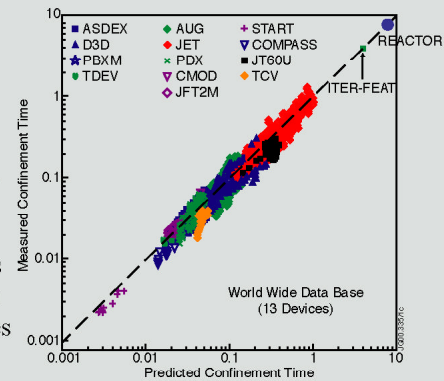


THE SCIENTIFIC BASIS FOR ITER

- The fusion power produced by fusion reactions of deuterium and tritium should exceed the power required to heat the plasma
- Building on the solid scientific background accumulated over the past two decades in a number of fusion experimental devices in several countries, ITER is designed to achieve and investigate burning plasma regimes.

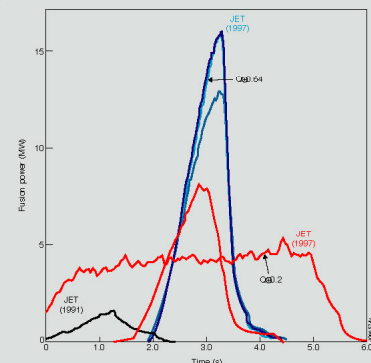
Plasma Confinement

- Energy amplification Q (ratio: total fusion power/ input power) larger than 10 is required
- This requires achieving a target value for the product $nT\tau$ where:
 - n: plasma density => required value already achieved in present machines
 - T: plasma temperature => required value already achieved in present machines
 - τ : characteristic time measuring the quality of plasma confinement => Can be achieved in larger machines like ITER (twice the JET size in linear dimensions)



Milestones in Fusion Power with Deuterium-Tritium Plasmas

1991	1.7 MW
1994	10 MW
1997	16 MW
2015 - 2020	500-700 MW (ITER)



Record Fusion Power in JET

Accompanying Programme during ITER Construction

- Optimise plasma scenarios
- Prepare for operation in steady-state and for burning plasmas physics
- Optimise auxiliary systems
- Train scientists for ITER operation and in an international environment