ITER REMOTE MAINTENANCE SYSTEM (IRMS) LIFECYCLE MANAGEMENT

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The availability of the ITER machine to perform its scientific program is strongly dependant on the capability of the different Remote Handling systems constituting the ITER Remote Maintenance System (IRMS). The IRMS is expected to safely and efficiently perform both scheduled and unscheduled complex maintenance tasks throughout the 20 year programmed operational lifecycle of the machine. The lifecycle of the IRMS will largely exceed 40 years from initial concept design and proof testing through to machine decommissioning. Such a long lifecycle requires that a rigorous approach is put in place to guarantee IRMS efficiency and availability. For this purpose, an IRMS **System Engineering** and IRMS **Lifecycle Management** approach has been adopted by the IO and it is now being deployed by the ITER RH Section. The approach will aim at ensuring the IRMS full operability and availability at an acceptable cost of ownership over the full ITER machine assembly and operations period.

The tool, described in this paper, was introduced in early 2010 to implement the above approach within the ITER Organization and with the DOMESTIC AGENCIES (DA's). It is known as the Remote Handling Integrated Product Team (RH-IPT). Through the RH-IPT, the system engineering approach identifies and characterizes those elements of the IRMS and of the ITER machine components which will affect the operability and availability of the IRMS. This activity requires the joint efforts of IO and DA's staff involved in the procurement of both the IRMS and of the machine components needing remote maintenance. The approach requires each machine component to be remotely handled in the vacuum vessel and in the hot cell to be designed to be fully RH-compatible. A dedicated, approved procedure (described in this paper) has been put in place to ensure that the RH compatibility process is implemented both within the IO and with the relevant DA's.

IRMS lifecycle management method proposed in this paper covers such subjects as specific requirements for IRMS design reviews, monitoring during manufacture, factory and site acceptance testing, integrated commissioning, decontamination, maintenance and requalification strategies, requirements for Integrated Logistical Support during operations. Special attention is paid both to the problems of obsolescence of both technology and components - many of which will already be "out of date" before the equipment goes into service - and to maintaining the competences required to operate and maintain complex systems which are scheduled to be used over a very long period of time.

This paper presents the approach taken by the IO to managing the IRMS lifecycle and how it constitutes a corner stone in the implementation of the ITER REMOTE MAINTENANCE MANAGEMENT SYSTEM (IRMMS) presented at SOFT in 2008.