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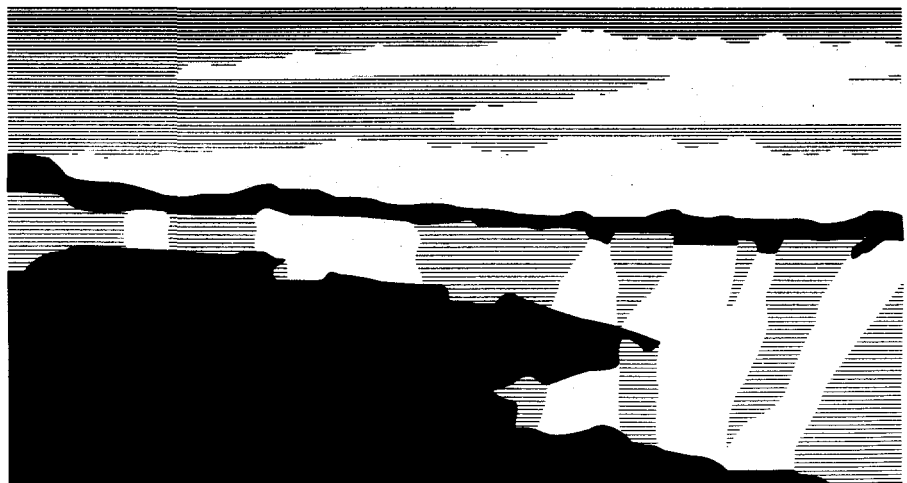
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GOVERNMENT AND INDUSTRY MEET TO DISCUSS ENVIRONMENTAL STEWARDSHIP AND ECONOMIC DEVELOPMENT

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Introduction

At the New Mexico Conference on the Environment, government and industry representatives met to address environmental stewardship and economic development, particularly as these issues relate to New Mexico. The session took place March 13, 1996, from 1:30 P.M. to 5:00 P.M., in the Cochiti/Taos room at the Albuquerque Convention Center. The first part of the session dealt with environmental stewardship. After a 15-minute break, the panel resumed with a discussion on economic development.

This paper chronicles the highlights of this unique session. It attempts to capture the essence of each speaker; therefore, rather than a strict narrative, this paper consists of a series of quotes that, when seen as a whole, provide an understanding of how government and industry view environmental stewardship and economic development. Moreover, these quotes reveal that these organizations continue to develop effective methodologies to collaborate.

Session One: Environmental Stewardship

The Panel

- John Whetten, Moderator
- John Arthur, Department of Energy Albuquerque Operations Office
- Thomas E. Baca, Los Alamos National Laboratory
- Bob Holcomb, Motorola
- Ed Kelley, New Mexico Environment Department
- Tom Blejwas, Sandia National Laboratories
- Jim Casciano, Intel

Phase One: Defining Environmental Stewardship

Tom Blejwas: "Meeting the intent of what environmental laws dictate and ensuring that activities at Sandia (National Laboratories) do not negatively impact the environment."

John Arthur: "Establishing a future that incorporates waste minimization, environmental restoration, and (an) effective transitioning and downsizing of facilities. All these activities must take place in a timely and cost-effective manner."

Tom Baca: "Conducting activities so that they no longer generate waste; cleaning up legacy waste; and, in essence, looking at the future without 'looking in the rear-view mirror.' The ethic of environmental stewardship is simply to 'get on' with the cleanup and establish an aggressive pollution prevention effort."

Bob Holcomb: "Act as environmental guardians through technology development, environmental education, environmental responsibility, and in products that have a positive impact on the environment."

Ed Kelley: "To make the environment a better place for future generations in an effective, cost-efficient manner. There's a price for everything we do—we must achieve a balance that meets both societal and environmental needs."

Jim Casciano: "One: responsible use of resources; reducing the consumption of water and energy; reducing waste. And two: product stewardship, from cradle to grave, to reduce or eliminate waste generation at any point in a product's lifetime."

Phase Two: Establishing an Environmental Strategy

The discussion formally began with an overview of efforts taking place in government and industry to establish an environmental strategy; that is, a "plan of attack" toward establishing not only an environmental ethic, but also to conduct timely and cost-effective cleanup and pollution prevention activities.

"We have established a Memorandum of Understanding between the Department of Energy, New Mexico Environment Department, Environmental Protection Agency, Los Alamos National Laboratory, and Sandia National Laboratories," noted Ed Kelley. "This document will enable all these organizations to address environmental restoration activities in a consistent manner."

John Arthur outlined the Department of Energy's strategy in addressing waste: "Priority rests on medium- and high-risk (wastes)," he said. "In New Mexico, we (DOE) have improved cleanup technologies to address high-risk challenges."

"Waste generation must eventually go down to zero," added Tom Baca. "Operations in the future should generate no waste. Government and

industry have an opportunity to develop waste-free processes. Remember, regulators regulate waste—they do not regulate processes."

Bob Holcomb then added an industry perspective: "In an industrial setting, the regulations dictate a company's efforts. Most sophisticated industry has established standards that are two to three times higher than regulations. We encourage the government to use science-based methodologies to address environmental issues. Compliance should be science based; if this is a case, each environmental issue has a solution."

Phase Three: Cost/Benefits

Pete Lyons of the Industrial Partnership Office at Los Alamos National Laboratory posed a question to the panel: "With society needs pulling one direction and environmental stewardship headed in another direction, is it possible to determine the cost-benefits of addressing environmental concerns?"

"Rather than develop extensive, numerical analyses for a risk analysis system, we should engage regulators and the public in addressing which risk should be addressed first," said Tom Blejwas.

Tom Baca also addressed the so-called "shotgun effect," in which environmental issues at first seem insurmountable: "Our strategy is to minimize vulnerability. By reducing waste generation to zero, we minimize public, regulatory, and government concerns. Our system approach avoids the 'dough-boy' effect, in which one positive impact yields one or more negative impacts. The life-cycle approach is the way to avoid this effect."

John Arthur added that "we need to have the proper technologies to conduct cleanup cost-effectively."

Phase Four: Technology Development

Both government and industry are concerned that the present regulatory process does not provide incentives to develop innovative technologies. The present system has a number of punitive measures if an organization falls below a regulation but no incentives if an organization exceeds regulatory compliance. Without such a "carrot," innovation only takes place when organizations fall out of compliance.

"There are no incentives for industry to lower emissions beyond regulatory levels," noted Jim Casciano. "Our improvements are driven by cost—we would like to work closer with regulators so that we can move to a state of substantial manufacturing with minimal resources."

"We need to achieve a balance between environmental stewardship and industry's 'bottom line,'" added Bob Holcomb. "For example, an extensive, costly air permit can eliminate the production of a product. We need to partner closely with regulators to ensure that we meet environmental regulations will concurrently minimizing costs. Again, we need to establish balance."

Ed Kelly agreed that the regulatory framework needs to change. "We need to streamline the regulation process so that we no do not burden government and industry. The process should 'work' for these organizations."

"The problem is not in technology development," said Tom Baca. "We need to start with the end in mind. We need to streamline the process so that we can meet established, final goals, rather than meeting 'this year's' regulation, which may change every year."

"Building on that," Tom Blejwas noted of Baca's comments, "the challenge, then, is to develop technologies that avoid prescribed regulations. In other words, we need regulations that use a common-sense approach, thereby enabling us to develop technologies that significantly reduce, perhaps even eliminate, waste types."

"One possible way to foster pollution prevention is through a charge-back system that charges waste generators," said John Arthur.

Adding to Arthur's comments, Tom Bejwas said that "we must establish accountability at the scientist level. At Sandia, we work with line organizations (technical divisions) to establish environmental goals to minimize waste generators."

Phase Five: Public Trust

"We have a lot of past to overcome," said Tom Baca. "Without ownership, there is no responsibility."

"To help overcome the past," added John Arthur, "we have developed methods to engage the public in a number of activities. Our goal is to talk 'with' the public, not talk 'at' the public."

Jim Casciano noted that 'the public drives our reputations, more so than regulators.'

"But different segments draw different conclusions," added Tom Blejwas. "The public is so diverse that it presents difficulties. It is easy to establish trust with small groups. Our challenge is to have a similar positive impact on larger groups."

"Part of the problem is that we (organizations) do not communicate our successes well," said Ed Kelley. "The media tend to pick up negative publicity. Traditional means just don't work—we release press releases every day, but none of them are picked up for syndication."

Phase Six: Creating Environmental Stewards

"Our method relies on education and training," said Bob Holcomb. "We created a full-day course of instruction to educate all our employees at Motorola. This program has impacted 130,000 employees world-wide and has been translated to six languages. The program instills sensitivity, the first step in creating environmental stewards."

"We define expectations, then develop incentives that enable us to meet those expectations," added Jim Casciano.

"Management must clearly communicate its environmental vision to employees so that everyone understands the goals of the vision," said Tom Baca.

The panel then adjourned for approximately 15 minutes.

Session Two: Regional Economic Development and Technology Transfer

Panel

- John Whetten, Moderator
- Fred Johnson, Santa Fe Technologies
- Alan Richardson, New Mexico Economic Development Department
- Jim Rice, Sandia National Laboratories
- Pete Lyons, Los Alamos National Laboratory

Introductions

Fred Johnson said of the approach of his company: "There are always potential partners rather than competitors."

"At Sandia National Laboratories," said Jim Rice, "we expect to spend \$86 million in New Mexico, with 60% going toward cleanup and the remainder to technology development."

"Los Alamos National Laboratory has approximately 200 Cooperative Research and Development Agreements with industry," said Pete Lyons. "We view industry collaborations as a business necessity. We can learn from and

concurrently assist industry in solving problems of importance to the nation."

Ed Kelley then noted that "if you do business in New Mexico, you'll probably do business with us (New Mexico Environment Department). We handle everything, from complex waste sites to food permits."

"We are a small organization with great responsibility," said Alan Richardson of the New Mexico Economic Development Department.

Phase One: Improving Economic Development

"The same paradigm that enables scientists to address industrial problems has not yet occurred for economic development," said Fred Johnson.

Pete Lyons added that "economic development means more than company spin-offs. For example, students work at Los Alamos and when they graduate enter the private sector."

"Our (Sandia's) goal is to have partnerships with every project we develop. Without an industrial partner, a technology has difficulty entering the private sector," said Jim Rice.

Phase Two: Collaborations Between Government and Industry

"The time to implement Cooperative Research and Development Agreements—CRADAs—has been significantly reduced. However, other programs, particularly Work for Others, still require substantial streamlining," said Pete Lyons.

Fred Johnson then said that "the private sector must understand the national laboratory culture. Collaborations are a two-way street. They (the national laboratories) also have mission goals they need to meet."

"There is a lack of consistency and continuity in government that limits the impact of partnerships in New Mexico," said Alan Richardson. "We (New Mexico) require continuity to yield effective collaborative efforts."

"The fundamental problem in technology transfer is the space between the R&D and commercialization phases," said Fred Johnson. "Industry must take a substantial risk to develop a prototype into an attractive product. This effort takes time and money."

Referred to as the "Valley of Death," this problem is the major impediment for effective commercialization. The national laboratories have multiple

prototypes and bench-scale technologies, and in many cases industry has managed to commercialize them. However, ideal partnerships are those in which the industrial partner is involved as early as possible in the development of technology.

"New Mexico needs people who not only understand technology, but also the management structure to produce commercial products from advanced, innovative ideas," said Alan Richardson.

Phase Three: Incentives

"Some incentives at Los Alamos include Technology Transfer Awards, royalties to inventors, and industrial fellows," said Pete Lyons. "The latter are Laboratory employees who work at an industrial site for a period of time. These individual then bring back knowledge of industrial practices to Los Alamos."

"DOE changes in policy and procedures have enabled Sandia to better interact with industry," added Jim Rice.

Fred Johnson then added a caveat: "We (industry) must understand the national laboratories do not develop products. They are mission-oriented, which means that they solve complex problems. Industry can take advantage of the lab's 'brain power' to develop technologies, which industry can turn into products. That's why we should think of technology transfer as technology partnerships."

"At the state level, we do not generate the tax revenue of largely populated states," said Alan Richardson. "As a result, we cannot attract much industry. However, we are presently developing a legislative package that may yield a better business environment for New Mexico."

Representative Nick Salazar noted that "New Mexico does have incentives that attract industry. However, the problem lies in helping small businesses remain viable."

Fred Johnson offered a potential solution: "By attracting large companies, small businesses, in the form of manufacturing and service entities, will naturally follow."

"Los Alamos has a program designed to positively impact regional economic development, in particular technology maturation," said Pete Lyons. "Los Alamos provides funds that enable New Mexico businesses to refine Laboratory-developed prototypes into commercial products."

Phase Four: Future Directions

Pete Lyons: "Our (Los Alamos') goals are (1) to educate scientists so that they can recognize the commercial potential of their ideas so that the protection of intellectual property can start as early as possible, and (2) create more flexibility with technology maturation funds."

Jim Rice: "Sandia's goal is to have stable funding through the life of each project."

Alan Richardson: "New Mexico should have a specific objective that targets specific industries. It should also have the resources to implement this objective."

Fred Johnson: "Anyone involved in technology partnerships should have the courage to make decisions. Risk-taking yields new start-ups. Without taking that risk, economic development remains stagnant."

In closing the session, John Whetten noted that "the technology transfer process is complex, but from what we've heard here today, government and industry share similar views, which in part has yielded many successful partnerships. If we maintain this focus, and perhaps enhance it, it should yield even more success."

John Whetten then thanked the panel members and the session came to a close.