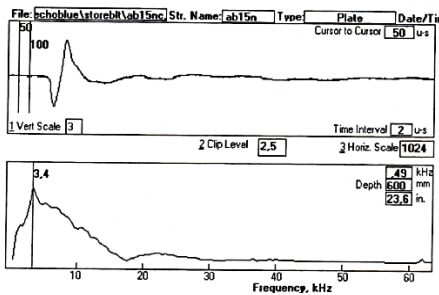
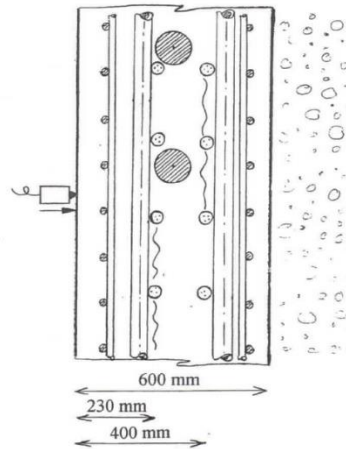
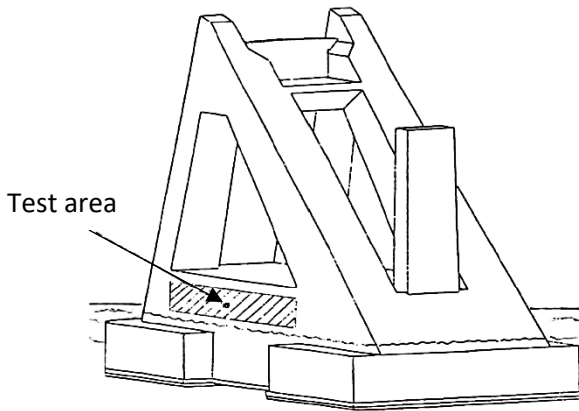


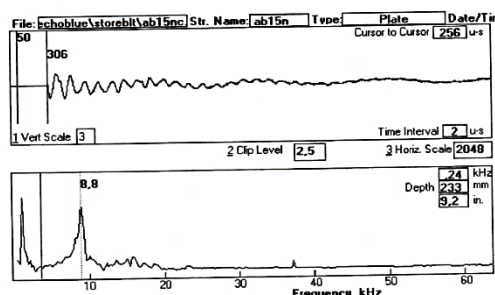
NDTitans in action



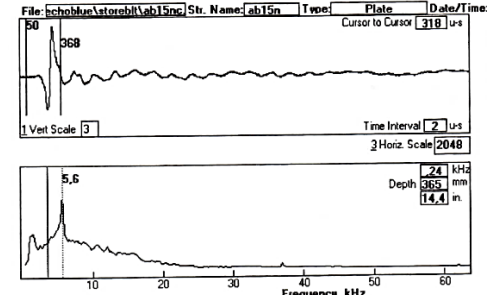
Case 8.6 DOCTer Impact-echo testing for delaminations of walls in two anchor blocks at the Great Belt Link, Denmark



3.4 kHz, Solid 600 mm



8.8 kHz, Delamination 233 mm deep

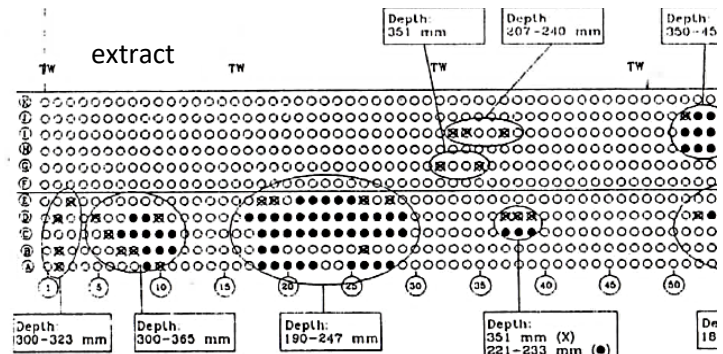


5.6 kHz, Delamination 365 mm deep

Cooling of the interior of 600 mm thick walls in two huge anchor blocks was performed during hardening to avoid temperature cracking due to too large temperature differences between the interior and the surface. The cooling water was partly left in the cooling tubes placed at 1/3 and 2/3's of the depth in the 600 mm thick walls. The ambient temperature dropped to -15 Degree Celsius. The formed expanding ice cracked the walls vertically.

The walls were heavily reinforced with post-tensioning in both directions. It was decided to inject the cracking, but how to find the delaminations? GPR was attempted without success.

The **DOCTer Impact-echo** was used in a blind pilot test, and based on these results all the walls were tested with this system. A total of 6,000 DOCTer Impact-Echo were performed, detecting clearly the cracking



despite the presence of dense reinforcement and the cable ducts. 75 cores were drilled out for confirmation. All the core results matched 100% with the impact-echo findings. Injection was performed in the cracked areas to the full satisfaction of the owner.

Foto: **NDTitan Jesper S Clausen** testing in stormy, cold weather, freezing with big waves coming in.

Testing headed by **NDTitan Claus Germann Petersen**