

## VLT Budget Information: FY2001/2002

<ul style="list-style-type: none"> <li>• <b>Program Element:</b></li> </ul>	FUSION TECHNOLOGIES (Summary)
<ul style="list-style-type: none"> <li>• <b>Program Element Mission:</b> (25 words or less)</li> </ul>	Identify and explore novel chamber technology concepts and develop technologies that: 1) in the near-term enable better capabilities in plasma experiments and 2) in the long-term improve the economics and safety of fusion energy systems.
<ul style="list-style-type: none"> <li>• <b>Element Five-Year Goals:</b> (list up to five)</li> </ul>	<ul style="list-style-type: none"> <li>• Understand and perform key R&amp;D for evaluating liquid walls</li> <li>• Operate liquid walls in an experimental physics device (e.g. NSTX)</li> <li>• Advance novel concepts that can extend the capabilities of solid walls international participation in key areas</li> <li>• Evaluation and R&amp;D of safety and environmental issues</li> <li>• Develop tritium, remote handling, and vacuum technologies</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Relationship to FESAC Major MFE and IFE Goals:</b> (25 words or less) (Goals List: Attachment III)</li> </ul>	Essential for MFE Goals 2-4 and IFE Goal 2 - enable and enhance plasma experiments in the near term - innovation to reduce cost and time of fusion R&D path - major contributions to economic, safety, and environmental attractiveness of fusion energy systems
<ul style="list-style-type: none"> <li>• <b>Principal FY1999/2000 Achievements:</b> (list up to five)</li> </ul>	<ul style="list-style-type: none"> <li>• Identified promising concepts with high potential for safe and attractive energy systems with a more affordable R&amp;D path</li> <li>• Safety analysis and R&amp;D for key materials, concepts, and studies</li> <li>• High precision metrology measurements</li> <li>• Initiated experiments on free surface flows</li> <li>• Advanced 3-D modelling and conducted experiments on thermomechanics of pebble beds</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Identify Key Connections to Other Program Elements</b></li> </ul>	Very important linkages to plasma, plasma technologies, materials, and system studies

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FY2001	
<ul style="list-style-type: none"> <li><b>President's Budget:</b></li> </ul>	\$9373 K (includes \$2733 K for IFE and \$2168 K for tritium)
<ul style="list-style-type: none"> <li><b>Expected Deliverables and Key Milestones:</b> (list up to five)</li> </ul>	<ul style="list-style-type: none"> <li>• Operation and initial results of LW's thermofluid experiments</li> <li>• n-D MHD modelling, <math>\kappa</math> - <math>\epsilon</math> modelling, plasma-liquid interaction modelling</li> <li>• 2-phase Li flow with W issues</li> <li>• Measurements of chemical reactivity for Sn-Li, and vapor pressure and mobilization for flibe</li> <li>• Metrology, mapping, and motion detection of PFC in NSTX, LHD</li> <li>• Complete experiments on effective <math>\kappa</math> and interface h for pebble</li> </ul>
<ul style="list-style-type: none"> <li><b>Participating Institutions and Proposed Funding:</b></li> </ul>	Chamber technology - \$2737 K IFE Chamber Technology - \$2402 K Safety and environment - \$1578 (\$1247K MFE, \$331K IFE) Tritium systems - \$2168 K Remote handling - \$198 K Vacuum vessel – 0 (plus VLT management)
<ul style="list-style-type: none"> <li><b>Issues:</b></li> </ul>	<ul style="list-style-type: none"> <li>• Situation with TSTA and tritium area</li> <li>• US-Monbusho collaboration needs to be covered</li> <li>• (Note IFE chamber technology budget is included here, but activities will be reported on separately)</li> </ul>
<ul style="list-style-type: none"> <li><b>Incremental Request:</b></li> </ul>	\$2525 K (\$2300 K for MFE chamber technology, \$75 K for IFE safety, \$75 K for remote handling, \$75 K for vacuum)
<ul style="list-style-type: none"> <li><b>Additional Expected Deliverables:</b></li> </ul>	<ul style="list-style-type: none"> <li>• Major initiatives in key areas (e.g. national initiative on liquid walls in plasma devices [e.g. NSTX], and fusion energy systems)</li> <li>• Support US-Monbusho collaboration (equal funds to come from Japan)</li> <li>• Restore vitality of important areas</li> </ul>

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FY2002	
<ul style="list-style-type: none"> <li>• <b>Flat Budget:</b> (same as FY01 President's Budget)</li> </ul>	\$9373 K
<ul style="list-style-type: none"> <li>• <b>Expected Deliverables and Key Milestones:</b> (list up to five)</li> </ul>	<ul style="list-style-type: none"> <li>• Obtain experimental results from thermofluid facilities</li> <li>• Modelling for LW: fluid flow, plasma-liquid interactions, other areas</li> <li>• Advances in high temperature refractory solid wall concepts</li> <li>• Measure mobilization of flibe, safety analysis for various studies</li> <li>• Remote handling support and measurements in NSTX, JT-60</li> <li>• Construction of UNICEX for pebble bed thermomechanics interaction</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Incremental Request:</b></li> </ul>	\$2975 K (\$2700 K for MFE chamber technology, \$125 K for safety, \$100K for remote handling, \$50 K for vacuum)
<ul style="list-style-type: none"> <li>• <b>Additional Expected Deliverables:</b></li> </ul>	See items under B-budget for 2001 <ul style="list-style-type: none"> <li>• Continuation if funded in 2001</li> <li>• Initiation in 2002 if not funded in 2001</li> </ul>