



## Inspections of CRDM Nozzle Penetrations in Paks NPP

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During the maintenance outage of Unit#2 of Paks Nuclear Power Plant in 2002, performing the regular drop-test of Control Rod Driving Mechanisms (CRDM) reduced drop-speed was observed in case of one CRDM. In spite of the measured value of speed was inside the acceptance limit, so it was still satisfactory, decision was made to disassemble the CRDM to clarify the cause of the speed-anomaly.

After removal of the CRDM, by means of visual inspection deformation (bulge) was observed on the inside surface of the heat protection tube of the CRDM nozzle penetration. Deformation was big enough to obstruct the free movement of CRDM.

After the deformed heat protection tube was removed, significant bulge was observed also on the corrosion protection tube, at the same elevation. As the root cause of these deformations, presence of water in the space between the CRDM nozzle and the corrosion protection tube was assumed.

Non destructive inspection procedures were worked out and utilized to detect the presence of water in the space in question and to find the possible way of water inlet. Performed inspections successfully localized the place of water inlet. Developed inspection program of CRDM nozzles has to be performed during each outage on each unit.

Paper deals with introduction of the phenomenon, the cause of damage, inspection the procedures which were worked out and applied, summarize the results of inspections performed.

**Keywords:** Paks NPP, CRDM, nozzle, non destructive inspection, corrosion protection tube