

INTRODUCTORY REMARKS

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**FINESSE PROJECT MEETING
15-16 MAY 1986
UCLA**

AGENDA

FINESSE Project Meeting

May 15-16, 1986

UCLA Faculty Center

Sierra Room

Thursday, May 15

8:30 Assemble at Faculty Center
8:45 M. Abdou Welcome and Introduction

1. LIQUID METAL BLANKETS

9:30 M. Tillack Assessment of Modeling Needs and Model
Development Issues
10:15 A. Hadid MHD Fluid Flow Modeling
11:00 C. Kim Examination of MHD Velocity Profiles at a
Bend Perpendicular to the Magnetic Field
11:30 D. Sze/B. Picologlou LMF Facility Description, Instrumentation
12:30 LUNCH

2. SOLID BREEDER BLANKETS

1:30 P. Gierszewski Status of Solid Breeder Material Properties
Data Base
2:15 R. Raffray Comparison of Solid Breeders
3:15 R. Puigh Fission Reactor Capabilities
4:00 Discussion
5:00 Adjourn

Friday, May 16

3. NUCLEAR ASPECTS OF PLASMA INTERACTIVE COMPONENTS

8:30 M. Abdou Overview of PIC Tasks
9:00 A. Majid Liquid Metal Limiter Thermomechanical
Modeling and Design Window

4. TRITIUM SUPPLY AND BREEDING BLANKETS FOR NEXT GENERATION DEVICES

9:30 P. Gierszewski Tritium Supply Issues
10:15 BREAK
10:30 J. Gordon Blanket Concepts and Reliability Analysis
11:30 Adjourn Project Meeting; Lunch
1:00 Subgroup meetings in Boelter Hall

LIQUID METAL BLANKETS

- ASSESSMENT OF MODELLING NEEDS, APPROACH

- MODELLING AND ANALYSIS
 - ONE KEY AREA WHERE ADVANCES IN FUSION ENGINEERING CAN BE MADE THROUGH UNDERSTANDING AND DEVELOPING THEORY, ANALYTICAL MODELS AND COMPUTATION TOOLS

 - A NUMBER OF AREAS NOW BEING ADDRESSED:
 - VELOCITY PROFILE
 - PRESSURE DROP
 - HEAT TRANSFER
 - CORROSION (& BENCHMARK EXPERIMENT)

 - WORKING WITH ANL AND OTHER ORGANIZATIONS TO VERIFY MODELS

- LMF FACILITY
 - TECHNICAL CAPABILITIES EVALUATION

 - DESCRIPTION, COST ESTIMATE

 - CAN WE GET WHAT WE REALLY NEED FROM EXPERIMENTS?
(INSTRUMENTATION)

- EVOLVE TEST PLAN

SOLID BREEDER BLANKETS

- ASSESSMENT OF MODELLING NEEDS

- MODELLING AND ANALYSIS
 - CRITICAL NEED EXISTS FOR SERIOUS MODELLING AND POST EXPERIMENT ANALYSIS

 - TRITIUM TRANSPORT

- SOLID BREEDER MATERIALS COMPARISON
 - IDENTIFY KEY EXPERIMENTS AND EXPERIMENTAL PARAMETERS WHICH PERMIT SELECTION OF MATERIALS

 - NARROW MATERIALS THROUGH ANALYSIS

- FISSION REACTOR CAPABILITIES
 - FAST VS. THERMAL REACTORS FOR DIFFERENT DESIGN CONCEPTS

 - REALISTIC ANALYSIS OF SIMULATION CAPABILITIES (FLUX AND NUCLEAR RESPONSE PROFILES, BURNUP, ETC.)

- EVOLVE TEST PLAN

NUCLEAR ASPECTS OF
PLASMA INTERACTIVE COMPONENTS

- TESTING SCENARIOS AND DEFINITION OF EXPERIMENTS AND FACILITIES ARE NEEDED IN THIS CRITICAL AREA
 - COMPLEXITY OF INTERACTION WITH PHYSICS
 - DEPENDENCE ON CONFINEMENT SCHEME
 - DESIGN CONCEPTS NOT WELL DEVELOPED

- FINESSE WILL ADDRESS THOSE NUCLEAR ASPECTS WHICH ARE STONGLY RELATED TO BLANKET/FIRST WALL

- KEY AREA NOW UNDER INVESTIGATION
 - LIQUID METAL COOLING FOR LIMITER/DIVERTOR PLATE. CONDITIONS UNDER WHICH A DESIGN WINDOW EXISTS. EVALUATION OF TOLERABLE UNCERTAINTIES AND EXPERIMENTS.

NEXT GENERATION DEVICES

- TESTING REQUIREMENTS
 - IMPACT ON MAJOR DESIGN PARAMETERS AND FEATURES
 - COST/BENEFIT/RISK TRADE-OFFS

- TESTING IN THE DEVICE
 - EXPERIMENTAL PROGRAM
 - TEST MODULES DEFINITION & DESIGN

- TRITIUM BREEDING BLANKET FOR THE DEVICE
 - NEED (TRITIUM SUPPLY ISSUE)
 - BLANKET
 - Δ CONCEPTS
 - Δ RELIABILITY/AVAILABILITY ANALYSIS