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ITER relevant current ramping experiments in Alcator C-Mod ADRIANUS SIPS, Max-Planck-Inst. fur Plasmaphysik, Euratom Assoc., Garching, Germany, STEVE WOLFE, IAN HUTCHINSON, MIT, Plasma Science and Fusion Center, CHARLES KESSEL, Princeton Plasma Physics Laboratory, YU LIN, EARL MARMAR, JOSEPH SNIPES, STEVEN WUKITCH, MIT, Plasma Science and Fusion Center, THE ALCATOR C-MOD TEAM — ITER requires routine operation at 15 MA within the operational constraints of the device. The original proposed poloidal coil-set is specified only for rather low plasma inductance $(l_i=0.7-1)$ 1.0). In C-Mod, the current rise and current decay phase of the ITER discharge scenario have been studied, trying to keep l_i low. The experiments used early X-point formation during the current ramp-up, and remained diverted during the current ramp-down. Ohmic ramp up discharges achieved li as low as 0.9 at the start of the flat top, ICRF heated discharges only reduced l_i by ~ 0.05, despite raising T_{e0} from 2 keV (ohmic) to 4 keV (3 MW ICRH). For the ramp-down, l_i could be kept below 1.2 during the first half of the current decay, using a slow I_p ramp-down rate still consuming flux from the transformer. These dedicated experiments are supported by interpretation of the results with TSC/TRANSP, and provide input for validating the transport models used in extrapolating the results to ITER. Supported by USDoE awards DE-FC02-99ER54512 and DE-AC02-76CH03073.

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