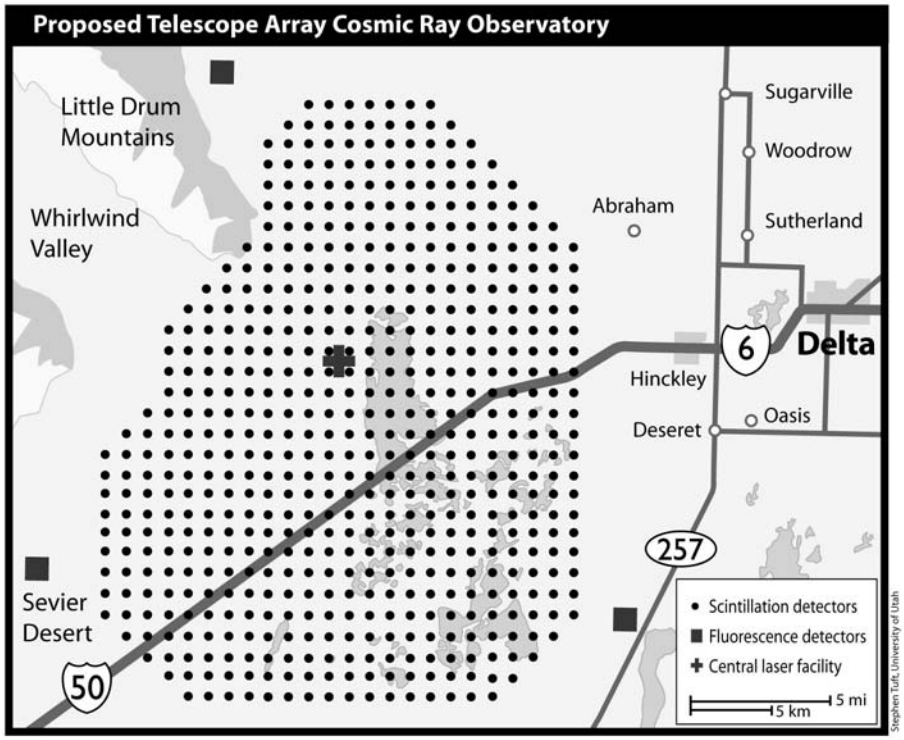
A description of the nature of the research project being conducted (47 C.F.R. §5.63(d)(1)):

The University of Utah and a group of Japanese and U.S. universities plan to build a $17 million to $18 million cosmic ray observatory named the Telescope Array in central Utah's Millard County. It will try to determine the mysterious source of the most energetic particles in the universe. Cosmic rays, discovered in 1912, are subatomic particles: the nuclei of atoms such as hydrogen, oxygen, carbon, nitrogen or iron. Medium-energy cosmic rays come from exploding stars, while the sun and other stars emit even lower-energy cosmic rays. But the source of ultrahigh-energy cosmic rays is unexplained. They are 100 million times more energetic than anything produced by particle accelerators on Earth. Scientists theorize they may come from noisy radio galaxies, super massive black holes at the centers of active galaxies, shock waves from colliding galaxies, bizarre sources such as so-called cosmic strings or even from the decay of massive particles left over from the "big bang" that scientists believe formed the universe about 13 billion years ago.

The Telescope Array is a collaborative effort by the University of Utah, University of New Mexico, University of Montana, University of Tokyo Institute for Cosmic Ray Research, Tokyo Institute of Technology, Osaka City University, Chiba University, Shibaura Institute of Technology, KEK (Japan's High Energy Accelerator Research Organization), Kinki University, Saitama University and Yamanashi University.



The Telescope Array will be built in open rangeland west of Delta, Utah. A "ground array" of 576 scintillation detectors will be installed in a vast grid on a roughly 18-by-22-mile area west of Delta, Hinckley, and Deseret. When a cosmic ray hits atmospheric gases, it causes a cascade or "air shower" of other subatomic particles that reach the ground and will be measured by the scintillation detectors. Each detector will contain a flat plastic plate that produces a measurable pulse of light when hit by the particles. Each solar-powered scintillation detector will sit on a 2-foot-tall stainless steel table measuring 6-by-10-feet wide. Each of the 576 detectors will be three-fourths of a mile from other detectors.

To collect the data from the array of scintillation detectors, a communications network will be established using radio equipment operating in the 2.4 GHz band under the IEEE 802.11b standard. Five base stations will be constructed at Black Rock Mesa, Long Ridge, Smelter Knolls, Little Drum Mountains, and Cricket Mountains surrounding the detector array area. The base stations will poll the scintillation detectors for the measurement data that has been collected. The communications network for the scintillation detectors cannot operate license-free under Part 15 because the radio equipment, supplied by the Japanese participants in the research project, has not been certificated by the FCC. Therefore, a Part 5 experimental license is required to operate the equipment and is being requested by this application.

A showing that the communications facilities requested are necessary for the research project involved (47 C.F.R. §5.63(d)(2)):

The communications network will allow near real-time collection and analysis of the measurement data. The communications facilities are required because in the alternative, it would be necessary for personnel to visit each detector regularly to collect the data, resulting in logistical difficulties given the large number of detectors and large area, as well as unworkable delays in acquiring the data.

A showing that existing communications facilities are inadequate or unavailable (47 C.F.R. §5.63(d)(3)):

There are no existing wired or broadband wireless communications facilities in the desert area where the Telescope Array will be constructed. Therefore, it is necessary for the researchers to build a radio communications network as part of the experimentation.