Computing Sciences
Integrated Safety Management Plan

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Katherine Yelick
Associate Laboratory Director, Computing Sciences

Date: 7/8/2015

Jonathan Carter
Computing Sciences Deputy

Date: 7/8/2015

Betsy MacGowan
Computing Sciences ES&H Coordinator

REVISION LOG

Date	Major/Minor	Brief Description of Revision
January 2007	Minor	• Organizational Chart updated. • Charts, graphs and supporting documentation updated to reflect RY/FY07. • Added URLs. • Added core function descriptions.
October 2008	Major	• Added ISM core functions and guiding principles. • Added links to additional Policy and Procedure documents. • Added stop work policy. • Updated Scope of Work Authorized, adding Job Hazards Analysis (JHA) and Activity Hazard Document (AHD). • Deleted specific training course requirements. • Added signature page.
March 2009	Major	• Added Revision Log. • Updated Accountability and Responsibility section to incorporate most recent PUB-3000 requirements. • Updated work authorization information. • Added Employee Rights section.
March 2010	Minor	• Sec. 1: Added work locations. • Sec. 3: Modified details on walkarounds, construction contractor safety, and staff work expectations. • Sec. 5: Removed mention of Human Subjects research, updated AHD description. • Sec. 8: Updated Resource Allocation section. • Made minor housekeeping revisions throughout.
March 2012	Major	• Sec. 2: Added third Division. • Sec. 3: Updated Accountability and Responsibility wording. • Sec. 5: Added Working Alone policy, updated AHD descriptions. • Sec. 8: Updated Directorate resources.
March 2013	Minor	• Sec. 2: Updated Directorate Organization Chart. • Made minor housekeeping revisions throughout.
July 2015	Major	• Sec. 1: updated ISM Core Functions and Guiding Principles • Sec. 2: Updated Directorate Organization Chart; added CRT as a work location. • Sec. 3: Changed walkarounds from biannual to annual. • Sec. 4: Updated Safety Committee membership and attendance requirements. • Removed references to JHA and AHD; replaced with WPC/Activity Manager. • Made minor housekeeping revisions throughout.

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1.0   Purpose

This Computing Sciences (CS) Integrated Safety Management (ISM) Plan provides guidance to implementation of the integrated environment, safety and health (ES&H) policies within the Computing Sciences Area. CS has integrated each of the five functions and seven guiding principles of Integrated Safety Management (ISM)[i] from the Lawrence Berkeley National Laboratory (LBNL) ISM Plan into its ongoing research and operations. Furthermore, CS conducts all of its operations in a manner that protects the health and safety of employees and the general public, safeguards the environment, and is consistent with applicable LBNL, university, and government agency policies and regulations. The Laboratory's ES&H policies and requirements are contained in:

> PUB-201, Requirements and Procedures Manual (RPM);
> PUB-3000, ES&H Manual, and
> PUB-3140, Integrated Environment, Safety, & Health Management Plan.

This ISM Plan describes the mechanisms that are applied in Computing Sciences to ensure proper implementation of these safety policies.

## 2.0   Description of Computing Sciences

The Computing Sciences mission includes computational research and operation of two national user facilities, the National Energy Research Scientific Computing (NERSC) Center and the Energy Sciences Network (ESnet). Berkeley Lab's Computing Sciences organization was created to advance computational science throughout the Department of Energy's Office of Science research programs. Computing Sciences combines computing and network operations with research and development in computer science, computational science, and applied mathematics.

The Computing Sciences Directorate, led by Associate Laboratory Director Katherine Yelick, was created in 1996 and currently has approximately 500 employees and guests. Computing Sciences includes three divisions: the Computational Research Division (CRD), the National Energy Research Scientific Computing (NERSC) Center Division, and the Scientific Networking Division (SND). The SND was formed in 2011, when the Energy Sciences Network was separated from CRD as a stand-alone Division. The CS organizational structure is shown in Figure 1.

The Computational Research Division conducts research and development in mathematical modeling and simulation, algorithm design, data storage, management and analysis, computer system architecture and high-performance software implementation.

The NERSC Division mission is to accelerate the pace of scientific discovery in the Department of Energy (DOE) Office of Science community by providing high-performance computing, information, and communications services. NERSC is the principal provider of high performance computing services to DOE Office of Science programs.

The Scientific Networking Division manages and operates the Energy Sciences Network (ESnet), a high-speed network serving thousands of Department of Energy scientists and collaborators worldwide.
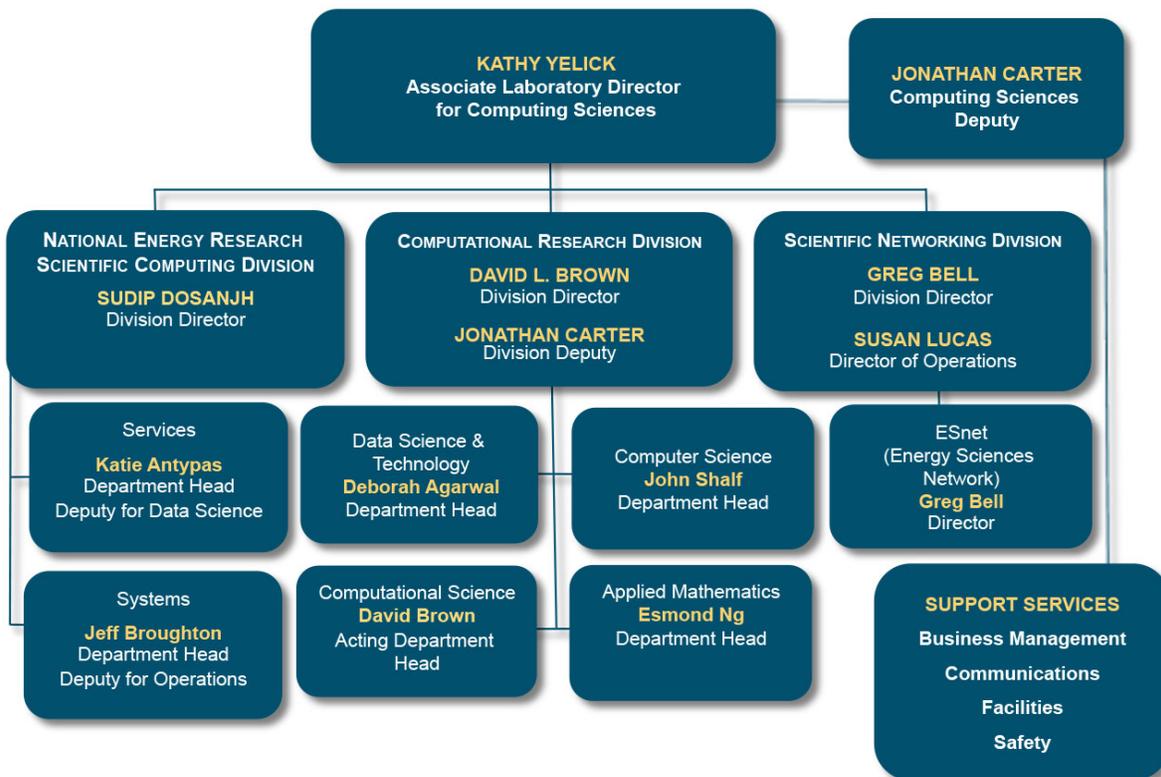
Figure 1 Computing Sciences Organization Chart

Computing Sciences offices and computer rooms are located in the Building 50-complex and the Computational Research and Theory (CRT) facility on the main Lab site. Staff also work in office and computer room spaces at the Joint Genome Institute in Walnut Creek and at the Oakland Scientific Facility (OSF), in Oakland. Many CS staff work in more than one location. All three Divisions have some staff that work remotely, both in offices and in technical areas. Drop-in offices have been established in the 50-complex, at the CRT, and at OSF, facilitating flexible work arrangements and matrixing of employees. In addition, CS Area researchers collaborate with faculty and scientists located at other institutions. These collaborators may have LBNL employee or Guest status.

3.0   Accountability and Responsibility

Division Management is responsible for ensuring implementation of ES&H policy. Safety in Computing Sciences flows from the Directors of the three Divisions to their direct reports, and from them down to first line supervisors. Division Management ensures that roles and responsibilities for ensuring compliance with ES&H requirements within CS are clearly defined in staff position descriptions and performance review documents.

Line Management includes Department Heads, Group Leads, and other supervisors. Line Management is responsible for protection of the public, employees, and the environment. More specifically, Computing Science line managers are responsible for integrating ES&H into work practices and for ensuring active communication up and down the management line and within the workforce. Line management is responsible for reviewing the ES&H hazards and controls for their employees, guests, contractors, visitors, students, and matrixed employees, ensuring that the hazard analysis is completed within 30 days of their start date,

and that required training is completed and controls are implemented. Sections 5 and 6 of this ISM Plan provide additional detail on work authorization.

Supervisors conduct annual safety walkarounds to review the safety of their employees and workspaces, documenting their observations and ensuring that unsafe conditions are corrected promptly. These walkarounds may be conducted in conjunction with an annual wall-to-wall review by Division management. Supervisors participate in accident investigations to identify accident causes and corrective actions. They ensure that corrective actions identified in walkarounds and accident investigations are entered into the Corrective Action Tracking System (CATS). Management proactively promotes and encourages safety awareness in the workplace.

Activity Leads and Activity Lead Designees may be authorized by line management to direct, train, and/or oversee the work and activities of one or more workers. Multiple Activity Leads may oversee aspects of staff work, as determined by the nature of the work performed.

Area Safety Leaders are responsible for overall safety within technical areas, such as computer rooms or mechanical rooms. Area safety leaders ensure that the appropriate personal protective equipment has been determined, and that this is posted with other required information at each entrance to their areas.

A Division Safety Coordinator (DSC) serves as a point of contact for all Division staff regarding the implementation and interpretation of the Lab's ES&H policies. The DSC coordinates and manages required safety programs and documentation. The DSC works with CRD, NERSC and SND safety representatives to promote ES&H awareness, communication, safe work practices, and compliance.

All employees, participating guests, and contractors are responsible for knowing and following the ES&H requirements that apply to their work. They are expected to work safely, and to cooperate and contribute to Computing Sciences ES&H activities as appropriate. They must consult with qualified specialists to resolve any questions about ES&H activities.

All employees, participating guests, and contractors are responsible for bringing safety and health concerns promptly to the attention of the appropriate manager, supervisor, or work lead for resolution. Line management is then responsible for investigating the concern and implementing corrective action. If a satisfactory response is not received, the Division Director should be contacted, followed by the Director of the Environment, Health, and Safety Division.

All employees, participating guests, and contractors are responsible for stopping work activities considered to pose an imminent danger. An "imminent danger" is defined as any condition or practice that could reasonably be expected to cause death or serious injury, or environmental harm. The Laboratory's Stop Work Policy can be found in the RPM.

Subcontractors are required to comply with ES&H requirements. CS managers are responsible for the safe performance of work conducted on-site by subcontractors. When non-construction subcontractor work is hands-on and is conducted on-site, the work hazards are documented in a Subcontractor Job Hazards Analysis. Construction work hazards are addressed through contractor Safety Checklists and construction JHAs. Subcontractor employees issued LBNL badges must be covered by the Lab's Activity Manager system.

Matrixed employees' supervisors from the home divisions or departments retain all ES&H responsibilities pertaining to the matrixed employees.

Students are afforded the same protections and assume the same obligations as any LBNL employee or guest for safe work practices. Before student work begins, supervisors are responsible for assuring that each student possesses a thorough understanding of safe work practices. Supervisors are responsible for assuring that each student performing work is aware of the hazards of their work, has completed the appropriate safety training, and performs their work safely.

Regular or occasional offsite work is subject to the same safety requirements and review as on-site work, unless the safety oversight of the work is covered by another institution. CS has some employees who work in permanent offices at other locations or institutions; some employees or Affiliates may be present onsite only once a year for a week or month or other length of time. SND's ESnet employees routinely provide on-site support at computational facilities around the United States.

Telecommuting is addressed on a case-by-case basis, and may be permitted at the discretion of line management, when appropriate.

4.0   Safety Committee

CS maintains an ES&H (Safety) Committee, consisting of representatives from Directorate Management, from CRD Division Departments, the Safety Advisory Committee (SAC) representative, the CS Electrical Safety Committee Representative, the Division Safety Coordinator, the EH&S Division Liaison, the NERSC Safety Representative, and the SND Safety Representative. The DOE Berkeley Site Office Representative, the LBL Associate Lab Director for Computing Sciences, CS Division Directors and Deputies are ex officio members. The Safety Committee is chaired by the Division Safety Coordinator.

The CS Safety Committee's responsibilities include these functions:
- review, maintain and implement the CS ISM Plan
- analyze accident and injury data
- promote ES&H awareness and training
- review the need for specialized training
- participate in planning for ES&H Peer Reviews
- develop metrics and analyze pertinent data
- advise the Associate Laboratory Director for Computing Sciences on ES&H issues.

Members of the Safety Committee participate in the preparation of Self-Assessment Reports for the Associate Laboratory Director. The Safety Committee also assures that Computing Sciences works to improve the effectiveness of the ES&H program through the dissemination of lessons learned and other appropriate mechanisms. Division Directors or Deputies attend at least one regular Committee meeting each year.

5.0   Scope of Work Authorized

The majority of Computing Sciences employees work in an office environment with intensive computer use. Staff may also perform work in computer rooms and other technical areas, and require training appropriate to their activities in these areas. No personal protective equipment (PPE) is required for entry into computer rooms, though in some cases PPE may be recommended or required for work under the floor, or for performing specialized tasks, in computer rooms. Computing Sciences uses the Laboratory Work Planning and Control process, along with its software tool Activity Manager, to analyze work hazards, authorize work, and allow workers to demonstrate that they are qualified to perform activities.

Permits for lockout/tagout, energized electrical work, and confined space entry are used as necessary in compliance with EHS requirements to control work hazards of employees and contractors performing work which requires these controls.

Working Alone Policy. Working alone is performing work when no one is within sight or earshot who could help in the event of an emergency. Activities where a plausible injury or exposure could render an individual unable to self-rescue are considered too hazardous to permit working alone. Activity leads determine whether any work under their control requires a work alone prohibition and, if required, include controls in the Activity authorization to implement this prohibition.

Activity Leads will review their activities as specified in Activity Manager, based on the level of risk, and when work changes. Activity Manager will notify Activity Leads of relevant review times. Activity Leads or supervisors will obtain required approvals for potentially hazardous or regulated work as specified in PUB-3000, Chapter 6.

6.0   Qualification and Training

The LBNL Activity Manager and Berkeley Lab Training database are mechanisms used to implement ISM in CS. Activity Manager documents hazard analysis and Berkeley Lab Training records completion of performance and training requirements. CS staff and long-term guests must be authorized to work under this process. Until authorized to work alone, individuals will perform work only under the supervision of a qualified employee.

CS may develop additional training mechanisms including on-the-job training (OJT) and facility-specific training for work in CS computer rooms and mechanical areas. Qualifications include skills, work experience, knowledge, training, and certifications required by regulations, by Laboratory policy, or Division management. Contract labor employees, guests, and students who will be at LBNL for more than 30 days are subject to the same ES&H requirements for qualification and training as career employees performing similar tasks.

CS staff qualifications and training are reviewed as part of the self-assessment program to ensure that skills are commensurate with technical needs and workplace hazards.

7.0   Employee Rights

CS staff may file an ES&H concern with their immediate supervisor, higher level managers, Director of the EH&S Division, or the local DOE office. Concerns may be submitted by calling the Berkeley Lab Employee Hotline (800) 403-4744. This toll free number is available 24 hours every day and is operated by a third-party vendor for confidentiality and anonymity if so desired by the caller. Persons reporting improper activities are fully protected by the law and Lab policy against retaliation.

8.0   Resource Allocation

Supervisors will incorporate appropriate resource allocation to address ES&H concerns in all research and operations proposals. The allocation of funds is particularly important in addressing ergonomic issues but may also be required to cover the cost of safety equipment, permits, and training.

To facilitate implementation and execution of this ISM Plan, the following Computing Sciences resources are made available:

Directorate ES&H Coordinator
Administrative Support
Directorate ES&H Committee Member
LBNL Safety Advisory Committee Representative

The following resources are made available by the EH&S Division. They are available to assist supervisors, the ES&H committee, and staff in general with any aspects of the implementation of this program.

EH&S Division Liaison
EH&S Subject Matter Experts: Confined Space, Electrical, Ergonomics, Fire Protection, Hearing Protection, Industrial Hygiene, Laser, Seismic.

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[i] The five functions of Integrated Safety Management (ISM) are:
- Define the scope of work
- Analyze the hazards (including environmental impacts)
- Develop and implement hazard (including environmental controls)
- Perform work within controls
- Provide feedback and continuous improvement

These five ISM core functions are sustained by applying the seven guiding principles of ISM:
- Line management responsibility for safety
- Clear roles and responsibilities
- Competence commensurate with responsibilities
- Balanced priorities
- Identification of ES&H standards and requirements
- Hazard controls (including environmental controls) tailored to the work being performed
- Operations authorization