

# **ESRF External Panel Review Response to 2010 Panel**

**Mary Gonzales  
Senior Manager  
Advanced Systems & Analysis Group  
Sandia National Laboratories, CA**

*Presented to the*  
**Engineering Sciences External Review Panel  
Sandia National Laboratories**

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# Overview Comments

- **This was perhaps the most impressive ERP to date**
  - Management continues to do the right thing
  - ES is now seeing the payoff from the 15 year investment in M&S codes
  - The quality of technical talks was excellent
  - The panel was impressed with Sierra Mechanics
  - The climate has improved as the NW funding has improved

## Response:

- We are pleased that the panel commented on the progress Sandia has made in it's 15 year investment in M&S codes – we are proud of this work.
- Thank you for your compliments!

# Leadership

- **Now is precisely the moment for ES to make a shift to leadership**
  - A unique opportunity for ES to transform itself into a leader for the nation.
  - ES may benefit from enhanced strategic planning and using the plan to develop major programs.
  - Does doing good at everything mean that ES misses chances to do a small number of things with greatness? Prioritize work where ES has or will have a reputation as being unmatched.
  - SNL and ES would be well served by pursuing more strategic rather than tactical goals. Now is the time to push on discovery.

## Response:

- During this past year ES has updated it's strategic plan and is working to ensure the staff have a common understanding of the strategic path.
- Cross-site strategic planning in solid mechanics and structural dynamics to be completed this FY
- Sandia is challenging itself to identify 2-3 areas where we are a recognized leader in ES – can the panel help here?

# Staffing and Hiring

- **Morale and hiring has improved but ...**
  - Morale is clearly up from the past few sessions but there is still room for improvement
  - Efforts to hire aggressively are laudable but questions remain whether ES has enough or the right staff
  - Administrative support situation appears unacceptable. First level managers need time to manage and lead

## Response:

- We would like to hear if morale is still high after recent benefit changes in pension, healthcare, and pay-freeze
- Hiring is up significantly the past year due to the slow economy
- There are ongoing corporate studies to identify how to reduce manager burden

# Build on SIERRA

- **The panel was tremendously impressed with the picture of Sierra that has emerged but ...**
  - Making the codes more widely available will be in Sandia's and the nation's best interests
  - Broad distribution could increase ES leadership nationwide
  - Sierra should be applied to issues of national competitiveness

## **Response:**

- Sandia has started working on the Laboratory for Computational Mechanics (an open source research platform based on Sierra) to allow collaboration with academia and industry
- Sandia ASC office is working with the line to complete a self assessment of the SIERRA implementation (what works well, where do there still need to be improvements)
- Sandia is making progress within DoD and is addressing Export Control issues for wider distribution

# Integrating M&S into the Design Cycle

- **The panel has seen plenty of evidence that ES can perform predictive simulation but ...**
  - ES does not appear fully integrated with programmatic elements (i.e. weapon designers)
  - Progress will require a different focus and different skills
  - What is the future of electrical M&S at Sandia?

## **Response:**

- The past few (and current) reviews have focused on research rather than application. We could easily spend a week discussing how our prior R&D efforts are making a huge impact on Sandia's problems.
- Engineering Transformation is a process being used on our LEP designs. The B61-LEP is currently utilizing our newly developed technology to impact the design process. Each B61-LEP PRT has a modeling POC.
- Solving the identity problem and sponsorship of electrical modeling is a current focus at Sandia. A task team has been formed to identify an owner for the discipline and a corporate solution. Note that ES only covers EM and not circuit modeling.

# External Scholarship

- **More can be done to increase Sandia's visibility outside DOE**
  - Publication numbers in peer reviewed journals have room for improvement
  - Provide more incentive and time for publishing
  - More publications will help recruiting
  - Increase attendance at professional society meetings

## Response:

- We agree that publications and presentations are important to our organization and have identified it as a metric in our strategic plan. Numbers have improved in the last year.
- There is a clear expectation that staff performing research must publish.
- Attendance at conferences is strongly encouraged and rarely denied (except for some foreign conferences).
- We also have a number of Fellows (ASME, etc.) and Society officers within Engineering Sciences.

# Panel Suggestions for 2011 ERP Meeting

- Extended break on the afternoon of the first day (Free time before dinner. Would need to expand to 2 full days for additional break during Day 1.)
- Move to an off-site location where panel members could access email and phones (Change of venue next year will allow laptop and phone access)
- Show how predictive engineering is integrated into design (Added programmatic presentations on how M&S is impacting the B61 LEP design)
- Would like to see how ES determines if future HPC resources are sufficient (Typically handled by our Computer Sciences partners)
- Each presenter should note upfront their peers and competitors (Presenters have been given the instructions.)
- **We have taken the all feedback from the panel and will work on continuous improvement**

**We encourage the panel to provide suggestions again this year to improve the 2012 Review**



# Charge #1: Assess and Advise

- **The Panel will assess us on:**
  - Quality of science, technology, and engineering
  - Relevance to national need and agency mission
  - Programmatic performance, management, and planning
- **The Panel will advise us on:**
  - Vision, mission and implementation
  - Strategic planning
  - Opportunities that should be explored
  - Culture, environment, anything else you hear

# Charge #2: Assess Our LDRD Program

- **LDRD Corporate Review Process**

- LDRD review is to be a specific subsection for each RF's External Review Board and other major program reviews where LDRD projects are a significant part of the portfolio being reviewed.
- The ERB report will contain a separate subsection that provides an assessment of the LDRD portion of the R&D portfolio

- **Review Criteria for ES External Panel**

- Relevance  
What is the relevance of ES LDRD investments to the DOE & SNL national security missions?
- Quality  
Assess the leading edge character of ES LDRD projects. How creative and innovative is our LDRD portfolio as we try to solve challenging ST&E mission problems.
- Impact  
What has been the long- and short-term impact of ES LDRD?
- Management  
How can we more efficiently, effectively and strategically manage our ES LDRD portfolio?