CONTENTS

I.	INTRODUCTION							
II.	EX	EXECUTIVE SUMMARY						
	1.	RAT	IONALE FOR THE ITER BASELINE DESIGN	13				
		1.1	I-A-B _m Design Space	13				
		1.2	Constraints	13				
		1.3	Selection of the ITER Baseline	15				
	2.	IND	UCTIVE-IGNITED PERFORMANCE AND					
	SENSITIVITIES							
	3.	TEC	HNOLOGY PHASE PERFORMANCE	18				
		3.1	Rationale for Analysis	18				
		3.2	Steady-State Operation	19				
		3.3	Hybrid Operation	19				
		3.4	Discussion	21				
	4.	THE	PROSPECTS FOR HIGHER ASPECT RATIOS:					
		A F	PRELIMINARY ASSESSMENT	21				
	5.	ADV	ANCED OPERATING MODES	23				
		5.1	Scope	23				
		5.2	Advanced Technology Phase Operation	23				
		5.3	D-3He Operation	24				
	6.	IMPI	LICATIONS FOR COMMERCIAL FUSION					
		RE	ACTORS	25				
III.	RA	TION	ALE FOR THE ITER BASELINE DESIGN	27				
	1.	INTF	RODUCTION	27				
	2.	ITEF	R DESIGN OPTIONS IN I-A-B _{TF} SPACE	27				
		2.1	I-A-B _{TF} Phase Space	27				
		2.2	Operational and Database Constraints	29				
	3.	SELI	ECTION OF THE ITER BASELINE	31				
IV.	ITER INDUCTIVE, IGNITED PERFORMANCE							
	AND SENSITIVITIES							
	1. INTRODUCTION							
	2.	NOM	INAL ITER PERFORMANCE UNDER					
	INDUCTIVE, IGNITED OPERATION							
	3.	3. SENSITIVITY TO THERMAL ALPHA FRACTION						
	4.	SEN	SITIVITY TO IMPURITIES AND Z _{eff}	37				

	5.	SENS	SITIVITY TO FUSION POWER AND	
		NE	UTRON WALL LOADING	37
	6.	SENS	SITIVITY TO DRIVEN OPERATION AT	
		HIC	GH AND LOW Q	41
	7.	SENS	SITIVITY TO DENSITY PROFILE	43
	8.	SENS	SITIVITY TO PLASMA CURRENT	43
V.	TE	CHNO	LOGY PHASE OPERATION: RATIONALE,	
	Μ	ETHC	DOLOGY AND OPTIMIZATION	47
	1.	INTR	ODUCTION	47
	2.	MOD	DEL	48
	3.	NOM	IINAL TECHNOLOGY PHASE	
		OPI	ERATING SCENARIOS	50
		3.1	Steady-State Operation	50
		3.2	Hybrid Operation	52
		3.3	Hybrid Operation with Pulsed Fatigue Limits	53
	4.	SENS		54
		4.1	Divertor Heat Load	54
		4.2	Injection Power Level	57
		4.3	Bootstrap Fraction	57
		4.4	Confinement H Factor	61
		4.5	Beta Level	61
	5.	ADD	ITIONAL STEADY-STATE	
		OPI	ERATION STUDIES	61
		5.1	Boundaries for Steady-State Operation	66
		5.2	Models	66
		5.3	Impact of Neutron Wall Loading	66
		5.4	Effect of High Magnetic Field	69
		5.5	Hybrid and High Q Cases	70
	6.	SUM	MARY	73
VI.	тн	E PRO	SPECTS FOR HIGHER ASPECT RATIOS	
	Α	PREL	IMINARY ASSESSMENT	79
	1.	INTR	ODUCTION	79
	2.	ASPE	ECT RATIO DEPENDENCE OF CONFINEMENT	
		IMI	PLICATIONS FOR ITER	79
		2.1	The ITER Power Scaling and TFTR Results	79
		2.2	The ITER H-Mode Scaling	80
	3.	HIGH	HER ASPECT RATIO STUDY POINTS	80
	4.	VER'	TICAL STABILITY AT	
		HIC	GHER ASPECT RATIO	81

	5.	BOO HIG	TSTRAP CURRENT AT	3	
	6	HER ASPECT RATIOS - INTERIM	,		
	0.	CO	NCLUSIONS AND CRITICAL ISSUES	4	
VII.	AD	VANC	CED OPERATING MODELS 89	9	
	1.	INTF	RODUCTION	9	
	2.	ADV	ANCED TECHNOLOGY PHASE OPERATION 89	9	
		2.1	Scope	9	
		2.2	Performance Sensitivities	9	
		2.3	Implications of an Advanced Technology Phase		
	on ITER Systems				
		2.4	Single Sector Electricity Generation	3	
	3.	POT	ENTIAL FOR D-3He OPERATION	4	
		3.1	Introduction	4	
		3.2	D- ₃ He Performance	4	
		3.3	Tentative Conclusions on D-3He Operation	4	

VIII. IMPLICATIONS FOR COMMERCIAL FUSION REACTORS ... 97