STATEWIDE SYSTEM MANAGEMENT GROUP
TECHNICAL WORKGROUP

SEPTEMBER 8, 2010
OFFICE OF JUSTICE ASSISTANCE
1 S. PINCKNEY STREET
MADISON, WI 53703
9:30AM

MEETING MINUTES

CALL TO ORDER – 10:32AM
ATTENDANCE

- MEMBERS
  - Carl Guse
  - Kevin Lemke
  - Joe Collins
  - Al Wisler
  - Keith Butler
  - Gary McClelland
  - Doug Meier
- VIA TELECONFERENCE
  - Keith Butler
  - Jim McNabb

- KIMBALL & ASSOCIATES
  - Laura Kelly
  - Jim Bidding
  - Chris Kelly
  - Kevin McGeary
  - EF JOHNSON
  - Lisa Beyer
  - Mark Davis
  - VISITORS
  - Mike Mietz
- WISCOM STAFF
  - Kathleen Lordo
  - OJA STAFF
  - Jennifer Lord
  - Dave Spenner

MEMBERSHIP

a. The need for a new vice chair was discussed. It was decided that no vice-chair is needed at this time. Carl Guse asked for a motion to not elect a new vice-chair at this time. Joe Collins made the motion and it was seconded by Keith Butler. The motion carried.

b. Two members of the technical working group have stepped down. Carl Guse suggested the addition of Lt. Mike Knoll to the working group and asked for a motion to recommend to the SSMG the addition of Lt. Knoll to the group. Joe Collins made the motion, and it was seconded by Keith Butler. The motion carried.

REVIEW L.R. KIMBALL SCOPE OF WORK FOR SUBSCRIBER TESTING

a. Kevin McGeary explained scope in more detail including the process, documentation, and field procedure for testing subscriber units. The purpose of this project is to identify those radios that may not perform favorably when used with WISCOM system. These limitations can be identified for users. This will help user agencies avoid purchasing radios that have identified limitations on the system. WISCOM will require that radios have undergone national P25 Compliance Assessment Program (CAP) testing for P25 compliance. Radios will also need to be WISCOM-certified by the process developed by L.R. Kimball.

b. Task 1 – Testing Procedures:
   i. The working group found the scope of Task 1 to be acceptable with the exception of the last bullet point, which is testing of non-radio equipment compatibility on WISCOM. Carl Guse suggested that this item be

revisited at a later time, but not be included in the current scope of work. The group concurred.

ii. There was discussion regarding the need for L.R. Kimball to keep the item regarding encryption. Doug Meier would like to keep the encryption item within the current scope of work for Federal Agencies, which employ encryption in many of their operations. The group discussed encryption, primarily whether WISCOM should require open standard encryption or allow proprietary encryption. AES is the current P25 standard. DES and AES are both open standards. At this point, the majority of members want to keep to an open standard. Motorola has a proprietary encryption, ADP, and this is used by some agencies (both Fond du Lac PD and Fond du Lac County). Encryption will need to be tested as well. How keys are exchanged is a concern. Administrative control could be compromised if some channels are encrypted with a proprietary standard. This may also occur if an individual would deviate from WISCOM policy using standard encryption; use of an unauthorized encryption key. The group agreed to consider allowing non-standard (i.e. proprietary) encryption use on a case by case basis. WISCOM will not test proprietary encryptions on the system in this scope of work. The working group agreed to move forward with exception of the last bullet point (testing of non-radio equipment).

c. Task 2 – Field Testing of Subscriber Units:

   i. The working group would like a step by step procedure for the testing process to enable WISCOM to perform the field testing in the future. L.R. Kimball will create a field testing procedure and will refine the procedure as field testing proceeds. This procedure will then pass to WISCOM, along with the results of their radio testing. These are included as deliverables in the Scope of Work Proposal. Any radio that is considered for WISCOM will have already been approved by P25 standards.

   ii. L.R. Kimball will perform preliminary radio tests this fall and winter with the current six-site system. These radios may then be re-tested in late spring and early summer after the majority of the WISCOM sites are operational. Additional radios may be tested at this time. The group discussed if testing beyond this initial process should be carried financially by vendors.

   iii. The first priority is to test to ensure that radios purchased with grant funds operate well on the system. The deliverables from L.R. Kimball will include a table of programming parameters for each vendor/model of radio that has been tested. This will simplify radio programming if vendors use differing nomenclature. The working group would like for Tasks 1 and 2 to run concurrently in order to expedite radio testing for OJA's needs (Replacement Grants, Round 6). Focus should be on multi-site trunking, especially roaming. If the radio has already passed national CAP testing, it does not need to be re-tested for P25 compliance. Also, it should be noted how radios from different vendors interact with one another in a multi-site trunked environment.

   iv. A question was raised regarding what action to take if a vendor is not available to aid with testing of their radios or if a vendor is not interested in participating in testing. Kevin McGeary replied that someone with programming expertise in the manufacturer would be ideal to aid with testing. The absence of such would perhaps slow, but not stop, the testing process.

   v. L.R. Kimball was asked if they would be testing one vendor at a time or multiple vendors at the same time. Kevin McGeary replied that there is no significant change in field time to test a couple of radios from a single vendor at the same time. They intend to test vendors separately. The price presented in the document is for two radios (a mobile and a portable) from a single vendor. The working group felt that testing many radios from many manufacturers is cost-prohibitive.

   vi. A plan of action is to identify the manufacturer and model of those radios purchased with grant funds and ensure that those are tested. The testing process could then be carried on internally or the cost of radio testing could be passed along cost to vendors. The question was raised – "Should WISCOM charge

manufacturers who come to ask for certification on the system?"   It was suggested that WISCOM only test radios for Wisconsin's local/county/state agencies which have a significant fleet of those radios. If a Wisconsin local/county/state agency is not benefitting from the testing of the radio, then WISCOM should not invest in testing that radio. Vendors who want to test radios that are not in use should carry the cost of testing. Some radios currently in use in quantity by agencies are manufactured by Motorola XTL (mobiles and portables), Kenwood (2 models), Tait (2 models), Icom (2 models), Harris, and Relm. OJA has funded Icom radios that are not trunking compatible, but these radios are eligible to be traded-in for a discount on a trunking capable model. This trunking capable Icom model should be tested. The group will develop a list of which radios need to be tested.   L.R. Kimball should then work with individual vendors and the Bureau of Communications to obtain these models of radio for testing. L.R. Kimball will revise the scope of work with these criteria. They had envisioned the vendor coming to WISCOM for certification, and not WISCOM preemptively testing radios. With this new information in mind, L.R. Kimball has agreed to re-price the field testing process for this initial testing. They will make field testing more efficient, testing more than two models per field test. Manufacturers will still be tested independently. The scope of work will be kept as written for the future, when vendors are coming to WISCOM for certification.

vii. OJA would like a document generated from the field testing that will enable radios to be categorized as recommended radios (those radios that have no significant issues on the system and can be purchased with grant funds), acceptable radios (those radios that an agency can buy, but due to some performance issues with the system, cannot be purchased with grant funds), and incompatible radios (those radios that should not be used with system due to significant performance issues).

viii. L.R. Kimball was asked to devise a plan on procedures for re-testing radios and guidelines for firmware updates when radios fail initial field tests. The version of the firmware is that is certified for use on the system via vendor inquiry should then to be included in any upgrades made to existing radios to enable trunking. Some radios were sold with older firmware with the promise that they could be upgraded to use on WISCOM.

ix. Carl Guse asked for a motion to recommend to the SSMG that L.R. Kimball's execution of Task 2 (with the new criteria described above) be approved. Al Wisler made the motion, and it was seconded by Joe Collins. The motion carried.

- Radio Specifications:
  a. A list of radio specifications suggested for use on the system was presented to the working group. These specifications were 138-174 MHz capability; P25 digital standard; AMBE +2 vocoder; trunking capability; 128 control channel capacity; 512 voice channel capacity; a roaming algorithm that considers RSSI, adjacent channel information, and noise environment; full spectrum control channel capability; and a preferred site list.

  b. The group discussed these specifications. Some radios known to be in use by agencies in Wisconsin only have a capacity of 64 control channels. This will may limit accessibility to some sites in the WISCOM system. The group would like to make recommendations to help agencies make more informed purchases when purchasing trunking radios. The group would like for agencies to have radios with robust roaming algorithms. The algorithm should actively check other control channels. Adjacent site information and the noise environment are important factors. Full spectrum control channel capability will allow a radio to perform a band scan if none of programmed control channels work. The radio can then find the system again if the control channel list is not adequate. A preferred site list will facilitate directing radio traffic to

the appropriate tower sites. Towers will not be engaged unnecessarily.

    c.   The recommendation for the AMBE +2 vocoder technology may be controversial due to the inaccurate information presented to the Wisconsin Joint Legislative Audit Committee during a hearing on Tuesday, September 7, 2010. AMBE +2 vocoder technology was adopted as the P25 standard by the Federal P25 committee in 2005. It was introduced in some models of radios in 2006. It was not widely available because this technology has different memory requirements than the IMBE vocoder, which was the P25 standard prior to 2005. Because of the need to redesign radios to implement the AMBE +2 technology, many manufacturers did not use it. In 2009-2010, the technology began to appear in more new radios. The IMBE vocoder and the AMBE +2 vocoder are fully compatible and interoperable with one another. The user experience is what varies. The AMBE +2 improves transmit/receive voice quality. The AMBE +2 vocoder is forward compatible for Phase 2 P25 use. These recommendations will not affect those radios that have already been purchased, most of which use the IMBE vocoder. Both vocoders will work on the system. The reason that this AMBE +2 vocoder technology is required of grant funded radios from this point forward is because it is the *current* P25 standard, and it is forward compatible. The hope of the working group is that vendors are encouraged to offer radios that are up to current P25 standards. These new recommendations are to help grant recipients and those purchasing new trunking radios to obtain radios that will function as well as is possible on the system. It was requested of L.R. Kimball to provide a recommendation of baseline radio specifications that operate favorably on WISCOM. It should be stressed that the recommendations above are not requirements to use WISCOM; they are recommendations for the purchase of trunking radios for use on the system.   They would, however, be proposed as requirements for those trunking radios intended to be purchased with grant funds.

    d.   Carl Guse asked for a motion to make a recommendation to SSMG and the IC that these radio specifications be accepted as the official recommended standards for WISCOM. Gary McLelland made the motion, and it was seconded by Doug Meier. The motion carried.

▪   WISCOM Implementation: Carl Guse presented the status of system implementation to the working group.

▪   Factory Acceptance Testing: Mark Davis gave the working group an overview of the factory acceptance process.

▪   Talkgroups:
    a.   Currently, eight statewide talkgroups and twenty-four regional talkgroups (four talkgroups in each of the six homeland security regions) are proposed for general interoperability usage. Interoperability talkgroups (used as they were intended) will not incur usage costs.

    b.   It was proposed that there be standard county talkgroups that, perhaps, would also be available at no cost. He proposed an "xxCOM" talkgroup for each county. This is a hailing channel of sorts. It would provide a way for an outside user to access a county dispatch.   This talkgroup would not normally be usable for daily operations. WISCOM would need to monitor agency usage of this talkgroup. Carl also suggested an "xxTRVL" talkgroup. This talkgroup would have statewide coverage and could be used for an individual to call his/her county when outside the coverage of his/her own system.

    c.   It was suggested that these two classes of talkgroups be available for local agencies in municipalities with large populations (perhaps in excess of 25,000). This would make the system valuable to a larger group of people. It was suggested that in lieu of the "xxTRVL" and "xxCOM" talkgroups, that counties be allotted

several talkgroups and they can designate how to use them. Comment was made that allowing all 72 counties to have access to several talkgroups in the early stages of the system could backfire, and overload the system as more agencies begin using WISCOM regularly. It was agreed upon by the group that "xxCOM" and "xxTRVL" should be the starting point for each county. Counties and large municipalities can request more of these types of talkgroups, and they will be considered on a case by case basis. It was discussed that demo talkgroups should be created for those agencies who request to test the WISCOM system.

d.   Fire/MABAS and Hospital/EMS were not represented at this meeting. The group would like the input of someone knowledgeable of the needs of these agencies to determine what talkgroups they would require. It was suggested that every hospital could have its own talkgroup, or that there could be regional talkgroups available for coordination. School buses might benefit from access to "xxCOM.

e.   An SSMG talkgroup will be established. Carl Guse is working on determining the cost to upgrade or replace radios for SSMG members, per the last SSMG meeting. It was suggested that state to state talkgroups be established for the adjacent states. The specific communication needs should be determined with adjacent states. Perhaps, a talkgroup for each bordering county in an adjacent state would be necessary. There is a desire in the western part of Wisconsin to tie into ARMER (Minnesota), at least at state and regional levels. The ability to tie into the adjacent state system will depend on which states want to connect to Wisconsin.

- Possible talkgroup priority levels
  1 – PS Primary main TG
  2 – PS Primary other TG's
  3 – PS Secondary main TG
  4 – PS Secondary other TG's
  5 – Public service primary main TG
  6 – Public service primary other TG's
  7 – Public service secondary main TG
  8 – Public service secondary other TG's
  9 – Other
  Interoperability only talkgroups would be status 1-3 on this scheme. This requires further discussion.

- Badgernet: Mike Mietz from DOA called in to discuss interest in Badgernet.
  a.   Mike Mietz gave an overview of the Badgernet Converged Network. The primary interest in Badgernet is to utilize it to tie sites into the system that are not part of the microwave/fiber tower network and to tie dispatch centers into the system.

  b.   WisDOT will need to file a Badgernet service request with DET. The request will be issued a project number, and WISCOM can then work with Badgernet engineers. The system is estimated to need DS0 per active talk path. This is a relatively low bandwidth application. The talk paths would ideally be aggregated to sites with Cisco 4503 switches, and there Badgernet could be inserted into the WISCOM network. Voice is the only application that needs low latency/high priority. WISCOM would need to reinforce the importance of clear voice communication via Badgernet.

  c.   The working group discussed gateways versus RF in dispatch centers. Consoles connected to gateways do not use over the air resources, and provide more dedicated and direct connections. They do reduce flexibility (radio control stations could allow dispatch to change the talkgroup as necessary). One

drawback for use of a gateway is the need for an IP connection. The gateway uses E&M or tone signaling. A demonstration of Badgernet used in this capacity is desirable, as there is a concern regarding tier levels and quality of service.

- Gateways: One gateway box provides two connections. Currently, there is a gateway box at Haven Tower. It has IP LAN one side and two 800 MHz radios on other side. This has been demonstrated to work well. There is question on how best to tie existing county channels in to the system.

- System Load Test:
  a. A system load test will be performed on the system when the majority of sites are installed and operational. One way to load the system is to use gateways to bring existing radio traffic onto system. The purpose of the load test to try and busy-out system to see how the system behaves under this load. Both one-way (bring talk into system on talkgroups, but cannot talk back) and two-way (can talk back if transmit is programmed into responding radio) can be utilized to load the system. Fond du Lac PD, Dane Co., Dodge Co., Racine Fire Dept., and Two Rivers PD have voiced interest in allowing their radio traffic to be used for this purpose.

  b. System usage would need to be scaled back to normal usage once the system is used for regular communication. The need to tie in counties' existing channels was discussed. Control stations or hard-wired gateways could be used to tie conventional repeater traffic into the trunked system. Methods for tying in existing conventional MARC repeaters was also discussed. One solution is for several conventional repeaters to funnel into one talkgroup, but that one talkgroup would then talk back to all associated MARC repeaters. MARC repeaters are usually only brought up as they are needed. It is only necessary to tie in to them when both conventional and trunked systems must work together at a MARC repeater. WISPERN and IFERN are simplex systems. Another solution is to tie all MARC repeaters within a county to one county-wide MARC talkgroup. A gateway can be tied to a MARC repeater in order to test concepts and see how to best tie in conventional MARC repeaters statewide.

- Simulcast: EF Johnson now offers simulcast capabilities. Simulcast uses the same frequency set at multiple tower sites. It is a more expensive than multicast. It is more cost effective to put in a stand-alone multicast site than to employ simulcast.

- Additional WISCOM Sites: Additional sites will add to portable coverage. Mauston and Port Washington (which is located in Ozaukee County, where there are currently no WISCOM towers) will be available for WISCOM sites. Funding has been approved for WisDOT to build or make arrangements to use an existing tower in Ozaukee County. Multi-tower funding approval has been granted for State Patrol. It was discussed if equipment that has been purchased for sites that have not been built be re-deployed at these existing sites until the intended site is built. The cost effectiveness of this should be examined. Is it more feasible to move the equipment to the original site or to buy new equipment for the new site? The towers that are currently standing or are in the building process should be examined compared to which sets of equipment will not have a site to be installed in the immediate future.

- WISCOM Usage Policy: The subject of private calls should be revisited. Group members recall a previous meeting during which private calls were removed from the policy verbiage. The NMS does have the capability to prohibit private calls. The minutes from the previous meeting should be referenced.

- User Documents:

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a. A shortened demo/test user application is being created. This document will aid with accountability for those using the system during the preliminary test period. This application will gather agency contact information, requested talkgroups, and agency radio ID's for entry into the NMS. A list of those agencies who have received grant radios should be obtained from OJA to facilitate their completion of the application. David Spenner suggests that the application be available on the OJA interoperability website and be returned to OJA.

b. A key agreement is being developed for those individuals who have access to system keys for radio programming purposes. It will include clauses referring to not duplicating radio ID's, not programming unauthorized talkgroups into radios, not cloning radios, etc.

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▪ Daily User Ideas: Several ideas where discussed, including:
a. No maintenance fees for early adopters of the system for a certain number of years (perhaps until 2014?). The first users of the system will be test cases. Allowing these agencies to use the system at no cost in return for the feedback and experience gained.

b. Costs for purchase and maintenance of infrastructure added by an agency to facilitate daily system usage should be shouldered by the agency. Grant funds may be available to mitigate agency costs. "For Profit" agencies wishing to use the system should, perhaps, be assessed fees on a different scale than public entities.

MEETING ADJOURNMENT

MOTION
- Motion made by Kevin Lemke to adjourn
- Motion seconded by Joe Collins
- Motion carried

MEETING ADJOURNED AT 3:00PM