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Assessment of ITER W divertor performance during early operation phases JAE-SUN PARK, XAVIER BONNIN, RICHARD PITTS, ITER Organization, Route de Vinon-sur-Verdon, CS 90 046, 13067 St. Paul Lez Durance Cedex, France — Until now, the focus of plasma boundary simulations at ITER has been on tungsten divertor performance under the most challenging conditions of H-mode, burning plasmas. However, operations will begin at low power in L-mode with H fuel only. Here we use the SOLPS-ITER code to assess the divertor performance in this first phase at q95=3 with SOL power up to PSOL=20 MW. The focus will be on a study of the impact on detachment behaviour of gas fuelling location (main chamber (MC), divertor) and possible Be coating of the divertor surfaces driven by MC erosion and migration. Throughput scans show that the divertor material does impact the recycling balance between H atoms and molecules and hence the relative contributions to momentum and power losses, but the overall effect on the detachment behaviour is marginal. Similarly, the influence of gas puffing location is small, but does impact neutral penetration in the MC SOL. Even at this low PSOL, full detachment is not observed in the code at the maximum operational fuel throughput. For divertor puffing, the upstream separatrix density saturates after the initial low recycling phase, behaviour found also at high performance. Analysis shows that this is a consequence of the vertical target configuration and physical size of the divertor.

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