

## DEPLOYABLE CELLULAR COMMUNICATIONS

### **Background and Recommendations for Deployable Cellular Communications**

When disastrous events occur, communications networks of all types (commercial and government operated) often fail or become unreliable. In the face of these situations, first responders and government leadership must have an easy means of rapidly re-establishing dependable communications. In particular, first responders such as fire, police, and search & rescue as well as key government officials must be enabled to communicate across a common interoperable guaranteed access system within hours of a crisis, not days or weeks, to effect rescue and continuity of government, respectively.

While private communications systems developed for the Government and operated by the Government (e.g. push to talk land mobile radios) are key components of any emergency communications plan, commercial off the shelf technologies (COTS) are increasingly being deployed and used by the Government on a daily basis. The two most prevalent COTS tools are the internet (including email, directory services, maps, etc.) and cellular phones / devices. With regard to cellular, two key facts are critical to point out, but often overlooked: 1) Cellular phones are interoperable by design. A Blackberry device on the Sprint cellular network will talk to a Samsung phone on the Verizon Wireless network, and in fact can exchange data as well (e.g. photos, video, text messages). 2) Cellular devices are now evolving to their third generation which allows for high speed data connectivity to these devices. Depending on the network, cell phones and cellular PDA's can receive data at speeds two or three times faster than traditional "dial up" modems all the way up to speeds that rival cable modem or DSL "wired" connections to computers. This second point means that whatever is available at the desk can be made available in the field.

However, this rapid evolution, deployment and use of cellular has led to a Government funded effort with industry to insure that cellular capability is operational in times of man-made or natural disasters. Inspired by requirements from the White House Communications Agency, QUALCOMM Inc developed a miniaturized complete cellular base station that can serve to create a private cellular network in times of crisis to allow existing cellular COTS devices to operate in an assured fashion. This miniaturized system is called the QUALCOMM Deployable Base Station (QDBS) and was deployed in response to FEMA, Northern Command and Louisiana State Police requirements in response to Hurricanes Katrina, Rita and Wilma. Eight units, total, were deployed to assist the New Orleans area and the surrounding Parishes (counties). These units are now in the possession of FEMA and additional units and capabilities are being pursued for readiness requirements in calendar year 2006.

Key to the successful deployment of this system was that it allowed Government users' COTS cellular phones operating in commercial cellular carrier spectrum to function as if they had normal cellular service but on a private network that could not be overloaded by the general public or other users. Each QDBS unit created a private cellular "bubble" with a range of 5-10 miles radius that allowed hundreds of public safety and government users to talk to each other, call and receive calls from landline phones and surf the internet. QUALCOMM believes that 20 - 30 units should be ready in each state to provide the coverage necessary to respond to an emergency. Additional units should be procured and held by FEMA and/or National Guard for National Response and Continuity of Government purposes. These federal units would be fully interoperable and would expand coverage as needed, but also often arrive days later. Rapid deployment is a key factor, and placing these units in vehicles (Suburbans, custom vehicles, etc.) could save lives within the first hours of response to a disaster by allowing these private cellular "bubbles" to be created as soon as the vehicle arrives on the scene. With proper pre-planning QDBS systems can provide critical interoperable communications within hours of a crisis.

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### Summary of QUALCOMM Support to FEMA for Hurricanes Katrina and Rita

- On Sept 2, FEMA made an emergency request to QUALCOMM to deliver a QUALCOMM Deployable Base Station (QDBS) for New Orleans area coverage in response to Hurricane Katrina
- Over Labor Day QUALCOMM mobilized resources and personnel to configure and test emergency QDBS system
- Sun. Sept. 4 QUALCOMM utilized their Chairman's jet to deliver a QDBS, ViaSat Ku-band satellite backhaul terminal, 400 commercial cellular phones, generators, technical installation team, to the FEMA Emergency Operations Center, Baton Rouge, Louisiana
- QUALCOMM worked with ALLTEL Cellular to provide a dedicated channel for communications during the crisis at 850 MHz. Verizon Wireless and Sprint were also prepared to help with spectrum
- QUALCOMM and FEMA personnel proceeded to setup the QDBS at the St. Bernard Parish Emergency Operations Center and turned it over to FEMA. Once site location was determined, **Setup was within one day.**
  - Note: St. Bernard Parish Location had limited power, no elevators, no air conditioning and was an Exxon-Mobile refinery plant building
  - Portability of the downsized base station & satcom system was key to success
  - FEMA personnel were trained and took acceptance of the system within 24 hours after satellite reach-back was established
- After Initial Operations, FEMA was able to take down the system the week of September 13th move it to a new location
  - It was operational again in less than 2 hours
- Northern Command also set up a QDBS system in New Orleans
  - Proceeded to order six additional systems for Katrina and Rita response