Condition assessment of the wood pole RP-6-1

June 17, 2011

Figure 1: Ultrasonic pole testing (UPT)

The tested section of the wood pole RP-6-1 (Red pine) is 26.8 cm diameter. The wood pole is new and its condition assessment was evaluated using ultrasonic tests in the Testing-Lab, Department of Civil Engineering, University of Waterloo.

Overall dissimilarity index

Parameters of wave velocity, wave attenuation, and the modulus of elasticity are combined to compute an overall dissimilarity index (ODI) for each raypath. The ODI represents a number of standard deviations respect to the expected value for a new pole and, therefore, describes the overall condition assessment of a cross-section. An ODI in the range [-2,-3] means that a cross-section has 98% probability that is decayed. The mean value and standard deviation of the ODI computed from 20 raypaths are $\mu = 0.1$ and $\sigma = 0.3$.

Condition rating index

The condition rating index (CRI) is correlated to the expected remaining strength ratio. A CRI=1 means that the expected strength of a tested section is similar to the expected value of a new pole. For the wood pole RP-6-1 , **CRI = 1.05** .

Decayed areas

No decayed areas were detected in the tested cross-section.

Remarks

The non-destructive evaluation shows that the tested section is sound.

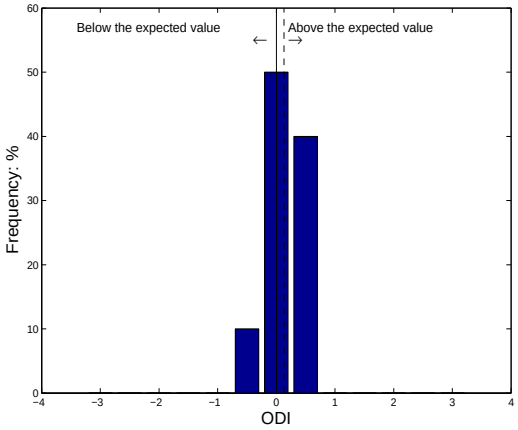

Figure 2: Overall dissimilarity index

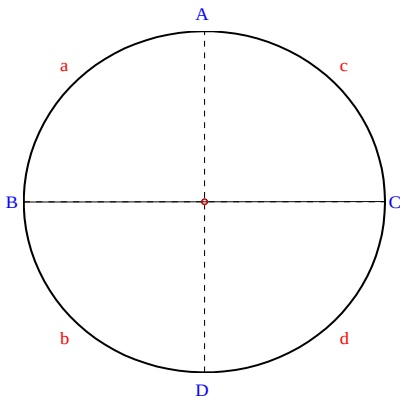

Figure 3: Decayed areas

Condition assessment of the wood pole RP-B-1-3

June 17, 2011

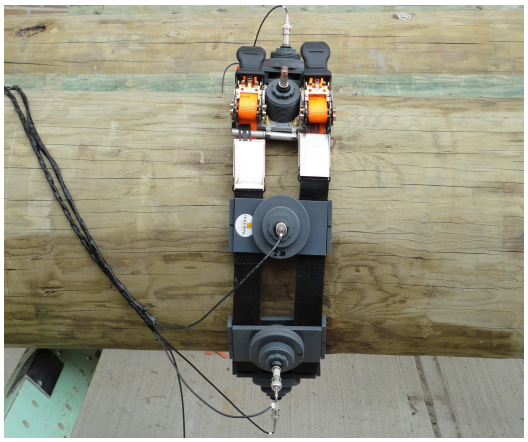

Figure 1: Ultrasonic pole testing (UPT)

The tested section of the wood pole RP-B-1-3 (Red pine) is 37.7 cm diameter. The wood pole is new and its condition assessment was evaluated using ultrasonic tests in the Testing-Lab, Department of Civil Engineering, University of Waterloo..

Overall dissimilarity index

Parameters of wave velocity, wave attenuation, and the modulus of elasticity are combined to compute an overall dissimilarity index (ODI) for each raypath. The ODI represents a number of standard deviations respect to the expected value for a new pole and, therefore, describes the overall condition assessment of a cross-section. An ODI in the range [-2,-3] means that a cross-section has 98% probability that is decayed. The mean value and standard deviation of the ODI computed from 20 raypaths are $\mu = -0.8$ and $\sigma = 0.5$.

Condition rating index

The condition rating index (CRI) is correlated to the expected remaining strength ratio. A CRI=1 means that the expected strength of a tested section is similar to the expected value of a new pole. For the wood pole RP-B-1-3 , **CRI = 0.77** .

Decayed areas

Figure 3 shows decayed areas identified from ultrasonic tests. The percentage of decayed areas is 20 % of the section area, approximately.

Remarks

The non-destructive evaluation shows that the tested section has some decayed areas. The wood pole has to be scheduled for rehabilitation.

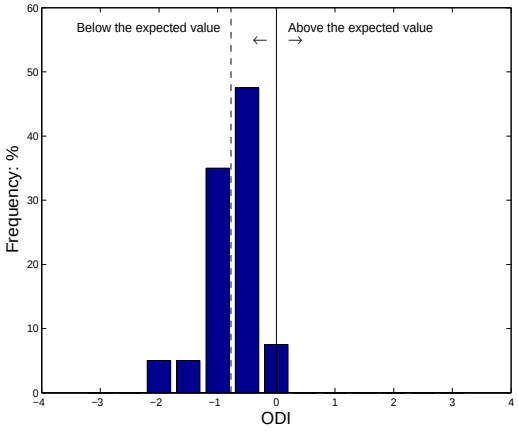

Figure 2: Overall dissimilarity index

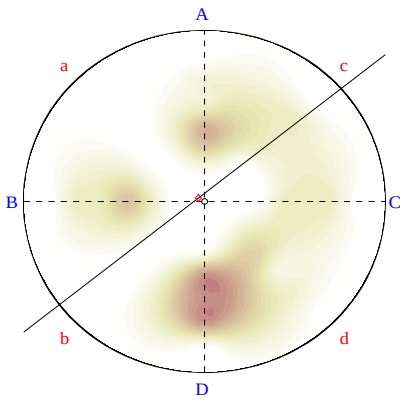

Figure 3: Decayed areas

Condition assessment of the wood pole RP-D12

March 23, 2011

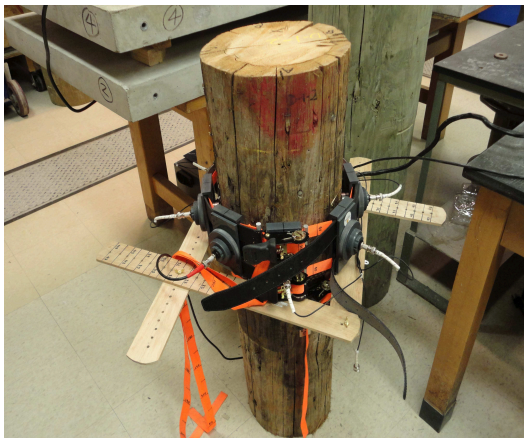

Figure 1: Ultrasonic pole testing (UPT)

The wood pole RP-D12 (Red pine) has been in-service for 32 years. The tested section is 26.7 cm diameter. The condition assessment of the wood pole was evaluated using ultrasonic tests in the NDT-Lab, Department of Civil Engineering, University of Waterloo.

Overall dissimilarity index

Parameters of wave velocity, wave attenuation, and the modulus of elasticity are combined to compute an overall dissimilarity index (ODI) for each raypath. The ODI represents a number of standard deviations respect to the expected value for a new pole and, therefore, describes the overall condition assessment of a cross-section. An ODI in the range [-2,-3] means that a cross-section has 98% probability that is decayed. The mean value and standard deviation of the ODI computed from 20 raypaths are $\mu = -2.2$ and $\sigma = 0.7$.

Condition rating index

The condition rating index (CRI) is correlated to the expected remaining strength ratio. A CRI=1 means that the expected strength of a tested section is similar to the expected value of a new pole. For the wood pole RP-D12 , **CRI = 0.43** .

Decayed areas

Figure 3 shows decayed areas identified from ultrasonic tests. The percentage of decayed areas is 73 % of the section area, approximately.

Remarks

The non-destructive evaluation shows that the wood pole RP-D12 has reached the End-of-life according to CSA C22.3 No. 1 (2006a).

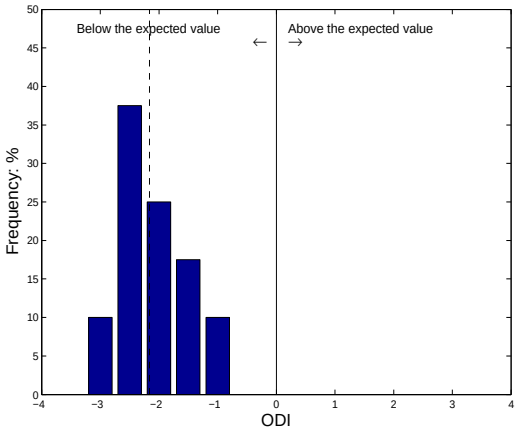

Figure 2: Overall dissimilarity index

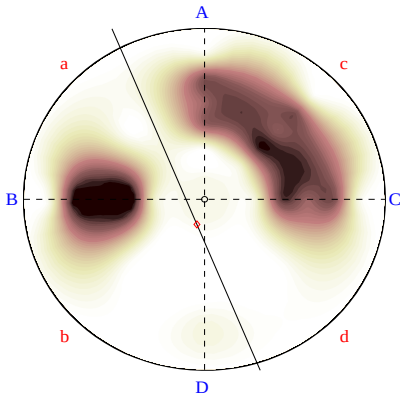

Figure 3: Decayed areas