DHS Science and Technology Directorate
Canada-U.S. Enhanced Resilience Experiment Series (CAUSE) V

CAUSE V to Test Cross-border Interoperability

The Canada-United States (U.S.) Enhanced Resiliency Experiment (CAUSE) series kicked off in 2011 after the two countries announced the U.S.-Canada joint declaration *Beyond the Border: A Shared Vision for Perimeter Security and Economic Competitiveness.* Between 2011 and 2017, four experiments took place on the U.S.-Canadian border—testing various communication technologies and information sharing tools—each time at a different location. The final experiment of the current series is returning to where it all started in 2011.

The CAUSE V experiment will take place from November 15-16, 2017, along the border between the Canadian province of British Columbia (BC) and the state of Washington (WA). As a collaborative effort between the Department of Homeland Security Science and Technology (S&T) Directorate and Defence Research and Development Canada Center for Security Science, this specific experiment will be based on a crater collapse scenario.

(Photo Credit: USGS) Western edge of Sherman Crater in the foreground of the Mount Baker Summit, WA.

Experiment Scenario: Sherman Crater Collapses

The experiment opens with increased volcanic activity on Mt. Baker, prompting the Cascades Volcano Observatory to raise the alert level. The first major earthquake occurs in the subsequent weeks, followed by steam and ash emission. The National Weather Service forecasts river flooding and lahar, which is a destructive flow of volcanic debris. In-mid November, a volcanic eruption of Mt. Baker causes a collapse of the Sherman crater wall and sends lahar down to the valley. The lahar causes extensive damage in both WA and BC, requiring an immediate response from multiple agencies from both sides of the border.

Technologies/Procedures to be Tested

- Wireless capabilities leveraging a 700 MHz Public Safety Broadband Network (PSBN)
- Robots and human to Common Operating Picture (COP) applications
- Pacific Northwest Emergency Management Arrangement (PNEMA)
- Moving specialized resources and personnel across the Canada-U.S. border expediting the pre-vetting process

A Multi-technology Interoperability Experiment

The Sherman crater collapse scenario will be a realistic opportunity to test cross border communications interoperability. The initial collapse of the crater will test alerts and warnings to make sure emergency managers coordinate to ensure accurate and clear public notifications are distributed through appropriate channels to official notification groups, such as border security agencies and citizens.

Digital volunteers will play a role in the alert and warning phase by monitoring social media for misinformation and amplifying information provided by official sources. Local response agencies will be dispatched after receiving 9-1-1 calls. Multiple technologies and procedures will be tested during the response phase, including experimental Public Safety Broadband Network/FirstNet compatible handheld devices to provide seamless communication. Emergency managers evaluate resource needs and shortfalls and issue requests for mutual aid. Aerial robots will provide the opportunity for operators to conduct damage assessments remotely.

FirstNet, FEMA to Participate as Observers

The experiment will examine the importance of efficient cross-border communication and information sharing during times of emergency, based on underlying structures which are particularly strong in this region. Some of the observers of this experiment will include the Federal Emergency Management Agency field office as well as FirstNet and U.S. Northern Command.

Spanning almost 6,000 miles, the U.S.-Canada border is the longest international border in the world, touching 13 U.S. states and eight Canadian provinces. The CAUSE experiments have provided opportunities to test emerging technologies in real-life scenario opportunities. These lessons learned and best-practices have been and are applied to S&T's other international collaborative projects to increase S&T's understanding of technology gaps and responder needs.

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To learn more about CAUSE experiment series, contact, first.responders@hq.dhs.gov.

2017-08-17