Attachment 5
High Priority Physics Research Areas 2000 - 2001

	Research Areas	Issues
*	Finite-β effects in H-mode	Tolerable ELMs (δW/W<2%) with good confinement alternate to type-I ELMs (e.g. type II, Type III+core confinement) Stabilisation of neoclassical islands at high β and recovery of β
*	Plasma termination and halo currents	Runaway electron currents: production and quenching, e.g. at low safety factor
*	Sol and divertor	Achievement of high n_{sep} and relation of $n_{sep}/<n_e>$ in ELMy H-modes, especially at high n and δ Carbon Chemical sputtering, redeposition and deuterium retention/cleaning methods
*	Core confinement	Non dimensional scaling and identity experiments; effect of finite β and flow shear Determine dependence of τ_E upon shaping, density peaking etc.
*	H-mode power threshold	H-mode accessibility in ITER-FEAT , Data scatter
*	Good H-mode confinement at high n	Confinement degradation onset density; its dependence on aspect ratio, shape and neutral source
*	Pedestal physics	Scaling of pedestal properties and ELMs Effects of plasma shape on pedestal and ELMs MHD stability analysis of transport barrier
	Internal transport barrier properties	ITB power thresholds vs n, B, q, Te/Ti, Vrotation etc. for strong reversed shear (q_{min}>3), moderate reversed shear(q_{min}>2, and weak shear (q_{min}>1). Compatibility with impurity exhaust and divertor Accessiblity of ITBs in reactor scale devices at low toroidal rotation, Ti/Te ˜ 1, and flat density profile, etc.
	Resistive Wall Mode	RWM analysis and experimental verification
	Heating/CD, Steady State	Development of steady state scenarios :active current and pressure control Active control of LHCD coupling Assess fast particle effects (EPMs and ITBs)
	Diagnostics	**Continue assessment of possible methods for measurement of q(r) and search for new approaches** **Continue study of First Mirrors especially effects of deposition and possible mitigating methods** **Assess impact of RIEMF on magnetic measurements and perform improved measurements on prototype coils** **Complete determination of measurement requirements for divertor target and divertor plasma parameters (in collaboration with the Div Expert Group), and complete assessment of the probable performance of proposed diagnostic methods**
* : relevant to main scenario of ITER (ELMy H)		