Beat: News

Gigantic landslide at Utah copper mine triggered quakes, scientists say

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USPA News - A gigantic landslide at a Utah copper mine last year marked the biggest non-volcanic slide in North America`s modern history, powerful enough to trigger a series of small earthquakes in the area, a phenomena that had never been seen before, scientists said Monday. The landslide - which moved at an average of almost 70 miles (112 kilometers) per hour - left a deposit so large it would cover New York`s Central Park with about 66 feet (20 meters) of debris, according to University of Utah scientists who published the results of their study in this month`s issue of the Geological Society of America magazine GSA Today.

The extraordinary slide occurred on the evening of April 10, 2013, at the open-pit Bingham Canyon Mine that is roughly 20 miles (32 kilometers) southwest of downtown Salt Lake City, the capital of Utah. The event consisted of two huge rock avalanches at 9:30 p.m. and 11:05 p.m. local time, with each lasting about 90 seconds. The slides were detected throughout the Utah seismic network, including its most distant station some 250 miles (402 kilometers) south on the Utah-Arizona border. But the second slide was followed immediately by a real earthquake measuring 2.5 in Richter magnitude and centered less than half a mile (800 meters) below the bottom of the mine pit. And while earthquakes are known to have caused landslides in the past, the Utah event marks the first time a landslide is known to have caused earthquakes. The 2.5-magnitude quake was followed by fifteen smaller earthquakes, most of which did not exceed magnitude 1. "This is really a geotechnical monitoring success story. No one was killed, and yet now we have this rich dataset to learn more about landslides," said Kris Pankow, associate director of the University of Utah Seismograph Stations. And while no one was killed or injured, the slide destroyed 14 haul trucks, three power shovels and caused damages up to $1 billion. The landslide, from top to bottom, fell 2,790 vertical feet (850 meters), but its runout - the distance the slide traveled - was almost 10,072 feet (3,070 meters), or just less than two miles (3 kilometers). "It was a bedrock landslide that had a characteristically fast and long runout - much longer than we would see for smaller rockfalls and rockslides," said Jeff Moore, an assistant professor of geology and geophysics at the University of Utah. Much larger slides have occurred in North America in the past, but the slide at the Bingham Canyon Mine - weighing 165 million tons (149.6 billion kilograms) - is believed to have been the largest non-volcanic landslide in modern North American history. The landslide caused by the 1980 eruption of Mount St. Helens in Washington state was 57 times larger than the Bingham Canyon slide. Moore said it remains unclear why the slide happened as two rock avalanches instead of one, but noted that a huge volume such as this one can fail in one episode or in a series of episodes. He said seismic and infrasound recordings suggest both avalanches were similar in volume, but photos indicate the first slide contained more bedrock while the second slide contained a higher proportion of mined waste rock.

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