

Characteristics Allocation Matrix		11 - In-Vessel Components	12 - Vacuum Vessel Systems	13 - Conventional Coils	14 - Modular Coils	15 - Structures	17 - Cryostat and Base Support Structure	21/23 - Fueling and Wall Conditioning	22 - Torus Vacuum Pumping	24 - Ion Cyclotron Heating System	25 - Neutral Beam Injection System	26 - Electron Cyclotron Heating System	3 - Diagnostics	4 - Electrical Power Systems	5 - Central I&C Systems	61 - Water Cooling Systems	62 - Cryogenic Systems	63 - Utility Systems	64 - Helium Bakeout System	7 - Test Cell Preparation and Machine Assy
3.2.1	Performance Characteristics																			
3.2.1.1	Initial Facility Startup	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.2	Pre-Run Facility Startup	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.2.1	Coil Cool-down																			
3.2.1.2.1.1	Coil Cool-down Timeline			X	X	X	X										X			
3.2.1.2.1.2	Cool-down and Warm-up Cycles			X	X	X	X										X			
3.2.1.2.1.3	Pre-Run Temperatures	X	X					X		X		X	X						X	
3.2.1.2.2	Vacuum Requirements																			
3.2.1.2.2.1	Base Pressure	X	X					X	X	X	X	X	X							
3.2.1.2.2.2	Pumping Speed		X					X												
3.2.1.2.3	Bakeout																			
3.2.1.2.3.1	Vacuum Vessel Bakeout Temperatures		X																X	
3.2.1.2.3.2	Carbon-based Plasma Facing Components (PFCs) Bakeout Temperatures	X	X																X	
3.2.1.2.3.3	Coil Temperatures During Bakeout			X	X	X	X										X			
3.2.1.2.3.4	Bakeout Timelines	X	X					X	X	X		X	X						X	
3.2.1.2.3.5	Glow Discharge Cleaning (GDC) During Bakeout	X	X					X	X	X	X	X	X						X	
3.2.1.2.3.6	Bakeout Cycles	X	X					X	X	X		X	X						X	
3.2.1.3	Pre-operational Initialization and Verification	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.3.1	Plasma Chamber Conditioning																			
3.2.1.3.1.1	Boronization	X	X					X	X	X	X	X	X							
3.2.1.3.1.2	Lithiumization	X	X					X	X	X	X	X	X							
3.2.1.4	Pre-pulse Initialization and Verification	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.4.1	Glow Discharge Cleaning (GDC) Between Pulses	X	X					X	X	X	X	X	X						X	
3.2.1.4.2	Pre-Pulse Temperature	X	X					X	X	X		X	X						X	
3.2.1.5	Experimental Operations																			
3.2.1.5.1	Field Error Requirements	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.5.2	Electrical (Eddy Current) Requirements	X	X	X	X	X	X			X		X	X							X
3.2.1.5.3	Plasma Magnetic Field Requirements																			
3.2.1.5.3.1	Coordinate System	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.5.3.2	Magnetic Field Polarity	X	X	X	X	X	X			X	X	X	X	X	X					
3.2.1.5.3.3	Reference Scenarios																			
3.2.1.5.3.3.1	Reference Scenario Specifications																			
3.2.1.5.3.3.1.1	First Plasma Scenario	X	X	X	X	X								X			X		X	
3.2.1.5.3.3.1.2	Field Line Mapping Scenario	X	X	X	X	X								X			X		X	
3.2.1.5.3.3.1.3	1.7T Ohmic Scenario		X	X	X	X								X			X		X	
3.2.1.5.3.3.1.4	1.7T High Beta Scenario		X	X	X	X								X			X		X	
3.2.1.5.3.3.1.5	1.2T High Beta Long-Pulse Scenario		X	X	X	X								X			X		X	
3.2.1.5.3.3.1.6	2T High Beta Scenario		X	X	X	X								X			X		X	

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3.2.1.5.3.3.1.7	320 kA Ohmic Scenario		X	X	X	X							X				X	X		
3.2.1.5.3.3.2	Reference Scenario Requirements		X	X	X	X							X				X	X		
3.2.1.5.3.4	Flexibility Requirements																			
3.2.1.5.3.4.1	Quasi-axisymmetry Flexibility		X	X	X	X							X						X	
3.2.1.5.3.4.2	External Iota Flexibility		X	X	X	X							X						X	
3.2.1.5.3.4.3	Shear Flexibility		X	X	X	X							X						X	
3.2.1.5.3.4.4	Beta Limit Flexibility		X	X	X	X							X						X	
3.2.1.5.3.4.5	Radial and Vertical Position Flexibility		X	X	X	X							X						X	
3.2.1.5.3.5	Equilibrium Control			X									X	X	X					
3.2.1.5.3.6	Breakdown Loop Voltage			X	X	X								X						
3.2.1.5.3.7	Power Supply Ripple												X	X						
3.2.1.5.3.8	Coil Current Measurements												X	X						
3.2.1.5.4	Power Handling																			
3.2.1.5.4.1	PFC Configuration	X	X				X	X	X				X						X	
3.2.1.5.4.2	Maximum Plasma Heating Power	X	X						X	X	X								X	
3.2.1.5.4.3	Maximum Component Surface Temperature	X																		
3.2.1.5.5	Disruption Handling	X	X	X	X	X														
3.2.1.5.6	Plasma Heating																			
3.2.1.5.6.1	Neutral Beam Heating																			
3.2.1.5.6.1.1	Initial Neutral Beam Heating Complement									X			X		X	X				X
3.2.1.5.6.1.2	Ultimate Neutral Beam Heating Complement									X			X		X	X				X
3.2.1.5.6.2	Ion Cyclotron Heating (ICH)		X						X				X		X					X
3.2.1.5.6.3	Electron Cyclotron Heating (ECH)										X		X		X					X
3.2.1.5.7	Plasma Fueling																			
3.2.1.5.7.1	Fuel Species						X	X	X	X	X									
3.2.1.5.7.2	Gas Injection						X													
3.2.1.5.7.3	Pellet Injection	X	X				X													
3.2.1.5.8	Plasma Diagnostics																			
3.2.1.5.8.1	General Diagnostics Requirements												X							
3.2.1.5.8.2	Diagnostics Implementation												X							
3.2.1.5.9	Instrumentation, Control, and Data Acquisition														X					
3.2.1.5.10	Pulse Repetition Rate	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.5.11	Discharge Termination																			
3.2.1.5.11.1	Normal Termination	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.5.11.2	Abnormal Termination	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.6	Facility Shutdown	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.1.6.1	Coil Warm-up Timeline			X	X	X	X									X				
3.2.1.6.2	Vacuum Vessel Venting		X					X												