



ULTRASONIC DETECTION OF CONTACT POINT CORROSION

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ABSTRACT

Contact point corrosion is a type of corrosion caused by the contact of two or more metals or structures with different chemical potential. It always occurs in the pipelines for transferring oil and gas especially on the pipe support. The corrosion can be detected by ultrasonic testing. In this project, the method used to detect the contact point corrosion was Long Range Ultrasonic Shell Transmission (LRUT).

Objectives of this project were to find the relation of transmissions and wall losses due to the contact point corrosion, to measure the effect of wall losses on the pipe's surface and to make a research on a new technique that is save time and cost in detecting the contact point corrosion. Later the new technique will be proposed to industry.

In LRUT, two probes with frequency of 200 KHz were used and separated at constant distances of 200mm and 300mm. The probes were glued on the probe shoes that were made from Perspex. Angles of probes were made depend on the refraction angles of 33.10°, 45°, 60°, 70° and 90° on the probe shoes. The curvature of the probe shoes at the contact side should follow the pipe's curvature. On the pipe's surface, artificial defects of 10%, 20%, 30%, 40%, 50%, 60% and 70% depths were made from the pipe's thickness. The transmit times of the ultrasonic waves were recorded and the transmission coefficients can be found by using the relation of ultrasonic transmission. The results shown that the transmissions will reduce at higher wall losses.

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