

**Heavy Ion Fusion Science Virtual National Laboratory  
Program Advisory Committee**

**HIFS-VNL PAC Charter**

- Advise the HIFS-VNL Board in its oversight and the HIFS-VNL Directorate in the formulation of the most effective scientific research and technology development program for Heavy Ion Fusion.
- Evaluate the scientific and technical quality of research in the Heavy Ion Fusion Science Virtual National Laboratory.
- Periodically review and comment on
  - Strategies and plans
  - Ways to improve VNL operations.
  - How HIFS-VNL program couples with the broader fusion and relevant scientific communities.

**Eighth HIF-VNL PAC meeting at LBNL, February 22, 2007**

**Charge for the eighth meeting revisit charge 1 from the 7<sup>th</sup> mtg:**

**Charge (1):** Taking into account recent progress in experiments and modeling, please review the several alternative strategies to be presented to carry-out first VNL heavy-ion beam-driven warm dense matter experiments before the end of FY08, and recommend priorities in the pursuit of the various options prior to a decision point mid 2007: what are the technical risks, cost-benefits and programmatic trade-offs to resolve? The 7<sup>th</sup> HIFS-VNL PAC asked to revisit this charge the next 1-day meeting, along with eight requests for more information, listed below (Best-effort written responses to these sent to PAC January 25, 2007):

- (1) Assess and document target preheat effects from beams and plasma for the various options.
- (2) Decide what, if any, further PLIA tests are warranted, based on most recent data.
- (3) Describe what further experiments and modeling are needed to evaluate the use of solenoids versus quads for future WDM experiments.
- (4) Seek OHEP support for e-cloud research on HCX.
- (5) Assess required accuracy of WDM diagnostics for planned near term experiments, including effects of finite hydro in targets.
- (6) How might NDCX-I tests affect the various options for WDM drivers? (e.g., what we learn from combined radial and longitudinal compression and focusing).
- (7) How would the proposed options for WDM drivers affect our ongoing collaboration with GSI?
- (8) Develop a new HIFS plan that reflects new thinking both in accelerators and targets.

**Background to Charge (1):**

The HIFS-VNL plan to achieve 1 eV in heavy-ion-beam-driven targets has not changed for the last three years: NDCX-I is to be upgraded to NDCX-II assuming \$5 M hardware in incremental funding. OFES granted Mission Need (CD-0) on 12-1-05 for the Integrated Beam-High Energy Density Physics Experiment (IB-HEDPX), a future \$50M-class heavy-ion beam HEDP user facility, in which NDCX-II is a stated prerequisite. However, as NDCX-II funding may continue to be delayed, we are evaluating alternative options to (a) begin initial target experiments below 1 eV, and (b) develop improvements that might achieve uniform 1 eV target conditions as soon as practical. Regarding item (8) above, since the last PAC meeting, OFES Director-designate Ray Fonck has also indicated a need to update HIF research plans, but for a longer period of 20 years. The draft longer term plan has implications for the nearer term WDM plans that the PAC should consider for charge #1, and so the PAC is asked to comment also on the preliminary draft plan (8).

Given the extensive last 7<sup>th</sup> VNL-PAC report received in December, and given that decisions on our path forward must be proposed to the OFES Budget Planning meeting March 15 for FY08 and FY09, the PAC is requested to send a brief ~1 page 'letter report' by March 1 to allow us timely benefit from the review.

**Preliminary Agenda for the eighth VNL-PAC at LBNL**

**Thursday, February 22, 2007**

<b>Time</b>	<b>Item</b>	<b>Who</b>
8:00	Coffee	All
8:15	PAC charge (Exec. Session).	Campbell/PAC
8:30	Welcoming comments	Synakowski
8:35	Recap of WDM options pending	Logan
<b>Presentations and discussion for Charge question #1- Initial HEDP experiments</b>		
8:40	PAC Q1: Preheat assessments for the WDM options	Barnard
8:55	PAC Q2: PLIA plans	Seidl/Waldron
9:05	PAC Q6: What we learn from NDCX-I re 3 WDM options	Seidl
9:25	PAC Q3: Solenoids vs. quads for WDM	Molvik
9:40	PAC Q4: Plan to secure OHEP support for E-Cloud	Molvik
9:50	GSI 12-06 exp + PAC Q5: WDM diagnostic needs & plan	Bieniosek
10:20	PAC Q7: Impact of WDM options on GSI collaboration	Logan/Bieniosek
10:30	Coffee break	All
10:40	<b>Discussion</b> on PAC Q1 through Q7	All
11:10	Opportunities & issues for heavy ion direct drive	Perkins
11:30	PAC Q8: Draft 20-yr HIFS research plan	Logan
11:50	Break to retrieve lunches (brought in)	All
12:00	Working Lunch <b>Discussion</b> re direct drive and PAC Q8	All
12:40	Feasibility of a double pulse experiment using ATA equipment	Westenskow
12:50	WDM driver cost and schedule planning/contingencies	Leitner
1:05	Pulling it all together: a preferred path forward	Logan
1:20	<b>Discussion</b>	All
1:40	PAC Exec Session	PAC
4:00	<b>Preliminary Feedback</b>	All
4:30	<b>Adjourn</b> (Initial drafting by some PAC members til 6 pm)	TBD