

Institute for Nuclear Energy Science and Technology

Hybrid Energy Systems April 4, 2012

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INEST Mission/Vision

- Create a laboratory component that stimulates discovery at technology and time scales beyond the constraints of current DOE missions while establishing strong partnerships with the university research community
- Grow technology leadership reputation while building long-term capabilities, tools and techniques to advance nuclear technology
- Establish linkages with NUC universities which will stimulate innovation and technical excellence, and a source of high quality future employees

National labs focus on the near term 0–2 year timeframe. The NE University program focuses on the 2–4 year timeframe. What the Institute should focus on is the long term, 3/4 year to infinity timeframe.

INEST Organization Chart



INEST Advisory Board and Steering Committees

Fuel Cycle CORE

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Advisory Board

 Mujid Kazimi - Chair (MIT) Regis Matzie (Westinghouse) Gary Bennett (Consultant) Edward Arthur (Chair, Fuel Cycle) KL Murty (Chair, Nuc. Fuels & Materials) Andy Klein (Chair, Space Power) Charles Forsberg (Chair, Hybrid NE Systems) Rich Denning (Chair, Safety and Licensing) 	 Terry Todd/Patricia Paviet-Hartman - Director Edward Arthur - Chair (UNM) Gordon Jarvinen (LANL) William Charlton (Texas A&M) Alena Paulenova (Oregon State)
Safety & Licensing CORE Nam Dinh - Director	Nuclear Fuels & Materials CORE Todd Allen - Director
 Rich Denning - Chair (Ohio State) Bal Raj Sehgal (Royal Institute of Technology) Sandra Sloan (Areva) Paul Turinsky (NC State) Bob Youngblood (INL) Prasad Kadambi (Consultant) 	 KL Murty - Chair (NC State) Peter Ford (Consultant) Doug Crawford (GE) Rick Holt (Queen's University) Kemal Pasamehmetoglu (INL)
Space Power CORE Steve Howe - Director	Hybrid Nuclear Energy Systems CORE Steve Aumeier - Director
 Andy Klein - Chair (OSU) Sam Bhattacharyya (Renmar Industries) Michael Houts (NASA) William Saylor (US Air Force Academy) Tom Hughes (Penn State) 	 Charles Forsberg - Chair (MIT) Daniel Kammen (UC Berkley) Bruce Dale (Michigan State) James Bartis (Rand) Zhiyuan ZHU (Chinese Academy of Science) Michel LeCompte (Areva)

FY2012 INEST LDRD Portfolio

\$3.2 M Investment

- Research projects are distributed between 4 CORE's (New Hybrid Nuclear Energy Systems CORE not yet included-mid year 2012 call just released)
- Require university participation
- CORE meetings and workshops are used to hone topical areas and generate university interests





University Blanket Master Contract Process

- Funded by INL project (LDRD, programmatic, etc.)
- Participants are subject to all terms and conditions, regulations and requirements (including work control) as a subcontractor
- Tuition, Fees, and Books paid directly to University and fellowship to student
- Provides INL access

 Student not incorporated into Education Programs internship program

Collaboration Internship

- Funded by INL project (LDRD, programmatic, etc.)
- Mentoring/protégé responsibilities are shared between INL and University
- Student aligns academic thesis/dissertation research interest into collaboration scope
- Provides INL access
- Encompasses student into Education Programs fostering an academic enhancement experience



Summary INEST Year 2

- Added a new CORE
- ~\$3.2M LDRD Funds allocated towards 2012 INEST projects (7 new project starts)
- 36 Universities involved in INL LDRD projects
 - 16 in INEST LDRD projects
 4 NUC schools involved
- Collaborative Student
 Opportunities (Fellowships)
 under development



Safety and Licensing Thrust Areas

- > Redefined as the result of Fukushima accident
- > Severe accident research
 - Advanced simulation
 - SAMG validation
- > Risk-informed assessment of external events
- > Risk-informed assessment of spent fuel storage alternatives
- > Improved risk perspective
 - Societal risk (Societal Safety Goal Workshop in March)
 - Methods for the assessment of risk of passively safe reactors

S&L LDRD Opportunity

- > Currently funded research
 - >Human reliability analysis
 - >Bayesian approach to code validation
- Safety and Licensing CORE has targeted LDRD funds available for innovative safety and licensing research
- Rich Denning can help establish communications with potential INL collaborators
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- > denning.8@osu.edu