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**ICRF-induced core impurities: Source and transport studies of ICRF conventional and field aligned ICRF antennas**[1] S.J. WUKITCH, B. LABOMBARD, Y. LIN, MIT PSFC, M.L. REINKE, Univ. York, J. TERRY, MIT PSFC, AND ALCATOR C-MOD TEAM — Ion cyclotron range of frequency power (ICRF) is considered a good candidate to provide bulk heating for ITER and future reactors. A primary challenge to ICRF utilization is to minimize plasma-material interaction using techniques that scale to continuous operation in a thermonuclear environment. New Alcator C-Mod experiments investigate impurity contamination associated with ICRF operation determining whether it is predominantly a result of increased source, transport or some combination. Previous work showed a field aligned (FA) antenna could significantly reduce core high-Z impurity contamination and lower limiter impurity sources compared to a toroidally aligned antenna. However, measurements of the RF-enhanced plasma potentials showed little difference between antennas designs. To investigate impurity penetration/screening directly, trace nitrogen is injected at different poloidal/toroidal locations, measuring core nitrogen levels in the presence and absence of ICRF power. This provides insight into transport changes associated with the RF and antennas concepts.

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