

Title	Improving Accuracy of the Calculation of In-core Power Distributions for Light Water Reactors												
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Abstract	<p>Comparisons have been made of VNEM prototype system to the measured data obtained from Ringhals unit 3 NPP at its beginning of life, hot-stand-by state. Three cases with difference control rod bank positions and Boron concentrations have been compared:</p> <p>Case 1: nearly all rod banks withdrawn, Boron = 1315 ppm Case 2: bank C = nearly half-inserted, bank D = fully inserted, Boron = 1131 ppm Case 3: banks C and D = fully inserted, Boron = 1060 ppm</p> <p>The results can be summarized as:</p> <table><thead><tr><th></th><th>error: maximum detector reading (%)</th><th>error: keff (%)</th></tr></thead><tbody><tr><td>Case 1</td><td>-2.1</td><td>-0.175</td></tr><tr><td>Case 2</td><td>1.5</td><td>-0.022</td></tr><tr><td>Case 3</td><td>-0.5</td><td>-0.044</td></tr></tbody></table> <p>Excellent agreement was observed in the comparison of the neutron detector readings and the core eigenvalues.</p> <p>The method of core modelling and parameters used in calculation of VNEM is completely the same as the "PWR standard option" determined from similar comparisons of VNEM and other PWRs. No empirical, or any sort of adjustment was done.</p>		error: maximum detector reading (%)	error: keff (%)	Case 1	-2.1	-0.175	Case 2	1.5	-0.022	Case 3	-0.5	-0.044
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