APPENDIX C

OPENING REMARKS

BY

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Workshop purpose-
We want to look at Laser IFE as an integrated system

Discuss several components of an IFE reactor...

1. Target Designs
2. Target Fabrication
3. Target Layering
4. Target Injection/Tracking
5. Chamber

Steam plant & turbine

...and how they must relate to each other
Ensures we can develop them in concert to produce an attractive power plant.

Focus on issues with existing reactor architecture. (dry wall, spherical illumination.)
Solve these issues, before abandoning concept for “greener pastures”

Concentrate on things that can be tested in next 4-5 years
Allows us to define path to the IRE
An integrated repetitive demonstration, that a power plant sized laser, can be steered to illuminate a target, that is injected into a reactor chamber environment, with the uniformity and precision required for inertial fusion energy.

Parameters required for an IRE will be determined by Phase I
Role of NIF in developing Direct Drive Laser Fusion Energy

Main physics issues are:
1. control of Rayleigh Taylor growth
2. control of laser imprint
3. beam balance

These can be addressed now with experiments on Nike and Omega
(Nike factor of 2-10 below high gain requirements for intensity, areal mass)
(Omega does spherical implosions)

Target designs can be developed, & most physics addressed, on existing lasers

Main role of the NIF for Laser Inertial Fusion Energy:

Validate target designs with intensities and laser pulse lengths at or near those required for high gain
A few words about getting support for Laser IFE

DOE views fusion as a science (& technology) program, not an energy program

Development of Laser IFE encompasses many areas of science.....

- materials science
- surface and interface science
- thin films, chemistry
- nano-processing technologies
- solid state electronics
- optics
- aerodynamics
- cryogenics

chamber materials, target fab & injection, optics
chamber materials, target fabrication & injection
target fabrication, chamber materials
target fabrication
target injection
laser windows, steering mirrors, final optics
target injection
target injection & fabrication

FESAC has recommended funding for IFE “chamber technologies”

Suggest we prepare a series of proposals, to submit if funding becomes available
Emphasize science
But directed towards resolving laser IFE issues
i.e. the purpose of this workshop
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