

To: Anna Swertfeger, Chair  
LANL Employee Advisory Committee (EAC)  
From: Roger Byrd, EAC member  
Re: Employee view of security issues at LANL

Anna,

As you know, in addition to working on EAC, I'm enrolled in the Lab's Executive MBA program at UNM. One of my courses for Fall 2005—Ethical, Social, Political, and Legal Environment—included an assignment to write a paper on my workplace. My report, which was motivated by an employee's plea for someone to "tell us what really happened," describes the security issues behind the 2004 shutdown. The analysis raises questions at three levels:

- Can the Lab find a way through the classification and privacy restrictions to use security incidents as lessons-learned opportunities, like we handle safety problems? If not, can the restrictions at least be explained to show why we can't be told the whole story?
- We've often seen problems from poor communication between different pieces of the Lab—managers and non-managers, scientists and non-scientists, support and technical staff. In particular, the disconnect between the policymakers and the rest of us causes frustration, missed feedback, and dangerous mistakes. Cross-cutting organizations like EAC and the EMBA program promote discussions that break down those barriers, eliminate stereotypes, and establish trust. Can we encourage more opportunities?
- The Lab has long been out of step with the outside world, especially in its political viewpoints and business practices. Maybe being so different doesn't always mean our way is better, especially when we're dealing with our stakeholders—the media and public, or our sponsors and customers. The transition to the LLC is a time for changes, perhaps for the better. Can we learn to see ourselves as others see us?

The attached paper was reviewed by both classification and legal counsel. The few Lab employees who've read it found their time to be well spent, and I'd like to encourage its discussion by EAC or anyone else.

Sincerely,

Roger Byrd



LA-UR-

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# **Ethics, Crises, and Due Process: Security Incidents at Los Alamos National Laboratory**

Roger Byrd, EMBA 2004–06

Ethical, Social, Political, and Legal Environment (MGT 708)

## **1. Introduction**

My reason for this paper is summed up in the following quote<sup>1</sup> from the LANL Newsbulletin's Reader's Forum early in 2005, which refers to events around the Laboratory shutdown in the summer of 2004:

At least one thing could easily be done to raise the morale: tell us what really happened over at Dynamic Experimentation (DX) Division. Show us the evidence. Acknowledge all system failures. Convince us that the personnel actions are justified.

Few employees know even the basic facts that led to the shutdown, and almost none know the thinking behind the decisions made at the time. Even worse, there has been little discussion about how the events may have been related to others over the last 15–20 years or how those problems will be perceived and dealt with by a new contractor. Instead, the advice from our leadership, as represented by a comment made by Senator Pete Domenici, has been “Get over it.” Although many employees would be happy to put the events of the last decade behind them, others such as the writer above are still looking for some understanding that would make such closure easier. Given the schedule for announcing the new contractor, the last weeks of 2005 may be the last opportunity.

My own connection with the events is coincidental—I happen to know many of the people involved. Such broad connections are unusual at the Lab, because the pervasive habit of

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<sup>1</sup> Karen Pao, “Unfinished Business,” LANL Reader's Forum, January 6, 2005.

need-to-know restrictions results in most employees knowing only their immediate coworkers. An exception is the few employee committees with concerns that extend across the Lab both horizontally and vertically. For example, I've been on one committee that studied the salaries and wages of management, administrative, and technical workers; another addressed cross-cultural tensions between different ethnic and interest groups. In that case, gay and lesbian employees complained about a climate of fear and hostility, which led to a goal of providing a non-threatening workplace for everyone through the Lab's first code of ethics. The project was quickly adopted by senior management, but no accountability measures were ever approved. To continue those efforts, some members moved to the Employee Advisory Committee (EAC), the Lab's equivalent of the staff assemblies at other University of California (UC) campuses. Although not a designated employee representative, EAC provides a forum for open discussions, an upward channel for employee concerns, and a sounding board for management policies. As such, EAC is an obvious stakeholder in understanding the events of the last decade.

Finally, many of these events concern the handling of classified material, also an area of personal concern. In particular, I serve as an Authorized Derivative Classifier (ADC), which requires evaluating proposed publications on the basis of approved classification standards. My effort splits into two concerns: correctly identifying and interpreting the applicable guidance, and properly accounting for the items that contain that information. The consequences of failure in either area pervade much of my work. Security issues will therefore be the emphasis of this paper, although safety and accounting issues could have been included as well. The causes and effects of the problems in all three areas are often the same.

The most obvious applications of business ethics and law to the events at Los Alamos are

1) institutional social responsibility, 2) crisis management, 3) employee rights to due process, and 4) ethical decision-making. Given its history of government ownership and academic operation, the Lab's priorities were originally almost reversed from a typical business. Even today, public welfare remains paramount, financial constraints are almost absent, and legal and ethical concerns lie somewhere in between. Further, in a national security environment, crisis management may have little concern with public relations, employee rights can be severely limited, and the context for ethical decisions is decidedly unique. The latter are often viewed very differently by the Lab's university and government overseers. Academics and research favor the reasoned cause-and-effect arguments of teleological ethics, while government and security lean toward the rule-based procedures of deontological approaches. Stated differently, one side collects facts and then draws conclusions; the other begins with premises and eliminates conflicting evidence. To understand the events at Los Alamos, therefore, it is often important to consider the multiple viewpoints required in Neutral Omnipartial Rule Making, which combines the two approaches to produce a set of rules that should be fair to everyone. As expressed by a former CIA and Lab intelligence officer:<sup>2</sup>

On the wall of a classroom at Bozeman High School, I came across a quote by Goethe that neatly summarized what I believe is the root cause of this mess, "One man's word is no man's word; we should quietly listen to both sides."

Based on my experience, I would add the need to consider not just different viewpoints but individual motivations—what was someone really thinking?

Throughout, my understanding is based mostly on my own experiences and on the background readings and interviews in the Acknowledgements and Bibliography (see page 32).

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<sup>2</sup> Robert S. Vrooman, "What Went Wrong?," presented at the New Mexico Chapter of the Association of Chinese-American Engineers and Scientists (ACES) Annual Meeting and Symposium, February 19, 2000, Albuquerque, NM ([www.lanl.gov/orgs/pa/News/vrooman.html](http://www.lanl.gov/orgs/pa/News/vrooman.html)).

To compare that understanding with the view of the Lab as seen from the outside, however, the story will be told largely through quotes from government documents and news sources, with my additional comments then providing the context, continuity, and interpretation. Those comments are intended mainly for an audience of Lab employees and will probably seem terse, cryptic, and even mysterious to outsiders. That's partially the point—if readers have trouble understanding my retrospective analysis, how could the media, external policy-makers, and the public have been expected to make sense of the events as they unfolded? Finally, I must point out that the interpretations expressed herein are entirely my own. I'll be the first to admit that I may not have gotten everything right, and corrections are certainly welcome.

Section 1 has discussed my goals and reasons in choosing this topic and how it connects with business law and ethics. Section 2 summarizes the origins of the Lab and its development through the Cold War, and Sec. 3 covers the transition into the 1990's. Section 4 addresses the Wen Ho Lee case; and Sec. 5 covers the immediately subsequent "lost-and-found" disk drive incident. Section 6 introduces the continuing security problems of the early 2000's and concludes with the "phantom" disk drive incident in the summer of 2004. Section 7 briefly comments on even more recent incidents and summarizes my conclusions and my thoughts about the Lab's future.

## **2. Los Alamos: The First Half-Century**

Amazingly, the weapons laboratory known as Los Alamos was established within only a dozen years of the dawn of nuclear physics in the discovery of the neutron and nuclear fission.

As one<sup>3</sup> of the congressional reports describes the situation:

Los Alamos National Laboratory has played a key role in the history of the 20th Century. It helped end World War II, through the extraordinary efforts of the brilliant and patriotic individuals who gathered there to work on the Manhattan Project—chemists, physicists, soldiers, and many others from all over the country. Many were recent immigrants from other nations.

Despite their differences, a common purpose and destiny united these uncommon individuals. They won their race against time, and against a desperate and resourceful enemy who would stop at nothing to achieve world domination.

From the moment that President Franklin Roosevelt received Albert Einstein's 1939 letter outlining the explosive potential of atomic fission, scientist and government have worked in tandem—if not always in harmony—to build and maintain America's nuclear arsenal. So, from the very beginning, the science of Los Alamos has been closely tied to the government, in a long and productive partnership.

This passage concisely but implicitly lays the basis for many of the themes in the present analysis. In particular, scientists from different backgrounds, American and immigrant, achieved unprecedented success in developing new technology to secure national security. The significant point is that scientists, particularly an academic physicist named Robert Oppenheimer, have received most of the credit. The military is usually relegated to a supporting role, even General Leslie Groves, who not only ran the Manhattan Project but before that had built the Pentagon. Much of this bias is traceable to Vannevar Bush of MIT, the wartime coordinator of US scientific research. In order to cement the ties between science, industry, and the military that had been forged during the war, he later recommended the creation of the

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<sup>3</sup> Howard H. Baker, Jr. and Lee H. Hamilton “Science and Security in the Service of the Nation: A Review of the Security Incident Involving Classified Hard Drives at Los Alamos National Laboratory,” September 2000 ([www.fas.org/sgp/library/bakerham.html](http://www.fas.org/sgp/library/bakerham.html)).

National Science Foundation. An essay lays out his agenda:<sup>4</sup>

This has not been a scientist's war; it has been a war in which all have had a part. The scientists, burying their old professional competition in the demand of a common cause, have shared greatly and learned much. It has been exhilarating to work in effective partnership. Now, for many, this appears to be approaching an end. What are the scientists to do next?

It is the physicists who have been thrown most violently off stride, who have left academic pursuits for the making of strange destructive gadgets, who have had to devise new methods for their unanticipated assignments. They have done their part on the devices that made it possible to turn back the enemy, have worked in combined effort with the physicists of our allies. They have felt within themselves the stir of achievement. They have been part of a great team. Now, as peace approaches, one asks where they will find objectives worthy of their best.

Not only did physicists get most of the credit for winning the war, in this view they were then charged with the country's security and success going forward into the future.

Some perspective is important here. Science and technology, not military or economic power, were seen as central to the success of humanity. This unprecedented concept was bound to unravel eventually; it was just a matter of how and when. As a hint, this enterprise was to be carried out using an organizational structure modeled on universities, with a large faculty (the technical staff), a small staff (the support groups), and a miniscule administration (the managers). Nevertheless, throughout the 1950's and 60's the conduct of government-supported science developed mainly along the pattern established at Los Alamos and later passed to its sister Labs at Sandia and Livermore.

Even in the 1970's, with the Atomic Energy Commission morphing into the Energy Re-

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<sup>4</sup> Vannevar Bush, "As We May Think," The Atlantic Monthly, July 1945 ([www.theatlantic.com/doc/194507/bush](http://www.theatlantic.com/doc/194507/bush))

search and Development Administration and then the Department of Energy, it remained the assumption that science and engineering could solve all problems. This thesis began to unravel after Jimmy Carter's energy crisis abated of its own accord, and it frayed even further with Ronald Reagan's selling of the Strategic Defense Initiative as the ultimate solution to a never-ending arms race with the USSR. Perhaps the assertion was true, at least indirectly; shortly afterwards, the Soviet economy collapsed under the strain of trying to keep up with the US, and the Cold War came to a close. As recounted later, however, the official view of the importance of the Labs' mission was almost unchanged:<sup>3</sup>

While the Cold War has ended, the mission of LANL and the other national laboratories remains essential to the national security of the United States. Some of the finest scientists in the world have gathered there, and the Nation depends on their unique work in preserving our nuclear deterrent. It is therefore essential to preserve the ability of the laboratory to conduct the leading-edge science that has helped keep America strong and free for the past half-century.

The Cold War may have been over, but the Labs and their supporters were still looking more backward than forward.

In summary, the mythology that surrounds the origins of the Lab leads to two results that are important for understanding the subsequent events. First, the organizational structure was based on an academic framework, not a business model, with power concentrated in the technical staff, their group and division leaders, and the senior managers, all with scientific backgrounds. Support staff were of secondary importance, and they usually communicated with the rest of the Lab structure only at the highest levels of management. Second, the attitudes of the technical staff toward authority could not help but be distorted by their imagined place in

the heroic version of the Lab's history. Quoting again from a later report:<sup>5</sup>

One facet of the culture mentioned more than others is an arrogance borne of the simple fact that nuclear researchers specialize in one of the world's most advanced, challenging, and esoteric fields of knowledge. Nuclear physicists, by definition, are required to think in literally other dimensions not accessible to laymen. Thus it is not surprising that they might bridle under the restraints and regulations of administrators and bureaucrats who do not entirely comprehend the precise nature of the operation being managed.

This description fairly summarizes the situation entering the Lab's next half-century.

### 3. Transition to Crisis

In retrospect, events in the late 1980's and early 90's clearly set the stage for the crisis over the next 15 years. Acknowledged or not, the Lab's Cold War mission was gone, as evidenced by the stagnation of funding for the weapons program compared with that for new nonproliferation projects. More important, the generation coming into power in Washington no longer had served in WWII but instead grew up in the 60's. They were generally anti-technology, probably anti-war, and absolutely anti-nuclear—and they weren't awed by lectures from aging Lab scientists and managers. Among the early indications of trouble were the late-80's Congressional inquiries led by Sen. John Glenn and Rep. John Dingell. A later reference summarized their concerns:<sup>6</sup>

The weapons laboratories have opened up markedly to overseas visitors since the end of the Cold War. According to the GAO, the number of foreign visitors to the three laboratories has grown from around 3,800 in 1988 to 5,983 in 1994 and 6,998 in 1996.

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<sup>5</sup> The President's Foreign Intelligence Advisory Board (PFIAB), "Science at Its Best, Security at Its Worst: A Report on Security Problems at the U.S. Department of Energy," A Special Investigative Panel, June 1999 ([cio.doe.gov/Publications/Cyber/pfiab-doe.pdf](http://cio.doe.gov/Publications/Cyber/pfiab-doe.pdf))

<sup>6</sup> "Congress Warns Nuclear Labs of Spy Risk," *Nature*, Vol. 395, 15 October 1998.

Almost one-third of visitors now come from countries that the United States regards as “sensitive”—chiefly India, China and Russia.

The implications of these investigations were two fold. First, they mirrored the shifting focus of the nuclear threat from the Soviet Union to developing countries, and they reflected the growing importance of scientific research in those countries, not coincidentally including nuclear technology. More foreign research, of course, meant more post-doctorate students, many of them trained in US universities, where non-citizens dominated the enrollment.<sup>7</sup>

The next shock to the Lab’s system was the dramatic increase in regulatory oversight by agencies such as EPA and OSHA. A string of Tiger Teams invaded the Labs and demanded compliance with rules that were often more appropriate for industrial facilities than security installations and research laboratories. Unable to enlist scientists and technicians in constructive reforms, these outsiders set up parallel structures to adapt and implement the new mandates.

A perfect storm of mismatched requirements and funding ensued. The increasing numbers of regulatory administrators pushed the ratio between support and technical staff above 1:1 for the first time. Faced with declining budgets for the Lab’s traditional mission, management responded with a planned “reduction in force” (RIF) intended to restore parity as soon as the regulatory environment was back under control. Group leaders across the Lab were charged with identifying “nonessential” personnel, who were expected to seek employment elsewhere within the Lab or face the risk of termination.

These policies had several consequences, many of them complex and unintended. Understandably, the morale of the targeted employees plummeted, and labeling the support staff as

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<sup>7</sup> “Graduate Students and Postdoctorates in Science and Engineering,” National Science Foundation, ([www.nsf.gov/statistics/gradpostdoc/start.cfm?Date=1](http://www.nsf.gov/statistics/gradpostdoc/start.cfm?Date=1) ).

generally nonessential reinforced their status as second-class employees. Those employees, however, were also predominately local and Hispanic, which in the diversity-oriented political climate of the Clinton administration raised questions (and lawsuits) alleging racial discrimination. Many of the RIF'd employees then complained to their state representatives, who came to recognize their almost complete lack of political authority over northern New Mexico's largest single employer, operated by an entity headquartered in the distant state of California. The NM officials therefore allied with their counterparts in California, who subsequently passed a new law, the Higher Education Employee Rights Act (HEERA), which extended California labor law to cover Los Alamos employees. Negotiations between managers and employees over conditions of employment, that is, working conditions, were henceforth to be carried out only at arms' length.

Over time, the major effect of the RIF was therefore decreased communication and trust across the Lab, both between technical and support staff and between managers and line employees. Although the changes may not have been immediate, eventually they became a major factor in the way later crises unfolded.

A minor effect of the RIF, however, was the layoff of Sylvia Lee, a computer technician and the wife of weapons programmer Wen Ho Lee. As explained later,<sup>8</sup>

Sylvia Lee was involuntarily terminated at LANL during a reduction-in-force in 1995. Her personnel file indicated incidents of security violations and threats she allegedly made against coworkers.

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<sup>8</sup> Fred Thompson and Joseph Lieberman, "Department of Energy, FBI, and Department of Justice Handling of the Espionage Investigation into the Compromise of Design Information on the W-88 Warhead," August 5, 1999 ([www.senate.gov/~gov\\_affairs/080599\\_china\\_espionage\\_statement.htm](http://www.senate.gov/~gov_affairs/080599_china_espionage_statement.htm)).

#### **4. The Wen Ho Lee Case**

I have pointed out that the increasing percentage of visitors from sensitive countries in US graduate programs in science and engineering coincided with an increase in the number of such visitors to the Lab, which led to growing concern over potential security problems. For China especially, the late 90's saw increased suspicion because of alleged connections between Clinton campaign financing and export control violations. Although Wen Ho and Sylvia Lee were naturalized American citizens with high security clearances, in this environment their behavior in the 80's had made them likely candidates for particular scrutiny. The resulting events progressed in three overlapping stages. First, there was an indication that the Chinese had made progress on advanced weapon designs, and the Lees were identified among the more likely sources, with some justification. Second, a search of Wen Ho Lee's office and computer revealed glaring security violations, which were serious enough on their own but also lent credence to the espionage allegations. Finally, the handling of the subsequent investigation and the circumstances of Lee's detention raised the possibility of selective prosecution based on racial profiling, which eventually led to a plea bargain in which all but one of the charges were dismissed. The extensive publicity resulted in detailed but contradictory reporting, so there is no need here for an exhaustive recapitulation of the events. Furthermore, many of the topics verge on highly classified weapons design information, and I must be careful not to comment on its accuracy. Instead, I will simply quote from several public documents in order to illustrate the issues, without commenting on whether the design information therein is accurate or not. I will conclude with my own version of the important points.

A summary of the above facts was later published in a book review in *The Economist*.<sup>9</sup>

The investigation that had fingered Mr Lee was led by Notra Trulock, the intelligence chief at the Department of Energy, who combined the zeal of Inspector Javert with the ability of Inspector Clouseau. He believed that the classified information must have come from a weapons lab. But a subsequent review indicated that the source could have been any one of dozens of contracting companies or literally thousands of individuals. The FBI was unable to obtain any evidence suggesting, let alone proving, that Mr Lee was a spy. It did, however, establish that he had built up a huge unauthorised collection of computer codes for the design and testing of nuclear weapons, and that he had placed them on an open network accessible to the outside world via the Internet.

The allegations of espionage and the undeniable (and admitted) security violations quickly led to a congressional investigation, the Cox Commission, in which information provided by the DOE Office of Intelligence figured prominently. The critical conclusion of the section concerning the security breach at Los Alamos states the following:<sup>10</sup>

The PRC stole design information on the United States' most advanced thermonuclear weapons as a result of a sustained espionage effort targeted at the United States' nuclear weapons facilities, including our national weapons laboratories. The successful penetration by the PRC of our nuclear weapons laboratories has taken place over the last several decades, and almost certainly continues to the present.

Even the most arrogant of Lab scientists would question the inverted logic that Chinese espionage was the only reason behind the increase in Lab visitors and therefore the obvious source of advances in Chinese weapon designs. Why not instead assume that all those Chinese students and researchers were proof of growing foreign investment in nuclear physics

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<sup>9</sup> "Trade Secrets: Nuclear Espionage," *The Economist*, Feb 9, 2002.

<sup>10</sup> Christopher Cox, "Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China," ([www.house.gov/coxreport/](http://www.house.gov/coxreport/)).

and engineering programs, which were eventually quite capable of developing their own indigenous weapon designs? Not surprisingly, a subsequent review of the evidence by a respected panel associated with Stanford University was harshly critical of the Cox report's findings:<sup>11</sup>

In short, the discussion of Chinese politics, economic modernization, and nuclear doctrine lacks scholarly rigor, and exhibits too many examples of sloppy research, factual errors, and weakly justified inferences.

As far as the significance of the information downloaded by Lee, the panel also strongly disagreed with the assertions made by the committee. In detail:

Similarly, the importance of the much-publicized episode of the Los Alamos scientist Wen Ho Lee is difficult to assess. Lee was removed from his job on grounds that he transcribed classified-weapons-related computer codes to an unclassified system. No explanation is given for why he did this and no evidence seems to indicate that the information once transcribed was in fact made available to a foreign country. Lee has not been charged with any crime. The codes in question are the so-called legacy codes which contain information about the physical processes relevant to the behavior of nuclear weapons such as high-pressure hydrodynamics, radiation transport, etc. They also contain historical information. Clearly such codes, should they be made available to a foreign country, could add to the basic knowledge within that country relating to weapons physics design, but the usefulness of that knowledge clearly depends on the level of erudition already existing there. It is dubious that these codes would have materially aided the Chinese nuclear weapons program. China has had a highly competent nuclear weapons program, and we should note again that it has nuclear weapons experience of thirty-five years. Such codes would be quite difficult to interpret but possibly could assist the Chinese in general background information. They would not be sufficient to lead to a new design, especially not one that could be deployed without tests.

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<sup>11</sup> Alastair Iain Johnston, W. K. H. Panofsky, Marco Di Capua, and Lewis R. Franklin, "The Cox Committee Report: An Assessment," December 1999 ([cisac.stanford.edu/publications/10331/](http://cisac.stanford.edu/publications/10331/)).

At the extreme, the skepticism about the potential value of the design information is illustrated by a simple statement from a different source:

Einstein was right. There is no secret. One of the most pernicious effects of secrecy is to cause nuclear weapons to be overvalued. When a battalion of bureaucrats is searching the archives for misplaced secrets, the impression is given that something must be worthy of all this protection.<sup>12</sup>

To many Lab employees, the truth is probably between these divergent statements. The downloaded codes and other information may not have been sufficient to allow the Chinese to develop and field advanced weapons without testing, but they would certainly have provided valuable assistance to China or others in developing less sophisticated designs.

In the end, the public perception was that the espionage case was driven almost entirely by racial stereotyping. An example is provided by the following commentary<sup>13</sup>:

The latest developments at the Los Alamos Lab illustrate how racism hurts us all by blinding us to real issues and dangers. A panic reaction has placed a most likely innocent scientist, Wen Ho Lee, into completely unnecessary solitary confinement.

One result was a call for Asian-American students and scientists to shun employment at Los Alamos, a backlash that was probably misdirected. Referring to the original DOE investigation, an account by an intelligence officer at the Lab laid the blame elsewhere:<sup>2</sup>

The administrative inquiry (AI) that identified Wen Ho Lee as the only suspect in the Kindred Spirit Case was seriously flawed. The DOE CI Procedural Guide of November 1995 provides clear instructions on how AIs are to be conducted.

1. “(DOE) CI personnel must insure the security of the inquiry/investigation and protect the reputations of all, even the “evident” guilty parties, until such time guilt or

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<sup>12</sup> Howard Morland, “What's left to protect?,” Bulletin of the Atomic Scientists, November/December 2000 ([www.thebulletin.org/article.php?art\\_ofn=nd00morland](http://www.thebulletin.org/article.php?art_ofn=nd00morland)).

<sup>13</sup> C. Drew (Executive Director, Chicago Uptown Multi-Cultural Art Center), “Racism Places Scientist in Cruel Confinement,” [www.art-teez.org](http://www.art-teez.org).

innocence is proved through administrative or legal procedures.”

2. “(DOE) CI representatives will be judicious at all times, to ensure the reputations, character and dignity of individuals involved in any CI inquiry are protected.”

Let me repeat the key point, even the evident guilty parties shall have their reputations, character and dignity protected.

Thus, while racial stereotyping may well have been an issue, its origin was probably elsewhere.

I next turn to the issue of the downloading itself, regardless of any intent of espionage. Returning to the previous public commentary:<sup>13</sup>

There is not a shred of evidence that Mr. Lee did anything more than work on a network computer using only password protections to prevent unwarranted access and to take work home with him.

I believe every Lab employee who handles classified material would find this cavalier statement chilling in the extreme. The best analysis is contained in classified forensic study<sup>14</sup> presented jointly by Lee’s supervisor and a computer expert, which reconstructed the degree, method, and pattern of Lee’s transfers and his subsequent efforts to alter their records. Lee’s subsequent assertion was his behavior was common among his colleagues, yet the reconstruction found no instance of similar actions by any other employee. In the end, whether or not someone believed the downloaded codes were jewels or junk, no one else violated the existing security regulations nearly so grossly and intentionally. This understanding was summarized in the Stanford critique of the Cox report:<sup>11</sup>

Once individuals have received clearance, *they have to be trusted* to handle such information in accordance with regulations which govern the handling and storage of classified information and materials. Technical barriers are erected that impede unau-

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<sup>14</sup> Cheryl Wampler and Charlie Neil, “Cyber Forensic Study of the Wen Ho Lee Case,” Classified LANL Director’s Colloquium, August 8, 2003.

thorized transfers; such barriers make unauthorized transfers more difficult and can prevent losses by inadvertence. Such barriers cannot in themselves, however, be sufficient to totally prevent unauthorized transfers. After all, much classified information is contained within the brains of cleared individuals and thus control of information must always to some extent rely on *trust*, aside from management of materials, documents, and computer programs.

Lee's supervisor goes on to make two other important comments. First, he explained his understanding of the social contract between cleared employees and the government: in return for access to sensitive information, employees accept a sacred trust to protect that information, and employers agree to an assumption of integrity and diligence without requiring intrusive inspections or monitoring. Second, before entering Lee's office with express permission, the supervisor could not accept that any member of his team, including Lee, would have violated that contract. Within minutes, however, the violations he discovered left his faith in that assumption, and eventually that of many other Lab employees, completely shaken.

I conclude my comments on the Lee incident with my own opinions. First, it is unclear whether China received advanced design information from Lee or anyone else at the Labs. However, even if he had no intention of providing anyone with classified information, Lee's behavior over the years was certain to arouse suspicions. Second, the downloaded information certainly represented a grave security violation, but it also doesn't establish intent to commit espionage. As Lee explained later,<sup>15</sup> the downloaded information addressed his insecurities about his position at the Lab and the reliability of the backups that protected his work, which led him to save benchmarked sets of interrelated codes, inputs, and outputs on tapes that he could physically hold in his own hands. This desire for safety was strong enough to

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<sup>15</sup> Wen Ho Lee and Helen Zia, "My Country Versus Me: The First-Hand Account by the Los Alamos Scientist Who Was Falsely Accused of Being a Spy," Hyperion, New York, NY (2001).

overcome the limited protections in place at the time, which were based on information storage in the form of bulky documents and limited human memories, not modern computer networks and media. Finally, I have to agree Lee's treatment after his arrest was undeniably harsh and probably not justified by the need to determine the fate of his missing backup tapes. That assessment, however, is made with the benefit of hindsight not available at the time.

In the end, I believe the discovery of the downloaded information and Lee's violation of the social contract governing classified access marked the turning point in the history of the Lab. Never again would Lab procedures for handling classified electronic information be so prone to diversion, and never again would Lab employees be given so much latitude in its handling and control. In short, in security and in other areas, implicit trust was being replaced by the need for documented procedures. These changes subsequently led to a succession of incidents with handling classified computer media, the next of which occurred while Lee was still in jail awaiting trial.

## **5. The "Lost-and-Found" Disk Drives**

The Lee case highlighted the two problems with the Lab's computer security: 1) control of file transfers at the interface between classified and unclassified systems, and 2) tracking the creation, transfer, and disposal of classified removable electronic media, or CREM. An immediate response was to shut down the classified computer systems and inventory the media located in the vaults and safes throughout the Lab. Their proliferation into the hundreds of thousands had come about largely because rapid advances in storage technologies occurred at the same time as the relaxation of Cold War security controls. Many of the scattered floppies, diskettes, and tapes had been created for one-time presentations or short-lived projects, and those not immediately shredded were often archived with little or no documentation about

their contents. For expediency, the post-Lee inventory therefore had to assume that materials found with inadequate identification would be given bar-code labels at the highest classification category for their particular safe or vault, reflecting information on national security, weapons design, or intelligence. This precedent of mixing classification category with media accountability would eventually have serious consequences in later incidents. The number of items was also magnified by the directive that classified and unclassified systems would henceforth be separated by an “air gap,” meaning that files could be transferred not electronically but only by being copied to physically trackable media. Each transfer into a classified system or between classified computers on different networks would therefore generate another piece of CREM that had to be inventoried and tracked. Further, because there were initially neither approved facilities nor procedures for destroying any new or existing items, the numbers increased even more rapidly.

In this environment, the next serious computer security incident was already set to occur, and it happened only a little more than a year after the Lee incident. As before, the details of what actually happened are impossible to reconstruct, so I will illustrate the confusion within and outside the Lab by quoting the reactions from public sources. In each case, however, the results are unclassified: the security inquiries are now closed, and no classified information was known to be compromised. Thus, as summarized in an early *Nature* report:<sup>16</sup>

The Los Alamos National Laboratory in New Mexico is facing new embarrassment over its security procedures this week, after admitting that it has lost computer hard drives containing classified information about the design of nuclear weapons. The drives were found to be missing when the laboratory was being cleared of important equipment as brush fires approached last month. “This is an extremely serious matter

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<sup>16</sup> Rex Dalton, “Los Alamos ‘Loses’ Key Weapons Data,” *Nature*, Vol. 405, 15 June 2000.

and we are taking swift actions to deal with it,” laboratory director John Browne said on Monday. The laboratory is run by the University of California on behalf of the Department of Energy. Browne said that a joint investigation is being carried out by the department and the Federal Bureau of Investigation. He has promised “appropriate disciplinary actions” if individuals are found to be responsible. The missing data are believed to include information about how to defuse nuclear devices in case of emergencies, as well as data on Russian weapons. A statement from the laboratory said that efforts were continuing to locate the missing media “or to determine if they were inadvertently destroyed”.

As in the Lee case, it is informative to contrast the *Nature* version with that from a more general source such as CNN:<sup>17</sup>

[One member of Congress] added, “I think when you start with the presumption that because you've got good, dedicated Americans there, that rather than getting started with a criminal investigation, you're delaying an investigation of all of those who had access.”

Even more damaging was the public reaction when the disks were recovered shortly thereafter. Again quoting from CNN:<sup>18</sup>

Two missing computer hard drives containing sensitive nuclear weapons data from the Los Alamos National Laboratory have been recovered, federal authorities announced Friday. The drives were found behind a copy machine in a secure area of the laboratory that had previously been searched [...]

Several members of the House Commerce Committee [...] noted that “virtually every loss of weapons information at Los Alamos has involved lab employees,” and that the employees were most likely responsible for the misplaced hard drives.

Once again, the CNN response contrasts with that in *Nature*:<sup>19</sup>

The most plausible scenario for what happened is that one or more such volunteers

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<sup>17</sup> Amy Paulson, “Senate Hearing Examines Loss of Nuclear Secrets at Los Alamos Lab,” *CNN*, June 14, 2000.

<sup>18</sup> Dana Bash, John King and Terry Frieden, “Missing Nuclear Secrets Found Behind Los Alamos Copy Machine,” *CNN*, June 16, 2000.

<sup>19</sup> “Los Alamos Deserves Better,” *Nature*, Vol. 406, 6 July 2000.

acted irresponsibly, did not record taking the disks, then found themselves in the middle of a hunt. At some point, they decided to return them by dropping them behind a photocopier.

After an intense investigation, *Nature* later concluded:<sup>20</sup>

The FBI “was unable to determine responsibility for the disappearance ... and found no evidence that the classified information contained on the hard drives had been compromised”, the energy department said in a statement. At least four Los Alamos employees had been investigated in connection with the disappearance.

Again, it is important to remember that during this time Lee had been arrested just over a year earlier and was awaiting trial.

Thus began another set of external reviews, this time by the National Academy of Sciences and yet again by Congress. The former commented on the cumulative effect on the morale of the Lab’s workforce:<sup>21</sup>

These have been hard times at Los Alamos, between the tragic fire and the security issues that have dominated the headlines in recent months. In visiting Los Alamos, we came to understand the very different perspective the scientists there bring to *all* issues—including security—and view that difference as a source of strength, not weakness. We saw the anger and anxiety there, and it causes us great concern. If these problems are not addressed, the cutting-edge science that has served America so well will be placed in jeopardy.

It is difficult to evaluate how this situation will evolve. On one hand the “remedial” security programs may in time restrict their scope to protecting truly important and critical elements of information, such as detailed design of nuclear weapons, military operations, and the like. Alternatively, the hysteria induced by the “spy” reports, such as that of the Cox Commission, may lead to a widening scope of restrictive practices,

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<sup>20</sup> Irwin Goodwin, “Weapons Labs Escape FBI Action,” *Nature*, Vol. 409, 1 February 2001.

<sup>21</sup> Wolfgang K. H. Panofsky, “Perspective: National Security and Scientific Communication,” *Proceedings of the National Academy of Sciences*, Vol. 97, May 9, 2000 ([www.pnas.org/cgi/content/full/97/10/5034](http://www.pnas.org/cgi/content/full/97/10/5034)).

severely damaging both national security and scientific productivity. Let us hope for the best!

Fortunately, even the Lab’s harsher critics were sympathetic to the idea that the increasing confusion around the procedures for handling CREM was at least partly to blame, not just employee carelessness. A White House report listed the following recommendations under the category of “Personnel Actions”:<sup>22</sup>

Define security to extend beyond the traditional elements of physical protection (guns, guards, gates), to include adequate attention to the morale and motivations of laboratory employees. Employees must be provided with the necessary resources and modern facilities necessary for their work, and they should be consulted in matters that affect their mission, including implementation of security policies.

Educate and train LANL personnel. These programs should be designed to reduce the “clash of cultures” between science and security, including through open discussion of this historic tension. It should instill improved security consciousness, animated by understanding of national security risks, rather than by fear of job loss or prosecution.

Eliminate the “zero tolerance” policy on information security, so that security incidents can be reported and remedied without employee fears of undue reprisals.

To paraphrase and reiterate:

*Employees should be provided with necessary resources and consulted about security policies; training programs should include open discussion and instill understanding rather than fear; security incidents should be reported and remedied without undue reprisals.*

Note in particular the recognition that the best approach combines the rule-based and reasoning-based approaches in a framework that is complementary and not adversarial. These recommendations should be remembered in weighing the appropriateness of the response to the subsequent events.

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<sup>22</sup> The President’s Foreign Intelligence Advisory Board (PFIAB), “Science at Its Best, Security at Its Worst: A Report on Security Problems at the U.S. Department of Energy,” A Special Investigative Panel, June 1999 ([cio.doe.gov/Publications/Cyber/pfiab-doe.pdf](http://cio.doe.gov/Publications/Cyber/pfiab-doe.pdf)).

Thus, Los Alamos ended the 90's very differently from how it began, under a cloud of uncertainty and criticism, with growing rifts between its remaining supporters and the inside world, between managers and employees, and between the technical and support staff.

## **6. Security Problems in the Early 2000's**

Not surprisingly, the problems with handling CREM continued almost unabated and reached a climax in the summer of 2004. To appreciate the environment, it is helpful to review at least one incident that occurred earlier and its circumstances, which illustrate many of the difficulties encountered with CREM tracking. The details are available in congressional testimony by the senior Lab manager for the affected organization:<sup>23</sup>

[A group leader in the Security Division] said that a bar coded CREM was not in the safe it should be, and that a search of that safe did not result in finding it; the item was listed as a hard drive. ... The next morning, [his team] came to my office and presented a plan to do a wall-to-wall search of the entire group. They estimated it would take well into the weekend to check and recheck all of the inventory and to search all of the physical space. [...] At this meeting, [the group leader] could not articulate in any way what the missing item was used for, or what information it might contain. A draft of the written report was reviewed at this meeting, and it did not make sense to me on two accounts: 1) It said the hard drive was lost or missing, when clearly in point of fact, the search was still ongoing; and 2) That someone was in the hospital, and that is why we could not explain the inventory difference. In either case, it would require a full inquiry to determine if something was lost or missing, and if all pertinent witnesses had been contacted. [Over the weekend,] I met with [them] to hear their report on the wall-to-wall search. They explained their methodology for the search and detailed their activities over the previous 72 hours. They then told me that they had found the bar coded

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<sup>23</sup> Mr. Stanley L. Busboom, "Prepared Witness Testimony, Procurement and Property Mismanagement and Theft at Los Alamos National Laboratory," The Committee on Energy and Commerce, Subcommittee on Oversight and Investigations, March 12, 2003, ([www.lanl.gov/news/index.php?fuseaction=nb.story&story\\_id=3604&nb\\_date=2003-03-14](http://www.lanl.gov/news/index.php?fuseaction=nb.story&story_id=3604&nb_date=2003-03-14)).

item and that it was a carrier without a hard drive in it. This was an interesting development in terms of reconciling the inventory, but it did not address the fundamental question of whether or not classified information was potentially compromised.

Note in particular

- the item was found to be absent from where it was expected to be;
- exhaustive attempts were immediately undertaken to attempt to resolve the discrepancy;
- the additional information initially only made matters more confusing;
- the final assessment supported the occurrence of an innocent and relatively minor accounting error; yet
- it could never be established exactly what had happened or what the CREM may have contained.

The last concern, of course, illustrates the consequences of remarking media at higher classification levels without regard to its actual information content. Unfortunately, there were other incidents during this period that inherited the same problem. In addition, the conduct of the investigation appears to have shifted from an assumption of innocence until proven guilty to something closer to the opposite extreme.

The capstone of these incidents, the one that largely precipitated the shutdown during the summer and fall of 2004 and extended into early 2005, was referred to in the Introduction to this paper. Once again, items of CREM were found to be out of place. As before, I will first review the public accounts. In this instance, however, I will then supplement those accounts with additional information that is not commonly available.

I begin with a quote from *Newsweek*:

By late last week, with the disks still unaccounted for and the Department of Energy breathing fire, an angry Peter Nanos, the lab's director, notified his 12,000 employees that all work at Los Alamos would stop until the safety and security snafus were re-

solved. “People in Washington just don't understand how any group of people that purports to be so intelligent can be so inept,” Nanos told staffers.

The digital security breaches are the third in just eight months—and by far the most serious. Despite five years of efforts to plug security gaps that surfaced when nuclear scientist Wen Ho Lee was caught improperly downloading classified data, Los Alamos still manages to embarrass the DOE. Nanos hasn't entirely ruled out theft, but says it's “highly unlikely” that an outsider or terrorist got hold of the disks. He blames Los Alamos scientists who think they are too busy to follow security protocols that require them to use bar-code scanners to check computer disks in and out of lab safes. “It's possible a number of people may have to go to prison over this,” said Rep. Joe Barton, chairman of the House energy and commerce committee. “There's probably better security at the Ennis Public Library over CDs and videos.”<sup>24</sup>

And the story continues in *Nature*:

The plagues afflicting Los Alamos National Laboratory in New Mexico are beginning to reach Biblical proportions. Since 1999, when the lab became the target of a so-far inconclusive probe into the apparent leaking of warhead design details to China, it has endured multiple security crises, forest fires and congressional investigations into the alleged theft of computer equipment by employees. This summer, more computer disks containing classified information have disappeared, causing Peter Nanos, the lab's director, to place 19 employees on administrative leave and suspend all research activities indefinitely.

The loss of the storage devices is LANL's third security failure in eight months. Last December an inventory revealed ten storage devices were missing, then in May it was found that a computer device had been destroyed without proper documentation. In the current case, two missing devices were found misplaced in a high-security area, but two others remained unaccounted for as of 19 July—all came from the weapons physics directorate.<sup>25</sup>

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<sup>24</sup> Andrew Murr, “The Secret Facility That Can't Keep Its Secrets,” *Newsweek*, July 26, 2004.

<sup>25</sup> Rex Dalton, “Los Alamos Grinds to a Halt after Classified Information Vanishes,” *Nature*, Vol. 430, 22 July 2004.

The lock-down at Los Alamos has, according to senior scientists there, had a profoundly negative impact on laboratory morale, which was already beaten down by the prospect of staff losing their valued academic affiliations with the University of California if it loses the contract. And Nanos has blasted his own staff for what he termed a “cowboy culture” at the laboratory; the tone of his public statements suggests a frightening gulf between the leader and the led.<sup>26</sup>

For an outsider, it’s hard to imagine that conditions at Los Alamos National Laboratory in New Mexico could get much worse. When two disks containing classified data went missing last summer, federal investigators descended on the lab, operations were suspended for months, and scientists were berated as “buttheads” by Peter Nanos, the lab’s director. Now, it turns out, those disks never existed.<sup>27</sup>

Senator Pete Domenici (Republican, New Mexico), who chairs the Senate committee that oversees the lab, says he now suspects a clerical error. Sources at the lab have suggested that security-coded labels were made up for disks that were never actually created.<sup>28</sup>

[As Senator Domenici explained,] “It may be that what we have here is a false positive—the system says something is missing when it is not. And just as if it were a medical test, it is better to find out the inventory was wrong than that the disks were actually missing. But this entire situation only reinforces that we need to improve the inventory system.”<sup>29</sup>

Even in these public accounts, the similarities to the previous case of the bar code applied to the disk carrier are already unmistakable.

Let me now, however, provide some additional details. Almost a year earlier, in the fall of 2003, the Lab was organizing an international conference. Although some speakers were

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<sup>26</sup> ‘Fear and loathing at Los Alamos,’ *Nature*, Vol. 430, 12 August 2004.

<sup>27</sup> “Bad faith at Los Alamos,” *Nature*, Vol. 434, 10 March 2005.

<sup>28</sup> “Did Extra Label Cause the Scare that Shut Down Los Alamos?,” *Nature*, Vol. 430, 19 August 2004.

<sup>29</sup> Sen. Pete Domenici, “Statement on LANL Security Investigation,” Tuesday, August 10, 2004. ([domenici.senate.gov/news/topicrecord.cfm?id=225231&code=DOELabs](http://domenici.senate.gov/news/topicrecord.cfm?id=225231&code=DOELabs) )

bringing unclassified presentations on electronic media, for simplicity it was decided to use a single classified projection system accredited at the highest level necessary, for weapons design information. Because the unclassified disks would therefore be inserted into a classified computer, they would then become CREM and must be marked, bar-coded, protected, and inventoried accordingly. The organizer therefore sent a young technician to the vault custodian to get more than enough bar-code labels for the number of unclassified items that were eventually brought. The custodian issued the labels and entered them into the tracking database. They were then passed to the technician running the projector. As they were needed, the technician affixed them to the unclassified media, which were then re-marked as CREM containing design information. Afterwards, the collected disks were returned to the custodian, but not the excess labels—the first oversight in the long chain of events. The custodian then made confirming entries in the tracking database for the returned disks but did not inquire about the two missing labels, thereby missing a chance to catch the oversight. Given the system's chronic problems with disks and labels becoming separated, someone should have recognized the potential for later problems.

Fast-forward to the spring of 2004. Faced with the growing number of pieces of CREM, UC decided to separate items marked as containing information on national security versus weapons design, the latter to be handled and tracked separately as accountable CREM, or ACREM. This solution immediately justified the claim of a dramatic reduction in the number of accountable items, but it made their handling and tracking even more cumbersome. Even worse, employees' questions about how to handle the most troublesome aspects of the new system were repeatedly turned aside with warnings to anticipate all possible difficulties and follow the rules perfectly—or else. As a result, the barcodes issued for the conference disks

were now associated with a set of ACREM items, whether or not the disks contained any weapons design information or even existed at all. As a check, the physical items were supposed to be verified as part of the initial inventory, which required two signatures, with a second employee verifying the custodian's inspection. The second employee later admitted that she had only taken the custodian's word for having inventoried the safe and seen the two bar-coded disks. That acceptance compounded the serious violation committed by the custodian, and the stage was now set for another security incident.

Several months later in July, a researcher moved two other disks—real ones—from one site to another without their transfer being recorded—another violation. As in previous cases, the discovery of their absence triggered a thorough search and inventory. Although the disks were soon found and the unrecorded transfer resolved, the search also turned up the discrepancy between the issued labels, the number of disk drives, and the incomplete inventory. The people best able to straighten out the problem were the custodian and perhaps the conference organizer, but the custodian was too frightened to be forthcoming, and the organizer was away in Washington. When contacted by a manager, it was agreed with approval up to the level of associate director that consultation over a secure phone line from DOE headquarters would be permissible. The two extra bar codes were never found, and only after the organizer returned to work did it become apparent that the corresponding disks had never even existed. It took weeks, however, to be able to reconstruct the events sufficiently to support that conclusion convincingly.

Unfortunately, by that time the inquiry had already taken on a life of its own, with the consequences described in the news reports above. Based on the date of Sen. Domenici's press announcement about a "false positive," the essential facts were acknowledged to UC and gov-

ernment officials within a few weeks, on the same day that UC President Bob Dynes conducted an all-hands meeting and implored employees to “help me to help you.” Nevertheless, it would be many more months before any official acknowledgement was released. The employees terminated were the custodian, the checker, and the organizer. Disciplinary measures were also taken against at least the projector technician, the researcher who moved the other disks, and successively higher line managers up to the division leader. Clearly, the previous warning from the White House report had been forgotten: *security incidents should be reported and remedied without undue reprisals.*

One cannot help but observe that this account scarcely supports the allegation of a “cow-boy culture” at the Lab, any more than earlier accounting incidents supported a “culture of theft.”<sup>30</sup> Further, blame for the incident should also be spread across all three categories of employees—technical, support, and management—not just directed at scientists, as many have felt. Finally, management, whether at the Lab or higher, needs to reconsider their quick-response approach to crisis management: “Ready, fire, aim!” may not always be a good strategy.

I conclude with a slight paraphrase from an earlier review of the Lee incident:

Science is a progressive, cumulative, self-correcting system of inquiry. Error is sooner or later corrected by experiment or more careful analysis. Yet there are still embarrassing moments, in other words, messes. [Internal security], on the other hand, does not have an empirical tradition. It is a static body of dogma, which to stray from is to risk having one’s sword broken and buttons stripped.<sup>2</sup>

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<sup>30</sup> Dr. John C. Browne, “Prepared Witness Testimony, Procurement and Property Mismanagement and Theft at Los Alamos National Laboratory,” The Committee on Energy and Commerce, Subcommittee on Oversight and Investigations, March 12, 2003, ([www.lanl.gov/news/index.php?fuseaction=nb.story&story\\_id=3604&nb\\_date=2003-03-14](http://www.lanl.gov/news/index.php?fuseaction=nb.story&story_id=3604&nb_date=2003-03-14))

## **7. Conclusions and Future**

Lab Director Nanos resigned and moved to Washington in the first half of 2005, and most of his immediate deputies are assumed to be leaving under the new contract. At the all-hands meeting announcing the transition, an employee asked whether some of the earlier decisions might be reviewed; Bob Kuckuck, the new acting director, and Bob Dynes, the UC president, appeared to be open to the suggestion, but Bob Foley, the UC vice president for Lab management, was absolutely opposed. DOE secretary Samuel Bodman and NNSA administrator Linton Brooks made no comment. As stated at the outset, long-time Lab supporter Senator Pete Domenici advised everyone to “get over it.” Unfortunately, however, carrying the present misconceptions forward into the new contract era may prevent any learning from past mistakes. For example, Lab internal security officers still consider foreign visitors and arrogant staff to be their major obstacles. The first assumption led off the original Lee espionage investigation, the second closed out the final debacle of the misdirected disk labels.

There have been other incidents since Director Kuckuck took over, most notably in safety. They have been fully acknowledged but have failed to generate much adverse publicity. Significantly, the Director’s statements to employees have generally followed the White House recommendations given above.<sup>22</sup> In particular, he has publicly agonized about the underlying reasons for the occurrences, with the conclusion that Lab employees’ historic culture of heroically overcoming all obstacles may be at least partly to blame.

In the end, researchers at the Lab are pragmatically goal-oriented. They welcome the chance to tackle complex, difficult, and important problems, and their greatest reward is often the satisfaction of having matched wits with those problems and come out ahead. Intrinsicly, theorists agonize over alternative derivations, experimentalists grapple with systematic

errors, and everyone struggles to reach elegant solutions within the limited resources of time and budget. Meeting the safety and security requirements just adds another set of constraints, another dimension of the puzzle to be solved. As more requirements are added, the resources remaining to address the original problem must necessarily decrease. In the short term, the only option will be to scale back the challenge of the proposed problems, which in the long term will be self-defeating for the researcher and the Lab.

In the eyes of the new contractor, advice from the employees of a failed predecessor may not be especially welcome. I've therefore tried to simply review the problems and not propose any solutions. I instead close this discussion with a final quote from an outside source:<sup>31</sup>

What Los Alamos has given the United States and its allies over its distinguished scientific and technological lifetime is a special kind of science-based security founded on four interlocking, essential ingredients: excellence, openness, leadership and oversight. All four were put in place in its earliest days; all four have been retained up to the present day; and, sadly, all four are now at risk.

For this paper I have attempted to explain how the concepts of an ethical, social, political, and legal environment (ESPLE), as well business management in general, can be applied to decisions at the Lab. In particular, I set out to apply those concepts to the events that led to the Lab suspension of operations in 2004. Understanding those events, however, required beginning with the Manhattan Project in World War II. In essence, the US Army and the University of California ran a highly secret project to develop the atomic weapons that ended the war with Japan. The result was a Lab culture based on three ideas:

- science and technology can solve problems of all kinds for the nation and mankind in general;

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<sup>31</sup> "Science-Based Security Under Threat," *Nature*, Vol. 407, 28 September 2000.

- universities provide the model for the Lab structure, with technical staff, support staff, and managers, in decreasing order of importance; and
- communication should be limited to as few employees and topics as possible.

These statements are certainly at odds with traditional business missions and strategies.

The segmentation poses particularly serious problems for ethical decision-making, which requires considering all sides of an issue and coming to a consensus set of rules that are fair for everyone. Only a few Lab organizations can provide a forum for such as discussion across the different boundaries. One is EAC, the Employee Advisory Committee, which corresponds to the staff assemblies at other UC campuses. As an EAC member, I have frequently been asked to consider issues of communication, accountability, and employee due process, often involving safety and security. The latter area overlaps with my background as an ADC, or Authorized Derivative Classifier. In turn, classification decisions are often made within the larger context of crisis management, which returns to the original focus of this paper, the events at the Lab in 2004.

The presentation of this paper handily illustrates these different issues. While many employees across of the Lab would like to know more about these events, those discussions raise a host of legal, privacy, and classification questions. For example, a book on the Lee case might argue that comparisons between US and Chinese weapons programs might show that Lee was guilty of espionage, but such a discussion would easily be classified. Similarly, discussions about downloaded tapes or missing disks that might reveal their contents or location are also classified. All Lab employees therefore appreciate the importance of the response “No Comment.”

In the end, therefore, applying ESPLE principles in the unique circumstances of the Lab can be difficult, especially for outsiders such as Congress, the media, and the public. Such

analysis is necessary and must be done well, however, as shown by UC's loss of the Lab contract. Further, while the Lab staff may be justifiably proud of their technical decision-making skills, their business skills are far behind. The transition to the new contractor will surely be challenging for the Lab and its employees, although those with business training may have some distinct advantages.

## **Acknowledgements and Bibliography**

Let me first collect all my disclaimers in one place.

- The idea for paper originated from an assignment in a course on Ethical, Social, Legal, and Political Environment (MGT 708) in the Lab's Executive MBA program at the University of New Mexico. As a member of the Lab's Employee Advisory Committee (EAC), I also hoped that a revised version might provide employees with background on the recent security incidents at the Lab. One EAC meeting was devoted entirely to discussing reactions to one of the later drafts, with the result that EAC would consider producing a revised version aimed directly at employees.
- As the research developed, I repeatedly consulted with Geoff Miller of the Lab's Classification group to be careful about boundaries in that area. Geoff further consulted with Jay Brown, the group leader. The last drafts were edited to avoid particular issues, but none of the conclusions of the paper were changed in the process. The suggestion arose that an alternative classified version might be produced to include the omitted discussion.
- Parts of the unclassified final draft approved by Classification were discussed with Virginia Melvin of the Security Integration group to ensure that all of the relevant security inquiries were indeed closed.
- The unclassified final draft was then provided to Chris Chandler of Laboratory Counsel, who suggested adding a formal statement:

I obtained the information through public sources or through discussions with individuals listed in this Bibliography; I did not have access to official documents at

the lab other than those that were part of the public domain; the opinions reflected in this paper are my own and do not necessarily reflect the views of laboratory management.

I thank these members of the Lab staff for their help on this project.

**Background books:**

These two accounts of the Wen Ho Lee case are very self-serving but provide an insider's viewpoint:

Wen Ho Lee and Helen Zia, "My Country Versus Me: The First-Hand Account by the Los Alamos Scientist Who Was Falsely Accused of Being a Spy," Hyperion, New York, NY (2001).

Notra Trulock, "Code Name Kindred Spirit: Inside the Chinese Nuclear Espionage Scandal," Encounter Books, San Francisco, CA (2003).

These two more general books illustrate the limitations of an outsider's view of the Lab:

Jo Ann Shroyer, "Secret Mesa: Inside Los Alamos National Laboratory," John Wiley and Sons, New York, NY (1998).

Debra Rosenthal, "At the Heart of the Bomb: The Dangerous Allure of Weapons Work," Addison-Wesley, Reading, MA (1990).

**Personal interviews or discussions:**

Stan Busboom, EMBA 2005-06, and retired Security Division Director.

Greg Cunningham, Technical Staff Member, Space Science and Applications Group (previously in DX Division).

Teresa Cremers, Deputy Group Leader, Applied Electromagnetics Group.

Richard Naranjo, Team Leader, Internal Security Office.

**Comments (personal, phone, or email):**

Terry Hawkins, Senior Lab Fellow, Intelligence Advisor to the Director.

William M. Phillips, III, Office Director, Internal Security Office

Morrie Pongratz, retired Technical Staff Member, Space and Remote Sensing Sciences Group.

