Asset Failure Cause Assessment

22kV Pole Failure

Assessment summary

What?	Where?	When?
Staked Wood Pole	MURRAYVILLE WEST 8 - Murrayville	01.01.2020 14:12 Hrs

A customer call reported a 'Wire Down' and a pole (MURRAYVILLE WEST 8) had snapped at base. Attending crew recorded that the pole had failed due to internal decay. The crew also noted that a storm had been present at the time of failure.

Conclusion

The root cause of failure of the pole below ground line is due to internal and external rot and decay. The presence of a moment force present at the top of the stake due to storm strength wind gusts against the pole above the stake would have contributed to the failure of the pole.

Root Cause and Contributing factors

Root Cause - Equipment :Condition ; Contributing Factor - Environment: Weather

Author: Not relevant Date: 11.06.2020 Version: v1.0

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1) Incident details

A customer call reported a 'Wire Down' and a pole (MURRAYVILLE WEST 8) had snapped at the base. The attending crew recorded that the pole had failed due to internal decay. The crew also noted that a storm had been present at the time of failure.

Figure 1: Network Context / General Location Map

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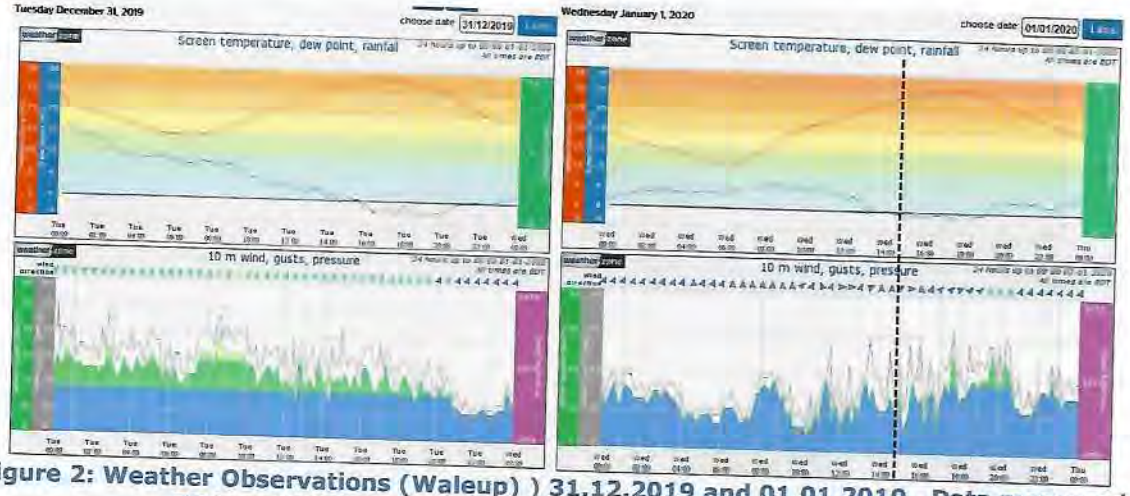

Figure 2: Weather Observations (Waleup)) 31.12.2019 and 01.01.2010. Data measured 77 kms (ENE) DD from the location of the asset failure site

The Fresh (30 - 39 km/hr) to Strong (40 - 62 km/hr) winds gusts recorded prior to the failure are a likely contributing factor in the final failure of the pole at MURRAYVILLE WEST 8. Wind Gusts can often be stronger on site, and attending crew recorded that Storm (88 - 117 km/hr) conditions were present at the time of failure.

2) Asset details

Pole MURRAYVILLE WEST 8 (LIS 023355-8770; SAP Eq# 32153652) is a wood (Messmate Stringybark) creosote impregnated pole, age 53 years (SAP install year 1967) and was last inspected 29.11.2017. At this time the pole was recorded as serviceable, with the following measurements; Sound wood at ground line 30mm and 50mm (400mm below stakes) with Pole calculator determining the remaining strength at 5.1kN

During inspection on the 21.11.2002, the pole was recorded Priority 2 Unserviceable due to cause "Rot/decay internal & external". The pole was subsequently staked on the 16.01.2003. SAP Maintenance history records no other defects since staking.

3) Asset analysis

Inspection of the photographs of the failed pole show evident deterioration below ground level, this is where the pole is likely to have initially failed (see Figure 3).

Figure 4 also demonstrates the presence of a moment force present at the top of the stake due to forces applied by storm strength wind gusts against the pole above the stake. These would have contributed to the failure of the pole below ground line where Internal and external rot and decay were previously recorded (Root cause of Failure).

RCA Methodology: Why Method.

1. Why did pole break? Storm strength wind gusts of apply external forces and bending moment to pole about stake. (Contributing Factors)
2. Why was pole strength not sufficient? Internal Rot and decay below ground. (Root Cause of Failure)

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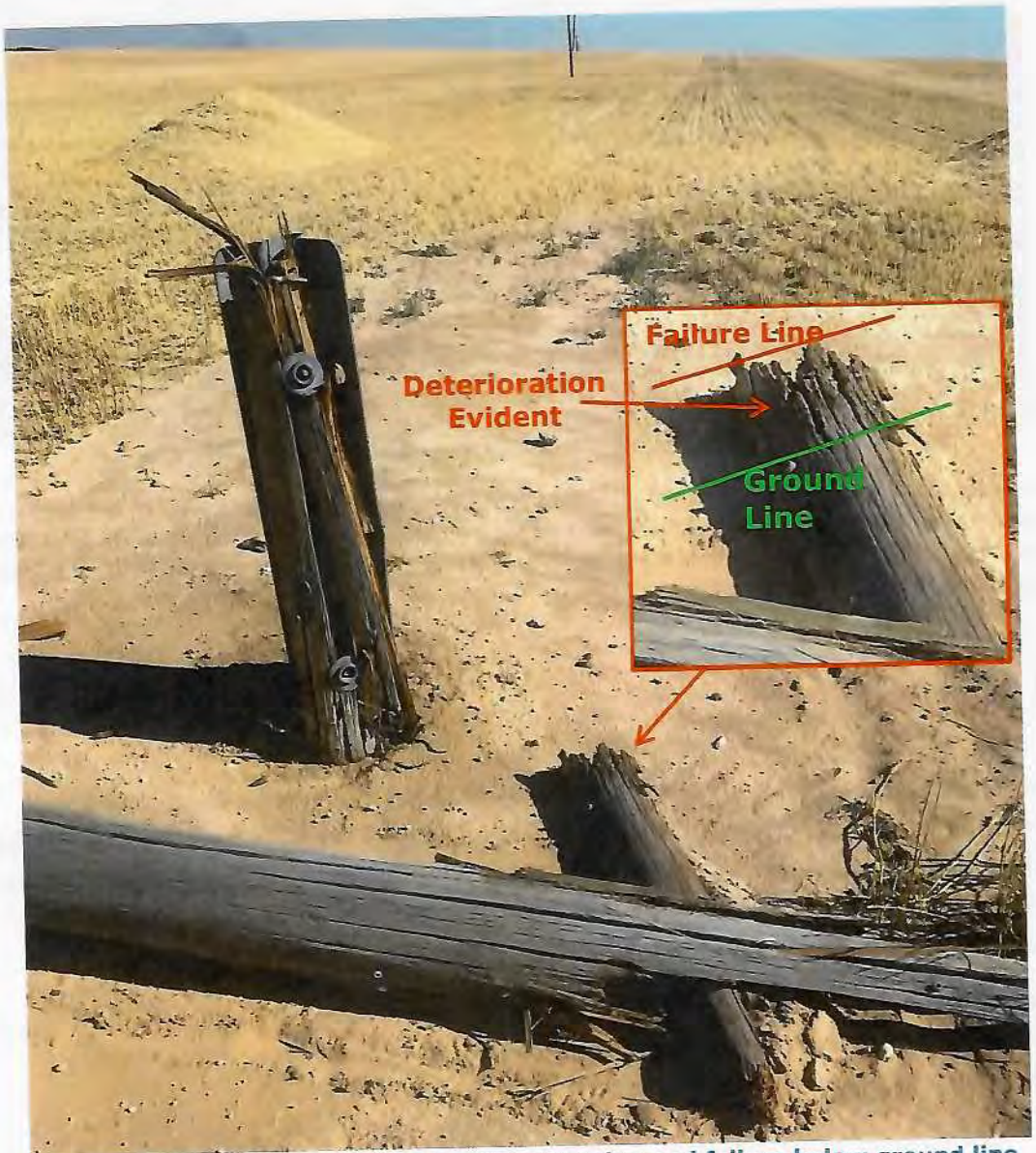

Figure 3: MURRAYVILLE WEST 8 – Deterioration and failure below ground line highlighted

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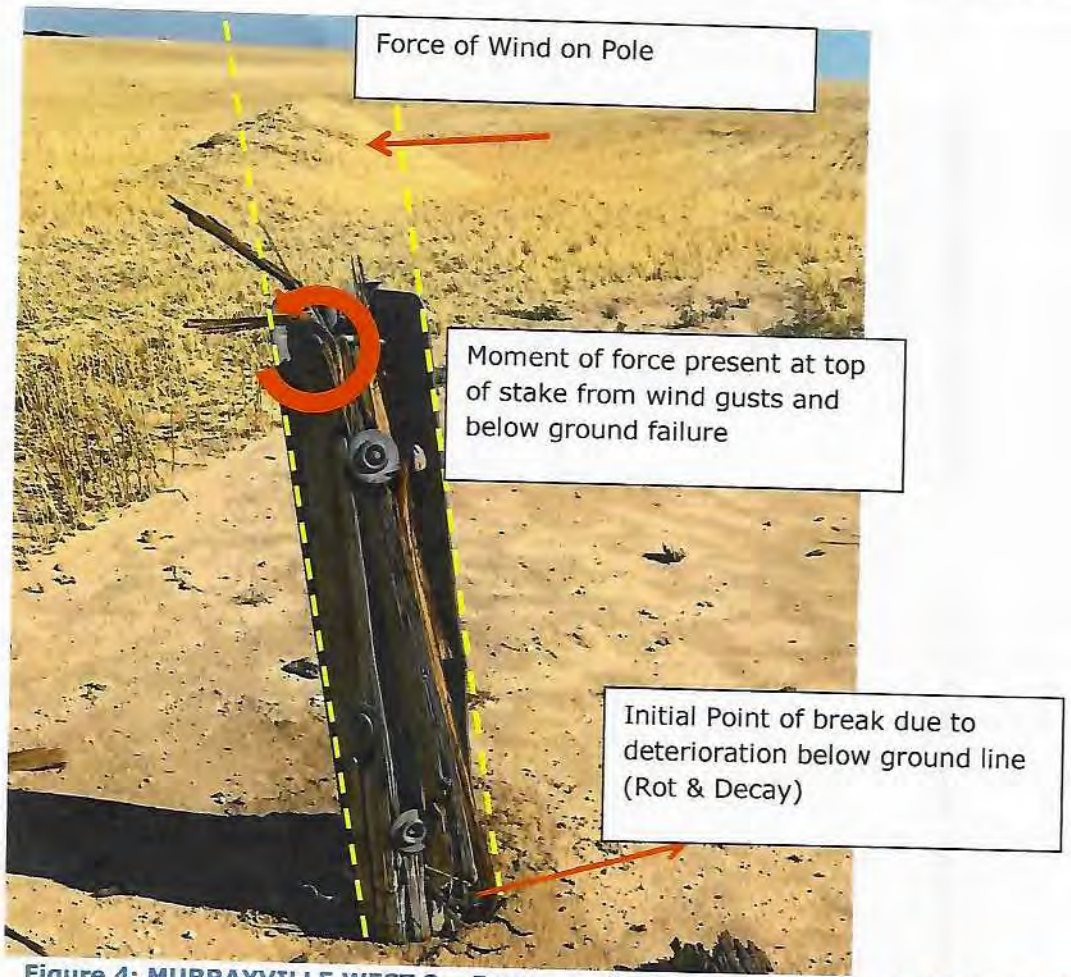

Figure 4: MURRAYVILLE WEST 8 – Forces applied to pole resulting and failure below ground line

4) Conclusion

The root cause of failure of the pole below ground line is due to internal and external rot and decay. The presence of a moment force present at the top of the stake due to storm strength wind gusts against the pole above the stake would have contributed to the failure of the pole.

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5) Approval

	Asset Engineer	Team Leader, Asset Engineering	Lines Asset Strategy Manager
Name:	[redacted]		[redacted]
Signature:			
Date:	01.06.2020		

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