

EIGHTEENTH FUSION ENERGY CONFERENCE

SESSION OV7/FT

Thursday, 5 October 2000, at 4:35 p.m.

Chair: R. ANDREANI (Italy)

SESSION OV7/FT: Fusion Technology (provided by E. TADA, Japan)

Paper IAEA-CN77/OV7/1 (presented by G.S. Lee)

DISCUSSION

H. TSUJI: What is the ratio of the critical current of the cabled superconductor compared to the strand critical current multiplied by the number of strands in the cable?

G. S. LEE: It has not been measured but we have an optimistic view on this issue based on the preliminary test results already done with the TF conductor. It should be noted that we are preparing tests of the PF conductor in the KSTAR Test Facility in early 2001.

Paper IAEA-CN77/FT/1 (R) (presented by B.G. Hong)

DISCUSSION

M. KIKUCHI: Dr. Lee mentioned that KSTAR will start at the end of 2004. You have a lot of options for heating & current drive, diagnostics, divertor power handling capability (20 second to 300 second), etc. When will you have full capability of these options?

B.G. HONG: According to the KSTAR operation schedule, the 20-second operation will start in 2007. The upgraded version will start in 2010 and 300-second operation will start in 2011.

Paper IAEA-CN77/FT/4 (presented by J. Kisslinger)

DISCUSSION

K. YAMAZAKI: (1) Concerning the system design, what is the most critical issue for reducing the field period, for example from N=5 to N=3? Is the beta limit or coil design a serious constraint? (2) As for the coil design, why didn't you adopt Nb₃Sn SC design instead of the NbTi system based on W7-X technology?

J. KISSLINGER: (1) The limiting parameter for reducing the number of field periods is the MHD-stability limit. We believe that we can achieve stable operation of an average beta of 4 % in the 4 period configuration. In the 5 period configuration, the MHD-stability limit is higher. (2) If the magnetic field on the coils is not higher than 10 T, we can still use NbTi superconductors and apply the same technique as in the W7-X. Increasing the magnetic field would not only imply higher costs but also higher forces and stresses in the coils and in the support structure.