Abstract Submitted
for the NWS08 Meeting of
The American Physical Society

Ultrasonic measurements of thin zinc layers on concrete[1] HENRI JANSEN, BILL BROOKS, VINH NGUYEN, MILO KORETSKY, Oregon State University, ULTRASOUND GROUP TEAM — In order to protect bridges at the coast from corrosion, a thin layer (approximately 0.5 mm) of zinc is sprayed on the concrete of the bridge. When this zinc layer is electrically connected to the reinforcing steel (rebar) and placed at a positive potential with respect to the rebar, oxidation is favored at the zinc layer and reduced at the rebar. The resulting protection of the rebar fails when the zinc layer delaminates from the concrete or when the zinc oxidation product layer becomes too thick. We have used ultrasonic detection to investigate the properties of the zinc layer. This method has been applied very successfully in the semiconductor industry. We present the details of the method and the expected response. Unfortunately, we are not able to measure changes in the zinc layer, because either the frequency we use (10-20 MHz) is too low, or scattering in the concrete is a dominant effect.

[1]Oregon Department of Transportation

Henri Jansen
Oregon State University

Date submitted: 21 Apr 2008 Electronic form version 1.4