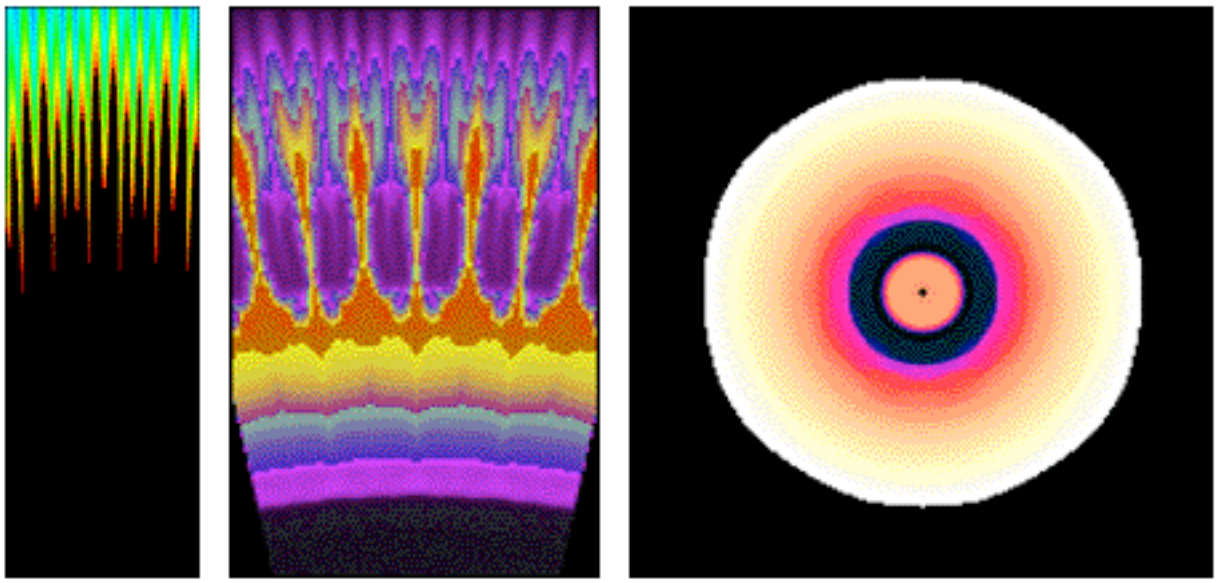
Preliminary Report from the IFE Review Panel

J. Dahlburg for R. Linford



Charge Letter:

July 17, 2003

Dear Professor Hazeltine:

In response to the considerable scientific and technical progress in the Inertial Fusion Energy (IFE) program during the past few years, I am requesting that FESAC carry out a review of DOE's IFE program to provide an assessment of the present status of the program. Due in part to Congressional action, IFE relevant programs reside in both the Office of Science and in the Office of Defense Programs(DP) within NNSA, therefore, this charge is somewhat broader than those normally submitted to FESAC. Both SC and DP support this review and concur that it be carried out by FESAC.

Charge Letter *(cont):*

The inertial path to fusion energy has been pursued by the Office of Fusion Energy Sciences (OFES) over the past 12 years. OFES has mostly funded the heavy ion beam driver and associated technologies component. DP as part of its Inertial Confinement Fusion (ICF) program, has funded high energy density physics facilities (including the National Ignition Facility) and the "target physics" relevant to ICF. The success of DP's ICF ignition program has always been viewed as a necessary precursor to the demonstration of IFE. Over the past four years, because of the strong DP laser program and DP's ICF efforts, Congress has added significant resources to the DP budget to develop the high average power laser (HAPL) driver. The DP program for the HAPL driver and related technology will have a long-term impact on the future development of IFE, and needs to be evaluated in the overall context of the Office of Science's IFE mission and program.

Charge Letter *(cont):*

The specific topics to be addressed in this review are:

1. The current status of the scientific basis and related technology of each of the approaches to IFE, including an assessment of the quality of work being carried out in the programs.
2. Critical scientific issues identified in each of the approaches to IFE that would contribute to understanding the long-range potential of IFE.
3. Impact that fast ignition as a concept improvement may have on IFE.
4. The potential contribution of the various IFE program elements to the emerging field of High Energy Density Physics.

The IFE approaches to be considered in this review are those involving heavy ion beam drivers, laser drivers and the "Z" approach. Because of the breadth of the requested review, please use additional expertise outside of FESAC membership as required.

Panel Membership:

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Panel First Meeting:

October 28, 2003

Need for IFE Report	*Anne Davies, David Crandall*
Indirect Drive Target Physics NIF, HIF & related HEDP	*John Lindl*
Heavy Ion Fusion (HIF)	*Grant Logan*
Z-Pinch	*Keith Matzen*
Laser Direct Drive	*John Sethian*
Target Fabrication and Injection	*Art Nobile*
Target Chambers and Reactors	*Mark Tillack*
Fast Ignitor	*Mike Campbell*
JASON Report on Petawatt Lasers	*David Hammer*

Panel First Meeting:

October 29, 2003

NRC Report HEDP: The X Games *Ron Davidson*

Follow-up Discussion *Anne Davies, Chris Keane*

Strawman findings and issues *Executive Session*

-- Targets
-- Drivers
-- Chambers and Reactors
-- Fast Ignitor
-- HEDP

Writing assignments and report outline

Schedule (next meeting, action items)