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## PWR Spent Nuclear Fuel Integrity Evaluation Results in Korea

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Accumulation of spent nuclear fuel in PWR power reactor pools is facing saturation limit within 5 years in South Korea. Though the national policy will be discussed again through public hearing process, it seems very clear to imply dry storage technique for the first management step out of reactor pools like other countries. Spent nuclear fuel (SNF) integrity evaluation R&D work has been performed for lower burnup (less than 45 GWd/tU) range for 5 years in order to produce initial SNF characteristic properties and anticipate aging effect during dry condition for several decades. This project produced non-destructive examination data which are essential prior to the destructive testing. The former data set includes visual exam, defect scan, dimension measurement and gamma scan. The later data set includes creep testing, hydride reorientation testing, delayed hydride cracking, ring compression testing, optical microscope analysis, hydrogen contents analysis and mechanical properties testing. This project also tried to evaluate fuel assembly hardware integrity including spacer grid, welding points between components, and bulge joint for real SNF components and for unirradiated components by charging hydrogen to simulate SNF. In order to anticipate SNF degradation for several decades, modeling of each single effect like creep and hydride reorientation have been done and comprehensively merged into a newly developed SNF performance platform which deals with thermal profile among SNF rods. Based on achievement for lower burnup range, SNF R&D infra could be expanded to high burnup range successively.

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#### Country or International Organization

Korea, Republic of

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