Oak Ridge National Laboratory

Safety Leadership Improvement Plan

LEADERSHIP

Set the highest standard of performance and instill accountability

World Class Research Facilities and Operational Infrastructure

Best Management Practices, Standards, and Tools

Interdependent Teams, Personal Accountability for Safety

World Class Safety

We believe that all accidents are preventable

Safety 1st
ORNL Celebrates
2,000,000
Safe Hours Worked

We have a moral obligation to provide a safe workspace

December 2005

OAK RIDGE NATIONAL LABORATORY
SAFETY LEADERSHIP IMPROVEMENT PLAN

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ACRONYMS

ACTS	Assessment and Commitment Tracking System
ALARA	as low as reasonably achievable
DOE	Department of Energy
ES&H	environment, safety, and health
ESH&Q	Environment, Safety, Health, and Quality
F&O	Facilities and Operations
FY	fiscal year
HFIR	High Flux Isotope Reactor
LSM	Laboratory Space Manager
M&O	management and operating
NNFD	Non-Reactor Nuclear Facilities Division
ORNL	Oak Ridge National Laboratory
SBMS	Standards Based Management System
SC	Office of Science
STOP	Safety Training Observation Program

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1. INTRODUCTION

UT-Battelle. LLC has implemented a Safety Leadership Initiative at Oak Ridge National Laboratory (ORNL), because UT-Battelle management believes that leadership is the critical element in culture change[1] and sustaining a safety conscious work environment. Safety leadership is a required element of UT-Battelle's business planning and execution process. As ORNL's prime management and operating (M&O) contractor for the U.S. Department of Energy (DOE) Office of Science (SC), UT-Battelle is committed to excellence in operations and environment, safety, and health (ES&H). Our Laboratory Agenda provides a structured framework for delivery of UT-Battelle commitments (see Figure 1), and is the foundation for continuously improving ORNL's operational discipline and safety culture.

Figure 1. UT-Battelle's Laboratory Agenda includes achieving "Excellence in Operations and Environment, Safety and Health (ES&H).

Since 2000, UT-Battelle has implemented various initiatives to stimulate continued improvement in ORNL's operations and ES&H.

- We are instilling a culture of personal accountability for safety and critical self-assessment that's based on the belief that all accidents are preventable.

- We are deploying a set of integrated management systems via the ORNL Standards Based Management System (SBMS) that provide user-friendly support and guidance on identifying and managing risk, controlling work, and providing lessons learned for continuous process improvement.

- We are demonstrating continual improvement in ES&H performance as we move toward our goal of achieving world-class status and recognition in safety performance (see Figure 2).

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[1] Culture change is reflected by positive changes lain staff behaviors, attitudes, and performance.

The Route to World-Class Safety Performance
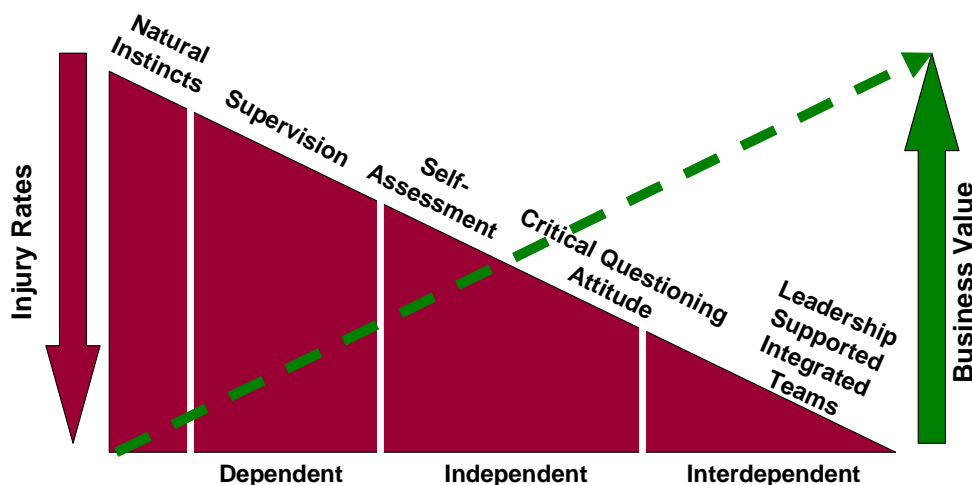
Figure 2. Leadership support is a critical element in encouraging interdependence.

UT-Battelle expects the Safety Leadership Initiative and this *"Safety Leadership Improvement Plan"* to produce a work environment where our operational performance meets or exceeds DOE's expectations. We continually strive for a work environment where:

- accidents and injuries are eliminated;

- the average radiation dose to our workforce is reduced to a level as low as reasonably achievable (ALARA), and individual doses are below the DOE limits;

- there are no violations of nuclear safety requirements; and

- our environmental performance results in no violations, unplanned releases, or permit exceedances.

Our goal is to plan and perform all operations in a manner that is safe, efficient, and protective of the safety and health of our staff, the public, and the environment, and conducive to conducting world-class research.

As documented in our "*Five-Year Strategic Plan for Operations and Environment, Safety, and Health in Support of World-Class Research*[2]," UT-Battelle is focused on three strategies to achieve world-class status and become recognized as a leader in safety and operational discipline.

- **Change Culture and Behavior** - we are building and leading a culture of personal accountability for safety and operational discipline.

- **Provide Staff with Knowledge and Tools -** we have established, and will continue to improve, communicate, and maintain well-defined standards, requirements, and tools that integrate safety into all phases of research and operations.

- **Create Safer Workspaces -** we are modernizing ORNL facilities and reducing/eliminating hazards and legacy materials.

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[2]*Oak Ridge National Laboratory Five-Year Strategic Plan for Operations and Environment, Safety, and Health in Support of World-Class Research,* ORNL/TM-2004/10, Oak Ridge National Laboratory, August 2004; accessible on line at: http://train.ornl.gov/eshq/EPWS/ORNL-StrategicPlan/ORNL_Strategic_Plan.htm.

We are making progress in each of these areas through our actions (see Figure 3). Improvements in the safety culture and behavior of ORNL staff are evident in the dramatic reduction in the severity and number of injuries over the last five years (see Figure 4). Our SBMS and work control guidance provide staff with ready access to knowledge and tools (e.g., the ORNL Work Plan System), which has positively impacted operational discipline. Our success in the clean up of legacy materials, the creation of the Laboratory Space Manager (LSM) role, and the identification and correction of facility-related safety risks has resulted in a substantial reduction in operational risk.

It is clear that additional attention is necessary to promote continued improvements in ORNL's safety culture and behavior if we are to achieve world-class status and meet our customer's expectations. ORNL management needs to increase attention on

- establishing and communicating safety expectations,
- setting performance standards,
- instilling accountability, and
- establishing an aggressive, risk-based management assessment program that identifies potential safety risks before accidents occur.

This *"Safety Leadership Improvement Plan"* is designed to help ORNL managers understand the expectations and their role as a leader in improving safety at ORNL.

UT-Battelle has known from the beginning that safety was about creating a different culture.

ORNL's Laboratory Director provides personal leadership:
- conducts rolling safety stand-down meetings with all staff,
- initiated the Laboratory Space Manager's Initiative,
- initiated "technical safety seminars",
- increased disciplinary actions for unsafe conduct, and
- emphasizes safety in manager performance evaluations and staff performance evaluations.

Develop Systems and Tools | Implement and Improve Systems and Tools

Create Safer Work Spaces (ORNL revitalization, legacy materials deposition)

Personal Accountability

FY00   FY02   FY04   FY06   FY08   FY10
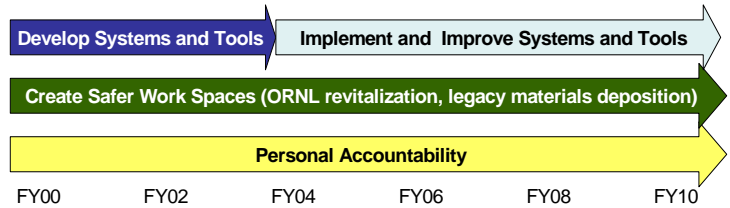
Figure 3. Sample of UT-Battelle actions to improve safety.

There's a downward trend in total recordable cases.

ORNL Total Recordable Cases Rate (Mean)
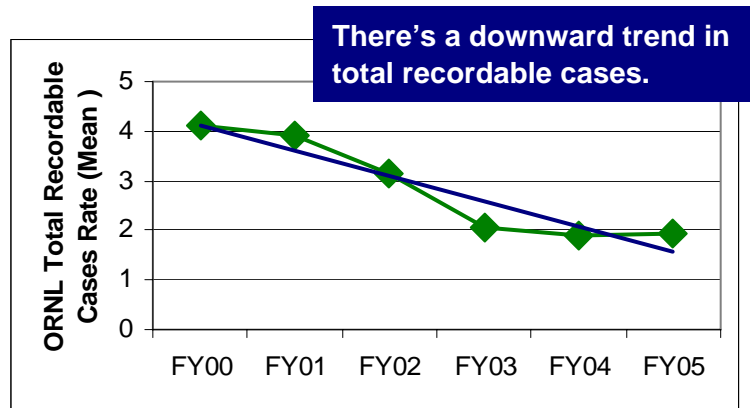
Figure 4. Improvements in ORNL's safety culture are resulting in fewer and less severe injuries.

2.   ORGANIZATION AND APPROACH

Corporate management systems that have achieved outstanding safety performance exhibit the characteristics shown in Figure 5. Behavioral elements that relate directly to culture are vital to the success of these management systems.
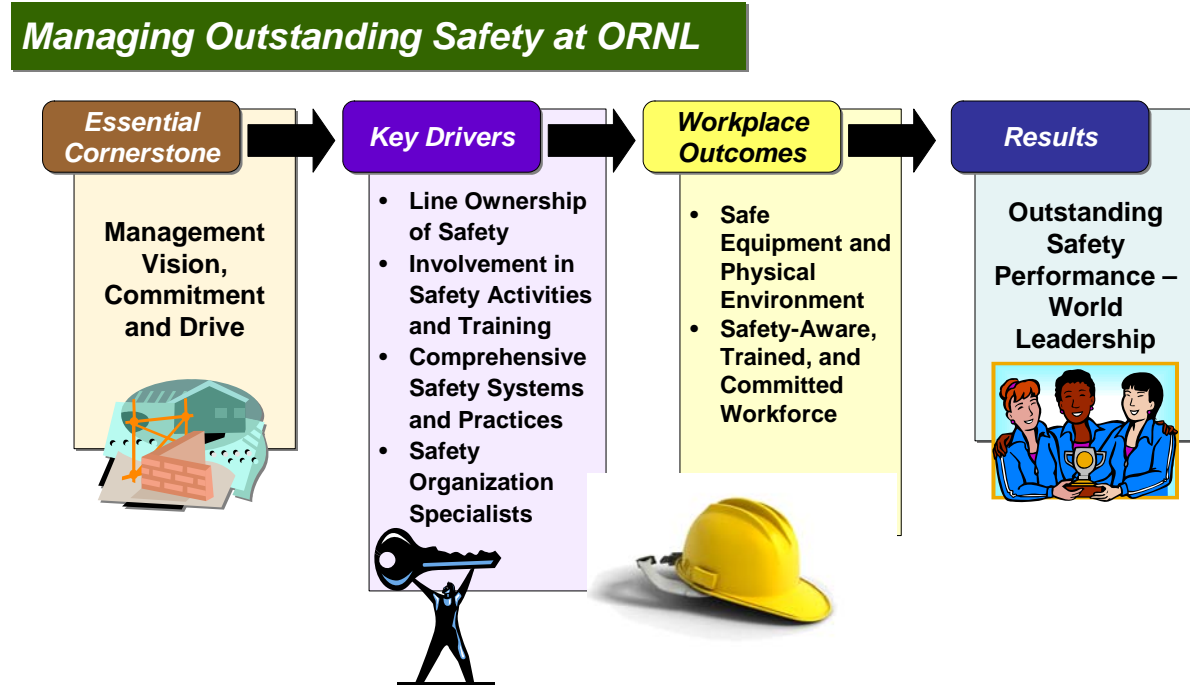
Figure 5. UT-Battelle's management model to achieve outstanding safety at ORNL. Adapted from J. M. Stewart's, *Managing for World-Class Safety,* **John Wiley & Sons, 2001.**

UT-Battelle has implemented many of the required elements to achieve outstanding safety performance at ORNL. However, the area of personnel behavior is now critical to our continued success. Changing the behavior of ORNL staff will be the focus of targeted efforts supported by the Safety Leadership Initiative and this "*Safety Leadership Improvement Plan*." Maintaining balanced leadership focus and support of our staff, methods, and facilities will result in a healthy safety culture (see Figure 6).
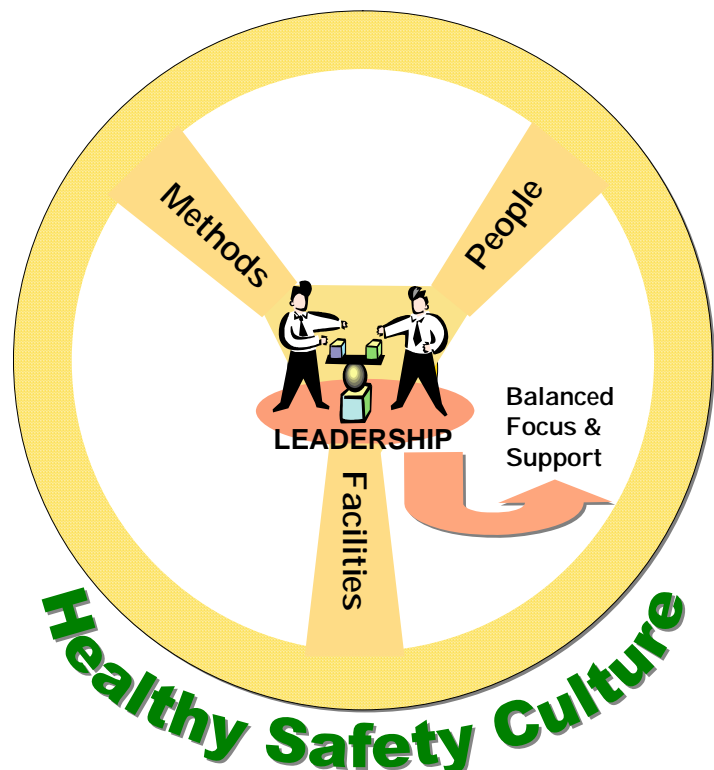
Figure 6. Maintaining balanced focus and support from leadership is important in improving human performance.

ORNL's Laboratory Director has articulated five key principles and expectations that will guide our culture change.

1. Everyone behaves as if all accidents are preventable.
2. Everyone is prepared to challenge unsafe behavior, welcomes challenges, and personally implements changes to correct unsafe behavior.
3. Each of us is responsible for our own safety and for the safety of our co-workers.
4. Constant vigilance is maintained, especially on routine tasks.
5. Managers feel personally responsible for the safety of their employees.

These principles and expectations provide a foundation for a safety culture that identifies risks, prevents incidents and accidents before they occur, and facilitates the successful execution of ORNL's research mission.

This "*Safety Leadership Improvement Plan*" supports the strategies contained in the "*Five-Year Strategic Plan for Operations and Environment, Safety, and Health in Support of World-Class Research*" and sets the expectations for ORNL management, as shown in Figure 7. The ORNL Environment, Safety, Health, and Quality (ESH&Q) Directorate will provide overall guidance to identify and implement activities, process changes, training and awareness exercises, and specific tools that address safety culture and performance improvements. Improvement of safety performance takes leadership. ORNL line organizations are accountable for supporting these principles, implementing suggested changes, and providing the leadership and resources necessary to achieve improvements in safety performance.
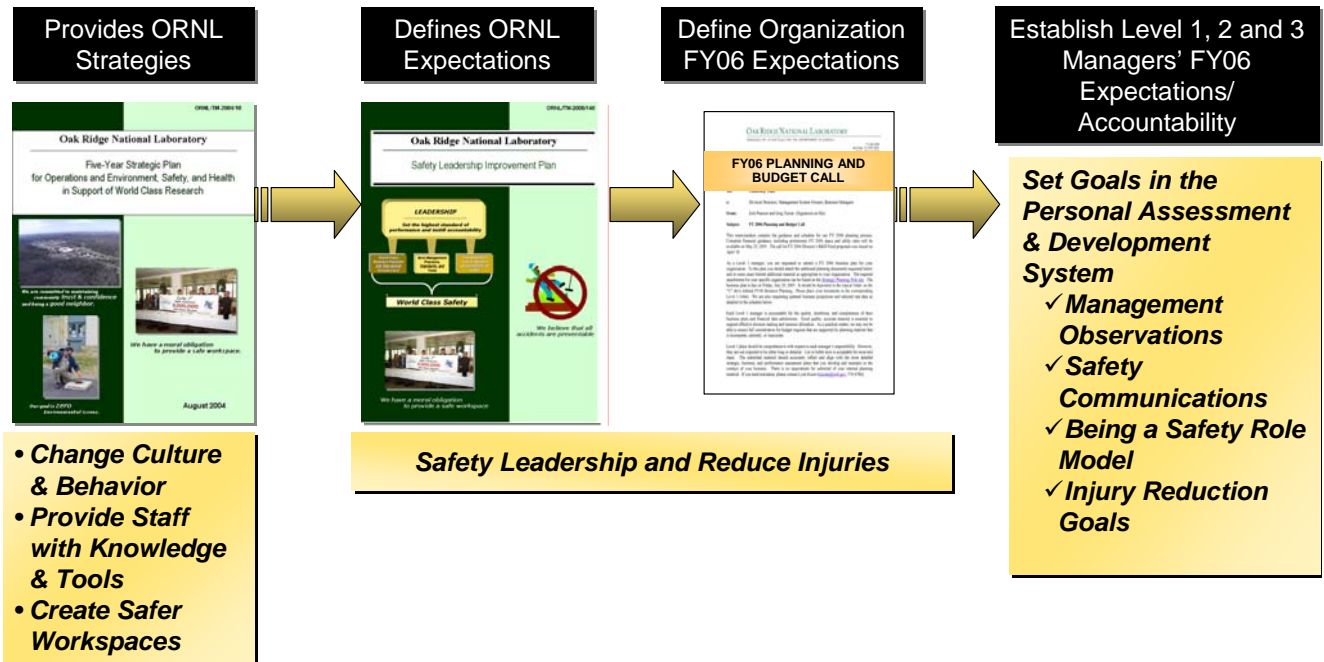
Figure 7. Clear management and leadership expectations, plans, and goals in regard to safety will continue to improve our safety culture and provide staff with the leadership required to help us achieve world-class safety performance.

The FY06 business planning process included a request for ORNL organizations to provide FY06 objectives to meet the desired outcome of improving safety leadership and performance. As part of the annual business planning cycle, each ORNL Directorate developing a set of specific actions (see Figure 8) to ensure continuous improvement in both safety leadership and the safety performance in their organizations.
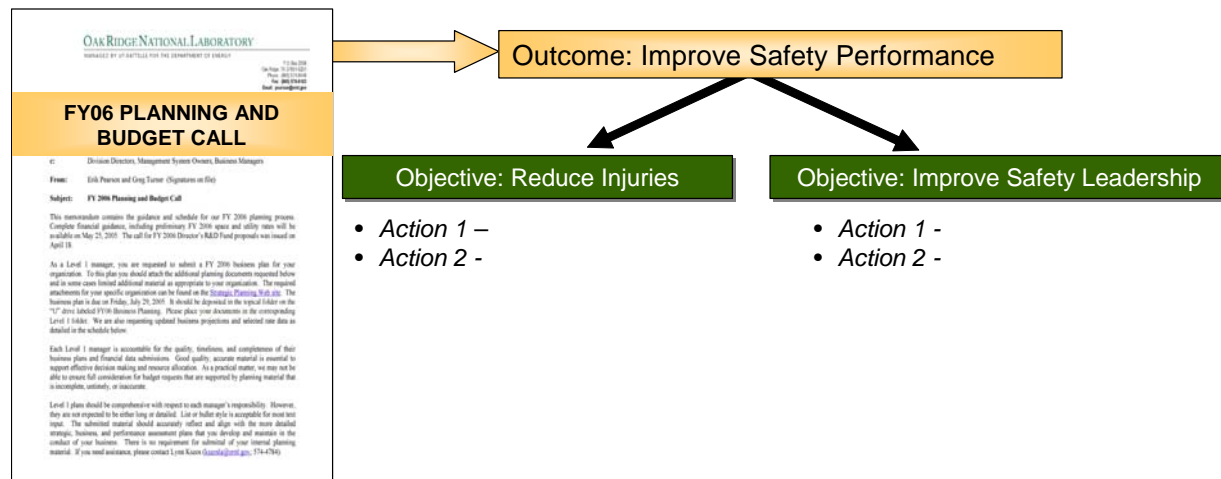
Figure 8. Safety Leadership Goals – ORNL Directorates provide FY06 objectives in their organization Business Plans to meet the desired outcome of improving safety performance.

3. SAFETY LEADERSHIP IMPROVEMENT PLAN ACTIONS

This "*Safety Leadership Improvement Plan"* is aimed at engaging and sustaining management support of

- effective communication of established core safety values, principles, and expectations;
- safety awareness and improvement opportunities for ORNL staff; and
- implementation of specific tools for incident and accident prevention and improved safety performance.

The following sections identify the actions associated with this plan. Appendix A summarizes the implementation schedule of the planned actions.

3.1 Effective Communication of Established Core Safety Values, Principles, and Expectations

The Leadership Team embraces the philosophy that all accidents are preventable and has consistently communicated this philosophy to ORNL line managers and staff. The following actions are being, or will be, implemented. These actions are directed at communicating consistent safety values, principles, and expectations.

- Establish "Safety Leadership" as a core performance expectation for all ORNL managers (see Appendix B).
- Improve the effectiveness of "management observation" activities performed by Directorate and Division level managers.
- Improve the effectiveness of the ORNL management assessment process.
- Continue to implement behavior-based programs, such as the DuPont *Safety Training Observation Program*® (STOP), where appropriate (e.g., supervisors, LSMs, etc.).
- Incorporate "human performance" improvement concepts into ORNL work processes.
- Develop and deploy safety culture surveys.

The ES&HQ Directorate (i.e., Safety Leadership Initiative Director) will establish performance measures and develop safety culture survey tools to monitor ORNL's safety culture and performance. Performance measures and surveys will be documented and distributed to ORNL line management and the Leadership Team so that they can track trends and make informed and effective decisions to continually improve ORNL's safety performance.

3.2 Increase Safety Awareness and Provide Safety Improvement Opportunities

Safety awareness and training are crucial to enhance the receptiveness of ORNL staff to behavior changes and their understanding of management's increased expectations in safety performance. The following actions will be implemented to improve safety training and awareness for ORNL managers, supervisors, and staff.

- Incorporate safety leadership principles (see Appendix B) and the belief that "all accidents are preventable" into Group Leader training.
- Incorporate safety leadership principles and "human performance" concepts into LSM training.
- Provide training on "human performance" principles to ORNL staff, varying the levels of detail as appropriate for various staff positions.
- Provide support to the "Distinguished Lecture Series" coordinator in finding speakers to reinforce behavior-based safety and "human performance" principles.
- Develop a comprehensive communication plan (see Appendix C), which includes communication avenues, such as Laboratory Director Messages, Safety Flash messages, the monthly Safety First program, and *ORNL Today*.

3.3 Implementation of Specific Tools

Training in the DuPont STOP® process was initially piloted in 2003/2004 with the Facilities and Operations (F&O) Directorate and has been implemented with great success. STOP® training has been conducted in other operational directorates, as appropriate. This trained personnel base will continue to expand the use of behavior-based concepts beyond the F&O organizations, as UT-Battelle implements STOP® as a key process for engaging supervision and staff in the conduct of safety observations. Additionally, the UT-Battelle Leadership Team has been trained in the principles of STOP® and has determined a course of action with regard to further management observation training for Level 1, 2 and 3 managers based on DuPont's Safety Leadership Training®.

The approaches to error identification and prevention, as provided in the human performance improvement process, will be incorporated into ORNL's work control processes in the near future, as indicated the actions below.

- Pilot a "human performance" improvement process with the Non-Reactor Nuclear Facilities Division (NNFD) and incorporate "human performance" improvement approaches at the High Flux Isotope Reactor (HFIR).
- Incorporate an accountability tool (i.e., the Culpability Decision Tree) into current SBMS guidance. This will provide a voluntary screening tool to determine individual and organizational accountability in errors or mistakes that result in injuries or occurrences.
- Incorporate an error precursor checklist, a task preview tool, and a post-job review tool into the ORNL Work Control System and process.
- Develop and initiate a management observation process for Level 1, 2 and 3 managers.

4. EXPECTED OUTCOMES

The actions and activities identified in this "*Safety Leadership Improvement Plan"* will assist ORNL management and staff in achieving a strong safety culture and world leadership in safety performance. While traditional performance indicators may show rapid improvement, a true culture change takes time (e.g., embracing the belief that all accidents are preventable). UT-Battelle expects the following long-term outcomes through continued management leadership and successful implementation of the "*Safety Leadership Improvement Plan*."

- **Continued reductions in the number and severity of injuries at ORNL.** We expect performance to vary from month to month, understand that variations will occur, and realize that it is the sustained reduction of both severity and number incidents over time that is important.   However we will continue to address safety and place a high priority on improved safety performance.

- **Continued improvement in the ratio of issues identified through observations and assessments versus those identified via event self-disclosure.** At some point in a very mature organization, the overall numbers of issues that trigger reporting requirements should decline. This is not a near-term objective at ORNL while we are strongly encouraging self-disclosure of issues and challenges relating to safety.

- **Improved indicators from employee safety culture surveys.** We plan to document the baseline survey results and track future survey results to identify trends, as well as improvement issues so that we can realign our planned actions to provide continuous improvement in ORNL's safety culture.

- **Improved employee engagement with and ownership of the ORNL Safety Leadership Program and its processes.** The publication, distribution, communication, and implementation of this plan will help us achieve this expectation.

- **A reduction in errors and mistakes and their impact that result in injuries and occurrences.**

 These expectations will be considered in the development of the performance indicators that will be used to monitor our overall progress.

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APPENDIX A - IMPLEMENTATION SCHEDULE

Activity	Start Date	End Date
Management Commitment		
Establish ORNL Key Safety Principles	March 2005	March 2005
Discussion of Safety Leadership at Leadership Team Spring Planning Retreat	March 30, 2005	April 1, 2005
Establish Battelle "Believe, Know, Do" principles	March 2005	June 2005
Establish Directorate Safety Leadership and Performance goals	June 2005	July 2005
Establish Safety Leadership performance metrics and multiyear goals	December 2005	Ongoing
Communication and Education		
Initial exposure to Human Performance (HP) fundamentals	February 2005	February 2005
2.5-day "human performance" fundamentals training (six additional ORNL staff)	March 22, 2005	March 24, 2005
Incorporate Safety Leadership principles into Group Leader training	May 2005	August 2005
Incorporate "human performance" principles into Group Leader training	May 2005	August 2005
1-day "human performance" Fundamentals for ORNL Operations Managers	May 16, 2005	May 16, 2005
Develop internal "human performance" training capability for "human performance" fundamentals and specific "human performance" tools	April 2005	November 2005
Increase emphasis on non-task-related behaviors and home safety via the Wellness Program and Safety First Program	November 2005	Ongoing
Provide voluntary "human performance" awareness and fundamentals training sessions for lab staff	December 2005	Ongoing
Include "human performance" fundamentals in Critique Facilitators qualification process	January 2005	March 2006
Implementation		
Establish management observation process	December 2005	June 2006
Develop and implement multimedia Safety Leadership communications plan	December 2005	Ongoing
Implement Safety Leadership Training® for Level 1, 2, and 3 managers	Fourth Quarter 2005	Third Quarter 2006
Implement "human performance" tools: culpability decision tree, error precursor checklist, task preview, post-job review included in SBMS guidance	December 2005	January 2005
Conduct Safety Leadership "Yardstick Survey"	November 2005	January 2006
Conduct safety culture survey for NNFD staff	March 2005	April 2005
Implement "human performance" pilot in NNFD	Fourth Quarter 2005	Ongoing
Outreach and Support		
Host DOE complex-wide HP conference	September 13, 2005	September 15, 2005

APPENDIX B – BATTELLE ESSENTIALS FOR SAFETY LEADERSHIP, THE "BELIEVE, KNOW, DO PRINCIPLES"

The Battelle Essentials for Safety Leadership

I BELIEVE . . .

1. Human life and health have value above all else; my goal is to prevent all incidents
2. Human error is inevitable; but I can reduce its likelihood and severity
3. Safety performance is a direct reflection of <u>my</u> leadership effectiveness
4. Open, timely, and self-critical review of events/near-misses is in my best interest
5. I am accountable for my own safety and for the safety of all those around me, as is everyone in my organization

I KNOW . . .

1. My success is dependent on the organization's safety performance
2. I must create a just environment where open and honest inputs are addressed fairly
3. I must constantly ensure that:
   - The scope of the work is defined and monitored for changes
   - The hazards of the work are analyzed
   - Controls and defenses against human error are developed to address hazards and keep people safe
   - Work is conducted in accordance with the controls, defenses, and all applicable requirements
   - The effectiveness of processes and products is assessed and continuous improvement pursued
4. We all have Stop Work authority, and are expected to use it when needed
5. How to reduce the likelihood and severity of human error-caused events by:
   - Motivating others to change at-risk behaviors and
   - Providing adequate defenses to protect people from the effects of potential errors
6. What to do in response to an emergency

I DO THE FOLLOWING . . .

1. Communicate performance expectations regularly, consistently, and sincerely
2. Ensure there are adequate resources to accomplish work safely
3. Demonstrate caring for the people and the work they do
4. Hold managers and individuals accountable for safety and compliance with requirements
5. Lead by example - practice safe behaviors at all times and comply with all requirements
6. Regularly conduct both formal and informal workplace observations and coaching
7. Actively monitor safety performance and the effectiveness of improvement actions
8. Always have a questioning attitude – avoid complacency and continuously improve
9. Respond receptively to feedback on personal performance
10. Reinforce safe behavior and reward safety excellence

APPENDIX C - SAFETY PERFORMANCE IMPROVEMENT COMMUNICATIONS PLAN

Safety Performance Improvement Communication Plan

Inputs

- **Management Safety Values, Goals, and Expectations**
  - Directorate Business Plans
  - Division Business Plans and Performance Assessment Plans
- **Assessment Feedback**
  - Safety & Heath Assessments
  - Management Observations
  - Operational Awareness Program Assessments
  - Employee Concerns
  - Lessons Learned
- **Incident Investigations**
  - Onsite and offsite critiques
  - Accident Investigations
  - Near Miss Reports.

- *Assessment of Inputs*
- *Development of various media forms*
- *Responsiveness to Business Plans and safety needs*
- *Integrated, and wide distribution*
- *Make safety knowledge, information, and tools a prominent and easy to access and use feature at ORNL*

Outputs

- **Verbal**
  - Group Leader and LSM Training
  - One on one coaching during observations
  - Extended and expanded Leadership Team meetings
  - Regular Division/Group/Team Safety Meetings
- **Visual**
  - Safety Video displays in common areas
  - Safety Video clips and graphics on ORNL web sites
  - Monthly Safety First Posters
  - Safety workshops and celebrations
  - Prominent placement of speed indicators and hazard signs
- **Written**
  - Shared Lessons Learned with improved process for disseminating safety information internally and through out the DOE complex
  - Mailings – Laboratory Director Messages, Wellness Program features, etc.