

Guidelines for Remote Handling Maintenance of ITER Neutral Beam Components (P2-G-263)

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Remote handling maintenance of ITER components is one of the main challenges of the ITER project. This type of maintenance shall be operational for the nuclear phase of exploitation of ITER, and be considered at a very early stage since it significantly impacts on the components design, interfaces management and integration business. A large part of the R/H equipment will be procured by the EU partner, in particular the whole Neutral Beam Remote Handling (RH) equipment package. A great deal of work has already been done in this field during the EDA phase of ITER project, but improvements and alternative option that are now proposed by ITER lead to added RH and maintenance engineering studies.

The Neutral Beam Heating & Current Drive system¹ is being revisited by the ITER project. The vertical maintenance scheme that is presently considered by ITER, may significantly impact on the reference design of the Neutral Beam (NB) system and associated components and lead to new design of the NB box itself. In addition, revision of both NB cell radiation level zoning and remote handling classification of the beam line injector will also significantly impact on components design and maintenance.

Based on the experience gained on the vertical maintenance scheme, developed in detail for the ITER Neutral Beam Test Facility² to be built in Europe in a near future, guidelines for the revision of the design and preliminary feasibility study of the remote handling vertical maintenance scheme of beam line components are described in the paper. A maintenance option for the SINGAP3 accelerator is also presented.

[Ref. 1] ITER Detailed Design Documentation 2.3 & 5.3

[Ref. 2] EFDA work programs ref. TW4-THHN-IITF1 & TW4-THHN-IITF2

[Ref. 3] SINGLE Aperture-single GAP accelerator, alternative concept to the MAMuG reference option for ITER