

Inflatable plug for subway tunnels demonstrated

June 16 2017



John Fortune, of the Department of Homeland Security's Science and Technology Division, points out features of the Resilient Tunnel Plug at a demonstration for media. Quick inflation and extreme strength of the plug's material hold back water that might enter a subway tunnel during a flood. Credit: DHS

A giant, inflatable structure designed to prevent flooding in subways was rolled out, literally, for media observers inside a full-scale, mock subway tunnel. As the video shows, in under five minutes it is nearly filled with pressurized air—creating a flexible but extremely strong barrier. Full inflation is complete in less than 12 minutes. The live demonstration continued with the plug holding back simulated floodwater at 11.5 pounds per square inch pushing against it.

The Department of Energy's Pacific Northwest National Laboratory helped develop the Resilient Tunnel Plug in partnership with ILC Dover and West Virginia University for the Department of Homeland Security's Science and Technology Directorate. It's kind of like a large balloon, but infinitely stronger.

"This is one of those things where we had an idea that was pretty simple but we needed to take that concept to reality," PNNL engineer Greg Holter said. "The big problem wasn't just designing the plug, but ensuring it could be stored without interfering with trains passing through their tunnels."

The RTP, made from a liquid crystal polymer called Vectran, was developed to provide security to transit systems as protection from flooding, primarily in subways, in the event of a terrorist attack or natural disaster. In the event of flooding, the plug would rapidly inflate, holding back a [tunnel](#) full of floodwater, keeping citizens and the transit

system assets safe.

Provided by Pacific Northwest National Laboratory

Citation: Inflatable plug for subway tunnels demonstrated (2017, June 16) retrieved 19 April 2024 from <https://phys.org/news/2017-06-inflatable-subway-tunnels.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.