

# NATF Redacted Operating Experience Report

## Human Performance – Breaker Trip Due to Panel Vibration

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## Topic

Breaker Trip Due to Panel Vibration

## Description

A 345 kV breaker tripped at a substation while a crew was performing relay panel demolition work inside the control building as part of an ongoing 345 kV line relay replacement project. At the time of the trip, a crew member was utilizing a grinding tool to cut a C-shaped steel channel and ground bar at the base between relay panels (to make space for a new pre-wired panel). During the cutting work, a control center dispatcher called to inform the crew that a 345 kV breaker tripped. The crew immediately stopped all work activities to investigate.

After investigating the cause of the trip, the crew found a breaker relay target located on the adjacent panel to where the cutting was taking place. With no other relay targets, the crew determined that the vibration of the grinder being used to cut the channel and ground bar caused the relay contacts to close and trip the breaker.

## Lessons Learned

1. Alternative work methods that do not involve cutting or drilling on relay panels should be used whenever possible.
2. Alternative cutting methods (e.g., plasma cutter, torch, etc.) were discussed, and it was decided to not use these tools because of the additional hazards they would create.
3. If there are no alternatives to performing a work activity on a relay panel that will cause vibration, relays that are susceptible to vibration need to be identified and removed from service and/or an outage needs to be taken to avoid an unintended operation.

## Actions Taken

### Corrective Actions Taken

1. An "INFO Sheet" switching control was obtained to remove the relay from service to finish the installation of the new pre-wired panel.

### Corrective Actions Planned

1. Perform a vibration risk assessment (identifying sensitive relaying) as part of the job briefing when performing grinding/cutting work.
2. Once sensitive relaying is identified, determine if risk exposure can be removed and/or minimized (take relaying out of service or take equipment outage).
3. Discuss event and communicate lessons learned at the next weekly safety / human performance meeting.

## Extent of Condition

N/A