

Fusion Energy Sciences The Restructured Program

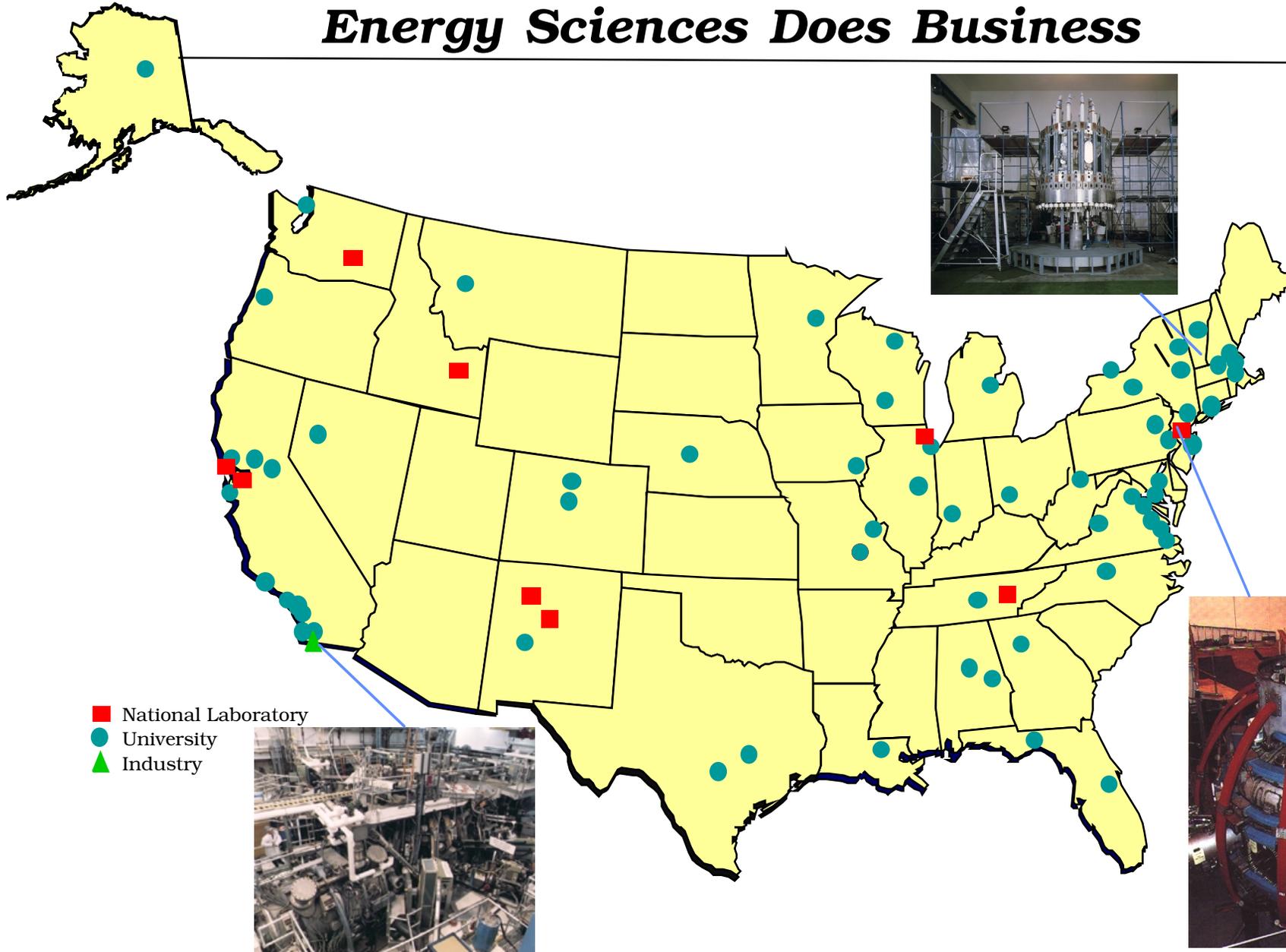
Presented at the

**Congressional Briefing
January 19, 2000**

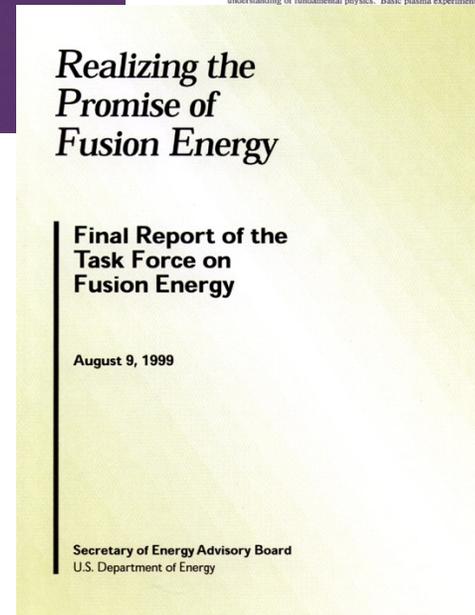
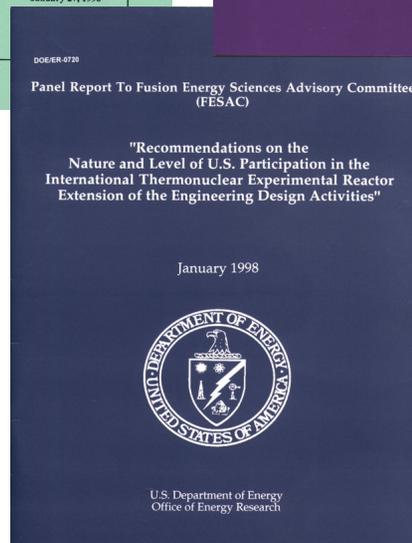
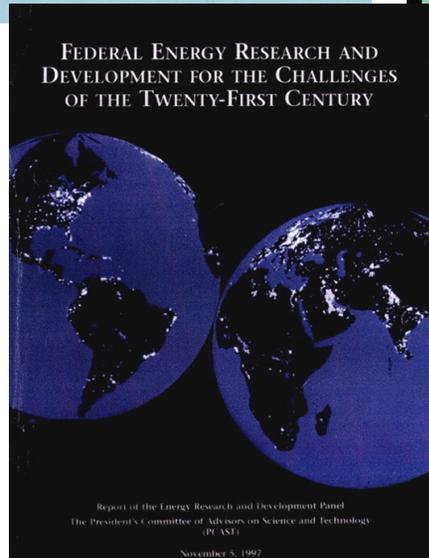
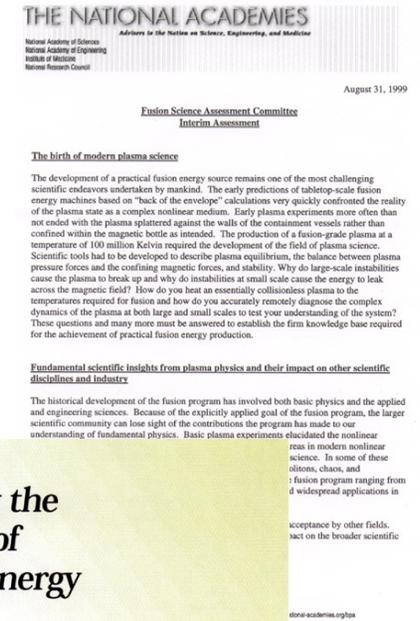
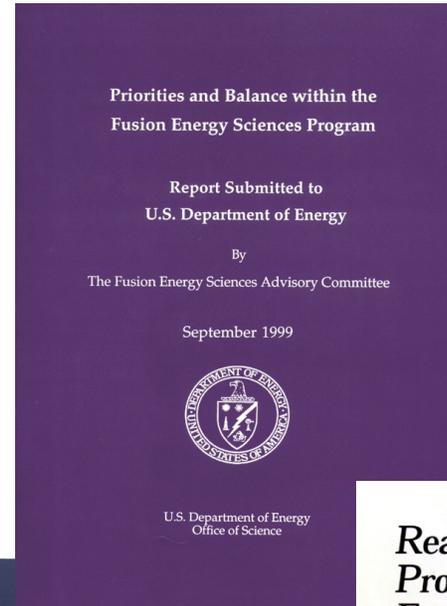
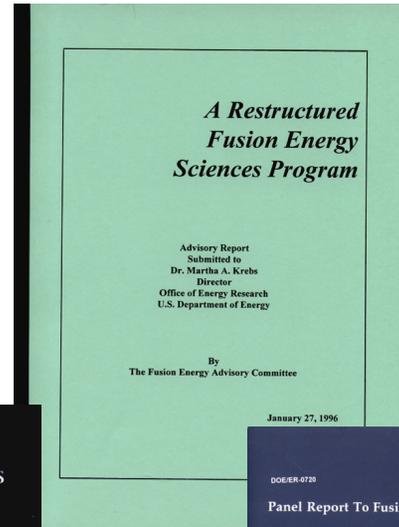
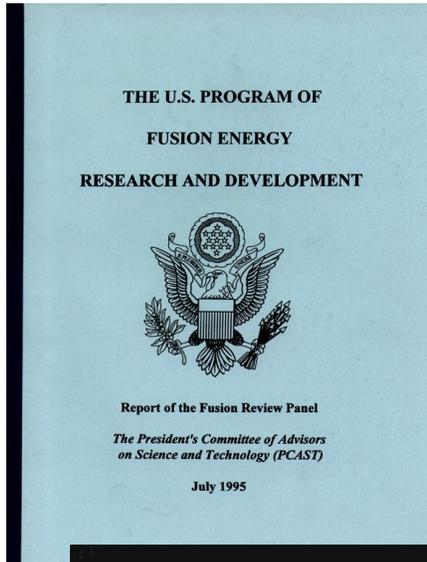
By

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Associate Director
for Fusion Energy Sciences
Office of Science

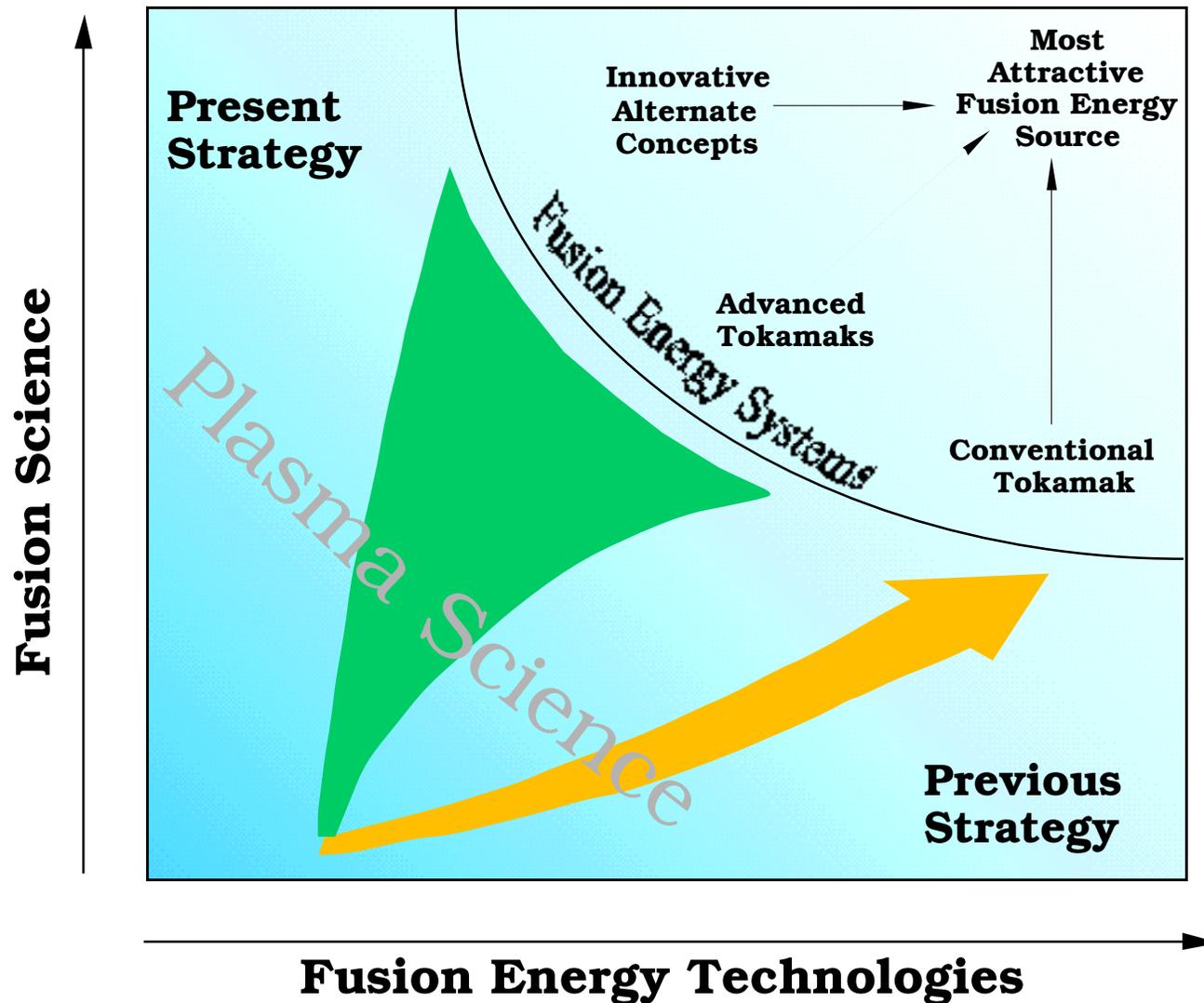
Where the Office of Fusion Energy Sciences Does Business



Major Reviews of the Fusion Energy Sciences Program 1995-1999



Restructuring of the U.S. Fusion Energy Sciences Program



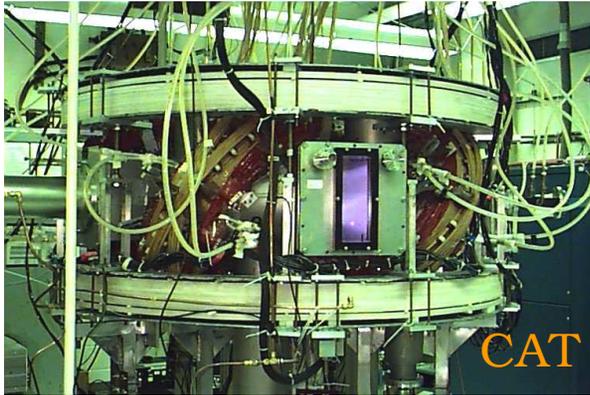
U.S. Fusion Energy Sciences Program Mission

“Advance the **knowledge base** needed for an **economically** and **environmentally** attractive fusion energy source.”

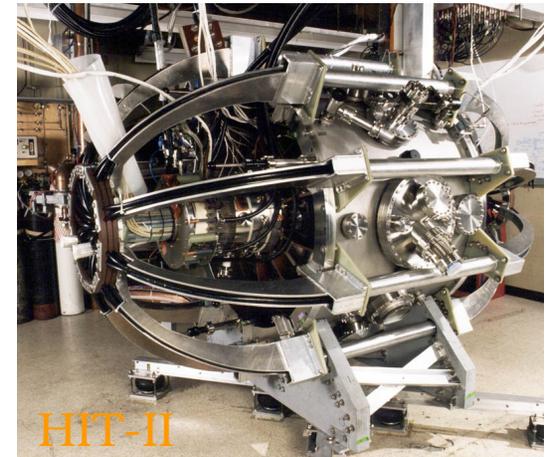
Restructured Fusion Energy Sciences Program

- o Increased **breadth of concepts**
- o Increased use of **competitive peer review**
- o Made DIII-D, C-MOD and NSTX **national facilities**
- o Increased support for field of **plasma science**
- o Shut down **TFTR**, beginning D&D in 2000
- o **Restructured** U.S. **technology** program to emphasize domestic program needs
- o Conducted orderly **close-out** of participation in reduced cost **ITER**
- o Broadened IFE program to include target and chamber research
- o Established **scientific and programmatic dialog** between MFE and IFE communities
- o Maintaining international collaboration in MFE, working to **establish collaboration in IFE**

Innovative Confinement Concepts



Compact Auburn Torsatron
Auburn University, Auburn Alabama



Helicity Injected Torus-II Experiment
University of Washington, Seattle



Sustained Spheromak Plasma Experiment
Lawrence Livermore National Laboratory

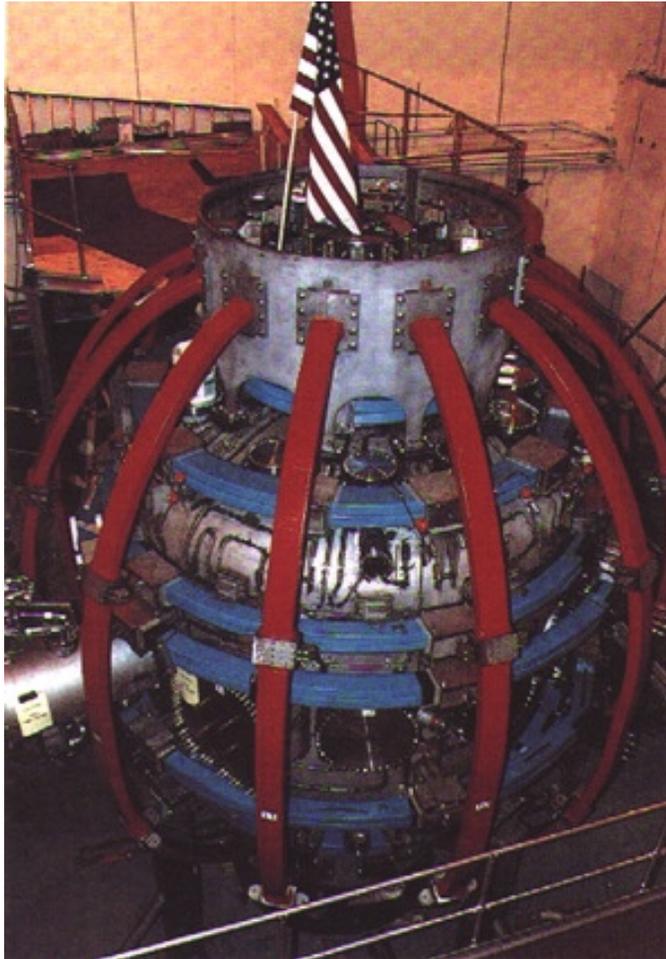


Levitated Dipole Experiment
Columbia University/Massachusetts
Institute of Technology



Helically Symmetric Experiment
University of Wisconsin, Madison

National Spherical Torus Experiment



***Princeton Plasma
Physics Laboratory***

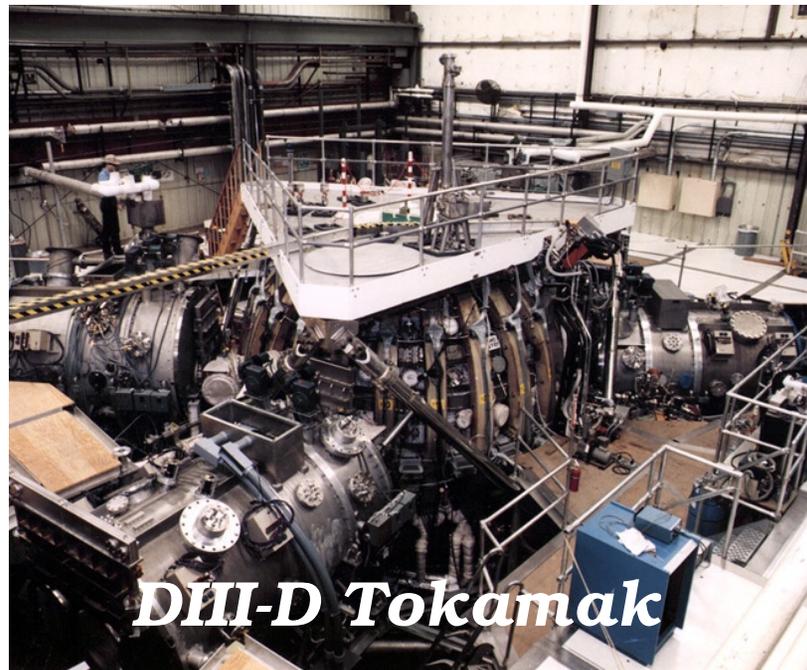
Torus started
operations in 1999

***Massachusetts
Institute of
Technology***

C-MOD
started
operations
in October
1991



Alcator C-MOD



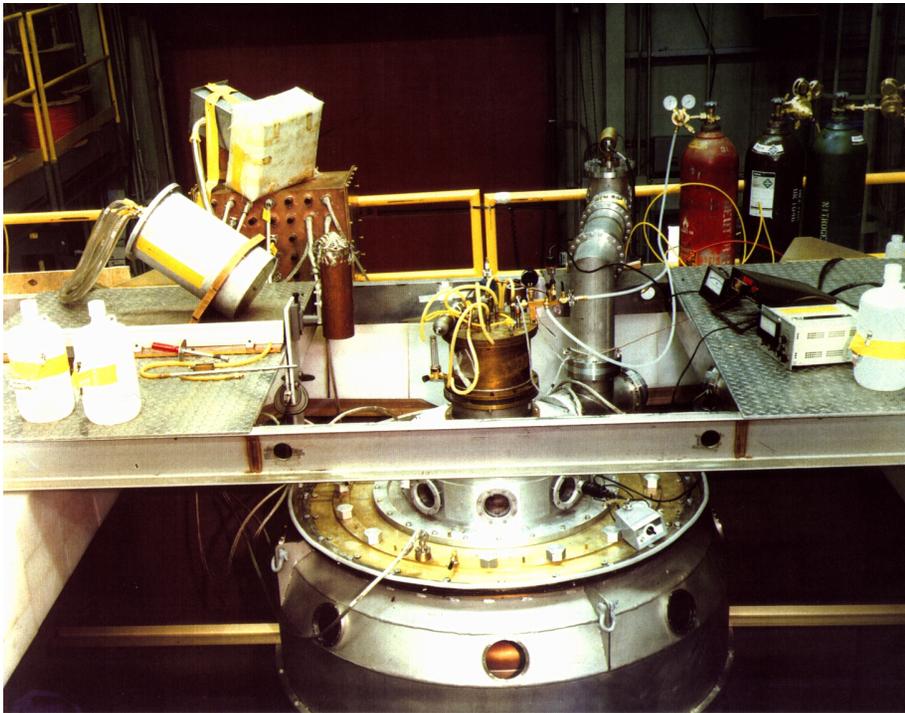
***General
Atomics***

Doublet III
started
operations
in 1978

DIII-D Tokamak

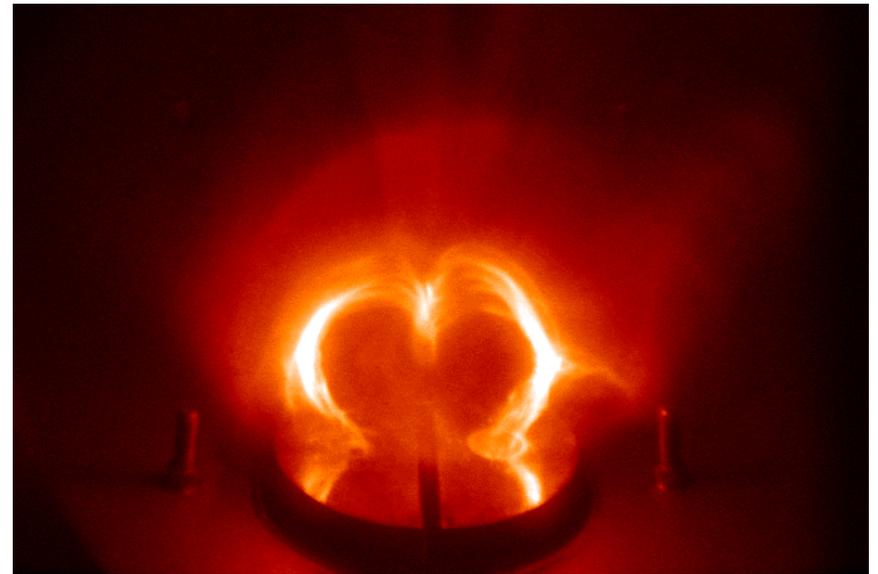
General Plasma Science

There are presently 9 Plasma Physics Science Junior Faculty Development Awards (+1 in cooperation with NSF)



Dense Z Pinch
University of Nevada-Reno

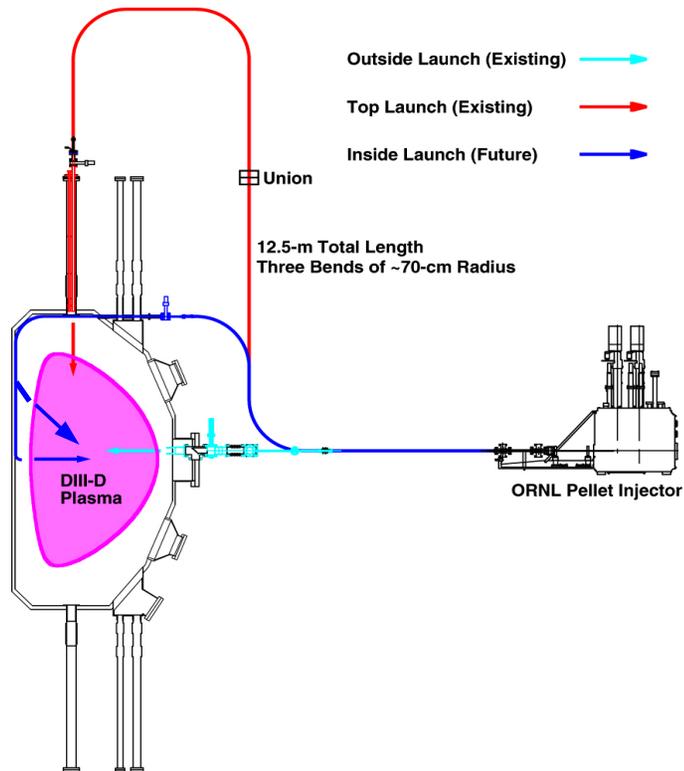
There are presently 31 NSF/DOE partnerships in Basic Plasma Science and Engineering Awards



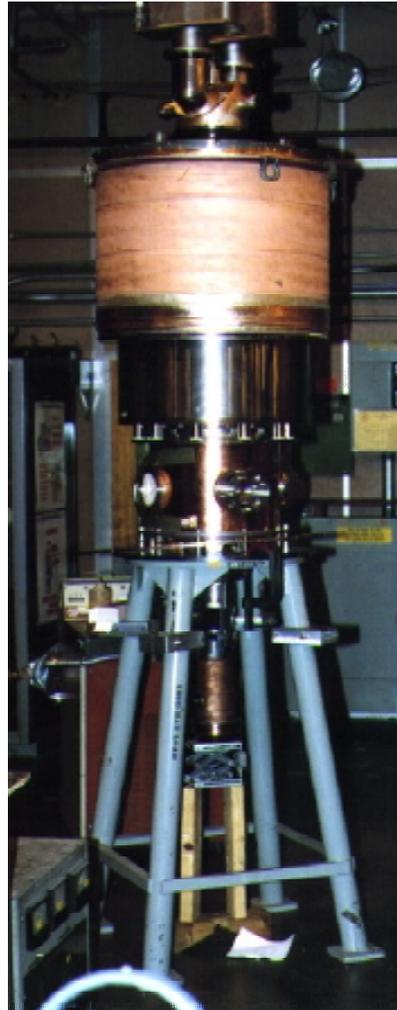
**Laboratory Simulation of
Solar Prominences**
California Institute of Technology

Enabling Technologies Program

Pellet Injector in DIII-D
for Plasma Fueling



100 GHz Gyrotron Tube
(1MW power in 1 second
pulse) for Plasma
Heating and Control

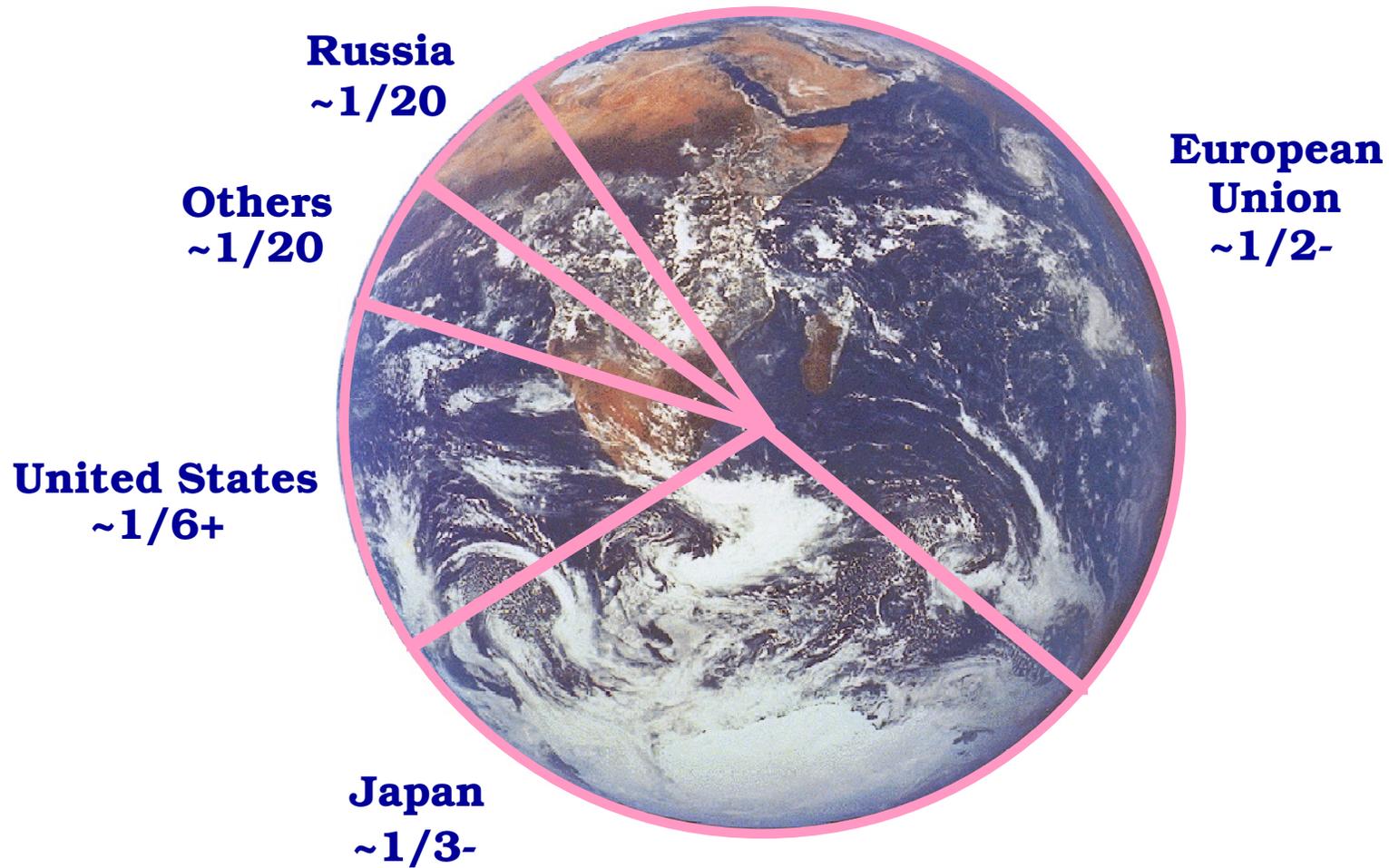


DiMES probe in DIII-D
provides data on plasma
material interactions.





World Magnetic Fusion Effort (2000)



[Relative levels based on published budgets, rough estimates of personnel not included in budgets and rough conversions to dollars]

FESAC Review

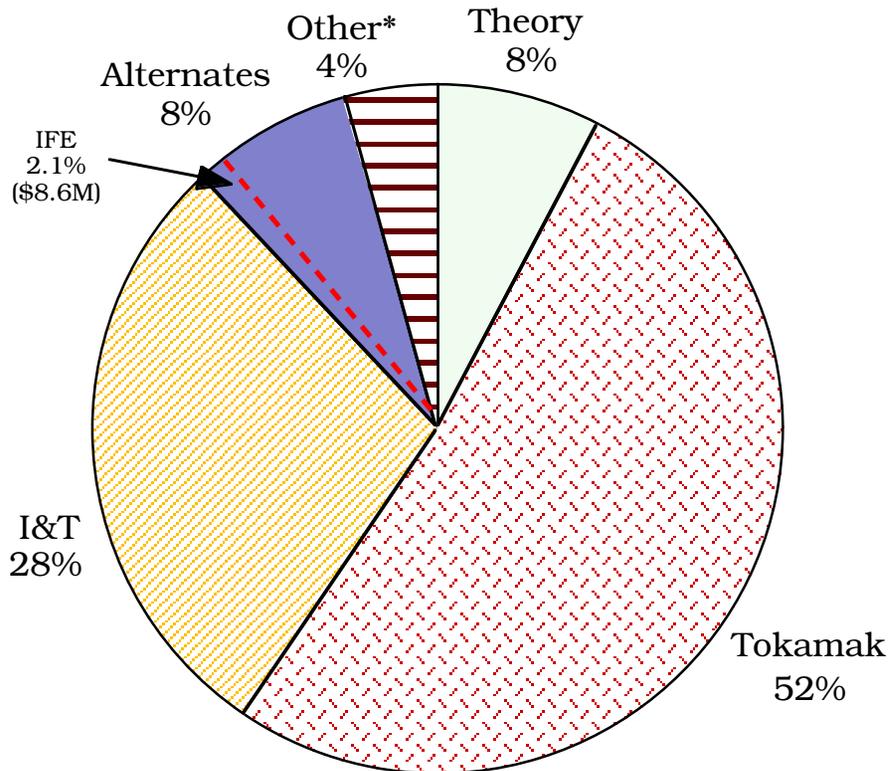
"Priorities and Balance within the Fusion Energy Sciences Program"

- o Culmination of **other reviews** and **workshops**
- o Broad **community representation** and consensus
- o Recommendations for **resource allocations**
 - Amongst MFE thrust areas
 - Between MFE and IFE
- o Adopted by DOE in allocating FY 2000 funds

Restructuring Changes in Fusion Energy Sciences Budget

\$ in Millions

**FY 1996
President's Request
in FY 2000\$**

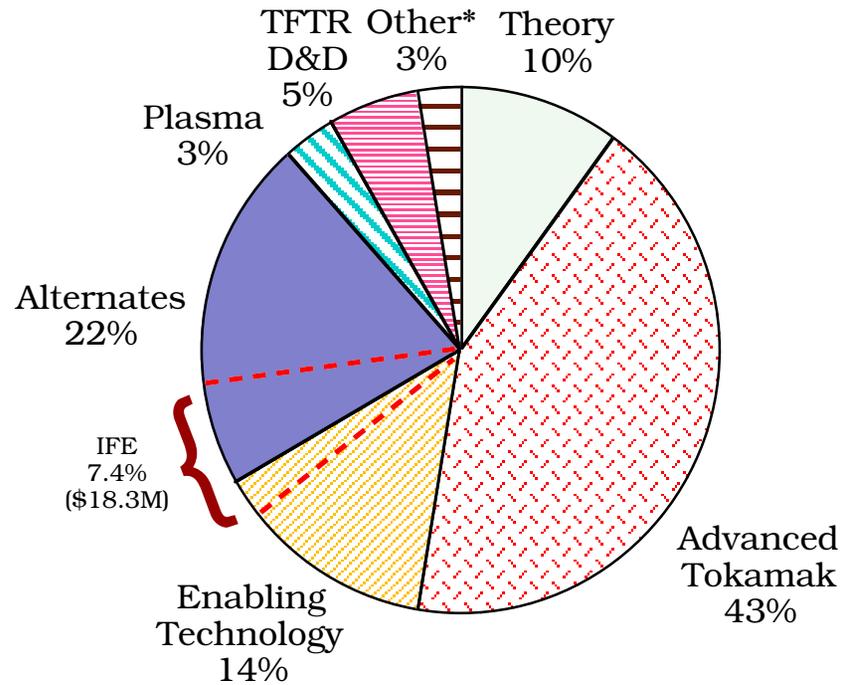


Total \$404.1M

(FY 2000\$)

Other*
SBIR/STTR
GPP
Program Direction

FY 2000 Appropriation



Total \$244.7M

Other*
SBIR/STTR
GPP
General Reduction

Entering the 21st Century

Stronger Program

Broader portfolio

More innovative

Better science

More collaborative

Becoming better integrated

Office of Fusion Energy Sciences Website

<http://wwwofe.er.doe.gov/>