

VOLUME 2

POSTERS III: DATA ACQUISITION AND CONTROLS

Chairman : D. BARNES (PPPL)

ICH RF SYSTEM DATA ACQUISITION AND REAL TIME CONTROL USING A MICROCOMPUTER SYSTEM W. Cary (GAT), J. C. Allen (GAT), R. Pinsker (GAT), C. Petty (GAT)	547
DIII-D CRYOGENICS CONTROL SYSTEM STATUS G. Campbell (GAT), J. Harris (GAT), K. Schaubel (GAT)	550
DIII-D NEUTRAL BEAM CONTROL SYSTEM OPERATOR INTERFACE J. Harris (GAT), G. L. Campbell (GAT)	554
IMPLEMENTATION OF A QUASI-REALTIME DISPLAY OF DIII-D NEUTRAL BEAM HEATING WAVEFORMS J. Phillips (GAT)	558
EFFECTIVENESS AND CONSTRAINTS OF USING OF THE FUELING SYSTEM TO CONTROL FUSION REACTOR BURN W. Hui (FSLUI), K. Fischbach (FSLUI), B. Bamieh (FSLUI), G. Miley (FSLUI)	562
POWER OPTIMISATION IN THE RF SYSTEMS AT JET AND FUTURE DEVICES.....	**
A. G. H. Sibley (JET), V. Bhatnagar (JET), G. Bosia (JET), M. Bures (JET), J. Dobbing (JET), C. Gomezano (JET), J. How (JET), M. Schmid (JET), D. Start (JET), T. Wade (JET)	
CONCEPTUAL DESIGN FOR THE TPX CENTRAL INSTRUMENTATION AND CONTROL SYSTEM S. Davis (PPPL), P. Funk (PPPL), P. Hagar (PPPL), G. Oliaro (PPPL), W. Rauch (PPPL), W. Stark (PPPL), D. Butner (LLNL), T. Casper (LLNL)	565
EXPANSION OF THE TFTR NEUTRAL BEAM COMPUTER SYSTEM FOR D-T OPERATIONS L. Lagin (PPPL), G. Fleming (PPPL), G. Christianson (PPPL), J. Chu (PPPL), S. Davis (PPPL), J. Hirsch (PPPL) J. Kampschroer (PPPL), J. McEnerney (PPPL), R. Newman (PPPL), T. O'Connor (PPPL), K. Silber (PPPL), J. Snyder (PPPL),	569

TdeV CONTROL SYSTEM UPGRADE

P. deVilliers (CCFM), B. Lliev (CCFM), J. Larsen (CCFM), J. Bagdoo (CCFM), J. Guay (CCFM), J. Caumartin (CCFM),
P. Trahan (CCFM),573

GRAPHICAL USER INTERFACE OF RFX CONTROL AND DATA ACQUISITION SYSTEM

G Flor (ENEA), O. Hemming (ENEA), A. Luchetta (ENEA), G. Manduchi (ENEA), V. Schmidt (ENEA), C. Taliervo (ENEA)
S. Vitturi (ENEA), T. Fredian (MIT), J. Stilleman (MIT)577

A NEW COIL PROTECTION SYSTEM FOR THE DIVERTOR CONFIGURATION AT JET **

V. Marchese (JET), J. R. Last (JET), G. Sannazzaro (JET), L. Scibile (JET), J. van Veen (JET)

PLENARY IV

Chairman : D. COOK (SNLL)

ENERGY FROM INERTIAL FUSION: APPROACHES AROUND THE GLOBE **

Speaker : W. Hogan (LLNL)

ORALSIVA: PELLETS, FELS, LOWER HYBRID AND ICRF ARRAYS

Chairman : M. PORKOLAB (MIT)

PELLET INJECTOR DEVELOPMENT AND EXPERIMENTS AT ORNL

L. Baylor (ORNL), B. Argo (ORNL), G. Barber (ORNL), S. Combs (ORNL), M. Cole (ORNL), G. Dyer (ORNL), D. Fehling (ORNL),
P. Fisher (ORNL), C. Foster (ORNL), C. Foust (ORNL), M. Gouge (ORNL), T. Jernigan (ORNL), R. Langley (ORNL),
S. Milora (ORNL),583

TWO-GIGAWATT BURST-MODE OPERATION OF THE INTENSE MICROWAVE PROTOTYPE (IMP)

FREE-ELECTRON LASER (FEL) FOR THE MICROWAVE TOKAMAK EXPERIMENT (MTX)

B. Felker (LLNL), S. Allen (LLNL), H. Bell (LLNL), J. Bowman (LLNL), M. DeLong (LLNL), M. Fenstermacher (LLNL),
S. Ferguson (LLNL), W. F. Fields IV (LLNL), D. Hathaway (LLNL), E. Hooper (LLNL), S. Hulsey (LLNL),
M. Jackson (LLNL), D. Lang (LLNL), C. Lasnier (LLNL), M. Makowski (LLNL), J. Moller (LLNL)589

DESIGN AND CONTROL OF PHASED ICRF ANTENNA ARRAYS

R. Goulding (ORNL), F. Baity (ORNL), D. Hoffman (ORNL), P. Ryan (ORNL), J. deGrassie (GAT), C. Petty (GAT)
R. Pinsker (GAT), M. Bures (JET), J. Dobbing (JET), D. F. H. Stuart (JET), T. Wade (JET)593

ORALSIVB: DIVERTORS AND GAS HANDLING

Chairman : B. LIPSCHULTZ (MIT)

APPLICATION OF DIVERTOR CRYOPUMPING TO H-MODE DENSITY CONTRL IN DIII-D

A. Mahdavi (GAT), J.Ferron (GAT), A. Hyatt (GAT), R. LaHaye (GAT), G. Laughon (GAT), M. Leh (GAT), K. Schaubel (GAT),
M.Schaffer (GAT), D.Schissel (GAT), J. Scoville (GAT), J. Smith (GAT), R.Stambaugh (GAT), R. Maingi (ORNL)
M. Menon (ORNL), P. Mioduszewski (ORNL), M.Wade (ORNL)597

THE ITER DIVERTOR

K. Dietz (ITER), P.H. Rebut (ITER)604

CONSTRUCTION AND TESTING OF THE JET DIVERTOR COILS INSIDE THE VACUUM VESSEL **

A. Tesini (JET), E. Bertolini (JET), N. Dolgetta (JET), J. R. Last (JET), P. Presle (JET), G. Sannazzaro (JET), J. Tait (JET),
G. Dal Mut (JET), C. D'Urzo (JET), A. Laurenti (Ansaldo GIE), A. Maragliano (Ansaldo GIE)

INSTALLATION AND INACTIVE COMMISSIONING OF THE JET ACTIVE GAS HANDLING SYSTEM (AGHS)**

J. L. Hemmerich (JET), A. C. Bell (JET), P. Boucquey (JET), C. CaldwellNichols (JET), P. Chuilon (JET), F. Delvart (JET)
B. Grieveson (JET), R. Haange (JET), G. Jones (JET), R. Lasser (JET), M. Laveyry (JET), J. Lupo (JET), A. Konstantellos (JET),

TESTING OF DRY MECHANICAL VACUUM PUMPS FOR ITER

D. Perinic (KFK), U. Kirchhof (KFK), B. Kammerer (KFK).....610

POSTERS IV: PLASMA ENGINEERING

Chairman : H. NEILSON (ORNL)

STEADYSTATE AND PLASMA START-UP OPERATIONS FOR THE ARIES-IV SECOND-STABILITY TOKAMAK REACTOR

T. K. Mau (UCLA), G. Emmert (UW), D. Ehst (ANL), C. Kessel (PPPL), B. J. Lee (LANL), K. Werley (LANL).....617

TWO FREQUENCY ICRF HEATING OF D-T PLASMAS ON TFTR

J. Rogers (PPPL), R. Majeski (PPPL), J. Wilson (PPPL), J. Hosea (PPPL), G. Schilling (PPPL), J. Stevens (PPPL), Y. Ho (SAIC)
S. Raman (UM), D. Rasmussen (ORNL)621

START-UP SIMULATIONS OF THE PULSAR PULSED TOKAMAK REACTOR

K. Werley (LANL), C. Bathke (LANL).....625

ITER PLASMA START-UP MODELING

J. Leuer (GAT), J. Wesley (GAT)629

SIMULATION OF THE BREAKDOWN IN TEXTOR

Y. Dnestrovskij (KUR), S. Lysenko (KUR), S. Tsaun (KUR), A. Vertiporokh (KUR), B. Giesen (KFA)634

PLASMA VERTICAL STABILITY AND FEEDBACK CONTROL FOR TPX

C. Kessel (PPPL), S. Jardin (PPPL), G. H. Neilson (PPPL)638

INTEGRATED, MODEL BASED FEEDBACK CONTROL IN FUSION REACTORS

M. A. Firestone (JCOR), J. MorrowJones (MRC), S. Jardin (PPPL), C. Kessel (PPPL), T. K. Mau (UCLA).....642

PLASMA RESPONSE MODELING FOR MULTIVARIABLE TOKAMAK CONTROL DESIGN

D. Humphreys (GAT), M. A. Firestone (JCOR), J. MorrowJones (MRC).....646

**EXPERIMENTAL AND ANALYTICAL STUDY OF THE ELECTROMAGNETOMECHANICS ON
FUSION REACTOR**

H. Miura (KHI), S. Nishio (KHI), T. Suzuki (JAERI),653

INFLUENCE OF RFX ENGINEERING PARAMETERS ON PLASMA BEHAVIOUR

P. Collarin (PAD), A. DeLorenzi (PAD), R. Piovan (PAD).....657

TOKAMAK PHYSICS EXPERIMENT POLOIDAL FIELD DESIGN

R. Bulmer (LLNL).....661

POSTERS IV: SUPERCONDUCTING MAGNETS

Chairman : W. HASSENZAHN (LLNL)

**DESIGN METHODS AND ACTUAL PERFORMANCES OF CONDUCTORS FOR THE SUPERCONDUCTING
COILS OF TOKAMAKS**

B. Turck (CENCAD), D. Bessette (CENCAD), D. Ciazynski (CENCAD), J. Duchateau (CENCAD)667

ITER COMPACT DESIGN

A. Torossian (CENCAD), P. Libeyre (CENCAD), B. Bertrand (CENCAD), C. Portafaix (CENCAD).....671

**ITER EDA IN-PLANE STRUCTURAL DESIGN, FINITE FRICTION EFFECTS, CENTRAL SOLENOID
TENSION AND COMPRESSIVE PRELOAD**

P. Titus (Stone & Webster Eng.), F. M. G. Wong (Stone & Webster Eng.).....676

ITER EDA OUT-OF-PLANE STRUCTURAL DESIGN AND ANALYSIS

P. Titus (Stone & Webster Eng.), F. M. G. Wong (Stone & Webster Eng.).....680

U. S. CONDUCTOR R&D AND SMALL SCALE EXPERIMENTS FOR THE ITER MAGNETS

J. Minervini (MIT), M. Steeves (MIT), D. B. Montgomery (MIT), R. Randall (MIT), M. Takayasu (MIT), C. Gung (MIT)
C. Gung (MIT), R. G. Ballinger (MIT), I. Hwang (MIT), M. Moraa (MIT), C.H. Jang (MIT), W. Guss (MIT), T. Hrycaj (MIT)
M. Ferri (MIT), M. K. Ahmed (MIT), C. Hall (MIT), A. E. Long (MIT)684

**STUDY ON CURRENT SHARING PHENOMENA OBSERVED DURING THE TESTING OF ITER PROTOTYPE
CABLE-IN-CONDUIT CONDUCTORS IN THE FENIX TEST FACILITY**

Y. Lee (LLNL), R. L. Wong (LLNL), S. S. Shen (LLNL)688

**EXPERIMENTAL ESTIMATION OF ENERGY DISSIPATION IN ITER CENTRAL SOLENOID
SUPERCONDUCTOR**

C. Gung (MIT), M. Takayasu, (MIT), J. Minervini (MIT)692

POSTERS IV: TPX ENGINEERING; RF SYSTEMS

Chairman : J. MINERVINI (MIT)

**DEVELOPMENT AND IMPLEMENTATION OF THE TPX STRUCTURAL AND CRYOGENIC DESIGN
CRITERIA**

I. Zatz (PPPL), P. Heitzenroeder (PPPL), J. Schultz (MIT).....699

TPX ASSEMBLY PLAN	
D. Knutson (PPPL)	703
STRUCTURAL DESIGN OF THE SUPERCONDUCTING POLOIDAL FIELD COILS FOR THE TOKAMAK PHYSICS EXPERIMENT	
T. G. O'Connor (LLNL), J. Zbasnik (LLNL)	707
THE TPX CRYOSTAT CONCEPTUAL DESIGN	
D. Ravenscroft (LLNL), A. Posey (LLNL), P. Heitzenroeder (PPPL), T. G. Brown (GRUMM)	711
DETAILED STRUCTURAL EVALUATION OF THE TPX TOROIDAL FIELD MAGNET NOSE REGION	
L. Myatt (MIT)	715
ELECTROMAGNETIC MODELING OF THE TPX COILS AND THE COLD STRUCTURE	
A. Radovinsky (MIT), P. Wang (MIT), R. D. Pillsbury (MIT)	719
THERMO-HYDRAULIC ANALYSIS OF THE TPX SUPERCONDUCTING TOROIDAL FIELD MAGNETS	
R. Wong (LLNL), J. Zbasnik (LLNL), W. Hassenzanz (LLNL)	723
CONCEPTUAL DESIGN OF THE TOKAMAK RADIATION SHIELDING FOR THE TOKAMAK PHYSICS EXPERIMENT (TPX)	
M. Cole (ORNL), B. Nelson (ORNL), P. Fogarty (ORNL), G. Jones (ORNL), P. Goranson (ORNL), S. L. Liew (PPPL), Y. Gohar (ANL).....	727
ASSESSMENT OF A MAGNET SYSTEM COMBINING THE ADVANTAGES OF A CABLE-IN CONDUIT FORCED FLOW AND POOL BOILING MAGNETS	
D. Slack (LLNL), W. Hassenzahl (LLNL), B. Felker (LLNL), M. Chaplin (LLNL)	731
MODIFICATION TO THE LONG PULSE ION SOURCE FOR OPERATION ON THE TOKAMAK PHYSICS EXPERIMENT (TPX)	
R. P. Wells (LBL), T. A. Stevens (LBL).....	735
MODIFICATIONS OF A BARIUM SURFACE CONVERSION SOURCE FOR OPERATION WITH R. F. DISCHARGE	
M. E. Stuart (LBL), M. Knolls (LBL), J. W. Kwan (LBL), A. W. Rawlins (LBL), T. A. Stevens (LBL), R. P. Wells (LBL),.....	739
RADIO FREQUENCY POWER SYSTEM FOR INDUCTIVE HEATING IN ION SOURCES	
J. W. Kwan (LBL), G. J. de Vries (LBL), G. Ackerman (LBL), M. Williams (LBL)	743

POSTERS IV: ICF / IFE

Chairman : L. FOREMAN (LANL)

CONCEPTUAL DESIGN FOR THE OMEGA UPGRADE CRYOGENIC TARGET DELIVERY SYSTEM R. Fagaly (GAT), N. Alexander (GAT), R. Mangano (GAT), R. Bourque (GAT), D. Bittner (W.J. Schafer), R. Gram (LLE), HG Kim (LLE)	749
FAST-FORMED LIQUID SURFACES FOR INERTIAL CONFINEMENT FUSION TARGET SHELLS R. B. Stephens (GA)	753
DESIGN INTEGRATION OF PROMETHEUS-H A HEAVY ION INERTIAL FUSION ENERGY REACTOR POWER PLANT V. D. Lee (MDA)	757
DESIGN OF 7.8 MJ 4 GEV PB++ HEAVY ION INERTIAL FUSION ENERGY DRIVER G. Linford (TRW), D. Driemeyer (MDA), S. Fornaca (TRW), A. Maschke (TRW)	761
NUCLEAR ANALYSIS OF THE FIRST WALL/BLANKET/SHIELD OF THE PROMETHEUS INERTIAL FUSION ENERGY REACTORS M. Youssef (UCLA), M. Abdou (UCLA)	765
NUCLEAR ANALYSIS FOR THE BLANKET AND SHIELD OF THE KrF LASER DRIVEN INERTIAL FUSION REACTOR SOMBRERO M. Sawan (UW), H. Khater (UW)	769
THERMAL AND STRUCTURAL ANALYSIS OF THE FIRST WALL IN THE SIRIUS-P REACTOR E. Mogahed (UW), I. Sviatoslavsky (UW)	773

PLENARYV

Chairman : J. DOGGETT (LLNL)

JET DEVELOPMENT TOWARDS PUMPED DIVERTOR OPERATIONS	**
Speaker : E. Bertolini (JET)	
RECENT PROGRESS AND FUTURE PROSPECTS OF THE JT60 PROGRAM Speaker : H. Ninomiya	779

ORALSVA: TPX MAGNETS

Chairman : R. CALLIS (GAT)

THE TPX SUPERCONDUCTING MAGNET SYSTEM J. Schultz (MIT), L. Bromberg (MIT), E. Chaniotakis (MIT), N. Diatchenko (MIT), W. Guss (MIT), C. Liao (MIT), D. B. Montgomery (MIT), J. Minervini (MIT), R. D. Pillsbury (MIT), A. Radovinsky (MIT), M. Takayasu (MIT), P. Wang (MIT), T. Brown (PPPL), J. Citrolo (PPPL), R. Bulmer (LLNL), (M. Chaplin (LLNL), D. Lang (LLNL), W. Hassenzahl (LLNL), J. Heim (LLNL), T. O'Connor (LLNL), D. Slack (LLNL), R. Wong (LLNL), J. Zbasnik (LLNL), L. Myatt (SW)	788
--	-----

THE TPX MAGNET R&D PROGRAM

J. Zbasnik (LLNL), W. Hassenzahl (LLNL), M. Chaplin (LLNL), D. Slack (LLNL), D. Lang (LLNL), J. Schultz (MIT)
J. Citrolo (PPPL).....794

THE TPX SUPERCONDUCTING MAGNET FABRICATION PROCESS

J. Citrolo (PPPL), J. Chrzanowski (PPPL), J. Schultz (MIT)798

QUENCH DETECTION & INSTRUMENTATION FOR THE TOKAMAK PHYSICS EXPERIMENT MAGNETS

M. R. Chaplin (LLNL), W. V. Hassenzal (LLNL), J. H. Schultz802

ORALSVB: EXPERIMENTAL DEVICES

Chairman : T. SHANNON (ORNL)

THE PRINCETON BETA EXPERIMENTMODIFICATIONS ADVANCED TOKAMAK PROGRAM

G. Gettelfinger (PPPL)806

START-UP AND EARLY RESULTS FROM ALCATOR C-MOD

S. Fairfax (MIT), Alcator Group812

TFTR DT PREPARATION PROJECT STATUS

E. Perry (PPPL), L. Dudek (PPPL)818

PHYSICS DESIGN REQUIREMENTS FOR THE TOKAMAK PHYSICS EXPERIMENT (TPX)

G. Neilson (ORNL), R. Goldston (PPPL), S.C. Jardin (PPPL), W. Nevins (LLNL), M. Porkolab (MIT), W. Reiersen (PPPL),
M. Ulrickson (PPPL)822

STATUS OF MACHINE AND OPERATION OF JT60U

I. Kondo (JAERI).....826

POSTERS V: DIVERTORS AND PLASMAFACING COMPONENTS

Chairman : L. SEVIER (GAT)

HIGH HEAT FLUX EXPERIMENTS OF PLASMA FACING COMPONENTS FOR NEXT FUSION DEVICES

K. Nakamura (JAERI), M. Akiba (JAERI), S. Suzuki (JAERI), K. Satoh (JAERI), K. Yokoyama (JAERI), M. Dairaku (JAERI),
M. Araki (JAERI), Y. Ohara (JAERI), T. Inoue (JAERI), Y. Okumura (JAERI), I. Smid (JAERI).....830

TPX DIVERTOR DESIGN: NEUTRAL ATOM BEHAVIOR AND OPTIMIZATION FOR PUMPING

D. Ruzic (FSLUI), D. Juliano (FSLUI), R. Turkot Jr. (FSLUI), K. Werley (LANL), M. Ulrickson (PPPL), D. Stotler (PPPL),
D. Hill (GAT)834

TPX DIVERTOR DESIGN

P. Anderson (GAT), C. Baxi (GAT), E. Reis (GAT), D. L. Sevier (GAT), J. Haines (MAC DAC), H. Mantz (MAC DAC),
F. Williams (MAC DAC)838

TPX POLOIDAL LIMITER DESIGN

H. Mantz (MDA), D. Bowers (MDA), J. Haines (MDA), F. Williams (MDA)842

ELECTROMAGNETICALLY PLUGGED GASEOUS DIVERTORS

M. Tekula (MRAT), L. Bromberg (MIT),846

PERFORMANCE OF THE PBX-M PASSIVE PLATE STABILIZATION SYSTEM

H. Kugel (PPPL), R. Bell (PPPL), S. Bernabei (PPPL), T.K. Chu (ORNL), A. England (ORNL), G. Gettelfinger (PPPL)
R. Hatcher (PPPL), P. Heitzenroeder (PPPL), R. Kaita (PPPL), S. Kaye (PPPL), M. Ono (PPPL), M. Okabayashi (PPPL),
N. Sauthoff (PPPL), L. Schmitz (UCLA), S. Sesnic (PPPL), H. Takahashi (PPPL),850

AN HIGH PERFORMANCE WATER-COOLED THERMAL SHIELD DEVICE

A. Pizzuto (FRAS), C. Sangiovanni (FRAS)855

TRANSPORT OF ENERGETIC ION AND ELECTRON ENERGY THROUGH THE VAPOR SHIELD DURING A TOKAMAK PLASMA DISRUPTION

E. Tucker (NCSU), J. Gilligan (NCSU)859

ENGINEERING AND MATERIALS ISSUES IN DESIGNING A COLD GAS DIVERTOR **

J. Davis (MDA), J. Haines (MDA), R. McGrath (SNLL)

OPTIMIZATION STUDIES ON INTERFACIAL MECHANICAL STRENGTH IN THE GRAPHITE-COPPER BONDED STRUCTURE FOR A DIVERTOR APPLICATION

K. Kitamura (TOSHIBA), K. Nagata (TOSHIBA), N. Tachikawa (TOSHIBA), M. Shibui (JAERI), M. Akiba (JAERI), M. Araki (JAERI)863

DEVELOPMENT OF LOW-Z DIVERTOR PLATE MATERIAL WITH FUNCTIONALLY GRADIENT MATERIAL LAYER

K. Namiki (MAPI), K. Ioki (MAPI), M. Morimoto (MAPI), H. Tsunoda (MHI), M. Toyoda (MHI), M. Onozuka (MHI)867

MANUFACTURING AND TESTING OF A RELEVANT SCALE MOCKUP BASED ON MONOBLOCK CONCEPT

E. Di Pietro (ENEA), A. Orsini (ENEA), M. Sacchetti (ENEA), S. Libera (ENEA), A. Cardella (GAR), G. Vieider (GAR)871

POSTERS V: POWER SYSTEMS

Chairman : R. MARSALA (PPPL)

OPERATION OF THE ALCATOR C-MOD POWER SYSTEM

S. Fairfax (MIT), J. Daigle (MIT), V. Bertolino (MIT), J. Parany (MIT), X. Zhong (MIT)877

ALTERNATOR CONTROL SYSTEM FOR THE ALCATOR C-MOD TOKAMAK	
E. Byrne (MIT)	881
GROUND FAULT MONITORING IN ALCATOR C-MOD	
D. Flanary (MIT)	885
DIRECT CURRENT INTERRUPTING SYSTEM USING AN IRON CORE FOR QUENCH PROTECTION OF THE SUPERCONDUCTING COIL	
Y. Matsuzaki (JAERI), Y. Matsumura (MELCO), I. Nakazawa (MELCO)	889
ANALYSIS AND SPECIFICATION OF THE PERFORMANCES OF THE NEW JET AMPLIFIER FOR THE VERTICAL STABILISATION	**
T. Bonicelli (JET), M. Garribba (JET), P. L. Mondino (JET), P. Noll (JET)	
UPGRADE OF TOROIDAL MAGNETIC FIELD POWER SUPPLY CONTROLS	
P. Petrach (GAT), A. Rouleau (GAT), R. McNulty (GAT), D. Patrick (GAT), L. Walin (GAT)	893
TFTR ECS SAFETY DISCONNECT SWITCH SOFT CLOSE MODIFICATION	
C. Ancher (PPPL), S. Tureikas (PPPL)	897
THE POWER SUPPLY AND CONTROL SYSTEM FOR THE MM-2U NEUTRAL BEAM INJECTOR	
D. Wang (SWIP), X. Xu (SWIP), X. Li (SWIP), D. Lu (SWIP), S. Jiang (SWIP), M. Sun (SWIP), H. Li (SWIP), S. Yuan (SWIP), M. Liu (SWIP)	901
TPX POWER SYSTEMS DESIGN OVERVIEW	
C. Neumeyer (EBASCO), G. Bronner (PPPL), E. Lu (PPPL), S. Ramakrishnan (PPPL), M. Jackson (LLNL)	905
TPX POLOIDAL FIELD (PF) POWER SYSTEMS SIMULATION	
E. Lu (PPPL), G. Bronner (PPPL), C. Neumeyer (EBASCO)	909
NEUTRAL BEAM POWER SYSTEM FOR TPX	
S. Ramakrishnan (PPPL), N. Bowen (PPPL), T. O'Connor (PPPL), J. Edwards (PPPL), N. Fromm (PPPL), R. Hatcher (PPPL), R. Newman (PPPL), G. Rossi (PPPL), T. Stevenson (PPPL), A. VonHalle (PPPL).....	913
LIMITATIONS OF POWER CONVERSION SYSTEMS UNDER TRANSIENT LOADS AND IMPACT ON THE PULSED TOKAMAK POWER REACTOR	
G. Sager (GAT), C. P. C. Wong (GAT), D. Kapich (GAT), C. F. McDonald (GAT), R. Schleicher (GAT)	917
POSTERS V: ES&H	
Chairman : J. LEVINE (PPPL)	
CHARACTERIZATION OF OXIDE BREAKUP BY CONVECTIVE CURRENTS	
G. Smolik (INEL), K. A. McCarthy (INEL), V. SmithWackerle (INEL)	923

CHEMICAL AND WASTE MANAGEMENT TRACKING AND REPORT-GENERATING SYSTEMS	
P. Del Gandio (PPPL), W. Slavin (PPPL), J. Scott III (PPPL)	927
ACTIVATION AND WASTE DISPOSAL OF THE ARIES-II TOKAMAK FUSION POWER REACTOR	
H. Khater (UW)	930
ENVIRONMENTAL AND SAFETY ASSESSMENT OF THE INERTIALLY CONFINED DIRECT DRIVE LASER FUSION POWER REACTOR SIRIUS-P	
H. Khater (UW), S. K. L. Wittenberg (UW), M. Sawan (UW)	934
A SYSTEMS MODULE FOR ENVIRONMENTAL AND SAFETY ASSESSMENT IN FUSION REACTOR STUDIES--ILLUSTRATIVE RESULTS FOR HT-9 STRUCTURES	
S. K. Ho (BERK), M. D. Lowenthal (BERK).....	938
ASSESSMENT OF PERSONNEL ACCESSABILITY IN THE PARTICLE BEAM FUSION ACCELERATOR FACILITY PBFA-II	
M. Sawan (UW), L. ElGuebaly (UW), H. Khater (UW)	942
ENVIRONMENT SOURCE TERMS FOR A FEW NET PLANT REFERENCE ACCIDENT SEQUENCES	
G. Cambi (Bologna U.), D. Cepraga (ENEA), G. Cavallone (NIERSRL) L. DiPace (ENEA), R. Passulacqua (ENEA), H. Bunz (KFA)	946
PRELIMINARY OCCUPATIONAL RADIATION EXPOSURE EVALUATION RELATED TO NET II/ITER	
S. Sandri (FRAS), G. Cambi (FRAS), S. Ciattaglia (FRAS).....	950
A COMPLETE LOSS OF COOLANT ACCIDENT (LOCA) ANALYSIS FOR THE INBOARD COMPONENTS OF ITER CDA	
E. Mogahed (UW), M. Sawan (UW), H. Khater (UW)	954
IMPACT OF ENVIRONMENTAL REGULATIONS ON CONTROL OF COPPER ION CONCENTRATION IN THE DIII-D COOLING WATER SYSTEM	
A. Gootgeld (GAT).....	958
TOKAMAK PHYSICS EXPERIMENT SAFETY ANALYSES AND ENVIRONMENTAL SAFETY AND HEALTH COMPLIANCE ACTIVITIES	
C. Motloch (INEL), M. McKenzieCarter (SAIC), J. Commander (consultant), J. Levine (PPPL)	962

POSTERS V: TRITIUM

Chairman : C. GENTILE (PPPL)

DYNAMIC TRITIUM ACCOUNTANCY FOR ITER	
R. Avenhaus (KFK), G. Spannagel (KFK).....	969

CORRELATION OF TRITIUM OUTGASSING FROM METAL SURFACES WITH SURFACE SMEARING	
A. Antoniazzi (OH), W. Shmayda (OHRD), T. Palma (ENEA).....	975

TRITIUM OUTGASSING FROM SOLID WASTE	
A. Antoniazzi (OH), W. Shmayda (OHRD), T. Palma (ENEA).....	979

INSTALLATION OF DECON FACILITY IN PREPARATION FOR TFTR D-T OPERATIONS	
J. Chrzanowski (PPPL), D. Speed (PPPL)	983

PLENARY VI

Chairman : G. MILEY (UOFILL)

REVIEW OF EXPERIMENTAL RESULTS AND OPERATION OF TOKAMAK15 SYSTEMS.....**	
Speaker : I. Posadsky (KUR)	

ORALSVIA: IFE DESIGN AND TECHNOLOGY

Chairman : W. DOVE (DOE)

RESEARCH AND DEVELOPMENT ASSESSMENTS FOR PROMETHEUS HEAVY ION AND LASER DRIVEN INERTIAL FUSION ENERGY REACTOR DESIGNS	
M. Abdou (UCLA), A. Ying (UCLA), M. Tillack (UCLA), N. Ghoniem (UCLA), L. Waganer (MDA), D. Driemeyer (MDA) G. Linford (TRW), D. Drake (KMS formerly).....	989

THE PROMETHEUS IFE REACTOR CAVITY	
M. Tillack (UCLA), M. Abdou (UCLA), A. Raffray (UCLA), N. Ghoniem (UCLA)	993

INDUSTRY COOPERATES TO ADVANCE IFE REACTOR DESIGN -- THE RESULTS OF PROMETHEUS	
L. Waganer (MDA)	997

AN INTEGRATED TEST FACILITY FOR INERTIAL FUSION ENERGY USING HEAVY ION DRIVERS	
W. Meier (LLNL), W. Hogan (LLNL).....	1001

GENERATION OF SAWTOOTH AND SQUARE WAVEFORMS FOR HEAVY ION INDUCTION ACCELERATOR CELLS USING IMPEDANCE TAPERED PFN'S	
D. Berners (BERK), L. Reginato (BERK)	1006

ORALSVIB: TRITIUM AND ES&H

Chairman : R. CARLSON (LANL)

REQUIREMENTS FOR U. S. REGULATORY APPROVAL OF THE INTERNATIONAL THERMONUCLEAR EXPERIMENTAL REACTOR (ITER)	
D. Petti (INEL), J.C. Haire (INEL)	1010

PREPARATIONS FOR DEUTERIUM-TRITIUM OPERATIONS AT TFTR

M. Leonard (PPPL), P. Alling (PPPL), W. Blanchard (PPPL), R. Camp (PPPL), C. Gentile (PPPL), J. Hosea (PPPL)
R. Hawryluk (PPPL), P. LaMarche (PPPL), S. Murphy (PPPL), G. Pearson (PPPL), C. Vannoy (PPPL)..... 1016

**THE TOKAMAK FUSION TEST REACTOR TRITIUM SYSTEMS TEST CONTRACTOR OPERATIONAL
READINESS REVIEW**

C. Gentile (PPPL), J. Levine (PPPL), M. Norris (PPPL), F. Rehill (PPPL), C. Such (PPPL) 1023

DECOMMISSIONING THE TOKAMAK FUSION TEST REACTOR

P. Spampinato (GRUMM), G. R. Walton (PPPL) 1025

**RECOMMENDED IN-VESSEL TUBING FAILURE RATES FOR THE INTERNATIONAL THERMONUCLEAR
EXPERIMENTAL REACTOR**

T. Marshall (INEL), L. Cadwallader (INEL) 1029

SAFETY ANALYSES OF THE ARIES-II AND ARIES-IV TOKAMAK REACTOR DESIGNS

J. Herring (INEL), K. A. McCarthy (INEL), T. Dolan (INEL)..... 1033

POSTERS VI: FUELLING, DIVERTORS AND VACUUM SYSTEMS

Chairman : D. SEDGLEY (GRUMM)

ARGON FROST CONTINUOUS CRYOPUMP FOR FUSION APPLICATIONS

C. Foster (Cryo. App. Inc.) H. McCurdy (Cryo. App. Inc.) 1039

**INSTALLATION AND INITIAL OPERATION OF THE DIII-D ADVANCED DIVERTOR CRYOCONDENSATION
PUMP**

J. P. Smith (GA), K. Schaubel (GA), C. Baxi (GA), G. Campbell (GA), A. Hyatt (GA), A. Laughon (GA), M. Mahdavi (GAT)
E. Reis (GA), M. Schaffer (GA), D. L. Sevier (GA), R. Stambaugh (GA), M. Menon (ORNL) 1043

PERFORMANCE CHARACTERISTICS OF THE DIII-D ADVANCED DIVERTOR CRYOPUMP

M. Menon (GAT), G. Maingi (ORNL), M. Wade (ORNL), C. Baxi (GAT), G. L. Campbell (GAT), K. Holtrop (GAT), A. Hyatt (GAT)
G. Laughon (GAT), C. Makariou (GAT), M. Mahdavi (GAT), E. Reis (GAT), M. Schaffer (GAT), K. Schaubel (GAT)..... 1047

DESIGN, CONTROL AND OPERATION OF THE VACUUM AND GAS SYSTEMS FOR ALCATOR C-MOD

R. Childs (MIT), J. Goetz (MIT), M. Graf (MIT), A. Hubbard (MIT), J. Rice (MIT), T. Toland (MIT) 1051

**CONCEPTUAL DESIGN OF THE VACUUM PUMPING SYSTEM FOR THE TOKAMAK PHYSICS
EXPERIMENT**

K. St. Onge (ORNL), R. Langley (ORNL), B. Nelson (ORNL), P. Fogarty (ORNL), G. Jones (ORNL), M. Ulrickson (PPPL)..... 1055

POSTERS VI: RF SYSTEMS

Chairman : H. W. HARRIS (LANL)

RF MODELING AND DESIGN OF A FOLDED WAVEGUIDE LAUNCHER FOR THE ALCATOR CMOD TOKAMAK T. Bigelow (ORNL), C. Fogelman (ORNL), F.W. Baity (ORNL), M. Carter (ORNL), D. Hoffman (ORNL), P. Ryan (ORNL) J. Yugo (ORNL), S. Golovato (MIT), P. Bonoli (MIT)	1061
ICRH SYSTEM FOR THE IGNITOR MACHINE F. Carpignano (MIT), B. Coppi (MIT), M. Nassi (MIT)	1065
HIGH POWER RF TESTING OF THE JET 'A2' FWCD ANTENNAE	**
T. Brown (JET), V. Bhatnagar (JET), C. Gormezano (JET), J. Jacquinet (JET), A. Kaye (JET), T. Wade (JET)	
ANTENNAS FOR ICRF HEATING IN THE ALCATOR C-MOD TOKAMAK S. Golovato (MIT), W. Beck (MIT), P. Bonoli (MIT), M. Fridberg (MIT), M. Porkolab (MIT), Y. Takase (MIT)	1069
4MW UPGRADE TO THE DIII-D FAST WAVE CURRENT DRIVE SYSTEM J. de Grassie (GA), R. Pinsker (GA), W. Cary (GA), R. Callis (GA), R. O'Neill (GA), C. Petty (GA), D. Remsen (GA), F. Baity (ORNL) R. Goulding (ORNL), S. Fergusons (LLNL)	1073
EXPERIMENTAL TEST OF A TWOPORT DECOUPLER IN THE DIII-D FAST WAVE CURRENT DRIVE SYSTEM P. Pinsker (GAT), C. Petty (GAT), W. Cary (GAT), F. Baity (ORNL), R. Goulding (ORNL)	1077
UPGRADING AND OPERATING OF THE 80MHz TRANSMITTER ON THE ALCATOR C-MOD TOKAMAK M. Fridberg (MIT), E. Byrne (MIT), S. Golovato (MIT), M. Porkolab (MIT), Y. Takase (MIT)	1081
DESIGN OF FOLDED WAVEGUIDE ANTENNA FOR ALCATOR C-MOD C. Fogelman (ORNL), T. Bigelow (ORNL), M. Carter (ORNL), D. Hoffman (ORNL), B. Riemer (ORNL), J. Yugo (ORNL) S. Golovato (MIT), P. Bonoli (MIT)	1085
FEEDBACK CONTROLLED HYBRID FAST FERRITE TUNERS D. Remsen (MIT), D. Phelps (MIT), J. deGrassie (MIT), W. Cary (MIT), R. Pinsker (MIT), C. P. Moeller (GA), W. Arnold (ANTBOSCH) S. Martin (ANTBOSCH), E. Pivitt (ANTBOSCH)	1088
PERFORMANCE OF THE DIII-D GHz ECH SYSTEM DURING THE FIRST YEAR OF OPERATIONS AND TESTING A. Wright (GAT), J. C. Allen (GAT), W. Cary (GAT), T. E. Harris (GAT)	1092
OPERATIONAL UPGRADES TO THE DIII-D 60 GHz ELECTRON CYCLOTRON RESONANT HEATING SYSTEM T. E. Harris (GAT), W. Cary (GAT)	1096
COMPACT ITER-RELEVANT ECH BEAM STEERING ANTENNA DESIGN J. Doane (GAT), C. Moeller (GAT)	1100
EXPERIMENTAL STUDY OF MEGAWATT GYROTRONS K. Kreischer (MIT), M. Blank (MIT), S. Lee (MIT), R. Temkin (MIT)	1104

QUASI-OPTICAL MODE CONVERTERS FOR HIGH ORDER MODE GYROTRONS	
M. Blank (MIT), K. Kreisler (MIT), R. Temkin (MIT)	1107

DETERMINATION OF VACUUM PUMPING CHARACTERISTICS FOR AN EVACUATED ECH CIRCULAR WAVEGUIDE SYSTEM	
R. Langley (ORNL), T. Bigelow (ORNL), D. Santeler (Process Applications)	1111

MEAN TIME BETWEEN FAILURES (MTBF) AND AVAILABILITY OF THE GYROTRON SYSTEM USED ON THE MICROWAVE TOKAMAK EXPERIMENT AT LAWRENCE LIVERMORE NATIONAL LABORATORY	
S. Ferguson (LLNL), M. Jackson (LLNL), D. Seilhmer (LLNL)	1115

POSTERS VI: MAGNET ENGINEERING II

Chairman : R. PILLSBURY (MIT)

REPAIR OF POLOIDAL FIELD MAGNETS ON ALCATOR C-MOD	
W. Beck (MIT)	1121

DEVELOPMENT OF HIGH STRENGTH ELECTRICAL CONNECTIONS USING COPPER ELECTRO-DEPOSITION	
E. Fitzgerald (MIT), C. Reddy (MIT)	1125

ANOMALOUS BEHAVIOUR IN ICCS	
L. Bromberg (MIT), M. Takayasu (MIT), J. Schultz (MIT)	1128

MHD-DRIVEN INTERNAL COILS FOR TOKAMAK DIVERTOR OPERATION	
M. Tekula (MRAT), L. Bromberg (MIT)	1134

MODELING OF QUENCH IN CICC WITH A CENTRAL CHANNEL IN THE CONDUIT	
J. Freidberg (MIT), A. Shajii (MIT), E. Chaniotakis (MIT), J. McCarrick (MIT)	1138

ANALYTIC AND NUMERICAL THEORY OF QUENCH IN CICC	
A. Shajii (MIT), J. Freidberg (MIT)	1143

A NEW INTEGRATED 3D PULSED LOSSES AND HEAT REMOVAL CODE FOR ICCS MAGNETS	
C. Liao (MIT), J. Schultz (MIT)	1148

STATUS AND TEST RESULTS OF TOKAMAK-15 SUPERCONDUCTING TOROIDAL FIELD COIL	
I. Anashkin (KUR), V. Asmalovsky (KUR), A. Vertiporokh (KUR), D. Ivanov (KUR), I. Posadsky (KUR), P. Khvostenko (KUR)	1152

THE MECHANICAL MEASUREMENT SYSTEM OF RFX	
P. Zaccaria (ENEA)	1158

STRENGTH CONSIDERATIONS ON THE MAGNETIC FIELD COILS OF THE SPANISH STELLARATOR TJ-II M. Medrano (CIEMAT), M. Blaumoser (CIEMAT), J. Alonso (CIEMAT), G. Barrera (CIEMAT), M. Pastor (CEDEX) C. Rubio (CEDEX), F. Pedrazo (CEDEX), N. Heusmann (NOELL).....	1162
---	------

DRASTIC IMPROVEMENT OF I_c OF Nb₃Sn CIC CONDUCTOR BY PRESTRAINING AT ROOM TEMPERATURE A. Torossian (CENCAD), W. Specking (KFK), J. Duchateau (CENCAD), P. Decool (CENCAD).....	1166
--	------

POSTERS VI: PLASMAFACING COMPONENTS

Chairman : M. ULRICKSON (SNLL)

COMPUTATIONAL MODEL OF SURFACE ABLATION FROM TOKAMAK DISRUPTIONS D. Ehst (ANL), A. Hassanein (ANL).....	1173
---	------

METHODOLOGY FOR FIRST WALL DESIGN J. Galambos (ORNL), D. Conner (ORNL), P. Goranson (ORNL), D. Lousteau (ORNL), D. Williamson (ORNL), B. Nelson (ORNL) F. Davis (ORNL),	1177
--	------

SURFACE IMPURITY REMOVAL FROM DIII-D GRAPHITE TILES BY BORON CARBIDE GRIT BLASTING R. Lee (GAT), M. Hollerbach (GAT), K. Holtrop (GAT), A. Kellman (GAT), P. Taylor (GAT), W. West (GAT)	1181
--	------

UPGRADE OF THE DIII-D VACUUM VESSEL PROTECTION SYSTEM M. Hollerbach (GAT), R. L. Lee (GAT), J. P. Smith (GAT), P. Taylor (GAT).....	1185
---	------

THERMAL HYDRAULIC ANALYSIS OF THE TPX PLASMA FACING COMPONENTS C. B. Baxi (GAT), E. Chin (GAT), K. Redler (GAT).....	1189
--	------

DESIGN OF THE TPX LIMITER AND ARMOR COMPONENTS D. L. Sevier (GA), E. Chin (GA), T. Hodapp (GA), R. Junge (GA), K. Redler (GA), H. Mantz (MDA).....	1193
--	------

STRUCTURAL ANALYSIS OF THE TPX PLASMA FACING COMPONENTS E. Reis (GAT), E. Chin (GAT), K. Redler (GAT), F. Williams (MDAC)	1197
---	------

ASPECT RATIO EFFECTS ON HEAT TRANSFER IN MHD LAMINAR FLOW THROUGH RECTANGULAR CHANNELS IN THE PLASMA FACING COMPONENTS OF FUSION REACTORS M. Hasan (IPFR,UCLA), K. Takase (IPFR,UCLA)	1202
---	------

HEAT TRANSFER IN MHD LAMINAR FLOW THROUGH A RECTANGULAR CHANNEL IN THE PLASMA FACING COMPONENTS OF FUSION REACTORS K. Takase (IPFR,UCLA), M. Hasan (IPFR, UCLA)	1206
---	------

EVALUATION OF POROUS MEDIA HEAT EXCHANGERS FOR PLASMA FACING COMPONENTS J. Rosenfeld and J. Lindemuth	1210
---	------