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Preliminary Design for Diagnostic Port Integration at ITER Upper Port #18

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ITER has many ports to install various diagnostics which view and measure various plasma parameters. One of the ports, the upper port #18 (UP18) is designed to integrate three tenant diagnostic systems: VUV (Vacuum Ultra Violet) spectrometer, NAS (Neutron Activation System), UVNC (Upper Vertical Neutron Camera). The key design drivers for the port integration are requirements on neutron shielding and maintenance. In this paper, we discuss the neutron shielding design made following the ALARA (as low as reasonable achievable) principle in order to reduce the shut-down dose rate in the interspace and port cell which are human-accessible areas. The design choice for radiation shielding of electronics in the port cell is also discussed. The port maintenance in ITER consists of RH (remote handling) operation for the port plug and manual (or assisted-manual) operation for the interspace and port cell areas. The compatibility with the ITER maintenance strategy is investigated for UP18 and the associated issues are addressed.

Eligible for student paper award?

No

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