

# NAVSPASUR Upgrade

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Rural site part of America's oldest satellite-tracking system

By DAVID WHITE

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The Air Force Space Command's Jordan Lake Field Site, part of America's oldest satellite-tracking system, tries to blend into quiet, rural Elmore County.

The barbed wire fence that surrounds the 11-acre site has bluebird houses attached here and there. Eight gourds for purple martins hang near the main building.

The site's 10 employees will phone if a cow gets loose from Billy and Sarah Matthews' 500-acre farm.

"They're good neighbors," Sarah Matthews said.

But those workers also run a 1,032-foot-long radio antenna array that, among other things, helps keep the International Space Station out of harm's way.

The gray aluminum structure looks a bit like a grilled walk way raised about 12 feet in the air by hundreds of poles.

Atop the walkway, which is really a radiation groundscreen, stand 256 antennas in a straight line, each shaped like an arrow head. Each antenna produces 150 watts of power and radiates radio waves at a frequency of 216.99 megahertz, just higher than the frequencies reserved for television stations that broadcast on channel 13. They beam their energy

straight up into space.

At almost a fifth of a mile long, the antenna array does stick out amid the pastures, hardwoods and houses on Jones Corner Road. But site manager Frank Bullard said that, before a new Space Command sign went up, some folks thought the array and its many amplifiers and power supplies were something run by Alabama Power Co. or a water treatment plant.

"It's like we don't even exist over here," he said.

Addie Stubbs, who lives with her husband, Jimmy, near the Jordan Lake site, said, "It's never bothered us. It's been there for years."

The site makes a bigger impression in space. Along with transmitter sites in Texas and Arizona, it creates an invisible fence of radio waves that extends east-to-west across America at about the 33rd parallel. Orbiting satellites and other objects that cross the fence reflect radio waves back to earth, where they're collected at six receiver stations. The receivers are sensitive enough to detect objects as small as a basketball orbiting as far as 15,000 nautical miles, or 17,200 land miles, above the earth's surface, Bullard said.

The receiver stations, in Georgia, Mississippi, Arkansas, New Mexico and California, record more than 5 million detections each month, according to the Air Force Space Command.

The stations send the information to the Alternate Space Control Center at a Navy base in Dahlgren, Va. A computer system there uses the information to update a catalog of more than 10,500 orbiting objects. Only about 500 are working satellites, according to the Space Command. The rest are dead satellites, rocket parts and other debris.

The fence of radio waves can detect about 60 percent of the orbiting object catalog. It can't see objects if they don't cross America at about the 33rd parallel, said Air Force Master Sgt. Robert Pascal.

He oversees the three transmitter and six receiver sites. Together, they're formally known as the Air Force Space Surveillance System. Informally, they're called the "Fence."

The Fence can tell when a Russian spy satellite will orbit over sensitive areas. It can tell when a satellite or other catalogued object breaks up. It can report a new object, and by its path tell if it likely came from a Russian, European, Chinese or other launch site, Pascal said. A new object then can be tracked by other sensors, such as telescopes and advanced phased array radars that, along with the Fence, are part of the worldwide Space Surveillance Network directed by the U.S. Strategic Command.

The Fence also can tell if a catalogued object crosses later than expected. Then observers at Dahlgren or the Space Control Center at Cheyenne Mountain, Colo., can plot the decaying orbit and predict when the object will re-enter the atmosphere.

"We have an agreement with the Russians that anything that re-enters over their land mass, we have to report it to them, whether it's their junk, our junk or some other country's, so they don't think we're launching an attack against them," Pascal said. "It builds confidence."

He said the Fence also has warned the International Space Station about two dozen times to fire its thrusters to avoid collisions with satellites or debris, and it warns the space shuttle of dangerous objects.

Pascal said the Fence and related Dahlgren computer center, which are staffed by 188 people, will cost an estimated \$167 million to run for five years, this year through 2009.

"For the buck, this system is relatively cheap to run," he said. "It's a very basic system, but it's very effective."

The military has had a satellite-detection transmitter in northwest Elmore County since the summer of 1958. The Naval Research Laboratory built it about 10 months after the Russians launched Sputnik. The current site, across Jones Corner Road from the old one, has been running since 1965 near Mt. Pisgah Missionary Baptist Church.

The Navy operated the Jordan Lake site and the rest of the Fence until the Air Force took them over Oct. 1. Bullard said little has changed, other than the sign.

"We're on seven days a week, 24 hours a day, emitting energy out into space," he said.