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GAME FOUR COVERAGE

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The Register-G

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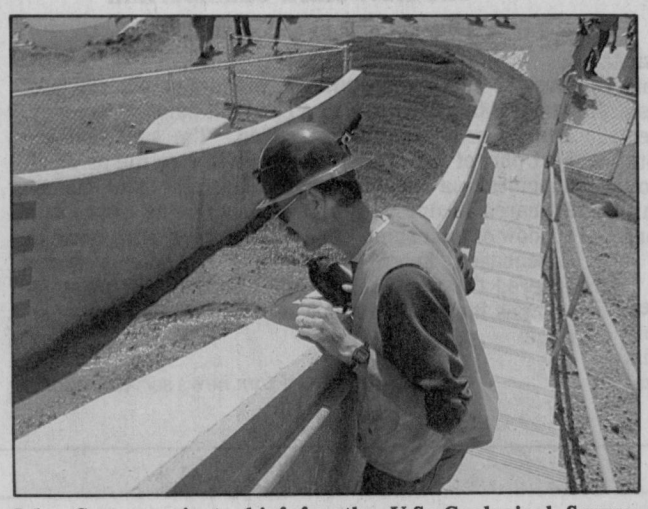

John Costa, project chief for the U.S. Geological Survey, inspects the concrete structure after a demonstration.

Giant flume lets scientists create slides

■ **Debris:** The government project east of Blue River is expected to draw researchers from around the world.

By LANCE ROBERTSON
The Register-Guard

BLUE RIVER — A unique government project launched near here Wednesday will study the destructive power of rocks and other debris in landslides and volcanic flows.

Scientists sent 40 tons of rock and water down a 310-foot concrete flume Wednesday in the inaugural experiment of a debris-flow project at the H.J. Andrews Experimental Forest.

"The detailed measurements and observations that we're going to make haven't been possible anywhere in the world so far."

DICK IVERSON
U.S. Geological Survey

The channel is the only one of its kind in the United States and is the largest in the world. It is expected to draw scientists from around the globe to the site east of Blue River.

"The detailed measurements and observations that we're going to make haven't been possible anywhere in the world so far," said Dick Iverson, a scientist for the U.S. Geological Survey in Vancouver, Wash., which spent $262,271 building the concrete flume.

Researchers from China and Japan, where large mudflows are widespread, already have visited the site.

The Andrews forest, founded in 1948, is a joint project of the U.S. Forest Service, Willamette National Forest and Oregon State University. The Geological Survey will run the flume facility.

Debris flows have been studied for decades; scientists at Andrews have been studying them for more than 30 years. But experts said it has been difficult to gather data because the slides usually occur in inaccessible spots or when no one is around.

Scientists usually are left trying to piece together how a slide occurred after the fact.

"It's hard to see a natural flow," said Richard LaHusen, a Geological Survey scientist helping spearhead the project. "You never know when they'll occur or how big they'll be."

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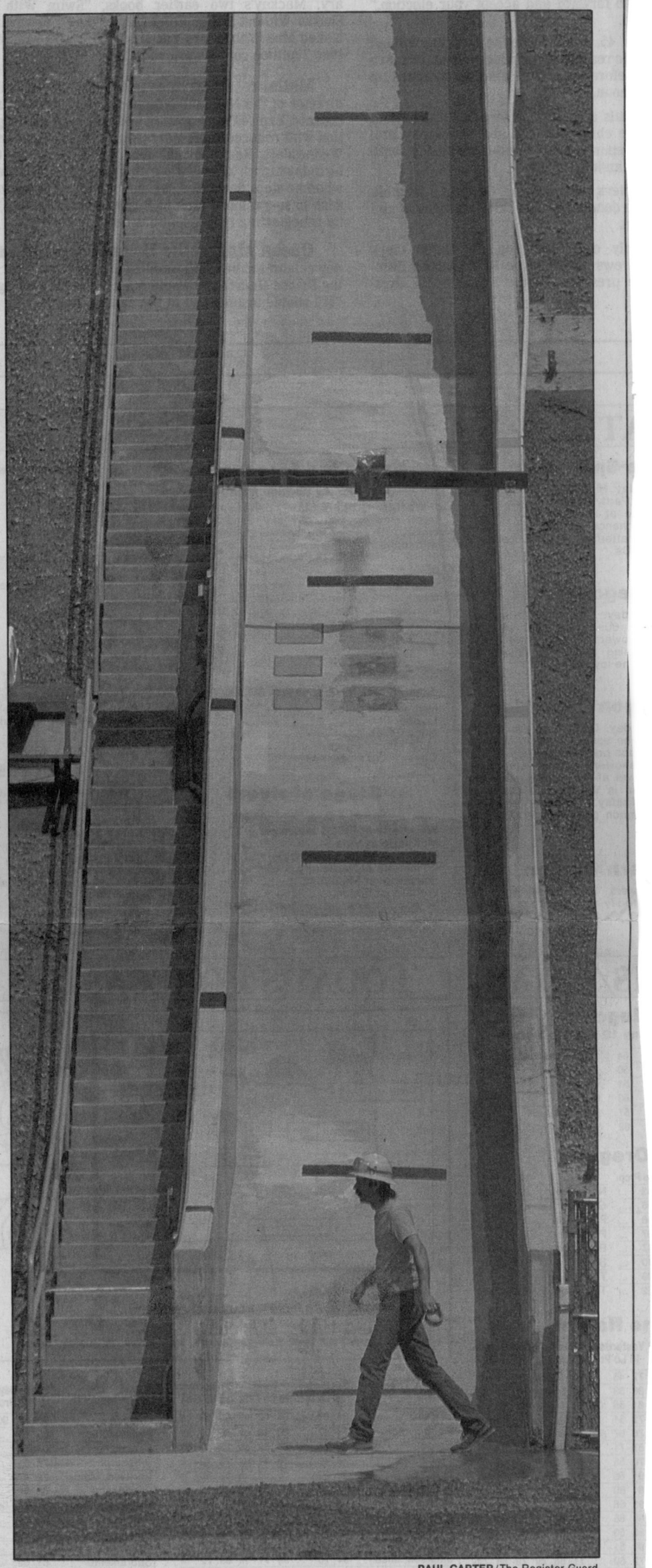

PAUL CARTER/The Register-Guard
A crew member passes beneath the 310-foot-long flume used to simulate landslides.

SLIDES

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Some other flumes do exist, but they are small and cannot accurately replicate massive landslides or volcanic mudflows, scientists said. In other words, the larger the facility, the more accurate the data.

The primary aim of the project is to research how landslides and debris flows start and how they behave on their way downhill. Scientists say the research should yield some real-world uses.

For example, knowing what kind of soil conditions are more apt to create high-velocity landslides could help foresters make better decisions about where to build logging roads or to cut trees. Studies show that logging and road building can spur landslides that damage streams.

"We're trying to increase our ability to determine where these types of slides will occur and when," said Fred Swanson, a geologist for the Forest Service.

Swanson said scientists still are puzzled as to why some slides travel only a short distance while others accelerate, sometimes reaching 60 miles an hour.

The concrete flume is built at a 31-degree angle, which closely matches not only the slopes of most volcanoes but many hillsides in the heavily logged Cascade Mountains and the Coast Range of Oregon.

Geological Survey researchers hope the flume will help them determine when large debris flows occur during volcanic eruptions. That may lead to an early warning system for people living near volcanoes.

The eruption of Colombia's Nevado del Ruiz volcano in 1985 sent a massive mudflow through several towns, killing 23,000 people. Debris flows during the 1980 Mount St. Helens eruption also killed a number of people.

The flume is packed with sensors that measure velocity, content, size and other factors. The information is sent to a computer for analysis. Each experiment produces about 1 million pieces of information, LaHusen said.

Video cameras also are set up along the flume to record each event.

About 20 experiments a year are expected to be conducted at the site.