NATF Redacted Operating Experience Report

Outage Caused by Uplift on Structure After Pole Replacement (Redacted NATF OER-913) January 3, 2025

About NATF Redacted Operating Experience (OE) Reports

North American Transmission Forum (NATF) operating experience reports highlight positive or negative transmission (reliability or resiliency) experiences worth sharing for learning opportunities or potential trending. The overall goal is to help each other learn without experiencing the same issues first-hand. This sharing originates confidentially within the NATF membership.

Redacted operating experience reports are posted on the NATF public website to allow the NATF and its members to more broadly share information, especially safety-related alerts, and learnings, with contractors and other utilities to benefit the industry at large.

The NATF member company that submitted the initial restricted distribution OE report for this topic/event has approved the NATF to issue this redacted OE report.

Topic

Outage Caused by Conductor Uplift After Pole Replacement

Description

A Transmission Owner (TO) performs a routine line patrol on each line and circuit every five years. In April 2018, a transmission line was patrolled, and it was identified that a structure (structure 96) needed a rush replacement. When the TO identifies a rush replacement, procedures require the pole to be replaced within one year.

The original pole was a 50-foot class 3 pole with wishbone construction (figure 1). The pole installed in November 2018 is a 60-foot class 1 pole with gain base insulators, which is according to the TO's new standard. This construction configuration follows the TO's standard for replacing wood poles, which includes adding 10 feet to the pole length and going up at least one pole class for wishbone structure replacement.

In March 2022, the transmission line was patrolled again. This inspection identified 12 poles that needed to be replaced within one year. However, the TO determined that replacing the poles could wait until 2024, when the TO and its contractors could coordinate with landowners and schedule the necessary equipment.

Structure 94 was a 70-foot class 3 pole that was replaced with a 75-foot H2 wood equivalent steel pole on January 30, 2024. During the work, workers determined that structure 95 should also be replaced because of the uplift caused by the new adjacent structure 94 and the previously replaced structure 96. However, structure 95 is in a gully and requires tracked equipment and/or matting for access, so it was not replaced at that time.

On January 3, 2025, line loading and cold ambient temperatures allowed the conductor to tighten to a point where the suspension bells on the wishbone configuration uplifted close to the pole static ground, causing the line to trip and lock out. To correct the situation, the line section was left out of service until the TO's contractor could find the right equipment to access structure 95. The crew then changed the wishbone construction to a vertical gain base construction (figure 2). Changing the construction configuration temporarily corrected the uplift issue, permitting the line to be reenergized until permanent repairs to structure 95 were completed.

Lessons Learned

1. Line crews did not recognize the potential risks of uplift on an adjacent structure while performing a structure replacement. While crews noticed some uplift on structure 95, they did not anticipate it being an issue. Because of this, they did not foresee the conductor tightening during colder temperatures with light loading.

Actions Taken

1. This incident was discussed with all contractor field personnel.
2. When replacing poles, the TO considers structure uplift along with the tension on neighboring poles.

Extent of Condition

This type of event can occur whenever poles are being replaced, especially when there is a difference or change in topography and/or elevation along the line.

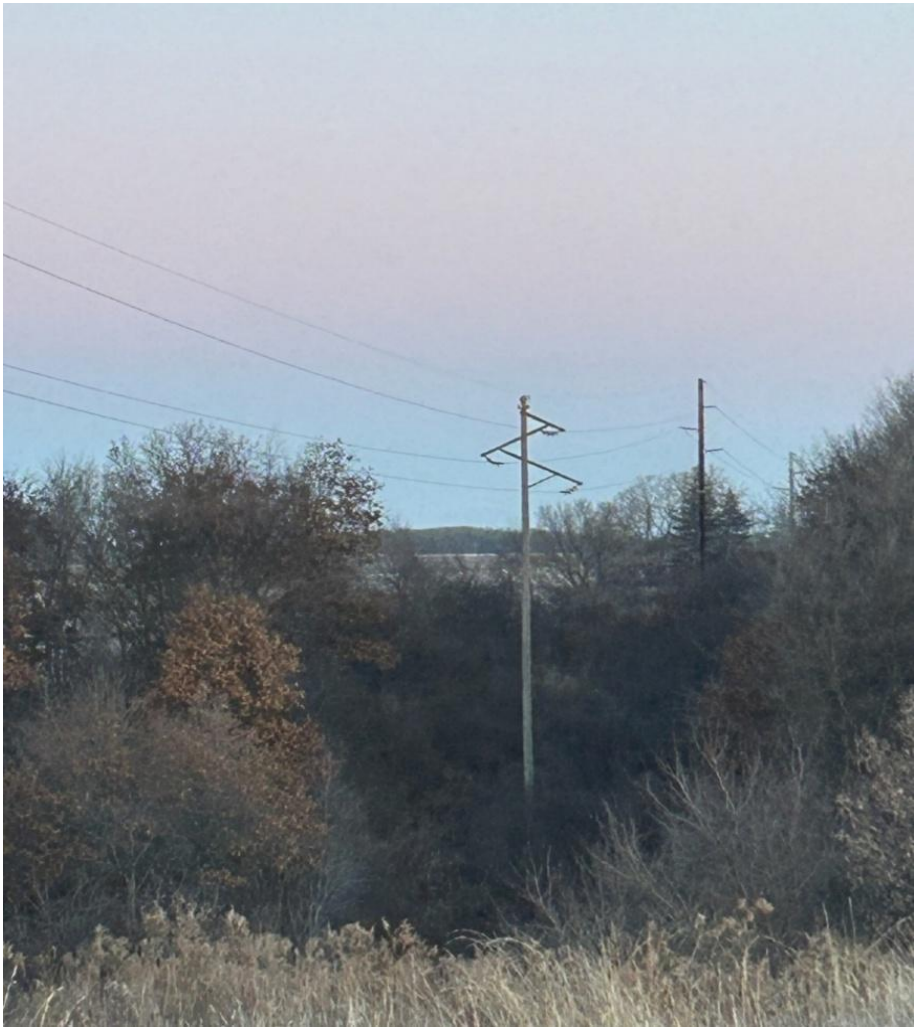

Figure 1. Wishbone line construction

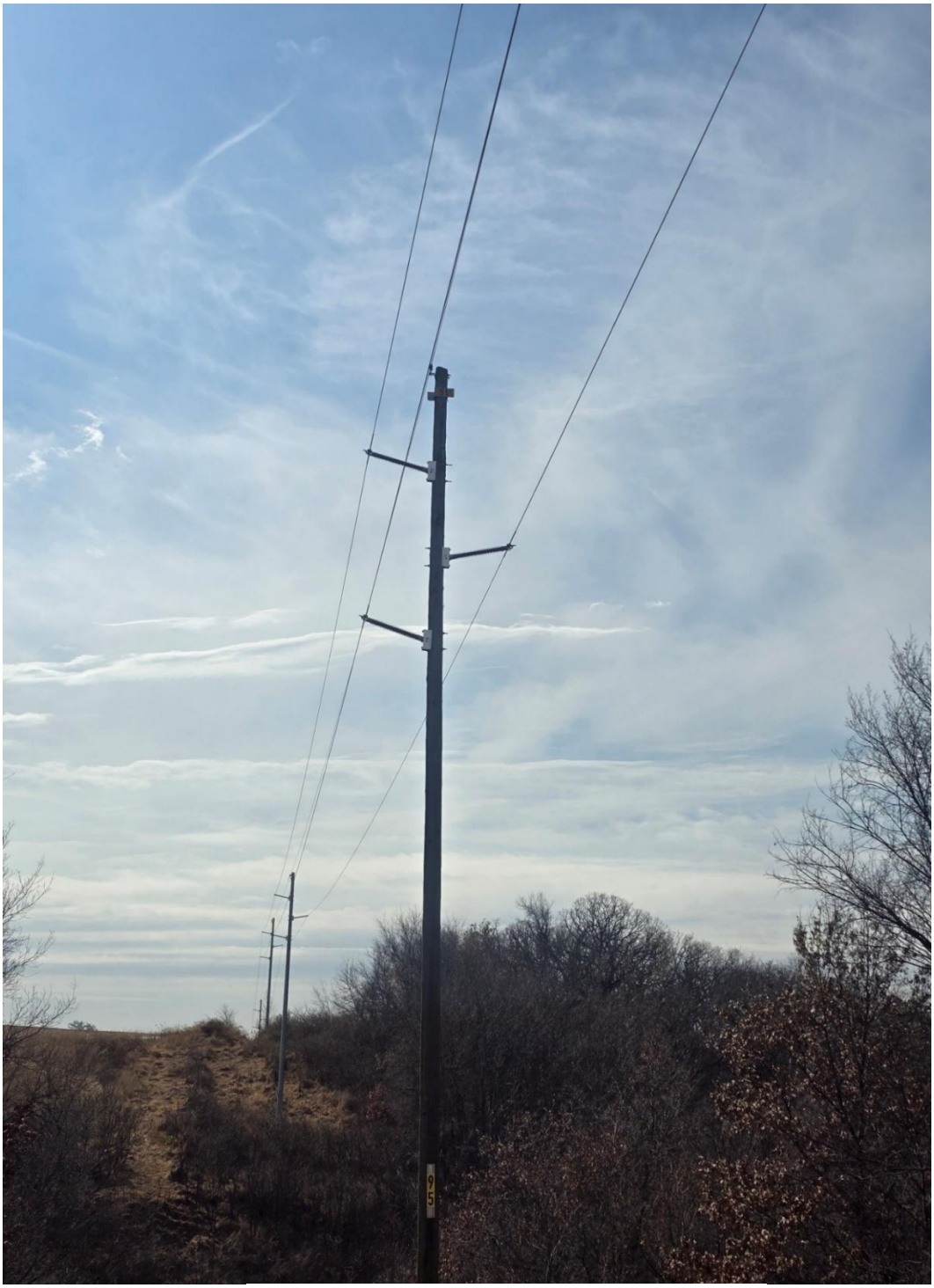

Figure 2. Vertical gain base construction