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Pike County Illinois Regional Communications System System Overview

- 1) General Description
 - a) The system was designed:
 - i) To allow 90% of all existing mobile/portable radios to be “on” the system with simple programming changes. Little additional mobile/portable equipment was required.
 - ii) To enable any existing narrow-band capable, simple analog radio with an ERP of greater than 3.0 watts to transmit/receive on LAW, ALPHA and BRAVO from 95% of locations within the county.
 - iii) To deliver base-to-mobile signal density of greater than 0.75µV to 95% of locations in the county on all channels.
 - b) The system is a multi-channel multiple receiver voted system with multiple transmit locations.
 - i) System Radio Channels
 - (1) Pike LAW – repeated channel normally reserved for Law enforcement agency use
 - (2) Command ALPHA – repeated channel available for any incident or agency
 - (3) Command BRAVO – repeated channel available for any incident or agency
 - (4) Pike PAGING channel incorporates several stand-alone repeaters that transmit initial paging notifications to fire and EMS first responders. This is a base-to-mobile only channel and is not authorized for mobile transmission.
 - ii) Voting, transmitter locks and default transmitters are independently controlled for PAGING, LAW, ALPHA and BRAVO. Each system operates independently from the others.
 - c) Two-way Mobile Operation (LAW, ALPHA and BRAVO)
 - i) A mobile user transmits (PTT)
 - ii) The transmission will be received by multiple receive sites
 - iii) All received audio is hauled to the El Dara site and presented to the JPS/Raytheon SNV-12 Voter.
 - iv) The Voter selects the receive site with the best voice quality (SNR criteria)
 - v) At 0.10 seconds after mobile PTT the voted audio is sent to the PSAP console.
 - vi) Based on the voted receiver location the VOTER routes the received audio to the transmitter with the best base-to-mobile coverage for the mobile transmitter’s location.
 - vii) At 0.22 seconds after mobile PTT the voted mobile audio begins transmitting from the selected site.
 - viii) Approximately 100 times a minute, the Voter re-scans all receivers and will change receiver/transmitter site to improve audio quality.
 - ix) The above process is automatic and requires no mobile user intervention.
 - d) PSAP Base-to-mobile Operation (LAW, ALPHA and BRAVO)
 - i) IF the PSAP transmits within 30 seconds of a mobile transmission:
 - (1) The transmitter previously selected by the voting process will transmit the PSAP audio.
 - ii) IF the PSAP transmits more than 30 seconds after a mobile transmission:
 - (1) The El Dara transmitter will become active by default.
 - iii) The PSAP can lock LAW, ALPHA or BRAVO transmitter to a particular site based on SOP or request from any agency. IF the PSAP has manually ‘locked’ a channel to a particular transmitter:
 - (1) All mobile transmission (received and voted to any receive site) will be re-transmitted from the manually ‘locked’ transmitter.
 - (2) All PSAP transmissions will be sent from the manually ‘locked’ transmitter.
 - (3) The PSAP must manually un-lock the system at the close of the incident.

- e) PAGING operation
 - i) All 911 calls for service, informational pages and other traffic on PAGING originate from the PSAP.
 - ii) The P11 operator selects the appropriate paging icon on the dispatch console
 - iii) The console
 - (1) Automatically selects the base transmitter that best serves the primary agency to be alerted.
 - (2) Transmits the alerting tones on the common VHF uplink frequency with a squelch code unique to the appropriate remote transmitter.
 - (3) The appropriate remote transmitter receives the uplink frequency and IF it hears its unique squelch code re-transmits the signaling over the common PAGING downlink frequency..
 - iv) The 911 operator:
 - (1) After the alert tones have been sent, the 911 operator *manually* selects the base transmitter that best serves the primary agency to be alerted.
 - (2) The 911 operator sends the voice information associated with the alert signaling.
 - (3) The console transmits the 911 operator's message on the common VHF uplink frequency with a squelch code unique to the appropriate remote transmitter.
 - (4) The appropriate remote transmitter receives the uplink frequency and IF it hears its unique squelch code re-transmits the 911 operator voice over the common PAGING downlink frequency.
 - v) The EI Dara automatic re-page system:
 - (1) Monitors all traffic on the common VHF uplink frequency.
 - (2) IF an appropriate squelch code is also received, it digitally records the alert times and any voice.
 - (3) It then waits 15 seconds for all traffic to stop on the PAGING uplink channel (COR inactive). If further traffic is heard, the timer resets.
 - (4) When the timer runs out, the system replays all traffic over the common PAGING downlink frequency from the EI Dara PAGING transmitter.
- 2) Component Locations:
 - a) Transmit Sites:
 - i) Pike County Water District EI Dara Tower (L/A/B/P with central 90% coverage)
 - ii) City of Griggsville Water Tower (L/A/B/P with coverage central, east and north)
 - iii) Village of Hull Water Tower (L/A/B/P with coverage west and northwest)
 - iv) Pike County Water District Pea Ridge Tower (L/A/B/P with coverage central, south and southwest)
 - v) Barry Fire House (PAGING only with local coverage only)
 - vi) Pike County Sheriff's Office (PSAP) (Limited backup transmitters only)
 - b) Receive Sites:
 - i) Pike County Water District EI Dara Tower
 - ii) City of Griggsville Water Tower
 - iii) Village of Hull Water Tower
 - iv) Pike County Water District Pea Ridge Tower
 - v) Pike County Sheriff's Office (improved Pittsfield area)
 - vi) Baylis Fire House (improved north and central coverage)
 - vii) Old Pearl Tower (improved south east coverage, online October, 2010)

Please feel free to contact me with any questions.



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