

Columbia Shuttle Recovery and 802.11b

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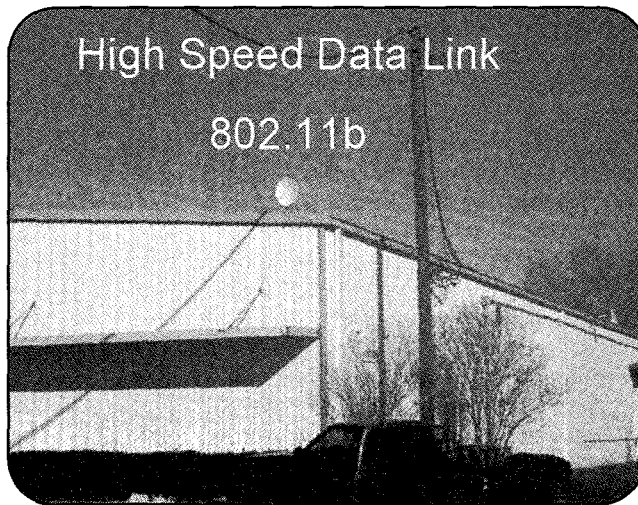
An 802.11b high-speed Internet link was used by hams in Nacogdoches, Texas during the *Columbia* shuttle recovery efforts. The equipment for the link was provided by Michael Willett, KD5MFM, from McKinney, Texas, to link net control in Nacogdoches with the Internet. The system was installed by Michael and several local Nacogdoches hams, including Robert Judy, KD5FEE, James McLaughlin, KD5POY, and Tim Lewallen, KD5ING, one week after the shuttle disaster.

The link utilized a mix of directional antennas to provide a robust link through the intense radio traffic in the area. Spanning a highway, and approximately a quarter-mile distance, the link was comprised of Aironet (now Cisco Systems) devices. The equipment used included a BR-500 stand-alone bridge-router connected into the LAN/Internet cloud at the Budweiser Distribution Center, and a PCI card in a tower-style PC in the ForeTravel recreational vehicle located on the Expo Center grounds. The PC in the RV ran Windows® 2000. Along with the radio card, the PC also included a standard Ethernet card, and was configured by James to run as a DHCP host and router, allowing several PCs to connect to the Internet via a local hub in the ForeTravel RV.

The radio cards were set to produce 100 mW of power and utilize the Direct Sequence Spread Spectrum encoding/modulation technique with a center frequency of 2437 MHz (U.S. channel 6). At the Budweiser Distribution Center a 24-inch parabolic dish made by David Clingerman, W6OAL, at Olde Antenna Labs in Parker, Colorado, was connected to approximately 50 feet of LMR-400 coax terminated on-site with N connectors. The dish was mounted on a wood 2 × 2, cross-braced by two more wood 2 × 2s held to a plywood pallet by lag screws.

The pallet was placed on the roof by the local fire department, which arrived at the Budweiser Distribution Center with a hook & ladder fire truck to help with access to the roof. On the Expo Center side, an 11-element shrouded Cushcraft antenna was mounted on a temporary mast held secure to the RV with a radiator-hose-style pipe clamp.

Net control utilized the link for looking up callsigns, communicating quickly via e-mail, and monitoring weather radar, as



The parabolic dish used for the 802.11b data link. This dish was located on top of the Budweiser Distribution Center.

rain tracked across the area often during the week after the shuttle disaster.

This application and installation of the 802.11b link was one of many examples demonstrating the extensive capabilities of volunteer amateur radio operators, government authorities, and local businesses teaming together to help during a crisis event.

Pictures of the link as well as other operations may be seen at <http://www.k5rwk.org/Shuttle/index.html>.

Many thanks to the Budweiser Distribution Center for their network and open facility generosity and support; the Nacogdoches Fire Department for the lift; Tim Lewallen for materials, support, and the volunteer fire department truck and ladder; Robert for running wires and planning; and James for the hub and his configuration assistance!