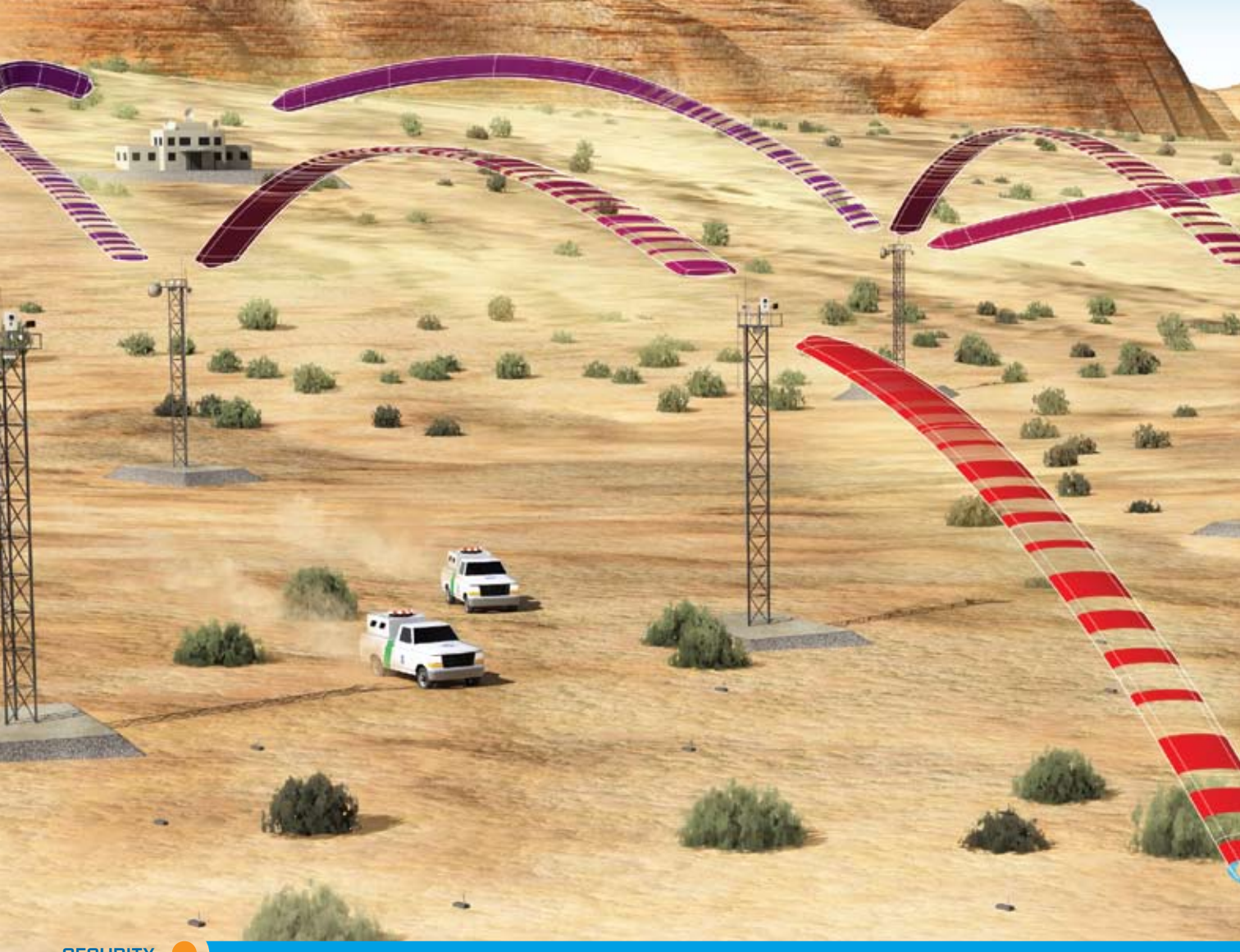

SECURITY

THE ALL-SEEING BORDER

A NEW VIRTUAL FENCE TO DETECT INTRUDERS ALONG 2,000 MILES OF THE U.S. BORDER

Border-patrol agents have searched for smugglers crossing the Mexican border in much the same way for decades: by looking for fresh smudges in the dirt. Motion sensors monitor parts of the border, but oftentimes agents spend hours responding to what turns out to be a herd of cattle. Now a new surveillance system could help them see what's there beforehand.

Boeing's Secure Border Initiative network—SBInet—will produce the world's most technologically advanced border. Any movement triggers vibration sensors, sending an alert to a command station, where an agent gets an automatic visual from remote video cameras before sending someone out.

This spring, border agents will test Boeing's first site in Tuscon, Arizona, while engineers work out any bugs, says Mark Borkowski, the Department of Homeland Security's executive director for SBInet. This fall, the company expects to hand over the 23-mile site to Homeland Security and, pending a positive review, begin construction along the rest of the border next year.

The system should help stymie smugglers' diversions, such as distracting agents with people dressed as migrant workers, and also protect agents. "Many are out there alone. You can turn on your flashlight and find a dozen smugglers with AK-47s," says Keith McManus, a border-patrol operations officer. "This will show us weapons ahead of time."—SANDEEP RAVINDRAN

JANUARY 14 Scientists set the Doomsday Clock—the symbolic clock that counts down to the end of humankind—back one minute in response to new international pledges to

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depends on how much fluid you pump in and how fast," says Colin Williams, a scientist on the U.S. Geological Survey's earthquake hazards team. "The key is finding a balance that results in unnoticeable microseismicity."

Because areas in the U.S. with the hottest rocks tend to be more seismically active, the success of the American ventures—based primarily in the West—will require careful site selection. At the time, Häring's rudimentary seismic analysis seemed sufficient to most experts, says Domenico Giardini, the director of the Swiss Seismological Service. The mess actually inspired more-rigorous testing, and so he and Williams think other facilities can be successful, provided that the quake risk is small. "As long as you do this far away from inhabited areas, there shouldn't be a problem," Giardini says. "But for cities with a history of earthquakes, it's probably best not to install enhanced geothermal." To wit, the DOE directed the bulk of its $100 million to projects in rural areas of California, Idaho, Nevada and Oregon.

ENHANCED GEOTHERMAL MIGHT BE TOO PROMISING TO GIVE UP.

Ultimately, the benefits of enhanced geothermal might be too great to give up. The DOE projects that enhanced-geothermal systems could supply a full 10 percent of U.S. electricity needs, 40 times as much as today's geothermal projects. And because heat from the rocks is constant, so is the electricity they help generate. Although it's important to establish that projects won't exceed a reasonable earthquake risk, no site assessment is foolproof. As Häring said after his trial, "We don't get innovation for free. We have to work it out."—ELIZABETH SVOBODA

HOW IT WORKS

STEP 1: DETECT THE DISTURBANCE

Radar towers, along with vibration and sound sensors on the ground, detect any action. Future upgrades may include magnetic sensors that can detect large metal objects, such as trucks, and UAVs that scan the landscape.

STEP 2: INTRUDER ALERT

Sensors beam info to the command center, where an alert pops up on a map on a border-patrol agent's computer and he clicks it to request visual confirmation.

STEP 3: GET THE PICTURE

The system automatically zooms in with the closest video-camera tower to show the agent whether the disturbance is, for example, cattle or a truck of armed men. Four agents could monitor about 30 miles of the border.

STEP 4: BRING 'EM DOWN

The command center directs field agents to the location. Because drug smugglers often use diversions, such as multiple groups of people, command-center agents can continue monitoring the scene to redirect field agents.

GRAHAM MURDOCH

reduce nuclear weapons and carbon emissions. **JANUARY 16** Antarctica welcomes its first wind farm, which will power U.S. and New Zealand research facilities on the continent.