

# Session II

## Conclusions

### TOPIC 1: Heat Transfer from Structure to Conductor

V. Pasler 'Effective Thermal Conductivity of the Conductor Insulation of the ITER Toroidal Field Model Coil at Operation Temperature'

S. Nicollet 'Heat Transfer from Plates to Conductors: from Toroidal Field Model Coil Tests Analysis to ITER Model'

B. Xiao 'Thermal Performance of TF Coils in HT-7U

1. Based on TFMC heat transfer measurements, the insulation in the TFMC has a thermal conductivity about a factor of 5 less than expected from database measurements

? Quantify accuracy of TFMC assessment

? Due to Kapton (check database measurements)

2. Heat transfer from case to coil in HT-7U after a disruption may lead to quench. Is extra case cooling needed?

? Is it

## TOPIC 2: NbTi Performance

P. Weng 'Test Results and Preliminary Analysis of HT7U Short Samples'

P. Bruzzone 'Latest Test Results from Sultan NbTi Samples'

1. Especially for NbTi, central channel undesirable (‘dangerous’) as reduces He flow in cable, local hot spots can develop. Also wraps reduce the He circulation
2. AC loss/ stability tests for NbTi for HT7U. Choose no wraps, solder coat for TF, no wraps Ni coat for PF. Wraps seem to reduce stability

? Recommendation from ITER MC AC loss assessment that wraps on cables not needed

? Why do many NbTi/HTS conductors use a central channel

## **TOPIC 3: Nb3Sn Performance**

R. Zanino 'Analysis and Interpretation of the Full Set of Tcs Tests in Conductor 1A of the ITER CSMC'

1. Performance at 40-46kA below expectations, equivalent to  $\sim -0.3\%$  extra strain (about 1K lower Tcs)
2. Effective 'n' of strand-in-cable appears  $\sim 8$ , lower than strand ( $>15$ )
3. Extra strain appears proportional to IB

## **TOPIC 4: Codes**

L. Bottura 'Flower, a Model for the Analysis of Hydraulic Networks and Processes'