that the wire rope **12** moves at constant speed between successive incremental pulses **24**. Then, distance ratios are equivalent to time ratios between pulses. This equivalence can be used for interpolation.

By calculating a value for **d**, the distance calibrator **40** has established calibration parameters by which the distance calibration and measurement apparatus **10** can produce a calibrated distance measurement corresponding to any value of the incremental rope distance signal **22**. Various types of distance markers **14** can be utilized. For example, it is possible according to certain embodiments of the invention to attach absolute visual markers **14**, such as paint or plastic strips that are spaced apart at known distances along the wire rope **12**, in which case an optical sensor head **30** could be used. Commercially available wear-resistant paints and tapes would be suitable. Plastic markers **14**—for example made from UHMWPE—also could be molded onto the wire rope **12**. These indicators could be optically detected by a simple machine vision system and used for absolute distance measurements. On the other hand, visual markers could become covered with grease and not be detectable, or they could wear off.

Therefore, according to other embodiments of the invention, magnetic absolute distance markers **14** can be used. One advantage of magnetic markers is that they are not affected by grease and dirt on the rope surface. Therefore, this approach promises to be robust and reliable.

For example, a "test wire" **14** can be utilized for in-service in situ calibration of an LMA (loss of metallic cross-sectional area) signal trace (as produced by a magnetic NDE sensor head) to establish a certain position along the length of a wire rope **12** as a reference for correlation with the LMA trace. Figures 18-20 illustrate by way of examples LMA traces (test wire signals) **60**, **70**, **80**, each of which includes test wire detection **52**.

Essentially, this technique uses test wires that are permanently or temporarily attached to the wire rope **12** for inspection. Besides serving as a rope cross-section reference, the test wire also establishes a distance marker **14** along the length of the rope. This helps to locate the positions of anomalies along the rope and to correlate them with corresponding indications on the chart recording.

It is conceivable for wire rope manufacturers to embed test wires (or other steel objects) at certain predetermined distances (say 100 m or 1 km) in the rope. These markers could then be used for absolute distance measurements. The incremental measurements from a distance counter wheel could then be refined and calibrated by this absolute information.

Of course, the above method may be problematic and/or not accepted by wire rope manufacturers and users. Never-

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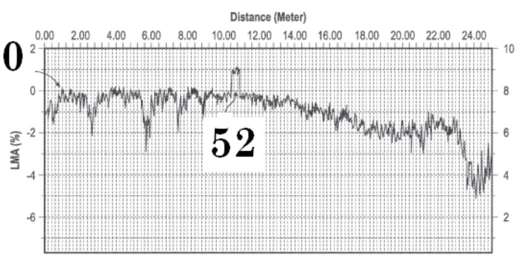

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Figure 19: Second exemplary loss of metallic cross-sectional area ("LMA") traces.

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