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NOTE: This Section's Sign-Off Record is maintained in the ESH&A Office, G40 TASF.

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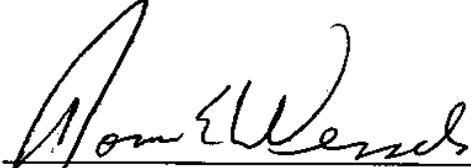
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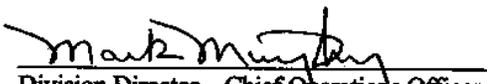
REVISION / REVIEW LOG**SECTION 1 – INTRODUCTION**

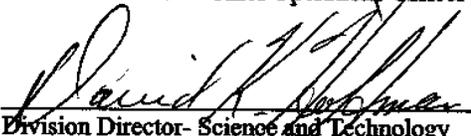
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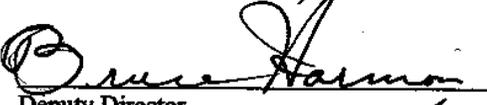
SIGN-OFF RECORD

The Environment, Safety, Health and Assurance Program Manual has been reviewed and approved as documented below.

Reviewed by:  **Date:** 10/11/99
Environment, Safety, Health & Assurance

Approved by:  **Date:** 10/12/99
Division Director - Chief Operations Officer

Approved by:  **Date:** 10/13/99
Division Director - Science and Technology

Approved by:  **Date:** 10/29/99
Deputy Director

Approved by:  **Date:** 10/25/99
Director

1.0 INTRODUCTION

1.1 DIRECTOR'S STATEMENT

Ames Laboratory has a strong commitment to the safety and health of each Laboratory employee. The Laboratory is equally committed to preventing accidental loss of resources and assets and protecting the environment and the general public. It is my belief that accidents that cause injury, illness, property loss or damage to the environment are preventable. Therefore, it is our goal to eliminate foreseeable hazards and maintain a safe and healthful workplace. In addition, achieving compliance with applicable Department of Energy Orders and regulatory standards is a prerequisite for doing Laboratory business and the responsibility of each employee.

In order to accomplish these goals, the Laboratory has adopted the principles of Integrated Safety Management or ISM. Basically, ISM means that we must incorporate safety into all aspects of our work, from planning to completion. We must have total participation by line management and all employees. Each level of supervision at the Laboratory has the responsibility to lead by personal example and to provide the opportunity and the conditions for adequate performance of safety practices. All employees are required to comply with the Laboratory's Environment, Safety, Health and Assurance Program. This "team" effort is necessary to achieve a safe and productive research laboratory.

Dr. T. J Barton, Director
Ames Laboratory

1.2 ENVIRONMENT, SAFETY, HEALTH & ASSURANCE PROGRAM MANUAL

The Environment, Safety, Health & Assurance (ESH&A) Program Manual incorporates the requirements of environmental, safety and health standards referenced in the Ames Laboratory contract as Work Smart Standards (<http://www.external.ameslab.gov/esha/worksmart.html>) with the requirements for quality assurance and training. The ESH&A Program Manual replaces the former "Safety Manual" (ES&H Program Manual) and the Ames Laboratory Standard Operations Document (AL-SOD). Major topical divisions of this manual are referred to as Sections. This manual is divided into ten sections.

1.0 INTRODUCTION : The Introduction includes a statement by the Director, the organizational design of the manual, an explanation of Integrated Safety Management, a description of the Laboratory's Safety Coordinator and Representative Program and an overview of the Safety Review Committee and Activity Reviews.

2.0 QUALITY ASSURANCE: The Quality Assurance Program establishes an effective management system by ensuring that senior management provides planning, organization, direction, control, and support to achieve DOE objectives and minimize environment, safety, and health risks and impacts. Systems are continually reviewed and enhanced in the areas of Management, Training, Quality Improvement, Documents, & Records, Work Processes, Design, Procurement, Inspection & Acceptance Testing and Assessments.

3.0 TRAINING PROGRAM: The Training Program provides employees with the training necessary for the safe and productive completion of their work responsibilities. A primary emphasis is placed on the fulfillment of Environment, Safety, and Health (ES&H) training requirements. The Training Program focuses on the following core activities: Needs Assessment Program; Institutional Training Modules (General Employee Training; Visitor Training; Emergency Awareness Training, etc); Job (Activity) Specific Training; module development; training record keeping; training coordination and performance reporting.

4.0 INDUSTRIAL HYGIENE (IH) PROGRAM: The Industrial Hygiene program describes the components of the Laboratory's Industrial Hygiene Program and includes hazard communication, chemical hygiene, respiratory protection, bloodborne pathogens, asbestos, lead and ergonomics.

5.0 INDUSTRIAL/GENERAL SAFETY PROGRAM: The Industrial/General Safety Program Section includes regulatory requirements for both industrial and general applications relating to specific activities such as Walking and Working Surfaces, Personal Protective Equipment, Machine Guarding, Scaffolding, Confined Space Entry, Lockout/Tagout, etc. These requirements are primarily derived from 29 CFR 1910 (General Industry) and 29 CFR 1926 (Construction Standards).

6.0 ENVIRONMENTAL PROTECTION PROGRAM: This program encompasses the general overriding environmental protection requirements that apply at Ames Laboratory. It refers to specific policies and procedures for protecting all environmental media. It cites appropriate regulations and rules identified in the Ames Laboratory Work Smart Standards (WSS).

7.0 RADIOLOGICAL PROTECTION PROGRAM: The Radiological Protection Program is designed to promote the safe use, handling, storage, receipt, shipping, transferring, and disposal of radioactive materials, and the safe use of analytical x-ray systems, laser systems, devices that generate RF radiation, devices that generate UV light, and high-powered magnets. The program is based on standards which have been developed for the safe use of each type of non-ionizing or ionizing radiation.

8.0 FIRE PROTECTION PROGRAM: The Fire Protection Program provides an overview of fire safety concerns and procedures to be used at the Laboratory. Hot work (torches, etc.), flammable chemical storage, and employee response to fire situations are discussed.

9.0 EMERGENCY PREPAREDNESS AND SITE SECURITY: The Emergency Preparedness and Site Security Program provides a description of the employee responses to emergency situations, severe weather, fire alarms, and security incidents.

10.0 ASSESSMENT PROGRAM: Assessment Program describes the Laboratory efforts to identify and correct deficiencies through a broad scope program. Elements include employee observations, manager observations and independent walk-throughs.

Where necessary, the major topical divisions are organized into sub-sections. Sub-sections are organized under the following general headings.

x.x. “SUB-SECTION HEADING”

APPLICABILITY STATEMENT

A brief statement designed to assist the user in determining the applicability of the sub-section to assigned work responsibilities.

x.x.1 REFERENCES

A listing of standards and local documents applicable to the topic.

x.x.2 BACKGROUND

A statement addressing the scope, historical practices, and/or source of the requirements related to the topic of the subsection.

x.x.3 PROGRAM INFORMATION

Information regarding the requirements related to the sub-topic area.

x.x.4 TRAINING

A list of related training modules.

x.x.5 PERFORMANCE CHECKLISTS

Brief statements of specific responsibilities for various levels of line management and Safety Coordinators and Representatives.

1.3 INTEGRATED SAFETY MANAGEMENT SYSTEM

Applicability Statement: *This section applies to all employees. This section also applies to the Environment, Safety, Health & Assurance (ESH&A) office, which is charged with administering the Laboratory's Integrated Safety Management System.*

1.3.1 REFERENCES

Ames Group Operational Surveillance Program Standard Operating Procedure
Ames Laboratory Contract No W-7405-ENG-82
Ames Laboratory Contract, Article 72, DEAR 970.5204-2 *Integration of Environment, Safety and Health into Work Planning and Execution*
Ames Laboratory Institutional Plan
Ames Laboratory Work Smart Standards
DOE P 450.4, Safety Management System Policy
ESH&I Management Plan
Policy 10200.006 Integrated Safety Management Policy

1.3.2 BACKGROUND

The Laboratory's Integrated Safety Management System is required by Article 72 of the Ames Laboratory Contract (DEAR 970.5204-2 *Integration of Environment, Safety and Health into Work Planning and Execution*). The Laboratory's safety programs, policies, procedures, and practices are the mechanisms through which the Laboratory's Integrated Safety Management System is implemented. These mechanisms ensure that safety considerations are integrated into all aspects of the Laboratory's work, from planning to completion.

1.3.3 PROGRAM INFORMATION

1.3.3.1 ISMS POLICY (Policy 10200.006)

It is the policy of the Ames Laboratory to integrate safety into management and work practices at all levels so that the Laboratory's mission is accomplished while protecting workers, the public, and the environment. This objective is fulfilled through a system of programs, policies, procedures and practices based on the Guiding Principles of Integrated Safety Management. These Guiding Principles are: Line Management Responsibility for Safety, Clear Roles and Responsibilities, Competence Commensurate with Responsibilities, Balanced Priorities, Identification of Safety Standards and Requirements, Hazard Controls Tailored to Work Being Performed, Operations Authorization.

Ames Laboratory work activities that can potentially affect workers, the public or the environment are defined, analyzed, developed, performed and reviewed according to the Laboratory's ES&H programs and practices. These work activities are subject to the Core Functions of Integrated Safety Management with the degree of rigor appropriate to address the type of work activity and hazards involved. The ISM Core Functions are: (1) Define the Scope of Work, (2) Analyze the Hazards, (3) Develop and Implement Hazard Controls, (4) Perform Work within Controls, (5) Provide Feedback and Continuous Improvement.

The Ames Laboratory's programs, policies, procedures, and practices are the mechanisms through which the ISM Core Functions are implemented. These mechanisms assure compliance with standards described in the Ames Laboratory Contract. The Laboratory's programs, policies, procedures and practices also define responsibilities and provide implementation guidance according to and sufficient with the hazards associated with the work activity being performed.

1.3.3.2 IMPLEMENTATION OF ISM FUNCTIONS AT AMES LABORATORY

Define the Scope of Work

"Define the Scope of Work" refers to the actions of translating the work idea into the planned tasks. It includes the definition and prioritization of the tasks, the initial scoping and the allocation of resources with particular emphasis of the principle of balanced priorities. The Laboratory's mechanisms for addressing this core function are performed at various organizational levels.

At the institutional level the fundamental mechanism for definition of work at Ames Laboratory is the GO/CO contract, *Contract No W-7405-ENG-82*. The contract provides the general guidance for operation of Ames Laboratory. The *Ames Laboratory Institutional Plan* provides additional information regarding the Laboratory's mission, strategic plan, core businesses, critical success factors and resource projections. The scope of the Laboratory's overall activities were assessed through the *Necessary and Sufficient Process* which produced the Ames Laboratory *Work Smart Standards*.

The definition and prioritization of tasks, the initial scoping and the allocation of resources for research projects and support functions are achieved according to several mechanisms. These mechanisms include the *Unified Field Budget and Work Authorization Systems (WAS) Call*, the *Preliminary Proposal Form (Form 10100.001)*, the *Laboratory Directed Research and Development* process, the *ESH&I Management Plan*, and the *Incremental Budget Request (Form 58100.012)*. Activities associated with research and support function projects are reviewed according to the procedure for *Readiness Review (Procedure 10200.010)* and *NEPA Procedure (Procedure 46400.033)*. Specific requests for service work are documented according to the *Service Order Requisition (Form 46200.036)*.

The planning and fulfillment of human resource needs are achieved through the *Professional and Scientific Position Information Questionnaire (PIQ)*, and the *Position Description Questionnaire (PDQ)* in conjunction with the *Needs Assessment Procedure (Procedure 10200.029)*. A network of Safety Coordinators and Representatives was established at Ames Laboratory to facilitate communication on workplace health and safety and environmental protection issues between Program/Department offices and the ESH&A office. The special safety related roles and responsibilities of these positions are described in the *Safety Coordinator and Representative Position Descriptions (Forms 10200.090 and 10200.091)*. The *Training Needs Questionnaire (Form 10200.030)* is utilized to document individual training needs for each employee. The *Visitor Safety Guide (Guide 10200.001)* provides guidance on the safety requirements for visitors and vendors.

Additional safety policies, programs, and practices and the related responsibilities are described in the *Environment, Safety, Health and Assurance Program Manual (Manual 10200.002)*.

Analyze the Hazards

“Analyze the Hazards” refers to the actions of identifying, analyzing and categorizing the hazards associated with work. It includes the analysis of hazards at the institutional level as well as the analysis of hazards at the activity level.

During 1996 the Ames Laboratory, with participation from the DOE Chicago Operations Office, undertook an analysis of the work performed at Ames Laboratory according to the *Necessary and Sufficient Process*. This process produced the Ames Laboratory *Work Smart Standards*. In 1992, 1994 and 1998 the Laboratory utilized emergency management consultants to conduct *Hazard Assessments* of the activities performed at Ames Laboratory. These assessments provide a technical basis for emergency planning and safety management activities at the institutional level such as the *Emergency Plan (Plan 46300.001)* and the *Site Security Plan (Plan 10200.007)*.

Personnel within research groups and departments perform the initial analysis of hazards associated with specific activities. The Laboratory, through the *Safety Review Committee*, has provided an *Activity ES&H Hazard Identification Checklist (Form 10200.003)* to document the identification of hazards. Group Leaders and Department Managers advise activity supervisors on analysis of hazards associated with activities. Activity supervisors are also encouraged to seek assistance from Safety Coordinators and Representatives as described in the *Safety Coordinator & Representative Program (Plan 10200.009)*. Safety Coordinators and Representatives are required to take *Hazard Identification Training (AL-130)* to supplement their hazard identification skills. Group leaders, are also encouraged to take *Hazard Identification Training (AL-130)*. Additional assistance is available through engineering and safety specialists within the ESG, ESH&A and FSG offices. The formal review of activities is conducted according to the procedure for *Readiness Review (Procedure 10200.010)*.

Hazards associated with specific jobs are reviewed and documented through *Hazard Inventory/Job Task Analysis (HI/JTA) (Forms 46601.021 and 46601.002)* as part of the hiring process for new employees.

Service Order Requisition reviews by ESH&A and service providers are utilized, as necessary, to identify hazards for work conducted and documented as part of the *Service Order Requisition (Form 46200.036)* process. *ESH&A specialists attendance at FSG planning meetings* also facilitates the analysis of work hazards.

ESH&A specialists conduct reviews of procurements as part of the *Chemical Management Program (Manual 46400.004)*. This information assists in the identification of hazards associated with procured items. Additionally, Engineering Services Group performs review and inspection activities as described by the *Procurement Quality Procedure (Procedure 46200.003)* to identify quality and safety concerns.

Develop and Implement Hazard Controls

“Develop and Implement Hazard Controls” applies to the process whereby applicable standards and requirements are identified and agreed upon, controls to prevent and mitigate hazards are identified and implemented and the safety envelope is established. The implementation of hazard controls shall be accomplished based on the hierarchy of 1) Hazard Elimination, 2) Engineering Controls, 3) Administrative Controls, and 4) Personal Protective Equipment.

The first method of hazard control is the elimination of such hazards during the design and planning of the work process. Where it is practical and effective, it is preferable to eliminate hazards rather than to control them. Examples of hazard elimination include chemical substitution with non-toxic chemicals, the use of non-flammable solvents for cleaning of equipment or metal parts or the use of chemicals that do not contain chlorofluorocarbons (CFC).

The second method of hazard control is engineering controls. Many engineering controls are built into equipment from the manufacturer such as laser and x-ray equipment. The engineering controls must still be tested to ensure they are working adequately. Other examples of engineering controls include fume hoods for handling toxic chemicals, machine guarding, relief valves, spill dikes and interlocks on equipment.

The third method of hazard control is administrative controls. The use of administrative controls to address all hazards should be minimized where the effectiveness and value of engineering controls can be demonstrated. Instead, administrative controls should be used in conjunction with engineering controls to augment hazard control. An example of administrative controls would be to train operators of lasers on the limitations of interlocks and that they can be defeated for alignment operations. Other examples of administrative controls include Standard Operating Procedures (SOP's), access control to non qualified employees, hazardous material limits (small quantities), limiting exposure time hazardous materials (exposure to radiological materials) and limiting exposure time to noise exposure.

The fourth method of hazard control is the use of personal protective equipment (PPE). Personal protective equipment should be used when hazard elimination, engineering controls and administrative controls are not completely adequate or infeasible to control hazards. Frequently, it will be necessary to supplement engineering controls and administrative controls with personal protective equipment. An example of PPE supplementing engineering controls would be handling of a toxic and acidic chemical in a fume hood. The fume hood would control the respiratory hazard and nitrile gloves would control the skin hazard. Other forms of PPE include safety glasses, face shields, hard hats, respiratory protection, steel-toed shoes and aprons or lab coats.

The *Work Smart Standards*, produced by the *Necessary and Sufficient Process* form the basis for the safety management documents at the Ames Laboratory, such as: *Environment, Safety, Health & Assurance Program Manual (Manual 10200.002)*, *Chemical Hygiene Plan (ISU EH&S)*, *Site-Specific Radiological Control Manual (46400.003)*, *Waste Management Program Manual (46400.001)*, and the *Electrical Safety Manual (46200.001)*. Associated training modules are developed and documented according to the requirements of the procedure for *Training Module Development (Procedure 10200.002)*.

Hazard Controls for specific activities are initially selected and developed within research groups and departments. Group Leaders and Department Managers provide assistance to Activity Supervisors as part of the typical mentoring relationship. Also, Activity Supervisors and Group Leaders are encouraged to seek assistance from Safety Coordinators/Representatives as described in the *Safety Coordinator & Representative Program (Plan 10200.009)* and from safety specialists in the ESH&A office. A formal review of activities is conducted according to the procedure for *Readiness Review (Procedure 10200.010)*. Formal activity reviews provide a forum for the activity supervisor, group/department personnel, safety specialists and engineering professionals to discuss the hazards associated with the activity, review the applicable standards, detail the required control mechanisms and establish the related safety envelope.

Emergency planning activities at the institutional level are documented in the *Emergency Plan (Plan 46300.001)*. The emergency planning activities are based on information developed through contracted *Hazard Assessments* of the Laboratory's activities and facilities.

Visitor safety requirements are established according to the hazards encountered while involved with the Laboratory's activities. Guidance for visitors is provided through the *Visitor Safety Guide (Guide 10200.001)*.

Perform Work Within Controls

"Perform Work Within Controls" relates to confirmation and authorization of readiness to perform activities before work is conducted, and to the performance of work according to agreed upon conditions and requirements.

The primary mechanism for authorization of work at Ames Laboratory by the DOE is the GO/CO contract, *Contract No W-7405-ENG-82*. The primary DOE process for confirmation that work is performed according to agreed upon conditions and requirements is the *Ames Group Operational Surveillance Program Standard Operating Procedure*.

Approval and authorization of specific activities is accomplished through *Readiness Review (Procedure 10200.010)*. These procedures require approvals by the Group/Section Leader, Program Director/Department Manger, ESH&A Lead Specialist and a member of the Safety Review Committee. These approvals are documented on the *Readiness Review Activity Approval Form (Form 10200.004)*. Approval from the Ames Laboratory Director is required for ES&H Hazard Level III activities. The formality and rigor of the activity review process and the extent of documentation is dependent upon the hazard and complexity of work related to the activity. A Safety Analysis Document (SAD) is prepared for ES&H Hazard Level III activities. This document is forwarded to the DOE Ames Group Manager and the Iowa State University EH&S Director.

Activity reviews allow for ***Developmental Approval*** at which time the specific conditions and requirements, including safety controls and documentation, are delineated. Once the agreed upon conditions and requirements are met the activity review is finalized through ***Operational Approval*** by the Safety Review Committee. The level and rigor of documentation related to activities, such as procedures, and training are determined according to the level of hazards and complexity of the work. Documentation may consist of general instructions for equipment operation, ***Group/Department process, activity or safety documents***, or formal procedures prepared according to the procedures for ***Writing Formal Procedures (Procedure 10200.001)***.

The ***Service Order Requisition (Form 46200.036)*** is utilized to document the approvals and the safety review related to service work.

Visitor and vendor work approvals are granted by the Group Leader or Department Manager with the management responsibility for the task being performed. Guidance for visitors is provided through the ***Visitor Safety Guide (Guide 10200.001)***.

Provide Feedback and Continuous Improvement

The most important and effective process for identification and correction of deficiencies is the observation of individual employees. Employees are charged with the responsibility of continuously assessing their individual performances and their workspaces in order to prevent problems and to identify nonconforming conditions and opportunities for improvement. A ***Worker Observation Guide (Guide 10200.003)*** is available to assist workers in the observation of activities within office spaces and laboratory/shop spaces. Employees are empowered, through the ***Stop Work Authority Policy (Policy 10200.005)***, to initiate stop work where there is the apprehension of serious injury, impairment of health or adverse impact to the environment. Resolution of concerns should occur at the level of line management most directly responsible for the activity. If the issue cannot be resolved at this level, the employee is directed to proceed within his/her line management structure or to report the concern to the Environment, Safety, Health and Assurance (ESH&A) office as part of the ***Employee Safety Concerns Program (Plan 10200.008)***. During ***General Employee Training (GET)*** all employees are apprised of their right to contact DOE directly.

Ames Laboratory has developed a network of Safety Coordinators and Representatives to facilitate communication on workplace health and safety and environmental protection issues between Program/Department offices and the ESH&A office. Responsibilities and requirements are described in the ***Safety Coordinator & Representative Program (Plan 10200.009)***. Safety Coordinators and Representatives may be involved in group-specific walk throughs and surveillance activities. Also, Safety Coordinators are usually responsible for ***Program/Department Walk Throughs (Procedure 10200.014)***. Issues identified through Group and Program/Department feedback efforts are generally resolved within the respective organizational unit. Program/Department offices are encouraged to communicate unresolved safety issues to the ESH&A office.

Additional safety reviews are conducted by programs administered through the ESH&A office. **Independent Walk Throughs (Procedure 10200.021)** are performed for each Program/Department on an annual basis. The Independent Walk Through team includes a member of the Executive Council. A corrective action tracking database is utilized to track and document close out of concerns. Ames Group and/or DOE-CH generally participate in these efforts. Ames Group and DOE-CH involvement is part of the **Ames Group Operational Surveillance Program Standard Operating Procedure. ESH&A Topical Appraisals (Plan 10200.022)**, such as Inspections and Surveys of Analytical X-ray Systems, are conducted by ESH&A subject matter experts on a periodic basis. The ESH&A office provides assistance to Program/Departments for **Subcontractor Oversight (Procedure 10200.046)** activities. This assistance is primarily provided by the Industrial Safety Specialist and the Industrial Hygiene Specialist.

A review of an approved activity's operation is performed after five years according to the requirements of **Readiness Review (Procedure 10200.010)**. This review is performed by safety and engineering specialists, with approval by the chair of the Safety Review Committee. Personal ES&H performance is addressed through supervisor interactions and an **Annual Performance Review (Form 58200.001)** as part of the **Ames Laboratory Performance Review and Planning System**. Group Leaders, Program Directors and Department Managers are responsible for safety related performance measures as communicated through the **Safety Performance Measures Policy (Policy 10200.007)**. **Guidelines for Safety Performance Evaluation (Guide 10200.002)** is provided to assist supervisors in reviewing an individual's safety performance during the annual performance review.

Incident and accident information is developed according to the requirements of the procedure, **Accidents, Incidents & Employee Safety Concerns: Classification & Investigation (Procedure 10200.038)**. Occurrence reporting is achieved according to the **Event Reporting Plan (Plan 40000.001)**. Corrective Action Plans are developed according to the requirements of **Corrective Action Development (Procedure 10200.039)**. Lessons learned from internal and external events are distributed according to the elements of the **Lessons Learned Program Implementation Plan (Plan 10200.020)**.

Information from the various feedback mechanisms described above is reviewed according to the procedure for **Trend Analysis of ES&H Concerns (Procedure 10200.045)**. This review is included as part of an annual self assessment process as detailed in **Appendix B, Performance Objectives and Measures (Contract No. W-7405-ENG-82)**. Significant institutional issues derived from Type A and B Investigations, from DOE program initiatives and from DOE surveillance activities are addressed by corrective action plans and tracked through the **Ames Group Issue Management Tracking Procedure**.

1.3.3.3 ROLES AND RESPONSIBILITIES

Laboratory Director

The Laboratory Director has a contractual responsibility with the U.S. Department of Energy to ensure that a safe and healthful workplace is provided for employees, to protect the environment and the public, to minimize or eliminate hazards to government property, and to comply with applicable ES&H regulations. The Director has delegated ES&H responsibilities to the line organization through Program Directors and Department Managers and, in turn, to Group / Section Leaders. The Director also has assigned staff, policy, and advisory functions related to ES&H to the ESH&A office.

Program Directors / Department Managers

Program Directors / Department Managers have responsibility for assuring the implementation of program/department ES&H operations under their authority. Program Directors / Department Managers shall assure that Group / Section Leaders implement, maintain, and document the ES&H program within each group.

Program Directors / Department Managers are responsible for appointing a Safety Coordinator. The Safety Coordinator shall serve as a liaison between the program and ESH&A and shall also serve as a resource for ES&H information to departmental personnel.

Group / Section Leaders

Group / Section Leaders function as first line managers responsible for day-to-day operational ES&H in their areas. Group / Section Leaders are responsible for implementing the programs and requirements described in this manual by defining which sections apply to their activities by reading the "Applicability Statements", understanding and implementing the "Program Information", completing the appropriate "Training" and completing the tasks listed in the "Performance Checklist".

Group / Section Leaders shall ensure that all employees are properly trained in accordance with the provisions of each subject area and have supporting training documentation that is retained for five years after employment. Group / Section Leaders may designate a Safety Representative to assist with ES&H program implementation.

Employees

Employees are responsible for: 1) following established standard operating procedures when performing their work; 2) receiving group/activity-specific training by their supervisor or his/her designee prior to conducting any work at Ames Laboratory; 3) asking questions about standard operating procedures until they understand them; and 4) reporting unsafe work conditions to their supervisor or ESH&A, as appropriate. This manual contains information regarding employee responsibilities in different subject areas; the employee is responsible for reading and understanding all pertinent sections of the program manual as defined by their supervisor.

All employees are responsible for ensuring the safety of visitors to the Laboratory. Social visitation is discouraged as it should normally be off-site and during non-working hours. The practice of "baby sitting" in the Laboratory is strictly forbidden. Children could be at great risk in the laboratory as it is virtually impossible to maintain constant control. Whenever possible, visitors should be excluded from areas of potential hazard. Discussions should be held in offices or conference rooms.

Line Management

Line Management is defined as any management level within the Laboratory organization, including program directors, department managers, group / section leaders and supervisors, that is responsible and accountable for directing and conducting work. Generic Integrated Safety Management Performance Expectations for Line Management are defined as follows.

Define the Scope of Work

- Identify new or significantly modified activities during the planning of work associated with Unified Field Budget Call, Preliminary Proposal Form, LDRDs, ESH&I Management Plan and Service Order Requisitions (SORs).
- Utilize PIQs/PDQs, Hazard Inventory/Job Task Analysis (HI/JTA) or other documentation to define safety roles, responsibilities and expectations for new and significantly modified job assignments.

Analyze the Hazards

- Identify hazards associated with new or significantly modified activities via the Activity ES&H Identification Checklist (Form 10200.003) and review these hazards with Safety Coordinator/Representative and ESH&A in accordance with the requirements developed by the Safety Review Committee (SRC).
- Develop and maintain skill necessary to analyze hazards associated with work tasks through participation in related safety training.
- Utilize Hazard Inventory/Job Task Analysis (HI/JTA), Training Needs Questionnaire (TNQ) or other documentation to analyze the safety hazards related to roles, responsibilities and expectations for new and significantly modified job assignments.

Develop and Implement Hazard Controls

- Develop and implement hazard controls to assure work is performed safely and consistent with the Ames Laboratory safety policies, procedures and requirements including controls required as part of Readiness Review or deficiency corrections.
- Assure workers have received appropriate safety training before performing work.
- Utilize supervisory relationships, such as mentoring, and/or develop Job/Activity specific requirements to assist employees with control of hazards.

Perform Work Within Controls

- Utilize Readiness Review Approval Forms and the Service Order Requisition Form to document line management's approval of activities.
- Perform work within the controls developed during activity reviews, written procedures and Group /Department requirements.
- Utilize Employee Training Profiles (ETPs) to assure appropriate training has been completed for the performance of work within controls.

Feedback and Continuous Improvement

- Promote worker identification and prompt correction of safety deficiencies.
- Develop, promote and participate in Program / Department Walk Throughs.
- Promote an open and effective environment for expression and resolution of employee safety concerns.
- Cooperate with independent and external walk throughs and assessments.
- Review employee safety performance and discuss safety expectations during annual performance reviews.
- Report all accident, incidents, injuries and cooperate with related investigations.
- Promote the distribution of safety related lessons learned.
- Support the Laboratory's contract performance measures.

1.3.4 TRAINING

Specific training for Integrated Safety Management is provided via the following institutional training module:

| INTEGRATED SAFETY MANAGEMENT | | #AL-143 |
|-------------------------------------------------------|---------------------------------------------------------------------|----------------|
| <i>Intended Audience:</i> | <i>Mandatory for all employees.</i> | |
| <i>Module Format:</i> | <i>Classroom Instruction. Estimated completion time: 0.5 hours.</i> | |
| <i>Associated Retrain Period & Format:</i> | <i>No retrain.</i> | |

After January 1, 2000 the principles and functions of Integrated Safety Management will be incorporated into General Employee Training (GET) for New Employees, AL-001.

| GENERAL EMPLOYEE TRAINING (GET) FOR NEW EMPLOYEES | | #AL-001 |
|----------------------------------------------------------|---------------------------------------------------------------------|----------------|
| <i>Intended Audience:</i> | <i>Mandatory for all employees.</i> | |
| <i>Module Format:</i> | <i>Classroom Instruction. Estimated completion time: 2.0 hours.</i> | |
| <i>Associated Retrain Period & Format:</i> | <i>No retrain.</i> | |

1.3.5 PERFORMANCE CHECKLIST

Supervisors / Group / Section Leaders / Department Managers / Program Directors shall:

Promote and comply with the principles and functions of the Laboratory's Integrated Safety Management Program.

Safety Coordinators and Representatives shall:

Promote the principles and functions of the Laboratory's Integrated Safety Management Program.

Environment, Safety, Health & Assurance (ESH&A) shall:

Administer the Laboratory's Integrated Safety Management System and maintain related processes and appropriate documentation.

1.4 SAFETY COORDINATORS AND REPRESENTATIVES

Applicability Statement: *This section applies to all Groups Leader s/ Department Managers and to employees designated as Safety Coordinators or Representatives; it also applies to the Environment, Safety, Health & Assurance (ESH&A) office which administers the Safety Coordinator and Representative Program.*

1.4.1 REFERENCES

Manual 10200.002, Environment, Safety, Health and Assurance Program Manual
Plan 10200.009, Safety Coordinator and Representative Program Implementation Plan

1.4.2 BACKGROUND

The purpose of the Safety Coordinator and Representative Program is to provide an additional network (other than Group Leaders / Department Managers) by which relevant ES&H information is disseminated to Ames Laboratory employees. Safety Coordinators and Representatives serve as liaisons between employees and supervisory personnel and frequently interact with the ESH&A office on safety issues. Coordinators and Representatives provide Program Directors /Department Managers or Group / Section Leaders information on the status of safety conditions in the Program or Group. Coordinators and Representatives receive regular information on safety issues such as Lessons Learned information, requests for information on chemical usage and requests for assistance with remediation of safety discrepancies.

1.4.3 PROGRAM INFORMATION

1.4.3.1 General

The basic elements of the program are Safety Coordinators (designated by Program Directors) and Representatives (designated by Group Leaders / Department Managers), training, and roles and responsibilities. Detailed programmatic information can be found in the document "Safety Coordinator and Representative Program Implementation Plan" (#10200.009).

1.4.4 TRAINING

Specific training for Safety Coordinators and Representatives is provided via the following institutional training modules:

| HAZARD IDENTIFICATION | | #AL-130 |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <i>Intended Audience:</i> | <i>Mandatory for Safety Coordinators and Representatives; strongly recommended for Group Leaders/Department Managers or other personnel wishing to increase hazard identification skills.</i> | |
| <i>Module Format:</i> | <i>Classroom Instruction with quiz. Estimated completion time: 2.5 hours.</i> | |
| <i>Associated Retrain Period & Format:</i> | <i>5 year retrain; mail-in quiz.</i> | |

| SAFETY COORDINATOR & REPRESENTATIVE ORIENTATION #AL-031 | |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <i>Intended Audience:</i> | <i>Mandatory for Safety Coordinators and Representatives.</i> |
| <i>Module Format:</i> | <i>One-on-one instruction with ESH&A personnel; estimated completion time: 1.0 hour.</i> |
| <i>Associated Retrain Period & Format:</i> | <i>No retrain.</i> |

Group/activity-specific training shall be given to each employee designated a Safety Coordinator or Representative that details specific roles and responsibilities. This training shall be documented by the Group Leader/Department Manager and the records maintained for a period of 5 years.

1.4.5 PERFORMANCE CHECKLISTS

Program Director/Department Manager shall:

- Appoint a Safety Coordinator for the Program.
- Notify ESH&A in writing of the person appointed to be the Safety Coordinator (also when changes are made).
- Assure that the group Safety Coordinator has a clear understanding of roles and responsibilities and has attended required training.
- Request information from the Safety Coordinator on the status of safety activities in the Group.

Group / Section Leaders shall:

- Appoint a Safety Representative for the group.
- Notify ESH&A in writing of the person appointed to be the Safety Representative (also when changes are made).
- Assure that the group Safety Representative has a clear understanding of roles and responsibilities and has attended required training.
- Request information from the Safety Representative on the status of safety activities in the Group.

Safety Coordinators and Representatives shall:

- Attend Ames Laboratory “Hazard Identification (AL-130)” training and “Safety Coordinator & Representative Orientation (AL-031)” training.
- Attend other training as indicated by supervisory personnel and ESH&A.
- Serve as liaison between group members and supervisory personnel and / or the ESH&A office.
- Provide information on the status of safety activities to Program Directors / Department Managers or Group / Section Leaders.

Environment, Safety, Health & Assurance (ESH&A) shall:

- Administer the Safety Coordinator and Representative Program by maintaining policies and procedures, conducting meetings, maintaining databases, and disseminating relevant ES&H information.

1.5 SAFETY REVIEW COMMITTEE AND ACTIVITY REVIEWS

Applicability Statement: This section applies to all Groups Leaders/Department Managers and to all activities of Ames Laboratory. This section also applies to the Environment, Safety, Health & Assurance (ESH&A) office which is charged with administering Readiness Reviews.

1.5.1 REFERENCES

ALARA Committee Charter, June 1999
Electrical Safety Committee (ESC) Charter, July 1998
Fire Safety Committee Charter, May 1999
Safety Review Committee (SRC) Charter, June 1999
10 CFR 835, Occupational Radiation Protection
Form 10200.003, Activity ES&H Hazard Identification Checklist
Form 10200.004, Readiness Review Approval Form
Plan 10200.005, Implementation Plan
Policy 10202.004, Radiological Protection Program (RPP)
Procedure 10200.010, Readiness Review Procedure

1.5.2 BACKGROUND

The Safety Review Committee was established by the Ames Laboratory Director in 1992. It serves in an advisory capacity to the Director, recommending policy and procedures related to safety issues and the readiness review of research and operational activities. The specific responsibilities of the SRC include:

- to appoint and oversee sub-committees for the study of safety issues,
- to prepare and seek approval of policy and procedures for the review of activities, and
- to facilitate the timely and orderly review of activities.

The membership of the SRC includes three representatives of the Science and Technology Division and one representative each from Engineering Services Group, Facility Services Group and Environment, Safety, Health and Assurance.

1.5.3 PROGRAM INFORMATION

Ames Laboratory management has identified the space, activities, and personnel for which Programs/Departments have management responsibilities. Programs/Departments, in turn, have assigned responsibilities to Group/Section Leaders. The Group/Section Leaders closely monitor and manage the day-to-day performance of activities and therefore are best suited to identify and manage the hazards associated with the activities for which they are responsible.

1.5.3.1 READINESS REVIEWS

Identification of Activities

Group/Section Leaders shall identify activities for which they have management responsibilities and clearly assign authorities, responsibilities, and accountabilities to other members of the Group/Section. An activity is one or several action(s), process(es), and/or equipment, coordinated to perform a task. Actions are the manner, method, or act of performing a task.

Additional information relating to the Identification of Activities is included in the procedure for Readiness Review (Procedure 10200.010).

Activity Hazard Identification and Categorization

Ames Laboratory activities are classified as Laboratory/Industrial Type and Office Type. Examples of Laboratory/Industrial Type Activities include: experimental research, applied research, production, maintenance, fabrication, construction, hazardous waste handling, and warehouse shipping and receiving activities. Examples of Office Type Activities include: theoretical research, computational, design, and administrative activities.

The identification of ES&H hazards associated with activities is accomplished by utilizing a checklist of potential environmental, safety, and health concerns, the Activity ES&H Hazard Identification Checklist (Form 10200.003). The identification of hazards should be undertaken without consideration of the administrative and physical controls used to mitigate hazards. A description of the identified hazards and the administrative and physical controls associated with the management of the concerns shall be documented. All activities are categorized into one of three ES&H Hazard Levels. The three levels are defined as:

ES&H Hazard Level I:

Activities with hazards similar to those encountered and/or accepted by the general public in an office environment. These hazards involve limited risk to (1) the health or safety of workers or the public, (2) the environment, or (3) the facilities or mission of the Laboratory. These hazards have minimal scope and magnitude.

ES&H Hazard Level II:

Activities with hazards similar to those encountered in a typical industrial/laboratory environment. These activities involve hazards whose scope may involve significant risk (1) to the health and safety of workers involved in the activity or those working within the same room in which the activity is being performed, (2) of short-term localized environmental impacts, or (3) of minimal and localized damage to facilities or negative impacts on the performance of program or Laboratory functions.

ES&H Hazard Level III:

Activities with hazards that involve a larger scope than impacts upon a single work site or laboratory area. These activities involve hazards whose scope may involve (1) significant risk to the health or safety of the public or on-site personnel who are not involved in the activity, (2) significant risk of widespread or lasting environmental effects, or (3) significant risk of damaging facilities or impeding the mission of the Laboratory.

Readiness Review

All Laboratory/Industrial Type Activities shall undergo Readiness Reviews and be approved: (1) before acquisition, fabrication, or testing; and, (2) before operation. Approvals and reviews shall be documented by the Activity ES&H Readiness Review Approval Form (Form 10200.004), in accordance with the procedure for Identification, Risk Categorization, and ES&H Readiness Review of Activities (Procedure 10200.010). All Laboratory/Industrial Type Activities shall be approved by the Group/Section Leader, the Program Director/Department Manager, and the ESH&A Office. ES&H Hazard Level II and Level III Activities require additional approval by the Safety Review Committee (SRC).

Activities which undergo a modification will also be subject to Readiness Review if the modification significantly alters the hazards associated with the activity or if the risk associated with a particular hazard is increased. Activities in which the hazards have changed may be identified by reviewing the Activity ESH&A Hazard Identification Checklist (Form 10200.003). An example where the risk associated with a hazard has increased is the scale-up of an activity where larger quantities or a different class of hazardous chemical are to be used. Office Type Activities are not required to undergo Readiness Review in addition to reviews by the Group/Section Leader.

All activities are reviewed five (5) years after the last approval date. The Readiness Review procedure is used for these 5-year reviews, as well.

1.5.3.2 SAFETY REVIEW COMMITTEE (SRC) SUBCOMMITTEES

Electrical Safety Committee (ESC)

The Laboratory Director established the Electrical Safety Committee (ESC) in 1993. The ESC reports to the Safety Review Committee (SRC) and to the Ames Laboratory Director through the SRC. The ESC establishes policies and procedures related to electrical safety issues in research and operational activities and develops and maintains the Laboratory's Electrical Safety Program and the Ames Laboratory Electrical Safety Manual. The ESC is the Authority Having Jurisdiction (AHJ) for the interpretation and the implementation of the National Electric Code (ANSI/NFPA70); Occupational Safety and Health Act (OSHA 29 CFR 1910, Subpart S, and 29 CFR 1926, Subpart K); and/or other applicable federal, state, and local codes/standards. The ESC includes a Chairperson and five voting members appointed by the Ames Laboratory Director: one representative of SRC; two representatives of the Science and Technology Division; two representatives of the Technical and Administrative Services Division (TASD); one representative from Environment, Safety, Health and Assurance (ESH&A); and two nonvoting ex officio members, one representative from the Institute for Physical Research and Technology (IPRT) and one technical advisor from ESG-Electronics.

Fire Safety Committee (FSC)

The Ames Laboratory Director established the Fire Safety Committee (FSC), as a standing subcommittee of the Safety Review Committee in 1999. The Committee is comprised of a technical specialist from each of the following organizations: Environment, Safety, Health & Assurance (ESH&A); Facilities Services Group (FSG); and Engineering Services Group (ESG). The Committee is the local Authority Having Jurisdiction (AHJ) for fire safety issues. The FSC utilizes applicable standards, as listed in the Ames Laboratory Work Smart Standards, such as: the requirements of the pertinent US Department of Energy Orders, Occupational Safety and Health Administration regulations, National Fire Protection Association standards, American National Standards Institute standards, and other applicable state/local codes. The FSC is established to develop, document and implement the Ames Laboratory Fire Safety Program. The Committee is charged with advising the managers of ESH&A, FSG, and ESG regarding fire safety systems, requirements and actions, as well as the SRC and the Director.

As Low As Reasonably Achievable (ALARA)

ALARA is an acronym which means As Low As Reasonably Achievable, and is in reference to keeping doses from ionizing radiation as low as reasonably achievable. The ALARA Committee serves as the governing body for all aspects of ionizing radiation protection within the Laboratory and reports to the Safety Review Committee. The ALARA Committee is charged with oversight of all activities involving ionizing radiation to ensure that any radiation doses from the use of these sources at Ames Laboratory are maintained ALARA. The ALARA Committee will ensure that all possession, use and disposition of sources of ionizing radiation by Ames Laboratory personnel complies with the requirements of 10 CFR 835, Occupational Radiation Protection and the Ames Laboratory Radiological Protection Program (RPP) (Policy 10202.004), and that all concomitant radiation exposures are maintained ALARA. The ALARA

Committee is composed of individuals who represent the various uses of ionizing radiation within Ames Laboratory and are knowledgeable and experienced in the safe use of ionizing radiation sources, as well as individuals representing administrative and service functions. Representatives of Occupational Medicine and of Ames Laboratory management are required on the Committee. The Radiation Safety Officer is an ex officio member of the Committee.

1.5.4 TRAINING

| GENERAL EMPLOYEE TRAINING (GET) FOR NEW EMPLOYEES #AL-001 | |
|------------------------------------------------------------------|---------------------------------------------------------------------|
| <i>Intended Audience:</i> | <i>Mandatory for all employees.</i> |
| <i>Module Format:</i> | <i>Classroom Instruction. Estimated completion time: 2.0 hours.</i> |
| <i>Associated Retrain Period & Format:</i> | <i>No retrain.</i> |

1.5.5 PERFORMANCE CHECKLISTS

Group Leaders / Department Managers shall:

- Identify activities and associated hazards and submit activities for Readiness Review.
- Comply with the recommendations of Readiness Review.

Safety Coordinators and Representatives shall:

- Review ES&H Hazard Identification Checklists.

Program Directors / Department Managers shall:

- Promote Readiness Review with Group/Section Leaders.

Environment, Safety, Health & Assurance (ESH&A) shall:

- Administer the Readiness Review processes and maintain appropriate documentation and database information.

1.6 REPORTING OF EVENTS

Applicability Statement: This section applies to all employees. This section also applies to the Environment, Safety, Health & Assurance (ESH&A) office, which is charged with administering the Laboratory's investigation and reporting efforts.

1.6.1 REFERENCES

DOE Order 231.1, Environment, Safety and Health Reporting
DOE Order 232.1, Occurrence Reporting and Processing of Operations Information
DOE Order 471.3, Incidents of Security Concern
Plan 10200.011, Lessons Learned Program Implementation Plan
Plan 40000.001, Event Reporting Plan
Procedure 10200.038, Accidents, Incidents & Employee Safety Concerns: Classification & Investigation
Procedure 10200.039, Corrective Action Development
Procedure 10200.045, Trend Analysis of ES&H Concerns

1.6.2 BACKGROUND

Effective response to environmental, safety and health events requires timely notification of the appropriate organizations. Ames Laboratory has numerous reporting responsibilities related to environmental, safety and health events. These requirements include: Occurrence Reporting as per DOE Order 232.1, Occurrence Reporting and Processing of Operations Information; reporting of radiological incidents (Price-Anderson Act Amendments reporting); reporting of injuries and illnesses to the Computerized Accident/Incident Reporting System (CAIRS) as required by DOE Order 231.1, Environment, Safety and Health Reporting; and reporting of incidents of security concern as per DOE Order 471.3, Incidents of Security Concern.

1.6.3 PROGRAM INFORMATION

Event Notification of Ames Laboratory Personnel

Timely notification of events shall be given to supervisors, Group/Section Leaders, Occupational Medicine and the Environment, Safety, Health and Assurance office. Employees are required to notify supervisors and Group/Section Leaders of all work related injuries and illnesses. Injuries and illness requiring first aid or treatment from a trained medical provider shall be reported to Occupational Medicine office. All other events require notification of supervisors, Group/Section Leaders and the Environment, Safety, Health and Assurance office. In addition, security related events shall be reported to the appropriate Safeguards and Security personnel. The Plant Protection Section is available for notification at all hours by calling 4-5511.

Emergency events shall be reported by calling 911.

Group/Section Leaders shall ensure timely notification of Occupational Medicine, the Environment, Safety, Health and Assurance office and the appropriate Safeguards and Security personnel.

Near Misses

Experience in both the Department of Energy (DOE) and Industry show that accidents that claim a life or result in serious personal injury or environmental damage are often preceded by precursor or near miss events. Simply stated, a near miss is when an otherwise reportable event, such as an injury or release, was avoided by only a single barrier or when all of the conditions necessary to cause an event existed (i.e., when all barriers were compromised). The capture and dissemination of information from near miss events should provide a better chance of avoiding serious injuries, fatalities, or environmental impacts from future events.

Investigation of Events

Incident and accident information is developed according to the requirements of the procedure, Accidents, Incidents & Employee Safety Concerns: Classification & Investigation (Procedure 10200.038).

Corrective Action Development and Tracking

Corrective actions are developed and assigned as needed according to the results of the event investigation. The ESH&A office is responsible for tracking and closeout of safety related corrective actions. Significant institutional issues derived from Type A and B Investigations, from DOE program initiatives and from DOE surveillance activities are addressed by corrective action plans developed according to the requirements of Corrective Action Development (Procedure 10200.039) and tracked through the Ames Group Issue Management Tracking Procedure.

Lessons Learned

Lessons learned from internal and external events are distributed by the ESH&A office according to the elements of the Lessons Learned Program Implementation Plan (Plan 10200.011).

Trend Analysis

Information from investigations of events will be incorporated by the ESH&A office into the annual trend analysis according to Procedure 10200.045, Trend Analysis of ES&H Concerns.

Reporting

Reporting is achieved according to the Event Reporting Plan (Plan 40000.001).

1.6.4 TRAINING

| GENERAL EMPLOYEE TRAINING (GET) FOR NEW EMPLOYEES #AL-001 | |
|------------------------------------------------------------------|---------------------------------------------------------------------|
| <i>Intended Audience:</i> | <i>Mandatory for all employees.</i> |
| <i>Module Format:</i> | <i>Classroom Instruction. Estimated completion time: 2.0 hours.</i> |
| <i>Associated Retrain Period & Format:</i> | <i>No retrain.</i> |

1.6 PERFORMANCE CHECKLISTS

Employees shall:

Report all incidents, accidents, injuries and abnormal events in a timely fashion.

Cooperate with all investigative and corrective efforts related to incidents, accidents, injuries and abnormal events.

Supervisors / Group / Section Leaders / Department Managers / Program Directors shall:

Ensure that all incidents, accidents, injuries and abnormal events are reported in a timely fashion.

Cooperate with all investigative and corrective efforts related to incidents, accidents, injuries and abnormal events.

Safety Coordinators and Representatives shall:

Support investigative efforts related to accidents, injuries, illnesses, near misses and abnormal events.

Environment, Safety, Health & Assurance (ESH&A) shall:

Administer the Laboratory's efforts for reporting and investigation of incidents, accidents, injuries, and abnormal events, and maintain related processes and appropriate documentation.