SESSION V
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The highlights of the OECD-NEA Workshop on "Utilisation and Reliability of High Power Proton Accelerator" at Mito, Japan on October 13 - 15, 1998 were reported.

- The objective of the workshop was to explore the efficient utilisation of high power proton accelerator (HPPA) in various fields and the future possibility of accelerator-driven subcritical systems (ADS).

- One serious problem is frequent beam trips of existing HPPAs. It is indispensable to understand the effects of beam trips on sub-systems, especially on ADS.

- For ADS application, beam trips should be reduced by two order of magnitudes.

- These severe requirements from ADS to HPPA are completely new for the accelerator community.

- Development of a reference subcritical system was recommended for benchmark analysis of possible problems.

- The comparison between Linear and Circular accelerators was discussed, and the conclusion was the following: (1) a linac was for tens mA and GeV, (2) a linac or a cyclotron was for 10 mA, and (3) a cyclotron was for less than 10 mA.

Effect of beam trips on sub-systems was investigated for the fuel pin and beam window in JAERI. It was concluded that fatigue damages caused by beam trips were negligible.

The CEA/EDF paper and the KAERI paper discussed the comparison between thermal neutron spectrum and fast neutron spectrum. They concluded that thermal neutron spectrum is not adequate for ADS because its short mean free path causes localisation of nuclear reactions which is not acceptable for safe operation of ADS. The former paper also discussed the comparison of coolant materials for a demonstration device of ADS and concluded that a gas cooled system is the first priority, lead-bismuth is the second, and the sodium.

SCK/CEN of Belgium proposes a medium-size ADS prototype, MYRRHA. The spallation target is a liquid lead-bismuth with a unique windowless design. The subcritical core is made of two consecutive zones of fast and thermal zone.

Conceptual safety analysis was carried out for the Fast Energy Amplifier design (ANP, Italy). For the analysis, three-dimensional simulation was carried out using MCNP since the point kinetic analysis cannot be applicable due to the existence of higher mode for ADS.