

4. Outreach and Interaction

Travel and Technical Interaction

Center personnel traveled extensively in the first year of the ASAP program and were involved in a large number of technical and informational meetings. These included meetings intended to explore rocket science and technology, identify technical collaborators, describe the ASCI/ASAP program, and establish relationships among Center investigators, DOE lab scientists, and industry leaders.

ASCI Introductory Meetings

ASCI Kickoff, Snowbird, CO — October 15-18, 1997; 19 participants

CSAR Group Leaders and senior investigators have traveled to each of the DOE DP labs to introduce the Center's technical program to lab research staff and to establish key interaction linkages. CSAR and lab technical staff made presentations. The talks included overviews of the CSAR technical program, as well as discussions of the individual investigator research projects underway at the University of Illinois.

LLNL — October 2-4, 1997; 2 participants (General)

SNL — December 15-18, 1997; 7 participants (General)

LANL — March 16-17, 1998; 10 participants (General)

SNL — September 11-12, 1997; 2 participants (Combustion)

LLNL — April 19-21, 1998; 2 participants (Combustion)

ASCI Small Group Meetings

Individual CSAR senior investigators and technical staff have traveled to DOE DP labs to serve on ASCI/ASAP panels, to participate in ASAP-wide workshops (materials and computational environment), to offer research seminars and technical interaction, to receive introductory training on the ACSI computational resources, and to discuss ASCI resource issues with the CRT.

Level 2 Review, March 2-5, 1998; 3 participants

ASAP workshops; 4 trips, 6 participants (Combustion; CS; Structures [2])

Seminars presented at Labs; 4 trips, 4 participants (LANL [2]; LLNL [2])

Individual DOE DP Lab visits; 10 trips (LLNL [3]; LANL [4]; SNL [3])

DOE HQ Briefing, April 14-15, 1998; 1 participant

ASCI CRT; November 20, 1997; 1 participant

ASCI Red Training; 1 participant

ASCI Blue Mountain Training; 1 participant

Technical Conferences

The Center provides travel funds to investigators to participate in conferences in core areas both to enhance their technical expertise and to build global awareness of the ASCI/ASAP simulation program.

Mesh Generation, October 12-16, 1997; 1 participant

SIAM, November 2-6, 1997; 1 participant

IOPADS '97, November 15-17, 1997; 1 participant

SuperComputing '97, November 17-21, 1997; 4 participants

ISCOPE '97, December 8-11, 1997; 2 participants

JANNAF, January 1998; 1 participant

AIAA Solid Propellant Rocket Workshop, January 11-18, 1998; 1 participant

ICTDM, February 28-March 5, 1998; 1 participant

IUTAM Combustion Symposium, March 5-8, 1998; 3 participants

IEEE Aerospace, March 22-27, 1998; 1 participant

AIAA Fluids Conference, June 14-19, 1998; 2 participants

Stanford Summer Workshop, July 4 – August 4, 1998, 1 participant

DVC Review, July 5-8, 1998; 1 participant

AIAA Joint Propulsion Conference, July 12-14, 1998; 2 participants

27th International Combustion Conference, August 1-8, 1998; 2 participants

Teleconferences

Several teleconferences were conducted during the first year of the program to guide policy development for use of the ASCI supercomputer resources.

Student Interns at DOE Labs

Four graduate students served as research interns in 1998. Students were placed at Lawrence Livermore National Laboratory, Sandia National Laboratory, and Argonne National Laboratory.

Industrial Interaction

Meetings with the Rocket Industry

A significant amount of industrial interaction has occurred during the first year of the CSAR program. Most important among industrial meetings was a large gathering (35 people) at Lockheed-Martin Missile Systems in Sunnyvale, California, on July 22, 1998. Co-hosted by Lockheed-Martin and the U.S. Navy Solid Propellant Group, the meeting was an opportunity for Center leaders to brief industry leaders on the CSAR technical program and to identify new members for the CSAR External Advisory Board. The meeting included nine CSAR

investigators, representatives from six leading rocket companies (Lockheed-Martin, Aerojet, Thiokol, United Technologies, AlliantTechsystems, and Atlantic Research), the U.S. Army, Navy and Air Force, DOE HQ, and Sandia National Laboratory. Two other critical meetings were held with AlliantTechsystems and Thiokol representatives.

AlliantTechsystems, December 4-5, 1997; 3 participants

Thiokol, December 6-7, 1997; 3 participants

Thiokol, April 19-21, 1998; 5 participants

Navy SP and six companies, July 21-23, 1998; 9 participants

NASA and Thiokol teamed to provide the Center with the *Design Data Book for Space Shuttle Reusable Solid Rocket Motor*. The document contains a detailed description and discussion of the components that comprise the reusable solid rocket motor.

External Advisory Board

The first meeting of the External Advisory Board is planned for early 1999. We anticipate that the EAB will meet annually thereafter. The EAB membership is drawn from the DOE DP laboratories and academia, as well as from the commercial rocket industry, the high-performance computer industry, and other relevant companies. The Board will review research studies, make research recommendations, and provide expertise for translating research findings into practice. The purpose of the EAB is severalfold: assure that the CSAR research program remains aggressive and forward-thinking; gain commercial rocket industry perspective; accelerate high-level technical exchange; catalyze long-term visits; and explore other funding opportunities. Initial members of the Board include:

Aerojet: Michael Krogen, Chief Project Engineer

AlliantTechsystems: Grant Hodson, Technical Manager, Air Force Projects

Army Research Office: David Mann, Head of Propulsion Directorate

Atlantic Research Corporation: Guy Spear

Caltech: Fred E. C. Culick, Richard L. and Dorothy M. Hayman Professor of Mechanical Engineering and Professor of Jet Propulsion

Cornell University: Anthony Ingraffea, Professor of Civil and Environmental Engineering

Harvard University: Mitchell Smooke, Strathcona Professor of Mechanical Engineering and Applied Physics

Lockheed-Martin: Taras Jarymowycz, Research Scientist

Sandia National Lab: Paul Hommert, Director, Engineering Sciences

Thiokol: Suresh Kulkarni, Director of DLV Engineering

Others: *Boeing, Navy, Air Force, NASA, hardware and software vendors*