

Practical Experiences from Remote Handling in Fusion

Friday, 23 May 2014 08:00 (40 minutes)

Between February and May 1998 the first ever remote handling campaign on a Nuclear Fusion machine was completed at the JET Joint Undertaking in Culham UK.

This 4 month campaign was followed by 6 more campaigns up to and including 2010 with durations varying from 3-18 months and requiring a total of more than 22,000 hours of remote operation.

Preparations for the first remote handling campaign were started in the late 1970's and were at their zenith during the 4 years from 1993 to 1997. Preparations for each subsequent remote handling shutdown settled to a routine pattern of c12-24 months depending on the amount of new tooling and operational procedures required to develop.

Whilst the Remote Handling campaigns were all successfully concluded there were various unexpected interruptions to the operations as a result of problems with the condition of the plant, the conditions of the working environment and also failures of the Remote Handling equipment.

The overall experience gained has addressed most, if not all, of the elements vital to the successful implementation of remote handling based maintenance and modification for fusion plant and revealed the full extent of the competences and technologies needed for remote maintenance of similarly complex scientific plant.

This knowledge base is now being transferred to the ITER project through the European contribution managed by Fusion for Energy. The pertinent elements of the experience is also being transferred to other nuclear based sectors utilising or expecting to utilise remote handling.

The author was manager of the JET remote handling team from 1984 to 2006 and aims to provide a commentary on the practical experiences gained and their possible relevance to the maintenance of High Power Targets.

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Session Classification: Focus Session 5: Target Facility Challenges

Track Classification: Target Facility Challenges