

Response to Last External Panel Review

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Presented to the

Engineering Sciences External Review Panel

Sandia National Laboratories

July 19-21, 2010

*Sandia is a Multiprogram Laboratory Operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy Under Contract DE-ACO4-94AL85000.*

Summary of Comments from the 2009 Panel (1)

- The Panel would like to hear an update on long-term program milestones in the context of the roadmaps and the strategic plan.

Response: Given a large number of organizational and programmatic changes, we have substantially revised the Engineering Sciences strategic plan and are updating programmatic deliverables. Aspects of this will be evident in the talks.

- Panel members felt there might have been disconnects between material modeling efforts in Albuquerque and those in Livermore and would like to hear comment at the next session on how the organization ensures that it takes advantage of opportunities for leverage between groups at the two sites.

Response: We recognize the need to better leverage our material modeling efforts between sites. Over the past year, there has been increasing management engagements to develop an integrated mechanics plan with specific focus on predicting failure/fracture.

Summary of Comments from the 2009 Panel (2)

- In past years the thematic overviews by managers have focused more on describing technical talks than on discussing how those talks fit in the context of overall ES activities. The Panel was very pleased that this year the introductory talks provided the broader context, and hopes to see more along these lines in 2010.

Response: This year's review talks continue the contextual overviews we started last year which presented activities from 2 of 4 ASC Focus Areas. Specifically, we will highlight work this year from the ASC Assured Performance Focus Area.

- The Panel needs to have some context on the overall activities of the ESRF. It is understood that a full review of the entire portfolio of projects would take too much time, but on the other hand it is very challenging for the ERP to evaluate SNL without overall context. For 2010 the Panel would like to see some information on all projects funded under the ESRF (most likely in handouts or read-aheads, with a cursory review during the session to answer panelist questions)

Response: While we appreciate the interest in this information, providing the desired level of context and detail merits a substantial discussion. Sublements of the overall activities (with context) have been presented last year and will be presented this year.

Summary of Comments from the 2009 Panel (3)

- Electrical sciences has not been a focus of the review for the last few sessions. The Panel understands that relevant activities here are spread across several Research Foundations, and that the strategy for the discipline is still evolving. The Panel suggests that 2010 would be a good year for a top-to-bottom discussion of future plans for the electrical work.

Response: Given the small proportion of electrical sciences content in the Engineering Sciences, a comprehensive discussion is beyond the scope of this review. This may be a more appropriate SSAB topic.

- As noted above, the overall session was as integrated a set of presentations as the Panel has seen from ES. But the question of what is going on in the rest of the world could benefit from more explicit attention. The Panel would like to hear more about how Sandia, as a world leader in this area, sees itself relative to other contributors. The ERP, while not looking for detailed benchmarking or in-depth evaluation, believes that being clear about this information would be helpful for the organization in general.

Response: We agree completely. We seek your advice in identifying organizations that we can compare against for benchmarking.



Panel Charge and Review Agenda

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Charge to the Panel

The Panel will assess us on our performance:

- Quality of science, technology, and engineering
- Relevance to national need and agency mission
- Programmatic performance, management, and planning

The Panel will advise us on:

- Strategic planning: vision, mission and implementation
- Benchmarking (e.g. organizations to compare against)
- Opportunities that should be explored
- Culture, environment, anything else you hear . . .

Assess our Performance

Quality of science, technology and engineering

- How well is the work oriented towards addressing important technical issues?
- How much impact is our work having in the engineering sciences field?
- What are some examples of innovative research being performed?

Relevance to national need and agency mission

- How clear is the connection between the research and the nuclear weapon mission?
- How clear is the connection between the research and Sandia's S&T mission?
- What is the evidence that researchers understand how their research relates to the mission?

Programmatic performance, management and planning

- How well is the research coordinated?
- How well have we set specific focus areas, metrics and rationale for Sandia's differentiation?
- How enthusiastic is the staff for Engineering Sciences research?

**Panel is requested to provide feedback on items in blue;
questions in black provide context questions to consider.**

Agenda Overview (1)

| Tuesday, July 20th | | | |
|--------------------|---|-------|---|
| | | | |
| 7:00 | - | 7:30 | Pick-up; badging; security brief enroute to SNL |
| 7:30 | - | 7:45 | Continental breakfast |
| 7:45 | - | 8:00 | Welcome - Duane Dimos |
| 8:00 | - | 8:30 | SNL Update - Jim Handrock |
| 8:30 | - | 9:30 | Engineering Sciences Overview - Duane Dimos |
| 9:30 | - | 10:00 | Response to Last External Panel Review - Joel Lash |
| 10:00 | - | 10:15 | Break |
| 10:15 | - | 10:45 | Panel Charge and Review Agenda - Joel Lash |
| 10:45 | - | 11:45 | Engineering Sciences Code Overview - Joe Jung |
| 11:45 | - | 12:00 | Wrap-up; General Q&A |
| 12:00 | - | 13:00 | Working Lunch - split into manager group and 2 staff groups |
| 13:00 | - | 15:00 | Arming, Fuzing & Firing Components S&T |
| | | | • Overview - Joel Lash (15 min) |
| | | | • Battery Performance - Anne Grillet (30 min) |
| | | | • ESD Phenomena - John Torczynski (30 min) |
| | | | • Encapsulation Mechanics - Bob Chambers (30 min) |
| | | | • Q&A w/ customer (Steve Harris) (15 min) |
| 15:00 | - | 15:15 | Break |
| 15:15 | - | 16:15 | Poster Session |
| | | | • Wall Layer Modeling - Ryan Bond |
| | | | • Gas Dynamics/Chemistry - Michael Gallis |
| | | | • SAW Microsensor - Walt Gill |
| | | | • Ductile Failure X-prize - Brad Boyce |
| | | | • Foam Decomposition - Amanda Dodd |
| | | | • High Rate Material Experiments - Bo Song |
| | | | • 6 DOF Capability - Dan Gregory |
| 16:15 | - | 17:30 | Executive Session |
| 17:30 | - | 18:00 | Depart to Chama River Brewing Co. |
| 18:00 | - | 20:30 | Dinner - VP/Directors/Panel |

Agenda Overview (2)

| Wednesday, July 21st | | | | |
|----------------------|---|-------|--|--|
| | | | | |
| 7:00 | - | 7:30 | | Pick-up; travel to SNL |
| 7:30 | - | 7:45 | | Continental breakfast - get food for poster viewing |
| 7:45 | - | 9:15 | | Gas Transfer System S&T |
| | | | | • Overview - Mary Gonzales (15 min) |
| | | | | • Hydrogen-Isotope Exchange Kinetics - Scott James (30 min) |
| | | | | • Predicting Hydrogen Embrittlement - Jay Foulk (30 min) |
| | | | | • Q&A w/ customer (Paul Spence) (15 min) |
| 9:15 | - | 9:30 | | break |
| 9:30 | - | 10:00 | | Predictive Response due to Electrical/EM Insult - Jane Lehr |
| 10:00 | - | 10:30 | | Computational Mechanics Geosystems Management - Mike Stone |
| 10:30 | - | 11:00 | | Computer-Aided Engineering for Nanomanufacturing - Randy Schunk |
| 11:00 | - | 12:00 | | Executive Session |
| 12:00 | - | 13:00 | | Outbriefing - Working Lunch |
| 13:00 | - | 13:30 | | Follow-up Discussion - Panel and ES Leadership |
| 13:30 | - | 14:00 | | Depart for airport or hotel |