

The Experience of KPD for Reactor Vessel Upper head Penetration

TaeGeun Lee¹, Su-Cheol Jin¹, Su-Yeol Park¹, Euisoon Doh¹

¹Engineering Department, Sae-An Engineering, Republic of Korea

We use UT(ultrasonic testing) and VT(visual testing) method to detect a crack of penetration tube and an evidence of the Reactor coolant water leakage on the Reactor Pressure Vessel Upper head in accordance with managing regulatory guide. According to the Korean regulatory guide, we have to get KPD(Korean Performance Demonstration) qualified to apply UT in the examination for the UT procedure, equipment and examiner. Sae-an Engineering co.,Ltd has endeavored to develop the UT technology applying TOFD(Time of Flight Diffraction) for the UT procedure, and eventually got KPD qualified the procedure and examiners from CRI(Central Research Institute) of KHNP(Korean Hydro and Nuclear Power). We used IntraSpect Mercury UT instrument of 6-channel produced by WesDyne in USA, and TOFD probes from DEKRA in Sweden to develop the UT procedure. We also prepared Calibration blocks with EDM Notches in the OD and ID and its stand, and water supply system to provide coolant material. 2 years was required to prepare the procedure development, and 3 Months was needed to get the KPD qualification of the UT procedure and UT examiners. The successful KPD qualification led Sae-an Engineering Co., Ltd to join the vendor of RVHP(Reactor Vessel Upper head Penetration) examination company in Korea and abroad, and to provide a chance to perform the BMI(Bottom Mounted Instrumentation) Nozzle examination which has similar technology with RVHP examination. I intend to introduce the experience of developing KPD UT procedure for the penetration tube of Reactor Pressure Vessel Upper head.