

THE HISTORY OF THE ANECHOIC CHAMBER

ANTENNA RANGE & LASER TUNNEL

The plans for this facility were initiated during the years of 1960 and 1961. My initial desire was to erect an outdoor antenna range operating from mountaintop to mountaintop or at the very least from the top of a tall structure such as a building or a tower. At that time, we were the Electromagnetic Systems Branch of the Space Task Group, located at Langley Field, Virginia. The total operation was slated to move permanently to Houston, Texas.

In a short time I learned there were no mountains in or near Houston, and certainly none near Kemah, Seabrook, or South Houston--not even any tall buildings. After considering many possibilities, we decided to design and build in Houston a first rate antenna and microwave facility. We patterned our antenna range and anechoic chamber after the antenna ranges at the Massachusetts Institute of Technology and at Bell Laboratories. However, ours would be much larger because we would take patterns and make measurements of full-scale mockups such as Gemini, Apollo Command and Service Modules, Skylab, and future vehicles. Both re-entry and permanently orbiting spacecraft would also be serviced there. Our plans were to fully use the 5000-foot antenna range and operate the anechoic chamber with its doors open as part of the range.

A second application of the chamber was to run patterns and measurements in the chamber with the doors closed. Thus we would have two ranges, one outdoors and the other indoors, each working independently. Additionally, the chamber would be used for urgent and critical tests 24 hours a day no matter what the weather was outdoors.

The size of the chamber was to be 125 feet long by 100 feet wide and 100 feet tall. It was planned to have **two** ranges inside the chamber, with antenna patterns being taken simultaneously in each indoor range. Because of many administrative delays, when the time came to build the chamber and range, some of our allocated funds had been used to build smaller facilities by another division. As a result, the antenna range layout was constructed as planned, but the funds could pay only for a chamber with one range in it. The final dimensions of the one-range chamber became 150 feet long by 55 feet tall and 55 feet wide. The cost of the anechoic chamber was between \$850,000 and \$900,000 in FY'63.

note { I thought I would add the reason there is no elevator in Building 14, the anechoic chamber building. Building 14 is a full three-story building with at least 40 steps to reach the third floor. At times, 10 to 15 engineers and inspectors and technicians work there. The architects and building engineers indicated they could include a small elevator with a capacity of two people or one person plus electronic equipment in the elevator. The cost was to be \$50,000, and we had funds available. My Branch Chief at that time said No, we would not need an elevator. To this day, the third floor of the anechoic chamber building has no water supply, no washroom, nor is there elevator service to carry people or equipment to the third floor. There have been many complaints by men and women about this situation.

The optical range, now known as the laser tunnel, was constructed by using some of the funds allocated to the antenna facility. In 1962, some engineers at MIT were studying lasers for the Space Task Group. They indicated that they had no capability, nor could they find one, which could help them study and evaluate different types of lasers. One of NASA's managers decided to help MIT in this

laser project. He used some of the antenna funds to construct a laser range 260 feet long, 10 feet in diameter. The source for planning this laser range was one which had been built in Arizona, some feet under the ground surface in the desert. At the Manned Spacecraft Center (formerly Space Task Group) both the MIT research people and several NASA engineers tested lasers in the new laser tunnel which could be pressurized to 10^{-4} Torr. The laser tunnel was located approximately forty feet from the anechoic chamber.

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