

REMOTE HANDLING CONCEPT FOR THE NEUTRAL BEAM SYSTEM

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The ITER Neutral Beam Heating and Current Drive System (NBH&CD) is made of two heating units (HNB) and one diagnostic unit (DNB). Space in the NB cell is also reserved for the later addition of a third heating unit which will be added as a future upgrade during the ITER operational phase. The ITER NB systems will require periodic maintenance (exchange of the caesium ovens) and are also likely to require unscheduled maintenance to replace NB components. Due to activation and contamination of the NB vessel internal components during the DT phase of ITER, such operations will need to be conducted entirely using remote handling (RH) techniques.

Although the neutral beam cell has relatively low radiation level compared with the VV, the human worker access inside the NB cell is limited, and long term radiation exposure will give detrimental effect on the equipment. Therefore, the maintenance policy for NB system and RH equipment is that the human intervention time for the maintenance of the NB components, and the operation of the RH equipment should be minimized. The RH equipment is maintained and stored in the Hot cell building during the machine operation as possible as it can.

This paper describes the concept design of the NB RH equipment for maintenance of the NB systems. First, the maintenance concept of the NB RH equipment is presented which includes the concept for the deployment and removal of the equipment from/to NB cell to/from Hot Cell building, and relevant subsystems. Second, the operation of the NB RH equipment for maintaining the NB system is presented.