

# Los Alamos National Laboratory Transition Manufacturing and Safety Equipment Project

## Organizational Overview

*Basic Organizational Description:* Los Alamos National Laboratory (LANL) is owned by the US Department of Energy (DOE) and operated under contract by the University of California (UC). Established in 1943 as part of the Manhattan Project, LANL's original mission was to design, develop, and test nuclear weapons. As technologies, US priorities, and the world community have changed, LANL's mission has broadened to enhancing global security by ensuring safety and confidence in the U.S. nuclear weapons stockpile, developing technical solutions to reduce the threat of weapons of mass destruction, and improving the environmental and nuclear materials legacy of the Cold War. In addition, the Laboratory applies its scientific and engineering capabilities to assist the nation in addressing energy, environment, infrastructure, and biological security problems.

In FY99 LANL employed approximately 7,400 workers divided among 45 division and program offices, including the Project Management (PM) Division. PM Division, as its name implies, is responsible for overseeing large, complex projects for LANL. The division employs approximately 184 workers (roughly 2.5% of the LANL workforce), organized in several groups and project offices. Figure 0-1 shows the organizational structure of PM Division. One of PM Division's important undertakings is the Transition Manufacturing and Safety Equipment (TMSE) Project.

The President and Congress of the United States of America have directed the DOE to maintain the safety and reliability of the nuclear weapons stockpile in the absence of underground nuclear testing. In response to this directive, DOE has decided to reestablish certain weapons capabilities at LANL, and DOE's Albuquerque Operations Office has

Figure 0-1. PM Division organizational structure

developed the Capability Maintenance and Improvement Project (CMIP) to achieve this goal. TMSE, itself an extensive multiyear project, is a subunit of this larger plan. The TMSE project, as the first stage of CIMP, has as its goal the establishment of necessary processes and equipment to carry out the CIMP mission at LANL.

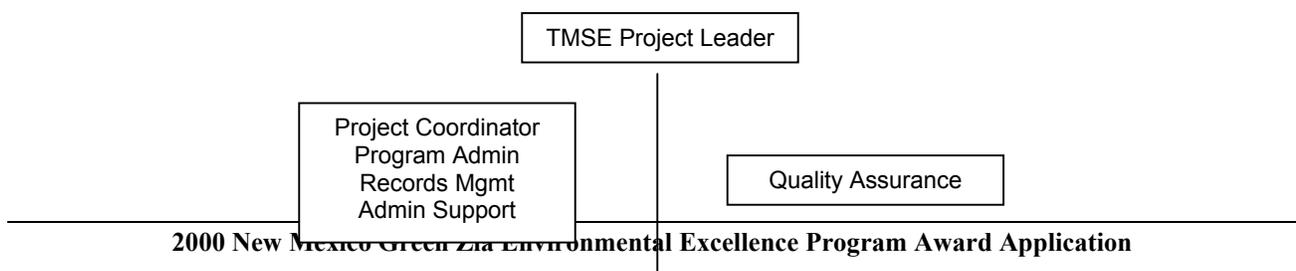
TMSE consists of thirty subprojects that fall into five major categories:

- manufacturing—subprojects designed to replace and /or upgrade equipment and associated systems, including metal preparation, foundry, machining, cold assembly and post assembly, analytical chemistry, and microstructural analysis;
- infrastructure—subprojects designed to replace and/or upgrade infrastructure systems, structures, and components to meet facility compliance drivers, reduce worker and public risk, and improve operability and reliability;
- waste management—subprojects designed to replace and/or upgrade waste management capabilities to meet the increased activity, including removal of obsolete gloveboxes and modification or reconfiguration of portions of existing buildings;

- nondestructive assay (NDA)—subprojects designed to replace and/or upgrade existing NDA equipment and systems to meet the requirements of the LANL Site Safeguards and Security Plan and other agreements; and
- project management—a major endeavor that provides categories so that the collection of PM labor costs, office supplies and expenses, use of subject matter experts, and staff augmentation can be readily tracked and monitored.

Baseline support documents describe in detail the scope, schedule and budgets for each subproject.

The TMSE project is currently expected to last 4 years and cost \$72 million. The project’s initial authorized funding for FY99 was \$15.4 million. Overall LANL funding for FY99 was \$1.45 billion, so the TMSE budget represented slightly more than 1% of total LANL spending. For this project PM Division is working cooperatively with several other LANL organizations, including the Nuclear Materials Technology (NMT) Division, which conducts operations within the major facilities affected by TMSE. Figure 0-2 shows the organization of TMSE, which currently employs 10 members.



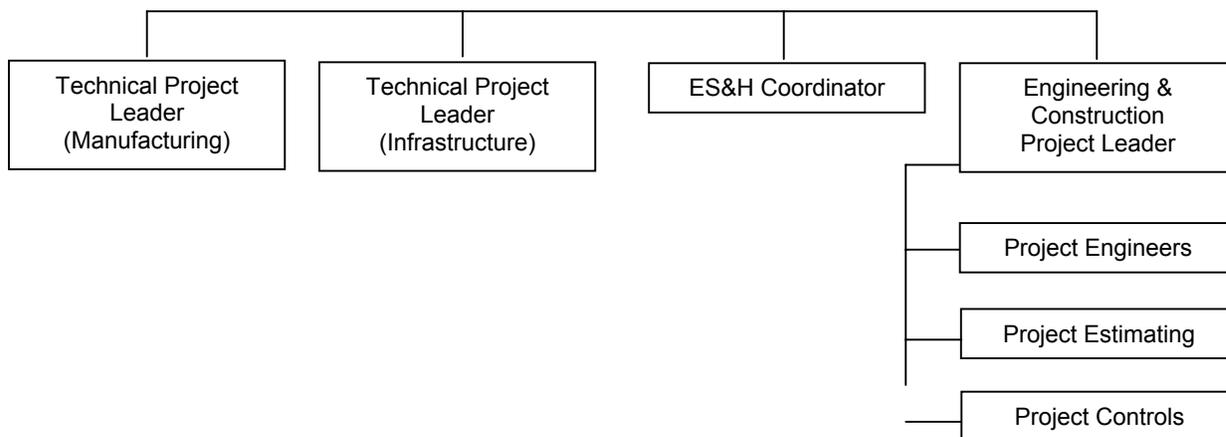


Figure 0-2. TMSE Project organizational chart.

Federal regulatory agencies with oversight for various LANL operations include EPA, DOE, OSHA and the NRC. The New Mexico Environment Department also oversees and regulates LANL activities. Because most TMSE employees work in and oversee activities in a typical administrative office environment, in day-to-day operations OSHA requirements related to employee safety and health are most applicable. However, the planning and scheduling decisions of TMSE project managers have important implications for other LANL and contract staff who must actually carry out the facility and equipment upgrades, usually in a hazardous and/or radioactive environment. Therefore, TMSE project managers must be familiar with and take into account the types of environment, safety, and health issues present in performance of scheduled work.

In addition to regulatory expectations, LANL operations—including the TMSE Project—are shaped and evaluated by contractual requirements negotiated by DOE, UC, and LANL. These requirements, revised annually, are contained in Appendix F of the operating contract and provide a broad range of specific goals, measures, and evaluation criteria.

Appendix F serves as a key method of determining both customer expectations and organizational performance. Both DOE and UC evaluate overall LANL performance—on which the TMSE Project contributes—on the environmental components of Appendix F. In addition, two specific measures related to facilities management track progress of the TMSE project. Category 3 provides a more comprehensive explanation of the Appendix F process.

TMSE staff are housed in one building with a typical administrative office environment. Their work, however, is focused on two of LANL’s category II nuclear facilities, the Chemistry and Metallurgical Research Building and the Los Alamos Plutonium Technical Area.

*Customer and Interested Party Requirements.* TMSE project managers have identified five major groups of customers with roughly the same requirements. Congress, other leaders in government, and DOE expect TMSE to deliver required process and improvements to carry out the mandate to assure the safety and reliability of US nuclear weapons but to deliver those improvements with minimal

environmental impact. Senior LANL leaders as well as division and program managers expect TMSE to perform the required upgrades without adversely impacting the institution’s ability to protect worker health and safety or LANL’s ability to conform to environmental laws, regulations, orders, and contractual commitments. Individual LANL workers and contract employees who work in the structures being modified or who perform the upgrades expect a well-designed construction process that ensures their safety and health while minimizing environmental impacts. Another group of customers includes environmental regulators, who expect LANL to continuously improve its environmental performance by developing processes—including demolition and construction activities such as those in TMSE—that minimize waste. Finally, the surrounding pueblos and communities constitute another group of external stakeholders. These people, whose family members may work at LANL and who share the local environment with the Laboratory, expect the organization to practice and promote sound environmental policies. Figure 0-3 summarizes customer groups and expectations.

In addition to the measures included in Appendix F, the TMSE Project uses a variety of LANL institutional systems to structure operations. LANL's Integrated Safety Management (ISM) Program, in its broadest definition, serves as a basis for the institution's environmental management system (see Category 1). LANL's Performance Management System (see Category 5) helps leaders establish clear performance expectations for employees and ensure those expectations are aligned with organizational goals and values. LANL mechanisms such as the annual Employee Checkpoint Survey and the Upward Appraisal Program (see Category 5) also allow managers to evaluate customer/

stakeholder satisfaction with team performance.

Customer Segment	Key Requirements
Congress DOE	<ul style="list-style-type: none"> <li>• Deliver mandated upgrades and improvements with minimal environmental impact</li> <li>• Maintain a safe, healthy work environment</li> </ul>
LANL senior management LANL division/program managers	<ul style="list-style-type: none"> <li>• Deliver mandated upgrades and improvements with minimal environmental impact</li> <li>• Maintain a safe, healthy work environment</li> </ul>
LANL employees Contract employees	<ul style="list-style-type: none"> <li>• Deliver mandated upgrades and improvements with minimal environmental impact and within scope and budget</li> <li>• Maintain a safe, healthy work environment</li> </ul>
NMED EPA Other federal/state regulators	<ul style="list-style-type: none"> <li>• Deliver mandated upgrades and improvements with minimal environmental impact</li> <li>• Maintain a safe, healthy work environment</li> </ul>
General public	<ul style="list-style-type: none"> <li>• Deliver mandated upgrades and improvements with minimal environmental impact</li> </ul>

Figure 0-3. TMSE Project key customer segments and requirements related to environment.

*Supplier and P2-Partnering Relationships:* TMSE project managers interacts with vendors on the basis of environmental concerns within the scope of the entire project. LANL financial policies require that most product/service purchases be coordinated

through LANL's Business Operations (BUS) Division. BUS Division also evaluates the overall performance of suppliers.

Much of the demolition and construction work for TMSE is performed by contractors. TMSE project managers thus actively seek ways to help these work partners minimize the generation of waste. For this purpose, TMSE project managers have partnered with the LANL Environmental Stewardship Office (ESO) to use the Green Zia Tools to identify cost-effective methods to reduce waste and prevent pollution during actual project work.

*Competitive Situation:* Within the LANL organization, there are no direct competitors who can perform the traditional project management work functions. Other internal LANL units, however, vie for both programmatic funding and funding for specific projects. The TMSE Project is thus required to find ways to prioritize work and to both justify operating expenses and improve operating processes to make maximum use of available funding.

# 1. Leadership

The leadership system that supports environmental excellence for the TMSE Project begins with the director of LANL who, in 1998, issued a vision for LANL that included zero environmental incidents. Figure 1-1 shows the "six zeros" which constitute LANL's highest-level goals. A comprehensive, proactive, ethics-based system cascades down from these leadership goals.

Project managers have worked to establish both processes and behaviors to achieve the zero-waste goals. The system begins with goals that are articulated in numerous strategic documents. Before the project was authorized, DOE conducted an environmental impact assessment and issued the *Stockpile Stewardship and Management Programmatic Environmental Impact Statement*. Other formal project documentation includes the *Project Execution Plan*, which identifies a need to minimize waste, and a project-specific waste-minimization/pollution-prevention plan.

An integrating framework that the TMSE Project and LANL overall use as an environmental management system is ISM. The broad definition of "safety" encompasses all aspects of environment, safety, and health—including pollution prevention and waste minimization. The term "integrated" is used to indicate that the safety management system is a normal and natural element of the performance of work; safety isn't a workplace addition, it is how we do business. ISM supports LANL's goal "to accomplish its mission cost-effectively while striving for an

Zero Environmental Incidents

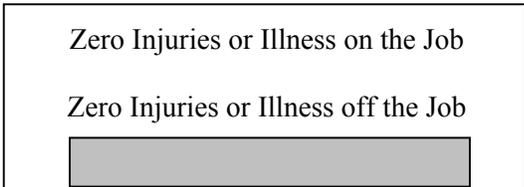
Zero Ethics Incidents

Zero People Mistreatment Incidents

Zero Security and Safeguards Violations

Figure 1-1. LANL's "six zeros" goals. injury-free workplace, minimizing waste streams and avoiding adverse impacts to the environment from its operations." ISM implementation is a major emphasis at LANL, and senior leaders formally review progress toward full implementation on a quarterly basis. The ISM system also makes available a wide range of online safety resources which all members of TMSE, LANL, and the general public can easily access. Figure 1-2 shows the ISM safety page.

TMSE project managers recognize that waste is the result of inefficiency and seek to promote greater emphasis on pollution prevention and resource conservation. To that end, they have begun using participation in the New Mexico Green Zia Environmental Excellence Program as a way to evaluate the potential for waste minimization. Use of Green Zia tools helps project managers identify opportunities to more systematically build pollution prevention into daily project operations. Through submission of a 2000 Green Zia application for recognition at the commitment level, TMSE project managers are communicating to group members the importance of pollution prevention and environmental excellence. During the coming year, TMSE project managers will further deploy understanding and use of the Green Zia Program.



The planning process (see Category 2) used by TMSE project managers employs a line-of-sight process from high-level organizational goals to individual performance expectations.

Using LANL's Performance Management System (see Category 5), managers work cooperatively with employees to identify how each individual in the program is expected to contribute to the overall project and LANL goals. This methodology has become a cornerstone for the operations within LANL. The leadership system uses the Performance Management System and other frequent one-

on-one meetings to review performance and highlight areas of focus.

The TMSE Project's management system is based on frequent and open communication. Project managers review action plans for all projects to ensure work is being completed as scheduled and budgeted or to determine



Figure 1-2. Safety resources available from LANL's ISM web page.

necessary adjustments to the plans. Because team members are collocated in one office building, they interact informally with each other on a daily basis.

Division and group leaders also conduct regular management walkarounds. These informal reviews allow leaders to observe working conditions throughout their areas of responsibility, to talk informally with employees, and to note potential areas for improvement. LANL has created nine categories of guidance cards, including environmental protection, that provide suggestions on the types of observations managers should make during walkarounds.

TMSE project managers have minimal interaction with the public related to environmental issues. LANL has designated organizations, such as the Community Relations and Public Affairs Offices, to routinely handle interactions with the public. Presentations, discussions, and workshops specifically focused on environmental issues are typically coordinated through LANL's Environment, Safety and Health (ESH) Division or the Environmental Science and Waste Technology Division. Other community interactions take place through the integrated outreach programs of LANL.

## 2. Planning for Continuous Environmental Improvement

LANL has developed and uses as a guiding blueprint a strategic plan for the next five years. The current LANL strategic plan (available online to both the public and LANL employees) sets out major programmatic objectives and strategies. It also identifies environmental objectives related to most LANL major goals. In addition, a major objective of demonstrating operational excellence in all activities specifically calls out the following strategies:

- Achieve measurable improvements in safety and environmental stewardship through full implementation of ISM [which includes pollution prevention] throughout LANL.
- Manage wastes and hazardous legacy materials effectively and accept the challenge of minimizing the generation of hazardous wastes in the future, with a long-term direction toward zero emissions.

Each year LANL also produces an institutional plan, a five-year perspective on LANL operations. This document (available online to the public and to employees) identifies strategic requirements for LANL; summarizes strategic, tactical, and programmatic plans; and helps ensure the integration of LANL activities with DOE priorities. The *FY 1999—FY 2004 Institutional Plan* addresses the TMSE Project as a component of LANL's future perspective.

Based on LANL strategic directions and DOE requirements, LANL divisions and program offices then develop their own strategic plans. The NMT Division director

is responsible for balancing priorities with the division and ensuring proper integration between division goals and TMSE project goals. This integration has been captured in the *TMSE Program Requirements Documents*.

TMSE is a carefully planned project, with extensive supporting documentation. Early in the planning phase, senior leaders identified the need for resource requirements that include quality assurance, quality control, and ESH expertise. Project technical baselines include the following requirements for safety.

- ISM—LANL's ISM Plan requires all work, including construction, to be performed in a manner that provides a significant margin of safety for the workers, the environment, and the public. Additionally, NMT Division has developed its own ISM implementation program, which customizes safety and environmental requirements for the division's specific work.
- Nuclear Safety—The NMT Division Authorization Basis Team maintains the authorization basis documentation (facility safety analysis reports, etc) and performs assessments and process hazards analysis.
- General Safety—All work performed as part of TMSE is done in accordance with federal, DOE, and LANL safety requirements. Work in potentially contaminated or high-hazard areas is controlled through a Safety Work Plan and a subproject-specific health and safety reviews.

In addition, the TMSE Project documentation includes a waste-minimization/pollution-prevention plan. Team members have developed a method for estimating waste and have begun implementing a tool for waste estimating. As part of a Green Zia process analysis, project managers have been able to modify and proceduralize this step. The team has also used the Green Zia process improvement tools to develop actions that

should lead to significant waste reduction throughout the project. Participation in the New Mexico Green Zia Environmental Excellence Program, with accompanying development of appropriate measures and performance indicators, is also allowing TMSE project managers to begin incorporating a pollution-prevention and waste-minimization focus into long-range plans. Project managers recognize that inefficiency leads to waste, and there is an ongoing effort to improve operations. Category 6 describes the method by which key processes are analyzed and improved. These improvement efforts include action plans, which are regularly reported to management and tracked for successful completion.

### **3. Customer, Supplier and Others Involvement**

Just as frequent and open communication marks TMSE project managers' internal management practices, so does it characterize interactions with customers and stakeholders. The project managers are highly conscious of the need to fully involve all affected parties in seeking to improve the efficiency of work and demonstrating a sustainability ethic in daily operations.

TMSE project managers provide a number of mechanisms by which primary customers and funding agencies are kept informed of project progress.

- TMSE and DOE representatives hold more formal quarterly meetings to discuss project issues.
- TMSE project managers report project status for quarterly Appendix F reviews. An annual Appendix F self-assessment and reviews by both DOE and UC evaluate overall performance.
- TMSE managers attend other meetings and prepare other documentation as requested by customers or as deemed appropriate to communicate project status.

The performance measures found in Appendix F of UC's operating contract provide clear expectations, increase accountability, and improve customer relations by addressing performance issues that concern DOE. Hence, Appendix F serves as a major vehicle for both determining customer requirements and performance levels.

Appendix F contains approximately one hundred specific performance measures and associated goals divided among ten functional areas. TMSE Project performance is included in several of the Appendix F measures directly related to environmental excellence that fall within the functional area of environment, safety, and health and to measures within the functional area of facility

- The TMSE project team leader submits monthly progress reports for review and assessment.
- TMSE and DOE representatives meet in monthly sessions to discuss project status. Agendas are tailored to current issues.

management. For example, ESH measure 1.2.c requires reduction of transuranic waste, low-level waste, hazardous waste, and sanitary waste. ESH measure 1.2.e requires LANL to operate its facilities within defined operating parameters. (See Category 4.)

The negotiation steps for Appendix F measures, the process to set priorities, the improvement steps, and the resulting evaluations (see Fig. 3-1) all help focus TMSE Project resources on key business processes and improve operational quality. Appendix F requires an annual self-assessment and evaluation by both UC and DOE, but LANL senior leaders also meet quarterly with UC and DOE representatives to discuss current progress against goals and

to identify any issues. Senior leaders also interact more often with DOE and UC customers on an as-needed basis. The regular and frequent interaction helps prevent surprises, mitigate problems, and create a cooperative rather than an adversarial atmosphere.

Appendix F thus provides both the requirement and a mechanism to do process analysis and improvement related to customer input.

TMSE project managers interact with LANL senior leaders and division leaders in a variety of ways. The TMSE project manager meets with the program office as required for updates on progress and the funding status. Meetings are conducted as required with division leaders for

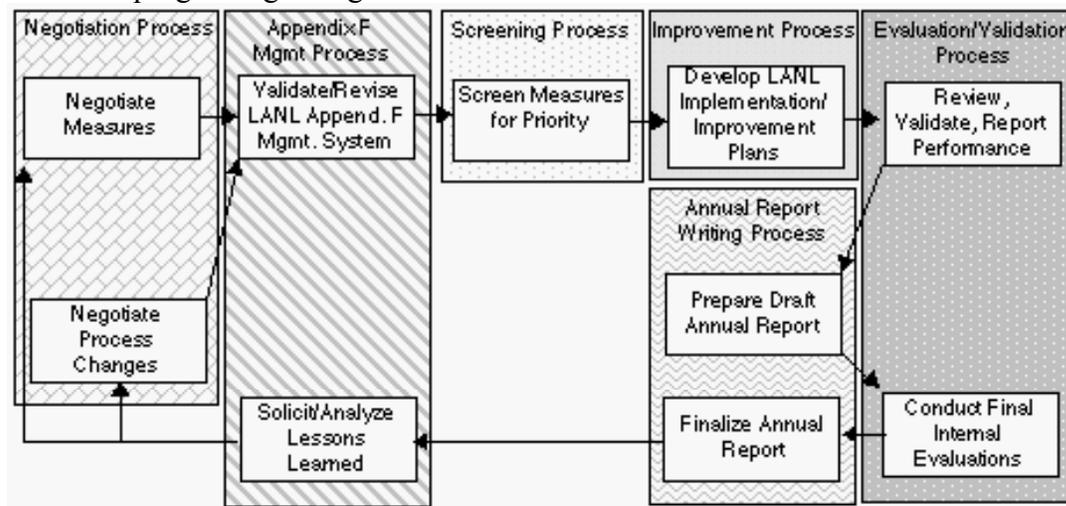


Fig. 3-1. LANL Appendix F Process (18-month continuous cycle.)

updates and status reports for projects being worked. More frequent meetings are conducted between TMSE project managers and organizations involved in the subprojects in order to identify any problems, to resolve issues, and to status each subproject in more detail. Upcoming work that is planned is then built into the daily scheduling of work conducted within the facilities.

For employee feedback, TMSE project managers rely on two LANL programs, the annual Employee Checkpoint Survey and the Upward Appraisal Program (see Category 5). The survey monitors employee perspectives and contains standard types of questions in general categories including safety, productivity, and customer focus. The structure of the survey allows TMSE project managers to perform comparisons with other operational divisions within LANL and also

with other companies. For the past four years LANL has also used an annual Upward Appraisal Program, which allows employees to provide direct feedback to managers regarding the supervisors' behavior and ability in areas such as environment, safety and health; communication; and accountability. TMSE project managers review the information from these instruments and use it to help establish goals and corrective actions. Finally, management walkarounds provide an opportunity for managers and employees to interact informally and to jointly review safety and environmental issues in the workplace.

To monitor public perception, LANL and the TMSE Project rely on a quarterly survey of public opinion, which LANL has conducted since 1990. The resulting reports profile New Mexico residents' views and identify results from specific geographic areas around the state. In addition to asking about general perceptions of LANL, the survey specifically asks respondents their opinion of LANL's environmental responsibility. Results from the survey are recorded, analyzed, reviewed, and used in planning activities.

Most opportunities to interact with vendors on the basis of environmental concerns are limited. In addition, LANL financial policies require that most product/service purchases be coordinated through LANL's BUS Division. BUS Division also evaluates the overall performance of suppliers.

One of the TMSE Project's methods of communicating and involving other interested parties is through participation in the New Mexico Green Zia Environmental Excellence Program. The Green Zia Program is a state-wide initiative designed to encourage businesses to focus on pollution prevention as a economic business advantage.

#### 4. Information and Analysis

The Appendix F Process (see Category 3) is a key performance indicator of contractual requirements and also a measure of customer satisfaction. Managers monitor progress related to performance goals and use that information to develop and/or modify operational plans and to identify areas for improvement. Many of the Appendix F measures evaluate total LANL performance in environmental arenas. Because the measures include all aspects of LANL operations, TMSE performance contributes to the ultimate evaluation score. Table 4-I identifies the measures for which TMSE contributes to overall LANL environmental achievement.

LANL senior leaders also monitor progress toward full implementation of ISM (see Category 1). The ISM Project Office has established a detailed implementation schedule and monitors all portions of LANL to ensure that milestones are achieved and that performance goals are met. A DOE audit of ISM in the fall of 1999 indicated that implementation is on track and that LANL efforts in this area are fully satisfactory.

In addition to monitoring TMSE's contribution to overall LANL institutional performance as measured by Appendix F, senior leaders also tracks information gathered through participation in LANL institutional programs. Leaders review results from LANL's public opinion survey and also analyze information from the annual Employee Checkpoint Survey and Upward Appraisal.

This year for the first time the TMSE Project will receive impartial evaluation and feedback Table 4-I. Appendix F Measures to which TMSE Contributes.

Area	Measure	Scope
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ESH	1.2.b	Radiation Protection of Workers
ESH	1.2.c	Waste Minimization, Affirmative Procurement, Energy & Natural Resource Conservation
ESH	1.2.d	Management Walkarounds
ESH	1.2.e	Maintenance of Authorization Basis
ESH	1.2.f	Injury/Illness Prevention
Facilities & Project Mgmt	1.1	Construction Project Performance
Facilities & Project Mgmt	1.2	Construction Project Cost
Facilities & Project Mgmt	1.4	Project Management Program
Facilities & Project Mgmt	5	Utilities and Energy Conservation (several measures)

on its environmental performance through participation in the New Mexico Green Zia Environmental Excellence Program. Project managers will begin tracking this measure and will use identified opportunities for improvement as initiation points for remedial actions.

TMSE project managers systematically analyze data to develop the information necessary for wise decision-making. Operational data and Green Zia analysis help to identify opportunities for process and performance improvement.

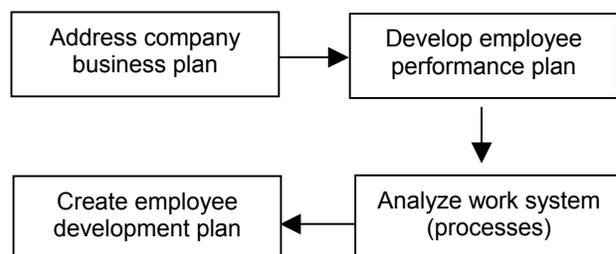
### 5. Employee Involvement

Managers work with each employee to cooperatively prepare individual development programs—both short-term and long-term—on an annual basis as part of LANL’s Performance Management System. This system, which Figure 5-1 shows, requires organizations to establish objectives which support the organizational echelons above them. Objectives for each employee are then

designed to ensure that the organizational objectives are met and that the employee has a clear view of how his or her work requirements contribute to the success of the entire organization. The Performance Management System ensures clear two-way communication during the goal-setting phase of the process and provides a focus for ongoing discussion about work objectives and processes. Specific goals include

- aligning individual expected results with institutional goals,
- identifying and assessing individual performance results/accomplishments,
- evaluating performance of institutionally defined behaviors,
- describing how individuals helped to meet organizational objectives,
- linking performance to rewards or consequences,
- designing development plans to support improving performance in current jobs and/or increasing impact on the organization,
- enhancing employee/manager ownership of individual and organizational performance,
- improving two-way communication between supervisors and employees.

Once developmental goals have been established, employees may participate in appropriate training offered by LANL or other organizations. LANL's ESH Division offers over forty courses related to environmental issues, from general safety training and first aid to courses on such specific topics and packaging and transporting hazardous



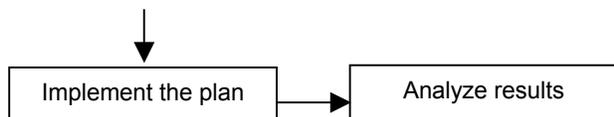


Figure 5-1. LANL's Performance Management System.

materials. Training may be used to improve skills needed for current job performance or to develop new capabilities.

Training programs are a key component to assuring actions by workers that reflect integrated plans. Training generalists from LANL's Human Resources Division work with managers and employees to identify specific training requirements for work being performed, establish appropriate programs, enhance quality, and assure continuity between all aspects of training. Training on standardized practices such as hazardous material management or emergency operations is conducted on a LANL-wide basis. Site- and task-specific training is also provided for TMSE projects and facilities.

To assure an adequate safety envelope and compliance with laws and regulations, LANL facilities must produce several operations plans. These include

- facility management plans,
- configuration management plans,
- facility safety plans,
- quality assurance plans,
- emergency action plans,
- training program description and job analysis, and
- maintenance implementation plans.

All of the above plans represent a process that is integral to assuring high-quality work being conducted on very hazardous material is accomplished with minimal risk to the worker, his/her peers, surrounding communities, and the environment.

Another new focus is participation in the New Mexico Green Zia Environmental Excellence Program and use of the Green Zia tools for environmental excellence. Submission of this award application is part of an ongoing effort to more effectively and systematically focus on environmental performance. Figure 5-2 shows how TMSE will achieve this goal and how the efforts will contribute to LANL success.

To encourage communication, all managers observe an open-door policy. Employees may also provide comments and observations at project meetings. The annual Employee

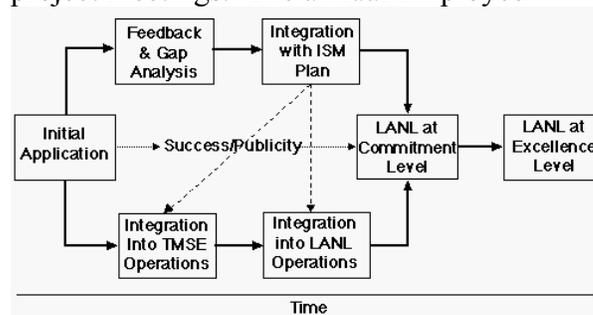


Figure 5-2. LANL's and TMSE's Green Zia plans.

Checkpoint Survey and the Upward Appraisal Program provide ways for employees to give anonymous input. LANL's ESO has also established an electronic mechanism for soliciting employee input on pollution prevention. TMSE employees, as well as any LANL employee, can send comments, observations, or questions to [wastenot@lanl.gov](mailto:wastenot@lanl.gov). The message will be routed to the environmental expert best able to respond, the sender will be notified of any proposed action, and ESO will track the issue to resolution.

Senior leaders ensure that human resources are properly aligned to carry out proposed

action plans. The alignment process begins with the *Baseline Support Summary Document* and the TMSE work breakdown structure. Leaders develop long-term priorities and projections and ensure that adequate resources are available. As projects evolve, leaders use quarterly or monthly reviews to ensure that resources continue to be adequately aligned.

LANL's major formal method for determining employee attitudes and the climate in the workplace, as well as for providing employees with a formal mechanism for feedback, is the annual Employee Checkpoint Survey, which has been used for the past five years. The survey contains standard types of questions in general categories including safety, productivity, and customer focus. A second major method is LANL's annual Upward Appraisal Program, which allows employees to provide direct feedback to managers regarding the supervisors' behavior and ability in areas such as environment, safety and health; communication; and accountability. Figure 5-3 shows the Upward Appraisal process.

Efforts to promote carpooling are an example of how TMSE and LANL in general encourage employees to minimize the environmental impact of their work duties on the local community. The LANL daily *Newsbulletin* maintains an electronic "Commuter's Corner" where prospective carpoolers can advertise or look for ride-sharing opportunities.

There are also incentives to encourage staff to work smarter and utilize innovative approaches to accomplish their work. The Pollution Prevention Awards Program, sponsored by LANL's ESO, is open to all LANL employees and subcontractors. It is designed to encourage individuals and teams to develop plans, programs, or ideas for

minimizing waste; conserving water, electricity or natural gas; reducing air or water pollution; or procuring products with recycled content. Recipients of the awards receive recognition and a cash grant from specially allocated congressional funds.

The Los Alamos Awards Program, administered by LANL institutionally but tailored for application at the division or program level, provides a link between the organization's mission and those employees or teams that achieve significant accomplishments toward that mission. Managers use the program to recognize exceptional contributions and noteworthy achievements by awarding their employees, either individually or as teams, cash awards ranging from \$250 to \$2000.

As part of the larger LANL community, the TMSE Project relies primarily on institutional

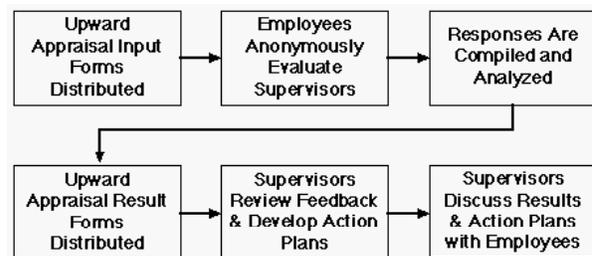


Figure 5-3. LANL's Upward Appraisal process.

programs to enhance employee support. LANL offers a comprehensive set of support initiatives along with feedback systems. Employees are encouraged to use all LANL services that are appropriate and relevant to their individual needs.

To provide emotional support, LANL provides an Employee Assistance Program (EAP) whose main goal is to assist employees with personal problems that are affecting their job performance. The EAP also offers a wide variety of presentations and workshops on

such topics as stress management, gender issues, conflict resolution, and smoking cessation. The EAP also makes available a collection of books, videos, and audio tapes on workplace issues. The program is available free of charge. Usually employees refer themselves; however, a supervisor can refer an employee if job performance has been identified as a problem.

For employees' physical well-being, LANL maintains a Wellness Center. The center offers equipment and specific areas for weight training and aerobic exercise in individual and group formats. Use of the center for individual exercise programs is offered free of charge. The center also provides, usually for a small fee, a wide variety of exercise and health programs including stress management, healthy eating, aerobics, yoga, and cardiovascular fitness. The center offers individual fitness evaluations for a nominal fee. The center monitors daily use numbers and has completed user satisfaction surveys along with participant evaluations.

Division employees may choose between two basic work schedules, a traditional 5 day/40 hour week or a new 9 day/80 hour schedule which allows employees every other Friday off. In addition, TMSE allows employees, with prior agreement of their managers, to use some flexibility in their regular work schedules to meet personal needs.

LANL provides employees and managers formal guidance on administrative reviews and grievances. In addition to this formal support, the institution provides responses to informal queries as well as guidance to employees or management on relations in the workplace. Specific support is available on such subjects as counseling, sexual harassment, violence in the workplace, and interpersonal skills.

An Ombuds Office, available to any individual in the workforce, provides services including addressing work-related issues, assisting employees in obtaining services, or expediting actions. The Ombuds Office also provides a Mediation Center—available to all members of the workforce—which provides a structured approach and environment to resolving issues between employees or between management and employees.

## 6. Process Management

The TMSE Project uses a systematic project management methodology to manage work on an ongoing basis. In general, TMSE plans and manages environmental requirements through the TSME work breakdown structure and baseline support documents for the thirty subprojects. Cost estimates for work performed include estimates for the scope of waste generated and associated costs. The cost of handling and disposing of waste is a significant fraction of TMSE Project costs, so there is serious motivation to reduce the volume of waste generated. Appendix F measures also serve as drivers to reduce waste volumes. The group evaluates processes for waste minimization and material substitution opportunities. Using these systematic but informal methods, the TMSE Project is beginning to identify some significant opportunities for waste minimization.

The organization is working to formally establish both processes and behaviors to achieve waste reductions beyond that required by compliance. The team has used the Green Zia tools to evaluate overall TMSE project strategies. Figure 6-1 shows the high-level process map for TMSE. Figure 6-2 shows a cause-and-effect diagram the improvement team used to identify possible reasons for excessive waste generation. Using the tools, TMSE team members have identified priority

areas for improving pollution-prevention/  
waste-minimization performance (see Table 6-

I) and have drafted simple action plans for the  
most important improvement opportunities.

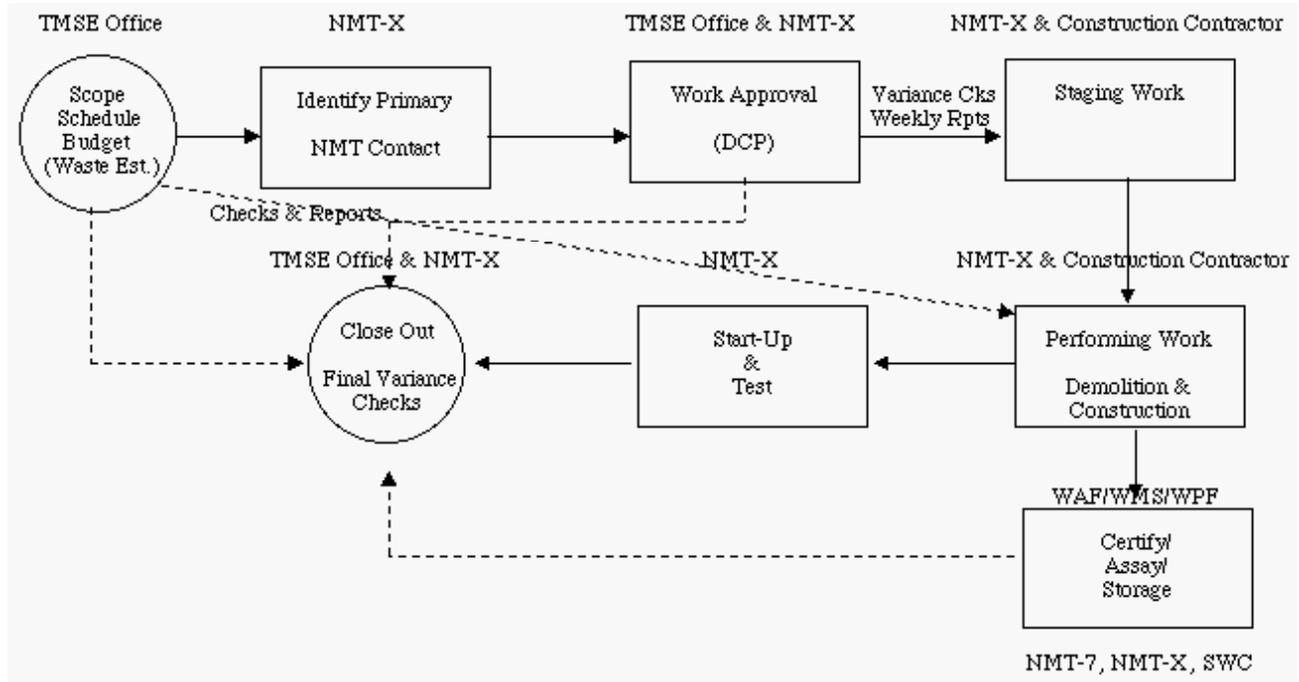


Figure 6-1. TMSE high-level process map.

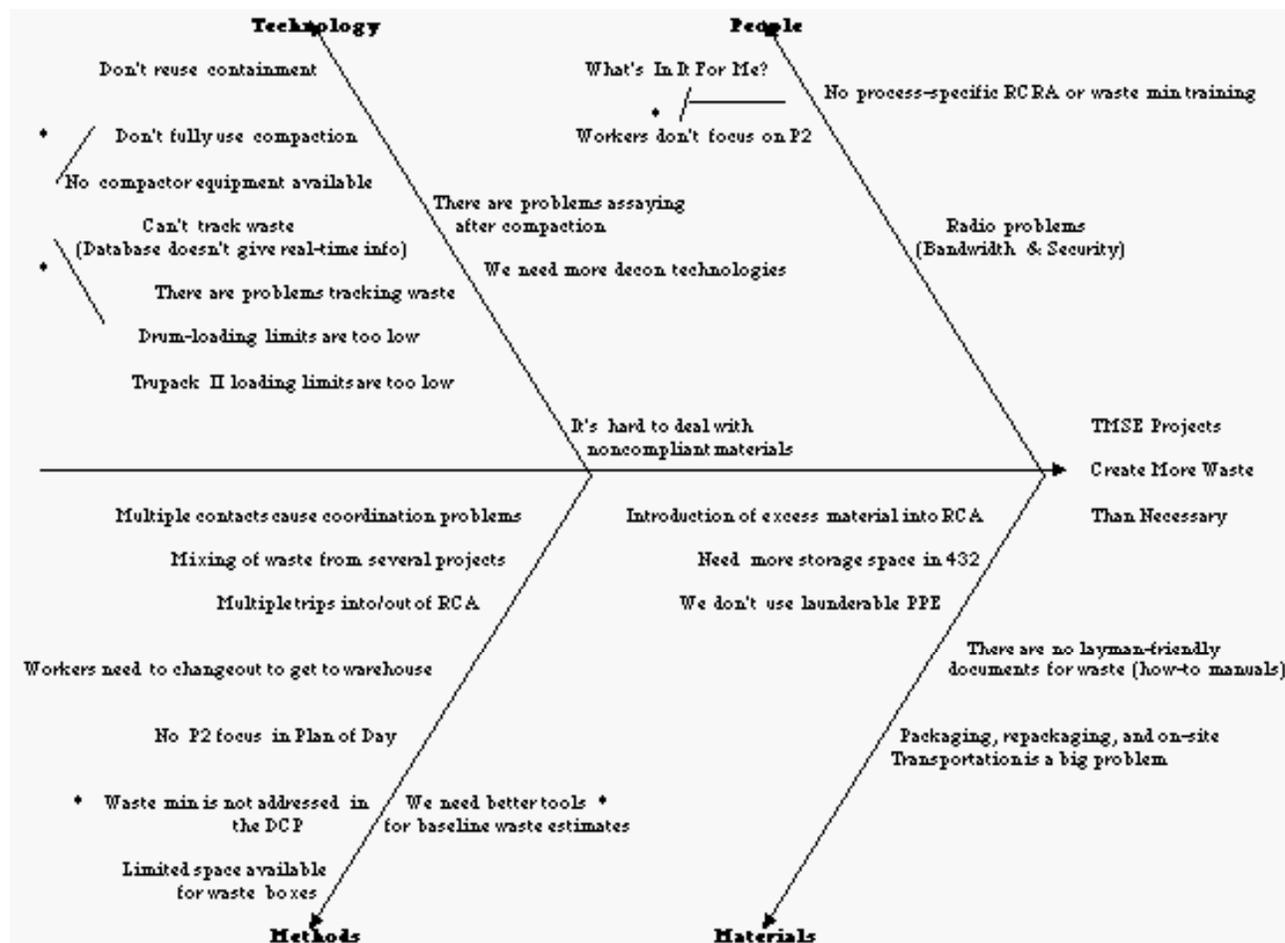


Figure 6-2. Cause-and-effect diagram used to identify root causes of less-than-optimum environmental performance.

Table 6-I. Priority Opportunities to Improve TMSE Environmental Performance.

- Increase personnel training & focus on P2
- Develop better real-time waste tracking capabilities
- Incorporate P2 into the planning processes (Design-Change Procedures, Plan of the Day, Pre-Evolutionary Briefs)
- Develop a standard method for waste estimating
- Secure adequate compactor equipment and use it efficiently and consistently

## **Acronyms**

BUS	Business Operations
CMIP	Capability Maintenance and Improvement Project
DOE	Department of Energy
EAP	Employee Assistance Program
EPA	Environmental Protection Agency
ESH	Environment, Safety and Health
ESO	Environmental Stewardship Office
ISM	Integrated Safety Management
LANL	Los Alamos National Laboratory
NDA	Nondestructive Assay
NMT	Nuclear Materials Technology
NRC	Nuclear Regulatory Commission
OSHA	Occupational Safety and Health Administration
PM	Project Management
TMSE	Transition Manufacturing and Safety Equipment
UC	University of California