

Paul Hommert

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concerted efforts to address this — Jim Simmons (8528) is working on outreach and Karen Scott (12122) works with our local legislative people at the state and national level. We need to illustrate to those key constituents the role, strengths, and difference we bring. But we shouldn't ever lose sight of the broader connectivity we have with LLNL as we work together.

We also have a great work force that is very engaged with this community, particularly in the area of education. I'm continually impressed with the individual efforts of community involvement, and commitment and giving that come from our staff.



Strategic partnerships

LN: What customers, constituents, or programs might help us in the future in terms of strategic partnerships?

PH: Within DOE, the Office of Science has been a long-term, sustaining customer with an important role to play going forward — as indicated by the recent JBEL exercises and in our efforts toward the CRF's future. We want to continue cultivating that relationship.

Within the weapons program our core NNSA customer remains critical to our organization and mission. This organization has done an outstanding job of developing and evolving entrepreneurial, innovative relationships with industry, most recently with the automotive industry. My hope is for more relationships rooted in homeland security business because industry will play a significant role as a technology provider to first responders and other end users.

LN: How do you think our relationship with LLNL will change with their management change?

PH: Obviously, there is a bit of uncertainty. They have uncertainty themselves as they transition to new leadership. In the programmatic space — weapons, homeland security — the character of our partnership and mission roles will remain very much the same. Some homeland security leadership will change, but their leadership in weapons will make the transition across the new contract.

In other areas it is only logical that with their new contract we explore ways to be as efficient as possible in our partnership across East Avenue. We will look at shared services such as security and emergency response. We look forward to engaging with the new leadership once they've gone across their contract change and are stable.

Sandia/California's unique culture

LN: What are your impressions of Sandia/California staff and researchers and the California site's culture, particularly in light of your previous experience in New Mexico?

PH: When I get out and talk to staff I find the innovation, teamwork, dedication, and enthusiasm to be really exceptional. This is very energizing — the most enjoyable thing I can do is to sit back and be amazed by the work and talent here.

All of the national laboratories are characterized by talented and dedicated people, but this site has a different and unique feel. The interconnectivity allows the organization to respond quickly and innovatively.

This is a function of the size, physical layout, and the fact that we manage our infrastructure and mission pretty much sitting around the same table. The sense of community is unique compared with anywhere else I've been. We need to maintain that special character.

Hiring foreign nationals

LN: What is your position on hiring foreign nationals and what are your plans to address this issue?

PH: Taking a broad view, we must ensure we are bringing the best of science to bear on our national security problems and that we are challenging our staff to be competitive on an interna-

tional level. That said, although we have hired foreign nationals in the past and do so now as limited term and postdocs, I recognize that this is a complicated employment issue.

I'm pleased that Sandia is considering this with an effort led by Pat Smith (3000), who will report to LLT later in the summer. We must continually examine this and look to leverage the foreign national community to the benefit of our site and laboratory. My view is this should encompass permanent hires, but we will take that decision as a laboratory.

Dealing with difficult issues

LN: From a leadership and management standpoint how would you like to deal with the difficult issue of staff layoffs?

PH: Despite all the uncertainty, I remain confident that the broad base of our mission provides a stable basis for moving the organization forward. Could I be wrong? Clearly we see one possibility with the initial House appropriation for the weapons program, which would have an impact, if it were to go through unchanged.

We must continually examine how efficiently we deliver our product to our customer base. Those efforts can, in limited situations, result in transforming part of the organization. I envision this happening occasionally in the future, but a broad-based impact is extremely unlikely. In any difficult employment situation, I would hope we always approach it in a way that reflects our corporate values.

Life in the Bay Area

LN: What kinds of things have you been enjoying in the Bay Area?

PH: I'm making a deliberate attempt to enjoy the area as much as possible. I've been to the San Francisco Opera, Monterey Bay Aquarium, Napa Valley, and Oakland A's ballgames (you can't see a major league baseball game in New Mexico). This month my wife and I are spending a long weekend in Mendocino and, time permitting, in September we'll attend the Shakespeare Festival in Ashland, Oregon.

RRW

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Another reason to get excited about RRW is the opportunity to fully embed computer modeling and simulation into the weapon lifecycle engineering process, says modeling and simulation lead Artie Ortega (8244). For RRW, computer modeling is an integral part of the design and development phases.

"There is a lot of opportunity to make use of new modeling tools and drive tool development," says mechanical analysis lead Jay Dike (8774). "On the mechanical side, we've been able to leverage ongoing work and computing resources funded by the Advanced Simulation and Computing (ASC) program."

Faster meshing, multiple codes

Among the advances are faster model meshing and new capabilities for using one analysis model in multiple codes. The work of Sandia's Design through Analysis Realization Team (DART) has resulted in improved quality assurance and model management.

"The use of computer modeling and simulation will have a transformational effect on RRW," says Artie. "In FY07 and FY08 the emphasis is scoping and design trade-off studies as well as specification of component environmental requirements with uncertainty quantification.

The ability to rapidly develop and execute models for design studies is critical and QMU has been implemented at the very start."

QMU (Quantified Margins and Uncertainties) is the application of science-based testing, together with modeling and simulation, to quantify design margins with consideration of known variabilities and uncertainties in the underlying systems, models, and databases. In other words, QMU tells you how close or far away you are from meeting the requirements.

"The goal is to have some impact up front, instead of assessing the design after it has been built," says Artie. "We are already seeing this in the mechanical area, where decisions are being made based on the computational data provided by Jay's team."

A critical role in qualification

Modeling and simulation will also play a critical role in qualification, supplementing the body of evidence for qualification, which has historically been based on testing and engi-

neering judgment.

Models will be used to make quantified statements of margins and uncertainties across a broad environment space — performance, survivability, and surety.

"For certain environments, most notably hostile environments where there is no adequate high-fidelity test capability, we anticipate that modeling will provide qualification evidence. Modeling will complement physical testing, resulting in a stronger qualification statement," says Jay.

RRW brings about a new paradigm for leadership

Sandia is applying many new tools and technologies to the Reliable Replacement Warhead (RRW) program, the first new weapons program in more than 20 years. A new paradigm for leadership — a shared role between Sandia/California and Sandia/New Mexico — is an important aspect that will enable success.

Although the bid for RRW officially was awarded to the Lawrence Livermore National Laboratory (LLNL)-Sandia/California team, Sandia/New Mexico will share in the responsibility. Sandia/California will continue to partner with LLNL on the warhead design, which includes systems qualification, surety, and gas transfer while New Mexico works on arming, fuzing, and firing.

The directors of Sandia's two weapons systems organizations — in California, Corey Knapp (8200), director of National Security Engineering, and in New Mexico, Bruce Walker (2100), director of Nuclear Weapons Systems Engineering — agreed early on that they would ensure a system leadership role for the other organization regardless of who won

the competition.

"Sharing the leadership of RRW ensures that we leverage the strengths of both sites — providing the best value to the nation — and that we continue to strengthen the system engineering capabilities at both the California and New Mexico sites," says Bruce.

One reason is simple logistics. RRW is about the size of the W76-1 and W80-3 combined. The project is simply too big for California or New Mexico to execute alone.

"I expect that this will hold true for future phases of RRW, a significant LEP [life-extension program], or other future weapons program," says Corey. "We'll work hard to ensure that there is a leadership role on one site and a meaningful role on the other site."

He also thinks the shared leadership is what is right for the country.

"It's not good for anyone — the nation, Sandia, or the individual sites — to be completely excluded from a system leadership role for a number of years," he says. "We are applying Sandia's resources in the best possible way to this program." — Patti Koning