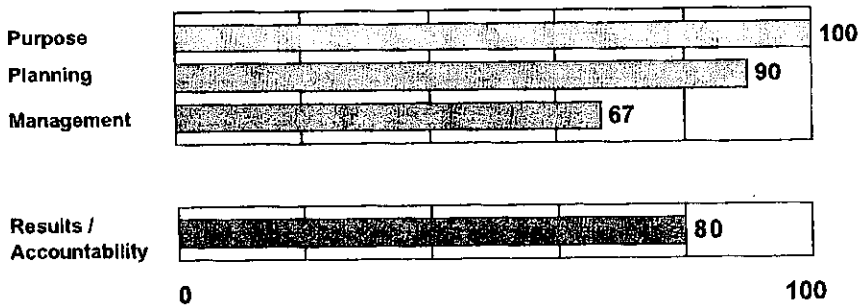
Program: *Fusion Energy Sciences*

Agency: *Department of Energy*

Bureau: *Science*



Key Performance Measures	*Year*	*Target*	*Actual*
Long-term Measure: Progress in developing a predictive capability for key aspects of burning plasmas using advances in theory and simulation benchmarked against a comprehensive experimental database of stability, transport, wave-particle interaction, and edge effects. An independent expert panel will conduct a review and rate progress (excellent, adequate, poor) on a triennial basis.	2006	Excellent	
	2009	Excellent	
	2012	Excellent	
	2015	Excellent	
Annual Efficiency Measure: Average achieved operation time of the major national fusion facilities as a percentage of the total planned operation time. (Scheduled annual operating time is roughly 2,160 hours in 2004 and 1,680 hours in 2005. The ambitiousness and appropriateness of the 90% target level is currently under review by OMB.)	2002	>90%	94%
	2003	>90%	81%
	2004	>90%	
	2005	>90%	
Annual Efficiency Measure: Cost-weighted mean percent variance from established cost and schedule baselines for major construction, upgrade, or equipment procurement projects.	2001	<10%, <10%	-6%, -6%
	2002	<10%, <10%	+5%, 0%
	2003	<10%, <10%	0%, 0%
	2004	<10%, <10%	

Link to PART details on OMB website.

Rating: *Moderately Effective*

Program Type: *Research and Development, Competitive Grant, Capital Assets and Service Acquisition*

Program Summary:

The Office of Science's Fusion Energy Sciences (FES) program supports facilities and research in plasma science, and in fusion science and technology aimed at providing the intellectual basis for a possible future fusion energy source.

The assessment found that the FES program has developed a limited number of adequate performance measures, as recommended during the 2004 PART process. Additional findings include:

- The program budget is not yet sufficiently aligned with scientific program goals so that the impacts of funding changes on performance are readily known.
- The program has not yet produced a science-based strategic plan for the future of U.S. fusion research within the new international context for fusion.
- The program recently instituted a Committee of Visitors process, but the program's merit review processes have yet to be validated—for impact on quality, relevance, and performance of the research portfolio—since the assessment(s) have not been completed.
- Due in part to design problems and inadequate oversight, one of the program's scientific user facilities, the National Spherical Torus Experiment, experienced a magnetic coil failure in February, 2003, so it only operated for 4 weeks in 2003.

In response to these findings:

1. The 2005 Budget more than doubles spending on pre-construction preparatory work for ITER, and dedicates an increased fraction of the operation of the program's tow tokamak user facilities to support for ITER.
2. The Department will develop an appropriate action plan in response to the findings and recommendations of the Committee of Visitors within 30 days of receipt of the report.
3. The Department will work with its advisory committee to develop research milestones [by September, 2004] against which future outside panels may judge interim progress toward achieving the long-term goals of the program.
4. The Department will engage the FES advisory committee to prepare a top-to-bottom scientific prioritization for the new U.S. fusion program within an international context, including participation in ITER. An interim report will be prepared by July, 2004, with a final report due by November, 2004.
5. The Department will develop a strategic plan for the fusion program, based upon the input of this advisory committee report, and will submit that plan to OMB by September, 2005.

Program Funding Level (in millions of dollars)

2003 Actual	2004 Estimate	2005 Estimate
247	263	264