

Way Back When.....

By: Doyle Piland

From the White Sands Missile Range Museum Archives

People at White Sands today know the area out US Highway 70 east about 20 miles or so as the High Energy Laser System Test Facility (HELSTF). People visiting there, may be puzzled by the one large dome and two small domes that are a part of that facility today. People who work there, most likely don't give them a thought, but also may not know anything about their history.

Well, *Way Back When....* in early 1963, that part of White Sands looked like most any other part of the desert. Then, in March 1963, site preparation began for the Multi-Function Array Radar, commonly referred to as MAR, or since this was the first, it was also called MAR-I (one). Construction and equipment installation continued on the domes and underground complex until June of 1964, when the radar was first powered on, starting the test program.

After several years of Research and Development (R&D) testing of the Nike Zeus Anti Intercontinental Ballistic Missile system the three different radars used with the Nike Zeus system were deemed to be inadequate. These radars were limited by mechanical rotation constraints and became obsolete as technology advanced and the ability to electronically steer the radar beam became possible. This brought about MAR-I, part of the Nike X program, which was a follow-on to Nike Zeus that had been active at Launch Complex 38. Technological advances had made it possible to develop array radars without the normal mechanically rotating/positioning radar antennas, and MAR-I was the Army's first effort to take advantage of this development. The photo above shows the completed facility, with the one large dome and the two smaller domes.

In the photo, the transmitter array can be seen on the small dome at the right corner of the facility, while the receiver array is on the larger dome. The MAR-I was built with only one transmitter array and one receiver array, with the expansion capability to add a transmitter array on the other small dome with the array pointing to the left, and a receiver array in the raised portion on the left side of the large dome. The domes were all steel and most of the equipment and facilities were under ground. There was a

Nike Hercules tracking radar on top of the large dome and one on the short tower to the right of the main facility. These radars were used as instrumentation radars to verify the accuracy of the MAR-I radar. The large outer fence was referred to as a "clutter fence." It was called that because it blocked the radar signal reflected from the ground (called ground clutter) from being received by the radar and displayed. An interesting thing about the MAR-I, was that it had its own electrical power line that ran all the way from the El Paso Electric Newman power plant to the



Multi-Function Array Radar (MAR-I)

substation just outside the clutter fence. There were no other customers connected to that line at the time.

As R&D testing continued, advances in technology were making even the MAR-I technology outdated. However, there were many things to be learned from the MAR-I testing and it remained operational until 1969. The technology advances had made it possible to consolidate the transmitter and receiver function into one array. So, at Kwajalein Island in the Pacific, construction had begun on the R&D Common Aperture Multi-function Array Radar (CAMAR). Eventually, as the technology settled out, the Nike X system concept, which included the Spartan and Sprint missiles, was replaced by the Sentinel system (later renamed Safeguard), which also included the Spartan and Sprint missiles along with two phased array radars called the Missile Site Radar (MSR) and the Perimeter Acquisition Radar (PAR) and one site was eventually built in North Dakota. The CAMAR building was completed, but never populated with equipment and was turned into a environmentally controlled warehouse.

And, that's the way it was, *Way Back When.....*