



**\* \* \* \* \* EBRCSA BULLETIN \* \* \* \* \***

**November 2011**

**IN THIS ISSUE**

October Progress Review	1
About the System	1
Encryption	2
EBRCS Participant Implementation Plan	4
ALCO East Simulcast Cell	5
ALCO Northwest Simulcast Cell	5
ALCO Southwest Simulcast Cell	6
CoCo West Simulcast Cell	6
CoCo Central Simulcast Cell	7
CoCo East Simulcast System	7
Stand Alone Repeater Sites	7
Dispatch Console System	8
Working Groups	9
Scheduled Events	10
Upcoming Articles	10
FAQ's	11
Contacts	12

**October Progress Review**

- **Patterson Pass**-Completed.
- **Warm Springs BART**- Completed.
- **MCC 7500 Consoles**- Equipment has been racked and initial programming completed.
- **ASTRO 7.9 Upgrade** – Completed.

**About the System**

EBRCSA, Motorola Solutions, and AECOM have finalized the site selection and coverage design for the two-county EBRCSA P25 trunked radio system. The EBRCSA 36 site system once completed in June 2012 will provide coverage and interoperability to all agencies operating on the EBRCSA system. This system will improve safety, eliminate duplication of overlapping independent systems, and provide effective interoperable voice communications. This will enable EBRCSA to provide improved public safety services.

The EBRCSA P25 System consists of an IP-based P25 Phase I simulcast subsystem and ASTRO 25 standalone repeater sites. The Motorola ASTRO 25 trunked system incorporates the latest technology, delivering the flexibility of an IP transport, FDMA operation and simulcast frequency efficiency. The site and channel count information for each simulcast cell has been identified below.

For site locations please use this link:  
[http://www.ebrcsa.org/site\\_maps.aspx](http://www.ebrcsa.org/site_maps.aspx)

## Encryption

Encryption on radio systems comes under many different names. Scrambling, Coded, Secure, as well as Encrypted come to mind. All of these terms refer to the process of taking regular clear voice and adding some level of security to prevent unintended listeners from receiving potentially sensitive information. In analog radio systems various methods were used to encrypt transmissions, these included sub-band coding, CVSD, frequency inversion, and band scrambling. These methods had various impacts on voice quality as well as various levels of resistance to code breaking.

With the advent of P25 digital systems, transmissions can now have the same voice quality of a clear call and still maintain a high-level of encryption protection. This is mainly due to the fact that the transmission originates in digital format whether it is clear or encrypted and that encryption just rearranges the digital bits according to a complex encryption algorithm.

The recognized standard encryption algorithm for P25 is the 256-bit Advanced Encryption Standard or AES. AES is a Federal Information Processing Standard (FIPS) 140-2 approved encryption standard. P25 systems can also support other formats as well, and these include Digital Encryption Standard (DES) and Motorola's Advanced Digital Privacy (ADP). However it is important to note that DES is no longer suitable as a FIPS 140-2 encryption algorithm. DES is a 56-bit encryption and is now considered unsecure because a brute force attack is possible. In January, 1999, a public collaboration of computer organizations was able to break a DES key, considering the advances in computer technology over the intervening years the amount of time required to crack a key is substantially reduced.

Motorola's proprietary ADP is a 40-bit encryption and could be considered even less secure than DES. Motorola's ADP is also proprietary, so any users on a talkgroup using ADP must all have Motorola radios to operate correctly. This is important in that an agency purchasing ADP and integrating it into their daily operations could potentially become "locked-in" to purchase Motorola radios.

Table 1 below shows the various methods of encryption and the ways to decrypt the received information.

Mode of Operation	Security Level	Equipment Used	Level of Difficulty
Analog Conventional	Unsecure	Any Generic Scanner	Easy
P25 Trunked Clear	Unsecure	P25 Uniden Bearcat Scanner or similar	Moderate
P25 Trunked DES/ADP	Unsecure	P25 Receiver with PC	Difficult
P25 Trunked AES	Secure	P25 Receiver with PC	Extremely Difficult

Table 1 - Encryption Modes and Level of Security

The EBRCS can support encryption for users that require it. For AES encryption a radio will typically need an encryption module, this is usually an add-on option. If encrypted calls need to be logged on the logging recorder or monitored by dispatch the console will need an encryption module as well. Please contact your vendor for additional details on purchasing these items if encryption is desired.

The encryption policy for the EBRCS is that

1. Talkgroups are either always encrypted or never encrypted; it is not selectable by the user.
2. Main dispatch talkgroups should never be encrypted.
3. Encrypted talkgroups that are shared by multiple agencies must use AES encryption as the encryption method.

The rationale for the above policy revolves around safety and interoperability. By not allowing users to select whether to transmit clear or encrypted but rather select the correct talkgroup avoids the possibility of user error. Sensitive communications could be transmitted in the clear while the user believes he or she are transmitting encrypted and could end up compromising operations.

By not allowing main dispatch talkgroups to be encrypted, agencies avoid potential public relations problems over freedom of information, “Big Brother”, etc. In addition some manufacturers in order to meet FIPS 140-2 requirements will wipe or zeroize their encryption key if the radio enters an error condition. Once the key is wiped the radio can no longer access an encrypted talkgroup, which could be problematic if the main dispatch channel is encrypted.

Lastly by using AES on shared talkgroups, the EBRCSA maintains a fundamental principle of open-standards procurement to foster competition and drive pricing down for future purchases. While the EBRCSA understands that agencies may want to use proprietary encryption schemes on their own non-shared talkgroups, the EBRCSA highly discourages their use.

## **EBRCS Participant Implementation Plan**

### **Complete Fleetmap Process**

#### **Subscriber Implementation**

- Complete subscriber inventory for each agency
- Verify which subscribers are P25 capable
- Procure subscribers if necessary
- Develop programming templates
- Have user representatives test radios based on templates and approve
- Train the Trainer training
- Actual subscriber programming/testing/FCC check and alignment
- User Subscriber training
- Activate subscriber IDs in Master Site DB
- Develop template mobile installations per agency
- Develop mobile installation plan and schedule

#### **Dispatch**

- All console installations complete
- Dispatch Console Training Room Complete
- Console Configuration - Screen Layout
- Backup Control Station templates
- Backup Control Station Testing
- Console Testing
- Dispatcher Training

#### **Logging**

- Identify Logging Solution
- Procure Logging Solution if necessary
- Configure/Test Solution
- Training

#### **Cutover**

- Develop cutover plan
- Testing
- Agency Prep
- Cutover

#### **Mobile Installations**

##### **Police Mobiles**

- Trunk-mount Installs
- Dash Mount Installs
- Motorcycle Installs
- Control Station Installs

##### **Fire Mobiles**

- Dual-head Installs
- Dash Mount Installs
- Control Station Installs

#### **Transition Complete**

Transition team meetings will be scheduled with all areas over the next several weeks. Meeting time and location will be announced shortly. The teams will be assigned by cell. ALCO North West, ALCO South West, ALCO East, Contra Costa West, Contra Costa Central, and Contra Costa East. If you wish to be involved in transition team, please send an email to Bob Simmons [[bob.simmons@cdxwireless.com](mailto:bob.simmons@cdxwireless.com)] and indicate your agency and your cell.

## ALCO East Simulcast Cell – 700 MHz- 10 Channel

The Alameda County East simulcast cell (ALCO East) has four sites and ten channels per site configured for 700MHz operation. The four radio sites are the Doolan Prime Site, Sunol Ridge, Patterson Pass and East Dublin BART station. The ALCO East cell provides coverage in the Dublin, Livermore, and Pleasanton region.

**Doolan – Completed**

**Sunol Ridge- Completed**

**East Dublin Bart- Completed**

**Patterson Pass – Completed**



PATTERSON PASS SITE



PATTERSON PASS MONOPOLE TOWER COMPLETE

## ALCO Northwest Simulcast Cell – 700 MHz- 16 CHANNEL

The Alameda County Northwest simulcast system (ALCO Northwest) has four sites and sixteen channels per site configured for 700 MHz operation. The four radio sites in the ALCO Northwest are Glenn Dyer Prime Site, Seneca Reservoir, U.C.-Berkeley and Skyline Reservoir sites. The Northwest simulcast cell has been designed to provide coverage in Albany, Berkeley, Emeryville, Oakland, and Piedmont.

**GLENN DYER JAIL – COMPLETED**

**U.C. BERKELEY – UNDER CONSTRUCTION**

**SKYLINE – UNDER CONSTRUCTION**

**SENECA – PLANNING / PERMITTING**



SKYLINE SITE PREPARATION



SKYLINE SHELTER FOUNDATION



SKYLINE SHELTER FOUNDATION

## **ALCO Southwest Simulcast Cell – 700 MHz – 12 Channel**

The Alameda County Southwest simulcast system (ALCO Southwest) has seven sites and twelve channels per site configured for 700MHz operation. The seven sites are San Leandro Hills Prime Site, Coyote Hills, Garin water tank, Fremont Police Department, Warm Springs BART station, Walpert Ridge and Hayward Police Department. The Southwest simulcast cell has been designed to provide coverage in Fremont, Hayward, Newark, San Leandro, and Union City.

**San Leandro Hills – Completed**

**Coyote Hills – Completed**

**Walpert Ridge – Completed**

**Fremont PD- Floor / Power Upgrade**

**Garin Water Tank- Upgrade PG&E/ Tower Extension**

**ALCO PW Annex Site – Planning**

**Warm Springs Bart- Completed**



Warm Springs Completed



Warm Springs Completed

## **CoCo West Simulcast Cell – 800 MHz- 10 Channel**

The Contra Costa West simulcast cell (CCCO West) has four sites and ten channels per site configured for 800 MHz operation. The four radio sites are Turquoise Prime Site, El Cerrito Police Department, Pearl Ridge Reservoir and Nichol Knob (Point Richmond). The CCCO West Cell provides coverage in El Cerrito, Hercules, Kensington, Pinole, Richmond, and San Pablo areas.

**This cell has been completed.**

## CoCo Central Simulcast Cell- 700 MHz- 10 Channel

The Contra Costa Central simulcast cell (CCCO Central) has eight sites and ten channels per site configured for 700 MHz. The eight radio sites are Cummings Peak Prime Site, 651 Pine Street in Martinez, Bald Peak, Highland Peak, Peter's Ranch Road / Apollo, Sydney Drive, Kregor Peak and Alta Mesa Moraga. (Note that Kregor Peak is a shared site with the CCCO East simulcast cell.) The CCCO Central cell will provide coverage in the areas of Walnut Creek, Clayton, Concord, Danville, Lafayette, Martinez, Moraga, Orinda, San Ramon and Pleasant Hill.

**Cummings Peak – Completed**

**Kregor Peak – Completed**

**Bald Peak – Completed**

**Highland Peak – Completed**

**651 Pine St. –Completed**

**Sydney - Planning**

**Peter's Ranch – Approval Process**

**Alta Mesa – Approval Process**

## CoCo East Simulcast System- 700 MHz- 7 Channel

The Contra Costa East simulcast cell (CCCO East) has three sites and seven channels per site configured for 700MHz operation. The three radio sites are Kregor Peak Prime Site, Shadybrook and Los Vaqueros. The CCCO East Cell will provide coverage in the east county areas of Antioch, Pittsburg, Brentwood, and Oakley/Knightsen.

**Kregor Peak – Completed**

**Shadybrook- Installed**

**Los Vaqueros – Planning**

## Stand Alone Repeater Sites

Motorola has included six Astro 25 stand-alone repeater sites to provide fill-in coverage in rural areas in both Alameda and Contra Costa Counties. Many of these sites provide seamless coverage in canyons and rural areas not covered by the EBRCSA simulcast cells identified above.

These stand alone repeater sites in Alameda County are:

- ◆ **EB Parks (Gwin)- 4 Channel-800 MHz - Planning**
- ◆ **Crane Ridge- 4 Channel-800 MHz - Installed**
- ◆ **Niles Canyon- 5 Channel - 800 MHz - Planning**

In Contra Costa the stand alone repeater sites are:

- ◆ **Marsh Creek Detention Facility- 4 Channel-800 MHz - Site improvements**
- ◆ **Old Fire Station 53- 3 Channel-800 MHz - TBD**
- ◆ **Crockett - 6 Channel-800 MHz - Site improvements**

## Dispatch Console System

The EBRCSA is using a combination of upgraded Motorola Gold Elite and the IP based MCC 7500 consoles. Both consoles feature an easy to use Graphical User Interface (GUI). The seamless integration of the dispatch console into the radio system gives dispatchers full access to system functionality, allowing access and control of the Project 25 trunked resources, as well as superior audio quality.

### MCC7500 Console Sites and positions:

- ◆ 5 Livermore dispatch center
- ◆ 5 Pleasanton dispatch center
- ◆ 27 Contra Costa Sheriff
- ◆ 9 Contra Costa Fire
- ◆ 6 Richmond dispatch center
- ◆ 3 Pinole dispatch center
- ◆ 2 Martinez Police
- ◆ 3 Pleasant Hill Police
- ◆ 6 Walnut Creek Police
- ◆ 8 Concord Police
- ◆ 4 San Ramon Valley Fire
- ◆ 2 Albany Police
- ◆ 8 Berkeley Police
- ◆ 2 Emeryville Police
- ◆ 4 East Bay Parks
- ◆ 2 UC Berkeley (Lakeside)

#### **Status:**

The team has completed the racking of the equipment. Programming and integration into the Master site is underway. Testing and shipment will happen in November 2011.

### Gold Elite Consoles to be migrated to the P25 System:

- ◆ 3 Newark Police
- ◆ 9 Fremont Police
- ◆ 4 Union City Police
- ◆ 6 Alameda County Sheriff
- ◆ 3 San Leandro Police
- ◆ 5 Alameda City Police
- ◆ 2 ALCO EOC
- ◆ 9 ALCO Fire Lawrence Livermore Labs

#### **Status:**

The Alameda County Radio shop is completing the cable runs at the final dispatch center. The new switches and routers have shipped and will be installed. The members of the Motorola project team attended the 911 Meeting on September 15<sup>th</sup>. We discussed the current status of preparation and reviewed the plan for the cutover. A summary of the Plan is below.

#### Cutover date: **Sunday, December 11<sup>th</sup>, 2011 at 6AM**

- A Motorola Technician will be at each existing Alameda County dispatch center.
- The dispatcher center will utilize portables or local control stations during the cutover period.
- Cutover duration is expected to take 4-12 hours depending on size and complexity. We anticipate improving on the duration. 12 would be the extreme case.

## Working Groups

**EBRCS Technical Advisory Committee (TAG)** will address issues that have the possibility of affecting EBRCS users by developing system-level policy recommendations for the EBRCSA Operations Committee. The EBRCSA Board at its last meeting amended the By-Laws and established the TAG as a standing committee with the membership listed below.

- Alameda County Law Representative – Tom McCarthy, Dublin Police Chief
- Contra Costa County Law Representative – Tim Schultz, Captain Walnut Creek Police
- Alameda County Fire Representative – Andy Smith, Asst. Chief Alameda County Fire
- Contra Costa County Fire Representative – Kody Kerwin, Contra Costa Fire Protection District
- Public Services/Special District Representative – Lynette Journey, EBRPD Communications MGR
- Alameda County Technical Representative – Ed Valenzuela/ Manny Suarez, Alameda County GSA
- Contra Costa County Technical Representative – Randy Demerse/ Mike Wright, Contra Costa DOIT
- Combined Dispatch Representative – Margaret-Mary Goulart [Pleasanton PD], Glenn Jackson [ACSO Mg], Gerard Heidekamp [CCSO Technical Services], Brenda Velasquez [Berkeley PD]
- EBRCSA Executive Director – Bill McCammon, EBRCSA Executive Director

Bob Simmons

**CDX Wireless, Inc.**

**Technology Consultants**

Phone: 925-218-4213

Fax: 925-397-6799

Web: [www.cdxwireless.com](http://www.cdxwireless.com)

**West County Transition Team** will plan, prepare, and coordinate the agencies that will cutover / transition to the Contra Costa West Cell in Q1 2012.

- Byron Baptiste – Richmond – Team Leader- bbaptiste@richmondpd.net
- Charles Durley – Hercules
- Chysandra Nair – Richmond
- Erik Newman – Richmond
- Kevin Hui – Kensington
- Kevin Janes – El Cerrito
- Larry Johnson – San Pablo
- Matt Avery – Pinole
- Matt Messier - Pinole
- Robert De La Campa – El Cerrito
- Tim Stratmeyer – Hercules
- Tom Hughes – San Pablo
- Kody Kerwin – Contra Costa Fire Protection District
- Mike Regan – El Cerrito

Bob Simmons

**CDX Wireless, Inc.**

**Technology Consultants**

Phone: 925-218-4213

Fax: 925-397-6799

Web: [www.cdxwireless.com](http://www.cdxwireless.com)

**ALCO East County Transition Team** will plan, prepare, and coordinate the agencies that will cutover / transition to the Alameda County East Cell in Q1 2012.

- Rhonda Bishop - Livermore Police Department – Team Leader- RBishop@ci.livermore.ca.us
- Randy Werner- Livermore Water Resources Division
- Rich Fraser- Livermore Public Works
- Joe Testa - Livermore Pleasanton Fire
- Joe Rodondi - Livermore Pleasanton Fire
- Mike Elerick - Pleasanton Police Department
- Margaret Mary Goulart - Pleasanton Police Department
- Mike Nicholson - Livermore Area Recreation & Parks District

Bob Simmons

**CDX Wireless, Inc.**

**Technology Consultants**

Phone: 925-218-4213

Fax: 925-397-6799

Web: [www.cdxwireless.com](http://www.cdxwireless.com)

## Scheduled Events

### MAJOR MILESTONE EVENTS

- Centralized Nice Logger Integration – November 2011
- Master Site Functional Testing – December 2011
- Contra Costa West Cell Functional Testing –December 2011
- Alameda East Cell Functional Testing – December 2011
- Alameda East Cell Coverage Testing by Motorola Solutions – November 2011
- MCC 7500 Console System Staging – November 2011
- Contra Costa West Cell & Alameda East Cell On Line – Q1 2012
- EBRCS RF Infrastructure System Complete – June 2012

## Upcoming Articles

Please tell us what you are most interested in. Use the link below for your suggestions:

[http://www.ebrcsa.org/Lists/ContactUs/NewForm\\_ContactUs.aspx](http://www.ebrcsa.org/Lists/ContactUs/NewForm_ContactUs.aspx)

## FAQ's

**Question: When will the system be completed?**

Answer: July 1, 2012

**Question: Where do I go to find more information and status of the project?**

Answer: [www.EBRCSA.org](http://www.EBRCSA.org)

**Question: The radio system is live next June 2012. Does that mean all the radios have to be purchased and operational by that time? Or is there a time when CCC dispatch will continue to broadcast on the old system until all installations are complete for the new radio?**

Answer: The plan is to start migrations onto the system starting in that timeframe. One of the drivers for this is narrow banding which will be required for VHF and UHF users and would need to be completed by January 1, 2013. By migrating onto the EBRCS system before January 1, 2013 UHF and VHF system owners avoid the cost of reprogramming their conventional systems for narrowband operation.

**Question: What about Training? We have made it through the hard part of getting the infrastructure in place to support a regional radio system between 2 counties. Now it is time to start working on developing a good training package that all agencies can provide to their end users. We have a unique opportunity to develop a fundamental training package that will address the following areas:**

- **Standardized Interoperability Radio Training so everyone is being trained the same way with the same information based upon a common set of goals.**
- **What a P25 Digital Radio System is and what it means to the end user.**
- **Common and Consistent radio terminology between disciplines**
- **Identify and develop SOP's for Interoperability between disciplines and agencies.**

Answer: With the implementation schedule of putting agencies on the new EBRCS first quarter of 2012, it is time to start working on a regional training package. Please contact Kody Kerwin with Contra Costa Fire at 925-941-3553 or email at [KKerw@cccfd.org](mailto:KKerw@cccfd.org) if you have questions, suggestions, or would like to be part of the team.

Please submit your questions using the link below:

[http://www.ebrcsa.org/Lists/ContactUs/NewForm\\_ContactUs.aspx](http://www.ebrcsa.org/Lists/ContactUs/NewForm_ContactUs.aspx)

Please visit the [www.EBRCSA.org](http://www.EBRCSA.org) for all FAQ's.

If you have suggestions for the EBRCSA Newsletter, please submit them via the link below:

[http://www.ebrcsa.org/Lists/ContactUs/NewForm\\_ContactUs.aspx](http://www.ebrcsa.org/Lists/ContactUs/NewForm_ContactUs.aspx)

## Contacts

**William J. McCammon**, Executive Director  
[East Bay Regional Communications System Authority](#)  
4985 Broder Blvd.  
Dublin CA 94568  
ebrcsa.org  
(925) 803-7802  
[Bill.McCammon@acgov.org](mailto:Bill.McCammon@acgov.org)

**Gary Durbin**, Project Manager  
[Motorola Solutions Systems Integration](#)  
(925) 813-1902  
Email: [Gary.Durbin@MotorolaSolutions.com](mailto:Gary.Durbin@MotorolaSolutions.com)

EBRCSA:  
[http://www.ebrcsa.org/Lists/ContactUs/NewForm\\_ContactUs.aspx](http://www.ebrcsa.org/Lists/ContactUs/NewForm_ContactUs.aspx)