Utility Planet

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HF in Death Valley

If you're an active emergency-communications ham in Southern California, you've probably heard of the annual Baker to Vegas Challenge Cup Relay in late March. It's an epic competition involving over 250 teams of 20 runners each, all from law enforcement agencies in several different countries. That's why it's been billed as "the world's largest police chase." When support personnel are included, the number of people involved goes well over 6,000.

The race's 20 sections stretch for 120 miles, through desolate desert and over steep mountain passes prone to snow storms. It starts in the absolute middle of nowhere, just south of Death Valley. The nearest sign of habitation is Baker, California (population 735), and even that's 25 miles away. The rest of the year, Baker is known mostly for its temperature extremes, as proudly displayed on the world's largest thermometer. 13 to 24 hours later, teams reach the finish line in Las Vegas.

Due to terrain and long distances, the communication challenges are immense. Most of the support comes from ham volunteers with mobile radios, using strings of VHF/UHF repeaters. It's a massive undertaking. Repeaters are no longer linked, due to technical problems in the past.

This year, however, comm support also came from NVIS Communications, on shortwave radio (HF). NVIS is the commercial radio consulting firm operating those mysterious WQLE815 stations heard on Automatic Link Establishment (ALE). Typical was the ALE-initiated USB voice between WQLE815SJCLIENT, identifying at a temporary location in "Mountain Springs" and WQLE815CVLCLIENT, temporary in Pahrump, Nevada. There were also soundings on 7549.0 kHz USB ALE.

The rest of the year, Pahrump is known mostly for Art Bell, the retired talk show host who (for better or worse) defined late night AM radio for a generation. He's an Extra Class ham (W6OBB/ 4F1AB), with a large antenna farm out in the desert. The latter call is used in the Philippines, where he lived for a time.

The name NVIS undoubtedly refers to Near-Vertical Incidence Skywave; a skip mode that's perfect for the kind of situation seen in this race. Antennas are configured to radiate almost straight up, and the result is very even coverage in a radius of about 500 miles. Terrain becomes less of an issue, as does antenna gain. This mode is becoming common for military operations. At least on the Baker to Vegas race, it seems like a good match of capability to the task at hand.

In this case, the mobiles were using Barrett radios,

Barrett NVIS antenna, in deployed position (Courtesy: Barrett Communications)

feeding special NVIS antennas resembling luggage racks on the vehicle roofs. Barrett is an Australian company, generally associated with robust communication solutions for very remote areas. It is represented in the U.S. by a division of NVIS called Barrett Communications Consulting.

Barrett and NVIS have also worked with some other consulting firms in developing a Tactical Communications Unit (TCU) for the new Los Angeles County interoperability initiative known as LA-RICS. The TCU is an ominous-looking comm trailer that is much smaller than most, and operated by one person. An EMP-hardened shelter encloses several racks of radios, plus a generator and four days' worth of fuel. Antennas are mounted on a crank-up mast. Turnkey cellular, phone patch, and public safety radio capability are provided over networks on VHF and UHF. Two HF networks are provided as an absolute fall-back when all other modes fail.

Hopefully, we'll be hearing more from WQLE815 radios in California. The frequencies shown in the FCC license are: 2194-2495, 3155-3400, 4438-4650, 5005-5450, 6765-7000, 7300-8100, 9497.4, 11452.4, 12225, 14360, 15604.4, 18035, 20095, and possibly 27490 kHz. The lower frequencies are shown as ranges because they are authorized for frequency hopping spread spectrum. As we've seen, though, some identifiers and operator chatter occur on single frequencies, usually near the center of the range.

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