

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	3
Agenda	9
List of Participants.....	12
SUMMARY OF EACH GROUP	13
PMI for ITER.....	17
Neutron Damage.....	29
Engineering.....	35
High Heat Flux Testing.....	39
TECHNICAL SESSIONS	49
Day 1 -- Identification of Problem Areas	51
A. Welcome and Introduction, A. Miyahara, IPP	53
B. Required Characteristics of HHF/PMI Materials From Experiences Gained in Current Devices	
JT-60 and Other Japanese Devices, M. Seki (JAERI).....	56
JET and Other European Devices, M. Pick (JET)	69
TFTR and Other U.S. Devices, M. Ulrickson (PPPL)	80
C. Database Requirements for Future Machines	
ITER, J. Whitley (SNLA)	94
Graphite Issues for Next Generation Devices, H. Conrads (KFA) ...	105
D. Present Status of PMI Database	
Japanese Activities, T. Hino (Hokkaido).....	109
U.S. Activities, K. Wilson (SNLL)	126
E. Present Status of HHF and Engineering Database	
Design Perspective from Japan, M. Seki (JAERI).....	136
Engineering Aspects (U.S.), J. Koski (SNLA)	143

TABLE OF CONTENTS (cont)

TABLE OF CONTENTS (cont)

	Page
F. Modeling	
Heat Flux Modeling and Measurements, R. McGrath (SNLA)	158
Modeling of Hydrogen Behavior in Graphite N. Itoh (presented by T. Tanabe, Osaka)	178
Day 2--Specific Research Issues	193
G. Radiation Damage of Graphite	
Japanese Summary, T. Tanabe (Osaka)	195
European Summary, K. Koizlik (KFA)	212
U.S. Summary, W. Eatherly (ORNL).....	217
H. Hydrogen Recycling and Tritium Inventory	
Japanese Activities, M. Yamawaki (Tokyo Univ.)	221
U.S. Activities, W. Wampler (SNLA)	234
U.S. Activities, K. Wilson (SNLL)	247
Recent TEXTOR Results, F. Waelbroeck (KFA)	255
I. Graphite Outgassing and Conditioning	
Japanese Activities, K. Akaishi (Kyoto)	273
U.S. Activities, K. Wilson (SNLL)	278
Hydrogen Pumping and Release by Graphite Under High Flux Plasma Bombardment, Y. Hirooka (UCLA)	289
J. Graphite Erosion, Redeposition	
Japanese Activities, A. Miyahara (IPP)	298
Canadian Activities, T. Haasz (Toronto)	304
U.S. Activities, Y. Hirooka (UCLA).....	313
European Activities, V. Philipps (KFA)	322
Day 3 --	331
K. Items and Problem Areas of PIC Engineering: Designers View of HHF/PIC Studies	
Japanese Perspective, A. Miyahara (IPP)	333
U.S. Perspective, W. Gauster (SNLA).....	336

	Page
L. High Tech Materials	
Large Area 2D C-C Limiter/Divertor Plate Fabrication and Other High Tech Materials, M. Nayama (MHI).....	340
The Use of Pyrolytic and Other High Tech Graphites for PIC's, R. Watson (SNLA).....	346
Evaluation of Thermal Shock Resistance and Fracture Toughness of Graphite, Y. Gotoh (Hitachi).....	359
M. High Heat Flux Issues	
Disruption and Off Normal Loads, M. Ulrickson (PPPL) and C. Baxi (GA Tech.)	376
Thermal Testing of Carbon Materials, H. Bolt (JAERI)	392
Thermal Testing, U.S., C. Croessmann (SNLA)	407
Synergistic Effects of Thermal and Large Electromagnetic Loadings, H. Hashizume (Tokyo)	425
N. Important Engineering Considerations	
Fabrication and Active Cooling, J. Koski (SNLA).....	437
C/C Composites for Armor Materials of Active Cooling First Wall, Y. Gotoh (Hitachi).....	458
Graphite First Wall for Long Pulse Service, Y. Shibutani (Toshiba).....	464
Non-Destructive Inspection Methods for PFM, H. Hashizume (Tokyo)	478
O. Other Engineering Considerations	
High Temperature Vacuum Lubrication, G. Brown (SNLA).....	490
Technical Experience with ALT-II in TEXTOR, W. Kohlhaas (KFA) ..	503
The Story of Castle Fusion, J. Whitley and K. Wilson (Sandia)	509