

## INTRODUCTION

This report is a summary of comments from the Peer Review Panel at the FY 2004 DOE Hydrogen Program Annual Merit Review, held on May 24-27, 2004, at the Philadelphia Downtown Marriott in Philadelphia, Pennsylvania. The work evaluated in this document supports DOE and the results of this merit review and peer evaluation are major inputs utilized by the Department in making its funding decisions for the next fiscal year.

The objectives of this meeting were to:

- Review and evaluate FY 2004 RD&D accomplishments and FY 2005 plans for DOE laboratory programs and industry/university cooperative agreements.
- Provide an opportunity for program participants (hydrogen production manufacturers, hydrogen storage manufacturers, fuel cell manufacturers, etc.) to help shape the DOE sponsored R&D program so that the highest priority technical barriers are addressed. The meeting also serves to facilitate technology transfer.
- Foster interactions among the universities, industry and national laboratories conducting the R&D.

During the plenary session on the first morning, all four DOE offices involved in Hydrogen Fuel Initiative activities (FE, NE, EE and SC) each gave overviews of their programs. Those presentations became a prelude to the 2005 Annual Merit Review, which will expand in scope to cover projects of the entire DOE Hydrogen Program. Projects from FE, EE and NE will be reviewed next year, and an introduction to the set of projects to be awarded by SC in 2005 will be provided.

The Peer Review process followed the guidelines of the Peer Review Guide developed by EERE. The Peer Review Panel members, listed in Table 1, attended the meeting and provided comments on the projects presented. These panel members are peer experts from a variety of hydrogen and fuel cell related backgrounds including national laboratories, hydrogen production manufacturers, hydrogen storage manufacturers, fuel cell manufacturers, universities, and other U.S. Government agencies. They were screened from a conflict of interest (COI) perspective per the Peer Review Guide. A complete list of the meeting participants is presented as Appendix A.

**Table 1: Merit Review Panel Members**

No.	Name	Organization
1	Radoslav Adzic	Brookhaven National Laboratory
2	Michele Anderson	Office of Naval Research
3	Raymond Anderson	Idaho National Engineering and Environmental Laboratory
4	Don Anton	United Technologies Research Center
5	Tim Armstrong	Oak Ridge National Laboratory
6	Paolina Atanassova	Cabot Superior Micropowders
7	Carol Bailey	SENTECH, Inc.
8	Addison Bain	Consultant
9	Jay Bauman	DuPont Fuel Cells
10	Farshad Bavarian	Chevron Texaco
11	Bud Beebe, SMUD	Sacramento Municipal Utility District

<b>No.</b>	<b>Name</b>	<b>Organization</b>
12	Thomas Benjamin	Argonne National Laboratory
13	Larry Blair	Consultant
14	Alex Bogicevic	Ford
15	Rod Borup	Los Alamos National Laboratory
16	Lynnae Boyd	National Renewable Energy Laboratory
17	Dick Bradshaw	Stirling Strategic Services, LLP
18	Rich Carlin	Office of Naval Research
19	Eric Carlson	TIAX
20	William Chernicoff	Department of Transportation – Volpe
21	Russell R. Chianelli	University of Texas at El Paso
22	Prashant Chintawar	Nuvera
23	Hongli Dai	DuPont
24	Davison, Brian	Oak Ridge National Laboratory
25	Mark Debe	3M
26	Emory DeCastro	Etek Denora
28	Glenn Eisman	Plug Power
29	Feinberg, Ed	Consultant
30	Karl Fiegenschuh	Ford
31	Scott Freeman	DaimlerChrysler
32	Don Frikken	Becht Engineering Company St Louis Office
33	Alexi Gabrielov	Shell Hydrogen
34	Esin Gulari	National Science Foundation
35	David Haberman	IF,LLC
36	Pat Hagans	UTC Fuel Cells
37	Jim Hansel	Air Products and Chemicals, Inc.
38	Mike Heben	National Renewable Energy Laboratory
39	Shinichi Hirano	Ford
40	Nashat Jalil	Daimler Chrysler
41	Craig Jensen	University of Hawaii
42	Will Johnson	W L Gore
43	Scott Jorgensen	GM
44	Maurice	State of Hawaii
45	Michael Kelly	Millennium Cell, Inc.
46	John Kerr	Lawrence Berkeley National Laboratory
47	John Kopasz	Argonne National Laboratory
48	Theodore Krause	Argonne National Laboratory
49	Romesh Kumar	Argonne National Laboratory
50	Daniel Loffler	IdaTech
51	Melissa Lott	QSS Group, Inc.
52	Andy Lutz	Sandia National Laboratories
54	Len Marianowski	Gas Technology Institute
55	David Masten	GM

<b>No.</b>	<b>Name</b>	<b>Organization</b>
56	Jim McGrath	Virginia Tech
57	Gerald Meyer	Johns Hopkins University
58	Jeremy Meyers	UTC Fuel Cells
59	Mike Miller	Southwest Research Institute
60	William S. Millman	Office of Basic Energy Sciences, DOE
61	Kevin Mills	U.S. Army
62	Michael Niehues	DaimlerChrysler
63	George Parks	Conoco Philips
64	Richard Paur	Army Research Office
65	Larry Pederson	Pacific Northwest National Laboratory
66	Guido Pez	Air Products & Chemicals, inc.
67	Harold L. Phillippi	Exxon Mobil Research and Engineering
68	Walter Podolski	Argonne National Laboratory
69	Michael Quah	NextEnergy
70	Rick Rocheleau	Hawaii Natural Energy Institute
71	Mark Roelofs	DuPont
72	Jerry Rogers	GM
73	Philip Ross	Lawrence Berkeley National Laboratory
74	Gary Sandrock	SunaTech, Inc.
75	Bill Schank	Ford
76	Ed Schmetz	Department of Energy
77	Jesse M. Schneider	DaimlerChrysler RTNA
78	Andreas Shell	DaimlerChrysler
79	John Shen	Department of Energy
80	Ron Sims	Consultant (retired Ford)
81	Carl Sink	Department of Energy
82	William Smith	Infinity Fuel Cell and Hydrogen, LLC
83	Rhoads Stephenson	Motor Vehicle Fire Research Institute
84	Ken Stroh	Los Alamos National Laboratory
85	Robert Sutton	Argonne National Laboratory
86	Scott Swartz	NexTech
87	Amy Taylor	Department of Energy/NE
88	George Thomas	Sandia National Laboratories
89	Levi Thompson	University of Michigan
90	Doanh Tran	DaimlerChrysler
91	James Uhllein	BP
92	Francisco Uribe	Los Alamos National Laboratory
93	Suellen V Ooteghem	Brookhaven National Laboratory
94	Nick Vanderborgh	Consultant
95	Victor Maroni	Argonne National Laboratory
96	Gerald Voecks	GM
97	Fred Wagner	GM

No.	Name	Organization
98	Brian Weeks	Texas Energy Center
99	Jim Wegryzn	Brookhaven National Laboratory
101	Doug Wheeler	Consultant
102	John Williams	Quantum
103	Keith Wipke	National Renewable Energy Laboratory
104	Chris Wolverton	Ford
105	Bob Wysocki	Shell
106	Bob Zalosh	Worcester Polytechnic Institute
107	Tom Zawodzinski	Case Western Reserve University
108	Ragaiy Zidan	Savannah River National Laboratory

## SUMMARY OF MERIT REVIEW PANEL'S CROSS CUTTING COMMENTS AND RECOMMENDATIONS

The Peer Review Panel members provided a number of comments and recommendations that apply to the Annual Merit Review and peer review process, as well as overall management of the DOE Hydrogen Program. These comments are provided in Appendix B of this report. DOE will utilize these comments to improve both the program and future review meetings.

## ANALYSIS METHODOLOGY

As shown in Table 1, a total of **108** panel members participated in the merit review process. A total of **164** project presentations were given at the meeting and a total of **1095** review sheets were received from the Peer Review Panel (not every panel member reviewed every project). These members were asked to provide numeric scores (on a scale of one to four, with four being the highest) for five aspects of the research on their Evaluation Form, a sample of which can be found as Appendix C to this report.

The five aspects were:

- Relevance to overall DOE objectives;
- Approach to performing the research and development;
- Technical accomplishments and progress toward achieving the project and DOE goals;
- Technology transfer and collaborations with industries, universities, and other laboratories; and
- Approach to and relevance of proposed future research.

The numeric scores given to each project by the reviewers were averaged to provide the overall score for that project for each of the five criteria. An average score for the five criteria was also calculated within each of the project categories. In this manner, a project's overall score can be compared to other projects in that category.

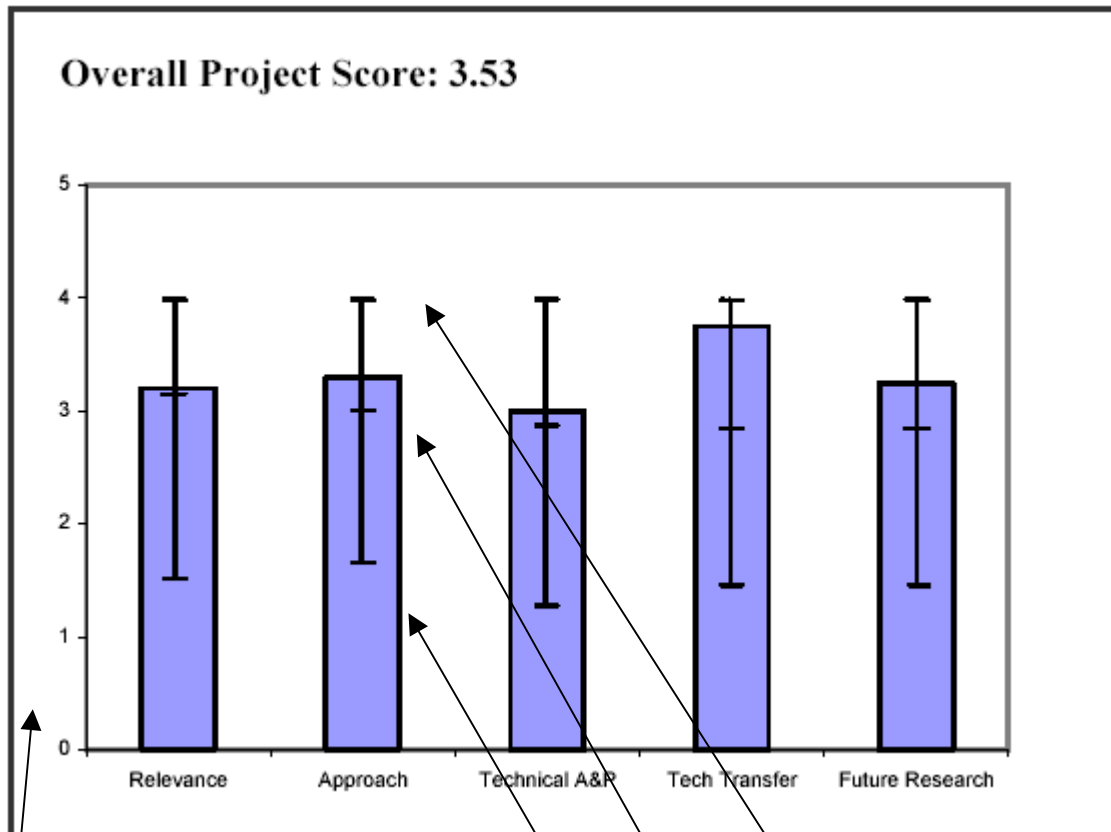
Reviewers were also asked to provide qualitative comments on the five research aspects, as well as the specific strengths and weaknesses of the project, and any recommendations for additions or deletions to the work scope.

These comments, along with the quantitative scores, were placed into a database for easy retrieval and analysis. These comments are summarized in the following sections.

### ORGANIZATION OF THE REPORT

This report is organized in six sections, in an effort to group projects according to the sub program in which they fall in DOE Hydrogen Program planning. A brief description of the general type of research being performed in each category is presented.

The remaining pages of each section present the results of the analysis for each of the projects discussed at the merit review. A summary of the qualitative comments is provided, as well as graphs showing overall score and how the particular project compared with all other projects presented. An example of a graph is provided below:



Blue bars – individual scores for this project.

Minimum, mean, and maximum individual scores for *all* projects for this criterion.

