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Reliability Assessment of remote maintenance strategy for CFETR Divertor

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China Fusion Engineering Testing Reactor (CFETR) will be built to test and verify the feasibility of engineering and technology in practice for the future fusion reactor. Long pulse and steady-state operation will be demonstrated with duty cycle time not less than 30~50%. During plasma operation, the in-vessel components of the fusion reactor will be activated and contaminated with tritium. Because of the beta and gamma activation of the component bulk and surface dust (beryllium, carbon, tungsten) special remote handling techniques will be required during machine maintenance periods. The divertor cassettes remote replacement is one of the key maintenance operations for the CFETR to meet the requirements of duty cycle time. RH maintenance strategies will have a significant impact on the layout of the machine and design of components. In this paper we will give an overview of the different CFETR divertor components remote maintenance strategies as well as to describe the maintenance process of the in vessel components. Preliminary assessment of the divertor maintenance scheme is done in order to carry out RH maintenance tasks successfully and efficiently. Considering the number of feasible designs for the divertor maintenance, we concentrate remote handling concept assessments on the follow principles: As simple as possible; high-security; high reliability and availability.

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