NEAR VERTICAL INCIDENCE SKYWAVE (NVIS) TECHNIQUE

Transmitting a radio signal from point A to point B is not as simple as it sounds. In the HF spectrum, radio signals are usually radiated from an antenna at low or obtuse angles, reflecting off the F2 layer of the ionosphere, much like bouncing off a mirror. In the diagram below, a signal from STATION A would typically reflect off the ionosphere at a low angle and be received strongly at STATION C, at a distance of 800 – 1000 miles. But, the signal may skip completely over STATION B, and not be heard at all. Because STATION B is only 75 miles from STATION A, it is located in a DEAD-SKIP ZONE.

To overcome the negative effect of the DEAD-SKIP ZONE, radio operators have adopted a creative technique called Near Vertical Incidence Skywave, or NVIS. The strategy involves deploying antenna systems which radiate at high or acute angles. The antennas are typically horizontal wires parallel to the ground at heights of only 10 to 15 feet. The low antenna radiates mostly upward with signals reflecting off the F2 layer downward toward earth closer to the intended station. This provides a more effective cone of radiation that can provide reliable communication from a few miles to 300 miles.