, contractual obligations (including any customer/Motorola approved changes) and approved by Humboldt County.
- ◆ This shall be confirmed by Motorola's subcontractor and reviewed with Motorola construction manager and project manager before inspections occur.
- ◆ Site turn-over package completed and turned over to Motorola (As defined and agreed to with project team and customer).
- ◆ All punch list and deficiencies shall be completed prior to customer and Motorola inspections.
- ◆ Motorola site development checklist shall be completed and signed off by Motorola's subcontractor prior to Humboldt County's inspection. (Review with project team and customer and amend checklist as required at project kick off or before work begins).

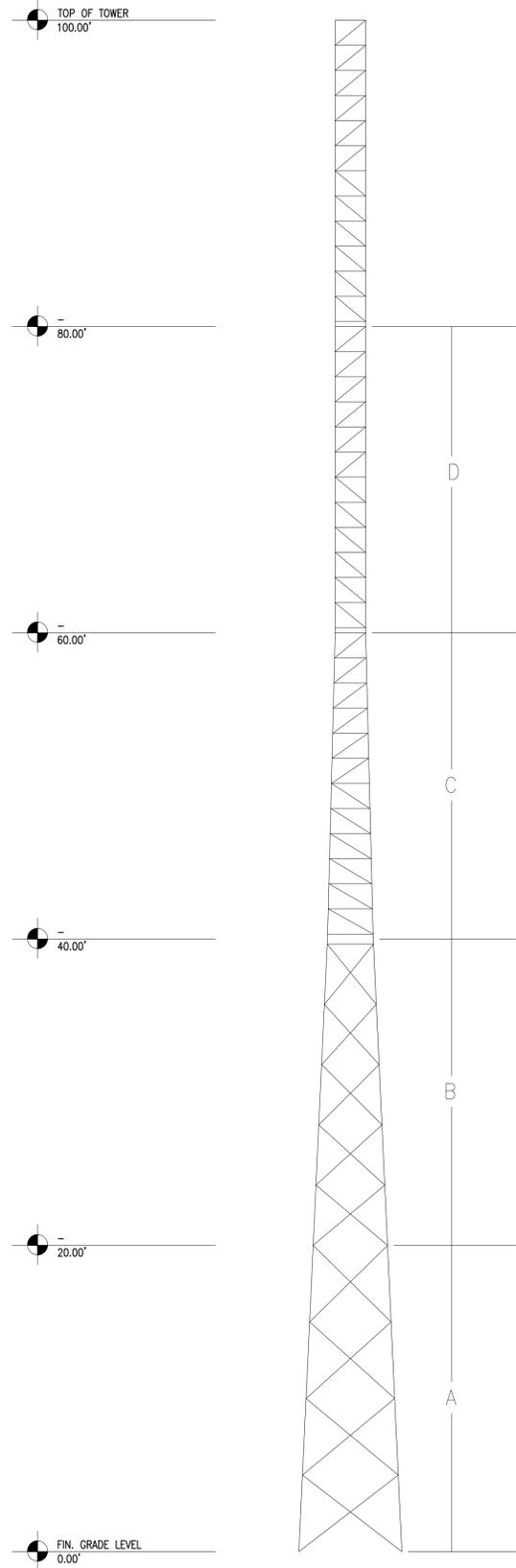








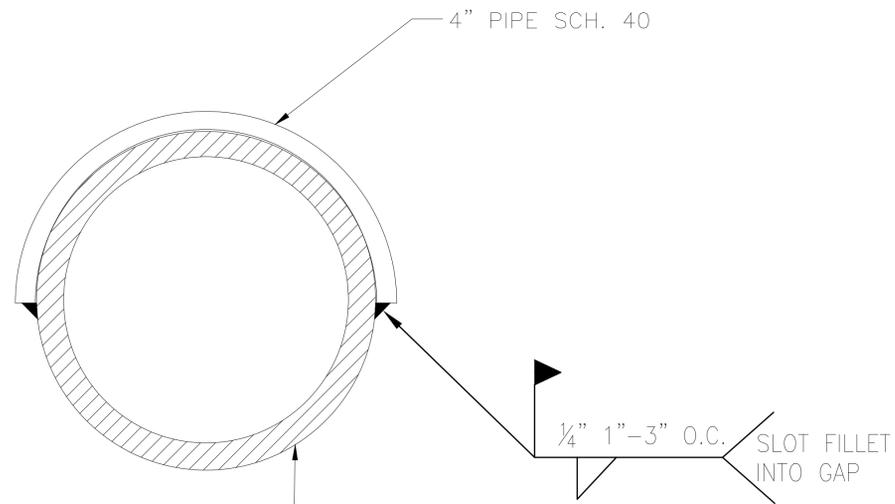




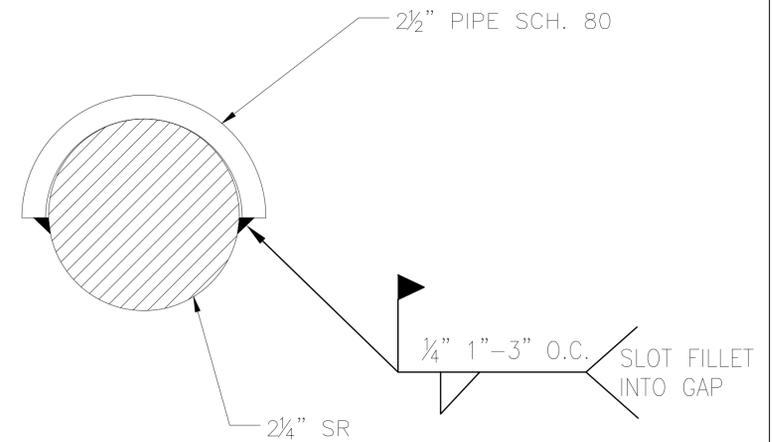
**TOWER ELEVATION** 1  
Scale:  $\frac{3}{16}$ " = 1'-0"

NOTES:

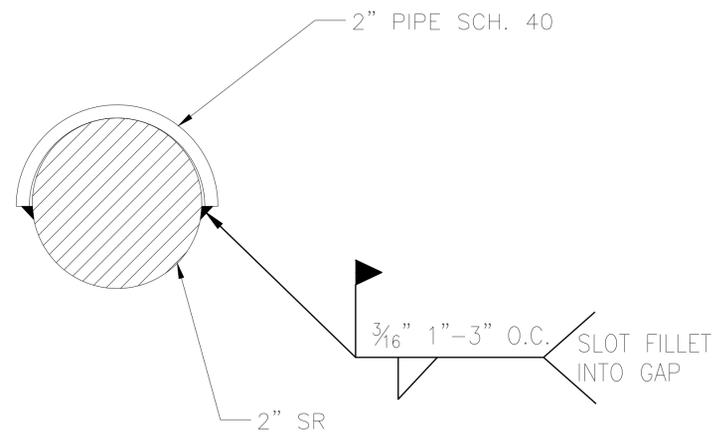
1. INSTALL LEG UPGRADE AS SHOWN TO ALL 3 LEGS
2. USE GRADE ASTM A53 GR. B 35 KSI STEEL, MIN.
3. WELD TO SPLICE PLATES AT EACH TOWER SECTION, USING  $\frac{1}{4}$ " FILLET



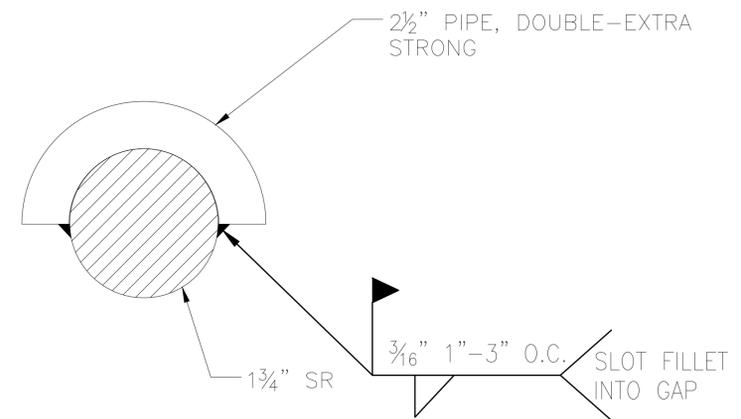
**SECTION - A**



**SECTION - B**



**SECTION - C**



**SECTION - D**

**REINFORCEMENT TO LEG DETAILS** 2  
Scale: 1'-0" = 1'-0"

PLANS PREPARED FOR

PYRAMID NETWORK SERVICES

6615 TOWPATH RD,  
EAST SYRACUSE, NY 13057



PLANS PREPARED FOR

ENGINEER OF RECORD



**PLATINUM**  
Engineering Solutions, Inc.  
Commercial ? Industrial ? Residential ? Towers

10648 N. HIGHWAY 41  
Madera, CA 93638-9469  
Tel: (559) 433-0500  
Fax: (559) 433-6433

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PLATINUM JOB NO.: 2020-7136

DRAWN BY: N.R.

CHECKED BY: D. REIMER

APPROVE BY: N. SALEM

SCALE:

MARK	DATE	DESCRIPTION

PROPOSED PROJECT

**TOWER MODIFICATION**

STATUS

MOD CD 100%

SITE NAME & NO.

HORSE MOUNTAIN

SITE ADDRESS

40.8741388, -123.733555

SHEET TITLE

MOD. DETAILS

SHEET

S-1

COUNTY OF HUMBOLDT, CALIFORNIA

# EXHIBIT C-2

# PRICING SUMMARY & EQUIPMENT LIST

HUMBOLDT COUNTY RADIO SYSTEM REPLACEMENT PROJECT

JULY 01, 2020

## RFP#18-100-COMM

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## Exhibit C-2

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EXHIBIT C-2

# PRICING SUMMARY & EQUIPMENT LIST

Below is the pricing without taxes. An incentive of \$135,525 is based upon payment of the first milestone prior to December 31, 2018.

Humboldt County Radio Project	
Fixed Network Equipment	\$3,593,631
DC Power Equipment	\$153,289
Microwave Network Equipment	\$870,984
User Radio Equipment	
Sheriff's Office	\$723,960
District Attorney's Office, Public Works Supervisors, Probation	\$362,763
User Radio Accessories	\$58,818
User Radio Labor	\$181,281
Spectrum Fingerprinting Labor	\$117,647
MCC 7500 Dispatch Console Equipment	\$124,060
Site Development Labor	\$435,756
Frequency Coordination Labor	\$17,647
VHF Combining Equipment	\$67,090
Site Monitoring Equipment	\$38,618
Sugarpine – Site Equipment	\$175,123
Sugarpine Solar Equipment	\$15,824
<b>Discounted Total Before Incentives</b>	<b>\$6,936,489</b>
System Incentive	(\$650,964)
Contract Execution by December 21, 2018	(\$500,000)
Incentive to Pay First Milestone before December 31, 2018	(\$135,525)
<b>Total with Incentives</b>	<b>\$5,650,000</b>

Below is the pricing for change order one (CO001) and change order two (CO002). Tax is not shown.

CHANGE NUMBER	DESCRIPTION	SITE	C/O Amount
CO001	NEPA	Pratt Mountain	\$11,118.75
CO001	NEPA	Mt. Pierce	\$11,118.75

CO001	NEPA	Horse Mountain	\$11,118.75
CO001	NEPA	Courthouse	\$11,118.75
CO001	NEPA	Trinidad	\$11,118.75
<b>CO001</b>		<b>CO001 Sub Total</b>	<b>\$55,593.75</b>
CO002	Site Development	In Contract	-\$435,756.00
CO002	Site Development	Pratt Mountain	\$144,043.74
CO002	Equipment	Pratt Mountain	\$4,520.81
CO002	Site Development	Mt. Pierce	\$211,937.73
CO002	Equipment	Mt. Pierce	-\$8,347.32
CO002	Site Development	Horse Mountain	\$144,933.44
CO002	Equipment	Horse Mountain	\$16,391.06
CO002	Site Development	Trinidad	\$123,708.31
CO002	Equipment	Trinidad	-\$1,498.98
CO002	Site Development	Courthouse	\$123,392.26
CO002	Equipment	Courthouse	\$0.00
CO002	Equipment	Big Lagoon	-\$12,786.73
CO002	Equipment	Shelter Cove	-\$1,757.85
CO002	NEPA	Shelton Butte	\$0.00
CO002	Equipment	Shelton Butte	-\$9,162.10
CO002	NEPA	Sugar Pine	\$0.00
CO002	Equipment	Sugar Pine	-\$5,891.64
CO002	Equipment	Spares	\$13,692.81
CO002	Equipment	Subscribers	-\$27,357.71
CO002	Site Development	Shelton Butte	\$6,133.91
CO002	Site Development	Sugar Pine	\$10,870.96
CO002	Equipment	Rodgers Peak	-\$69,328.98
CO002	Site Development	Big Hill	\$6,133.91
CO002	Site Development	Tasks Completed	\$78,416.85
CO002	SI Spectrum Fingerprint	Big Hill	\$13,125.00
CO002	Day Wireless Antennas	Shelter Cove	\$13,687.50
CO002	Day Wireless Antennas	Shelton Butte	\$13,687.50
CO002	Day Wireless Antennas	Big Hill	\$13,687.50
CO002	Site Development	Horse Mountain Tower	\$125,450.00
<b>CO002</b>		<b>CO002 Sub Total</b>	<b>\$491,926.00</b>

## Milestone Payments for changes

Payment for the change orders will be in accordance with the following milestones.

Milestone	Percent	Amount
Execution of change order two	25%	\$136,879.94
Shipment of equipment	45%	\$246,383.89
Installation of equipment	10%	\$54,751.97
Final Acceptance	20%	\$109,503.95

## 2.1 EQUIPMENT LIST

Site	SysSeg	Item Num	QTY	Nomenclature	Description
BIGLAGOON	NETWORK	1	2	CLN1868	2930F 24-PORT SWITCH
BIGLAGOON	NETWORK	2	2	T8547	SITE ROUTER & FIREWALL- DC
BIGLAGOON	NETWORK	2a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
BIGLAGOON	NETWORK	2b	2	CA03448AA	ADD: STATEFUL FIREWALL
BIGLAGOON	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
BIGLAGOON	CCGW	3a	1	CA01619AA	ADD: DC POWER
BIGLAGOON	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
BIGLAGOON	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCXO, 48VDC INC
BIGLAGOON	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
BIGLAGOON	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
BIGLAGOON	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
BIGLAGOON	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
BIGLAGOON	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
BIGLAGOON	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
BIGLAGOON	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
BIGLAGOON	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
BIGLAGOON	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
BIGLAGOON	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
BIGLAGOON	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
BIGLAGOON	CONV_GTR	8h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
BIGLAGOON	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
BIGLAGOON	CONV_GTR	9	1	T7039	GTR 8000 Base Radio
BIGLAGOON	CONV_GTR	9a	1	CA01400AA	ADD: POWER CABLE, DC
BIGLAGOON	CONV_GTR	9b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
BIGLAGOON	CONV_GTR	9c	1	CA01949AA	ADD: ANALOG ONLY CONV SW

BIGLAGOON	CONV_GTR	9d	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
BIGLAGOON	CONV_GTR	9e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
BIGLAGOON	CONV_GTR	9f	1	CA03111AA	ADD: CEC COMPLIANCE
BIGLAGOON	CONV_GTR	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
BIGLAGOON	CONV_GTR	9h	1	X265AM	BR PRESECTOR, 150-174 MHZ
BIGLAGOON	CONV_GTR	9i	1	X530BG	ADD: VHF (136-174 MHZ)
SHELTONB	DVRS	258	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATION
SHELTONB	DVRS	259	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
SHELTONB	DVRS	260	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
SHELTONB	DVRS	262	1	DDN1576	DVR PROGRAMMING SOFTWARE FOR APX DV
SHELTONB	DVRS	263	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT
SHELTONB	APX6500	264	1	M25QSS9PW1 N	APX6500 UHF R1 MID POWER
SHELTONB	APX6500	264a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
SHELTONB	APX6500	264b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
SHELTONB	APX6500	264l	1	GA00631AB	ADD: DVRS MSU ACTIVATION APX MOBILE
SHELTONB	APX6500	264d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
SHELTONB	APX6500	264e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
SHELTONB	APX6500	264f	1	G67	ADD: REMOTE MOUNT MID POWER
SHELTONB	APX6500	264h	1	G142	ADD: NO SPEAKER NEEDED
SHELTONB	APX6500	264i	1	G618	ADD: CBL REMOTE MOUNT 10 FEET
SHELTONB	APX6500	264k	1	G24	ADD: 3Y ESSENTIAL SERVICE
SHELTONB	ANTENNA	265	1	DSANT150F2	TELEWAVE (148-174) BROADBAND FIBERGLASS OMNI ANTENNA
SHELTONB			2	DS245173	245173 COLD SHRINK WEATHERPROOFKIT, 1/2 TO 1/2
SHELTONB			2	DDN1089	L4TNF-PSA TYPE N FEMALE PS FOR 1/2 IN CABLE
SHELTONB			50	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
SHELTONB			2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
SHELTONB			3	DSSG1212B2U	SG12-12B2U, SUREGROUND 1/2", 48"
SHELTONB			1	DSISNEMPC2MA	RF SPD, 125MHZ-1.0GHZ, COAXIAL NUCLEAR EMP, NM ANT NF EQUIPMENT SIDE
SHELTONB			2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
SHELTONB	ANTENNA	276	1	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
SHELTONB			2	DS245173	245173 COLD SHRINK WEATHERPROOFKIT, 1/2 TO 1/2
SHELTONB			2	DDN1089	L4TNF-PSA TYPE N FEMALE PS FOR 1/2 IN CABLE

SHELTONB			50	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
SHELTONB			2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
SHELTONB			3	DSSG1212B2U	SG12-12B2U, SUREGROUND 1/2", 48"
SHELTONB			1	DSISNEMPC2MA	RF SPD, 125MHZ-1.0GHZ, COAXIAL NUCLEAR EMP, NM ANT NF EQUIPMENT SIDE
SHELTONB			2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
SHELTONB	SiteMonitor	394	1	DSTSXNFFP	RF SPD, 698-2700MHZ, DC BLOCK HIGH POWER
SHELTONB	SiteMonitor	395	1	DQBFN	SPD, 100 TO 512MHZ, DIN FEMALE/FEMALE CONNECTOR, PIM RATED
SHELTONB	SiteMonitor	396	1	DSOC69271FNF	OMNIDIRECTIONAL ANTENNA 698?960MHZ, 1710?2700MHZ, FIXED NF CONNECTOR
SHELTONB	SiteMonitor	397	15	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
SHELTONB	SiteMonitor	398	1		RG-174 N-Male to SMA-Male (10ft)
SHELTONB	SiteMonitor		1	DSDPKNGLT212018001	NETGUARDIAN LT G2, SNMP, 4 ALM, +12VDC, TMP/BATT, NOVOICE, IT
SHELTONB	SiteMonitor	399	1	DS29170000300	CELLULAR ROUTER, LTE (VERIZON), CELLULAR ONLY W/US ACCESSORY KIT
SPARES	SPARES	411	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCXO, 48VDC INC
SPARES	SPARES	412	1	DLN6886	FRU: GRV8000 SPARE
SPARES	SPARES	413	2	DLN6898	FRU: FAN MODULE
SPARES	SPARES	414	2	DLN6805	FRU: ENERGY EFFICIENT POWER SUPPLY
SPARES	SPARES	415	2	DLN6897	FRU: PA VHF
SPARES	SPARES	416	2	DLN6892	FRU: XCVR VHF V2
SPARES	SPARES	417	6	F4544	SITE MANAGER ADVANCED
SPARES	SPARES	417a	6	VA00905	ADD:24/48 VDC PS TO SM
SPARES	SPARES	417b	6	VA00872	ADD: SDM ASTRO RTU FW CURR ASTRO RE
SPARES	SPARES	418	1	SQM01SUM0205	GGM 8000 GATEWAY
SPARES	SPARES	418a	1	CA01619AA	ADD: DC POWER
SPARES	SPARES	419	1	CLN1868	2930F 24-PORT SWITCH
SPARES	SPARES	420	1	TT3225	Z2 MINI WORKSTATION 258G 8G NON RET
SPARES	SPARES	429	2	T8493	EDGE & HUB ROUTER & FIREWALL - AC
SPARES	SPARES	429a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
SPARES	SPARES	429b	2	CA03448AA	ADD: STATEFUL FIREWALL
SPARES	SPARES	439	1	T7039	GTR 8000 Base Radio
SPARES	SPARES	439a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
SPARES	SPARES	439b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS

SPARES	SPARES	439c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
SPARES	SPARES	439d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
SPARES	SPARES	439e	1	CA03111AA	ADD: CEC COMPLIANCE
SPARES	SPARES	439f	1	CA01400AA	ADD: POWER CABLE, DC
SPARES	SPARES	439g	1	X153AW	ADD: RACK MOUNT HARDWARE
SPARES	SPARES	439h	1	X265AM	BR PRESECTOR, 150-174 MHZ
SPARES	SPARES	439i	1	X530BG	ADD: VHF (136-174 MHZ)
SPARES	SPARES	10	1	T7039	GTR 8000 Base Radio
SPARES	SPARES	10a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
SPARES	SPARES	10b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAST SOFTWARE
SPARES	SPARES	10c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
SPARES	SPARES	10d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
SPARES	SPARES	10e	1	CA03111AA	ADD: CEC COMPLIANCE
SPARES	SPARES	10f	1	X153AW	ADD: RACK MOUNT HARDWARE
SPARES	SPARES	10g	1	X265AP	ADD: BR PRESECTOR 380-512 MHZ
SPARES	SPARES	10h	1	X640AL	ADD: UHF R2 (435-524 MHZ)
SPARES	SPARES	440	1	T7039	GTR 8000 Base Radio
SPARES	SPARES	440a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
SPARES	SPARES	440b	1	CA01949AA	ADD: ANALOG ONLY CONV SW
SPARES	SPARES	440c	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
SPARES	SPARES	440d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
SPARES	SPARES	440e	1	CA03111AA	ADD: CEC COMPLIANCE
SPARES	SPARES	440f	1	CA01400AA	ADD: POWER CABLE, DC
SPARES	SPARES	440g	1	X153AW	ADD: RACK MOUNT HARDWARE
SPARES	SPARES	440i	1	X530BG	ADD: VHF (136-174 MHZ)
SPARES	SPARES	442	2	T8547	SITE ROUTER & FIREWALL- DC
SPARES	SPARES	442a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
SPARES	SPARES	442b	2	CA03448AA	ADD: STATEFUL FIREWALL
SPARES	SPARES	302	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATION
SPARES	SPARES	303	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
SPARES	SPARES	304	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
SPARES	SPARES	307	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANTY
SPARES	APX6500	308	1	M25QSS9PW1 N	APX6500 UHF R1 MID POWER
SPARES	SPARES	308a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
SPARES	SPARES	308b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
SPARES	SPARES	308l	1	GA00631AB	ADD: DVRS MSU ACTIVATION APX

					MOBILE
SPARES	SPARES	308d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
SPARES	SPARES	308e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
SPARES	SPARES	308f	1	G67	ADD: REMOTE MOUNT MID POWER
SPARES	SPARES	308h	1	G142	ADD: NO SPEAKER NEEDED
SPARES	SPARES	308i	1	G618	ADD:CBL REMOTE MOUNT 10 FEET
SPARES	SPARES	308k	1	G24	ADD: 3Y ESSENTIAL SERVICE
Sugar Pine	ANTENNA	353	2	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
Sugar Pine	ANTENNA	265	2	DSANT150F2	TELEWAVE (148-174) BROADBAND FIBERGLASS OMNI ANTENNA
Sugar Pine	UPPERJUMPR	354	40	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
Sugar Pine	SURGE	362	2	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH P
Sugar Pine	LOWERJUMPR	363	40	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
Sugar Pine	LOWERJUMPR	364	2	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
Sugar Pine	LOWERJUMPR	365	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
Sugar Pine	DVRS	366	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATIO
Sugar Pine	DVRS	367	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
Sugar Pine	DVRS	368	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
Sugar Pine	DVRS	371	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT
Sugar Pine	APX6500	372	1	M25KSS9PW1 N	APX6500 VHF MID POWER
Sugar Pine	APX6500	372a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
Sugar Pine	APX6500	372b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
Sugar Pine	APX6500	372d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
Sugar Pine	APX6500	372e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
Sugar Pine	APX6500	372f	1	G67	ADD: REMOTE MOUNT MID POWER
Sugar Pine	APX6500	372h	1	G142	ADD: NO SPEAKER NEEDED
Sugar Pine	APX6500	372i	1	G618	ADD:CBL REMOTE MOUNT 10 FEET
Sugar Pine	APX6500	372k	1	G24	ADD: 3Y ESSENTIAL SERVICE
Sugar Pine	RFDS	374	1	DS2636H0102	DUPLEXING SYSTEM 137-174 MHZ 2 CHAN
Sugar Pine	DVRS	387	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATIO
Sugar Pine	DVRS	388	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
Sugar Pine	DVRS	389	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
Sugar Pine	DVRS	392	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT

Sugar Pine	APX6500	393	1	M25KSS9PW1 N	APX6500 VHF MID POWER
Sugar Pine	APX6500	393a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
Sugar Pine	APX6500	393b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
Sugar Pine	APX6500	393m	1	GA00631AB	ADD: DVRS MSU ACTIVATION APX MOBILE
Sugar Pine	APX6500	393d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
Sugar Pine	APX6500	393e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
Sugar Pine	APX6500	393f	1	G67	ADD: REMOTE MOUNT MID POWER
Sugar Pine	APX6500	393h	1	G142	ADD: NO SPEAKER NEEDED
Sugar Pine	APX6500	393i	1	G618	ADD:CBL REMOTE MOUNT 10 FEET
Sugar Pine	APX6500	393k	1	G24	ADD: 3Y ESSENTIAL SERVICE
Sugar Pine	SiteMonitor	394	1	DSTSXNFFP	RF SPD, 698-2700MHZ, DC BLOCK HIGH POWER
Sugar Pine	SiteMonitor	395	1	DQBFN	SPD, 100 TO 512MHZ, DIN FEMALE/FEMALE CONNECTOR, PIM RATED
Sugar Pine	SiteMonitor	396	1	DSOC69271FNF	OMNIDIRECTIONAL ANTENNA 698?960MHZ, 1710?2700MHZ, FIXED NF CONNECTOR
Sugar Pine	SiteMonitor	397	15	DSLDF450ACABLE	CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
Sugar Pine	SiteMonitor	398	1		RG-174 N-Male to SMA-Male (10ft)
Sugar Pine	SiteMonitor		2	DSDPKNGLT212018001	NETGUARDIAN LT G2, SNMP, 4 ALM, +12VDC, TMP/BATT, NOVOICE, IT
Sugar Pine	SiteMonitor		2	DS29170000300	CELLULAR ROUTER, LTE (VERIZON), CELLULAR ONLY W/US ACCESSORY KIT
TRINIDAD	NETWORK	1	1	CLN1868	2930F 24-PORT SWITCH
TRINIDAD	NETWORK	2	1	T8547	SITE ROUTER & FIREWALL- DC
TRINIDAD	NETWORK	2a	1	CA03445AA	ADD: MISSION CRITICAL HARDENING
TRINIDAD	NETWORK	2b	1	CA03448AA	ADD: STATEFUL FIREWALL
TRINIDAD	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
TRINIDAD	CCGW	3a	1	CA01619AA	ADD: DC POWER
TRINIDAD	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
TRINIDAD	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCXO, 48VDC INC
TRINIDAD	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
TRINIDAD	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
TRINIDAD	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
TRINIDAD	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
TRINIDAD	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
TRINIDAD	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
TRINIDAD	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL

					SIMULCAS
TRINIDAD	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
TRINIDAD	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
TRINIDAD	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
TRINIDAD	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
TRINIDAD	CONV_GTR	8h	1	X265AM	BR PRESECTOR, 150-174 MHZ
TRINIDAD	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
TRINIDAD	RFDS	9	1	DS2636H0101	DUPLEXING SYSTEM,137-174 MHZ 1 CHANNEL INPUT ISOLATORS AC
TRINIDAD	ANTENNA	10	1	DSCOL54160	OMNI, MEANDER COLLINEAR 6.0 DBD, 150-160 MHZ, PIM RATED
TRINIDAD	UPPERJUMPR	11	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
TRINIDAD	UPPERJUMPR	12	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
TRINIDAD	JUMPER	13	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
TRINIDAD	MAINLINE	14	100	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
TRINIDAD	MAINLINE	15	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
TRINIDAD	MAINLINE	16	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
TRINIDAD	MAINLINE	17	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
TRINIDAD	ANTACC	18	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
TRINIDAD	SURGE	19	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
TRINIDAD	LOWERJUMPR	20	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
TRINIDAD	LOWERJUMPR	21	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
TRINIDAD	LOWERJUMPR	22	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	DC Power	1	1	DSDCPSX2002S	48V, 200A DC POWER SYS, 84X23X22 RA
COURTHOUSE	DC Power	2	3	DSDCR50	50AMP DC RECTIFIER, DCPS50A
COURTHOUSE	DC Power	3	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
COURTHOUSE	DC Power	4	1	DSP4ALMB80D1B	INVERTER BREAKER
COURTHOUSE	DC Power	5	2	DSWL4GM155F	BATTERY, 155AH 48VDC STRING CONSIST
MTPIERCE	DC Power	6	1	DSDCPSX2003BS	48V, 200A DC POWER SYS, SEISMIC, 84
MTPIERCE	DC Power	7	4	DSDCR50	50AMP DC RECTIFIER, DCPS50A
MTPIERCE	DC Power	8	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
MTPIERCE	DC Power	9	1	DSP4ALMB80D1B	INVERTER BREAKER
MTPIERCE	DC Power	10	3	DSWL4GM180F	BATTERY, 180AH 48VDC STRING CONSIST
HORSEMTN	DC Power	11	1	DSDCPSX2003BS	48V, 200A DC POWER SYS, SEISMIC, 84

HORSEMTN	DC Power	12	4	DSDCR50	50AMP DC RECTIFIER, DCPS50A
HORSEMTN	DC Power	13	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
HORSEMTN	DC Power	14	1	DSP4ALMB80D1B	INVERTER BREAKER
HORSEMTN	DC Power	15	3	DSWL4GM155F	BATTERY, 155AH 48VDC STRING CONSIST
PRATTMTN	DC Power	16	1	DSDCPSX2003BS	48V, 200A DC POWER SYS, SEISMIC, 84
PRATTMTN	DC Power	17	4	DSDCR50	50AMP DC RECTIFIER, DCPS50A
PRATTMTN	DC Power	18	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
PRATTMTN	DC Power	19	1	DSP4ALMB80D1B	INVERTER BREAKER
PRATTMTN	DC Power	20	3	DSWL4GM155F	BATTERY, 155AH 48VDC STRING CONSIST
Trinidad	DC Power	21	1	DSDCPSX2002S	48V, 200A DC POWER SYS, 84X23X22 RA
Trinidad	DC Power	22	3	DSDCR50	50AMP DC RECTIFIER, DCPS50A
Trinidad	DC Power	23	1	DSIX4US23KIT1	IX SYSTEM, INCLUDING CONTROLLER, ST
Trinidad	DC Power	24	2	DSWL4GM155F	BATTERY, 155AH 48VDC STRING CONSIST
Trinidad	DC Power	25	1	DSP4ALMB80D1B	INVERTER BREAKER
SPARES	DC Power	26	10	DSP4AIELB20D1B	BREAKER 20 AMP FOR DCPS POWER SYSTE
SPARES	DC Power	27	20	DSP4AIELB15D1B	BREAKER 15 AMP FOR DCPS POWER SYSTE
SPARES	DC Power	28	60	DSP4AIELB5D1B	BREAKER 5 AMP FOR DCPS POWER SYSTEM
HORSEMTN	NETWORK	1	2	CLN1868	2930F 24-PORT SWITCH
HORSEMTN	NETWORK	2	2	T8547	SITE ROUTER & FIREWALL- DC
HORSEMTN	NETWORK	2a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
HORSEMTN	NETWORK	2b	2	CA03448AA	ADD: STATEFUL FIREWALL
HORSEMTN	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
HORSEMTN	CCGW	3a	1	CA01619AA	ADD: DC POWER
HORSEMTN	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
HORSEMTN	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCXO, 48VDC INC
HORSEMTN	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
HORSEMTN	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
HORSEMTN	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
HORSEMTN	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
HORSEMTN	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
HORSEMTN	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
HORSEMTN	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
HORSEMTN	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
HORSEMTN	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
HORSEMTN	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE

HORSEMTN	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
HORSEMTN	CONV_GTR	8h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
HORSEMTN	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
HORSEMTN	CONV_GTR	9	1	T7039	GTR 8000 Base Radio
HORSEMTN	CONV_GTR	9a	1	CA01400AA	ADD: POWER CABLE, DC
HORSEMTN	CONV_GTR	9b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
HORSEMTN	CONV_GTR	9c	1	CA01949AA	ADD: ANALOG ONLY CONV SW
HORSEMTN	CONV_GTR	9d	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
HORSEMTN	CONV_GTR	9e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
HORSEMTN	CONV_GTR	9f	1	CA03111AA	ADD: CEC COMPLIANCE
HORSEMTN	CONV_GTR	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
HORSEMTN	CONV_GTR	9h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
HORSEMTN	CONV_GTR	9i	1	X530BG	ADD: VHF (136-174 MHZ)
HORSEMTN	ANTENNA	11	1	DSEA8041DINT3	ELLIPTICAL, EXPOSED DIPOLE ARRAY, 8DBD, 136-174MHZ, 3DEG DT, PIM RATED
HORSEMTN	UPPER JUMPR	12	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	UPPER JUMPR	13	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	JUMPER	14	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HORSEMTN	MAINLINE	15	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
HORSEMTN	MAINLINE	16	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
HORSEMTN	MAINLINE	17	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
HORSEMTN	MAINLINE	18	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
HORSEMTN	ANTACC	19	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
HORSEMTN	SURGE	20	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
HORSEMTN	LOWERJMPR	21	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	LOWERJMPR	22	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
HORSEMTN	LOWERJMPR	23	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	ANTENNA	353	2	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
HORSEMTN	UPPERJMPR	25	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	UPPERJMPR	26	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	JUMPER	27	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HORSEMTN	MAINLINE	28	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER

HORSEMTN	MAINLINE	29	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
HORSEMTN	MAINLINE	30	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
HORSEMTN	MAINLINE	31	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
HORSEMTN	ANTACC	32	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
HORSEMTN	SURGE	33	1	DSVHF50DMPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
HORSEMTN	LOWERJMPR	34	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	LOWERJMPR	35	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
HORSEMTN	LOWERJMPR	36	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	ANTENNA	38	1	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
HORSEMTN	UPPERJMPR	39	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	UPPERJMPR	40	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	JUMPER	41	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HORSEMTN	MAINLINE	42	110	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
HORSEMTN	MAINLINE	43	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
HORSEMTN	MAINLINE	44	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
HORSEMTN	MAINLINE	45	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
HORSEMTN	ANTACC	46	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
HORSEMTN	SURGE	47	1	DSVHF50DMPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
HORSEMTN	LOWERJMPR	48	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	LOWERJMPR	49	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
HORSEMTN	UPPERJUMPR	51	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	UPPERJUMPR	52	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
HORSEMTN	JUMPER	53	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HORSEMTN	MAINLINE	54	110	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
HORSEMTN	MAINLINE	55	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
HORSEMTN	MAINLINE	56	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
HORSEMTN	MAINLINE	57	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP

HORSEMTN	ANTACC	58	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
HORSEMTN	SURGE	59	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
HORSEMTN	LOWERJMPR	60	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
HORSEMTN	LOWERJMPR	61	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
HORSEMTN	SURGE	62	1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
HORSEMTN	SURGE	63	1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1- PHASE
HORSEMTN	UHF ASR LINK	64	1	T7039	GTR 8000 Base Radio
HORSEMTN	UHF ASR LINK	64a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
HORSEMTN	UHF ASR LINK	64b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAST SOFTWARE
HORSEMTN	UHF ASR LINK	64c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
HORSEMTN	UHF ASR LINK	64d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
HORSEMTN	UHF ASR LINK	64e	1	CA03111AA	ADD: CEC COMPLIANCE
HORSEMTN	UHF ASR LINK	64f	1	X153AW	ADD: RACK MOUNT HARDWARE
HORSEMTN	UHF ASR LINK	64g	1	X265AP	ADD: BR PRESELECTOR 380-512 MHZ
HORSEMTN	UHF ASR LINK	64h	1	X640AL	ADD: UHF R2 (435-524 MHZ)
HORSEMTN	UHF ASR LINK	64	2	T7039	GTR 8000 Base Radio
HORSEMTN	UHF ASR LINK	64a	2	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
HORSEMTN	UHF ASR LINK	64b	2	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAST SOFTWARE
HORSEMTN	UHF ASR LINK	64c	2	CA01948AA	ADD: CONVENTIONAL SOFTWARE
HORSEMTN	UHF ASR LINK	64d	2	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
HORSEMTN	UHF ASR LINK	64e	2	CA03111AA	ADD: CEC COMPLIANCE
HORSEMTN	UHF ASR LINK	64f	2	X153AW	ADD: RACK MOUNT HARDWARE
HORSEMTN	UHF ASR LINK	64g	2	X265AP	ADD: BR PRESELECTOR 380-512 MHZ
HORSEMTN	UHF ASR LINK	64h	2	X640AL	ADD: UHF R2 435-524 MHZ)
COURTHOUSE	CORE	1	1	SQM01SUM0237	SINGLE ZONE CONV NON-RED CORE
COURTHOUSE	CORE	1a	1	CA02259AA	ADD: Redundancy
COURTHOUSE	CORE	1b	2	CA01896AB	ADD: BACKHAUL SWITCH
COURTHOUSE	CORE	1c	1	CA01663AB	ADD: RACK
COURTHOUSE	CORE	1d	1	CA02258AC	ADD: APPLICATION SERVER
COURTHOUSE	CORE	1e	1	UA00247AA	ADD: UEM LITE SESSION
COURTHOUSE	CORE	1f	1	UA00256AA	ADD: UEM LITE EMAIL NOTIFICATION
COURTHOUSE	CORE	1g	1	CA02635AA	ADD: Fortinet Firewall Appliance
HUMBOLDT C	CEN	2	1	SQM01SUM0205	GGM 8000 GATEWAY
HUMBOLDT C	CEN	2a	1	CA01619AA	ADD: DC POWER
HUMBOLDT C	CEN	3	1	CLN1868	2930F 24-PORT SWITCH
HUMBOLDT C	CCGW	4	1	SQM01SUM0205	GGM 8000 GATEWAY

HUMBOLDT C	CCGW	4a	1	CA01619AA	ADD: DC POWER
HUMBOLDT C	CCGW	4b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
HUMBOLDT C	CORE	5	1	TT3492	Z2 G4 MINI WORKSTATION NON RETURNAB
HUMBOLDT C	CORE	6	1	T7885	MCAFFEE WINDOWS AV CLIENT
HUMBOLDT C	CORE	7	1	DSTG191B	TECH GLOBAL EVOLUTION SERIES 19INCH
NORTH CELL	RACK	8	1	TRN7343	SEVEN AND A HALF FOOT RACK
NORTH CELL	GRV8000	9	1	T8341	GRV 8000 COMPARATOR
NORTH CELL	GRV8000	9a	1	CA03084AA	ADD: COMPARATOR
NORTH CELL	GRV8000	9b	1	CA03320AA	ADD: ASTRO 25 CONVENTIONAL SOFTWARE
NORTH CELL	GRV8000	9c	1	CA03316AA	ADD: DIGITAL CONV VOTING SOFTWARE
NORTH CELL	GRV8000	9d	1	CA03085AA	ADD: GEO REDUNDANCY
NORTH CELL	GRV8000	9e	1	CA03111AA	ADD: CEC COMPLIANCE
NORTH CELL	GRV8000	9f	1	CA01400AA	ADD: POWER CABLE, DC
NORTH CELL	GRV8000	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
NORTH CELL	GRV8000	9h	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
NORTH CELL	GRV8000	9i	1	CA01953AB	ADD: POWER EFFICIENCY PACKAGE
HUMBOLDT D	AUX_IO	10	1	F4543	SITE MANAGER BASIC
HUMBOLDT D	AUX_IO	10a	1	VA00874	ADD: AUX I-O SERV FW CURR ASTRO REL
HUMBOLDT D	AUX_IO	10b	1	VA00905	ADD:24/48 VDC PS TO SM
HUMBOLDT D	AUX_IO	10c	3	V592	AAD TERM BLCK & CONN WI
HUMBOLDT D	CCGW	11	1	SQM01SUM0205	GGM 8000 GATEWAY
HUMBOLDT D	CCGW	11a	1	CA01619AA	ADD: DC POWER
HUMBOLDT D	CCGW	11b	1	CA02086AA	ADD: HIGH DENSITY ENH CONV GATEWAY
HUMBOLDT D	SWITCH	12	2	CLN1868	2930F 24-PORT SWITCH
HUMBOLDT D	OP_POS	13	1	B1948	MCC 7500E DISPATCH POSITION LICENSE
HUMBOLDT D	OP_POS	13a	4	UA00653AA	ADD: BASIC CONSOLE OPERATION
HUMBOLDT D	OP_POS	13b	4	UA00249AA	ADD: 15 RADIO RESOURCES LICENSE
HUMBOLDT D	OP_POS	13c	4	UA00661AA	ADD: ENHANCED IRR
HUMBOLDT D	OP_POSIT	14	2	B1949	MCC 7500E SOFTWARE DVD
HUMBOLDT D	OP_POSIT	15	4	DSTG221B	TECH GLOBAL EVOLUTION SERIES 22INCH
HUMBOLDT D	OP_POSIT	16	4	DSY7B61AA	HP Z2 MINI ARM WALL VESA MOUNT
HUMBOLDT D	OP_POSIT	17	4	TT3492	Z2 G4 MINI WORKSTATION NON RETURNAB
HUMBOLDT D	OP_POSIT	18	16	B1952	SPEAKER, DESKTOP, USB
HUMBOLDT D	OP_POSIT	18a	16	CA03405AA	ADD: POWER SUPPLY WITH DC CORD
HUMBOLDT D	OP_POSIT	18b	16	CA03406AA	ADD: AC LINE CORD, NORTH AMERICA
HUMBOLDT D	OP_POSIT	18c	16	CA03412AA	ADD: USB CABLE, TYPE C TO TYPE C, 4

HUMBOLDT D	OP_POSIT	19	4	B1941	USB AUDIO INTERFACE MODULE
HUMBOLDT D	OP_POSIT	20	4	B1951	MICROPHONE, DESKTOP, USB
HUMBOLDT D	OP_POSIT	20a	4	CA03412AA	ADD: USB CABLE, TYPE C TO TYPE C, 4
HUMBOLDT D	OP_POSIT	21	8	B1913	MCC SERIES HEADSET JACK
HUMBOLDT D	OP_POSIT	22	4	RLN6098	HDST MODULE BASE W/PTT, 15 FT CBL
HUMBOLDT D	OP_POSIT	23	4	RMN5150A	OVER-THE-HEAD, MONAURAL, NOISE-CANC
HUMBOLDT D	OP_POSIT	24	4	DSTWIN6328A	PROVIDES ONE DUAL PEDAL FOOTSWITCH
HUMBOLDT D	OP_POSIT	25	4	T7885	MCAFFEE WINDOWS AV CLIENT
HUMBOLDT D	OP_POSIT	26	4	DSUSB31000S	STARTECH USB 3.0 TO GIGABIT ETHERNE
HUMBOLDT D	OP_POSIT	27	2	DSF2B56AA	USB EXTERNAL DVD DRIVE
HUMBOLDT D	OP_POSIT	28	4	DSST7300U3M	STARTECH 7 PORT USB 3.0 HUB
HUMBOLDT D	ROUTER	29	2	T8493	EDGE & HUB ROUTER & FIREWALL - AC
HUMBOLDT D	ROUTER	29a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
HUMBOLDT D	ROUTER	29b	2	CA03448AA	ADD: STATEFUL FIREWALL
HUMBOLDT D	RACK	30	1	TRN7343	SEVEN AND A HALF FOOT RACK
HUMBOLDT D	RACK	31	2	DS1101990	SPD, SHIELDED RJ-45 JACK, SINGLE LI
HUMBOLDT D	RACK	32	2	DSTSJADP	RACK MOUNT GROUND BAR, 19 IN FOR TS
COURTHOUSE	MOSCAD	33	1	F4544	SITE MANAGER ADVANCED
COURTHOUSE	MOSCAD	33a	1	V592	AAD TERM BLCK & CONN WI
COURTHOUSE	MOSCAD	33b	1	VA00872	ADD: SDM ASTRO RTU FW CURR ASTRO RE
COURTHOUSE	MOSCAD	33c	1	VA00905	ADD:24/48 VDC PS TO SM
COURTHOUSE	TRAK	34	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCXO, 48VDC INC
COURTHOUSE	TRAK	35	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
COURTHOUSE	TRAK	36	1	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
COURTHOUSE	TRAK	37	1	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
COURTHOUSE	GRV8000	38	1	T8341	GRV 8000 COMPARATOR
COURTHOUSE	GRV8000	38a	1	CA01400AA	ADD: POWER CABLE, DC
COURTHOUSE	GRV8000	38b	1	CA01953AB	ADD: POWER EFFICIENCY PACKAGE
COURTHOUSE	GRV8000	38c	1	CA03084AA	ADD: COMPARATOR
COURTHOUSE	GRV8000	38d	1	CA03085AA	ADD: GEO REDUNDANCY
COURTHOUSE	GRV8000	38e	1	CA03111AA	ADD: CEC COMPLIANCE
COURTHOUSE	GRV8000	38f	1	X153AW	ADD: RACK MOUNT HARDWARE
COURTHOUSE	GRV8000	38g	1	CA01949AC	ADD: ANALOG CONV ONLY SW
COURTHOUSE	GRV8000	38h	1	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
COURTHOUSE	GRV8000	38i	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
NORTH COUR	GTR8000	39	1	T7039	GTR 8000 Base Radio

NORTH COUR	GTR8000	39a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
NORTH COUR	GTR8000	39b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
NORTH COUR	GTR8000	39c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
NORTH COUR	GTR8000	39d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
NORTH COUR	GTR8000	39e	1	CA03111AA	ADD: CEC COMPLIANCE
NORTH COUR	GTR8000	39f	1	CA01400AA	ADD: POWER CABLE, DC
NORTH COUR	GTR8000	39g	1	X153AW	ADD: RACK MOUNT HARDWARE
NORTH COUR	GTR8000	39h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
NORTH COUR	GTR8000	39i	1	X530BG	ADD: VHF (136-174 MHZ)
NORTH COUR	GTR8000	40	1	T7039	GTR 8000 Base Radio
NORTH COUR	GTR8000	40a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
NORTH COUR	GTR8000	40b	1	CA01949AA	ADD: ANALOG ONLY CONV SW
NORTH COUR	GTR8000	40c	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
NORTH COUR	GTR8000	40d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
NORTH COUR	GTR8000	40e	1	CA03111AA	ADD: CEC COMPLIANCE
NORTH COUR	GTR8000	40f	1	CA01400AA	ADD: POWER CABLE, DC
NORTH COUR	GTR8000	40g	1	X153AW	ADD: RACK MOUNT HARDWARE
NORTH COUR	GTR8000	40h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
NORTH COUR	GTR8000	40i	1	X530BG	ADD: VHF (136-174 MHZ)
HUMBOLDT C	CCGW	41	1	SQM01SUM0205	GGM 8000 GATEWAY
HUMBOLDT C	CCGW	41a	1	CA01619AA	ADD: DC POWER
HUMBOLDT C	CCGW	41b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
SITE MOSCAD	MOSCAD	42	6	F4544	SITE MANAGER ADVANCED
SITE MOSCAD	MOSCAD	42a	6	V592	AAD TERM BLCK & CONN WI
SITE MOSCAD	MOSCAD	42b	6	VA00872	ADD: SDM ASTRO RTU FW CURR ASTRO RE
SITE MOSCAD	MOSCAD	42c	6	VA00905	ADD:24/48 VDC PS TO SM
SITE MOSCAD	MOSCAD	43	1	SQM01SUM0205	GGM 8000 GATEWAY
SITE MOSCAD	MOSCAD	43a	1	CA01619AA	ADD: DC POWER
SITE MOSCAD	MOSCAD	43b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
COURTHOUSE	ANTENNA	44	1	DSOA4041DIN	OFFSET, EXPOSED DIPOLE ARRAY, 9 DBD, 136-174 MHZ, PIM RATED
COURTHOUSE	UPPERJUMPR	45	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
COURTHOUSE	UPPERJUMPR	46	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	JUMPER	47	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
COURTHOUSE	MAINLINE	48	100	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
COURTHOUSE	MAINLINE	49	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)

COURTHOUSE	MAINLINE	50	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
COURTHOUSE	MAINLINE	51	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
COURTHOUSE	ANTACC	52	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
COURTHOUSE	SURGE	53	1	DSVHF50DMPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
COURTHOUSE	LOWERJUMPR	54	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
COURTHOUSE	LOWERJUMPR	55	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
COURTHOUSE	LOWERJUMPR	56	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	ANTENNA	57	1	DSOA4041DIN	OFFSET, EXPOSED DIPOLE ARRAY, 9 DBD, 136-174 MHZ, PIM RATED
COURTHOUSE	UPPERJUMPR	58	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
COURTHOUSE	UPPERJUMPR	59	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	JUMPER	60	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
COURTHOUSE	MAINLINE	61	100	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
COURTHOUSE	MAINLINE	62	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
COURTHOUSE	MAINLINE	63	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
COURTHOUSE	MAINLINE	64	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
COURTHOUSE	ANTACC	65	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
COURTHOUSE	SURGE	66	1	DSVHF50DMPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
COURTHOUSE	LOWERJUMPR	67	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
COURTHOUSE	LOWERJUMPR	68	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
COURTHOUSE	LOWERJUMPR	69	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
COURTHOUSE	SURGE	70	1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
COURTHOUSE	SURGE	71	1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1-PHASE
COURTHOUSE	RFDS	72	1	DSSPD2325D-2	( RFDS For Horse Mountain)Site RF Distribution System comprised of: Special PIM-hardened 3Ch TX combiner/filter, Special cavity-type Receive window filter, Best Practices DSRMC06 RX Multicoupler, and two 2--post rack 45 RU color black with ground bar.
MICROWAVE	MICROWAVE	1	1	DQMWHUMBLTCARF	18.US.822186.04 INCLUDES 1.01-1.03,
MICROWAVE	MICROWAVE	2	1	DQMWHUMBLTCAAD	18.US.822186.04 INCLUDES 1.05, 5.01

MICROWAVE	MICROWAVE	3	1	DQMWHUMBLTCANM	18.US.822186.04 INCLUDES 1.07 TSM-8
MICROWAVE	MICROWAVE	4	1	TT3225	Z2 MINI WORKSTATION 258G 8G NON RET
MICROWAVE	MICROWAVE	5	1	DSA019BLK	19" LCD, BLACK, NON-TOUCH
DA, PW, Prob	SUBSCRIBER	2	13	H98KGF9PW6BN	APX6000 VHF MHZ MODEL 2.5 PORTABLE
DA, PW, Prob	SUBSCRIBER	2a	13	Q811	ENH: LI DIGITAL CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	2b	13	H885BK	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	2c	13	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	2d	13	QA09012	ADD: MISSION CRITICAL GEOFENCING
DA, PW, Prob	SUBSCRIBER	3	13	M22KSS9PW1 N	APX4500 VHF
DA, PW, Prob	SUBSCRIBER	3a	13	Q811	ADD: SOFTWARE P25 CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	3c	13	GA00804	ADD: APX O2 CONTROL HEAD (Green)
DA, PW, Prob	SUBSCRIBER	3d	13	G444	ADD: APX CONTROL HEAD SOFTWARE
DA, PW, Prob	SUBSCRIBER	3e	13	G66	ADD: DASH MOUNT O2 WWM
DA, PW, Prob	SUBSCRIBER	3f	13	G301	ADD: 3DB ANT 136-174MHZ
DA, PW, Prob	SUBSCRIBER	3h	13	B18	ADD: AUXILARY SPKR 7.5 WATT
DA, PW, Prob	SUBSCRIBER	3i	13	GA00226	ADD: GPS ANTENNA
DA, PW, Prob	SUBSCRIBER	3j	13	G24	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	3l	13	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	3m	13	QA09012	ADD: MISSION CRITICAL GEOFENCING
DA, PW, Prob	SUBSCRIBER	4	30	H98KGF9PW6BN	APX6000 VHF MHZ MODEL 2.5 PORTABLE
DA, PW, Prob	SUBSCRIBER	4a	30	Q811	ENH: LI DIGITAL CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	4b	30	H885BK	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	4c	30	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	4d	30	QA09012	ADD: MISSION CRITICAL GEOFENCING
DA, PW, Prob	SUBSCRIBER	5	30	M22KSS9PW1 N	APX4500 VHF
DA, PW, Prob	SUBSCRIBER	5a	30	Q811	ADD: SOFTWARE P25 CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	5c	30	GA00804	ADD: APX O2 CONTROL HEAD (Green)
DA, PW, Prob	SUBSCRIBER	5d	30	G444	ADD: APX CONTROL HEAD SOFTWARE
DA, PW, Prob	SUBSCRIBER	5e	30	G66	ADD: DASH MOUNT O2 WWM
DA, PW, Prob	SUBSCRIBER	5f	30	G301	ADD: 3DB ANT 136-174MHZ
DA, PW, Prob	SUBSCRIBER	5g	30	B18	ADD: AUXILARY SPKR 7.5 WATT
DA, PW, Prob	SUBSCRIBER	5i	30	G24	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	5k	30	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	5l	30	QA09012	ADD: MISSION CRITICAL GEOFENCING
DA, PW, Prob	SUBSCRIBER	6	43	M22KSS9PW1 N	APX4500 VHF
DA, PW, Prob	SUBSCRIBER	6a	43	Q811	ADD: SOFTWARE P25 CONVENTIONAL
DA, PW, Prob	SUBSCRIBER	6c	43	GA00804	ADD: APX O2 CONTROL HEAD

					(Green)
DA, PW, Prob	SUBSCRIBER	6d	43	G444	ADD: APX CONTROL HEAD SOFTWARE
DA, PW, Prob	SUBSCRIBER	6e	43	G66	ADD: DASH MOUNT O2 WWM
DA, PW, Prob	SUBSCRIBER	6f	43	G301	ADD: 3DB ANT 136-174MHZ
DA, PW, Prob	SUBSCRIBER	6h	43	B18	ADD: AUXILARY SPKR 7.5 WATT
DA, PW, Prob	SUBSCRIBER	6j	43	G24	ADD: 3Y ESSENTIAL SERVICE
DA, PW, Prob	SUBSCRIBER	6l	43	QA00782	ENH: APX GPS ACTIVATION
DA, PW, Prob	SUBSCRIBER	6m	43	QA09012	ADD: MISSION CRITICAL GEOFENCING
SUBSCRIBER	RADIO ACCE	1	135	PMNN4486	BATT IMPRES 2 LIION R IP68 3400T
SUBSCRIBER	RADIO ACCE	2	12	PMNN4448AR	BATTERY PACK, MAH,BATT IMP STD IP67
SUBSCRIBER	RADIO ACCE	3	15	PMNN4486	BATT IMPRES 2 LIION R IP68 3400T
SUBSCRIBER	RADIO ACCE	4	5	PMNN4448AR	BATTERY PACK, MAH,BATT IMP STD IP67
SUBSCRIBER	RADIO ACCE	5	147	NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A,
SUBSCRIBER	RADIO ACCE	6	7	NNTN8844A	CHARGER, MULTI-UNIT, IMPRES 2, 6-DI
SUBSCRIBER	RADIO ACCE	7	147	PMMN4069A	IMPRES RSM, 3.5MM AUDIO JACK
SUBSCRIBER	RADIO ACCE	8	147	PMLN7560A	REC ONLY EARPIECE W/TRANSLUCENT TUB
HumboldtPo	APX6000LI	1	135	H98KGF9PW6BN	APX6000 VHF MHZ MODEL 2.5 PORTABLE
HumboldtPo	APX6000LI	1a	3	Q157	ADD: APX DATA CABLE
HumboldtPo	APX6000LI	1b	135	H207	DEL: BATTERY
HumboldtPo	APX6000LI	1c	135	QA05570	ALT: LI-ION IMPRES 2 IP68 3400 MAH
HumboldtPo	APX6000LI	1d	135	Q811	ENH: LI DIGITAL CONVENTIONAL
HumboldtPo	APX6000LI	1e	135	H885BK	ADD: 3Y ESSENTIAL SERVICE
HumboldtPo	APX6000LI	1f	135	QA00782	ENH: APX GPS ACTIVATION
HumboldtPo	APX6000LI	1g	135	QA09012	ADD: MISSION CRITICAL GEOFENCING
HumboldtMo	APX4500	2	100	M22KSS9PW1 N	APX4500 VHF
HumboldtMo	APX4500	2a	100	Q811	ADD: SOFTWARE P25 CONVENTIONAL
HumboldtMo	APX4500	2c	100	GA00804	ADD: APX O2 CONTROL HEAD (Green)
HumboldtMo	APX4500	2d	100	G444	ADD: APX CONTROL HEAD SOFTWARE
HumboldtMo	APX4500	2e	100	G66	ADD: DASH MOUNT
HumboldtMo	APX4500	2j	100	G301	ADD: 3DB ANT 136-174MHZ
HumboldtMo	APX4500	2g	100	B18	ADD: AUXILARY SPKR 7.5 WATT
HumboldtMo	APX4500	2i	100	G24	ADD: 3Y ESSENTIAL SERVICE
HumboldtMo	APX4500	1h	100	QA00782	ADD: ENABLE INTERNAL GPS OPERATION
HumboldtMo	APX4500	1i	100	QA09012	ADD: MISSION CRITICAL GEOFENCING
HumboldtCS	APX4500	3	4	M22KSS9PW1 N	APX4500 VHF
HumboldtCS	APX4500	3a	4	Q811	ADD: SOFTWARE P25 CONVENTIONAL

HumboldtCS	APX4500	3c	4	GA00804	ADD: APX O2 CONTROL HEAD (Green)
HumboldtCS	APX4500	3d	4	G444	ADD: APX CONTROL HEAD SOFTWARE
HumboldtCS	APX4500	3e	4	G66	ADD: DASH MOUNT
HumboldtCS	APX4500	3f	4	G89	ADD: NO RF ANTENNA NEEDED
HumboldtCS	APX4500	3g	4	W382	ADD: CONTROL STATION DESK GCAI MIC
HumboldtCS	APX4500	3h	4	G142	ADD: NO SPEAKER NEEDED
HumboldtCS	APX4500	3i	4	G91	ADD: CONTROL STATION POWER SUPPLY
HumboldtCS	APX4500	3j	4	W665	ADD: CONTROL STATION OPERATION
HumboldtCS	APX4500	3l	4	G24	ADD: 3Y ESSENTIAL SERVICE
HUMBOLDT D	APX7500CON	5	2	RMN5070A	AS. SPECTRA & XTL5000 DESKTOP MIC
HUMBOLDT D	APX7500CON	6	2	HKN6233	ASSEMBLY,ACCESSORY,APX CONSOLETT E
HUMBOLDT D	ANTENNA	7	2	DSANT150Y10H	TELEWAVE 144-174 MHZ 10DB 6 ELEMEN
HUMBOLDT D	UPPERJUMPR	8	60	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
HUMBOLDT D	UPPERJUMPR	9	8	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
HUMBOLDT D	JUMPER	10	8	TDN9289	221213 CABLE WRAP WEATHERPROOFING
HUMBOLDT D	MAINLINE	11	250	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
HUMBOLDT D	MAINLINE	12	8	DDN1091	L4TDF-PSA 7-16 DIN FEMALE PS FOR 1/
HUMBOLDT D	MAINLINE	13	20	DSSG1212B2U	SG12-12B2U, SUREGROUND 1/2", 48"
HUMBOLDT D	MAINLINE	14	4	DSL4SGRIP	L4SGRIP SUPPORT HOIST GRIP 1/2" LDF
HUMBOLDT D	ANTACC	15	28	MDN6816	STD HANGERS FOR 1/2IN CABLE & EW180
HUMBOLDT D	SURGE	16	2	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH P
HUMBOLDT D	LOWERJUMPR	17	100	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
HUMBOLDT D	LOWERJUMPR	18	4	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
HUMBOLDT D	LOWERJUMPR	19	4	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
HumboldtCB	APX1000	20	12	H84SDD9PW5 N	APX 1000 UHF R2 MODEL 1.5 PORTABLE
HumboldtCB	APX1000	20a	12	H885BK	ADD: 3Y ESSENTIAL SERVICE
HumboldtCB	APX1000	20b	12	QA00782	ENH: APX GPS ACTIVATION
HumboldtCB	APX1000	20c	12	QA04097	ENH: P25 CONVENTIONAL
HumboldtCB	APX1000	20d	12	QA09012	ADD: MISSION CRITICAL GEOFENCING
ConsoleBac	CONSOLETT E	21	2	L37TSS9PW1 N	ALL BAND CONSOLETT E
ConsoleBac	CONSOLETT E	21a	2	CA01598	ADD: AC LINE CORD US
ConsoleBac	CONSOLETT E	21b	2	G48	ENH: CONVENTIONAL OPERATION
ConsoleBac	CONSOLETT E	21c	2	G78	ADD: 3Y ESSENTIAL SERVICE
ConsoleBac	CONSOLETT E	21d	2	G806	ENH: ASTRO DIGITAL CAI OP APX

ConsoleBac	CONSOLETTTE	21e	2	L999	ADD: FULL FP W/05/KEYPAD/CLOCK/VU
ConsoleBac	CONSOLETTTE	21f	2	W382	ADD: CONTROL STATION DESK GCAI MIC
ConsoleBac	CONSOLETTTE	21h	2	GA05507	DEL: DELETE 7/800MHZ BAND
ConsoleBac	CONSOLETTTE	21i	2	GA05509	DEL: DELETE UHF BAND
MTPIERCE	NETWORK	1	2	CLN1868	2930F 24-PORT SWITCH
MTPIERCE	NETWORK	2	2	T8555	EDGE & HUB ROUTER & FIREWALL - DC
MTPIERCE	NETWORK	2a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
MTPIERCE	NETWORK	2b	2	CA03448AA	ADD: STATEFUL FIREWALL
MTPIERCE	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
MTPIERCE	CCGW	3a	1	CA01619AA	ADD: DC POWER
MTPIERCE	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
MTPIERCE	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCXO, 48VDC INC
MTPIERCE	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
MTPIERCE	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
MTPIERCE	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
MTPIERCE	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
MTPIERCE	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
MTPIERCE	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
MTPIERCE	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS
MTPIERCE	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
MTPIERCE	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
MTPIERCE	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
MTPIERCE	CONV_GTR	8h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
MTPIERCE	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
MTPIERCE	CONV_GTR	9	1	T7039	GTR 8000 Base Radio
MTPIERCE	CONV_GTR	9a	1	CA01400AA	ADD: POWER CABLE, DC
MTPIERCE	CONV_GTR	9b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
MTPIERCE	CONV_GTR	9c	1	CA01949AA	ADD: ANALOG ONLY CONV SW
MTPIERCE	CONV_GTR	9d	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
MTPIERCE	CONV_GTR	9e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	CONV_GTR	9f	1	CA03111AA	ADD: CEC COMPLIANCE
MTPIERCE	CONV_GTR	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
MTPIERCE	CONV_GTR	9h	1	X265AM	BR PRESELCTOR, 150-174 MHZ
MTPIERCE	CONV_GTR	9i	1	X530BG	ADD: VHF (136-174 MHZ)
MTPIERCE	GRV8000	10	1	T8341	GRV 8000 COMPARATOR
MTPIERCE	GRV8000	10a	1	CA03084AA	ADD: COMPARATOR

MTPIERCE	GRV8000	10b	1	CA03320AA	ADD: ASTRO 25 CONVENTIONAL SOFTWARE
MTPIERCE	GRV8000	10c	1	CA03316AA	ADD: DIGITAL CONV VOTING SOFTWARE
MTPIERCE	GRV8000	10d	1	CA03085AA	ADD: GEO REDUNDANCY
MTPIERCE	GRV8000	10e	1	CA03111AA	ADD: CEC COMPLIANCE
MTPIERCE	GRV8000	10f	1	CA01400AA	ADD: POWER CABLE, DC
MTPIERCE	GRV8000	10g	1	X153AW	ADD: RACK MOUNT HARDWARE
MTPIERCE	GRV8000	10h	1	CA01953AB	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	GRV8000	10i	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
MTPIERCE	GRV8000	11	1	T8341	GRV 8000 COMPARATOR
MTPIERCE	GRV8000	11a	1	CA01400AA	ADD: POWER CABLE, DC
MTPIERCE	GRV8000	11b	1	CA01953AB	ADD: POWER EFFICIENCY PACKAGE
MTPIERCE	GRV8000	11c	1	CA03084AA	ADD: COMPARATOR
MTPIERCE	GRV8000	11d	1	CA03085AA	ADD: GEO REDUNDANCY
MTPIERCE	GRV8000	11e	1	CA03111AA	ADD: CEC COMPLIANCE
MTPIERCE	GRV8000	11f	1	X153AW	ADD: RACK MOUNT HARDWARE
MTPIERCE	GRV8000	11g	1	CA01949AC	ADD: ANALOG CONV ONLY SW
MTPIERCE	GRV8000	11h	1	CA01952AC	ADD: ANALOG CONV SIMULCAST SW
MTPIERCE	GRV8000	11i	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
MTPIERCE	RACK	12	2	TRN7343	SEVEN AND A HALF FOOT RACK
MTPIERCE	ANTENNA	13	1	DSOA4041DIN	OFFSET, EXPOSED DIPOLE ARRAY, 9 DBD, 136-174 MHZ, PIM RATED
MTPIERCE	UPPERJUMPR	14	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
MTPIERCE	UPPERJUMPR	15	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
MTPIERCE	UPPERJUMPR	16	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
MTPIERCE	MAINLINE	17	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
MTPIERCE	MAINLINE	18	2	DDN1070	DL360 G6 SERVER, MED TIER, NO-OS
MTPIERCE	MAINLINE	19	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
MTPIERCE	MAINLINE	20	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
MTPIERCE	MAINLINE	21	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
MTPIERCE	ANTACC	22	1	DSVHF50DMPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
MTPIERCE	SURGE	23	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
MTPIERCE	LOWERJUMPR	24	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
MTPIERCE	LOWERJUMPR	25	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE

MTPIERCE	ANTENNA	26	1	DSOA4041DIN	OFFSET, EXPOSED DIPOLE ARRAY, 9 DBD, 136-174 MHZ, PIM RATED
MTPIERCE	UPPERJUMPR	27	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
MTPIERCE	UPPERJUMPR	28	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
MTPIERCE	UPPERJUMPR	29	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
MTPIERCE	MAINLINE	30	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
MTPIERCE	MAINLINE	31	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
MTPIERCE	MAINLINE	32	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
MTPIERCE	MAINLINE	33	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
MTPIERCE	MAINLINE	34	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
MTPIERCE	ANTACC	35	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
MTPIERCE	SURGE	36	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
MTPIERCE	LOWERJUMPR	37	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
MTPIERCE	LOWERJUMPR	38	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
MTPIERCE	SURGE	39	1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
MTPIERCE	SURGE	40	1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1-PHASE
PRATTMTN	NETWORK	1	2	CLN1868	2930F 24-PORT SWITCH
PRATTMTN	NETWORK	2	2	T8547	SITE ROUTER & FIREWALL- DC
PRATTMTN	NETWORK	2a	2	CA03445AA	ADD: MISSION CRITICAL HARDENING
PRATTMTN	NETWORK	2b	2	CA03448AA	ADD: STATEFUL FIREWALL
PRATTMTN	CCGW	3	1	SQM01SUM0205	GGM 8000 GATEWAY
PRATTMTN	CCGW	3a	1	CA01619AA	ADD: DC POWER
PRATTMTN	CCGW	3b	1	CA02141AA	ADD: LOW DENSITY ENH CONV GATEWAY
PRATTMTN	TRAK	4	1	DSTRAK88358M	GPS CLOCK, 10MHZ, DOCXO, 48VDC INC
PRATTMTN	TRAK	5	1	DSTRAK4008245101	MOUNTING SHELF FOR 8835 GPS CLOCK
PRATTMTN	TRAK	6	4	DDN9769	F1TNM-HC 1/4" TYPE N MALE CONNECTO
PRATTMTN	TRAK	7	50	L1700	FSJ1-50A CABLE: 1/4" SUPERFLEX POLY
PRATTMTN	CONV_GTR	8	1	T7039	GTR 8000 Base Radio
PRATTMTN	CONV_GTR	8a	1	CA01400AA	ADD: POWER CABLE, DC
PRATTMTN	CONV_GTR	8b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
PRATTMTN	CONV_GTR	8c	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAS

PRATTMTN	CONV_GTR	8d	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
PRATTMTN	CONV_GTR	8e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
PRATTMTN	CONV_GTR	8f	1	CA03111AA	ADD: CEC COMPLIANCE
PRATTMTN	CONV_GTR	8g	1	X153AW	ADD: RACK MOUNT HARDWARE
PRATTMTN	CONV_GTR	8h	1	X265AM	BR PRESECTOR, 150-174 MHZ
PRATTMTN	CONV_GTR	8i	1	X530BG	ADD: VHF (136-174 MHZ)
PRATTMTN	CONV_GTR	9	1	T7039	GTR 8000 Base Radio
PRATTMTN	CONV_GTR	9a	1	CA01400AA	ADD: POWER CABLE, DC
PRATTMTN	CONV_GTR	9b	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
PRATTMTN	CONV_GTR	9c	1	CA01949AA	ADD: ANALOG ONLY CONV SW
PRATTMTN	CONV_GTR	9d	1	CA01952AA	ADD: ANALOG CONVENTIONAL SIMULCAST
PRATTMTN	CONV_GTR	9e	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
PRATTMTN	CONV_GTR	9f	1	CA03111AA	ADD: CEC COMPLIANCE
PRATTMTN	CONV_GTR	9g	1	X153AW	ADD: RACK MOUNT HARDWARE
PRATTMTN	CONV_GTR	9h	1	X265AM	BR PRESECTOR, 150-174 MHZ
PRATTMTN	CONV_GTR	9i	1	X530BG	ADD: VHF (136-174 MHZ)
PRATTMTN	UHF ASR LINK	10	1	T7039	GTR 8000 Base Radio
PRATTMTN	UHF ASR LINK	10a	1	CA00719AA	ADD: ASTRO SYSTEM RELEASE 7.19
PRATTMTN	UHF ASR LINK	10b	1	CA01502AA	ADD: ASTRO 25 CONVENTIONAL SIMULCAST SOFTWARE
PRATTMTN	UHF ASR LINK	10c	1	CA01948AA	ADD: CONVENTIONAL SOFTWARE
PRATTMTN	UHF ASR LINK	10d	1	CA01953AA	ADD: POWER EFFICIENCY PACKAGE
PRATTMTN	UHF ASR LINK	10e	1	CA03111AA	ADD: CEC COMPLIANCE
PRATTMTN	UHF ASR LINK	10f	1	X153AW	ADD: RACK MOUNT HARDWARE
PRATTMTN	UHF ASR LINK	10g	1	X265AP	ADD: BR PRESECTOR 380-512 MHZ
PRATTMTN	UHF ASR LINK	10h	1	X640AL	ADD: UHF R2 (435-524 MHZ)
PRATTMTN	RACK	11	1	TRN7343	SEVEN AND A HALF FOOT RACK
PRATTMTN	ANTENNA	12	1	DSOA4041DINT3	OFFSET, EXPOSED DIPOLE ARRAY, 9DBD, 136-174MHZ, 3DEG DT, PIM RATED
PRATTMTN	UPPERJUMPR	13	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
PRATTMTN	UPPERJUMPR	14	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	JUMPER	15	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
PRATTMTN	MAINLINE	16	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
PRATTMTN	MAINLINE	17	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
PRATTMTN	MAINLINE	18	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
PRATTMTN	MAINLINE	19	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP

PRATTMTN	MAINLINE	20	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	POLYPHASER	21	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
PRATTMTN	LOWERJUMPR	22	25	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	LOWERJUMPR	23	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
PRATTMTN	LOWERJUMPR	24	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	ANTENNA	25	1	DSOA4041DINT3	OFFSET, EXPOSED DIPOLE ARRAY, 9DBD, 136-174MHZ, 3DEG DT, PIM RATED
PRATTMTN	UPPERJUMPR	26	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
PRATTMTN	UPPERJUMPR	27	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	JUMPER	28	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
PRATTMTN	MAINLINE	29	140	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
PRATTMTN	MAINLINE	30	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
PRATTMTN	MAINLINE	31	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
PRATTMTN	MAINLINE	32	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
PRATTMTN	MAINLINE	33	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	POLYPHASER	34	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
PRATTMTN	LOWERJUMPR	35	25	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK
PRATTMTN	LOWERJUMPR	36	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
PRATTMTN	LOWERJUMPR	37	1	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	ANTENNA	39	1	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT, 380-400 MHZ, 9.0 DBD
PRATTMTN	UPPERJUMPR	40	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
PRATTMTN	UPPERJUMPR	41	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2 IN CABLE
PRATTMTN	JUMPER	42	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
PRATTMTN	MAINLINE	43	110	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL CABLE, CORRUGATED COPPER
PRATTMTN	MAINLINE	44	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT FOR 7/8IN CABLE (MOTOROLA SPECIFIC)
PRATTMTN	MAINLINE	45	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN COAXIAL CABLE
PRATTMTN	MAINLINE	46	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
PRATTMTN	ANTACC	47	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER 10PK

PRATTMTN	SURGE	48	1	DSVHF50DMPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH POWER DIN MALE ANT, DIN FEMALE EQUIP
PRATTMTN	LOWERJUMPR	49	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POLY JKT PER FOOT
PRATTMTN	LOWERJUMPR	50	1	DDN1088	L4TDM-PSA TYPE N MALE PS FOR 1/2 IN CABLE
PRATTMTN	SURGE	51	1	DS570SA16FNRJ1S	SPD, TYPE 1, SAD/MOV, 120/240 VAC 1-PHASE
PRATTMTN	SURGE	52	1	DS560SA16FNRJ1S	SPD, TYPE 2, MOV, 120/240 VAC 1- PHASE
PRATTMTN	RFDS		1	DS26700101	DUPLEXER SYSTEM, SINGLE CHANNEL, 450-470, TX WITH ISOLATORS
ShelterCov	RACK	301	1	TRN7343	SEVEN AND A HALF FOOT RACK
ShelterCov	DVRS	302	1	DQ50WDVRS	DVR VHF CABINET IN BAND APPLICATIO
ShelterCov	DVRS	303	1	TT05715AA	DVR/VRX FOR USE WITH SINGLE BAND AP
ShelterCov	DVRS	304	1	TT05130AA	FIXED MOUNT OUTDOOR ENCLOSURE UPGRA
ShelterCov	DVRS	305	1	DSEA4041DIN	ELLIPTICAL, EXPOSED DIPOLE ARRAY, 5
ShelterCov	DVRS	307	1	DDN2088	DVR IN-BAND 1 YEAR EXTENDED WARRANT
ShelterCov	APX6500	308	1	M25QSS9PW1 N	APX6500 UHF R1 MID POWER
ShelterCov	APX6500	308a	1	G806	ADD: ASTRO DIGITAL CAI OPERATION
ShelterCov	APX6500	308b	1	G48	ENH: CONVENTIONAL OPERATION APX6500
ShelterCov	APX6500	308l	1	GA00631AB	ADD: DVRS MSU ACTIVATION APX MOBILE
ShelterCov	APX6500	308d	1	GA00804	ADD: APX O2 CONTROL HEAD (Grey)
ShelterCov	APX6500	308e	1	G444	ADD: APX CONTROL HEAD SOFTWARE
ShelterCov	APX6500	308f	1	G67	ADD: REMOTE MOUNT MID POWER
ShelterCov	APX6500	308h	1	G142	ADD: NO SPEAKER NEEDED
ShelterCov	APX6500	308i	1	G618	ADD: CBL REMOTE MOUNT 10 FEET
ShelterCov	APX6500	308k	1	G24	ADD: 3Y ESSENTIAL SERVICE
ShelterCov	ANTENNA	276	1	DSRDA699	RUGGEDISED UHF DIRECTIONAL YAGI ANT
ShelterCov	UPPERJUMPR	277	15	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
ShelterCov	UPPERJUMPR	278	2	DDN1090	L4TDM-PSA 7-16 DIN MALE PS FOR 1/2
ShelterCov	JUMPER	279	2	TDN9289	221213 CABLE WRAP WEATHERPROOFING
ShelterCov	MAINLINE	280	110	L3323	AVA5-50, 7/8 IN VIRTUAL AIR COAXIAL
ShelterCov	MAINLINE	281	2	DDN1077	7-16IN DIN FEMALE CONNECTOR EZ-FIT
ShelterCov	MAINLINE	282	3	DSSG7806B2A	SG78-06B2A GROUNDING KIT FOR 7/8 IN
ShelterCov	MAINLINE	283	1	DSL5SGRIP	L5SGRIP 7/8" SUPPORT HOIST GRIP
ShelterCov	ANTACC	284	5	DSSSH78	SSH-78 7/8" SNAPSTAK HANGER

					10PK
ShelterCov	SURGE	285	1	DSVHF50DMAPGR	RF SPD, 100-512MHZ, DC BLOCK HIGH P
ShelterCov	LOWERJUMPR	286	25	L1705	LDF4-50A CABLE: 1/2" LDF HELIAX POL
ShelterCov	LOWERJUMPR	287	1	DDN1088	L4TNM-PSA TYPE N MALE PS FOR 1/2 IN
HORSEMTN	RFDS		1	DSSPD2325D-2	( RFDS For Horse Mountain)Site RF Distribution System comprised of: Special PIM-hardened 3Ch TX combiner/filter, Special cavity-type Receive window filter, Best Practices DSRMC06 RX Multicoupler, and two 2--post rack 45 RU color black with ground bar.
MTPIERCE	RFDS		1	DSSPD2325D-3	( RFDS For Mt Pierce and for Pratt Mtn)Site RF Distribution System comprised of: Special PIM-hardened 3Ch TX combiner/filter, Special cavity-type Receive window filter, Best Practices DSRMC06 RX Multicoupler, and two 2--post rack 45 RU color black with ground bar.
PRATTMTN	RFDS		1	DSSPD2325D-3	( RFDS For Mt Pierce and for Pratt Mtn)Site RF Distribution System comprised of: Special PIM-hardened 3Ch TX combiner/filter, Special cavity-type Receive window filter, Best Practices DSRMC06 RX Multicoupler, and two 2--post rack 45 RU color black with ground bar.