

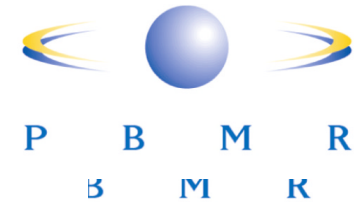
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**US DOE Orientation Presentation
Pebble Bed Modular Reactor
August 7, 2003
DOE's Germantown Offices**



0900 – 0915	Opening Remarks	Regis Matzie
0915 – 0945	PBMR Executive Overview	Ed Wallace
0945 – 1045	Demonstration Plant Design Overview	Dieter Matzner
1045 – 1100	Break	
1100 – 1130	The Choice of Fuel Design	Dieter Matzner
1130 – 1230	Core Design	Johan Slabber
1230 – 1315	Lunch	
1315 – 1345	Thermo-hydraulic Cycle and Thermal Design	Johan Slabber
1345 – 1445	Demo Plant SSC Testing Program	Dieter Matzner
1445 – 1500	Break	
1500 – 1530	Fuel	Johan Slabber
1530 – 1600	Future R&D Development Path for PBMR-VHTR	Dieter Matzner
1600 – 1700	General Discussions	All



US Department of Energy Orientation Seminar on Pebble Bed Modular Reactor Introduction

7 August 2003

Dr. Regis Matzie

PBMR Board of Directors /
Westinghouse Senior VP

OPENING REMARKS



Purpose of this Seminar:

To provide a technical and programmatic update of the South African PBMR project to DOE, NRC and other interested US government personnel

Introduction of PBMR Speakers

- Ed Wallace - PBMR General Manager, Projects
- Dieter Matzner - PBMR Engineering Manager
- Dr Johan Slabber - PBMR Senior Nuclear Consultant

Current PBMR Investors

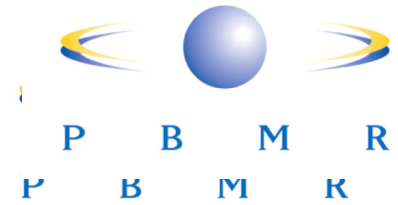


- Eskom – South African national utility
- Industrial Development Corporation of South Africa – national development finance institution
- British Nuclear Fuel plc – global nuclear fuel cycle company (parent of Westinghouse Nuclear) solely owned by the UK government

Status of PBMR Project



- Current investors have expressed their intention of proceeding to the detailed design and construction phase (December 2002)
 - Solid business case
 - Technical issues remaining manageable
 - Political environment positive
 - Public opinion satisfactory
 - Initial utility client to launch project
- Further interest in project by potential additional investors
- Well aligned with US Hydrogen Initiative



PBMR Overview

7 August 2003

Ed Wallace

General Manager, Projects

PBMR History



1993 Option Identified under Eskom long term planning

Selection Criteria



- Competitive Economics (with CCGT/Eskom coal)
- Distributed Generation (independent of fuel source)
- Short Lead Times (reduce risk of capacity mismatch)
- Load Following (increased commercial pressures)
- Reduced Environmental Impact (no emissions)

PBMR History



1993 Option Identified under Eskom long term planning

1995 Pre Feasibility Study undertaken

The Real Targets



\$1000/kWe installed

24 months construction

400m EPZ

Key Strategies



- Strict adherence to standardization
- Use of international strategic suppliers
- Minimum market disruption (module size)
- Use of simple systems and operations
- Minimum required maintenance
- Achieve inherent safety (no moving parts)

PBMR History



- 1993 Option Identified under Eskom long term planning
- 1995 Pre Feasibility Study undertaken
- 1997 Initial Concept Design & Costing completed
- 1999 Detailed Feasability Study started
Eskom LOI for Demo + 10 Modules
- 2000 Cabinet Support & Commercial Partners
Formal Nuclear Licence & EIA applications
- 2001 Fundamental Safety Case Philosophy Accepted
SAR rev 1 submitted to NNR (Licensing Authority)

Plant Target Specifications



- Rated Power per Module (Commercial) 165 MW(e)
- Eight-pack Plant 1320 MW(e)
- Continuous Power Range 20-100%
- Module Construction Schedule 24 months (1st)
- Planned Outages 30 days per 6 years
- Seismic 0.4g
- Aircraft (Calculations to survive) 747/777
- Overnight Construction Cost \$1000/kWe
- Fuel Costs & O&M Costs 9 mills/kWh
- Emergency Planning Zone <400 m
- Availability >95%

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SAR rev 1 submitted to NNR (Licensing Authority)
- 2002 Sept 2 Business Case completed (S&L/McKinsey)
Oct 30 Submittal of Final EIR
 - Mar 24 NNR favorable Licensing Assessment Issued
 - May 16 Eskom re-confirmed commitment to PBMR
 - June 25 EIA RoDs Issued for Demonstration at Koeberg and
Pilot Fuel Plant at Pelindaba

Current Full Time Staff



• PBMR	280
• M&RES / S&L	40
• IST Nuclear	60
• MHI / NFI / SGL...	90
• Eskom (Client Office)	30
	===
	~500

Total manhours to date	~2,500,000
Total costs to date	~\$125m
	(~\$300m US equivalent)

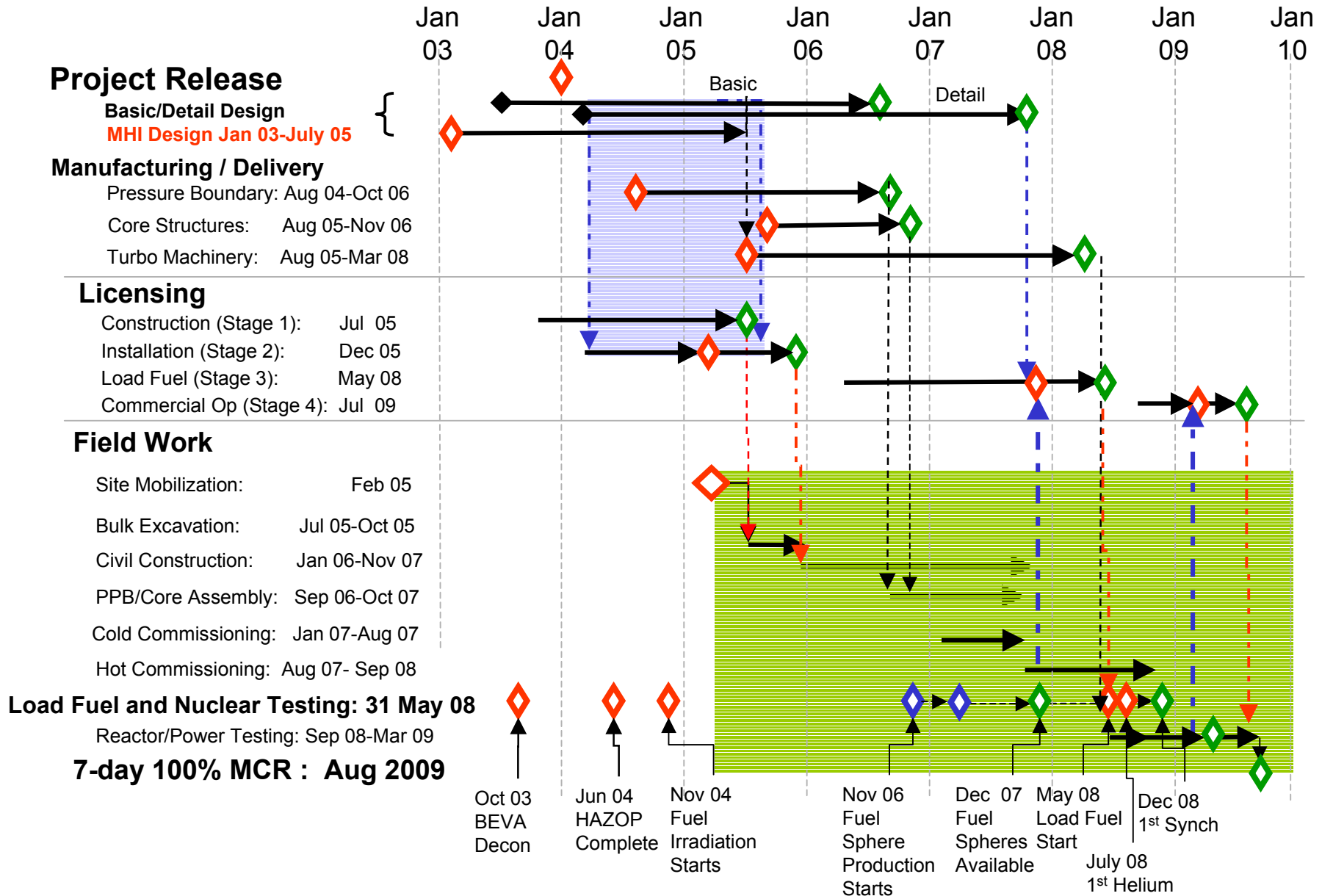
Key Suppliers



- Mitsubishi Heavy Industry
- NFI/Nukem
- SGL (Germany)
- Ingersoll Rand (USA)
- IST Nuclear (RSA)
- Westinghouse (USA)
- Ensa (Spain)
- IVV-2M (Russia)
- Fabritech (RSA)

Turbo-Machinery
Fuel Technology
Graphite
Recuperator
Nuclear Aux.
Instrumentation
Pressure Boundary
Fuel Testing
Gas Cycle Valves

Demonstration Phase Schedule



Commercialization Scenario

