

Incident Summary #II-1100021-2020 (#19840) (FINAL)

SUPPORTING INFORMATION	Incident Date	November 13, 2020	
	Location	Delta, BC	
	Regulated industry sector	Electrical - High voltage electrical system (greater than 750V)	
	Impact	Qty injuries	0
		Injury description	None
		Injury rating	None
	Damage	Damage description	Private overhead high voltage transformer bank platform collapsed.
		Damage rating	Major
	Incident rating	Major	
	Incident overview	A 12KV high voltage private overhead pole line H frame transformer bank structure collapsed during a wind storm. The transformer bank fell over hitting the side of a warehouse building. The building and staff in the building lost power for 24hrs.	
INVESTIGATION CONCLUSIONS	Site, system and components	<p>The high voltage 12,000Volt overhead private pole H Frame transformer bank consists of 3 high voltage conductors and 3 single phase 12KV 167KVA transformers installed on a platform in a H configuration.</p> <p>The H frame is constructed of 2- 40 foot treated class 2 wooden poles supported by steel u channel beams and wooden planks horizontally for the transformer platform.</p> <p>The high voltage conductors are attached at the cross arms at the top of the class 2 poles and feed down through the high voltage cut out fuses to the transformers.</p> <p>The original class 2 poles are set at a minimum 2 feet plus 10% of pole length (4 feet) in the moist soil.</p>	
	Failure scenario(s)	<p>During a wind storm, the overhead H frame structure was subjected to heavy side wind loading.</p> <p>The west wooden pole broke off at the base level, the H frame structure twisted and the other east pole broke (see photo #3), the structure then collapsed onto the side of the building.</p> <p>The twisting of the structure caused the high voltage conductors to contact each other and short out.</p> <p>The primary conductor high voltage fused cut outs were blown open from the line to line short before the structure landed on the side of the building.</p>	
	Facts and evidence	<p>-The H frame structure was aging infrastructure from the 1970's.</p> <p>-The class 2 wooden pole was dry rotted at the base (see photo #2 and #4) and it supported three 1600lbs transformers.</p> <p>-There was no annual electrical maintenance program for the aging pole line.</p>	

Incident Summary #II-1100021-2020 (#19840) (FINAL)

	<p>A gust of wind caused side loading on an old class 2 wooden pole causing it to break.</p> <p>The structure would then twist and collapse. (See photo #1)</p>
Causes and contributing factors	<p>The class 2 pole was dry rotten due to age. The pole was subjected to a moist environment for more than 40 years.</p> <p>The life expectancy of a treated pole is around 50 years.</p> <p>It is highly likely the lack of ongoing preventative maintenance on aging infrastructure was the cause of the incident.</p>



(Photo #1) High voltage transformer platform collapsed



(Photo #2) West pole dry rotted out at base where subject to years of wet soil.



(Photo #3) east pole



(Photo #4) west pole base in soil