

Radio Astronomer [STEVE TORCHINSKY, YEARS ON JOB: 18]

CATWALK

High-tension steel cables and grate-bottomed trusses ferry fiber-optic cables—and astronomers—from dish to dome, nearly 500 ft. above the ground.

SPECTRUM ANALYZER AND ANTENNA

With a dish as sensitive as this one, interference is a constant concern. This handheld device distinguishes cellphone, GPS and radar signals from the coveted celestial electromagnetic waves.

Growing up, Steve Torchinsky came by his fascination with stars the same way many kids do—at the movies. “*Star Wars* was the best,” he recalls. Now, he works in a setting better known from films like *Contact* and the James Bond flick *GoldenEye*—Puerto Rico’s famed Arecibo Observatory, home of the world’s largest radio telescope, where Torchinsky recently led an effort to upgrade the scope to achieve unprecedented resolution levels. Surveying the sky for radio waves from stars and interstellar matter up to 1 billion light-years away, astronomers are now, in effect, taking the universe’s first census. “It’s a counting game,” Torchinsky says. “We’re trying to find all the galaxies we can and see how the universe evolved. It’s just another part of the puzzle.”

GREGORIAN DOME

Synced with the primary reflector, two smaller mirrors inside this geodesic ball focus the main scope’s massive readings into intelligible imagery, later stored as digital bits on a hard drive.

PRIMARY REFLECTOR

Arecibo’s 1000-ft.-wide mirror, carved into Puerto Rico’s ancient limestone, reflects radio waves—emitted by pulsars, high-velocity hydrogen clouds and instellar gas—toward the dome above.

Career Goal

“The coolest thing would be to detect material from the time before stars were even formed. Maybe this telescope isn’t even big enough. But we’re going to keep trying.”