



P25 Division

Agenda

Contract Highlights

System Overview

Progress Made

Upcoming Schedule

P25 Benefits



P25 Division

Contract Highlights

- Contract signed for \$122,916.70 less than proposal
- 50 days of training for all technicians that includes the P25 Master Technician Course
- 3 Year Warranty that starts upon final acceptance
- Software & Firmware upgrades to the latest version at the end of the warranty period and will include required hardware upgrades at no additional cost
- 6 Harris Technicians will be co-located in UCA service shops during the warranty period
- End-User radio discounts from 40-65% off the list price for quantities purchased before system acceptance



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System Overview

- P25 Phase-2 IP Trunked System Radio Communications System
- The UCA solution will consist of four IP based VIDA Cores with back-ups
 - 1 x VIDA Premier Core
 - 3 x VIDA Premier Connect Cores
- Connected to the four VIDA cores will be a total of:
 - 144 MASTR V-based RF sites
 - 117 trunked, multicast sites
 - 9 simulcast cells (27 sites)



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- 9 simulcast cells (27 sites)

System Overview





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- 9 simulcast cells (27 sites)
 - Cache Simulcast Cell – 3 Sites

System Overview





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System Overview

- 9 simulcast cells (27 sites)
 - Cache Simulcast Cell – 3 Sites
 - Davis Simulcast Cell – 4 Sites



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System Overview

- 9 simulcast cells (27 sites)
 - Cache Simulcast Cell – 3 Sites
 - Davis Simulcast Cell – 4 Sites
 - Lake Mountain Simulcast Cell – 2 Sites



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System Overview

- 9 simulcast cells (27 sites)
 - Cache Simulcast Cell – 3 Sites
 - Davis Simulcast Cell – 4 Sites
 - Lake Mountain Simulcast Cell – 2 Sites
 - Saint George Simulcast Cell – 3 Sites



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System Overview

- 9 simulcast cells (27 sites)
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 - Davis Simulcast Cell – 4 Sites
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 - Saint George Simulcast Cell – 3 Sites
 - Salt Lake North Simulcast Cell – 4 Sites



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 - Saint George Simulcast Cell – 3 Sites
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 - Salt Lake South Simulcast Cell – 3 Sites
 - Sardine Canyon Simulcast Cell – 2 Sites



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 - Wasatch Simulcast Cell – 3 Sites



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 - Saint George Simulcast Cell – 3 Sites
 - Salt Lake North Simulcast Cell – 4 Sites
 - Salt Lake South Simulcast Cell – 3 Sites
 - Sardine Canyon Simulcast Cell – 2 Sites
 - Wasatch Simulcast Cell – 3 Sites
 - Weber Simulcast Cell – 3 Sites



P25 Division

System Overview Continued

- DCP (Distributed Control Point) Technology
- Frequency: 700 MHz
- 224 Symphony Dispatch Consoles
 - (220 active & 4 training/spares)
- 560 conventional (4-wire) interfaces
- 1 centralized logging recorder with backup
- VIDA Interop Gateways & Encompass Gateways
- ISSI (Inter Sub System Interface)
 - Interconnection with 1 external P25 system with 20 concurrent talk paths
- BeOn Gateway Server



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Progress Made

Site Surveys	100% Complete
Tower Mapping	100% Complete
Tower Structural Analysis	99% Complete
Detail Design Approval	98% Complete
Grounding	81% Complete
Site Civil Remediation	87% Complete
NSC Equipment Installation	100% Complete
RF Equipment Installation	46% Complete



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Site Surveys





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Tower Mapping



	Tower Leg / Face	Height	Antenna Type & Mount Type or Description
1	CD	120	20-ft ±, 4-Element Dipole, Pipe Mount
2	A	120	8-ft Omni Antenna, Leg Mount
3	B	120	10-ft Omni Antenna, Leg Stand off mount
4	C	120	Omni Antenna, Antel BCD-80010, Standoff Mount
5	D	120	Omni Antenna, Antel BCD-80010, Standoff Mount
6	D	120	Omni Antenna, Sector Mount
7	A,B,C	118	(6) #-ft Sector Antennas, Sector Mount
8	A	116	10-ft ± Ø Microwave Antenna, Leg Mount, Ant
9	B	115	10-ft ± Ø Microwave Antenna, Leg Mount, Ant
10	A,B,C	98	(5) #-ft Sector Antennas, Sector Mount
11	C	94	10' Andrew Dish, Leg Pipe Mount
12	B	84	12' X 5' Ice Shield, Leg Mount
13	A	82	12' X 5' Ice Shield, Leg Mount
14	CD	79	2-Element Dipole Antenna, Sector Mount
15	CD	79	(2) Yagi Antenna, Sector Mount
16	CD	79	(2) Yagi Antenna, Sector Mount
17	CD	79	8-ft Omni Antenna, Sector Mount
18	B	79	10-ft ± Ø Microwave Antenna, Leg Mount, Ant
19	A	77	10-ft ± Ø Microwave Antenna, Leg Mount, Ant
20	D	65	12' X 5' Ice Shield, Leg Mount
21	C	64	12' X 5' Ice Shield, Leg Mount
22	A	63	8-ft ± Ø Microwave Antenna, Pipe Mount
23	D	61	6-ft ± Ø Microwave Antenna, Pipe Mount
24	CD	59	4-ft Yagi Antenna, Pipe Mount
25	A	57	4-ft ± Ø Microwave Antenna, Pipe Mount
26	B	57	1.5-ft Omni Antenna, Pipe Mount (upside down)
27	C	57	6-ft ± Ø Microwave Antenna, Pipe Mount
28	C	50	6-ft ± Ø Microwave Antenna, Pipe Mount, RFS
29	B	50	10-ft ± Ø Microwave Antenna, Pipe Mount, RFS
30	A	49	4-ft ± Ø Microwave Antenna, Pipe Mount
31	A	35	6-ft ± Grid Antenna, Pipe Mount
32	A	32	6-ft ± Ø Microwave Antenna, Pipe Mount, RFS
33	D	30	3-ft ± Ø Microwave Antenna, Pipe Mount
	A - Leg is Northeast		
	B - Leg is Southeast		
	C - Leg is Southwest		
	D - Leg is Northwest		
	AB - Face is Northeast		
	BC - Face is Southeast		
	CD - Face is Southwest		
	DA - Face is Northwest		



P25 Division

Tower Structural Analysis



Project Number: U3574-101-201

March 13, 2020

Haniel C. Clements
P25 Director
NPSPAC Region 41 Chairperson
700 Milliz Region 41 RPC Chairperson
5215 Wiley Post Way, Suite 550
Salt Lake City, Utah 84116

REFERENCE: **Cal Mountain**
41° 47' 3" North & -112° 13' 58" West, Box Elder County, UT
Structural Analysis of Existing Tower for Proposed Loading Modifications
UCA P25 Radio Communications Upgrade Project

Dear Mr. Clements,

On behalf of L3Harris Technologies and per your request, we have completed a feasibility study and have analyzed the known elements of the existing guyed tower for the proposed antenna and auxiliary equipment modifications. It is our understanding that the proposed loading modifications include the addition of (1) seven antennas and (1) amplifier to the tower, and that all existing equipment will remain. The following is a summary of our analysis and conclusions.

SUMMARY OF RESULTS:

Table 1: Tower Results¹

Component	Loading	Demand-Capacity Ratio ²	Result
Tower	Proposed	4.25	Fail
Tower	Existing	4.18	Fail
Foundation ¹	Proposed	1.41	Fail
Structure Rating ³		4.35	

- See Conclusions section below for a summary of analysis and results.
- Demand capacity ratio of 1.05 or less considered acceptable per TIA-222-G Section 15.6.3.
- Structure rating is the maximum demand-capacity ratio from all known tower components.
- Foundation demand-capacity ratio based on design reaction comparison.

DOCUMENTATION:

The following documentation was provided by the client for this analysis:

- UCA mapping spreadsheet of existing and proposed equipment provided to us by L3 Harris Technologies
- As-built tower configuration by Robn and provided by L3 Harris Technologies (Dated: August 2, 2001, Drawing #: D010319)
- Foundation as-built drawings by Robn and provided by L3 Harris Technologies (Dated July 19, 2001 Drawings# A011691-1 [Tower] & A011694-1 [Guys])





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Shelter Replacement / Relocate Legacy Equipment





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Consolidate Existing Equipment





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Transmission Line Entry Ports





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Cable Trays





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Electrical Service Panels





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Electrical Outlets





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Generators





P25 Division

HVAC Units





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Ice Bridge / Ice Bridge Trapeze





P25 Division

Uninterrupted Power Supplies





P25 Division

DC Power Plants





P25 Division

Solar Panel Arrays





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Grounding





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Detail Design Approval

L3HARRIS

Jeremy Roe
 Contracts Manager

L3Harris Technologies, Inc.
 223 Jefferson Ridge Parkway
 Lincolnburg, MO 64745
 Jeremy.Roe@L3Harris.com
 (434) 266-4082

June 5, 2020

Utah Communications Authority
 Attn: Quinton J. Stephens, General Counsel/Deputy Director
 5215 Wiley Post Way, Suite 550
 Salt Lake City, Utah 84116
 QStephens@uca911.org

Dear Quin:

Reference is made to that certain State of Utah Contract, dated June 7, 2019, as amended by Amendment No. 1, dated December 31, 2019 & Amendment No. 2, dated April 22, 2020 (the "Contract") between Utah Communications Authority ("UCA") and L3Harris Technologies, Inc. ("L3Harris").

The purpose of this letter is to request UCA's authorization to order the UCA-approved materials as of June 8, 2020 for UCA's selected 43 Project Sites as set forth in Attachment A to this letter (the "43-Site Material Order"). With respect to each site, the 43-Site Material Order will be completed in accordance with the UCA-approved materials and documentation identified specifically in the attached Schedules to Attachment A.

Please review the information provided and confirm your approval and authorization of the 43-Site Material Order by providing your signature to the Attachment A form herein and returning the completed form to my attention.

Sincerely,

/s/ Jeremy Roe
 Contracts Manager, L3Harris Technologies, Inc.

Cc: Harold Clements (UCA)
 Zeeshan Chandhry (L3Harris)
 JR Mann (L3Harris)

L3HARRIS

ATTACHMENT A

Authorization and Approval Form – UCA P25 Project

Request Information	
Today's Date:	6/5/2020
Name of Requestor:	Jeremy Roe
Work Details	
Purpose of Request:	UCA authorization and approval to complete the 43-Site Material Order as set forth herein at the 43 Project Sites.
Scope of Work:	The 43-Site Material Order will be completed in accordance with the UCA-approved materials and documentation identified specifically in the attached Schedules to Attachment A.
Duration:	June 8, 2020 – Nov 20, 2020
List of Sites and Materials	Please reference the Attachment A supplemental information and site-specific Schedules enclosed. Supplemental information <input checked="" type="checkbox"/> is <input type="checkbox"/> is not attached as part of Attachment A. (Check one).

Approved for UCA:
 By: _____
 Name: _____
 Title: _____
 Date: _____

David A. Edmunds
 Director of P25
 5215 Wiley Post Way
 Salt Lake City, UT 84116

David A. Edmunds



P25 Division

Upcoming Schedule

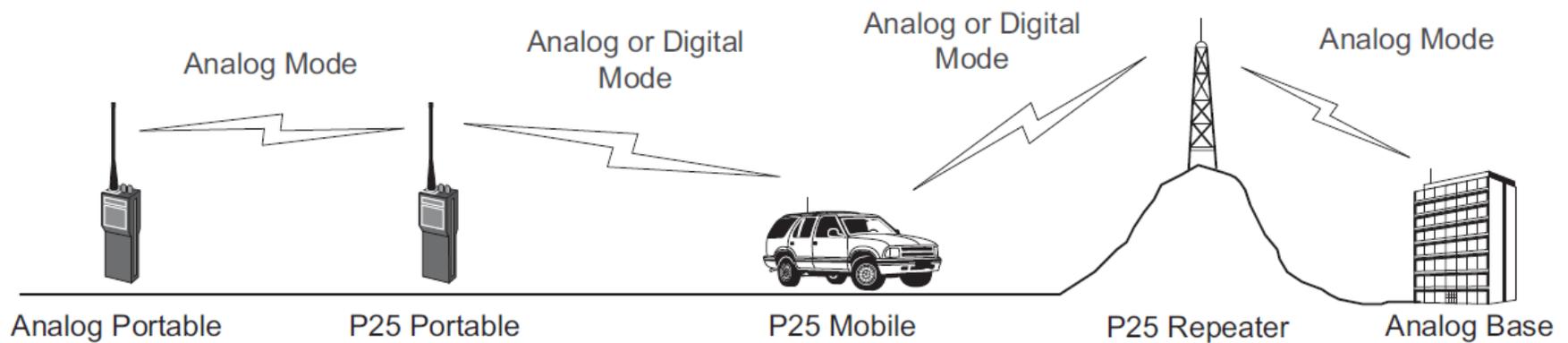
Site Civil Remediation	5/4/20 - 11/2/22
Create Fleet Maps & Radio Personalities	12/3/21 – 6/27/22
P25 Radio System Install	3/15/21 – 10/19/22
Equipment Production	10/11/21 – 5/6/22
(Round 3: 23 RF Sites, 221 Consoles)	
Factory Acceptance Test Round 3	3/21/22 – 4/28/22
Site Optimization	12/10/21-4/19/23
Console Install	5/9/22 – 11/7/22
Coverage Testing	8/8/22 – 8/30/23
Cutover / Migration	10/5/22 – 1/25/24
Burn-In	1/25/24 – 2/24/24
Warranty Period	3/15/24 – 3/15/27



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P25 Benefits

Interoperability
Multiple Vendors
Backwards Compatibility

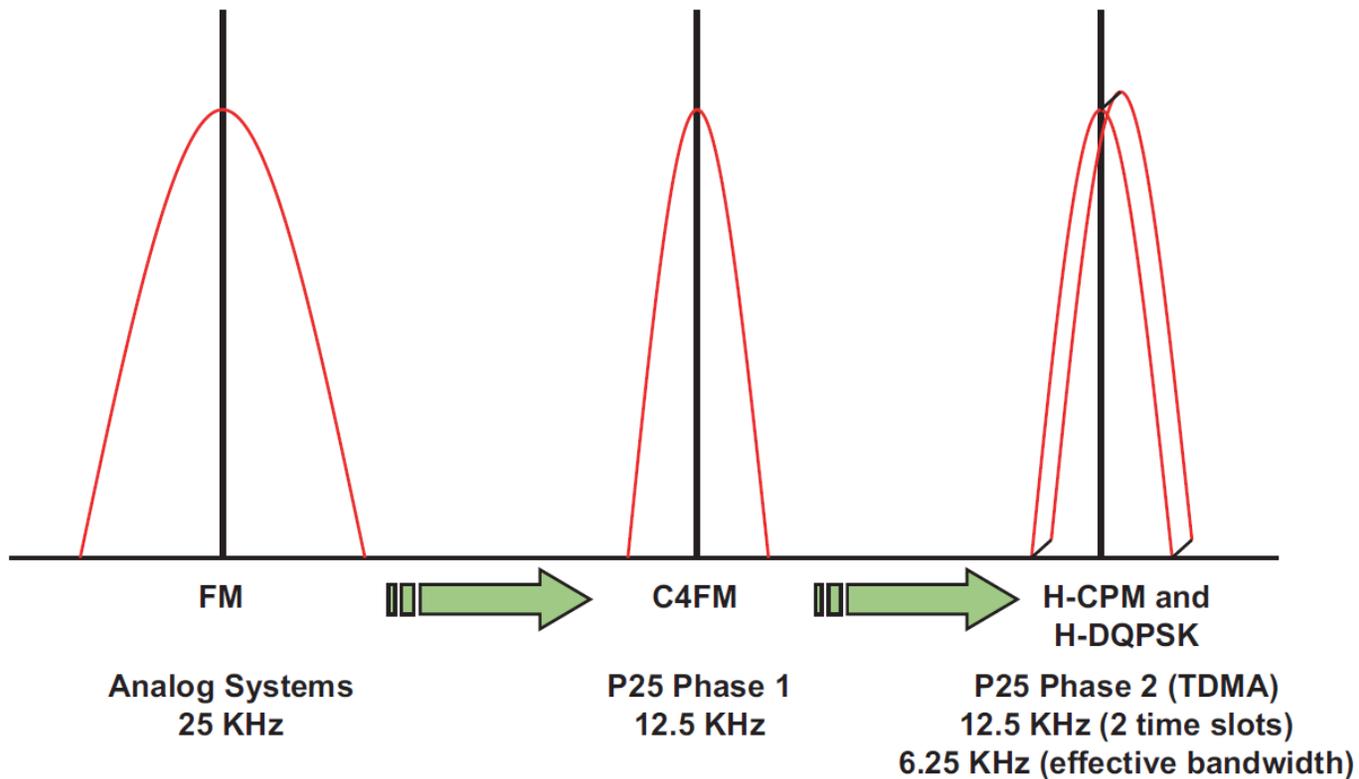




P25 Division

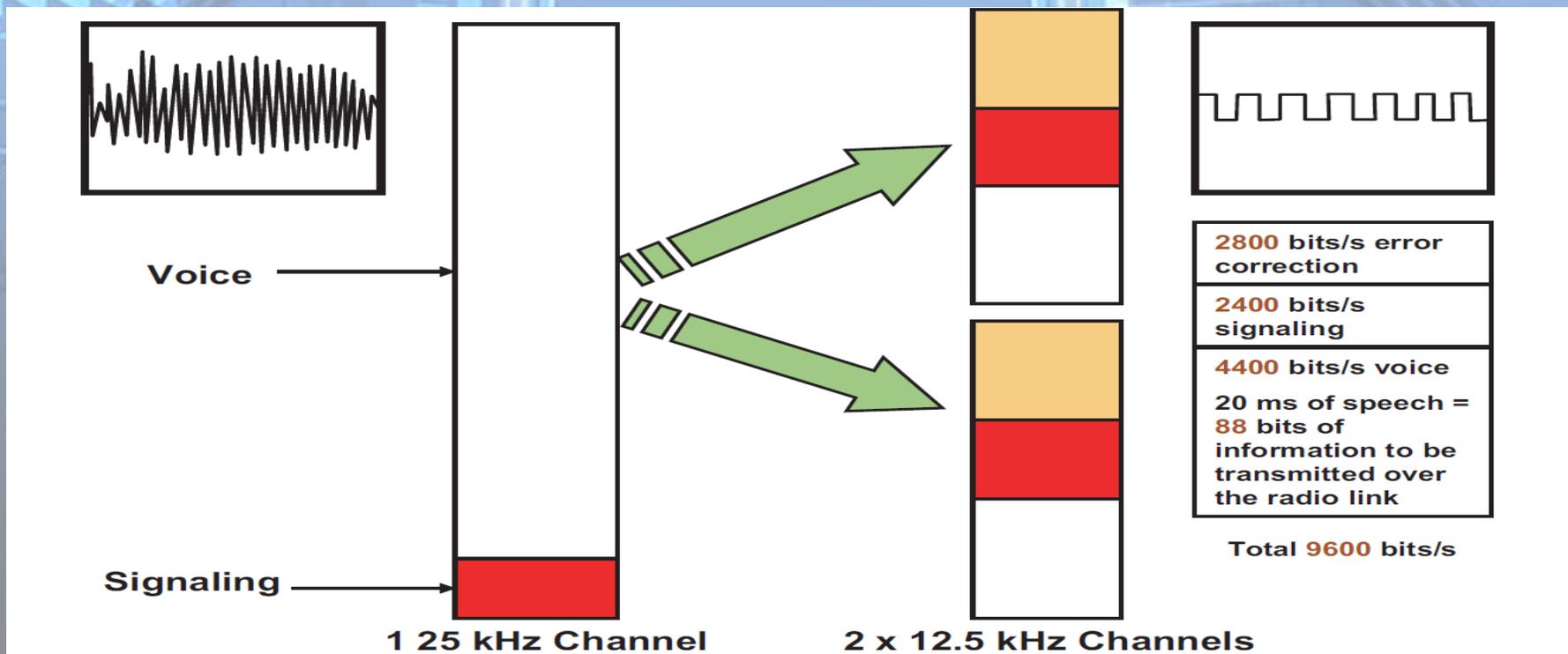
P25 Benefits continued

Spectrum Efficiency



P25 Benefits continued

Improved Audio Quality





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P25 Benefits continued

Enhanced Functionality



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James Baker

jbaker@uca911.org

385-522-9530

Questions

?

Harold Clements

hclements@uca911.org

801-633-2387