

Integrated Work Management

Table of Contents

- 1.0 Purpose 1
- 2.0 Authority and Applicability 2
 - 2.1 Authority..... 2
 - 2.2 Applicability..... 2
 - 2.2.1 Research and Development (R&D)..... 3
 - 2.2.2 Facilities and Maintenance 3
 - 2.2.3 Operations 3
 - 2.2.4 Subcontractors 3
 - 2.2.5 Security..... 3
- 3.0 Procedure Description..... 4
 - 3.1 Integrated Work Management (IWM) Expectations 4
 - 3.1.1 Define the Work..... 4
 - 3.1.2 Identify and Analyze Hazards..... 5
 - 3.1.2.a Subject Matter Expert (SME) Involvement..... 8
 - 3.1.3 Develop and Implement Controls 8
 - 3.1.3.a Documentation Requirements..... 10
 - 3.1.3.b Peer Review 10
 - 3.1.3.c Integrated Work Document (IWD) Validation 11
 - 3.1.3.d Worker Authorization..... 11
 - 3.1.3.e Security 12
 - 3.1.4 Perform Work Safely, Securely, and in an Environmentally Responsible Manner..... 12
 - 3.1.4.a Work Execution 13
 - 3.1.4.b Changes 13
 - 3.1.5 Provide Feedback and Strive for Continuous Improvement..... 14
 - 3.1.5.a Periodic Reviews..... 15
 - 3.2 Preparing the Integrated Work Document (IWD) 16
 - 3.2.1 Part 1—Activity-Specific Information 17
 - 3.2.1.a Integrated Work Document (IWD) Attachments and References 18
 - 3.2.2 Part 2—Work-Area Information 20
 - 3.2.3 Part 3—Validation and Work Release Information..... 21
 - 3.2.4 Part 4—Post-Job Review 21
 - 3.3 Standing Integrated Work Documents (SIWDs)..... 21
- 4.0 Responsibilities 22
 - 4.1 Facility Responsible Associate Director (RAD) 22
 - 4.2 Responsible Line Manager (RLM)..... 22
 - 4.3 Facility Operations Director (FOD) 22
 - 4.4 Planner/Preparer 23
 - 4.5 Work Provider 23
 - 4.6 Work Supervisor/Person in Charge (PIC) 23
 - 4.7 Subject Matter Expert (SME)..... 23
 - 4.8 Peer Reviewers 24

5.0 Implementation 24

6.0 Training..... 25

 6.1 Integrated Work Management (IWM) Required and Suggested Training (see Table 2)..... 25

7.0 Exception or Variance 25

8.0 Documents and Records..... 26

 8.1 Office of Record..... 26

 8.2 Other Records 26

9.0 Definitions and Acronyms..... 26

 9.1 Definitions 26

 9.2 Acronyms..... 29

10.0 History 31

11.0 References 33

 11.1 Other References 33

12.0 Forms 35

13.0 Attachments..... 35

14.0 Contact 35

List of Attachments

Attachment A.
 Integrated Work Management (IWM) Process for Research and
 Development (R&D) (Page 1 of 17) 36

Attachment B.
 Hazard Grading Table (Page 1 of 4) 53

Attachment C.
 Error Precursor Card and Task Preview Work Aids (Page 1 of 1)..... 57

Attachment D.
 Integrated Work Management (IWM) Self-Assessment Criteria (Page 1 of 2)..... 58

List of Figures

Fig. A-1. Integrated Work Management (IWM) Research and Development (R&D)
 Process Flow Chart 38

List of Tables

Table 1. Environment, Safety, and Health (ES&H) Subject Matter Expert (SME) Involvement 8

Table 2. Required and Suggested Integrated Work Management (IWM) Training 25

Table A-1. Hazard Analysis Team Criteria..... 45

Table B-1. Hazard Grading Table 53

Table B-2. Hazard Grading Table for Facility Maintenance Activities..... 56

Integrated Work Management

1.0 PURPOSE

The purpose of this document is to establish the Laboratory Integrated Work Management (IWM) expectations for doing work in a manner that protects people, the environment, property, and the security of the nation. The supporting processes are designed to accommodate work ranging from a preventive maintenance operation with a set of well-defined steps to a large, one-time research experiment. For simplicity in this document, the term “hazard” will be used to mean any source of environmental, safety, or health danger or any safeguards and security threat or vulnerability. Similarly, the term “controls” will be used to convey the mechanisms, processes, procedures, and preventive measures used to eliminate or reduce the risks posed by these hazards.

The five core functions, of Integrated Safety Management (ISM) and Integrated Safeguards and Security Management (ISSM) are (1) define the work, (2) identify and analyze hazards, (3) develop and implement controls, (4) perform the work, and (5) provide feedback and continuous improvement. These core functions of IWM emphasize the following:

- Management and worker accountability;
- Applying the worker’s knowledge, experience, skills, and training;
- Providing integrated, worker-friendly documentation that includes defined work tasks/steps linked to specific hazards and unambiguous controls;
- Identifying a single Person in Charge (PIC) for each work activity;
- Providing independent oversight and facility coordination; and
- Formally validating, releasing, and closing out work activities.

The most important aspects are the direct involvement of workers in controlling the hazards, and the accountability of Responsible Line Managers (RLMs) and Facility Operations Directors (FODs) for safety, security, and environmental protection.

Workers must be actively engaged throughout the IWM process to provide the practical knowledge needed to fully identify the hazards and to ensure that controls are effective and procedures are workable. Workers must perform their work within established control systems and continually evaluate these systems to ensure their adequacy for the work being performed.

IWM allows management judgment, tailoring, and decision-making to address the broad range of hazards and complexity of work at the Laboratory. For all work, the FODs or a FOD representative, and RLMs must

- establish processes that ensure the implementation of the requirements of IWM;
- determine the adequacy of controls to mitigate the hazards;
- determine the competence and commitment of workers to perform work in a safe, secure, environmentally responsible manner; and
- assess operations to identify needed improvements.

In certain cases, the adequacy of controls must be evaluated and approved by institutional support organizations (e.g., Biosafety Committee, Pressure Safety Committee, Industrial Hygiene and Safety [IHS] Division, Radiation Protection Division for Radiological Work Permits (RWPs), Environmental Protection Division (ENV) for environmental requirements, and Security and Safeguards Directorate for vaults, classified computing, alarms, access control systems, etc.).

2.0 AUTHORITY AND APPLICABILITY

2.1 Authority

This document is issued under the authority of the Laboratory Director to direct the management and operation of the Laboratory, as delegated to the Associate Director for Environment, Safety, and Health (ADESH) as provided in the [Prime Contract](#). This document derives from the Laboratory [Governing Policies](#), particularly the section on Management Systems.

- Issuing Authority (IA): Associate Director for Environment, Safety, and Health (ADESH)
- Responsible Manager (RM): Associate Director for Environment, Safety, and Health (ADESH)
- Responsible Office (RO): Associate Director for Environment, Safety, and Health (ADESH)

2.2 Applicability

This document applies to all Laboratory employees, and the requirements contained in this document apply to **all work** activities performed at the Laboratory. IWM emphasizes expectations for the safe, secure, and environmentally-sound conduct of work at the activity level, and it complements facility and institutional controls that mitigate safety, security, and environmental hazards.

IWM and this document establish the general expectations for the conduct, authorization, and coordination of all activity-level work at the Laboratory, including the Line manager's authorization of workers, based on the worker's competence and commitment, to perform his/her assignments in a safe, secure, and environmentally responsible manner. FODs coordinate the activities within their assigned facilities.

This document should be used directly for the development of

- Integrated Work Documents (IWDs),
- other equivalent work control documents, or
- other more specifically tailored IWM flow down procedures and related processes.

Such documents must meet the **seven** (7) criteria required for Part 1 of an IWD as defined in Section 3.2.1 of this document.

For certain types of work, the detailed implementation of certain requirements in Section 3.0 has been tailored specifically to that work through other IWM implementation documents, e.g., AP-WORK [Procedures](#), Attachment A, *Integrated Work Management (IWM) Process for Research and Development (R&D)*, etc.

Section 3.1 (which describes the 5-steps of ISM and ISSM) applies to all work at Los Alamos National Laboratory (LANL or the Laboratory), and Sections 3.2 applies to all IWDs.

However, for the work categories listed below, the tailored requirements that are identified for each should be followed rather than the specifics in Section 3.1 and 3.2, where the tailored requirements offer additional instructions or alternative forms to use. The work-specific IWM implementation documents or processes listed here fully implement the underlying requirements of Section 3.0 in a way appropriate to that work and the associated hazards.

2.2.1 Research and Development (R&D)

- Follow Attachment A of this document.

2.2.2 Facilities and Maintenance

- Follow [P950](#), *Conduct of Maintenance*, and the AP-WORK [Procedures](#).

2.2.3 Operations

- Nonroutine work—Follow the processes in Section 3.0 (no tailored requirements are applicable).
- Routine Operations—Follow Section 3.0, however, technical procedures may be developed as IWD-equivalent work control documents in accordance with Attachment 16 of [P315](#), *Conduct of Operations Manual*, and DOE-STD-1029-92, *Writer's Guide for Technical Procedures*, found on the [IWM Toolbox](#), in the Guidance documents section.

2.2.4 Subcontractors

- Follow [P101-12](#), *ES&H Requirements for Subcontractors*, and the processes in this document.

2.2.5 Security

- Follow [SD200](#), *Integrated Safeguards and Security Management*.

Note: Detailed information on how the Laboratory implements ISSM for Security is available in [SD200](#).

The requirements contained in this document do not apply to activities performed under emergency circumstances. However, the general principles and concepts of ISM and ISSM should be considered in the preplanning for emergencies and once emergency situations are stabilized, the IWM process must be applied to recovery and follow-up activities.

Work conducted at a non-Laboratory site must ordinarily follow that site's work-control mechanisms. For work at locations having inadequate work-control processes, the appropriate IWM implementation process requirements must be implemented to the extent practical as defined by the RLM.

3.0 PROCEDURE DESCRIPTION

3.1 Integrated Work Management (IWM) Expectations

All Laboratory work is governed by the five steps, or Core Functions, of ISM and ISSM:

1. Define the work.
2. Identify and analyze hazards.
3. Develop and implement preventive measures and controls.
4. Perform work safely, securely, and in an environmentally responsible manner.
5. Provide feedback and strive for continuous improvement.

As the levels of risk posed by the hazards and work complexity increase, IWM requires documentation and a more rigorous process. To guide this process, activities must be graded as Low-Hazard, Moderate-Hazard, or High-Hazard/Complex. Attachment B, *Hazard Grading Table*, must be used to determine the appropriate category.

Note: The thresholds in the *Hazard Grading Table* are subject to interpretation—they are guidelines, often requiring the help of a Subject Matter Expert (SME) to determine hazard grading. Section 9.1 describes the type of SMEs available. In some cases, thresholds are better defined in referenced institutional requirements documents, e.g., Radiation Protection, IHS procedures. With concurrence from an SME, engineered controls may be considered in determining the hazard grading if engineered controls have been established, thoroughly reviewed, and proven highly reliable in minimizing the hazards without active worker involvement.

3.1.1 Define the Work

Work components and processes must be defined in sufficient detail to identify and analyze hazards and the circumstances in which they could cause harm. This generally requires each of the tasks and work steps within an activity to be identified, defined, and planned so the associated hazards can be adequately mitigated. Where required by DOE requirements, e.g., [10 CFR 851](#), *Worker Safety and Health Program*, an existing job task analysis or new job task analysis should be used to identify and define work processes. The work definition should include factors such as the:

- facility and/or location where the work will be performed;
- configuration and use of equipment;
- use of classified or sensitive information or components; and
- effects on the environment, including chemical and materials use, waste streams, and other potential environmental impacts.

One RLM must be identified as responsible and accountable for the safety, security, and environmental compliance of each work activity. The RLM for the activity is responsible for defining the work in sufficient detail to identify and analyze the hazards. The RLM and/or PIC should engage appropriate SMEs to assist in defining the scope and method of work and ensure the appropriate level of detail, subject to further refinement in subsequent steps of defining the work. This may require a “scoping walk down.” The need for a scoping walk down should be determined jointly by the RLM and the PIC.

When activities involve workers from multiple organizations, or take place in shared space in such a way that multiple RLMs are potentially involved, responsibilities must be identified for each RLM before work begins. If multiple activities within a project or work area must be coordinated to ensure safety, security, or environmental protection, the FOD must designate an individual to provide that coordination and must inform the other participating RLMs and PICs of that individual's identity and authority. Information regarding "Negotiating Shared Space/Shared Activities" is available in the [IWM Toolbox](#) in the *Guidance Documents* section.

- Each RLM must maintain an inventory of the ongoing work activities for which he or she is responsible. This inventory must contain, at a minimum, the work activity names and locations and the associated hazard grades. The work activities inventory may be documented and maintained by each RLM in (1) the Job Hazard Analysis (JHA) Tool system, (2) [UTrain](#) Learning Management System by Plateau, which is designed to document the work activity, location, and hazard level and the worker qualification/authorization to perform work, (3) through use of the Plan of the Day (POTD) or Plan of the Week (POTW) schedules, (4) in the Computerized Maintenance Management System (CMMS) or (5) through equivalent means as approved by the RLM.

Work planning should include all aspects of the work cycle including setup, work, maintenance, cleanup, waste disposal and material disposition, and the use of other Laboratory-permitting systems such as the Project Review and Requirements-Identification (PR-ID) (see [PD400](#), *Environmental Protection*).

3.1.2 Identify and Analyze Hazards

Hazards and accident scenarios that could cause harm must be identified and analyzed using a graded approach to determine what controls are needed to eliminate or reduce the hazards to manage risks to an acceptable level. The RLM or designee, who in most cases is the PIC, will determine the hazard grading level based upon input from workers or worker representatives of those who will participate in the work. In addition the impact of the planned work on co-located activities and workers must be taken into consideration and addressed.

Attachment B, *Hazard Grading Table*, must be used by the RLM or designee, who in most cases is the PIC, to determine the hazard level of the activity (Low, Moderate, or High/Complex). Confirmation of use of the *Hazard Grading Table* is required by indicating the hazard level determination, e.g., on [Form 2100, IWD Part 1, Activity Specific Information](#), [Form 2100-WC, Facilities Maintenance IWD](#), or CMMS work order, or equivalent work control document. When answering the hazard grading questions, both activity and work-area hazards must be considered, such as when a low-hazard activity is performed in an area where it is co-located with high-hazard/complex work activity hazards. The examples listed are meant to be illustrative and do not represent a complete set of hazards. When in doubt about the appropriate grading level, the next higher level should be used.

Note: The Risk Matrix Work Aid, found in the [IWM Toolbox](#) in the *Hazards Analysis* section, may be used in evaluating and determining residual risk and hazard levels. See Section 9.1 for risk and hazard definitions.

Note: The Error Precursors table in Attachment C, *Error Precursor Card and Task Preview Work Aids*, will assist in identifying potential human error risks.

SMEs with specific process knowledge or knowledge of the applicable hazards should be consulted to assist with hazard classification. The RLM must involve ES&H deployed personnel in the planning stages of activities, to ensure that worker exposure assessments are completed and the recommended controls are in place and included in the IWD before the start of work. (Deployed Managers contact information is located at <http://int.lanl.gov/org/padops/adesh/deployed-services/index.shtml>.) During the development of the hazard analysis and controls, institutional, facility, and activity documents should be used when available. Notify your ES&H Deployed Manager of any changes in activities that would require an update of worker exposure assessments.

Note: Examples include: introduction of a new type of exposure hazard (especially where existing controls may not be adequate); introduction of a Category 1 chemical; adding to, deleting, or changing controls (engineering, administrative or PPE).

SME involvement should also be obtained during development of work control documents containing such information to assist in accurately identifying Lockout/Tagout (LOTO) locations/devices.

Use of drawings, sketches, and/or photographs in the work control document to accurately identify these locations/devices is recommended.

Note: IWDs and supporting work control documents must include or reference available documentation, where applicable, to ensure thorough identification of hazards. This documentation may include, but is not limited to:

- facility drawings,
- sketches,
- photographs,
- Facility Safety Plans (FSPs),
- schematics of hidden systems, and
- survey results, such as radiation survey maps and utility locates.

In nuclear facilities, new or modified activities must be approved through the Unreviewed Safety Question (USQ) process. In nonnuclear facilities, [PD110](#), *Safety Basis* (Operational Safety Requirements [OSR] and Accelerator Safety Envelope [ASE]), change-control process must be used.

The RLM or designee and PIC must also be knowledgeable of the applicable Process Hazard Analysis (PHA) and/or facility safety basis documentation such as the FSP or Documented Safety Analysis (DSA) and shall ensure that the planned activities are within the bounds of these documents. If not within the bounds, the RLM determines whether to modify the scope of the activities or to pursue, with the FOD, additional safety analysis and revision of the PHA or safety basis. Activities outside the bounds of the PHA or safety basis shall not be performed.

The RLM, as accountable to the FOD and Responsible Associate Director (RAD), must ensure the planned activity is compatible with the safety/security basis and environmental protection envelope where the work will be performed.

For **Low-Hazard** activities as determined by the *Hazard Grading Table*, a formal hazard identification and analysis process and a complete IWD are not required.

This does not mean exemption from ISM functions and principles or LANL policies and procedures. All low-hazard activities are subject to facility-specific access, facility postings, coordination, and scheduling requirements and must apply work-area controls required by the FOD. In lieu of a complete, four-part IWD, low-hazard work can be controlled by implementation of other processes. For example, qualified workers, expedited work, work orders, permits, facility-specific training/access control, POTD, equivalent work control documents, and/or Part 2 of the IWD ([Form 2101](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Non-Tenant Activity Form* or [Form 2102](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Tenant Activity Form*), which addresses approvals for entry and area hazards and controls may be adequate. However, the RLM and FOD may require a complete IWD be developed based on their review of hazards and controls.

For **Moderate-Hazard** activities, as determined by using the *Hazard Grading Table*, a hazard analysis method such as “what if” or Hazard and Operability Analysis (HAZOP) must be performed to determine the hazards associated with potential accidents or incidents and how harm might be caused. The [JHA Tool](#) or other equivalent tool may be used as an aid to validate that the hazards and associated institutional requirements are identified. However, the [JHA Tool](#) is not intended to substitute for critical thinking coupled with sound professional judgment provided by the review team. Part 1 of the IWD is used to document the hazard analysis method used and review team information. Workers representative of those involved in the activity must be part of this analysis. The analysis may be graded based upon the complexity of the moderate-hazard activity ranging from a relatively quick “brainstorming” for simple activities to a documented “what if” or HAZOP for more complicated ones. (See the [IWM Toolbox Hazards Analysis](#) section.) The RLM and FOD may exempt specific activities from this requirement if, in their judgment, equivalent means have been employed to ensure all significant hazards and associated institutional requirements have been identified.

The [JHA Tool](#) provides a smart system for identifying job hazards and defining controls. Alternatives to the [JHA Tool](#) should be reviewed and determined by the RLM to be

- supportive of the IWM process,
- capable of identifying job hazards and defining controls,
- capable of identifying associated institutional requirements, and
- able to document feedback and [Lessons Learned](#).

Note: The [JHA Tool](#) is for use with unclassified information.

For **High-Hazard/Complex** activities, a documented “what if,” HAZOP, or other effective analysis technique must be used. This analysis must be performed by a documented JHA team with appropriate depth and breadth of expertise to identify and analyze the hazards thoroughly and to determine how effective hazard mitigation will be achieved. The preparer leads the team and must include workers or a representative set of workers, dependent upon activity scope. In some cases, such as maintenance work activities, individuals technically qualified and knowledgeable of the work activity can participate on the job hazard analysis team as a representative for the workers who may be assigned to the work. Appropriate SME involvement is required to ensure that the analysis is complete and effective. The names of the JHA team participants must be documented, (e.g., on [Form 2100](#) or equivalent work control document) unless specifically exempted by the RLM and FOD.

3.1.2.a Subject Matter Expert (SME) Involvement

One type of SME, Environment, Safety, and Health (ES&H), includes designated organizational experts representing Laboratory core safety programs (e.g., Radiological Control Technicians [RCTs], Industrial Hygienists, Environment, Safety, and Health [ESH] Specialists, or Waste Management Coordinators, as well as Electrical Safety Officers, Explosive Safety Officers, Laser Safety Officers, Chemical Hygiene Officers, etc.). Their involvement may be specifically mandated by other requirements or indicated because of desirable expertise relative to the nature of the work (see Table 1).

Table 1. Environment, Safety, and Health (ES&H) Subject Matter Expert (SME) Involvement			
Hazard Level	Activity		
	Hazard Category	Define Work	Hazard Analysis
High/Complex	SME Recommended	SME Recommended	SME Mandatory
Moderate	SME Recommended	SME Recommended	SME Recommended/ Mandatory*
Low	SME Recommended	SME Recommended	N/A

*SME participation is mandated by specific requirements when Moderate (and High-Hazard/Complex) work involves, but is not limited to, activities such as energized electrical, explosives, radiological, beryllium, confined space, hot work, and/or environmental. SMEs may reside in Environment, Safety, and Health (ESH) Divisions or are deployed to the various Facility Operations Directors (FODs). In addition there are programs where the SME resides within the line organizations (e.g., electrical, explosive, and laser safety officers).

A second, distinct type of SME, the technical SME, includes technical experts who have knowledge relevant to the hazards involved in the work. For Moderate- and High-Hazard/Complex R&D work, this type of SME is required. (See Attachment A, *Integrated Work Management (IWM) Process for Research and Development [R&D]*.)

3.1.3 Develop and Implement Controls

Controls must be defined and implemented, as needed, to reduce the hazards associated with the work to an acceptable level. To effectively mitigate the hazards, the preparer together with appropriate team members must:

- Identify all institutional, facility, and activity requirements and controls applicable to the work. The Facility Notes section of the [JHA Tool](#) is available to identify facility requirements, points of contact, and, hazards/controls, and can assist in the determination of appropriate institutional requirements. The Laboratory [Policy Center](#) contains current institutional documents.

- Implement appropriate controls, identified in the work control documents, based on the outcome of the hazard analysis and the institutional, facility, and activity requirements. Controls must reduce the probability and/or consequence of adverse events. When establishing controls, the following hierarchy must be used:
 - Hazard elimination by process modification
 - Substitution of a less hazardous substance, if available
 - Application of engineering controls such as enclosures, machine guards, interlocks, worker booths, stack filters, security barriers/alarms, sharps disposal container, or similar devices
 - Application of administrative controls, e.g., training, LOTO, and procedures
 - Use of appropriate Personal Protective Equipment (PPE)
- Specify the knowledge, skills, and abilities needed by the workers and the training required to handle the hazards and effectively use the controls, e.g., formal training prerequisites to performing the job tasks. Define the On-the-Job Training (OJT) needed to qualify workers for specific tasks. Training coordinators and training specialists assigned to the organization should be involved, as necessary, in the accurate identification of prerequisite training.
- Analyze, with a rigor commensurate with the hazard level, potential failures of controls, equipment, utilities, facility systems, procedures, or human factors; and establish enhancements and/or alternatives as needed.
- Develop and/or identify emergency actions to follow in the event of a system failure, spill/release, or an accident.
 - IWDs involving use of hazardous chemicals should address chemical spill control, mitigation, and cleanup or reference procedures established for spill response, where appropriate.

When permits, plans, or special procedures are required for the work, as specified by required institutional procedures, they must be developed concurrently with the IWD or equivalent work control document to ensure conflicts in hazards and controls and inconsistencies between documents are resolved. Examples of Required Permits, Plans, or Procedures are (this list is not all-inclusive):

- Energized Electrical Work Permit
- Excavation/Fill/Soil Permit Identification (EX-ID)
- PR-ID
- Penetration Permit
- Spark- or Flame-Producing Permit
- Confined Space Entry Permit
- Lockout/Tagout specific written procedure
- RWP
- Fall Protection Plan

Prevention measures and controls must be integrated to provide optimized protection among different hazards. e.g., balancing security measures with safety measures, or contamination control with minimizing waste.

For High-Hazard/Complex activities, the controls established must be developed by a team with appropriate depth and breadth of expertise to ensure the effectiveness and adequacy of the controls. Generally, this team will be the same as the one engaged in the hazard identification and analysis. The team must decide whether the activity is most effectively covered by a single or multiple IWDs. When multiple IWDs are used, they must be closely coordinated by the owning RLM and PIC and must address hand-offs of activities and responsibilities to the RLM and PIC performing the next IWD in sequence; any interfaces between separate IWD activities, and potential conflicts between steps, hazards, controls, or the entities of two or more IWDs.

Consideration should also be given to facility-related conditions that may adversely affect the safety of an activity such as the loss of electrical power, and operational upsets in shared facilities.

3.1.3.a Documentation Requirements

For Moderate-Hazard and High-Hazard/Complex activities, the work process, hazards, and controls must be documented in an IWD or an equivalent work control document such as a technical procedure. The work process, hazards, and controls may also be listed in an attached permit to eliminate repetition. However, the work process, hazards and controls must be reviewed within the permit as part of the work authorization approval process. Workers must have the applicable and fully authorized work control document readily accessible where the activity is being conducted to guide their work.

The FOD is responsible for documenting and communicating work-area information, including the hazards associated with the facility or location in which the work is performed. The work-area part (Part 2) of an IWD identifies the FOD or FOD representative, FOD designated Point-of-Contact, entry and coordination requirements, ES&H safeguards and security hazards, and controls for the work area. The FOD, or his or her representative, and the RLM/Preparer must work closely together to ensure that the work can be performed safely, securely, and in an environmentally responsible manner within the facility or at the location designated for the work.

3.1.3.b Peer Review

The RLM must have a peer review performed for all moderate and high hazard work before approving the IWD. Having another set of eyes (a peer review) reviewing the unapproved product, provides benefit by bringing a systems approach, big picture view, and/or breadth of focus to ensure that the IWD has adequately identified the potential hazards and required the necessary controls.

The RLM determines the scope, form, and participant(s) for the peer review. The reviewer(s) should not have been directly involved in the development of or later approval of the IWD to be reviewed. The RLM can consider the level of definition (certainty) of the work scope, experience of the IWD development team and the employees identified to perform the work, recent related experiences, [Lessons Learned](#), and other factors that may influence the work when determining who the reviewer (or reviewers) should be. The peer review may include recognition of additional peer reviews that the RLM may have established as a control for ongoing work.

There is no requirement to document the peer review, however, the RLM signature on Part 1 of the IWD or equivalent work control document includes an acknowledgement that a peer review was completed and comments were adequately addressed.

Comments/concerns identified during the peer review must be communicated to the RLM for his or her consideration before approving the IWD. After completion of the peer review, the RLM

must address the review comments appropriately. RLMs are expected to use due diligence in making this determination.

For Maintenance, peer review is described in AP-WORK-002, *Work Planning*, found on the AP-WORK [Procedures](#) webpage, and for R&D is described in Attachment A, *Integrated Work Management (IWM) Process for Research and Development (R&D)*.

Note: Peer review is not required for the annual IWD review (before IWD expiration).

3.1.3.c Integrated Work Document (IWD) Validation

Before any new work is released, a “validation walk down” of the IWD, or equivalent work control document, must be performed to review tasks and steps for workability and to ensure that the hazards and controls are described effectively. It should be performed at the work site, when possible, assuming environmental configurations/scheduling/resources allow, and as close in time to the actual start of the work as feasible. This validation walk down of the IWD must involve the PIC and workers (or qualified worker representatives of those who will participate in the work) and SMEs for High-Hazard/Complex work or when determined appropriate by the RLM and/or PIC.

Documentation of the validation walk down is required on [Form 2103](#), *IWD Part 3, Validation and Work Release*. For High-Hazard/Complex work the validation walk down must also involve appropriate SMEs and subsequent walk downs will be determined by the RLM or PIC based on the hazards and complexity of the activities. Any issues identified during the validation walk down must be resolved before the work is started.

3.1.3.d Worker Authorization

The RLM responsible for the work activity must authorize workers, including workers from other organizations, to perform work activities. This entails determining whether each individual is up-to-date in the required training and qualified for the activity to be performed.

Documentation of each worker’s training and qualification is maintained in [UTrain](#), which is available through Data Warehouse reports, as defined in [P781-1](#), *Conduct of Training Manual*.

[UTrain](#) is a web-based application that shows the relationships among the following:

- worker activities,
- training ([UTrain](#) training plans or super training plans) or other requirements required for that work activity, and
- workers, from any organization, who may be assigned to perform that work activity.

[UTrain](#) application allows verification of the qualification status of a worker by his or her RLM or designee for specific activities. Based on that information, a worker may then be authorized by the RLM or designee who owns the work activity to perform that work activity upon release of the work by the PIC ([Form 2103](#), *IWD Part 3, Validation and Work Release*). Other documentation including written confirmation with the worker’s RLM, e.g., by e-mail or the [Form 3024](#), *Responsible Line Manager Delegation Form* located in the [IWM Toolbox](#) may be used to confirm that workers from other organizations are authorized and qualified to perform the work.

For activities involving workers from multiple organizations the RLM directly responsible for the work activity is responsible for determining whether each worker (including those deployed by other RLMs) is fully qualified on the activity to be performed, i.e., has demonstrated the needed

proficiency in the skills required for the activity, as well as on facility access requirements, and is fit to perform the work. This determination may be delegated to the PIC (serving as the designee of the RLM responsible for the work) and must be achieved before workers begin work, e.g., at the Pre-Job Brief. Each worker is responsible for keeping required training current and for assuring his or her authorization, qualifications, and fitness to perform the work. The signature of the PIC on Part 3 of the IWD verifies the assigned workers are authorized, qualified, and fit to perform the work. The worker confirms his or her authorization, qualification, and fitness by also signing Part 3 of the IWD (for R&D activities, reference Attachment A, *Integrated Work Management [IWM] Process for Research and Development [R&D]*). Worker authorization must be reviewed and renewed periodically at a frequency consistent with IWD periodic reviews at a minimum, and whenever the IWD or equivalent work control document undergoes significant changes.

3.1.3.e Security

Managers and workers must also examine the security aspects of work being performed and determine the appropriate training required to perform the work.

Deployed security workers, such as Deployed Security Officers (DSOs) and Security Program Leads (SPLs), are available to assist managers and workers in evaluating safeguards and security issues related to their work. Workers may also contact the Security Help Desk (665-2002) for security-related guidance.

3.1.4 Perform Work Safely, Securely, and in an Environmentally Responsible Manner

All work must be performed in a safe, secure, and environmentally responsible manner using the established hazard control systems.

For Moderate-Hazard and High-Hazard/Complex activities, the PIC must perform a Pre-Job Brief with the workers immediately before beginning any new work and cover, at a minimum, the questions listed on Part 3 of the IWD. The PIC must then formally release the work by performing the following steps:

- verify the RLM and FOD or FOD representative have signed the IWD;
- conducted a validation walk down;
- confirm that the required controls are in place and functioning and that initial conditions are as expected;
- confirm with each assigned worker that he or she has the required training and authorization to perform the activity;
- determine that each assigned worker is qualified to perform the work in a safe, secure, and environmentally responsible manner;
- ensure coordination with any Operations Manager or other FOD-designated interface point-of-contact when required by the FOD; and
- sign the IWD work release section.

If permits are required for the work activity, applicable portions of each permit must be included in the Pre-Job Brief. In some cases, e.g., RWPs, the Pre-Job Brief should be conducted by the respective SME.

Depending on the scope of the planned activity, the nature of the hazards, associated work controls, and/or the population of workers, the Pre-Job Brief may be conducted for different

phases of work to ensure clear instruction to affected workers. If this approach is taken as determined by the PIC, it is important to capture the date and signature of the workers for each Pre-Job Brief in Part 3 of the IWD which validates worker agreement and confirms his or her authorization, qualifications, and fitness to perform the work.

The content for Pre-Job Briefs is included in Part 3 of the IWD. Additional guidance for conducting a Pre-Job Brief is included in Attachment C, *Error Precursor Card and Task Preview Work Aids*, and also in the [IWM Toolbox](#). A Pre-Job Briefing and Post-Job Review video is available on the [IWM Toolbox](#).

3.1.4.a Work Execution

Workers must perform the work in strict accordance with the IWD or equivalent work control document. If unexpected conditions arise, work must be paused or stopped and re-evaluated. If the conditions indicate a hazard that is not effectively mitigated by the existing controls, the work must not be restarted until adequate controls have been established, as defined in [P101-18](#), *Procedure for Pause/Stop Work*.

The PIC must observe work execution to the extent required to ensure it is performed in accordance with the IWD. The PIC must be readily available to workers to resolve issues and to answer questions. The PIC must remain at the immediate work site for all High-Hazard/Complex work activities. For all other activities, the PIC should spend enough time at the jobsite to ensure that the work activity is carried out in accordance with the specifications of the IWD.

The RLM may designate alternate PICs to oversee a work activity if the primary PIC is unavailable or if work extends across work shifts. **However there must never be more than one PIC for an activity at any given time.** The alternate PIC must sign the IWD the first time the alternate acts as PIC to acknowledge his or her responsibilities. When assuming these responsibilities, the alternate PIC must confer with the previous PIC to obtain all required information associated with the hand off and ensure that the workers have been notified of the change in PIC. Shift turnover must follow conduct of operations requirements.

3.1.4.b Changes

The PIC and each involved worker must perform frequent readiness checks to confirm that conditions remain within planned parameters. Readiness checks at the start of the workday, the next shift, and the next task are recommended. These checks should determine whether the needed personnel, tools, and materials are available and whether any changes in the operating conditions or work environment have occurred. Safety basis impact must be considered for all changes where safety basis requirements apply.

The PIC and workers must assume that any change would result in increased risk until proven otherwise. Changes in the following are of particular significance:

- assigned workers,
- work scope,
- hazards or status of controls, and
- facility and/or work conditions.

If changes remain within bounding conditions specified in the IWD, the work may continue. For example, a minor change would include non-substantive editorial changes such as “including safety shields” with safety glasses to clarify and reinforce a control. For all other changes, the PIC

must evaluate, with input from the workers, the significance of any identified changes and determine how to proceed.

The PIC may address minor changes with revisions to the IWD on the job site by lining out and/or adding text, initialing and dating the revision, and notifying all affected workers of the changes.

Minor revisions are not to be used where the change would

- increase the safety risk to personnel,
- create a difference to a source document requirement and require a variance to continue work,
- alter the purpose or the scope of the procedure,
- eliminate any required reviews or approvals,
- impact the safety or Authorization Basis (AB) of the facility or exceed established facility-operating limits, or
- alter the operating, technical, design, process, regulatory, or quality control requirements of a procedure.

For ongoing work, the PIC must subsequently update the master copy of the IWD. Significant changes require repeating affected parts of the IWM process to include a USQ determination, where appropriate, and obtaining RLM and FOD approval. Worker authorization must also be reviewed and renewed as necessary. Examples of significant changes include

- major change in scope,
- unanticipated hazards or conditions,
- failure of controls and/or changes in controls, and
- any change that would impact the safety or Authorization Basis (AB) of the facility or exceed established facility-operating limits.

3.1.5 Provide Feedback and Strive for Continuous Improvement

The RLM, PIC, and the workers must monitor the activity to identify needed improvements and to capture [Lessons Learned](#).

Feedback from the workers on the adequacy and effectiveness of the preventive measures and controls is critically important. Improvements essential to safety, security, or environmental compliance must be implemented if the work is to continue.

Moderate-Hazard and High-Hazard/Complex activities require a Post-Job Review soon after completion to close-out the job and capture any [Lessons Learned](#). This review should involve a discussion among workers and the PIC to

- verify that the activity is complete and make notifications required by the FOD;
- ensure that follow-through actions (e.g., cleanup, recycle, waste disposal, equipment removal, and secure storage) are completed;
- capture the positive aspects of the activities, including human performance improvement concepts;

- identify inefficiencies, problems during the activity, procedural deficiencies, coordination issues, unanticipated conditions, and near misses; and
- develop recommendations for improvement.

The PIC must document the Post-Job Review and ensure that [Lessons Learned](#) of value to future activities are communicated to affected workers, RLMs, and FODs. (See Section 3.3 for specific information related to Standing Integrated Work Documents [SIWDs].) For ongoing work activities, feedback and [Lessons Learned](#) should be obtained during the normal course of the work. This information may be documented in

- Part 4 of the IWD,
- the Institutional [Lessons Learned](#) program,
- the Radiological Work Control Package (RWCP),
- the [JHA Tool](#),
- the Asset Suite software program for facilities maintenance work (see AP-WORK-005, *Work Closeout*, found on the AP-WORK [Procedures](#) webpage), or
- Other documented organization-specific methods that capture lessons learned on a periodic basis (e.g., during work execution, during annual IWD review, and/or at the termination of an activity).

Note: An alternative IWD Part 4, Feedback/Post-Job Review feedback tool has been developed for IWD users in the Footprints program and is very similar to the version in the [JHA Tool](#). The Footprints version, however, allows for text searching within the body of the feedback content making it easier to identify relevant information for future work planning. In addition, the LANL [Lessons Learned](#) process provides for sharing across the institution through the use of the Lessons Learned Submittal form.

3.1.5.a Periodic Reviews

IWDs and other equivalent work control documents must be reviewed periodically to ensure that the work control documents, work activities, and work practices are aligned and to ensure integrated implementation of the Integrated Safety Management System (ISMS) and IWM programs, as well as adequacy of IWD and hazard identification. Periodic reviews should be established by the RLM and FOD based on operational schedules (R&D/Programmatic) and related maintenance activities, whether programmatic or facilities maintenance. Therefore, review periods may vary in frequency from monthly to a maximum of three years (which coincides with a maximum expiration period of three years for IWDs), depending upon the activity cycle/schedule, and on the complexity of and the hazards involved with the activity.

Note: See Attachment A, *Integrated Work Management (IWM) Process for Research and Development (R&D)*, for R&D expiration and periodic review requirements.

3.2 Preparing the Integrated Work Document (IWD)

IWDs must systematically describe the work activity, the associated hazards, and the controls that must be employed to mitigate the hazards. DOE-STD-1029-92, *Writer's Guide for Technical Procedures*, and the National Nuclear Security Administration (NNSA) *Activity Level Work Planning and Control Processes*, are excellent sources of reference for preparers. Both of these documents can be found on the [IWM Toolbox](#), in the *Guidance Documents section*.

Note: All LANL IWDs have an expiration date of three (3) years maximum as determined by the RLM and FOD.

IWDs consist of four parts:

Part 1—Activity-Specific Information

Part 2—Work Area Information

Part 3—Validation and Work Release

Part 4—Post-Job Review

See the following Forms associated with the IWD Parts:

- [Form 2100](#), *IWD Part 1, Activity Specific Information*
- [Form 2100-WC](#), *Facilities Maintenance IWD* (for work performed by Maintenance and Site Services [MSS] craft)
- [Form 2101](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Non-Tenant Activity Form*
- [Form 2102](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Tenant Activity Form*
- [Form 2103](#), *IWD Part 3, Validation and Work Release*
- [Form 2104](#), *IWD Part 4, Feedback/Post-Job Review*

Note: Current forms (or equivalent) must be used, and must contain required information (e.g., in lieu of Part 4, periodic job status reviews or weekly experiment review processes can be used to capture feedback and lessons learned.)

The [JHA Tool](#) provides an institutional database for IWM. The [JHA Tool](#) may be used to help fully identify hazards and associated institutional requirements to control these hazards, to determine facility entry/hazard/control requirements, and to document [Lessons Learned](#). Use of the [JHA Tool](#) to complete Part 1 and Part 2 of an IWD is optional and must not be substituted for careful hazard analysis or active worker participation. If the preparer is not satisfied with the effectiveness of the automated output, he or she may write an IWD with the information deemed important and organized to effectively communicate the hazards and associated controls to the workers. This document must contain the elements of Part 1 and Part 2 of the IWD and be attached to the JHA record in the [JHA Tool](#), if used.

The equivalent criteria for RLMs to use when reviewing alternative hazards analysis tools or approaches should include:

- support of the IWM process,
- ability to define job hazards and controls,
- identifying institutional requirements,
- determining facility requirements, and
- documentation of [Lessons Learned](#).

IWDs and specific work activity procedures, e.g., those documents (Detailed Operating Procedures [DOPs], Standard Operating Procedures [SOPs], Work Instructions, etc.) pertaining directly to the specific work, must be kept current and, as appropriate, revised and reauthorized, incorporating information from ongoing readiness checks and [Lessons Learned](#). The PIC must use appropriate change control to ensure that workers are using the most current IWD or equivalent work control document for the activity. For the purposes of change control and records management, the four parts of the IWD may be treated as separate documents.

The normal process for extending the expiration date of an IWD requires making a copy of the original document, reviewing the hazard analysis for changes, confirming hazards and controls are appropriate, and updating as necessary. The IWD must then be re-approved following the approval requirements in accordance with this document.

An extension of the expiration date only, must be approved by the RLM and FOD with justification in writing including the required signatures, Z Numbers, and the date.

The original IWD expiration date (lined out and revised) may be extended for **no more than 60 days**. This action may only be performed **once** for each IWD. If an extension beyond 60 days is requested, it must be approved in writing and documented on the IWD by the RLM's Associate Director (AD).

3.2.1 Part 1—Activity-Specific Information

Part 1 ([Form 2100](#), *IWD Part 1, Activity Specific Information* or [Form 2100-WC](#), *Facilities Maintenance IWD*) of an IWD or other equivalent work control document must systematically describe the work activity, the associated hazards, and the controls that must be employed to mitigate the hazards. The document must meet the following **seven** requirements:

1. It must be worker friendly with a focus on the information needed by the worker (e.g., short, well-organized, integrated, consolidated, and reviewable).
2. Activities and their associated hazards and controls must be sufficiently detailed to ensure the worker can understand the associated ES&H/Security and Safeguards (S&S) hazards, concerns, and potential accidents/incidents.
3. Tasks/steps in the IWD or equivalent work control document must be listed sequentially when such sequencing contributes to the safety, security, and/or environmental protection of the activity.
4. Hazards and the associated controls must be linked to specific activity tasks/steps when such linkage will contribute to the worker's understanding of the hazards and use of the controls (e.g., "wear hard hats" for Steps 2 thru 7).
5. Activity and work-area hazards and the associated controls must be addressed.

6. Descriptions of hazards and associated controls **must be specific** and not generic (e.g., “goggles and face shield” rather than “refer to Material Safety Data Sheet [MSDS],” or “certified vault” rather than “secure storage”).
7. Training plans ([UTrain](#) training plans or super training plans)/authorizations, approved permits, and area postings must be referenced if they are required controls; if these are used, specific details do not have to be listed.

Excessive and duplicate controls are not required (i.e., once a control is listed, it does not need to be listed in every step, but it must be clear for which steps the control applies). Avoid over-using “boiler plate” controls that create cumbersome documents that detract from the real hazards.

For facilities maintenance work, use [Form 2100-WC](#), *Facilities Maintenance IWD*. A facilities maintenance IWD for facility maintenance work is performed in accordance with the AP-WORK series and the MSS IWD Writers Guide, found in the [IWM Toolbox](#), in the *Guidance documents* section.

The RLM approval on Part 1 of the IWD indicates

- completion of a peer review,
- IWM has been applied appropriately,
- work is authorized,
- verification by the RLM or designee (usually the PIC) that workers are qualified in accordance with the Part 3 process,
- work will be performed in accordance with ESH/S&S requirements and the IWD, and
- facility safety basis, aggregate hazards, and co-located hazards were appropriately included in the hazard analysis.

The FOD or FOD representative (for the FOD’s specific facility safety envelope) approval on [Form 2100](#) indicates

- work is appropriate to be conducted in this facility (the activity is within the AB, and the work is appropriate for the facility), and
- facility safety basis, aggregate hazards, and co-located hazards will be managed.

Note: Work activities in multiple FOD jurisdictions, e.g., additional facility safety envelopes, require those respective FOD or FOD representative approvals, as applicable.

The FOD may designate an appropriate representative to assist with specific duties, e.g., IWD or equivalent work control document approvals. The representative, in most instances, will be the RLM.

IWDs or equivalent work control documents for work activities in multiple FOD jurisdictions, e.g., additional facility safety envelopes, require those respective FOD or FOD representative approvals, as applicable.

3.2.1.a *Integrated Work Document (IWD) Attachments and References*

The activity-specific part of the IWD (Part 1) may attach or reference documents such as an existing work instruction, operating procedure, hazard control plan, or experimental plan, however, the resulting document must meet the above seven requirements. For example, a DOP

with the hazards and associated controls described within it for the appropriate work steps may be attached to [Form 2100, IWD Part 1, Activity Specific Information](#), and under Work Tasks/Steps, Step 1, would simply read “Reference DOP-XXX-XX, R1.”

Note: If specific work activity procedures, e.g., those documents (DOPs, SOPs, Work Instructions, etc.) that are considered equivalents or part of the IWD expire before the IWD expiration date, then the IWD is no longer valid. All work control documents must be current. Periodic review dates for procedures are not considered “expiration” dates. (See [P315, Conduct of Operations Manual](#), Attachment 16.)

Note: If an IWD or other local document references an Institutional Document (such as the Institutional Documents P101-13, *Electrical Safety Program*, or P121, *Radiation Protection*) the IWD needs to be kept current to match the referenced Institutional Document. If there has not been a substantive change in the referenced Institutional Document, the IWD will be revised according to Section 3.1.4.b of this document.

Alternatively, for an experiment with safety risks, a clear description of the safety envelope, including the hazards, controls, and allowable limits for safe operation may be attached if it effectively conveys when and/or how the hazards would be encountered and links the controls to these hazards. A general description of the hazards and controls is not sufficient.

A similar approach may be used for activities with security and/or environmental hazards. Required permits and security plans **must** be included as part of the work package—the IWD itself does not have to incorporate all hazards and controls from these permits, and the permits typically do not describe work tasks or steps in detail. (It may be useful to organize the permit for different phases of work.)

It is critical that the workers be able to easily locate the information needed to perform work safely, securely, and in an environmentally responsible manner. The IWD must establish specific and clear connections to required permits during applicable tasks/steps/phases of the work (e.g., hold points for specific steps in an IWD).

IWDs may also reference Qualified-Worker Activities without documenting the detailed steps, hazards, and controls associated with the task (e.g., “Qualified RCT performs swipe” after Step 5). For these activities, workers must complete a training and qualification process developed in accordance with all the requirements listed under Level 2/Course Classification Determination as defined in [P781-1, Conduct Of Training Manual](#). Academic credentials and work experience are not specific enough in relation to individual tasks/steps, hazards, controls and therefore do not alone fulfill the requirements for Qualified-Worker Activities.

Note: Qualified-Worker Activities, supported by qualification and training requirements, do not require a separate IWD. If the documentation associated with a training and qualification program provides the documented details of the tasks, hazards, and controls associated with a work activity, then it may be considered to be equivalent to Part 1 of a Standing Qualified-Worker IWD, making a separate IWD unnecessary. Permits may be required for some work activities, based on hazards and requirements for coordination of those activities.

3.2.2 Part 2—Work-Area Information

The preparer is responsible for obtaining the information for the work-area part of the IWD ([Form 2101](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Non-Tenant Activity Form* or [Form 2102](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Tenant Activity Form*) from the FOD and must ensure the activity-specific and work-area requirements are integrated and do not conflict.

The FOD or FOD representative must complete [Form 2101](#) or [Form 2102](#) specific to his or her work area to identify requirements for area hazards and controls and provide approval. This should be completed as close in time to the start of work as reasonably possible.

Although the use of the [JHA Tool](#) is not mandatory, the Facility Notes section of the [JHA Tool](#) is required to be populated by the FOD. The FOD must input and update information into the required Facility Notes section of the [JHA Tool](#) (as the database of record) so that the information is readily accessible throughout the Laboratory, to include at a minimum:

- FOD representatives and any designated Operations Manager or facility points-of-contact;
- entry and coordination requirements; and
- work-area hazards and controls identified for possible incorporation into IWDs or equivalent work control documents, e.g., radiation and beryllium areas.

When activities involve multiple FODs, or a single RLM performing work activities together with multiple FODs, the RLM must coordinate the activities through the FOD responsible for the work area.

Note: The RLM must comply with applicable work control procedures for a FOD's area unless pre-determined, written work agreements exist that may include established procedures and interface agreements.

Where explicit IWDs allow workers to enter and perform work activities in multiple FOD jurisdictions (e.g., facility safety envelopes) with prior FOD approval, [Form 2100](#), *IWD Part 1, Activity Specific Information*, may only require the work-authorizing FOD or FOD representative's approval.

Different forms for Tenant ([Form 2102](#)) and Non-Tenant ([Form 2101](#)) activities are provided in accordance with this document. The FOD must determine which of the forms applies to the activity and provide the appropriate content in the form, if used, or ensure this content is provided in the equivalent work control document.

When used, the [JHA Tool](#) completes the work-area part of the IWD, with the provision that real-time and/or transient area hazards and controls must be communicated as part of the coordination/scheduling and work-release process.

IWDs or equivalent work control documents for work activities in multiple FOD jurisdictions, e.g., additional facility safety envelopes, require those respective FOD or FOD representative approvals, as applicable. The FOD or FOD representative approval on Part 2 of the IWD ([Form 2101](#) or [Form 2102](#), the work-area part of the IWD), indicates facility-specific work area hazards, controls, and requirements have been identified. The suggested IWM assessment criteria contained within Attachment D, *Integrated Work Management (IWM) Self-Assessment Criteria* may be used to guide the evaluation of the adequacy of the IWD. This is also found in the on the [IWM Toolbox](#), in the *Guidance Documents section*.

IWDs are specific to the task, not the area. It is possible to have a low-hazard work activity being performed where there are co-located moderate or high-hazard/complex work activity hazards. [Form 2100](#) (Part 1 of the IWD) is not required for changing a light bulb. [Form 2101](#) (Part 2 of the IWD) identifies the area hazards and controls and if changing a light bulb in the Weapons Engineering Tritium Facility is a low-hazard job, the only required document would be [Form 2101](#).

3.2.3 **Part 3—Validation and Work Release Information**

As described in Section 3.1.3, the PIC is responsible for validating the activity and work-area parts of the IWD (including their compatibility) through a validation walk down with workers initially assigned to the activity, for conducting a Pre-Job Brief, and for releasing the work before execution. Following the Pre-Job Brief, workers must agree to and sign the IWD work release section of Part 3. The FOD may also require an Operations Manager or other facility designated point-of-contact to sign Part 3 immediately before work release to verify the activity is compatible with current facility configuration and operations. The PIC must document the work release by filling out and signing Part 3 of the IWD. Signed copies of all Part 3 documents should be routed back to the RLM as this enables the RLM to be knowledgeable of new workers.

3.2.4 **Part 4—Post-Job Review**

Moderate-Hazard and High-Hazard/Complex activities require a Post-Job Review soon after completion to close-out the job and capture any [Lessons Learned](#). The PIC must document the Post-Job Review on the close-out section of the IWD. (For example, [Form 2104](#), *IWD Part 4, Feedback/Post-Job Review*, or at an organizational level, see the AP-WORK-002, *Work Planning* work documentation process.) For information deemed valuable for performing future activities, the PIC must ensure [Lessons Learned](#) are entered into the [JHA Tool](#) or otherwise documented and communicated to affected workers, RLMs, and FODs.

For facilities maintenance, when [Lessons Learned](#) and Post-Job Review are entered directly into the Asset Suite software program in accordance with AP-WORK-005, *Work Closeout*, found on the AP-WORK [Procedures](#) webpage, Part 4 of the IWD does not need to be completed.

3.3 **Standing Integrated Work Documents (SIWDs)**

For repetitive, Moderate-Hazard and High-Hazard/Complex work activities in single or multiple facilities, an SIWD may be used. This document consists of a standardized, previously developed and approved Part 1 combined with an appropriate Part 2 for each facility listing the specific facility entry and coordination requirements and work-area hazards. In each case, the PIC must ensure the activity-specific and work-area requirements do not conflict.

Activities covered by SIWDs require the PIC to walk down the actual system or equipment and conduct a Pre-Job Brief before beginning work. Only one Pre-Job Brief is required if the work is performed repetitively in the same location with the same workers, and when periodic reviews are performed to detect changes in the work, work site, and hazards. **However, High-Hazard/Complex activities require a Pre-Job Brief before each evolution.** Work activities conducted using SIWDs do not require close-out or Post-Job Review. Follow the requirements in Attachment A, *Integrated Work Management (IWM) Process for Research and Development (R&D)*, for R&D related work activities.

Note: [Lessons Learned](#) and feedback should be captured and documented during the normal course of the work.

SIWDs may also be used for Moderate-Hazard Qualified-Worker Activities as described in the IWD Attachments and References Section above.

Examples of when SIWDs would benefit include the following:

- preventive maintenance activities performed across the Laboratory not covered by qualified worker requirements,
- routine maintenance activities performed similarly across the Laboratory that benefit from a step-by-step procedure,
- custodial services in labs with radiological, chemical, or laser hazards, and
- drywall installation.

4.0 RESPONSIBILITIES

Roles and Responsibilities are defined in detail in [P313](#), *Roles, Responsibilities, Authorities, and Accountability*. The following have been adapted for use in this document.

4.1 Facility Responsible Associate Director (RAD)

- Has overall responsibility and accountability to the Director for the safe, secure, and environmentally compliant operations of all work within an assigned set of facilities.
- Defines the mission need and use of the facility.
- Has authority to establish strategy and priorities for assigned facilities.
- Accountable to the Director for operations within assigned facilities.

4.2 Responsible Line Manager (RLM)

- Is the line manager having the responsibility, authority, and accountability to plan, validate, coordinate, approve, execute, and close out work activities in accordance with IWM.
- Must ensure that IWM is applied effectively to all activities for which he or she is responsible.
- Controls and manages activities in order to execute the responsibilities outlined in [P313](#), *Roles, Responsibilities, Authorities, and Accountability*.
- Is accountable to the FOD and RAD to ensure that their activities are conducted within the safety envelope of the facility and do not place the public, co-located workers, or the environment at risk.

4.3 Facility Operations Director (FOD)

- Takes direction from the RAD and is the senior line manager who provides owner stewardship and overall facility operations. Provides organizational leadership for facility Maintenance; Operations; ESH; Waste Services; and Engineering. Coordinates the efforts of the respective managers to ensure that all facility and programmatic activities are performed in a safe and compliant manner. Facility operations-related deployed personnel will report through the FOD; exceptions for unique reasons will report through the RAD.
- Establishes and maintains the safety, security, and environmental compliance envelope.
- Has authority to control and manage activities and work within his or her facilities in order to execute the responsibilities outlined in [P313](#), *Roles, Responsibilities, Authorities, and Accountability*.
- Is accountable to the RAD in managing the facility.

4.4 Planner/Preparer

- Is encouraged to identify the roles and responsibilities of the persons performing every step within a work control document. To ensure proper assignments based on the individual's roles and responsibilities, it is recommended the planner/preparer identify the discipline required to perform the work step at the beginning of the step.
- Is knowledgeable of required training and required permits to complete the work activities safely.
- Is the person responsible for the development of planning. May be a Laboratory employee or a subcontractor.
- Plans, develops, resolves comments, obtains approvals, and issues for scheduling.
- Has authority to control and manage activities and work based on organizational assignments.
- Is accountable to a line manager.

4.5 Work Provider

- Is responsible for actually performing work.
- Performs work in accordance with approved documents.
- Has authority and accountability to control and manage activities and work based on organizational assignments.
- Is accountable to a line manager.

4.6 Work Supervisor/Person in Charge (PIC)

- Is responsible for supervising the performance of work.
- Performs work in accordance with approved documents.
- Has authority to control and manage activities and work based on organizational assignments.
- Is accountable to a line manager.
- Determine SME engagement and, for R&D, independent worker participation.
- Is knowledgeable of applicable PHA and/or facility safety basis documentation, such as the FSP or DSA, and ensures that the planned activities are within the bounds of these documents.

4.7 Subject Matter Expert (SME)

One type of SME includes designated organizational experts representing Laboratory core safety programs (e.g., RCTs, Industrial Hygienists, ENV or ESH support, or Waste Management Coordinators, as well as Electrical Safety Officers, Explosive Safety Officers, Laser Safety Officers, Chemical Hygiene Officers, etc.). Their involvement may be specifically mandated by other requirements, or may be indicated because of desirable expertise relative to the nature of the work.

A second type of SME includes independent technical experts who have knowledge relevant to the hazards involved in the work.

Any SME participating in IWD development is expected to:

- Provide assistance in identifying and evaluating hazards and in developing and evaluating controls.
- Contribute to identifying opportunities for hazard elimination or substitution where appropriate, based on their expertise.
- Provide technical input as prescribed in [SD350, Management of Projects](#), and in functional areas. Input must be technically accurate, complete, and timely, and should be accepting of appropriate business risk, and cost effective.
- Provide input to help ensure work is compliant with applicable codes and standards, if appropriate to their area of expertise.
- Sign the IWD, agreeing, in the SME's opinion, with the IWD's hazard analysis and the adequacy of controls as appropriate to the level of risk.
- Be amenable to being called upon by the PIC for additional input during annual or other review of evolving R&D activities.

4.8 Peer Reviewers

- Review the unapproved product by bringing a systems approach (big picture view), to the development of the IWD,
- Ensure potential hazards have been identified,
- Confirm that the IWD has included required necessary controls.
- Communicate comments/concerns to the RLM before RLM approval of the IWD.

5.0 IMPLEMENTATION

This document is effective on the date of issue.

However, this document is subject to the Unreviewed Safety Question/Unreviewed Safety Issue (USQ/USI) Process as described in [Safety Basis Procedure \(SBP\)112-3, Unreviewed Safety Question \(USQ\) Process](#) as applicable to Hazard Category 2 and 3 nuclear facilities at LANL, and [SBP113-3, Unreviewed Safety Issue Process](#), for accelerators. The requirements in this document must be implemented no later than February 5, 2014. The Facility Operations Director (FOD) may begin implementation at his/her facility before February 5, 2014, so long as (1) the Safety Basis personnel have completed their USQ/USI review, and (2) the FOD has communicated to the applicable and affected workers for their facilities' readiness to implement and operate to this document. If the USQ/USI review has not or cannot be completed February 4, 2014, the Associate Director for Nuclear and High-Hazard Operations (ADNHHO) will enter a Performance Feedback and Improvement Tracking System (PFITS) item, and track this review until completed.

Note: [Course #12454, IWM: Refresher](#) must be completed within 90 days from the issue date of this document.

6.0 TRAINING

6.1 Integrated Work Management (IWM) Required and Suggested Training (see Table 2)

Table 2. Required and Suggested Integrated Work Management (IWM) Training							
Role	Training Course #12454, IWM: Refresher (CBT)	Training Course #31881, IWM: Overview (CBT)	Training Course #31883, IWM: Preparer (CBT)	Training Course #31884, IWM: PIC (CBT)	Training Course #31882, IWM: FOD/RLM (CBT)	Training Course #12494, IWM: What-If Checklist (2-day Course)	Training Course #28008, Job Hazard Analysis (JHA) Tool Training For Preparers and Approvers
Preparer (Moderate Hazard Level)	R	R	R	N/R	N/R	S	R*
Preparer (High/Complex Hazard Level)	R	R	R	N/R	N/R	R	R*
Person in Charge (PIC)	R	R	N/R	R	N/R	S/R**	S
Workers	R	R	N/R	N/R	N/R	S	N/R
Facility Operations Director (FOD)	R	R	N/R	N/R	R	S	R***
Responsible Line Manager (RLM)	R	R	N/R	N/R	R	S	R*
Subject Matter Expert (SME)	R	R	S	S	S	S	R*
	CBT = Computer Based Training R = Required N/R = Not Required S = Suggested (For suggested training, the RLM must determine who in his or her organization should attend.) *Required only if the JHA Tool is being used. **Required for High Hazard/Complex work. ***Required for inputting the Facility Notes section of the JHA Tool .						

7.0 EXCEPTION OR VARIANCE

To obtain an exception or variance to this document, see the following instructions:

- Managers may request an exception or variance from the IA.
- The IA or designee will provide the requestor with a written response.

The IA will maintain the record copy of all exceptions or variances and provide a copy to the Policy Office.

8.0 DOCUMENTS AND RECORDS

8.1 Office of Record

The Policy Office is the Laboratory Office of Record for this Institutional Document and maintains the administrative record.

8.2 Other Records

The RLM will identify and control IWDs and/or equivalent work control documents, such as technical procedures, as records in accordance with [P1020-1](#), *Laboratory Records Management*, and [P1020-2](#), *Laboratory Document Control*, respectively.

9.0 DEFINITIONS AND ACRONYMS

9.1 Definitions

See LANL [Definition of Terms](#).

Activity—A subset of a project describing floor-level work, made up of one or more tasks.

Activity Hazard—An ES&H/S&S hazard inherent to an activity and not specific to the location of the activity.

Aggregate Hazards—Hazards resulting from the accumulation and/or summation of individual hazards from multiple activities in a facility or across facilities.

Co-located Hazards—Hazards from an activity that have the potential to negatively impact other activities or workers not directly involved with the activity creating the hazard.

Controls—Preventative measures, administrative and engineered features, and PPE applied to work for the purpose of protecting people, the environment, property, and/or national security.

Emergency—Actions/work completed during a situation involving an imminent threat of death, serious injury, or illness of a member of the public or the Laboratory, severe damage to the environment beyond the boundaries of LANL, imminent threat to security, or major damage to a facility (see [PD1200](#), *Emergency Management* for details).

Environmental Management System (EMS)—A systematic method for assessing mission activities, determining the environmental impacts of those activities, controlling those impacts, prioritizing improvements, and measuring results.

Facility—An area, physical structure, or combination of structures together with the associated support infrastructure that form the envelope in which work is accomplished.

Facility Safety Plan (FSP)—Defines and establishes the safety basis for a facility or area. This plan describes the activities performed in the associated structures as well as identifies and assesses the hazards associated with these activities. Safety controls are also identified to manage, i.e., mitigate, the hazards.

Hazard—Any source of ES&H danger or Safety Significant (SS) threat or vulnerability with the potential to cause harm to people, the environment, property, and/or national security.

Hazard Analysis—A technique(s) that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment.

Hold Point—A step in the work package where work is not allowed to proceed until the step is complete, e.g., inspection point, verification point.

Integrated Work Document (IWD)—A worker-friendly document that describes the work activity, identifies the hazards, and links them to specific controls. The IWD may be a subset of a larger work package that includes other documents and information that do not address hazards and controls for that activity.

Job Hazard Analysis (JHA) Tool—The [JHA Tool](#) provides a current, sophisticated hazard checklist and helps identify institutionally mandated controls specified in procedures, and other documents. The Tool also provides facility and work-area information and identifies FOD representatives and the SMEs. It may be used to generate and validate IWDs and provides a means for electronic signatures. It also establishes a Laboratory-wide archive of IWDs and [Lessons Learned](#) that can be used by others. It is not for classified use.

Non-Tenant Activity—An activity conducted by workers who are not resident in the facility and, therefore, may not be familiar with the facility hazards and associated controls or the facility entrance and work coordination requirements.

On-the-Job Training (OJT)—Activity-level training that is a systematically designed instructional experience in which hands-on training is conducted and evaluated in the work environment.

Operations Manager—An individual designated by the FOD who provides coordination of activities within a specific facility on a daily basis and concurs with work-release when stipulated by the FOD.

Peer Review—A review of the unapproved final IWD by a person or persons not directly involved with development of or later approval of the IWD to help ensure that the IWD has adequately identified the potential hazards and required the necessary controls.

Person in Charge (PIC)—The person assigned responsibility and authority by the RLM or designee for overall validation, coordination, execution, and closeout of a work activity in accordance with IWM.

Plan of the Day/Plan of the Week—A daily/weekly meeting to plan and schedule operations and programmatic activities performed within an area under the administration of a FOD. The FOD may require attendance by the PICs and/or workers for identified activities.

Post-Job Review—Review by the PIC and workers to capture [Lessons Learned](#) when an activity is terminated or fully completed as a function of ISM feedback and improvement.

Pre-Job Brief—Review by the PIC and workers of a work activity immediately before release to ensure understanding of the IWD and agreement on how to execute the work.

Preventive Measures—Incorporation of alternative materials, processes, or work steps into an activity to reduce or avoid pollution, exposure to hazards, or security threats.

Program—A set of related projects or ongoing operations managed to execute Laboratory missions.

Project—A subset of a program undertaken to create a defined product or service within a specified schedule.

Qualification—A formal program that defines the required education, experience, training, examination, and any special conditions necessary to ensure that personnel can perform their assigned duties in a safe and reliable manner.

Qualified—A determination that an individual has demonstrated the practical skills necessary to perform a work activity in a safe, secure, and environmentally responsible manner.

Qualified-Worker Activities—Activities that workers can be qualified to perform without detailed instructions. At a minimum, qualifications must be developed in accordance with all the requirements listed under Level 2/Qualification as defined in [P781-1](#), *Conduct of Training Manual*.

Release—The final, formal approval by the PIC to initiate execution of an activity based upon all prerequisites and preparation being completed.

Research and Development (R&D)—“Any creative systematic activity undertaken in order to increase the stock of knowledge, and the use of this knowledge to devise new applications” (after a definition used by the Organization for Economic Cooperation and Development and the United Nations Educational, Scientific and Cultural Organization [UNESCO]. See also [SD601](#), *Conduct of Research and Development, Section 9*).

Risk—The quantitative or qualitative expression of possible harm or loss that considers both the probability that an event will occur and the consequence of that event.

Safety Envelope—The range of conditions covered by the safety documentation of a process or facility under which safe operation is adequately controlled.

Scoping Walk Down—A walk down of the worksite to identify hazards or potential hazards, controls, equipment, PPE and entry requirements, and any other pertinent information that may exist or may be required as pertaining to the IWD, procedure, or work instruction being developed. The need for scoping walk downs is determined jointly by the RLM and the PIC.

Subject Matter Expert (SME)—An individual who has been identified as being competent in a given specific functional area and within the respective ES&H or Technical discipline as defined below:

- **SME, Environment, Safety, and Health (ES&H)**—Designated organizational expert representing Laboratory core safety programs (e.g., RCTs, Industrial Hygienists, ENV or ESH support, or Waste Management Coordinators, as well as Electrical Safety Officers, Laser Safety Officers, Chemical Hygiene Officers, etc.). Their involvement may be specifically mandated by other requirements, or may be indicated because of desirable expertise relative to the nature of the work.
- **SME, Technical**—Independent technical experts who have knowledge relevant to the hazards involved in the work.

Step—A subset of a task, typically sequenced into an IWD, procedure, or work instruction, having a discrete set of related hazards and controls.

Task—A subset of an activity made up of one or more steps and often having different hazards than other tasks within the activity.

Tenant Activity—An activity conducted by the tenants of a facility and/or workers who are very familiar with the facility hazards and associated controls. Such activities must be carefully reviewed to ensure that they do not produce inadequately controlled aggregate or co-located hazards.

Unreviewed Safety Issue (USI)—Exists if a proposed change, modification or experiment will either: (1) Significantly increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety from that evaluated previously by safety analysis; or, (2) Introduce an accident or malfunction of a different type than any evaluated previously by safety analysis that could result in significant consequences. (See [DOE G 420.2-1](#), *Accelerator Facility Safety Implementation Guide for DOE O 420.2B, Safety of Accelerator Facilities.*)

Unreviewed Safety Question (USQ) Process—The mechanism for keeping a nuclear facility safety basis current. The process involves formally reviewing any changes to facility configuration, processes, or activities, reporting these issues to DOE, and determining the final approval authority for any changes.

Validation Walk Down—An on-site documented review of the work area to ensure that work conditions are consistent with the IWD. Includes a review of the tasks and steps to ensure “workability;” hazards have been identified; and required controls are in place, operational, and functional.

Vulnerability—Susceptible or exposed to a threat or to loss of control of classified material, safety, or environmental protection.

Work-Area Hazard—An ES&H/S&S hazard specific to the location of a work activity and not a hazard inherent in the activity itself.

Work Authorization—The combination of RLM and FOD approvals of the activity, accepting that the necessary conditions for the activity to be released and executed are clearly established.

Worker Authorization—The combination of the line manager’s determination of assigned worker competence (including knowledge, skills, and abilities) and commitment to perform the work in a safe, secure, and environmentally responsible manner and the RLM’s or PIC’s confirmation of the worker’s qualifications and fitness during the Pre-Job Brief.

9.2 Acronyms

See LANL [Acronym Master List](#).

AB	Authorization Basis
AD	Associate Director
ADESH	Associate Director for Environment, Safety, and Health
ASE	Accelerator Safety Envelope
ADNHOO	Associate Director for Nuclear and High-Hazard Operations
BSL	Biosafety Level
CBT	Computer Based Training
CMMS	Computerized Maintenance Management System
DOP	Detailed Operating Procedure
DSA	Documented Safety Analysis
DSO	Deployed Security Officer
EMS	Environmental Management System

ENV	Environmental Protection
ES&H	Environment, Safety, and Health
ESH	Environment, Safety, and Health
EX-ID	Excavation/Fill/Soil Permit Identification
FOD	Facility Operations Director
FSP	Facility Safety Plan
HAZOP	Hazard and Operability Analysis
HVAC	Heating, Ventilating, and Air Conditioning
IA	Issuing Authority
IHS	Industrial Hygiene and Safety
IMP	Implementation Procedure
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
ISSM	Integrated Safeguards and Security Management
IWD	Integrated Work Document
IWM	Integrated Work Management
JHA	Job Hazard Analysis
LANL	Los Alamos National Laboratory
LOTO	Lockout/Tagout
MSDS	Material Safety Data Sheet
MSS	Maintenance and Site Services
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
OJT	On-the-Job Training
OSR	Operational Safety Requirements
PHA	Process Hazard Analysis
PFITS	Performance Feedback and Improvement Tracking System
PIC	Person in Charge
POTD	Plan of the Day
POTW	Plan of the Week
PPE	Personal Protective Equipment
PR-ID	Project Review and Requirements-Identification
R&D	Research and Development
RAD	Responsible Associate Director
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RLM	Responsible Line Manager
RM	Responsible Manager
RO	Responsible Office
RWCP	Radiological Work Control Package
RWP	Radiological Work Permit
S&S	Security and Safeguards
SBP	Safety Basis Procedure

SIWD	Standing Integrated Work Document
SME	Subject Matter Expert
SOP	Standard Operating Procedure
SPL	Security Program Lead
SRT	Security Requirements Tool
SS	Safety Significant
UNESCO	United Nations Educational, Scientific and Cultural Organization
USI	Unreviewed Safety Issue
USQ	Unreviewed Safety Question
WSST	Worker Safety and Security Team

10.0 HISTORY

Revision History		
10/31/08	P300, Rev. 0	Renumbered document, Implementation Procedure (IMP) 300, <i>Integrated Work Management</i> .
10/30/09	P300, Rev. 1	<p>Added the following new requirements:</p> <ul style="list-style-type: none"> ▪ procedure for extending the effective date of an Integrated Work Documents (IWD), and ▪ Facility Operations Director (FOD) signature needed to approve work activities in multiple FOD jurisdictions (facility safety envelopes). <p>Clarified the following:</p> <ul style="list-style-type: none"> ▪ Integrated Work Documents (IWDs) should address hazardous chemical spill control, mitigation, and cleanup, where appropriate. <p>Updated Attachment A, <i>Integrated Work Management (IWM) Process for Research and Development (R&D)</i>, to emphasize critical thinking, identify the potential for interacting with the facility, the dangers of scope creep and getting fresh eyes and outside help, including the following:</p> <ul style="list-style-type: none"> ▪ retained and reinforced the basic process for Integrated Work Management (IWM) and Integrated Safety Management (ISM), ▪ strengthened guidance to reduce likelihood of “missed” moderate or high hazards in initial Person in Charge (PIC) grading, ▪ strengthened hazard analysis review teams, ▪ called for specific additional considerations in hazard analysis and development of controls, ▪ added that PIC is to verify that workers from other line organizations are authorized by their own Responsible Line Managers (RLMs) to perform work, and ▪ clarified annual review requirement for Research and Development (R&D) IWDs. <p>Reformatted to meet the requirements set forth in P311-1, <i>Creating, Revising, and Cancelling Institutional Documents</i>.</p>

Revision History		
07/16/10	P300, Rev. 2	<p>Revised to improve LANL activity-level work and integration of safe work practices. Revised to improve IWM implementation including strengthening Subject Matter Expert (SME) involvement, incorporating a peer review process, and clarifying other elements of IWM as follows:</p> <ol style="list-style-type: none"> 1. Clarified applicability of document when implementing within or across the IWM work categories, e.g., R&D, operations, facilities maintenance, and subcontractors. 2. Added requirement for confirming use of <i>Hazard Grading Table</i> (new requirement). 3. Clarified applicability of IWD elements for low-hazard activities, e.g., forms. 4. Clarified SME types and involvement. 5. Added Peer Review requirement (new requirement). 6. Added requirement for validation walk down documentation (new requirement). 7. Revised complete security section to clarify annual review requirements and Security Requirements Tool (SRT) implementation. 8. Added requirement for safety basis consideration (new requirement). 9. Removed requirement for RLM or FOD to determine adequacy of IWD and communicate approval via memo (new requirement). 10. Added requirement for IWDs and specific work activity procedures to be kept current (new requirement). 11. Revised instructions for extending effective dates of IWDs. 12. Removed requirement for RLMs to maintain listing of IWDs requiring qualified workers. 13. Revised Attachment A to include requirements for peer review (flowchart revised); annual IWD review and expiration date established; PIC to involve SMEs throughout the process, as needed; PIC to appoint SMEs for Hazard Analysis team; and peers selected by RLM. (new requirements). 14. Updated forms as applicable.
10/31/11	P300, Rev. 3	<p>Added two new required training courses: Course #12454, IWM: Refresher, and Course #12494, Integrated Work Management: What-If Checklist (2-day Course).</p> <p>Clarified existing requirements to align with current practice.</p> <p>Modified to reflect that this Quick Change does not require an Unreviewed Safety Question/Unreviewed Safety Issue (USQ/USI) review.</p> <p>Added "Note 1" and reference to Box 12 instructions to Fig. A-1.</p> <p>Updated links, titles, and acronyms. Clarified references to forms.</p>

Revision History		
03/30/12	P300, Rev. 4	<p>Revised IWM Toolbox references to be consistent with Toolbox format changes.</p> <p>Clarified existing requirements to align with current practice.</p> <p>Clarified and improved alignment of Attachment A with the main body of the document.</p> <p>Clarified use of “workers or a representative set of workers...” for High-Hazard Complex hazard analysis team.</p> <p>Clarified process for RLM, or RLM designee, authorization of workers from other organizations. Incorporated optional Form 3024, <i>Responsible Line Manager Delegation Form</i> into the IWM Toolbox.</p> <p>Eliminated requirements for use of Security Requirements Tool (SRT).</p> <p>Clarified requirement for documenting feedback and lessons learned. Incorporated acceptance of organizational-specific methods that capture lessons learned on a periodic basis.</p> <p>Added “Note” to clarify requirement to keep IWDs or equivalent current to match referenced Institutional Documents.</p>
01/22/14	P300, Rev. 5	<p>Section 3.1.2, Identify and Analyze Hazards, was modified to be consistent with an existing requirement in P101-32, Worker Exposure Assessments. Specifically, RLMs must involve ES&H deployed personnel in work planning activities to ensure worker exposure assessments are completed when required during the hazard identification and analysis stage of work planning.</p> <p>Updated language in Section 5.0 to reflect Unreviewed Safety Question/Unreviewed Safety Issue (USQ/USI) process and implementation dates for affected facilities.</p>

11.0 REFERENCES

[Prime Contract:](#)

- Clause I-121, DEAR 970.5203-1, *Management Controls* (Dec. 2000)
- Clause I-122, DEAR 970.5203-3, *Contractor's Organization* (Dec. 2000)
- Clause I-123, DEAR 970.5204-2, *Laws, Regulations, and DOE Directives* (Dec. 2000)

11.1 Other References

- AP-WORK [Procedures](#)
- [P950](#), *Conduct of Maintenance*
- [P315](#), *Conduct of Operations Manual*
- DOE-STD-1029-92, *Writer's Guide for Technical Procedures*, found on the [IWM Toolbox](#) in the *Guidance Documents* section
- [P101-12](#), *ES&H Requirements for Subcontractors*
- [SD200](#), *Integrated Safeguards and Security Management*
- [10 CFR 851](#), *Worker Safety and Health Program*

LANL

- “Negotiating Shared Space/Shared Activities” in the [IWM Toolbox](#) in the *Guidance Documents* section
- [PD400](#), *Environmental Protection*
- The Risk Matrix Work Aid, found in the [IWM Toolbox](#) in the *Hazards Analysis* section
- [PD110](#), *Safety Basis*
- [JHA Tool](#)
- [Lessons Learned](#)
- Laboratory [Policy Center](#)
- AP-WORK-002, *Work Planning*, found on the AP-WORK [Procedures](#) webpage
- [P781-1](#) *Conduct of Training Manual*
- [P101-18](#), *Procedure for Pause/Stop Work*
- AP-WORK-005, *Work Closeout*, found on the AP-WORK [Procedures](#) webpage
- *NNSA Activity Level Work Planning and Control Processes*, found on the [IWM Toolbox](#), in the *Guidance Documents* section
- MSS IWD Writers Guide, found in the [IWM Toolbox](#), in the *Guidance Documents* section
- [P313](#), *Roles, Responsibilities, Authorities, and Accountability*
- [SD350](#), *Management of Projects*
- [SBP112-3](#), *Unreviewed Safety Question (USQ) Process*
- [P1020-1](#), *Laboratory Records Management*
- [P1020-2](#), *Laboratory Document Control Program*
- [PD1200](#), *Emergency Management*
- [SD601](#), *Conduct of Research and Development*
- [DOE G 420.2-1](#), *Accelerator Facility Safety Implementation Guide for DOE O 420.2B, Safety of Accelerator Facilities*
- [P311-1](#), *Creating, Revising, and Cancelling Institutional Documents*
- [P121](#), *Radiation Protection*
- Laboratory [Forms website](#) for Environment, Safety, and Health (ES&H)
- [PD902](#), *Space Management*
- [P101-1](#), *Ergonomics*
- [P101-20](#), *Fall Protection Program*
- [P101-15](#), *Biological Safety*
- [P101-13](#), *Electrical Safety Program*
- [P101-34](#), *Pressure Safety*
- [P101-24](#), *Laser Safety Program*
- [P101-8](#), *Explosives Safety*
- [P101-29](#), *Working with Nanotechnology Materials and Processes*

- AP-WORK-001, *Work Initiation, Screening, and Acceptance*, found on the AP-WORK [Procedures](#) webpage
- [Exhibit “F”](#) for Construction, Environmental, Drilling and D&D High Hazard Work

12.0 FORMS

[Form 2100](#), *IWD Part 1, Activity-Specific Information*

[Form 2100-WC](#), *Facilities Maintenance IWD (for MSS facility maintenance work)*

[Form 2101](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Non-Tenant Activity Form*

[Form 2102](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Tenant Activity Form*

[Form 2103](#), *IWD Part 3, Validation and Work Release*

[Form 2104](#), *IWD Part 4, Feedback/Post-Job Review*

[Form 3024](#), *Responsible Line Manager Delegation Form* located in the [IWM Toolbox](#)

13.0 ATTACHMENTS

Attachment A. *Integrated Work Management (IWM) Process for Research and Development (R&D)*

Attachment B. *Hazard Grading Table*

Attachment C. *Error Precursor Card and Task Preview Work Aids*

Attachment D. *Integrated Work Management (IWM) Self-Assessment Criteria*

14.0 CONTACT

Associate Director for Environment, Safety, and Health (ADESH)

Telephone: (505) 667-4218

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Page 1 of 17)

Scope/Applicability

This attachment provides specific requirements that must be implemented for Research and Development (R&D) work activities and operations only.

Definition of Research and Development (R&D): Research and Development is “any creative systematic activity undertaken in order to increase the stock of knowledge, and the use of this knowledge to devise new applications” (after a definition used by the Organization for Economic Cooperation and Development and the United Nations Educational, Scientific and Cultural Organization [UNESCO]; See also [SD601](#), *Conduct of Research and Development, Section 9*).

All research and development is performed within an operational world. For that reason [SD601](#) explicitly supports the application to research and development of this document for Integrated Work Management (IWM) as well as controls required by the facility or program environment. It is Los Alamos National Laboratory’s (LANL’s) intent to support continued excellence and innovation across all LANL research and development through [SD601](#) (i.e., as a stepwise, iterative, discovery-laden intellectual pursuit), while ensuring through this document that hazards of the work—including the environment within and ingredients/processes with which the research and development may be conducted—are appropriately identified and managed.

Workers at LANL conduct Research and Development (R&D) separately or with collaborators at LANL as well as at other sites. Work conducted at a non-LANL site will follow that site’s work-control mechanisms unless, in the judgment of the workers or their LANL Responsible Line Manager (RLM), the local work controls do not provide an equivalent level of safety and security to LANL’s processes. In this case the IWM process requirements must be implemented and integrated into the site work control mechanisms.

Work with a significant safeguards and security component must be evaluated using additional security-specific criteria.

Deployed security workers, such as Security Program Leads (SPLs) and Deployed Security Officers (DSOs), are available to assist managers and workers in evaluating safeguards and security issues related to their work. Workers may also contact the Security Help Desk (665-2002) for security-related guidance.

While it is not unique to R&D, the nature of R&D (as compared to a fixed, repetitive operation) implies that both situational awareness and critical thinking are essential to identifying hazards that may emerge due to evolution of the work (as well as when beginning new work) or by the interaction of the work with the facility environment (which may be affected by changing environmental as well as R&D conditions). The process described in this attachment is intended to facilitate and encourage that thinking within a systematic structure for the IWM process. Awareness and critical thinking are not only important in the development of a hazard analysis and Integrated Work Document (IWD), but also in recognizing emerging hazards as work is conducted.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 2 of 17)

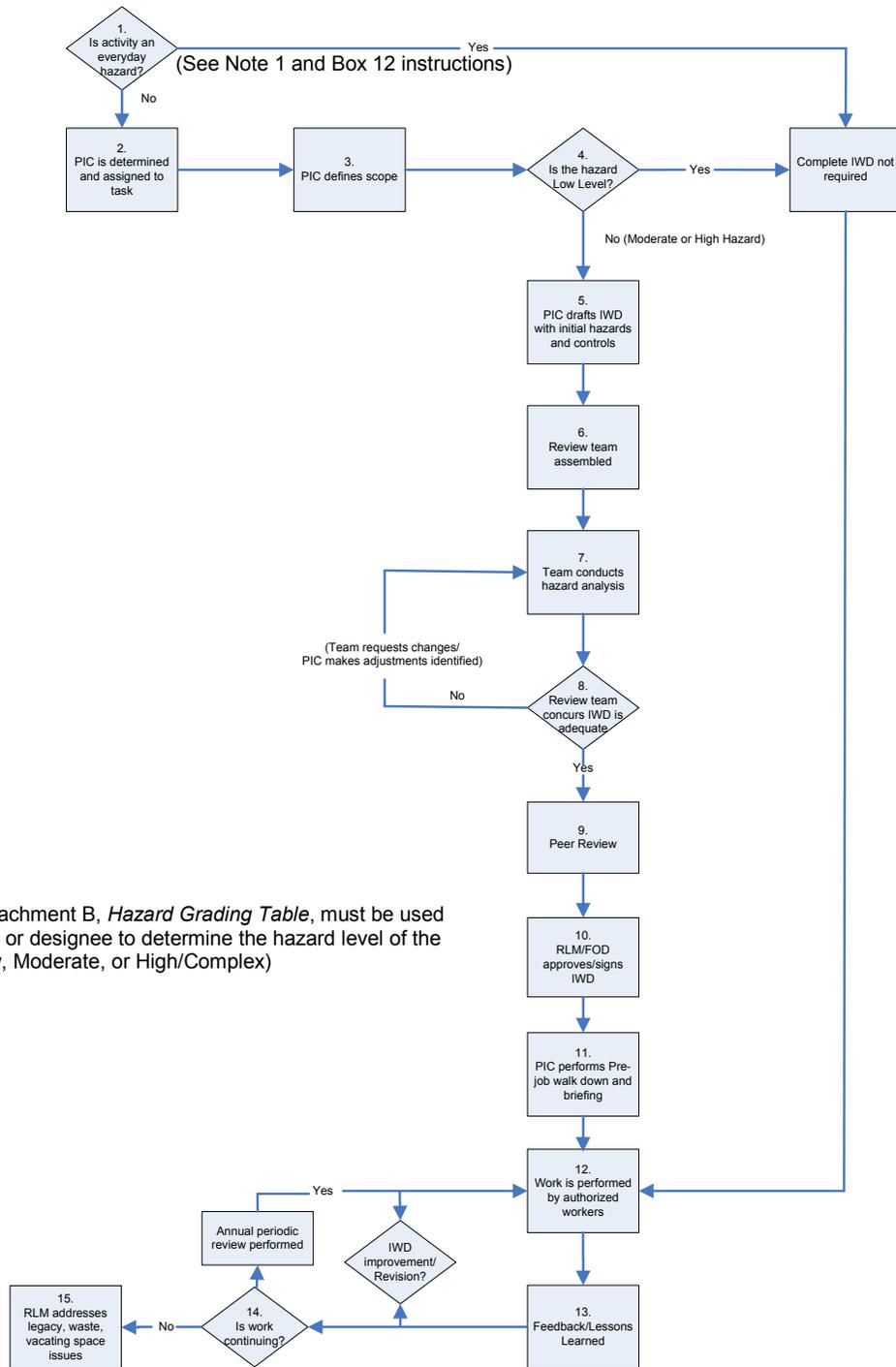
Periodic Reviews (applicable to R&D only)

The RLM establishes an expiration date (one-, two-, or three-year maximum) depending on the complexity and hazards of the activity and the rate of change in the work area. However, all R&D IWDs must be reviewed annually, at a minimum, by the RLM and workers to ensure the adequacy of the IWD and hazard analysis (specifically, to ensure that the work remains within the scope and no new hazards and/or improved controls have been identified). This includes a review of the work and work site, and hazards therein.

If the IWD is found to be adequate during this periodic review the RLM indicates this by initialing and dating [Form 2100, IWD Part 1, Activity Specific Information](#) or other equivalent work control document. If minor changes are necessary, they must be noted as “field changes” within the IWD. Field changes made as part of this periodic review are noted by RLM signature and date of the review (including a brief explanation for the change is suggested). If more substantive changes are necessary, the RLM will initiate a full review and a new IWD.

Involvement of Subject Matter Experts (SMEs) (see Fig. A-1, Box 6) in these annual work planning periodic reviews is encouraged. The one-year review of ongoing R&D activities recognizes the potential for evolution of the work and of related knowledge. Some flexibility in scheduling of both annual R&D work planning and full periodic IWD reviews may be provided by a variance to this document following the process in Section 7.0, if, for example, IWD reviews must be coordinated with separately scheduled activities such as maintenance outages.

**No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 3 of 17)**



Note 1 – Attachment B, *Hazard Grading Table*, must be used by the RLM or designee to determine the hazard level of the activity (Low, Moderate, or High/Complex)

Fig. A-1. Integrated Work Management (IWM) Research and Development (R&D) Process Flow Chart

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 4 of 17)

IWM Process Steps

Here is an explanation of the steps shown in Fig. A-1.

Box 1—Conduct Initial Hazard Screen

The RLM or designee determines whether the activity to be performed involves only everyday hazards. Examples of these activities are included in Attachment B, *Hazard Grading Table*. (Attachment B must be used by the RLM or designee to determine the hazard level of the activity [Low, Moderate, or High/Complex]).

If the activity is determined to involve only everyday hazards, a complete IWD is not required unless stipulated by the RLM and FOD. These activities may be subject to facility-specific access, coordination, and scheduling requirements and must comply with work-area controls required by the Facility Operations Director (FOD). Such requirements might include check-in, training, attendance at Plan of the Day (POTD) meetings, wearing specified Personal Protective Equipment (PPE), or working under an IWD that addresses work-area hazards. These requirements must be communicated by the FOD (or FOD representative) to existing tenants and transient workers through any or all of the following mechanisms:

- the Facility Notes section of the [JHA Tool](#);
- [Form 2101](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Non-Tenant Activity Form* or [Form 2102](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Tenant Activity Form*;
- facility postings;
- facility-specific training; or
- POTD or Plan of the Week (POTW).

The worker is responsible for conducting the activity using the Integrated Safety Management (ISM) 5-Step process (go to Box 12).

Note: If the RLM or designee determines that the activity may entail more than just everyday hazards, then the subsequent boxes in the flow chart are followed. At Box 4 the Person in Charge (PIC) may still determine, after defining the scope and grading the hazard level as described below under Box 4, that the activity is low hazard rather than moderate hazard or high hazard/complex. Low-hazard work may include everyday hazards and may also include radiological hazards and activities at thresholds defined in [P121](#), *Radiation Protection* (see Attachment B, *Hazard Grading Table*). The RLM or designee may determine that the work involves only everyday hazards at Box 1, while a determination of low hazard (or alternatively, moderate or high/complex hazard) may be a result of grading by the PIC at Box 4.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 5 of 17)

Box 2—Determine Person in Charge (PIC)

The RLM or designee determines which individuals are qualified to serve as PICs, defines the specific training requirements to allow them to conduct the hazard grading and assigns them, as applicable, to specific work activities.

Activities can involve multiple organizations, and multiple PICs may be initially assigned. These multiple PICs must participate on the hazard analysis review team, but a single PIC must be responsible for the work planning and day to day execution of the activity.

Box 3—Person in Charge (PIC) Defines Scope

The PIC determines the scope of the work to be conducted. The scope must be sufficiently detailed to assess all hazards, including the following:

- security;
- environment;
- safety and health;
- facility, equipment, tools, and/or materials, including inherent hazards and any hazards solely associated with their interaction with the R&D itself; and
- impact on facility safety basis.

The scope should be defined clearly enough to help prevent the work evolving outside the configurations for which these hazards are appropriately managed, without that fact being recognized and addressed by workers. Such evolution outside of conditions that have been appropriately analyzed and managed can occur because of the evolving nature of the work (e.g., changing materials or equipment) or even from apparently minor changes in a nearly routine aspect of an activity. While it is impractical to attempt to define the scope in detail sufficient to identify all such possible boundaries, it is desirable (as an aid to future situational awareness and critical thinking) for the PIC to also consider potentially hazardous aspects of “scope creep” when thinking about how to define and detail the scope.

Note: Planning should include permit requirements, the disposition of excess equipment, materials, and waste, and potential facility decontamination.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 6 of 17)

Box 4—Person in Charge (PIC) Grades Hazard Level

The PIC, designated by the RLM, determines if the work is low hazard or not, using the *Hazard Grading Table* (see Attachment B) as a minimum aid. The examples listed are meant to be illustrative and do not represent a complete set of hazards. The Risk Matrix Work Aid, found in the [IWM Toolbox](#) in the *Hazards Analysis* section, may be used in evaluating and determining residual risk and hazard levels.

These matrices are aids only and are intended to spur insight and development of an appropriate level of expert knowledge for identifying the hazard level. The PIC has the responsibility of applying professional and expert judgment to determine the sufficiency of information for identifying the hazard level and where indicated, to seek additional assistance and expert resources.

Note: [SD601](#), *Conduct of Research and Development* remarks that “judgment is inherently required in determining how best to plan, conduct, interpret, and communicate...R&D.”

Additional resources include (other) SMEs from the local organization or peers, relevant Laboratory institutional documents or local guidance, and other hazard grading tools where useful. When determining the hazard level of the work, the PIC must take into account the work activity itself and potential impact of work area hazards and co-located work activities. While it is not intended to make the identification of clearly low-hazard work dilatory or ponderous, the application of judgment, tools, and of additional (e.g., expert) resources, where available, is important to ensure that issues not immediately obvious, which, in particular, would raise the work above low hazard, are not missed at this step.

If the work is a low-hazard activity, a complete IWD is not required. The PIC must inform the FOD of any new, low-hazard work activities to be conducted in a facility. Low-hazard activities may be subject to facility-specific access, coordination, and scheduling requirements and must comply with work-area controls required by the FOD. Such requirements might include check-in, training, attendance at POTD meetings, wearing specified PPE, or working under an IWD that addresses work-area hazards. These requirements must be communicated by the FOD (or FOD representative) to existing tenants and transient workers through one of the following mechanisms:

- the Facility Notes section of the [JHA Tool](#);
- [Form 2101](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Non-Tenant Activity Form*, or [Form 2102](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Tenant Activity Form*;
- facility postings;
- facility-specific training; or
- POTD or POTW.

The worker is responsible for conducting the activity using the ISM 5-Step process (go to Box 12). In some cases, the PIC may choose to develop an IWD even though the activity was determined to be low hazard, or low-hazard activities may be included in a broader moderate- or high-hazard/complex work activity IWD.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 7 of 17)

Box 5—Person in Charge (PIC) Drafts Integrated Work Document (IWD) with Initial Hazards and Controls

If the work is not low hazard, an IWD is required. The PIC creates a first draft of the IWD in preparation for team review. This first draft should generally describe the work activity with enough detail to allow identification of hazards, expected outcomes and controls that are clearly evident.

The IWD includes initial hazards and controls, using either the [JHA Tool](#) (or an equivalent hazard analysis process *or tool*) or the IWD forms available through the Laboratory [Forms website](#) for Environment, Safety, and Health [ES&H]). At all points during this process, the PIC must apply “critical thinking.” The PIC should not rely solely on the [JHA Tool](#) to develop a complete set of hazards and controls. Again, the [JHA Tool](#) is intended to spur insight and development of an appropriate level of expert knowledge for identifying hazards and controls. The PIC has the responsibility of applying professional and expert judgment to determine the sufficiency of information for a draft IWD, and where appropriate to identify the need to seek additional assistance and expert resources during Hazard Analysis Review.

Note: The [JHA Tool](#) is available for optional use to assist in the identification and/or validation of controls and defenses related to the hazards identified in the planned work. The RLM may approve the use of alternate hazard analysis tools or approaches, if it can be demonstrated that they provide equivalent or more appropriate application to the work planning activity. This alternative must be documented, with explicit RLM approvals.

Alternatives to the [JHA Tool](#) should be reviewed and determined by the RLM to be

- supportive of the IWM process,
- capable of identifying job hazards and defining controls,
- capable of identifying associated institutional requirements, and
- able to document feedback and [Lessons Learned](#).

The PIC, as designated by the RLM, in consultation with SMEs and the RLM as needed, determines whether the activity is Moderate Hazard or High Hazard/Complex, using Attachment B, *Hazard Grading Table* and applicable Laboratory documents.

Box 6—Establish Hazard Analysis Review Team

The intent of this step is to assemble the right people to review the planned activity, to ensure the appropriate level of communication, and to stimulate critical thinking and discussion. The draft IWD identifies hazards that are clearly evident or otherwise identified by the PIC; these may not be all the hazards present, or some hazards assumed to be controlled may interact with the work to pose the need for additional controls. The intent of critical thinking and discussion during Hazard Analysis is to identify such hazards and controls. Since IWDs may be used to address a class of work, the Hazard Analysis should also attempt to identify changes within the work that may need to be flagged as among the possible causes for more detailed review of the applicability of an IWD, as a reminder for workers using the IWD in the future. This is similar in intent to the recommendation that the PIC think about potentially hazardous areas for “scope creep” when determining how to define the scope. However, what is flagged in this way can only be an *aid* to future critical thinking by workers while performing the work (see Box 12), not a substitute for it. To accomplish all of this during hazard analysis, it is important to assemble a hazard analysis review team with appropriate members.

LANL

P300, Rev. 5

Effective Date: 01/22/14

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 8 of 17)

Moderate-Hazard Requirements

The PIC identifies and assembles the hazard analysis review team consisting of the following categories of members:

- PIC(s);
- researcher/worker(s) (including students and postdocs who are doing the work, depending on the size and complexity of work team);
- SMEs of two distinct types described below;
- one or more independent team members representative of other workers affected by co-located hazards (as applicable); and
- as needed, a training specialist assigned to the organization familiar with training requirements and prerequisites for the work activities being planned.

The RLM must be involved in the review of an IWD as a member of the review team and/or during the walk down of the activity, given that the RLM will approve the final IWD. Any intermediate first line manager(s) whose work scope includes the work scope for the IWD should also be considered as a member(s) of the review team.

The PIC may include a FOD or representative of the FOD on the hazard analysis review team, depending on the nature of the activity, e.g., when there are co-located operations and/or facility interfaces that need to be communicated and coordinated.

The “independent team member(s)” are worker(s) who would be knowledgeable of the facility and safety and, in particular, represent other, presumably nearby, workers potentially affected by co-located hazards. He or she would know who to go to when more information is needed, may aid the PIC in getting the right people on the review team, would take an active part in the review itself, and provide an unbiased review of the planned work. While it is desirable that the independent (co-located) team member have the technical skills and experience to understand the planned process, this is not required, because of the separate requirement to include SMEs.

The PIC must include appropriate SMEs of two distinct types, where applicable. It is possible in some circumstances for one individual to be both an ES&H SME and Technical SME:

- ES&H SMEs include designated organizational experts representing Laboratory core safety programs (e.g., Radiological Control Technicians [RCTs], Industrial Hygienists, Environment, Safety, and Health [ESH] Specialists, or Waste Management Coordinators, as well as Electrical Safety Officers, Explosive Safety Officers, Laser Safety Officers, Chemical Hygiene Officers, etc.). Their involvement may be specifically mandated by other requirements, or may be indicated because of desirable expertise relative to the nature of the work, in which case the PIC will also include these as warranted.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 9 of 17)

- Technical SMEs include technical experts who have knowledge relevant to the hazards involved in the work. To add expert "fresh eyes" and critical thinking, the PIC will include one or more such technical SMEs from outside the immediate organization that is planning and conducting the work. However it is recognized that there will be cases, for example, involving narrow specialties, where this may not be achievable. Where this is the case, including only SMEs from among the researchers/workers or immediate organization requires approval by the RLM for the work activity, and this limitation in viewpoints should be recognized when the review team conducts the hazard analysis.

The PIC must include appropriate SMEs of the first organizational type as warranted, as well as one or more external technical SMEs appropriate to the work. SMEs of both types should contribute to identifying opportunities for hazard elimination, substitution, or controls where appropriate, based on their expertise, as well as contributing to hazard identification (in Box 7).

In some cases, where justifiable, an independent co-located worker could also be one of the SMEs; however that individual would have to be able to serve both distinct functions on the team.

Note: SMEs on the Hazard Analysis Review Team are appointed by the PIC. Individuals responsible for Peer Review (in Box 9) may have some similar skills, but are selected by the RLM.

High Hazard/Complex Requirements

In addition to the members listed for Moderate Hazard, the High Hazard/Complex hazard analysis review team must include a FOD or FOD representative. High Hazard/Complex work requires assembly of this team together to ensure appropriate hazard analysis.

Box 7—Team Conducts Hazard Analysis

The hazard analysis review team confirms the activity hazard grading determined by the PIC and performs a hazard analysis based on the hazards and complexity of the activity. Table A-1 captures requirements for both moderate and high-hazard/complex activities.

The team conducts the hazard analysis, reviews the adequacy of associated procedures, and determines if contingency or emergency plans must be developed. The Error Precursor table in Attachment C, *Error Precursor Card and Task Preview Work Aids*, will assist in identifying potential human error risks.

The [JHA Tool](#) or other equivalent tools may be used as an aid to validate that the hazards and associated institutional requirements are identified. However, the [JHA Tool](#) is not intended to substitute for critical thinking coupled with sound professional judgment provided by the review team. Part 1 of the IWD is used to document the hazard analysis method used and review team information.

The team reviews the draft IWD (Parts 1 and 2), including work tasks/steps, hazards (including hazards from the activity itself, work area hazards, and known co-located and aggregate hazards), the controls appropriate for the hazards, reference documents, and training and qualifications. The PIC incorporates the results of the team's review into the draft IWD.

Note: Both during the PIC's development of a draft IWD and during the hazard analysis, it may be helpful to apply judgment and critical thinking not only to identification of hazards (and their controls) but also to whether the utility of the IWD for the workers regarding specific and potentially consequential hazards is diluted by overly extensive or "cluttered" discussion of routine/common or low-consequence hazards. The team may consider how best to address this balance in reviewing the IWD during this step.

LANL

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 10 of 17)

Table A-1. Hazard Analysis Team Criteria

	Moderate Hazard	High Hazard/Complex
Hazard analysis team members	Person in Charge (PIC), worker(s), independent member, Subject Matter Experts (SMEs), and as applicable co-located worker, Responsible Line Manager (RLM) participation required for either Hazard Analysis review or walk down.	Add RLM and Facility Operations Director (FOD) or FOD representative
Team member participation documented	Required	Required
Team assembly together	Recommended	Required
Hazard-analysis rigor	At least brainstorming, consistent with the expectations of the hazard analysis as described under Box 6.	At least "What-If" Analysis
Hazard-analysis documentation	Optional	Required*
Contingency planning	Recommended	Required
Review of operational steps**	Recommended	Required
Include FOD and SME(s) in validation walk down	Optional	Required
<p>* Hazard analysis for high-hazard/complex work must be documented, with the following qualities as a minimum:</p> <ul style="list-style-type: none"> ▪ it must capture clear logic supporting final decisions; ▪ it must be retrievable in the future to review logic and decisions; and ▪ it must reflect requirements of Attachment B, <i>Hazard Grading Table</i>. <p>** Operational steps may be captured in an operational procedure, work instruction, plan, permit, or the Integrated Work Document (IWD) itself.</p>		

Teams should *consider* a range of controls for high-hazard or complex work in particular. For example, while R&D itself follows a plan (see [SD601](#), *Conduct of Research and Development*) but may *not* as an intellectual discovery-laden pursuit be pursued in a rigid sequence of work, teams should consider whether it may be appropriate to the hazards and/or to the R&D to use, as an administrative control, checklists for execution of operational steps involved in conducting a set of tests or experiments, including setup and post-measurement activities.

During the hazard analysis for either moderate- or high-hazard/complex work, teams should *consider whether* the R&D involves or can affect the facility or facility operations beyond the bounds of existing analyses or agreements/controls. If so, the interaction with or potential to impact controlled operations must be resolved with the FOD and addressed in the IWD.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 11 of 17)

The PIC and team must be knowledgeable of the applicable Process Hazard Analysis (PHA) and/or facility safety basis documentation such as the Facility Safety Plan (FSP) or Documented Safety Analysis (DSA) and shall ensure that the planned activities are within the bounds of these documents. If not within the bounds, the RLM determines whether to modify the scope of the activities or to pursue, with the FOD, additional safety analysis and revision of the PHA or safety basis. Activities outside the bounds of the PHA or safety basis shall not be performed.

Teams should recognize any elements of the activity, including those that support but are not directly part of the R&D itself, for which involved workers may have more limited expertise and that may call for particular attention to hazards and the adequacy of controls. The Pre-Job Brief should be tailored appropriately (see Box 11).

Note: This hazard analysis is the most crucial in the IWD development process. It must be conducted to facilitate critical thinking, worker involvement, and team interaction. The team should apply the hierarchy of controls (below), and address the impact of adjacent and potentially aggregate hazards:

1. elimination of hazards,
2. substitution with a lesser hazard,
3. engineered control,
4. administrative control, then
5. PPE.

Box 8—Review Team Concur Integrated Work Document (IWD) is Adequate

The team ensures the adequacy of the work scope, work steps, the hazards analysis and appropriateness of the controls, and the clarity of the overall IWD and associated work control documents. The PIC will make any adjustments identified by the hazard analysis review team or cycle the comments back through the team for resolution and concurrence.

Box 9—Peer Review

The RLM must have a peer review performed on IWDs for all moderate- and high-hazard work before approving the IWDs. Having another person reviewing the unapproved product provides benefit by bringing a systems approach, big picture view, and/or breadth of focus to ensuring that the IWD has adequately identified the potential hazards and required the necessary controls.

The RLM determines the scope, form, and participant(s) for the peer review. The reviewer(s) should not have been directly involved in developing or approving the IWD to be reviewed. The RLM can consider the level of definition (certainty) of the work scope, experience of the IWD development team, and the employees identified to perform the work, recent related experiences, and [Lessons Learned](#), and other factors that may influence the work when determining who the reviewer (or reviewers) should be. The peer review may include recognition of additional peer reviews that the RLM may have established as a control for ongoing work.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 12 of 17)

As with scientific peer review, having the peer reviewer(s) remain anonymous keeps the process and critical review robust. However, there will be situations where anonymity may be in conflict with performing an adequate review. These considerations should be discussed by the RLM and peer reviewers when the peer review process is initiated.

The RLM signature on Part 1 of the IWD or equivalent work control document includes an acknowledgement that a peer review was completed and comments were adequately addressed.

Comments/concerns identified during the peer review must be communicated to the RLM for his or her consideration before approving the IWD. After completion of the peer review, the RLM must address the review comments appropriately. RLMs are expected to use due diligence in making this determination.

Box 10—Responsible Line Manager (RLM) and Facility Operations Director (FOD) Approve Integrated Work Document (IWD)

The PIC reviews the final IWD with the RLM and FOD (or representative) and obtains their signatures of approval to conduct the work. The RLM approval on Part 1 of the IWD indicates:

- IWM has been applied appropriately,
- work is authorized,
- workers are qualified,
- work will be performed in accordance with ESH/Security and Safeguards (S&S) requirements and the IWD, and
- facility safety basis, aggregate hazards, and co-located hazards were appropriately included in the hazard analysis performed by the team.

The FOD approval on [Form 2100](#) indicates

- work is appropriate to be conducted in this facility (the activity is within the Authorization Basis [AB], the facility is appropriate for the work, and the work is appropriate for the facility), and
- facility safety basis, aggregate hazards, and co-located hazards will be managed.

Note: The RLM and FOD or FOD representative (for the FOD's specific facility safety envelope) sign [Form 2100](#), approving work based upon confidence that the IWD has been properly prepared, that the work will be performed within ESH/S&S requirements and facility requirements and capabilities, and will be performed in accordance with the IWD. Work activities in multiple FOD jurisdictions, e.g., additional facility safety envelopes, require those respective FOD or FOD representative approvals, as applicable.

The FOD or FOD representative approval on either [Form 2101](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Non-Tenant Activity Form* or [Form 2102](#), *IWD Part 2, FOD Requirements and Approval for Entry and Area Hazards and Controls, Tenant Activity Form* indicates facility-specific work area hazards, controls, and requirements have been identified.

The FOD or FOD representative release on [Form 2103](#), *IWD Part 3, Validation and Work Release for Standing Integrated Work Documents (SIWDs)* may be given concurrently with the signature on Part 2 of the IWD.

LANL

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 13 of 17)

Note: The recommended IWM assessment criteria (see Attachment D, *Integrated Work Management [IWM] Self-Assessment Criteria*) may be used to guide this evaluation of the adequacy of the IWD.

Box 11—Pre-Job Activities and Pre-Job Brief

Validation Walk Down

The PIC performs a validation walk down of the work area and work activity. The walk down must include workers assigned to conduct the work. The walk down must be conducted as close in time as reasonable to the actual performance of work, to ensure conditions in the area have not changed and the appropriate personnel, procedures, and equipment are available to start the work.

For High-Hazard/Complex Work, the FOD or FOD representative and SMEs appropriate to the hazards involved must be included in the validation walk down.

Validation and Work Release

At this point, the PIC and/or FOD-designated facility point-of-contact releases the work near the time the work is to commence with a work release signature on Part 3 of the IWD. Work activities must be released once, before initial execution. The FOD may also choose to require another work release when there are significant delays, changes in the work activity, or changes in the facility conditions. This work release may occur at the time the IWD is approved by the FOD, at the discretion of the FOD.

The work release indicates:

- the activity is compatible with the current facility configuration and operating conditions and co-located activities,
- controls are in place to protect co-located workers and transient workers, and
- the work activity can proceed.

Work should be controlled through POTD or POTW meetings; this should be a current and ongoing effort to schedule and resolve schedule conflicts, paying particular attention to co-located hazards. The FOD is responsible for ensuring co-located workers and transient workers who may be affected by the work are appropriately notified.

Pre-Job Brief

The PIC performs a Pre-Job Brief for all workers engaged in the work activity. A Pre-Job Brief is required for each worker before he or she begins work.

The Pre-Job Brief will include a review of the hazards and controls, critical steps in the process and any identified contingency actions, and a review of potential human error precursors that may affect the safe and secure conduct of the work. Suggested content for Pre-Job Briefs is included in [Form 2103, IWD Part 3, Validation and Work Release](#). Additional guidance for the Pre-Job Brief is included in the Task Preview (see Attachment C, *Error Precursor Card and Task Preview Work Aids*). **Where appropriate the Pre-Job Brief should be responsive to known differences among individual workers regarding the error precursors shown in Attachment C, such as knowledge and familiarity with tasks within the activity.**

LANL

P300, Rev. 5
Effective Date: 01/22/14

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 14 of 17)

Pre-Job Briefs should be conducted as frequently as necessary. At a minimum, they must be conducted before beginning work, whenever the work scope is changed, when new [Lessons Learned](#) are available, when unanticipated hazards or conditions have been identified, or before critical steps are to be initiated.

The PICs and all workers who will be working under the IWD must sign Part 3 of the IWD.

The worker signatures indicate that they

- agree to follow the work steps and implement the controls as written;
- agree to pause/stop work when conditions or hazards change, when they encounter unexpected conditions during the execution of work, when work cannot be performed as written, or when instructions become unclear during execution; and
- confirm that they are authorized, qualified, and fit to perform the work.

The PIC's signature indicates that he or she

- has verified authorization of the work by ensuring approval signatures of the RLM and FOD on Parts 1 and 2 of the IWD;
- has jointly conducted a validation walk down with workers and SMEs, as required, to confirm the IWD can be performed as written, and required initial conditions and other prerequisites are in-place and adequate;
- has conducted the Pre-Job Brief, and all workers have been briefed;
- has ensured coordination with any required FOD work-area representatives (e.g., area work coordinators); and
- has ensured that assigned workers are authorized and are qualified and fit to perform the work in a safe, secure, and environmentally responsible manner.

The main text of this document (see Section 3.1.3.d.) requires that the RLM of workers who enter a facility to perform work is responsible for ensuring that personnel are trained and qualified on the activity to be performed, as well as being knowledgeable of facility access requirements. It also states, "For activities involving workers from multiple organizations the RLM directly responsible for the work activity is responsible for determining whether each worker (including those deployed by other line managers) is fully qualified on the activity to be performed, i.e. has demonstrated the needed proficiency in the skills required for the activity, as well as facility access requirements, and is fit to perform the work. This determination may be delegated to the PIC and must be achieved before workers begin work, e.g., at the Pre-Job Brief."

To support these responsibilities and to support the PIC's signature on Part 3 of the IWD, the PIC is expected to verify (through [UTrain](#) Learning Management System by Plateau, other documentation, and confirmation with the worker's RLM, e.g., by e-mail or the *Responsible Line Manager Delegation Form* located in the [IWM Toolbox](#)) that the assigned, deployed workers are authorized and qualified to perform the work. The PIC (serving as the designee of the RLM responsible for the work) is expected to obtain this confirmation before signing Part 3 of the IWD or including new workers. Both initially and when new workers are added to an IWD, the PIC should communicate to the RLM responsible for the work activity that workers have been signed on to Part 3 of the IWD.

Note: Using institutional systems such as [UTrain](#) to identify that workers are authorized by their RLMs may facilitate the PIC's meeting this verification requirement.

LANL

P300, Rev. 5

Effective Date: 01/22/14

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 15 of 17)

Box 12—Performing the Work

Workers must perform the work in accordance with the IWD and supporting procedures, as applicable. Workers must apply critical thinking while they prepare for and conduct work. If unexpected conditions arise, work must be paused or stopped and reevaluated. If the conditions indicate a hazard is not effectively mitigated by the existing controls, the work must not be restarted until adequate controls have been established. As work proceeds under an IWD, changes within the work or in the environment should be the subject of critical thinking and review because they may have the potential to move work outside the planned and controlled parameters of the IWD.

The PIC and each worker must perform frequent readiness checks to confirm that conditions remain within planned parameters. Readiness checks at the start of the workday, the next shift, and the next task (i.e., as work performed under the IWD evolves) are particularly important. These checks are informal, used to confirm that needed personnel, tools, and materials are available, to confirm work is still within scope (avoiding “scope creep”), and whether any changes in the operating conditions or work environment have occurred. The PIC and workers must assume that any change would result in increased risk until proven otherwise.

The following are of particular significance:

- change in scope of activity,
- change in facility work area conditions,
- changes in personnel readiness,
- unanticipated hazards or conditions,
- failure of controls,
- any change that impacts the safety basis of the facility or exceeds established facility operating limits,
- an incident or injury associated with the planned work, or
- new co-located work is introduced into the area that may affect the safety of the ongoing activities.

Workers should approach the work each day with an understanding that task demands, the work environment, individual capabilities and elements of human nature may have changed from the previous day. They should approach tasks critically to ensure potential problems are identified as early as possible. Attachment C, *Error Precursor Card and Task Preview Work Aids*, should be used, as should techniques such as peer-checking, before completing critical steps in a task.

If changes remain within bounding conditions specified in the IWD, the work may continue. For all other changes, the PIC must evaluate, in consultation with the appropriate SME, the significance of any identified changes and determine how to proceed. In particular, if technical changes in the work may introduce new hazards or deviate from planning assumptions or bounding conditions used in developing the IWD, the PIC should consult with internal and external SMEs, as required, to evaluate the significance of the changes. Similarly, the PIC should consult with appropriate SMEs if changes in the facility or the facility’s interaction with the work could introduce new hazards or deviate from assumptions used in the IWD.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 16 of 17)

The PIC may address minor changes with revisions to the IWD on the job site by lining out and/or adding text, initialing and dating the revision, and notifying all affected workers of the changes. For ongoing work, the PIC must subsequently update the master copy of the IWD. Significant changes require repeating affected parts of the IWM process to include an Unreviewed Safety Question (USQ) or Unreviewed Safety Issue (USI) determination, where appropriate, and obtaining peer review and RLM and FOD approval. Worker authorization must also be reviewed and renewed as necessary. Examples of significant changes include:

- major change in scope,
- previously unanticipated hazards or conditions,
- failure of controls and/or changes in controls, and
- any change that would impact the safety or AB of the facility or exceed established facility-operating limits.

Minor revisions are not to be used where the change would

- increase the safety risk to personnel,
- create a difference to a source document requirement and require a variance to continue work,
- alter the purpose or the scope of the procedure,
- eliminate any required reviews or approvals, or
- alter the operating, technical, design, process, regulatory, or quality control requirements of a procedure.

Box 13—Feedback/Lessons Learned

Workers and PICs should be aware of opportunities to improve their operations. Minor improvements must be routinely incorporated into the existing IWD by the PIC using field revisions, or for more significant changes, by revising the IWD. (See Box 12—Performing the Work for a discussion of minor changes and PIC-approved field revisions.) The potential for feedback and [Lessons Learned](#) from performing the work to identify the potential need to revise the IWD is shown on Fig. A-1, *Integrated Work Management (IWM) Research and Development Process Flow Chart*.

Opportunities for improvement and subsequent [Lessons Learned](#) should be captured at any time during the activity—during work execution, during the annual IWD review, and/or at the termination of the activity.

Important opportunities for improvement must also be communicated as potential [Lessons Learned](#) to co-workers, other work planners, and the local Worker Safety and Security Team (WSST). The local WSST will review and forward important [Lessons Learned](#) using the LANL [Lessons Learned](#) program or other LANL-approved processes.

No: P300 Integrated Work Management
Attachment A. Integrated Work Management (IWM) Process for Research and Development (R&D)
(Cont.) (Page 17 of 17)

Note: When an activity is terminated or fully completed and the IWD is no longer needed, a Post-Job Review and [Lessons Learned](#) capture must be performed and the results communicated to co-workers and work planners, and provided institutionally through the [JHA Tool](#) (or other approved LANL process) or alternatively provided to the ESH Manager for the FOD and facility. (See Box 15—Project or activity close-out, for more details.)

Box 14—Is Work Ongoing or Completed?

IWDs for continuing R&D work must be reviewed annually for adequacy before their expiration date, which is determined by the RLM and may be one, two, or three years.

For the annual IWD review, the PIC must initiate a review tailored to the operating experience and degree of work scope change to be performed by the RLM and workers. This process should be based on the existing IWD and should incorporate any [Lessons Learned](#) identified. If more substantive changes are necessary, the RLM will initiate a full review and a new IWD. The PIC will obtain RLM and FOD approvals on the new IWD and the activity will be subject to re-release.

Peer review is not required for the annual IWD review (before IWD expiration). However, the RLM can invoke additional peer review at his or her discretion.

Note: The normal process for extending the effective date of an IWD is described in Section 3.2.

Box 15—Project or Activity Close-Out

At the completion of a project or activity, the PIC must conduct a Post-Job Review.

If an IWD was required, the PIC must document the Post-Job Review on the close-out section of the IWD. (For example, [Form 2104](#), *IWD Part 4, Feedback/Post-Job Review*, or at an organizational level, see the AP-WORK-002, *Work Planning* work documentation process.) In any case, the Post-Job Review should include the following:

- verify that the activity is complete and make notifications in accordance with FOD requirements;
- ensure that follow-through actions (e.g., clean-up, recycle, waste disposal, equipment removal, and secure storage) are completed;
- identify inefficiencies, problems during the activity, coordination issues, unanticipated conditions, and near misses;
- develop recommendations for improvement; and
- any [Lessons Learned](#) as described in Box 12.

If the work has been completed and the space is being vacated at the end of a project or task, the RLM, or designee, and PIC will follow the requirements in [PD902](#), *Space Management*.

Note: Further guidance on Shared Space/Shared Activities is available in the [IWM Toolbox](#) in the *Guidance Documents* section, titled “Negotiating Shared Space/Shared Activities.”

No: P300 Integrated Work Management
Attachment B. Hazard Grading Table (Page 1 of 4)

The Hazard Grading Table (see Table B-1) requires that the Responsible Line Manager (RLM) or designee, who in most cases is the Person in Charge (PIC), review not only the hazards, but also the risk of an incident occurring and the worst case consequence. Additional hazard grading tools may be used to supplement the criteria below.

The Hazard Grading Table must be used to determine the hazard level of the activity (Low, Moderate, or High/Complex). When answering the hazard grading questions, both activity and work-area hazards must be considered, such as when a low-hazard activity is performed in an area where it is co-located with high-hazard/complex work activity hazards. The examples listed are meant to be illustrative and do not represent a complete set of hazards. When in doubt about the appropriate grading level, the next higher level should be used.

Table B-1. Hazard Grading Table	
Hazard Grading Questions	Examples of Work
1. Does the work involve only everyday hazards such as those that could cause negligible harm and be controlled by means well known to the workers? YES—Complete Integrated Work Document (IWD) not required (unless stipulated by Responsible Line Manager [RLM] and Facility Operations Director [FOD]) NO—answer question below	<p style="text-align: center;">Examples of Low-Hazard Work</p> <ul style="list-style-type: none"> ▪ General office work Normal use of household appliances (e.g., coffee makers, microwave ovens, etc.) ▪ Activities not requiring hands-on work (e.g., visual inspections, log taking, etc.) ▪ Ordinary lifting (e.g., ergonomic risk factors for lifting considered in accordance with P101-1, Ergonomics) ▪ Use of a dolly or hand truck to move non-hazardous materials ▪ Elevated work when fall protection is provided by conventional handrail systems or otherwise not required according to P101-20, Fall Protection Program ▪ Radiological hazards and activities at thresholds defined in P121, Radiation Protection ▪ Other everyday accepted activities such as driving automobiles, food preparation, etc.

**No: P300 Integrated Work Management
Attachment B. Hazard Grading Table (Cont.) (Page 2 of 4)**

Table B-1. Hazard Grading Table (Cont.)	
Hazard Grading Questions	Examples of Work
<p>2. Does the work involve hazards that inherently could cause moderate harm, such as:</p> <ul style="list-style-type: none"> ▪ injury requiring medical attention or leading to temporary disability, or ▪ spill or unplanned release to the environment of hazardous materials? <p>Note: This question and Question 3 may be answered “NO” if engineered controls have been established, thoroughly reviewed, and proven highly reliable in minimizing the hazards without active worker involvement (e.g., commercial insulation on electrical wiring, sharps disposal containers). Additional engineered controls, e.g., gloveboxes, must have concurrence by applicable Subject Matter Experts (SMEs).</p> <p>NO—Low Hazard—Complete IWD not required (unless stipulated by RLM and FOD)</p> <p>YES—answer questions 3 and 4 below</p>	<p>Examples of Moderate Hazard Work</p> <ul style="list-style-type: none"> ▪ Work with hazardous chemicals, materials, or Biosafety Level 2 (BSL-2) bioagents/biohazards as defined in P101-15, <i>Biological Safety</i> ▪ Radiological hazards and activities at thresholds defined in P121, <i>Radiation Protection</i> ▪ Exposure to electrical energy at hazardous levels defined in P101-13, <i>Electrical Safety Program</i> ▪ Use of hazardous pressure, vacuum, or cryogenic systems defined in P101-34, <i>Pressure Safety</i> ▪ Exposure to laser radiation with potential for eye damage as defined in P101-24, <i>Laser Safety Program</i> ▪ Elevated work when fall protection is not provided by conventional handrail systems or required according to P101-20, <i>Fall Protection Program</i> ▪ Manually lifting more than 50 pounds by a single person ▪ Welding or other process that produces sparks or flame ▪ Work associated with decontamination or demolition

**No: P300 Integrated Work Management
Attachment B. Hazard Grading Table (Cont.) (Page 3 of 4)**

Table B-1. Hazard Grading Table (Cont.)	
Hazard Grading Questions	Examples of Work
<p>3. Does the work involve hazards that inherently could cause critical or catastrophic harm to people, property, national security, the environment, or the institution, such as</p> <ul style="list-style-type: none"> ▪ severe or fatal injuries, life-shortening disease, permanent disability, or ▪ major environmental contamination or permit violation (i.e., National Pollutant Discharge Elimination System [NPDES], Resource Conservation and Recovery Act [RCRA], etc.)? <p>Note: This question may be answered “NO” if engineered controls have been established, thoroughly reviewed, and proven highly reliable in minimizing the hazards without active worker involvement (e.g., commercial insulation on electrical wiring, sharps disposal containers). Additional engineered controls, e.g., gloveboxes, must have concurrence by applicable SMEs.</p> <p>4. Does the work involve unfamiliar hazards or a combination of moderate hazards (as defined above) and significant complexity?</p>	<p>Examples of High-Hazard/Complex Work</p> <ul style="list-style-type: none"> ▪ Radiological hazards and activities at thresholds defined in P121, <i>Radiation Protection</i> ▪ Use of significant amounts of stored electrical energy (e.g., large capacitor banks) ▪ Use of significant quantities of highly toxic or hazardous materials ▪ Work with high explosives in a quantity, form, and manner that could detonate and cause major damage according to P101-8, <i>Explosives Safety</i> ▪ Work with Biosafety Level 3 (BSL-3) bioagents/biohazards P101-15, <i>Biological Safety</i> ▪ Use of materials that, if released, could cause major environmental contamination ▪ Work with a combination of crafts and/or multiple workers requiring precise sequencing and careful coordination of their activities to prevent critical or catastrophic harm to people, property, national security, the environment, or the institution ▪ Work with multiple hazards with potentially conflicting controls ▪ Potential for rapidly changing work-area conditions ▪ Nonroutine or infrequently performed work where worker proficiency is important to managing the hazards ▪ Entering environments where unevaluated hazards may exist or performing low or moderate hazard tasks in a high-hazard environment ▪ Nanotechnology work, as defined in P101-29, <i>Working with Nanotechnology Materials and Processes</i>
<p>NO—(to both questions in block above)— Moderate Hazard—IWD required</p> <p>YES—(to either of these questions) High Hazard/Complex—Documented Hazard Analysis with JHA Team and IWD required</p>	

**No: P300 Integrated Work Management
Attachment B. Hazard Grading Table (Cont.) (Page 4 of 4)**

Table B-2 is applicable only for **facility maintenance activities**.

Table B-2. Hazard Grading Table for Facility Maintenance Activities	
Hazard Grading Questions	Examples of Work
<p>1. Does the facility maintenance work involve only hazards that could cause negligible harm, and is it controlled by means well known to the workers?</p> <p>YES—Complete Integrated Work Document (IWD) not required (unless stipulated by Responsible Line Manager [RLM] and Facility Operations Director [FOD])</p> <p>NO—answer question number 2 in Table B-1.</p>	<p style="text-align: center;">Examples of Low-Hazard Work</p> <ul style="list-style-type: none"> ▪ Expedited Work as defined in AP-WORK-001, <i>Work Initiation, Screening, and Acceptance</i>, found on the AP-WORK Procedures webpage ▪ Radiological hazards and activities at thresholds defined in P121, <i>Radiation Protection</i> ▪ Facility repairs such as repairing individual doors, windows, and locks ▪ Installation and removal of all scaffolding ▪ Equipment routine lubrications ▪ Maintenance of equipment, e.g., adjusting, changing of belts, sheaves, shafts, or bearings ▪ Shop equipment maintenance ▪ Inspect, diagnose, test, adjust, clean, perform minor repair of Heating, Ventilating, and Air Conditioning (HVAC), building controls systems and air handling systems or equipment ▪ Repair of kitchen appliances ▪ Repair or replace filter assemblies and periodic replacement of filter cartridges (e.g., on drinking fountains or on nonhazardous systems) ▪ Backflow preventer inspection ▪ Restroom repairs ▪ Minor plumbing and safety shower repairs ▪ General office repairs or renovations ▪ Snow removal, use of household mowing equipment, sweeping, traffic control, vegetation control, general cleanup of facilities, roads, and grounds ▪ Routine custodial work, including household cleaners and waxing activities ▪ Elevated work when fall protection is provided by conventional handrail systems or otherwise not required according to P101-20, <i>Fall Protection Program</i> ▪ Ordinary lifts with lift plan ▪ Class-1 penetrations authorized by the RLM or designee with knowledge of no existing hazards in structure, wall, floor, or other surface

Error Precursors

short list

Task Demands	Individual Capabilities
• Time pressure (in a hurry)	• Unfamiliarity w/ task / First time
• High Workload (memory requirements)	• Lack of knowledge (mental model)
• Simultaneous, multiple tasks	• New technique not used before
• Repetitive actions, monotonous	• Imprecise communication habits
• Irrecoverable acts	• Lack of proficiency / Inexperience
• Interpretation requirements	• Indistinct problem-solving skills
• Unclear goals, roles, & responsibilities	• “Hazardous” attitude for critical task
• Lack of or unclear standards	• Illness / Fatigue
Work Environment	Human Nature
• Distractions / Interruptions	• Stress (limits attention)
• Changes / Departures from routine	• Habit patterns
• Confusing displays or controls	• Assumptions (inaccurate mental picture)
• Workarounds / OOS instruments	• Complacency / Overconfidence
• Hidden system response	• Mindset (“tuned” to see)
• Unexpected equipment conditions	• Inaccurate risk perception (Pollyanna)
• Lack of alternative indication	• Mental shortcuts (biases)
• Personality conflicts	• Limited short-term memory

Task Preview



No: P300 Integrated Work Management
Attachment D. Integrated Work Management (IWM) Self-Assessment Criteria (Page 1 of 2)

These suggested criteria should be incorporated into organizational self-assessment plans to help managers and supervisors determine the effectiveness of work planning and implementation.

General

Review general work tasks, interview worker, observe work, and check training and authorization records.

1. Is the hazard rating (i.e., low) appropriate for the work?
2. Are controls used to mitigate low-risk hazards (e.g., lifting, moving, sharp objects, slick surfaces, ergonomic issues, hand tools, and uneven surfaces) to an acceptable level?
3. Is work being performed safely?
4. Are Pre-Job Briefs timely and appropriate to work being conducted?

Moderate and High Hazard

Review Integrated Work Document (IWD) and hazard analysis documentation, interview workers, observe Pre-Job Briefs and work, and check training and authorization records.

Scope of Work

1. Is the scope of work sufficiently detailed to clearly identify the following?
 - a. Facility and/or location where work is to be performed,
 - b. Configuration and use of equipment to be used,
 - c. Time frame over which work will occur,
 - d. Expected outcome of work, and
 - e. Any specific security, safety, or environmental concerns that will impact successful completion of the work.
2. Are task steps identified in sufficient detail to facilitate safe, efficient work?
3. Does the planning process normally include identification and review of resources, including other tasks scheduled to occur in the immediate area during the same time period?
4. Does the planning process normally include identification of initial facility conditions and prerequisites required for work to be accomplished?

Hazard Analysis

1. Is a team approach used to identify and analyze hazards associated with the work activity?
2. Are hazards for the associated work clearly identified in the IWD?
3. Was a hazard analysis conducted and documented (i.e., a team review involving workers, managers, and SMEs, where appropriate, was conducted)?
4. Are workers involved in the hazards-analysis step?
5. Was the activity walked down as part of the hazards analysis?
6. Did the walk down identify the major steps required to perform the activity?

No: P300 Integrated Work Management
Attachment D. Integrated Work Management (IWM) Self-Assessment Criteria (Cont.) (Page 2 of 2)

7. Has consideration been given to off-normal or unexpected conditions, and contingency steps incorporated?
8. Is the hazard rating (i.e., low) appropriate for the work?

Implement Controls

1. Are risk-graded hazard controls identified and incorporated into the IWD or Work Instruction?
2. Are workers involved in the identification of adequate and appropriate controls for both expected and unexpected conditions?
3. Do workers show knowledge and competency of the necessary controls?
4. Are controls implemented before performing work?

Peer Review

1. Is a peer review conducted?

Perform Work

1. Is a Pre-Job Brief conducted?
2. Does the Pre-Job Brief address the expected activities and any specific cautions for workers to be aware of?
3. Are both the work instructions and the work site reviewed, including walk downs where appropriate, to ensure that the hazards analysis results translate to the actual work environment (i.e., reflect actual conditions) and to verify that all hazards that could potentially affect the safety of workers have been identified and that selected controls are appropriate and adequate?
4. Do workers demonstrate an understanding of the scope of activities, expected outcomes, and required controls (e.g., perform work within the correct scope with required controls implemented)?
5. Do workers demonstrate an understanding of conditions that warrant a work pause or stoppage and a willingness to do so (e.g., pause or stop work if warranted)?

Feedback and Lessons Learned

1. Do workers and supervisors review the effectiveness of work planning for the task and identify improvement actions as needed? (This includes errors and mistakes that are indicators of potential problems or near misses.)
2. Is there evidence that the Feedback Section of the IWD is being used to identify future improvements?
3. Is there evidence that employee feedback is being encouraged?
4. Are previous, similar activities reviewed for applicable [Lessons Learned](#)?
5. Is there evidence that identified improvements are being implemented?

References for attributes, best practices, and guidance for effective incorporation of Integrated Safety Management and Quality Assurance:

- *NNSA Activity Level Work Planning and Control Processes*, found on the [IWM Toolbox](#), in the *Guidance Documents* section.

LANL

P300, Rev. 5
Effective Date: 01/22/14

IMPORTANT

If you wish to receive credit for the preceding document you **must** enter the course through [UTrain](#) **not** the Policy Office website. ***You may want to make a copy of these instructions before proceeding to UTrain, because entering UTrain will navigate you away from the instructions.***

The steps are: <http://int.lanl.gov/services/training/index.shtml> > click on UTrain icon, right side of page > weblogin > welcome page click on “continue” lower right > Catalog Tab upper middle right > use drop down menu > click on “Advanced Catalog Search” > Enter Course Number in ID box, click on “Search” lower right > click on “Go to Content” middle right side > you are now in the UTrain system that will give you credit > <click on “Proceed with document” bottom middle > read document > at the end of the document click on “If you have read and understand....” to receive credit > click on “Request Credit” and you are done.

If you click on the above credit button and you get the following message “***This content has opened in a way that renders it unable to award credit. This is either because of your system configuration or because of an error in the content,***” try using Citrix, call the UTrain Help Desk at 667-1111, or call AskIt at 665-4444.