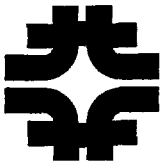

Fermi National Accelerator Laboratory

FERMILAB-TM-1953

Report on the Fermilab Pilot N&S Closure Process

Prepared by
Larry Coulson
in behalf of the convened group

Fermi National Accelerator Laboratory
P.O. Box 500, Batavia, Illinois 60510

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REPORT ON THE FERMILAB PILOT N&S CLOSURE PROCESS AUGUST 1, 1995

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REPORT ON THE FERMILAB PILOT N&S CLOSURE PROCESS AUGUST 1, 1995

INTRODUCTION

This report, prepared by Larry Coulson in behalf of the Convened Group, documents the Fermilab ES&H N&S pilot project conducted between February 27, 1995 and July 14, 1995. The pilot was charged with testing the validity and applicability of the Department of Energy Closure Process for Necessary and Sufficient Set of Standards, which we will call "the Process." (See Attachment 1.) Attachments to this report contain the key documentation and the results of the pilot. The most detailed source of documentation of the pilot is the *Documentation of Record* (DoR). The DoR comprises 10 appendices containing the detailed documentation, with an introduction, called the Process Documentation Guide, that describes the documentation in the appendices. The DoR Table of Contents and the Process Documentation Guide are Attachment 2 to this report. Another useful report is the *Fermilab Demonstration, Response to Criteria for Judging Success of Process Demonstration, July 25, 1995,* which contains the response to questions posed by the DOE Department Standards Committee to measure the success of the Fermilab pilot. The latter report, without attachments, is Attachment 3 to this report. Copies of the appendices and attachments to the above reports are available through the Director's Office at Fermilab (708-840-3211).

We intend this report for a broader audience than the other documents we reference above. We hope that this report will help guide others through the Process as currently written. We assume that the reader has an acquaintance with the Process and is using this report as a guide to its implementation. Without some prior acquaintance with the Process, we fear that many of the references will be meaningless.

The first of the eight parts of this report is this Introduction. The second part contains comments on the Process, including an explanation of the pilot organization. The third part, Implementation of the Process, describes what we did to address each section of the Process. This part should help the reader understand the interpretation chosen for each section of the Process. The fourth part contains a brief discussion of the contract modification made as a result of the pilot. The fifth part contains some general conclusions and lessons learned. The sixth part is a brief summary statement. The seventh section is a Glossary of Abbreviations, which the reader may find helpful in keeping track of the many abbreviations used in this report. Finally, there follows a series of 19 attachments, which contain the documentation to help the reader understand the details of the Fermilab pilot.

PROCESS COMMENTS AND ORGANIZATION

Comments

1. A critical element for the success of the pilot was the strong support from the entire line organization (ER, CH, BAO, and Fermilab), EH and the Department Standards Committee. Not only was there strong support and participation from all these organizations, but the working team relationship among the participants greatly facilitated the process.

2. From the beginning, the team decided to include all interested persons on the distribution list for documents as they were generated. Therefore, we sent electronic copies of meeting minutes, charters, etc. to everyone who had shown interest, including representatives of all the above-mentioned organizations. Ultimately over 40 people were on the distribution list.

3. Involvement of people and organizations outside the DOE family, peers from DOE sister labs, DOE personnel from the field office and area office, as well as Fermilab personnel, enhanced the credibility of the final product.

4. Agreement on the overall organization, responsibilities, authorities, etc. at the beginning of the Process kept the Process going smoothly. We agreed on the protocols for organization, approvals, responsibilities, and members of the Convened Group at the first and only meeting of the Extended Convened Group.

5. The Process works. We recognized that the Department Standards Committee had not specified the mechanics of the Process in great detail; but our experience showed that a strength of the Process comes precisely from the fact that the mechanics of the Process are *not* prescribed in great detail. Although this made starting the Process difficult, it allowed for enough flexibility for the responsible parties to implement the pilot in a way that reflected their collective judgment and experience. As a result, they felt comfortable in taking ownership of the Process and could feel confident of the results.

Organization

Attachment 4 shows the organization developed for the Fermilab pilot. The 3 boxes in the top row lists the **Agreement Parties**. The name within each box indicates the approval authority for that organization. Fred Bernthal is the President of Universities Research Association, Inc. (the organization that holds the contract with DOE to operate Fermilab);

John O'Fallon is the Director of the High Energy Physics Division in ER; and Andrew Mravca is the Manager of the Batavia Area Office, and the Contracting Officer.

Each of these organizations had one member on the **Convened Group** (the **Process Leader** is also from Fermilab but generally represented the Process and not an organization). Larry Coulson (Process Leader) is an Assistant Director at Fermilab; Ray Stefanski is the Associate Director for Operations Support at Fermilab; Andrew Mravca; and Dave Goodwin (ER-20) represented the Resource Authority.

The **Extended Convened Group** included the Convened Group members plus Cherri Langenfeld (Manager, Chicago Operations Office), Wilmot Hess (Director of High Energy and Nuclear Physics in ER), Ezra Heitowit (Vice President of URA), and Ken Stanfield (Deputy Director of Fermilab). This group met only once as a decision-making body. As described above, they created the overall plan for the Pilot.

A **Steering Committee** was created within Fermilab to advise the Process Leader on aspects of the Process that directly involved Fermilab. Members of the Steering Committee included Larry Coulson, Ray Stefanski, Bruce Chrisman (Associate Director for Administration), Don Cossairt (Head of the ES&H Section), Tim Miller (Deputy Head of the ES&H Section), Hans Jostlein (Standards Manager), and Kathy Williams (Manager of the QA Office).

The **Identification Team**, created by the Convened Group, consisted of 15 members including the Process Leader. One member each came from CEBAF, ANL, BNL, and BAO. Two members each came from SLAC and CH. The remaining members were Fermilab personnel. In general, senior personnel were chosen for their technical knowledge of accelerator activities, including ES&H aspects, and their ability to work in a team environment. The Identification Team broke into technical groups (by functional area), called **Focus Groups** ,to analyze issues and select standards. The Focus Groups had access to **Subject Matter Experts** as required.

The protocol for confirmation required presentation and defense of the draft set of standards to Fermilab first, and the Convened Group second. The Fermilab ES&H Policy Advisory Committee **(ESHPAC)**, which advises the Director on ES&H Policy matters, primarily carried out the Fermilab review.

A **Confirmation Panel,** created to support the Convened Group in its challenge of the draft set, provided peer involvement at the confirmation stage. The Confirmation Panel included high-level operational and ES&H personnel selected from DOE and non-DOE laboratories with a history of accelerator based physics research.

IMPLEMENTATION OF THE PROCESS

This section follows the outline of the Process. Paragraph labels and headings are those used in the Process. We discuss the interpretation and implementation of each part of the Process, for the Fermilab pilot.

Definitions

We agreed on the following definitions at the Extended Convened Group meeting.

The **Customer Organization** is BAO.

The **Responsible Organization** is URA.

The **Agreement Parties** include URA, ER , BAO. This is in keeping with the suggestion to establish the approval authority as low in the organization as possible.

The **Resource Authority** is ER.

The Convened Group identified **Stakeholders** in a document called the Stakeholder Participation Plan. This plan defines stakeholders and indicates the level of involvement of each. (See Attachment 5).

Operational and Technical Experts were largely ES&H professionals, physicists, engineers and other line supervisors at Fermilab. We also tapped expertise at sister labs for participation on the Identification Team and the Confirmation Panel. Three local industrial companies participated by providing personnel to discuss their experiences with external regulation and regulatory bodies. In addition, the Safety Director of the Laboratory of Nuclear Studies at Cornell presented to the Identification Team his experience with safety issues and regulation by outside regulators.

1. INITIATING THE NECESSARY AND SUFFICIENT CLOSURE PROCESS

Initiation of the Fermilab pilot was somewhat different from that envisioned in the Process protocol document. Fermilab was selected by representatives of the Department Standards Committee and ER as a likely candidate to conduct the pilot for two important reasons: Fermilab is a single purpose laboratory and it is classified as a low hazard facility. It was anticipated that it would be easier to conduct the pilot at Fermilab than at a multipurpose or a higher risk lab. In a letter to Andrew Mravca, Wilmot Hess proposed that Fermilab conduct the pilot. Fermilab agreed, and sent a proposal to the Department Standards Committee. The Department Standards Committee accepted the proposal on 2/24/95. A kickoff meeting at Fermilab on 2/27/95 launched the pilot. Representatives of ER, EH, CH, BAO and Fermilab participated. The kickoff acquainted Fermilab managers and other Lab personnel with the Process and showed the support of the line organization and EH. We hoped that this would allay skepticism about the prospects for success of the pilot. As required by the Department Standards Committee's protocol for the pilots, the head of the ER program office, Martha Krebs, and the head of EH, Tara O'Toole, officially sanctioned the pilot. DoR Appendix A displays these letters.

The Responsible Organization, Fermilab, appointed Larry Coulson to be the Process Leader.

2. PRODUCING A NECESSARY AND SUFFICIENT SET OF STANDARDS

Process Element 1. Defining the Work and the Hazards

[1] Acquisition of relevant information on the work performed at Fermilab was obtained as follows:

A. Through the Convened Group meetings, the Process Leader solicited information on the initial conditions (A through F shown in paragraph [3]) from ER and BAO. The group agreed that the hazard (issue) identification survey to be conducted by Fermilab would supply the best "bottoms up" information. (See D.[3] below.)

B. Operational and technical experts provided much of the information collected by the survey conducted by Fermilab. Experts were also part of the Identification Team and the

Confirmation Panel as previously described. More than 30 Subject Matter Experts assisted the Identification Team.

C. The resource authority, ER, agreed that the pilot would be conducted within existing resource limits. The resources to conduct the pilot would come partially from delaying some reports to DOE. The resources for the Laboratory mission (HEP) were not an issue in this pilot. The group decided that, although resources would fluctuate, future resource availability would not play a role in this pilot.

D. The Convened Group defined Stakeholder involvement in the Stakeholder Participation Plan. The DoR, Appendix D, documents the involvement of stakeholders.

[2] The Process Leader organized all the collected information into a binder issued to each Identification Team member when the work of the Identification Team began.

[3] The primary source of information for the definition of work at Fermilab was a survey of management, supervisors, and ES&H professionals. The survey form includes questions A though F, some other questions, and a checklist of potential ES&H issues. Attachment 6 displays the survey forms. This information, collected from each of the 77 sub-organizational units at Fermilab, provided a characterization of all the work currently being done at the Lab. The DoR, Appendix C, contains the collected data. In addition to this survey, the Process Leader assembled other sources of information that were felt to be of importance in characterizing the work and hazards at the Lab—e.g. accident records, occurrence reports. Attachment 6 also documents the other sources of information.

The information from all these sources was formulated into 151 ES&H issues that were provided as a starting point to the Identification Team for analysis to produce the N&S set of standards. The DoR, Appendix E, displays this initial list of issues. Nearly everyone who reviewed this list agreed that, with only a few exceptions, the same list would characterize many light industrial companies. The obvious conclusion is that there are very few unique ES&H issues at Fermilab. Fermilab has mostly standard industrial hazards.

[4] Although the Process allows for re-evaluating the definition of the work if advised by the Identification Team, the team found no re-evaluation necessary.

Process Element 2. Creating the Team(s)

The Extended Convened Group named the members of the Convened Group as described above. The Extended Convened Group decided that it was appropriate for the Convened Group to consist of one representative of each of the agreement parties. We have earlier provided the membership of the Extended Convened Group and Convened Group, also included as Attachment 7.

The Convened Group followed the guidance in the Process as closely as possible. The Convened Group documented their decisions and the protocols for the pilot in the pilot Charter. (See Attachment 8.) The Convened Group carried out specific responsibilities as follows:

[1] The pilot Charter and the Identification Team Charter, Attachment 9, defined the criteria for selection of Identification Team members. The primary criterion for the Identification Team members was knowledge of the work activities at a research accelerator. Another criterion was work experience in an external regulatory organization such as OSHA or EPA. We agreed that a Fermilab person with technical expertise in the appropriate functional ES&H area should lead each of the Focus Groups of the Identification Team, so members from Fermilab were also selected on this basis.

[2] The Process Leader solicited biographies of candidates for the Identification Team from Fermilab, BAO, CH, and four sister labs (SLAC, ANL, CEBAF, and BNL). The Convened Group reviewed the biographies and selected the team members. Attachment 10 contains the names of the team members and a summary of their credentials.

The Convened Group approved a list of Confirmation Panel candidates from five sister labs and one non-DOE accelerator lab The Process Leader solicited the Confirmation Panel members from that list. The Confirmation Panel included the ES&H Managers from SLAC, LBNL, ANL, and the Deputy ES&H Manager from BNL. The Project Manager of CEBAF and the Safety Director of The Laboratory of Nuclear Studies, which operates the Cornell Electron Storage Ring accelerator at Cornell University, were also panel members. Attachment 10 contains the list of Confirmation Panel participants.

Process Element 3. Defining and Agreeing to Protocols and Documentation Requirements

[1] The Convened Group defined the protocols and documentation in the pilot Charter (Attachment 8). Of particular importance was the specification of the approval protocols, and resolution of differing opinions. The Extended Convened Group agreed that the approval would be by the Agreement Parties: President of URA, ER, and the Contracting officer, in that order. The process for resolving differing opinions followed the authority hierarchy—i.e. problems not resolved by the Identification Team would be referred to the Convened Group, problems not solved by the Convened Group would be referred to the Extended Convened Group. We defined no further appeal mechanism.

[2] The Convened Group left most decisions about the documentation of the Identification Team work to the Identification Team. The pilot Charter contains all decisions made by the Convened Group regarding documentation requirements.

The minutes of the meetings, contained in the DoR, Appendices E, F, and H, record Identification Team decisions about protocols and documentation.

Process Element 4. Identifying the Necessary and Sufficient Set of Standards

The Identification Team began its analysis on the 151 issues prepared as previously described. During their deliberations, some issues were deleted or combined with others and some issues were added, based on the Identification Team's professional judgment. Attachment 11 displays the final list of 172 issues. The Identification Team used the following process for the analysis of each issue:

1. The Identification Team determined if a standard is needed for each issue identified (either presented to them or identified by them).

2. If a standard is needed, a Fermilab Identification Team Document (FITD) was filled out. This form documented adherence to the requirements of the Process. In particular, it provides documentation of [2], [3], [6], and [7] in Process Element 4.

Attachment 12 shows a flow chart of the analysis process and an example of the FITD. More than 30 Subject Matter Experts, mostly drawn from Fermilab's pool of professional engineers, scientists, and ES&H personnel, assisted the Focus Groups in this analysis.

The expectations of BAO, ER, and URA for the pilot were primarily to use industrial solutions for industrial problems. In other words, if an identified issue is similar to that faced by industry and an industrial standard exists (e.g. OSHA, EPA, etc.) then that standard should be chosen. If no industrial solution exists or if it is inadequate, then another external standard is sought (e.g. consensus standard, DOE Order, etc.). Only if a satisfactory solution is not available from those choices should an internal (Fermilab) standard be chosen.

In order to help the team members better understand the consequence and experience of using industrial standards, the team asked several local industries and two university research facilities to participate. Three local industrial firms sent representatives to join in a panel discussion on industrial regulation and regulators. AMOCO Research Center, Amersham, and NALCO participated. The Safety Director of the particle accelerator at Cornell also visited the team and discussed his experience with ES&H at a high energy accelerator that is not subject to DOE regulations. The safety director for the accelerator facility at the University of Illinois (also not regulated by the DOE) sent a copy of the ES&H program developed for that facility for the Identification Team to review. The interactions with the representatives of facilities using outside regulation proved very insightful to the Team members.

Attachment 13 contains the final set of FITDs for all 172 issues, and Attachment 14 contains the final list of issues with corresponding standards citations. Some standards (e.g. OSHA 1910) had many sections referenced. In some of these cases the Identification Team decided to accept the entire standard for the sake of simplicity, even though some parts of it were not necessary for the set.

The Identification Team reached consensus on a set of standards. Attachment 15, the Team Report, contains these standards. The Identification team made no recommendations for redefinition of work or for developing new standards.

Process Element 5. Confirming the Necessary and Sufficient Set of Standards

The pilot Charter called for a two-step confirmation process. First, Fermilab was invited to review and comment on the draft set. The pilot Charter defines the protocols for this process, and DoR Appendix G contains the documentation of that review.

The Charter called for the final confirmation process to be a presentation and oral defense of the draft set by the Identification Team to the Convened Group. A peer group, the Confirmation Panel, assisted the Convened Group. The Convened Group also invited the Extended Convened Group to participate in the confirmation.

The Convened Group held the confirmation meeting on July 12, 1995. Attachment 16 shows the people participating. DoR Appendix I shows the minutes of the confirmation meeting, issues raised, and the resolution of those issues. During the meeting, three issues were raised that were significant enough to need resolution after the meeting. The Convened Group resolved all issues before approval of the N&S set of standards by the Agreement Parties.

Process Element 6. Approving the Necessary and Sufficient Set of Standards

Approval of the N&S set occurred on July 14, 1995. Attachment 17 contains the approval documents.

CONTRACT MODIFICATION

The DOE/URA contract was modified on July 14, 1995, as a result of the N&S Pilot (see Attachment 18). The contract modification replaced the existing list of applicable ES&H DOE Orders with a modified list of applicable orders and the "N&S" list of Standards.

The new contract no longer contains the orders for Quality Assurance, Conduct of Operations, Self-Assessment, and Maintenance Management. These management orders have historically been associated with the ES&H activities of laboratories. These orders are important because they affect the implementation of the N&S set.

The Convened Group asked the Identification Team to make recommendations about management systems to the Convened Group. However, the Identification Team could not reach consensus on the best management systems to use as "standards." Members of the team held views that reflected the management systems of their home institutions. Therefore, the Process Leader referred these issues to the Convened Group for resolution as per protocol in the Pilot Charter. The Convened Group discussed these issues with the Identification Team, the Confirmation Panel, and members of the Extended Convened Group present at the confirmation. It was noted that many of the selected standards explicitly addressed QA for ES&H—e.g. CFR 835.102, ASME Pressure Vessel Code, and the Handbook for Sampling & Sample Preservation of Water and Wastewater (EPA-600/4-82-029). The conclusion of the Convened Group was unanimous—the referenced orders do not add value and are not necessary; therefore the contract should not include them.

The following clause was inserted into the contract:

> 1,b,(3). (Fermilab will) Continue to maintain management systems that ensure that the agreed-upon standards are implemented.

This requires:

1. Fermilab to maintain adequate management systems, and
2. The Batavia Area Office to audit Fermilab's management systems.

Attachment 19 provides further details.

CONCLUSION AND LESSONS LEARNED

We conclude that the N&S Process works well as designed. We faithfully followed the sequence of steps for the N&S Closure Process, contained in the Charter for the pilot and in the Identification Team Charter. These documents provided an entirely satisfactory mechanism for getting the work done.

We also concluded that the role of the Process Leader is a critical and exacting one. The Process Leader's effective coordination of a complicated mix of working and advisory groups (the Convened Group, Extended Convened Group, Steering Committee, Identification Team, Focus Groups, and Focus Group Leaders) is vital to the successful implementation of the N&S Process.

We present below a collection of "lessons learned" from the implementation of the N&S Pilot Process at Fermilab; we hope that these remarks will help organizations that are planning their own N&S Process in the future:

- Time and Hard Work: A successful N&S Process requires a lot of hard work by highly qualified and highly motivated people. In particular, the Identification Team phase of the work required significantly more time and effort than the Process Leader had anticipated. If we count the time of all the persons (Fermilab, BAO, CH, ER, Department Standards Committee and outside persons) involved in meetings, preparation, follow-up, communication, travel, etc., we estimate that the pilot took about 90 person-months of effort. Fermilab effort was about 24 person-months. The direct cost to Fermilab (travel, facilitation, meeting rooms, materials, etc.) was about $50 K.

- Careful Organization: Careful organization of each step of the process, including faithful implementation of all of the prescribed formalities of the process, is very important. In the Fermilab Pilot Process, this organizational effort helped to prevent misunderstandings and contributed to assuring continued buy-in by all interested parties as work progressed. The efforts of the Process Leader to assure that all interested parties were kept informed throughout the process were most worthwhile.

- Facilitator: The participation of a management consulting firm in the Fermilab N&S Process was helpful, especially in its role as a process facilitator at the outset of the Identification Team's initial two week period of concentrated work in mid-May. The facilitator introduced several concepts (the use of flip charts, ground rules, specific goals, pre-determined breaks, role playing- devil's

advocate, a common understanding of the meaning of consensus, etc.) that proved very useful in keeping the Team and Focus Groups focused on the issues, the process, and the final objective.

- OSH Issues: The scope of the work of the Occupational Safety and Health (OSH) Focus Group was too broad. Over 100 of the ES&H hazard issues identified by the workers at Fermilab were in the OSH area. The assessment of these issues by at least two separate Focus Groups would probably have made a more effective arrangement.

- Boundary Conditions: Thoughtful consideration by the Process Leader, throughout the duration of the Identification Team work, of "boundary conditions" is important. It is not always clear what constitutes an ES&H issue, or if one should include a closely related topic associated with a particular ES&H issue. Examples of this are property loss prevention in the fire safety area, or safeguards and security considerations in the emergency response area.

- Involvement of Contract Lawyers: Although we solicited some comments from legal counsel early on, during the negotiations for the contract modification it became clear that more participation by the lawyers during the Identification Team process would have facilitated the final stages of the process.

SUMMARY

The Fermilab Pilot exercised the Process. The Pilot followed the Process scrupulously, and found it very useful for the intended purpose. A set of N&S standards was selected, approved and incorporated into the DOE/URA contract. We propose no changes to the Process. We recommend use of the Process by the other DOE laboratories. We feel that lack of resolve or vision of those involved would constitute the only barrier to success.

REPORT ON THE
FERMILAB PILOT N&S CLOSURE PROCESS

GLOSSARY OF ABBREVIATIONS

ANL	Argonne National Laboratory
BAO	Batavia Area Office (DOE) [Since renamed the Fermi Group]
BNL	Brookhaven National Laboratory
CEBAF	Continuous Electron Beam Accelerator Facility
CH	Chicago Operations Office (DOE)
DOE	Department of Energy
DoR	Documentation of Record
DSC	Department Standards Committee (DOE)
EH	Office of Environment Safety and Health (DOE)
EPA	Environmental Protection Agency
ER	Office of Energy Research (DOE)
ES&H	Environment Safety and Health
ESHPAC	ES&H Policy Advisory Committee (Fermilab)
FRMI	Fermi Group (DOE) [Formerly the Batavia Area Office]
FITD	Fermilab Identification Team Document
HEP	High Energy Physics
LBNL	Lawrence Berkeley National Laboratory
N&S	Necessary and Sufficient
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
QA	Quality Assurance
SLAC	Stanford Linear Accelerator Center
URA	Universities Research Association

THE DEPARTMENT OF ENERGY

CLOSURE PROCESS

FOR

NECESSARY AND SUFFICIENT

SETS OF STANDARDS

DRAFT 2D

3/16/95

FOR THE DEPARTMENT STANDARDS COMMITTEE

Closure Process for Necessary and Sufficient Sets of Standards

DRAFT

CLOSURE PROCESS FOR NECESSARY AND SUFFICIENT SETS OF STANDARDS

CONTENTS

Closure Process for Necessary and Sufficient Sets of Standards

DRAFT

OVERVIEW

The Department Standards Program promotes the use of standards that are supportive of work, rather than barriers or extra burdens. The "Criteria for the Department's Standards Program" establishes agreed upon, "necessary and sufficient" sets of standards for the performance of work as a keystone of the program. Criterion 6.3 states, "A Department-wide process establishes how Department line management and contractor management, at the organization level appropriate for effective management, approve and maintain a necessary and sufficient set of standards (including all requirements imposed by law) for Department operations." The Department Standards Committee has developed this draft "Closure Process for Necessary and Sufficient Sets of Standards," for use at any level, and by any organization within the Department complex, including the establishment of mutual contractual commitments between the Department and its contractors.

Standards are expressed expectations for the performance of work. Sources of standards include federal, state, and local laws and regulations; Department Orders; and other documents such as Department of Energy Technical Standards, nationally and internationally recognized consensus standards, and industry standards. **A necessary and sufficient set of standards** is one that (a) meets the performance expectations and goals for the work (including complying with laws and regulations and providing adequate protection to the environment, workers, and the public) and (b) contains only the standards which are necessary for the set to be sufficient.

The **closure process for necessary and sufficient sets of standards** described in this document is initiated when one or more of the criteria listed in Section 1 are met. The process begins with a definition of the work and the related hazards. Using this information and other Stakeholder input, an Identifying Team reviews existing standards and identifies which of them constitute a necessary and sufficient set. Additional standards are written if needed to achieve sufficiency. Closure of the process is achieved when the selected set of standards is confirmed and approved.

The Fermilab Necessary and Sufficient ES&H Pilot utilized Draft 2, 2/24/95 of the Closure process document. There are no substantive differences between the 2/24/95 draft and this draft.

Closure Process for Necessary and Sufficient Sets of Standards

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DEFINITIONS

The **Customer Organization** is the organization that has direct responsibility, accountability, and authority for having the work performed subject to the agreed-upon set of standards.

The **Responsible Organization** is the organization that has direct responsibility, accountability, and authority for performing the work subject to the agreed-upon set of standards.

An **Agreement Party** is any party, including, at a minimum, the Responsible Organization and the Customer Organization, who must agree to the necessary and sufficient set of standards for the work (for example, parties to a contract, as in the case of DOE and a M&O contractor, or management organizations within an agency or company that agree on standards for performance of work.)

A **Stakeholder** is any party other than the Resource Authorities or the Agreement Parties that will be materially affected by, or can materially affect, the outcome of the work, either favorably or unfavorably (for example, representatives of state, local, and federal governments; labor unions; and citizens' groups.)

Operational Experts are individuals with knowledge and expertise relevant to the work, and the site, facility, and activities addressed by the necessary and sufficient set of standards.

Technical Experts are individuals with knowledge and expertise relevant to a particular environment, safety and health discipline, for example, industrial hygiene, criticality control, or industrial safety.

Resource Authorities are organizations or individuals who have control over the equipment, facilities, personnel, and budget necessary to accomplish the work. Line managers are typical resource authorities in classical organizations. Program and project managers are typical resource authorities in matrix organizations. Some organizations may have resource managers who are independent of programs and projects.

Closure Process for Necessary and Sufficient Sets of Standards

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1. INITIATING THE NECESSARY AND SUFFICIENT CLOSURE PROCESS

Objective: to determine whether the criteria exist for initiating the necessary and sufficient closure process and to assign responsibility for conducting the process.

The criteria for initiating the necessary and sufficient closure process are as follows:

A. A set of standards does not exist, as in the case of a new activity;

B. An existing set of standards (for example, the current set of all applicable Department directives) is no longer appropriate due to changes in mission, regulatory environment, degree of hazard, performance expectations, or knowledge;

C. The applicable contract requires that the process be used;

D. A Stakeholder demonstrates that the existing set of standards is NOT necessary and sufficient. A Stakeholder must demonstrate to the satisfaction of the agreement parties that the set of standards being used is not sufficient to provide adequate protection. Demonstration is to be made through evidence that shows the set of standards, not a lack of effective implementation of the standards, is the reason for not providing adequate protection.

The **Agreement Parties** are responsible for determining if any criteria for initiating the necessary and sufficient closure process is satisfied.

If an Agreement Party determines that at least one of the criteria is satisfied, the **Responsible Organization** assigns responsibility for conducting the process to a Process Leader.

NOTE: Criterion 6 states that identification, approval and maintenance of necessary and sufficient sets of standards will be at the organizational level appropriate for effective management. With regard to the conduct of the closure process, this will be at the lowest level of management that has responsibility for managing the work affected by the necessary and sufficient set of standards. This closure process is intended to be general enough to be applied at any management level within the Department and its contractor complex. It can be applied to establish contractual standards, or to the development of standards within a contractor organization, e.g., work standards for a specific work task.

Closure Process for Necessary and Sufficient Sets of Standards

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2. PRODUCING A NECESSARY AND SUFFICIENT SET OF STANDARDS

Objective: to produce and reach closure on the necessary and sufficient set of standards to meet performance expectations and objectives for providing adequate protection to workers, the public, and the environment. This phase consists of the following five major process elements:

1. Defining the work and the hazards

2. Creating the team(s)

3. Defining and agreeing to protocols and documentation requirements for the teams

4. Identifying the necessary and sufficient set of standards

5. Approving the necessary and sufficient set of standards.

These process elements do not need to be performed sequentially. Any one or more of them can be accomplished concurrently. Also, as the process evolves, it may be necessary to iterate among the various elements to allow for any changes to the scope, expectations, teams, set of standards, or other efforts being conducted within the process elements.

Process Element 1. Defining the Work and the Hazards

Objective: to define the work to which the standards apply.

This process element is critical to the successful identification of a necessary and sufficient set of standards. Without a clear definition of the work and its associated hazards and uncertainties a set of standards may be insufficient to provide the desired level of protection or may contain more standards than needed and be inefficient and wasteful of resources.

Closure Process for Necessary and Sufficient Sets of Standards

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In this process element, the **Process Leader** has the four following responsibilities:

[1] Acquire relevant information on the work to be performed from the following involved parties:

A. Agreement Parties. Individuals representing the Agreement Parties will provide information on initial conditions [3]A through [3]F.

B. Operational and Technical Experts will assist the Agreement Parties in providing information on initial conditions [3]A through [3]F.

C. Resource Authorities will provide information on initial condition [3]G.

D. Stakeholders who can and want to contribute to the work of this Process Element. These Stakeholders may include officials of the state or city and county governments located adjacent to a Department site or facility; unions representing labor at the site or facility; local citizens' groups, and independent oversight organizations within the Department and the contractor organization. They will provide information on initial conditions [3]H and [3]I.

[2] Organize the information received from the above parties as an initial basis for identifying the necessary and sufficient set of standards.

[3] Define the work in terms of these initial conditions:

A. Performance expectations and objectives (for example, goals for safety, quality, and operations).

B. What actions will be performed.

C. Physical conditions within which the work will be performed.

D. Materials and conditions that could cause adverse consequences (for example, hazards, carcinogens, and radiation).

E. Uncertainties about the work.

F. Organization and management.

G. Resource availability and constraints.

H. Stakeholder concerns.

Closure Process for Necessary and Sufficient Sets of Standards

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I. Stakeholders' channels of communication.

[4] If necessary, re-evaluate the work definition on the basis of feedback from the team(s).

Process Element 2. Creating the Team(s)

Objective: to create one or more teams that will develop a necessary and sufficient set of standards and confirm that the set is adequate and feasible.

The establishment of a set of standards relies on the collective judgment of a team of knowledgeable people in reaching a decision on what constitutes a necessary and sufficient set of standards for a defined scope of work. The nature of the work, its complexity, hazards, and uncertainties will determine the breadth of knowledge needed within the team. To ensure that a) the criteria for the team(s) members reflect the full breadth of issues to be addressed, and b) that resources for establishing the teams are provided, a group of interested parties will be used to establish the criteria for team members, and to arrange for individuals to be assigned to the team.

The use of a team for confirmation of the necessary and sufficient set of standards is intended to provide an adequate basis for approval of the set. The criteria for the team members, and the degree of individual and team independence needed for this purpose will have to be determined by the convened group in each case. For simple cases, the identification process itself may provide sufficient evidence of the adequacy and feasibility of the set. For more complex or controversial cases, it will be necessary to use more rigorous and independent methods for confirmation, for example, a formal, independent peer review. When formal, independent peer review is deemed desirable, NUREG-1297, "Peer Review for High Level Waste Depositories," may be useful.

The **Process Leader** will convene a group with representatives of

A. The Agreement Parties

B. The Resource Authorities

C. Stakeholders who have indicated that they want to participate and can be expected to contribute to the development of a necessary and sufficient set of standards. In most cases these Stakeholders include officials of the state or city and county governments located adjacent to a Department site or facility.

Closure Process for Necessary and Sufficient Sets of Standards

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The **Convened Group** will have the following responsibilities:

[1] Define the criteria for the team(s) that will be formed.

A. Establish the functions, relationships, and composition of the team(s) based on (1) the complexity of the work or the existing set of standards to be reviewed; (2) the number of disciplines (technical and otherwise) involved; and (3) the extent to which the relevant technical, scientific, programmatic, and Stakeholder communities are known to hold differing opinions on the issues under review.

B. Establish membership criteria pertaining to

Qualifications for Technical Experts (Subject Matter Experts) and Operational Experts, who have experience doing the work.

Those groups/interests that will be represented, including Resource Authorities and Stakeholders as appropriate (for example, representatives of state, local, and federal governments; labor unions; and citizens' groups.)

[2] Arrange for individuals to be assigned to the team(s), consistent with the membership criteria. (Assignment of people to the team means that members will fully participate in all team meetings and team decision making.)

Process Element 3. Defining and Agreeing to Protocols and Documentation Requirements

Objective: to establish protocols, agreements, and documentation requirements for a credible and efficient process.

NOTE: The degree of formality and the extent of documentation required may vary, depending on the work and the following considerations: (A) The potential impact of the identified hazards and associated uncertainties of the work; (B) The degree of Stakeholder involvement; (C) The complexity of the work; and (D) The quality and rigor required to provide confidence that the standards selected meet the performance expectations and objectives of the work.

Closure Process for Necessary and Sufficient Sets of Standards

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In this process element, the **Convened Group** will have the following responsibilities:

[1] Establish the following protocols and agreements, as necessary

A. Who will approve the final set of standards.

B. Schedules, time limitations, and approval defaults. (Approval defaults are automatic approvals of the set when the approval authorities do not take timely action in accordance with the time duration established for their review and approval.)

C. Resolution of differing opinions.

D. Interactions between this group and the teams.

[2] Establish the following documentation requirements, as necessary, for

A. The format and content for plans and procedures. (Typical plans and procedures may include: a plan for carrying out the closure process including a schedule for completion of the process activities, a plan for performing a formal peer review, a procedure for how comments and differing opinions are to be resolved, and a procedure for how team member qualifications are to be documented.)

B. The responsibilities and qualifications of team members.

C. Team consensus and differing opinions.

D. Decisions relating to the following:

Initiating the necessary and sufficient process.

Defining the work.

Selecting the team.

Selecting and confirming the standards.

Approving the necessary and sufficient set of standards.

Closure Process for Necessary and Sufficient Sets of Standards

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E. The basis for what constitutes a necessary and sufficient set of standards, including, at a minimum:

Definition of the work and hazards.

Compilation of the necessary and sufficient set of standards.

Justification for the set's adequacy.

Implementation assumptions necessary for reaching closure on the set, which will be used in interpreting and applying the set (e.g., any unique additional resource requirements, or any time constraints for the use of certain selected standards).

The **Process Leader**, with the participation of team members, will have the following responsibilities to carry out the duties assigned by the Convened Group:

NOTE: It is intended that the team perform its activities face-to-face as a group in determining what is judged to be the necessary and sufficient set of standards. All members of the team are expected to be present for team meetings and participate in team decision making.

[1] Establish the following team protocols, as necessary for

A. Establishing team members' roles and responsibilities.

B. Orienting team members on the necessary and sufficient process.

C. Developing plans and procedures, including schedules and cost estimates.

D. Resolving comments and differing opinions. In those cases where differences in opinion cannot be resolved within the team, dissenting opinions will be documented for consideration by the confirmation team (if any) and the approval authority.

E. Interacting with Stakeholders when it is necessary to obtain clarification of Stakeholder concerns included in the definition of work and hazards.

[2] Establish any additional team documentation requirements, as necessary.

Team Members must conduct the process in accordance with the protocols and documentation requirements.

Closure Process for Necessary and Sufficient Sets of Standards

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Process Element 4. Identifying the Necessary and Sufficient Set of Standards

Objective: to identify and reach team consensus on the necessary and sufficient set of standards.

The team assigned to identify the necessary and sufficient set of standards draws upon its collective experience to achieve the objective.

The **Identification Team** has the following eight key responsibilities:

[1] Identify any additional information needed to define the work.

[2] Evaluate relevant sources of existing international, national, state, local, and work-specific standards including laws, regulations, rules, orders and procedures.

[3] Identify which of the existing standards constitute a necessary and sufficient set, or write additional standards as needed to achieve sufficiency, with the requirement that only those standards necessary to provide adequate protection of workers, the public and the environment are included in the necessary and sufficient set.

[4] Request additional resources, if needed, such as other subject matter experts or resource authorities.

[5] Reach consensus on the necessary and sufficient set of standards.

[6] Identify (A) any assumptions used by the team regarding implementation of the necessary and sufficient set to achieve consensus (for example, use of a procedure where there is no established standard for a certain type of operation); and (B) the team's views on any unique resources required to implement the set of standards.

[7] Identify those applicable federal, state, and local laws, regulations, and rules that are required to be included in the necessary and sufficient set of standards, but are judged not to add any value to the achievement of adequate protection. This identification will serve as the basis for pursuing exemption from these standards.

NOTE: No justification or documentation is required for applicable non-regulatory standards that are NOT selected (for example, DOE Orders, manuals, and technical standards, and industry consensus standards.)

Closure Process for Necessary and Sufficient Sets of Standards

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[8] If it is not possible to identify a necessary and sufficient set to meet the current performance expectations and objectives, an outcome of the process may be to recommend that the work definition be revised, or that new standards be developed, or both.

If it was determined in Process Element 2, "Creating the Team(s)," that a separate confirmation team will be needed to provide an adequate basis for approval, the confirmation team will proceed as follows:

[1] Review the information available to and used by the Identification Team.

[2] Confirm that the set of standards is necessary and sufficient to satisfy the performance expectations and objectives of the work.

[3] Confirm that implementation of the set of standards will be feasible.

NOTE: Although it is always necessary to provide confirmation, it may not be necessary to have an independent confirmation team.

If the actions performed in this process element meet their objective and conform to the applicable protocols and documentation requirements, then the **Process Leader** initiates Process Element 5.

Process Element 5. Approving the Necessary and Sufficient Set of Standards

Objectives:

A. To accept the level of protection provided by the necessary and sufficient set of standards.

B. To accept and authorize the use of the necessary and sufficient set of standards, including any implementation assumptions.

NOTE: This approval does not constitute approval of exemptions to applicable laws and regulations. Process Element 4 provides that those standards, in laws and regulations, that do not provide any value to protection of workers, the public and the environment will be identified as a basis for seeking exemption through the prescribed processes.

Closure Process for Necessary and Sufficient Sets of Standards

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The **approval authority** will

[1] Judge whether the necessary and sufficient process has been correctly implemented.

[2] Determine whether the confirmation provided by Process Element 4 is adequate to support approval. If this confirmation is not adequate to support approval, the approval authority may request that the deficiencies be corrected, or to initiate its own confirmation action.

[3] Approve or disapprove the set of standards in accordance with the established time limitations or approval defaults.

NOTE (1) *This approval constitutes a commitment to provide the necessary resources through the normal budget process.*

NOTE (2) *Criterion 6 states that identification, approval and maintenance of necessary and sufficient sets of standards will be at the organizational level appropriate for effective management. With regard to the approval of necessary and sufficient sets of standards, this will usually be at the lowest level of management that has responsibility for managing the work affected by the necessary and sufficient set of standards and for managing the resources needed to perform the work.*

Closure Process for Necessary and Sufficient Sets of Standards

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NOTE: WHILE ESSENTIAL, THE ACTIVITIES DESCRIBED IN THE FOLLOWING TWO SECTIONS ARE NOT CENTRAL TO THE NECESSARY AND SUFFICIENT CLOSURE PROCESS AND THEREFORE ARE NOT DESCRIBED IN DETAIL.

3. INCORPORATING THE NECESSARY AND SUFFICIENT SET OF STANDARDS IN WORK PLANNING AND ACCOMPLISHMENT

To ensure that the expectations and agreements established between the Responsible Organization and the Customer Organization are successfully implemented, the **Responsible Organization**:

A. Ensures that the necessary and sufficient set of standards and associated implementation assumptions become the operating basis for all activities covered by the set.

B. Performs any agreed-upon actions which were approved with the set.

Methodologies for achieving these objectives are defined in existing business practices. Further definition is not central to the standards identification and closure process and therefore is not provided in this document.

Closure Process for Necessary and Sufficient Sets of Standards

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4. EVALUATING WORK PERFORMANCE AGAINST THE NECESSARY AND SUFFICIENT SET OF STANDARDS

In order to create confidence in the agreed-upon necessary and sufficient set of standards and the process used to reach closure on the set, continuous assessment and feedback will be provided by the approval parties on the following:

A. Whether performance expectations and objectives established during the necessary and sufficient closure process as measured by the approval parties are being met.

B. Actual work performance as measured by the approval parties.

C. The adequacy and feasibility of the necessary and sufficient set of standards as determined by the approval parties.

D. The adequacy and effectiveness of various process elements within the necessary and sufficient closure and implementation processes.

These objectives are expected to be accomplished through existing practices. Further definition of these practices is not central to the standards identification and closure process and therefore is not provided in this document.

Fermilab Necessary and Sufficient ES&H Standards

Documentation of Record

July 14, 1995

Larry Coulson, Process Leader

Fermi National Accelerator Laboratory

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U.S. Department of Energy

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PROCESS DOCUMENTATION GUIDE

Initiating the Process

The implementation of the N&S pilot process at Fermilab was initiated by a February 23, 1995 memorandum from Wilmot Hess (ER-20) to Andrew Mravca (Manager, BAO). This activity was subsequently authorized by Martha Krebs (ER-1) and Tara O'Toole (EH-1). See Appendix A.

On 2/24/95 application for initiating the Pilot was submitted to and approved by the Department Standards Committee. On 2/27/95 a kickoff meeting was held at Fermilab to explain the process to Lab representatives and begin organizing the pilot. At that meeting the Responsible Organization named Larry Coulson the Process Leader.

Organization

The Chicago Operations Manger, Cherri Langenfeld, The Contracting Officer, Andrew Mravca, Director of HENP, Bill Hess, and the Deputy Director of Fermilab, Ken Stanfield, (later this group and some of their staff was named the Extended Convened Group) met and chose the members of the Convened Group. See Appendix B.

The Convened Group for the Fermilab Pilot N&S Process met several times to establish the protocols for the Pilot and create the Identification Team, and fulfill all the other requirements for the Convened Group as defined in Process Elements 1, 2, and 3. The minutes of the CG meetings and the other documents generated to document the process are displayed in Appendix B. The CG created and charted the IT as required in Process Element 2. The charter and list of IT members is displayed in Appendix B.

Hazard Identification

The Process Leader solicited information necessary to define the work to which the standards will apply. A bottoms-up, worker safety oriented "Hazard Identification Process" was employed by Fermilab to develop an initial list of hazard issues at the Laboratory. This list of hazard issues was the starting point for determining the set of N&S ES&H Standards for Fermilab. See Appendix C. Additional sources of

information used in developing and verifying the hazards issues list is also included in Appendix C. The list of issues given to the Identification Team is in Appendix E.

Stakeholders

Stakeholders were identified early and a document prepared to define the involvement of the stakeholders in the process. The Stakeholder Communication Plan and copies of all stakeholder input received is displayed in Appendix D.

Identification Team Meetings and Fermilab Review

The Identification Team met on three occasions. At its first and longest meeting, from May 8 to May 19, the Team reviewed all of the hazard issues which had been compiled by the Laboratory, and developed a draft set of ES&H standards for each of these issues. Each hazard issue was reviewed by one or more Identification Team "Focus Groups" (six sub-groups of the Identification Team, which were charged with identification of ES&H standards in six topic areas -- fire protection, radiation protection, environmental protection, occupational safety & health, emergency response, and management & oversight issues). The Focus Groups were assisted in their work by a number of specialized "Subject Matter Experts" (SMEs). The work of the Focus Groups was accomplished through a deliberative process represented by the fourteen parts of the "Fermilab Identification Team Documentation" (FITD) analysis report forms on which the results of the hazard issue analyses and ES&H standards identification processes were documented. Appendix E contains minutes of some of the meeting, a list of subject matter experts, the draft set, the Final FITD Forms, and Final Simi-Rolled-Up List of standards.

At its second meeting, on June 13 and 14, the Identification Team reviewed the consolidation and completion of the FITD forms and the development of a draft Set of N&S Standards which had been carried out by the Focus Group Leaders in the interim period; the Team also reviewed a first rough draft of a Team report. The Team reached consensus, as follows, on June 14: "The FITD Forms and the draft set of standards resulting from the FITD Forms are sufficiently close to final form that, with suggested changes, they may be sent for the next level of review, i.e. review by Fermilab, and the development of the (Team's) report will continue taking into account the guidance

received from the Team members." Appendix F has documentation of the second Identification Team meeting.

During the week of June 26, the draft Set of N&S Standards was presented to Fermilab for review in a series of meetings. The documentation of the meetings, issues raised and issue resolution is in Appendix G.

At its third meeting, on July 11, the IT reviewed the resolution of comments received since it last met and approved the Final Team Report which was presented at the Confirmation Meeting. Documentation of the third IT meeting and the Final Issue List is in Appendix H.

Confirmation and Approval

On July 12, the report and draft Set were presented to the Convened Group for confirmation. Documentation of the Confirmation Meeting, issues raised, and issue resolution is in Appendix I.

On July 14, the Agreement Parties approved the set of N&S Standards. At the same meeting the DOE-URA Contract was modified to incorporate the N&S Standards. Documentation of approval and the contract modification are in Appendix J.

Fermi National Accelerator Laboratory
P.O.Box 500 • Batavia, Il. • 60510-0500
708-840-3211 Fax: 708-840-2939

Director's Office

July 25, 1995

Ms. Margaret H. Sturdivant
U.S. Department of Energy
EH-31, 329/CXXI
19901 Germantown Road
Germantown, MD 20585

Dear Ms. Sturdivant:

I wish to express my gratitude for all the help, encouragement, and advice that you, David, Dennie and others on your staff gave us during the Fermilab Pilot. Without that support we could not have succeeded.

I know that the DSC is searching for ways to assure themselves that the Pilots are a success when they finish. I have enclosed a report, (Fermilab Demonstration, Response to Criteria for Judging Success of Process Demonstration, July 25, 1995) which provides responses to questions developed by the SPAT 3/4. This report and the attachments should help provide a picture of the process used for implementation of the N&S process at Fermilab.

Please feel free to share the enclosure as appropriate.

Thanks again for your help.

Yours truly,

Larry, Coulson, Process Leader

LC:sa

Enclosure: As stated.

cc: R. Stefanski, w encl.
R. McCullum, w encl.
D. Goodwin, w encl.
A. Mravca, w encl.
E. Heitowit, w encl.

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Fermilab Demonstration
Response To Criteria
for
Judging Success of Process Demonstration
July 25, 1995

This document provides responses to questions prepared by the SPAT 3/4 of the DOE Department Standards Committee to gain a measure of the success of the Fermilab Demonstration of The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards. The Fermilab Pilot was begun on February 27, 1995 and concluded with approval of a set on July 14, 1995. In addition to answering the questions, many documents are attached to provide a clear picture of the process as executed at Fermilab. Additional, more detailed, documentation is available in the Documentation of Record. The table of contents of the Documentation of Record is Attachment A to this document. Documents in the Documentation of Record are available from Fermilab. Currently these can be obtained by contacting Larry Coulson at 708-840-5242 (FAX: 708-840-2939; E-Mail: COULSON@FNAL.GOV).

Process Element 1 - Defining the Work and Hazards

- **Was the objective of the demonstration clearly defined?**

  Yes, the objective was defined in the demonstration's Charter as follows:

  > "The result of this pilot will be a set of standards which will serve as the agreed upon basis for providing FNAL with adequate Environment, Safety and Health Protection at the lowest possible cost. This pilot will seek out and emulate compatible industry practices which have been proven successful both in terms of safety performance and cost-effectiveness."

- **Was the work scope adequately defined?**

  Yes, the work scope was defined as all work done at Fermilab.

- **Were the various work hazards identified?**

  Yes, an extensive hazards identification process was employed. All work units at the lab were surveyed and asked to identify the hazards associated with their jobs. About 150 hazards and other ES&H issues (issues) were so identified. The results of this effort were combined with the results of other analysis efforts and evaluated by the Identification Team based on their knowledge of Fermilab's work to arrive at the final list of 172 hazards. Attachment B contains the issues list in its final form as it was at the end of the demonstration.

- **Were safety, environment, quality and operational goals identified?**

  Yes, Fermilab expects to be in the upper quartile of accident/incident and environmental protection experience for comparable industrial situations. The accident/injury record indicates this performance goal is already met.

- **Were resource availabilities and constraints identified and incorporated into the process and goals?**

  It was understood that the process itself would be conducted within existing resources. The customer and resource organizations adjusted their expectations for other things which could have been done with the same resources accordingly. It was also understood that any process result which would cause the laboratory to be more expensive to operate was not a desired result.

Process Element 2 - Creating the Teams

- **Were organization and management relationships identified and considered?**

  Yes, this was the purpose of the "Expanded Convened Group". This group consisted of senior DOE and URA officials from all relevant organizational

and management entities. It was through the agreement of this group, based on their consideration of such relationships, that the approval authority was established and empowered to conduct the process. These relationships are reflected in the way the demonstration itself was organized. Attachment C is a copy of the organization developed for the demonstration.

- **Were requirements for team functions, relationships and composition established and implemented?**

  Yes, these were established in the demonstration's charter (Attachment D) and the Identification Team Charter (Attachment E). The minutes of the Convened Group and Identification Team and the Team's Final Report show that these requirements were followed.

- **Were team members selected on basis of technical credentials and/or work experience?**

  Yes, both. Resumes were solicited for Identification Team membership by the Convened Group. The Convened Group reviewed these resumes to determine adequacy of technical credentials and assure that the team would have work experience in every one of the functional areas which would need to be covered. The Team Charter documents the requirements.

- **Were outside technical experts added to the team when internal expertise was not available?**

  Yes, a special effort was made to involve persons outside the organizations of the Agreement Parties. The Identification Team included members from 4 other DOE peer laboratories. The Confirmation Panel consisted of representatives of 5 DOE peer laboratories. The Identification Team utilized 31 subject matter experts from Fermilab. Representatives from 2 universities were involved--one participated in both the Team work and confirmation and the other sent ES&H material. Representatives of 3 nearby, private sector companies conducting work similar to that done at Fermilab participated in a panel discussion to educate the Identification Team on how their companies

deal with ES&H issues, management of ES&H, and interactions with external regulatory agencies.

- **Were outside technical experts added to the team for confirmation?**

  Yes, the confirmation was a two step process. Fermilab was given a chance to review and comment of the draft set. This involved many of the Fermilab experts and the top management through the ES&H Policy Advisory Committee.

  A confirmation panel consisting of experts from 5 DOE laboratories and 1 non-DOE laboratory along with the "Convened Group" and "Extended Convened Group" was assembled to review the set and participate in the confirmation meeting where the panel's instructions were to "challenge" the set. This oral challenge of the set was a structured question and answer session analogous to a thesis defense. Each member of the panel was given opportunity to raise issues concerning the set, all issues raised were resolved prior to approval.

Process Element 3 - Defining & Agreeing to Protocols & Documentation

- **Did the process leader carry out the actions in the process description?**

  Yes, the process leader comprehensively implemented all elements of the process and rigorously documented that this was done. All of this documentation is contained in the Documentation of Record.

- **Were all relevant parties identified and provided opportunity to participate?**

  Yes, the "convened group" consisted of representatives of each of the 3 agreement parties (responsible organization, customer organization and resource authority) and the process leader. Consideration to all other relevant

parties was provided for though the much broader "extended convened group". Relevant parties also participated on the Identification Team and played a part in the confirmation process. Attachment F is the membership lists of the Identification Team and the Confirmation Team.

- **Did the Agreement Parties identify relevant work planning participants (stakeholders)?**

  Yes, a participation plan was developed by the Convened Group to address all stakeholder relationships. The plan and a report on the participation of each group is in Attachment G.

- **Were protocols established for conducting the process?**

  Yes, a Process Charter (Attachment D) was developed and agreed to by the Convened Group containing all relevant protocols.

- **Were protocols established for resolving differing opinions?**

  Yes, this was specifically addressed in the Process Charter and built into the pilot's organizational structure.

- **Were documentation requirements established?**

  Yes, this was specifically addressed in the Process Charter.

- **Was information recorded in conformance with documentation requirements?**

  Yes, this is documented in the Documentation of Record.

Process Element 4 - Identifying the Necessary and Sufficient Set

- **Was the work scope (if adjusted) clearly defined and were hazards clearly identified?**

  The Fermilab work scope did not need to be adjusted to identify a necessary and sufficient set of standards.

- **Was the Necessary and Sufficient Set compiled in an understandable format?**

  The set was compiled in a format that was convenient for participants and for the contract modification. However, others found it somewhat difficult to use. Improvements can be made based on the comments of others. The set is contained in Attachment H.

- **Did the team provide justification for the adequacy of the Necessary and Sufficient Set?**

  Yes, it was shown that each identified issue at Fermilab was adequately covered by a standard or standards included in the set. This was documented on a Fermilab Identification Team Document (FITD) for each hazard. The full final set of FITDs are in the Documentation of Record. Attachment I is an example of a completed form. Also the final Team Report, Attachment J, addresses this issue.

- **Were implementing assumptions needed to reach agreement on the set?**

  Only one, which concerned management systems and was addressed by including language in the contract modification associated with the set. Nearly all of the standards in the set are already part of the Fermilab ES&H program and thus represent very little new to implement.

- **Was a unanimous agreement reached on the set or were there dissenting opinions?**

  The agreement was unanimous. This is attested to by the fact that all members of the identification team signed the set (see Attachment J), with no added comments, and were present at the confirmation meeting to defend it.

- **Were applicable laws and regulations judged not to add value identified?**

  Yes, evaluations of the value added by specific standards were made on every one of the FITD forms. Examples where non-value added laws and regulations were identified are in Attachment K.

Process Element 5 - Approving the Necessary and Sufficient Set

- **Did the Approval Authorities document that the principles of the Process had been followed?**

  Yes, the demonstration's adherence to the process is described in the approval documentation which was signed by these authorities in approving the standards set. (See Attachment L.)

- **If there were implementing assumptions, were they reasonable?**

  Yes, the only implementing assumption was the contractual expectation that Fermilab have in place appropriate management systems so that the set could be implemented. Considering the good track record of this laboratory's management, this seems reasonable. As mentioned earlier, implementation will not be difficult as most all standards are already part of the ES&H program.

- **Was there a dissenting opinion at the time of approval?**

  No

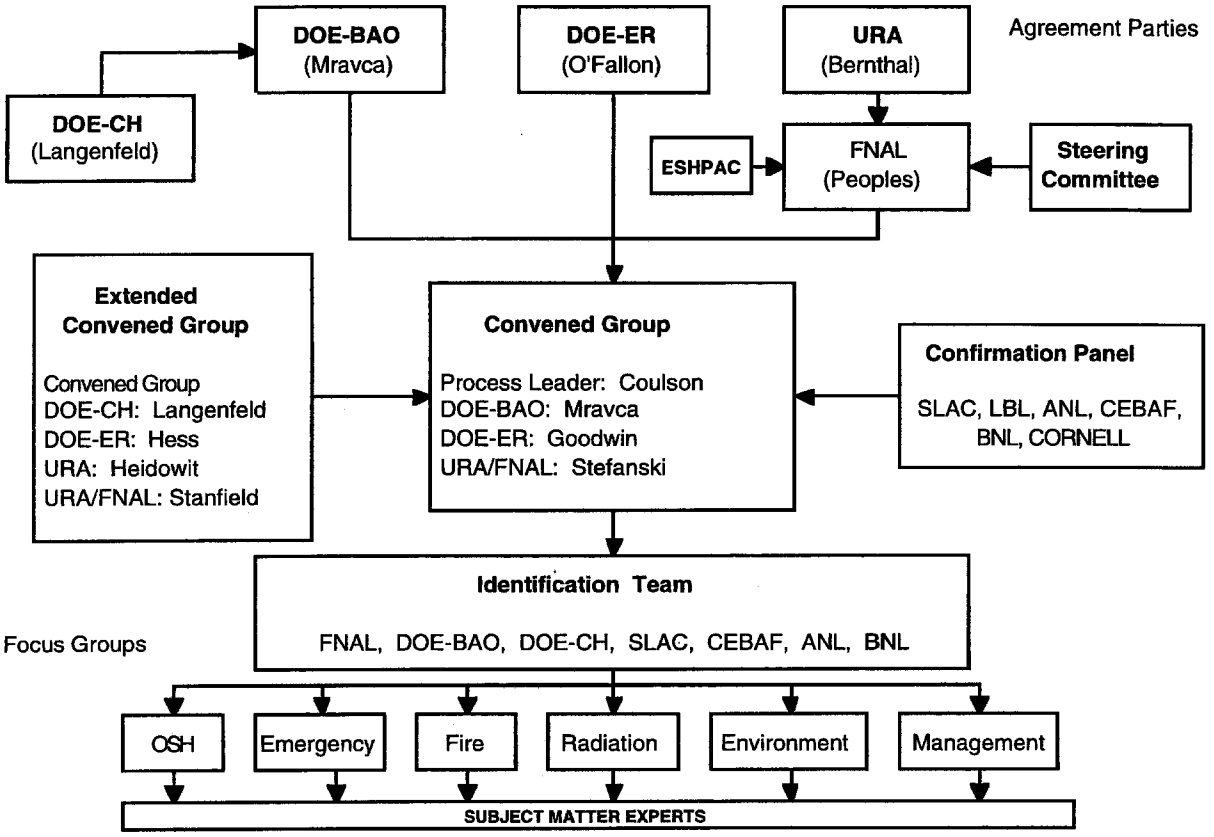
- **Did the Approval Authority affirm that confirmation of the set is adequate to support approval?**

  Yes, each of the approval authorities was either present or represented at the confirmation meeting. At the conclusion of the confirmation meeting all attendees agreed that, pending resolution of 3 open issues, they considered the set adequately confirmed. Each of these issues was resolved to the satisfaction of those raising the issues prior to approval of the set.

- **Was the Necessary and Sufficient Set approved?**

  Yes, by signature of all approval authorities. (See Attachment L.)

Fermilab N&S Pilot Organizational Structure



FERMILAB PILOT FOR THE NECESSARY AND SUFFICIENT CLOSURE PROCESS STAKEHOLDER PARTICIPATION PLAN 6/14/95

One of the vital elements of the Necessary and Sufficient Process is the identification and involvement of Stakeholders. This plan identifies the stakeholders and specifies the degree and mechanisms for their involvement.

Department Standards Committee

The Department Standards Committee (DSC) is a stakeholder. Communication with the DSC will be through Rod McCullum who will act as a Subject Matter Expert for the Team and also is a member of SPAT 3/4 of the DSC. Contact with the DSC is also maintained through the DOE-ER and the DOE-CH representatives on the DSC.

DOE-EM

The DOE-EM is a stakeholder. Communication with DOE-EM will be provided by a liaison arrangement between a Team Member, Jon Cooper (DOE-BAO-ER), and Sally Arnold (DOE-BAO-EM). Jon will relay EM concerns to the Team.

DOE-EH

DOE-EH as a stakeholder will communicate with the Team by the liaison arrangement between a Team member, Paul Neeson (DOE-CH), and Maggie Sturdivant (DOE-EH-31). The Process Leader will also invite Maggie Sturdivant to send a technically qualified observer to some Team meetings.

Employees and Union Members

The Fermilab employees, union and nonunion, will be notified about the Necessary and Sufficient Process Pilot and with invitation to comment though a publicity article in the Fermilab newspaper. A copy of the Pilot Charter, Identification Team Charter, Stakeholder Plan, and a list of ES&H issues being considered will be put in each division/section

office. Every employee will be notified and invited to comment. Their input will be brought to the Team by the Process Leader.

Public

The public involvement as stakeholders will be solicited in a news release. The Process Leader will bring public concerns to the Team. The participation is not expected to be significant because of the history of interactions between the public and Fermilab.

1) The few public hearings held have drawn insignificant comments from the public, 2) public notices for environmental permits typically bring no comments, 3) Fermilab is designated a low hazard facility, 4) as documented in the 1993 Environmental Report the maximum annual site boundary dose is typically less than 0.001 rem and the potential radiation dose to the public is typically less than 0.1 person rem, 5) The Hazard Assessment done in 1994 indicates that the only potential for impact to the public from chemicals comes from chlorine used to treat water--the use of that material has now been discontinued, 6) The Lab maintains membership with two intergovernmental organizations. There are no outstanding ES&H issues with either organization, 7) The Lab belongs to two "local industrial peer" groups, the East West Corporate Corridor Association and the Fermilab Industrial Affiliates. There are no outstanding ES&H issues with either of these organizations, and 8) there have been no occasions for ES&H related agreements with public.

In summary there is no history of public concerns with the ES&H impacts of Fermilab and no reason to expect that will change with this process. Fermilab is an open site--with tens of thousands of visitors each year. Thousands of the members of the public annually attend regularly scheduled social events held on the site.

Agreements do exist with neighboring communities to share resources for emergency responses, i.e. mutual aid agreements. If as a result of this process, it appears that those agreements could be impacted those communities will be consulted.

Regulators, State and Local

Fermilab has every intention of continuing to comply with applicable Federal State and local regulations. These stakeholders will not be consulted unless it is determined during this process that the ability to meet their expressed expectations will be altered. There is

essentially no potential for off-site impact, either now, nor will there be after any changes which this process could produce. There are no formal local or state agreements which could be impacted by this process.

Research Community

A liaison relation has been established with the research, user, community. Their input will be coordinated by a physicist team member acting as liaison with the User Executive Committee representative.

Subcontractors

Subcontractors that are presently working at the site, or have worked at the site in the past few years, will be informed of the process by letter from the Fermilab contracts office. They will be requested to send their comments to the contracts officer. That input from the subcontractors will be relayed to the Team by the Process Leader.

Issue Identification Process

Fermilab

Director's Office

March 22, 1995

To: Division/Section Heads

From: Larry Coulson

Subject: Information Needed for the Necessary and Sufficient Standards Pilot

We are in the process of setting up meetings to discuss and collect information needed for the Pilot Project for Necessary and Sufficient Standards. The information collected from you, and other sources, will be used to characterize the work and hazards at the Lab. These data will form the basis for the information which will be presented to the Standards Identification Team which will recommend the Necessary and Sufficient Standards. For this process to be successful on such a short time scale, we will need your cooperation in assembling comprehensive information on the work processes and hazards within your organization. We hope to finish this phase of the process by April 3.

Attached is a preliminary hazard list and a list of questions. These attachments represent the information we need about each group within your division/section. (I have in mind here, that a group is the same as a "box" on the large organization chart.) Please make a copy of the attachments for each group (box). If several groups (boxes) have similar hazards and activities you may want to lump them together. In order to keep the meetings short, it would be useful to have as much of the information as possible filled out ahead of time for each group. To speed analysis of data and preparation of the information for submission to the Standards Identification team, we would like to collect as much information as possible electronically in MSWord

(MAC) format. To facilitate this, the same information will be sent to you electronically.

At the meetings, please have 1) either yourself or other d/s management representative, 2) your SSO, (attendance of other ES&H personnel from your d/s is at your discretion), and 3) sufficient management/supervisory persons to be knowledgeable about the information being requested for each group (box). Also in attendance will be a Discussion Leader (Tim Miller, Ray Stefanski, Don Cossairt, or Larry Coulson) and some ES&H Subject Matter Experts either from the ES&H Section or elsewhere in the Lab.

Thank you for your cooperation on such short notice. Please call me (ext. 5242) if you have any questions.

cc: SSOs
Ray Stefanski
D. Cossairt
T. Miller

INFORMATION TO BE COLLECTED FOR EACH GROUP

DIVISION/SECTION _____ DATE ___/ /95___

GROUP _____.

CONTRIBUTORS AND ATTENDEES AND THEIR AFFILIATION (collect at meeting)

1. Are there specific performance expectations and/or objectives for this group? (e.g. goals for safety, quality, and operations)

2. Describe the work activities of this group. Try to be descriptive enough that a knowledgeable technical person will understand the nature of the work and how the hazards checked on the hazards list enter into the work. Generally a few sentences should be sufficient.

3. Physical and environmental conditions within which the work is performed (e.g. office, outdoors, in the tunnel)?

4. Materials and conditions that could cause adverse consequences? (For example, see the attached Preliminary Hazard List.)

5. Uncertainties which could affect the work (e.g. budgets, program changes, regulatory uncertainties, new technologies)?

6. Organization and management issues that could affect the work?

7. What protective equipment is used?

8. Are there any protective systems used (e.g. alarm systems, interlocks, etc.)?

9. Are special standards or requirements imposed beyond the usual Fermilab standards and requirements?

10. Are there any special training needs, either already done or needing to be done?

11. Are there special environmental pollution potentials as a result of this groups activities?

12. Are there special vulnerabilities for the Lab (e.g. possible fines, public relation problems, or civil/criminal penalties)?

13. What hazards do you judge to need more resources than now available?

14. What required activities do you consider a waste of your resources.

Instructions Filling Out the Preliminary Hazard List

This is intended to be a generic list of hazards potentially found at Fermilab. The work of any particular group may involve exposure to one or more of these hazards. Please indicate which hazards apply to the group by filling out the two columns next to applicable hazards. If you believe there are issues not indicated in the hazard list please list those at the bottom of the list. The two columns labeled "rank" and "OFEP" should be filled out as follows.

- The column labeled "class" is intended to allow you to indicate the subjective "seriousness rank" of the hazard. It is a simple ranking:

  1= a serious hazard common in the work of the group.

  2= a serious hazard but uncommon in the work of the group, or a minor hazard common in the work.

  3= a minor hazard which is not a significant aspect of the work.

  If you rank a hazard as 1, please indicate on the work sheet, in item 2 above, what work activity involves that hazard.

- The column labeled OFEP is used to indicate the scope of the hazard as follows:

  Enter all letters that apply.

  O= an occupational exposure, i.e. the hazard has potential impact only for those working in the immediate area.

  F= could impact workers within the facility but not likely to impact the environment outside the facility.

  E= a hazard which could have environmental consequences, e.g. a solvent which could be spilled in large enough quantities to cause environmental pollution outside the facility.

  P= a hazard which could have consequences to the off-site public.

INFORMATION TO BE COLLECTED FOR EACH GROUP

DIVISION/SECTION _____ DATE ____/ /95____

GROUP _____.

CONTRIBUTORS AND ATTENDEES AND THEIR AFFILIATION (collect at meeting)

Fermilab Preliminary Hazard List, cont'd.

HAZARD	CLASS	OFEP
OXYGEN DEFICIENCY HAZARDS		
cryogenic spills		
cryogenic gas or liquid leak		
gaseous argon or other detector gas		
chemical spills		
leak of supplied gases		
toxic gases		
FIRE HAZARDS		
electrical		
flammable liquids or gases		
welding		
spark producing tools near combustibles		
spontaneous combustion		
storage of combustibles		
special occupancies (NFPA)		
mobile structures (portakamps)		
transportation (rail, vehicle, fueling)		
special hazardous materials		
boiler, furnace, heating systems and appliances		
stationary combustion engines		
cigarette smoking		
ELECTRICAL HAZARDS		
low voltage/high current		
exposed 115 V		
high voltage		
high power		
stored energy/capacitors		
stored energy/inductors		
lightning		
battery		
NONIONIZING RADIATION		
lasers		
radio frequency radiation		
ultraviolet light		
intense light sources		
MAGNETIC FIELDS		
quench effects		
fringe fields		
high magnetic fields		
bioelectronic emplants		

HAZARD	CLASS	OFEP
RADIATION HAZARDS		
prompt radiation		
radiation check sources		
residual radiation/activated components		
contamination		
storage/handling of radioactive materials		
radioactive waste		
mixed waste		
radioactive liquids or gasses		
radioactivated soil		
depleted uranium		
special nuclear materials		
MATERIAL HANDLING HAZARDS		
cranes & hoists		
fork lift operation		
chemical spills		
lifting objects		
falling objects		
moving objects		
hazardous tools, equipment and machinery		
transportation		
elevators used for hazardous materials		
storage/handling of toxic materials		
ENVIRONMENTAL		
PCB's		
hazardous waste		
asbestos		
surface water discharges		
endangered species issues		
archeological requirements		
air emissions sources-radioactive		
air emissions sources-nonradioactive		
transformer oil (non-PCB)		
solid waste management units		
regulated chemical wastes		
groundwater protection		
ozone depleting substances		
pesticide application/use		
sewer discharges		
offsite radiation exposure		
sanitary effluent discharge		
drinking water quality		

Fermilab Preliminary Hazard List, cont'd.

HAZARD	CLASS	OFEP
BIOLOGICAL FACTORS		
animals		
insects		
poison plants		
bloodborne pathogens		
bacteria (water)		
allergies		
CONSTRUCTION HAZARDS		
heavy equipment		
local community impact		
earth cave in/collapse		
flooding-rain or groundwater		
environmental-air/water pollution		
dewatering hazard		
transportation and logistics		
materials handling		
possibility of hitting utilities		
hand tools		
high winds		
fall hazards		
scaffolding		
ladder		
compressed gas		
earth moving equipment		
demolition		
earth clearing		
THERMAL		
cold work environments		
cryogens		
high temperature equipment		
vacuum pumps		
battery bank and UPS equipment		
hot work environments		
wet work environments		
ultraviolet radiation (sun exposure)		
OTHER PERSONNEL HAZARDS		
sharp edges		
vacuum tanks		
traffic hazards		
pinch hazards		
work on wet surfaces		
confined spaces		
lifting/carrying heavy objects		
working at heights		
repetitive motion		
vibrating equipment (tools or surfaces)		
dry environment		
high noise levels		
housekeeping		
icy walking/working surfaces		
slips, trips & falls		
hazards requiring PPE		

HAZARD	CLASS	OFEP
CHEMICAL HAZARDS		
acids, solvents, toxic agents and haz liquids		
heavy metals such as lead		
chemical reactions		
toxicity in smoke or fumes		
pesticides		
welding fumes		
use of toxic materials		
carbon monoxide		
carcinogens		
nuisance dusts		
cutting/burning		
chemical exposure - exceeding PEL		
OTHER MECHANICAL HAZARDS		
machinery and rotating parts		
pressurized tanks, containers and lines		
moving vehicles, carts, forklifts		
material grinding, cutting, drilling		
special hand tools-power driven nail guns, etc.		
work with roads and grounds equipment		
means of egress		
powered platforms		
medical and first aid		
machine guarding		
general environmental control		
HAZARDOUS MATERIALS TRANSPORTATION		
loading/unloading		
spills/chemical releases		
emergency response/spill clean-up		
fire/explosion		
packaging hazardous materials		
bad road conditions (e.g., icy)		
prolonged periods of driving		
suspect/counterfeit parts		

Members of the Extended Convened Group and Convened Group

Members of the Extended Convened Group

Larry Coulson: Process Leader
Dave Goodwin: High Energy and Nuclear Physics, ER
Ezra Heitowit: Vice President of URA
Wilmot Hess: Director of High Energy and Nuclear Physics, ER
Cherri Langenfeld: Head Chicago Operations Office
Andrew Mravca: Contracting Officer and Head of DOE-BAO
Ken Stanfield: Deputy Director of Fermilab
Ray Stefanski: Fermilab, Associate Director for Operations Support

Members of the Convened Group

Larry Coulson: Process Leader
Dave Goodwin: High Energy and Nuclear Physics, DOE-ER
Andrew Mravca: Contracting Officer and Head of DOE-BAO
Ray Stefanski: Fermilab, Associate Director for Operations Support

Charter

Department of Energy
Fermilab Standards Closure Process
6/14/95 - Revision 1

Objective:

This document outlines the plans and protocols for conducting a pilot of the Department of Energy's Necessary & Sufficient Closure Process (Attachment A) at Fermilab National Accelerator Laboratory (FNAL) in Batavia, Illinois. The result of this pilot will be a set of standards which will serve as the agreed upon basis for providing FNAL with adequate Environment, Safety and Health Protection at the lowest possible cost. This pilot will seek out and emulate compatible industry practices which have been proven successful both in terms of safety performance and cost-effectiveness. This charter has been developed as a partnership effort by the parties to this agreement (see "Responsibilities" below), and is considered to be a living document.

Responsibilities:

Process Leader:

The Process Leader's responsibilities are as defined in Process Elements 1 and 3 of Attachment A. Larry Coulson of FNAL has this responsibility.

Convened Group:

This Group's responsibilities are defined in Process Elements 2 and 3 of Attachment A. This group also has ownership of this charter document. It consists of the following individuals:

Larry Coulson - Process Leader
Ray Stefanski - FNAL Representative
Andy Mravca - DOE-BAO Representative
Dave Goodwin - DOE-ER Representative
Rod McCullum - DOE-CH, Technical Resource

Extended Convened Group:

Provide management support to the Convened Group (including interactions with the Department Standards Committee and other stakeholders). This group has been formed in addition to what is called for by the Process Description because this is a pilot exercise which will receive a greater degree of Department-wide scrutiny than would normally be expected. It consists of the following individuals:

Responsibilities (continued):

All Members of the Convened Group
Ken Stanfield - Deputy Director, FNAL
Cherri Langenfeld - Manager, DOE-CH
Bill Hess - Associate Director, High Energy Physics, DOE-ER
Ezra Heitowit - Vice President, URA

FNAL Steering Committee:

This group provides a mechanism for the Process Leader to obtain internal review and guidance on the mechanics of FNAL participation. It will consist of the following individuals:

Larry Coulson - Process Leader
Bruce Chrisman - Associate Director for Administration
Ray Stefanski - Associate Director for Operations Support
Don Cossairt - Senior Laboratory Safety Officer & Head of ES&H Section
Tim Miller - Deputy Head of the ES&H Section
Hans Jostlein - FNAL Standards Manager
Kathy Williams - Manager, Quality Assurance Office

Identification Team (IT):

This group's responsibilities for identifying and confirming the set of standards are defined in Process Elements 3, 4 and 5 of Attachment A. Its membership will be determined by the Convened Group. The IT will consist of the Process Leader, URA representatives, DOE representatives, sister labs, other parties and subject matter experts as needed.

Agreement Parties:

The agreement parties are the authorities that must approve the Set of Standards. The Extended Convened Group has agreed that the following individuals have approval authority for the FNAL Set of Standards:

Responsible Organization - Fred Bernthal, President, Universities Research Association
Resource Authority - John O'Fallon, Director, High Energy Physics Division, Office of Energy Research
Customer Organization - Andy Mravca, Manager, DOE Batavia Area Office

Action Plan:

Actions Leading to the development of this charter:

1.	2/23/95	The Resource Authority (Bill Hess -ER) transmits a memorandum to the Customer Organization (Andy Mravca - BAO) providing instructions to proceed with a pilot of the Necessary and Sufficient Closure Process.
2.	2/24/95	The Department Standards Committee approves the Necessary & Sufficient Closure Process Description (Attachment A) and the list of proposed pilots (including FNAL).
3.	2/27/95	Kick-off meeting for this pilot held at Fermilab, Representatives of the Department Standards Committee were present to introduce the Necessary & Sufficient Closure Process (Attachment A).
4.	3/10/95	Expanded Convened Group meets to discuss expectations for the pilot project.
5.	3/16/95	FNAL Steering Committee agrees on proposed action plan.
6.	3/20/95	FNAL begins its internal baseline process of acquiring relevant information on FNAL work processes as defined in Process Element 1, [3], A-F of Attachment A. A°Preliminary Hazards List will be used to begin the hazards analysis. The DOE Orders at Fermilab book, the CDF Hazards Analysis, the D0 and Accelerator Safety Assessment Documents, and the Fermilab Hazard Assessment Document will also be available for the hazard analysis.
7.	3/20/95	DOE begins the process of assembling information on its input as called for in Process Element 1, [3], A-F of Attachment A.
8.	3/22/95	The Convened Group holds its first weekly meeting to identify Customer Organization, Responsible Organization, Stakeholders, and Resource Authority. FNAL, DOE-BAO and ER input to the Process Leader in response to Process Element 1, [3], A-F of Attachment A is also discussed. It is agreed to incorporate the FNAL Steering Committee Action Plan along with agreed upon protocols into this charter document.

Action Plan (continued):

8. 3/22/95 (continued)

These meetings will be scheduled at least weekly until the Convened Group responsibilities, as defined in Process Element 2, Process Element 3[1] and Process Element 3[2] are completed.

Actions Planned to complete the task of identifying a Set of Standards:

1. 3/27/95 The Process Leader will set up the Identification Team (IT):

   - The IT will consist of the Process Leader, URA representatives, DOE representatives, sister labs, other parties and subject matter experts as needed. Composition of the IT will be determined by the Convened Group. If necessary, the Process Leader will interview prospective team members.

   - The criteria for membership on the IT will be defined, with the agreement of the Convened Group, and documented.

   - The qualifications of the IT members will be documented.

2. 4/26/95 Under the direction of the Process Leader, Fermilab prepares materials that will be used for the closure process by this date. These materials, which will include an initial hazard analysis, will be presented to a full meeting of the Fermilab ES&H Policy Committee (ESHPAC). A progress report will be submitted to URA.

3. 5/1/95 Materials assembled by the Process Leader and distributed to the IT.

4. 5/8/95 IT meets to begin the process of developing the "final" Necessary and Sufficient Set. A presentation to the Fermilab Director will take place before the Necessary and Sufficient Set is finalized.

   Somewhat concurrently, the Agreement Parties will evaluate the Necessary and Sufficient Set for resource requirements. ESHMAP (The Fermilab ES&H Management Plan) would be drawn upon for budget data.

Action Plan (continued):

5.	6/8/95	External Stakeholder involvement (if any) will be scheduled. Appropriate meetings and reviews will be set up with identified stakeholders by the stakeholder liaisons on the IT.
6.	7/12/95	IT presents the NS set to the Convened Group.
7.	7/14/95	NS sent to Agreement Parties for approval. This should complete the closure process if the Approval Authority approves the NS. If not, the IT will meet again to modify NS and resubmit for final approval. Upon approval of the Necessary and Sufficient Set of Standards, the FNAL contract will be modified to incorporate them.
8.	When needed	If there is a need in the future to modify the NS, the Convened Group will be consulted.

Protocols:

Approval of Standards Set:

The Standards Set will be considered approved when it has been agreed to and signed by the following parties in the order listed:

Responsible Organization - Fred Bernthal, President, Universities Research Association, Inc.
Resource Authority - John O'Fallon, Director, High Energy Physics Division, Office of Energy Research
Customer Organization - Andy Mravca, Manager, DOE Batavia Area Office

Instructions to the Identification Team (IT):

The Convened Group will issue a charter letter to the IT outlining its expectations for their conduct of this pilot process.

Scope of Standards Set:

The Necessary and Sufficient Set of Standards will focus on standards in the area of Environment, Safety and Health (ESH). This is defined as any functional area that is addressed in DOE's Guidance Manual for the ESH Management Plan (dated October, 1994). Any decision to include areas beyond ESH will be made by agreement of the Convened Group and included in the final instructions to the Identification Team (IT).

Protocols (continued):

Documentation of Standards Set:

The specific format and level of detail with which the standards set will be documented will be decided by the Identification Team (IT). The Convened Group expects that this document will include, at a minimum, a listing of the standards and a summary discussion sufficient to communicate an understanding of the relationship between the FNAL's work, its associated hazards and the standards selected.

Confirmation of Standards Set:

Once the Identification Team (IT) has completed assembling the set of standards, it will be expected to hold a final Team meeting(s), with all members present, to confirm that the IT believes that the set as a whole is adequate. Once that is done, they shall present the set first to FNAL for concurrence (see Attachment B for details) and then to the Convened Group. The Convened Group will assemble a panel of subject matter experts who will be expected to orally challenge the set and the IT will be called upon to defend it (see Attachment C for details). Once the IT has successfully defended the set, it will be considered confirmed and the Convened Group will recommend it for approval.

Interactions between Convened Group and Identification Team (IT):

Throughout this process, the Process Leader will act as the liaison between the IT and the Convened Group.

Effort Tracking:

The Process Leader will be responsible for preparing an estimate of the costs incurred by the Identification Team (IT) in preparing this set sufficient to facilitate an evaluation of the impact of this pilot exercise.

Stakeholder Liaisons:

In order to keep the Identification Team (IT) to a workable size, it will not be possible to include all stakeholders on the team. Therefore, liaison relationships will be established between specific members of the IT and appropriate stakeholders. Formal communications between the IT liaisons and their assigned stakeholders will be required and documented.

Protocols (continued):

Consensus:

The Identification Team (IT) will need to establish its own protocols for reaching consensus on the set of standards. If at any point, they are unable to reach consensus on any issue, they may bring this issue for resolution to the Convened Group.

Signature
Convened Group

_____
Larry Coulson, Process Leader

_____
Ray Stefanski, FNAL

_____
Dave Goodwin, DOE-ER, High Energy Physics

_____
Andy Mravca, DOE-BAO

Attachment A: Department of Energy's Necessary & Sufficient Closure Process

Attachment B: Fermilab Protocol Confirmation of the Draft Set

Attachment C: Convened Group Protocol Confirmation of the Draft Set

Charter

Fermilab Standards Closure Process

Attachment B

Fermilab Protocol
Confirmation of the Draft Set

6/7/95

- When the Identification Team releases a draft of the N&S Set of Standards a copy will be sent to URA, ESHPAC members, and division/section heads. Instructions will go to division/section heads to orchestrate a review with appropriate personnel within their organizations and prepare written comments to go with their ESHPAC representative to an ESHPAC meeting in about 3 days. Backup information, such as the issue forms, will be provided on a server.

- At an ESHPAC meeting the draft set and division/section comments will be discussed. N&S Identification Team Focus Group leaders will be present to provide explanations and help resolve issues.

- A few days later there will be a meeting of the ESHPAC with division/ section heads and the Director. The set and unresolved comments will be discussed. N&S Identification Team Focus Group leaders will be present to provide explanations and help resolve issues.

- The Lab's comments will be prepared from the minutes of the above meeting. The comments will be sent back to the Identification Team.

Charter

Fermilab Standards Closure Process

Attachment C

Convened Group Protocol
Confirmation of the Draft Set

6/7/95

- A Confirmation Panel of about 5 persons will be assembled to assist the Convened Group in confirmation of the draft set of standards. The Process Leader will select the Panel from a list of names approved by the Convened Group. The candidates will be peers from other Laboratories. In most cases these will be the ES&H Directors, their deputies, or higher ranking personnel.

- The Draft Set will be sent to the Convened Group and Confirmation Panel for their review prior to the confirmation meeting. Members of Extended Convened Group, observers and technical resource people will also be invited. Technical resource people for this meeting will be persons expert in the N&S Process. Protocol for this meeting and the list of technical resource people will be developed by the Process Leader in consultation with the Convened Group.

- The Convened Group will meet, if necessary, to resolve issues presented but not resolved at the Convened Group confirmation meeting. This is the final step in the confirmation process.

- At the end of the confirmation process the set will be considered confirmed and ready for signature by the Agreement Parties.

FERMILAB PILOT NECESSARY AND SUFFICIENT PROCESS IDENTIFICATION TEAM CHARTER APRIL 20, 1995

Charge to the TEAM

Fermilab is conducting a pilot program to develop a set of ES&H standards which is both necessary and sufficient to protect the workers, the public, and the environment. A necessary and sufficient set of standards is one that (a) meets applicable laws and regulations, and (b) provides adequate protection at the lowest possible cost.

The format being followed for this pilot is The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards, dated February 24, 1995 (the Process). The Process calls for the creation of a Convened Group which represents the agreement parties (Fermilab, DOE-ER, and DOE-BAO). The Convened Group charters the Identification Team (Team). The Team is asked to identify a necessary and sufficient set of standards (Set) using the guidance given in the Process and direction from the Convened Group. The Set will serve as the agreed upon basis for providing FNAL with adequate Environment, Safety and Health Protection at the lowest possible cost.

The responsibilities of the Team are as described in the Process Elements 3, 4, and 5 of the Process. Primarily, the Team is asked to:

a. Review information presented concerning the goals, work processes, hazards, stakeholders' concerns, etc.;
b. Request more information if needed;
c. Assume compliance with applicable laws and regulations (OSHA, EPA, etc.);
d. Determine what standards are needed in addition to the applicable laws and regulations to meet needs of the work and goals;
e. The Convened Group will ask various members of the Team to be liaison with Stakeholders. Generally, the liaison responsibilities are to represent the interests of the Stakeholder in the deliberations of the Team. Specific responsibilities will be defined in writing for each assignment;
f. Present the Set to the Fermilab Director and/or his delegates; and,
g. In addition, the Team will be asked to defend the Set to the Convened Group as a confirmation process.

The Team is asked to consider the following guidance:

- No justification is required for any DOE Order(s) not included.
- Applicable Federal, State, and local laws shall be included.
- The Set may include the following four kinds of standards:
  1. External standards required by law (OSHA, EPA, etc.).
  2. External standards not required by law (ASME, ANSI, etc.).
  3. DOE regulated standards (10CFR835, etc.) and any other DOE standards (Orders, Tech. Standards, Guides, etc.) that the Identification Team judges as required for the set to be sufficient.
  4. Fermilab standards (Laser Safety, Accelerator Safety, Oxygen Deficiency Hazards, etc.). These are standards which are developed, approved and maintained by Fermilab.

Issue Resolution

Issues not resolved by the Team will be sent to the Convened Group for resolution. The Team should also seek clarification and guidance from the Convened Group as necessary.

Team Membership and Qualifications

The Team Leader will be the Process Leader, Larry Coulson. About twelve other members will be selected based on the protocols of the Convened Group, using the following process.

Biographies will be solicited from candidates with substantive experience with large research accelerators. Bio statements should summarize academic and work experience, external regulatory background, standards experience, publication history, and availability during the period May 1 through June 30, 1995. These statements will be evaluated against the following 4 ranking factors:

1. Knowledge of large research accelerators.
2. Knowledge of 1 or more of the 6 core functional areas (see below).
3. Demonstrated ability to function in a team environment.

4. Other experience/qualifications described in the Bio which are judged to be of exceptional value to the process.

The process leader will solicit candidate members, the convened group will then make selections based on these factors. Interviews may be conducted.

ES&H Functional Areas

The ES&H functional areas are distilled from the DOE's Guidance Manual for the ES&H Management Plan (dated October, 1994) as:

1. Fire Protection.
2. Radiation Protection.
3. Occupational Safety (including industrial safety, industrial hygiene, and occupational medicine).
4. Emergency Preparedness.
5. Management & Oversight.
6. Environmental Protection (including packaging and transportation, environmental restoration, decontamination and decommissioning, and waste management).

Technical Advisors

The Team may draw on Subject Matter Experts (SMEs) to supplement the Team expertise. It is left to the Team to set criteria and protocols for SMEs use. The Process Leader will ensure that a SME is available to provide assistance with legal issues.

Observers

A total of not more than two observers may be permitted at the discretion of the Team Chair. Convened Group members may not be observers.

Members of the Identification Team and Confirmation Panel

Members of the Identification Team

Larry Coulson, Process Leader
Jim Boyce, CEBAF
Jon Cooper, DOE-BAO
Don Cossairt, Fermilab
John Elais, Fermilab
Nancy Grossman, Fermilab
David Gordon, SLAC
Tom McDermott, DOE-CH
Tim Miller, Fermilab
Steve Musolino, BNL
Paul Neeson, DOE-CH
Linc Read, Fermilab
Mary Hall Ross, SLAC
Tim Tess, ANL
Rod Walton, Fermilab

Members of the Confirmation Panel

Steve Gray, Safety Director, CESR, Cornell
Beverly Hartline, Project Manager, CEBAF
Ken Kase, ES&H Manager, SLAC
David McGraw, ES&H Manager, LBNL
Otto White, Deputy ES&H Manager, BNL
Robert Wynveen, ES&H Manager ANL

Identification Team Qualification Summary

There are 15 members counting the Process Leader. Of these:

- 14 have work experience at a large research accelerator,
- 12 have had full time ES&H responsibilities at a large research accelerator, and
- 6 have had full time research experience at a large accelerator.

The IT members experience represent:

- 169 years of experience at a large research accelerator,
- 117 years of experience at Fermilab,
- 84 years of experience with ES&H at a large research accelerator, and
- 7 years of external regulatory experience (EPA and OSHA).

The education of the IT members:

- 9 Ph.D. degrees (physics, biology, health physics, and industrial hygiene),
- 5 MS degrees (occupational safety, physics, environmental science, public administration, and geology), and
- 1 BS degree (fire protection engineering).

Final List of 172 Issues

001. Bio - animals
002. Bio - bacteria (water)
003. Bio - bloodborne pathogens
004. Bio - insects
005. Bio - plants
006. Chem - acids, solvents, toxic agents and haz. liquids
007. Chem - carbon monoxide
008. Chem - carcinogens
009. Chem - chemical exposeures exceeding PEL.
010. Chem - chemical reactions
011. Chem - cutting and burning
012. Chem - heavy metals such as lead
013. Chem - nuisance dusts
014. Chem - pesticides
015. Chem - toxicity in smoke or fumes
016. Chem - use of toxic materials
017. Chem - welding fumes
018. Construction - compressed gasses
019. Construction - demolition
020. Construction - dewatering hazard
021. Construction - earth cave-in and collapse
022. Construction - earth moving equipment
024. Construction - earth clearing
025. Construction - fall hazards
027. Construction - hand tools
028. Construction - heavy equipment
029. Construction - high winds
030. Construction - ladder
032. Construction - materials handling
033. Construction - possibility of hitting utilities
034. Construction - scaffolding
035. Construction - transportation
036. Electricity - battery
037. Electricity - exposed conductors / >50 volts
038. Electricity - high voltage

039. Electricity - high power
040. Electricity - lightning
041. Electricity - high current conductors / <50 volts
042. Electricity - stored energy / capacitors
043. Electricity - stored energy / inductors
044. Env - air emissions / nonrad
045. Env - air emissions / rad
046. Env - cultural resources
047. Env - asbestos
048. Env - drinking water quality
049. Env - endangered species
050. Env - groundwater protection
051. Env - hazardous waste
052. Env - offsite radiation protection / penetrating
053. Env - ozone depleting substances
054. Env - PCBs
055. Env - pesticide application and use
056. Env - regulated chemical waste / non-hazardous
058. Env - sanitary and sewer discharges
059. Env - solid waste management units and inactive waste sites
060. Env - surface water
061. Env - transformer oil / non-PCB
062. Fire - boiler, heating systems, and (commercial) appliances
063. Fire - cigarette smoking
064. Fire - electrical
065. Fire - flammable liquids and gases
066. Fire - mobile structures
067. Fire - special hazardous materials
067B. Fire - hydrogen targets
068. Fire - special occupancies / accelerator and beam line enclosures
069. Fire - spontaneous combustion
070. Fire - stationary combustion engines
071. Fire - storage of combustibles
072. Fire - transportation / rail, vehicle, and fueling
073. Fire - welding near combustibles
074. Fire - spark producing tools near combustibles
075A. HazMat transport - bad road conditions / offsite
075B. HazMat transport - bad road conditions / onsite

076A. HazMat transport - emergency response and spill clean up / offsite
076B. HazMat transport - emergency response and spill cleanup / onsite
077A. HazMat transport - fire and explostion / offsite
077B. HazMat transport - fire/explostion / onsite
078A. HazMat transport - loading and unloading / offsite
078B. HazMat transport - loading and unloading / onsite
079A. HazMat transport - packaging hazardous materials / offsite
079B. HazMat transport - packaging hazardous materials / onsite
079C. HazMat transport - transportation of radioactive materials
080A. HazMat transport - prolonged periods of driving / offsite
080B. HazMat transport - prolonged periods of driving / onsite
081A. HazMat transport - spills and chemical releases /offsite
081B. HazMat transport - spills and chemical Releases / onsite
081C. Hazardous material transport - spills and chemical releases
082. Magnetic fields - bioelectric implants
083. Magnetic fields - fringe fields
084. Magnetic fields - high magnetic fields
085. Magnetic fields - quench effects
086. Material handling - chemical spills
087. Material handling - cranes and hoists
088. Material handling - elevators used for hazardous material
089. Material handling - falling objects
090. Material handling - forklift operation
091. Material handling - hazardous tools equipment and machinery
092. Material handling - lifting objects
093. Material handling - moving objects
094. Material handling - storage and handling of toxic materials.
095A. Material handling - transportation / offsite
095B. Material handling - transportation / onsite
096. NIR - intense light sources
097. NIR - lasers
098. NIR - radiofrequency radiation
099. NIR - ultraviolet light
101. ODH - cryogenic gas or liquid leaks
102. ODH - cryogenic spills
103. ODH - gaseous argon or other detector gas
104. ODH - leak of supplied gas
105B. ODH - mechanical refrigeration systems

106. Other mechanical hazards - general environmental control
107. Other mechanical hazards - machine guarding
108. Other mechanical hazards - machinery and rotating parts
109A. Other mechanical hazards - medical and first aid
blood borne pathogens, lead, noise, asbestos, and respiratory protection
109B. Surveillance - tuberculosis
110. Other mechanical hazards - powered platforms
111A. Other mechanical hazards - pressurized tanks and containers
111B. Other mechanical hazards - pressurized lines and piping systems
112. Other mechanical hazards - material grinding, cutting, and drilling
113. Other mechanical hazards (also fire) - means of egress
114. Other mechanical hazards - moving vehicles, carts, and forklifts
115. Other mechanical hazards - special hand tools and power driven nail guns, etc.
116. Other mechanical hazards - work with roads and grounds equipment
117. Other personal hazards - confined space
119. Other personal hazards - hazards requiring PPE
120. Other personal hazards - high noise levels
121. Other personnel hazards - housekeeping
122. Other personnel hazards - ice/walking surfaces
123. Other personal hazards - lifting and carrying heavy objects
124. Other mechanical hazards - pinch points
125. Other personal hazards - repetitive motion
126. Other personal hazards - sharp edges
127. Other personnel hazards - slips, trips & falls
128. Other personnel hazards - traffic hazards
129. Other personnel hazards - vacuum tanks
130. Other personal hazards - vibration
131. Other personnel hazards - work on wet surface
132. Other personnel hazards - working at heights
133. Radiation - radioactive contamination
134 /142. Radiation - special nuclear materials (SNM) and nuclear materials
135. Radiation - mixed waste
136. Radiation - prompt radiation
137. Radiation - radioactive sources
138. Radiation - radioactivated soil
139. Radiation - radioactive liquids and gases
140. Radiation - radioactive waste
141A. Radiation - residual contamination

141B. Radiation - residual activity
143. Radiation - storage and handling of radioactive materials
144. Thermal - battery bank and UPS equipment
145. Thermal - cold work environments
146. Thermal - cryogens
147. Thermal - high temperature equipment
148. Thermal - hot work environments
149. Thermal - ultraviolet radiation / sun exposure
151. Thermal - wet work environments
152. Emergency preparedness - severe weather
153. Emergency preparedness - safeguards and security
154. Emergency preparedness - generic
155. Env - underground storage tanks
156. Other mechanical hazards - aviation
159. Emergency preparedness - hazardous materials
160. Emergency preparedness - toxicity in smoke or fumes
161. Env - general environmental protection planning
163. Occupational safety administrative requirements
164. Occurrence Investigation and Reporting
165. Radiation - radiological emergency response (see 154.)
166. Radiation - radiological training
167. Radiation - monitoring and measurement of radiation
168. Radiation - record keeping in occupational radiation protection
169. Radiation - exposure control
170. Radiation - QA in occupational radiation protection
171. Safety analysis and documentation
172. Fire - emergency responder safety

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☐ Identification Team

1. Issue(s)

Focus group ☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

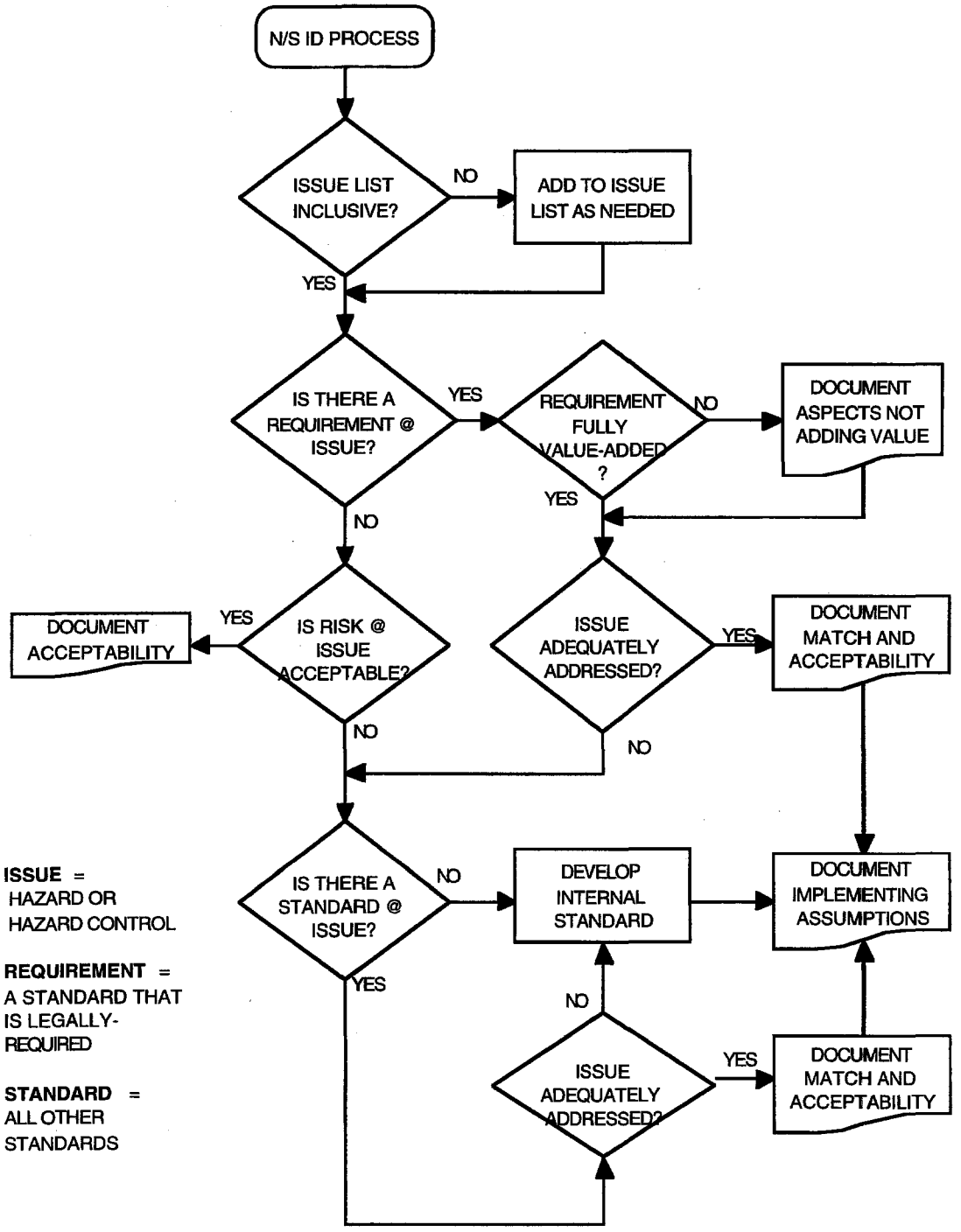
12. Describe how the levels of risk and cost are consistent with management performance goals.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impac
☐ Minor positive impact ☐ Major negative impac
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

FERMILAB N&S STANDARDS IDENTIFICATION PROCESS



FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

001. Bio - animals
004. Bio - insects
005. Bio - plants

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.21(b)(4)
29 CFR 1910.132

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Procedures and information regarding environmental biological hazards are provided in Chapter 5071 of the Fermilab ES&H Manual. Training is also conducted on an as-needed basis for persons who routinely work out-of-doors. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

002. Bio - bacteria (water)
151. Thermal - wet work environments

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

77 IAC 900
29 CFR 1910.141
29 CFR 1926.27
29 CFR 1926.51

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Requirements for maintaining the main site water supplies are provided in Fermilab ES&H Manual Chapter 8050. Backflow prevention procedures for domestic water supplies is provided in Chapter 8051. Issue 151 (Thermal - wet work environment) was combined with 002 (Bio - bacteria) as a "best fit" since a specific standard could not be identified for the former. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

003. Bio - bloodborne pathogens

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.1030

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The statutory requirement in #3 is implemented through Chapter 5072 of the Fermilab ES&H Manaual. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

006. Chem - acids, solvents, toxic agents and haz. liquids
009. Chem - chemical exposeures exceeding PEL.
013. Chem - nuisance dusts
016. Chem - use of toxic materials

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.1200
29 CFR 1910.1000
40 CFR 355
40 CFR 370
40 CFR 372

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The statutory requirements in #3 are implemented through a variety of ES&H Manual Chapters including 5051 (HazCom) and the 5052 Special Toxic Hazards series. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

007. Chem - carbon monoxide

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.1200
29 CFR 1910.146
29 CFR 1910.1000

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Carbon monoxide exposures occur in association with combustion; primarily engines and heaters. They are handled in accordance with good industrial hygiene practices including activity review, training,and monitoring. ES&H Manual Chapter 5051 (HazCom) and 5063 (Confined spaces) help to control exposures. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

008. Chem - carcinogens

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.1000-1200

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

In general, chemical carcinogens are a minor concern at Fermilab. The associated program is contained in Chapter 5052.1 of the ES&H Manual. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

010. Chem - chemical reactions

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.1200
40 CFR 724.277

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact	☐ Minor negative impact
☐ Minor positive impact	☐ Major negative impact
☒ No net impact	

14. Describe the nature and status of implementation including cost-effectiveness.

In general, chemical reactions are a minor concern at Fermilab. Chapter 5051 of the ES&H Manual (HazCom) includes this issue. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

011. Chem - cutting and burning
015. Chem - toxicity in smoke or fumes
017. Chem - welding fumes

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.1200
29 CFR 1910.1000
29 CFR 1910.146
29 CFR 1910.252-257

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Cutting and burning are common activities at Fermilab. They are handled in accordance with good industrial hygiene practices including activity review, training, and monitoring. ES&H Manual Chapter 5051 (HazCom) and 5063 (Confined spaces) help to control exposures. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

012. Chem - heavy metals such as lead

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.1200
29 CFR 1910.1000
29 CFR 1910.1018 (inorganic arsenic)
29 CFR 1910.1025 (lead)
29 CFR 1926.62 (lead)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Lead exposures can occur in association with physics or maintenance activities. They are handled in accordance with good industrial hygiene practices including activity review, training, and monitoring. ES&H Manual Chapter 5051 (HazCom), 5052.3 (Lead in paints) and 5063 (Confined spaces) help to control exposures. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

014. Chem - pesticides
055. Env - pesticide application and use

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

FIFRA (7 USC 136 et seq.)
40 CFR Subchapter E
Illinois Pesticide Act, IRS Ch. 5, para. 801 et seq.; 45 IL. CS 60-1
Structural Pesticide Act, IRS Ch. 111 1/2, para. 2201 - 2225
29 CFR 1910.1200
29 CFR 1910.1000
35 IAC 302.302
35 IAC 602.110
35 IAC 652
77 IAC 830

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Implementation of these laws and regulations is accomplished through contractual arrangements with applicators and lessors of agricultural land, and by procedures followed by Roads and Grounds personnel pursuant to all applicable regulations.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

018. Construction - compressed gasses

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.350-352

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

019. Construction - demolition

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.850
29 CFR 1926.58 (asbestos)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

020. Construction - dewatering hazard

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.651(h)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

021. Construction - earth cave-in and collapse

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.651-652

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

022. Construction - earth moving equipment

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.600-602

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

024. Construction - earth clearing

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.604

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in **#3** has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

025. Construction - fall hazards

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.500-503
29 CFR 1926.104

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

027. Construction - hand tools

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.300-301
29 CFR 1926.303
29 CFR 1926.305
29 CFR 1910.242

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

028. Construction - heavy equipment

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.550
29 CFR 1926.600-602
29 CFR 1926.250
29 CFR 1926.251

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

030. Construction - ladder

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.105
29 CFR 1926.1050-1053
29 CFR 1926.1060
29 CFR 1926.603
29 CFR 1926.550
29 CFR 1926.851
29 CFR 1926.951
29 CFR 1926.605
29 CFR 1926.451
29 CFR 1910.25-27
29 CFR 1910.31
29 CFR 1910.179
29 CFR 1910.333

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

032. Construction - materials handling

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.250
29 CFR 1926.602

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

033. Construction - possibility of hitting utilities

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.651(b)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

034. Construction - scaffolding

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.451

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

035. Construction - transportation
128. Other personnel hazards - traffic hazards

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.600-601
29 CFR 1926.200-202
Illinois Compiled Statutes (ICS) Chapter 625 (State vehicle code)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

036. Electricity - battery

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.305(j)(7) (explosion prevention)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Battery installations generally involve limited numbers of batteries and are in areas having more than adequate ventilation so as to preclude any significant hazard. Hazards associated with battery installations are well known and associated risks have been handled effectively. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

037. Electricity - exposed conductors / >50 volts
038. Electricity - high voltage

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.147 (LOTO)
29 CFR 1910.332-333

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapters 5040-5042, and 5044.
In general, OSHA electrical safety standards are not a good match for electrical hazards in a research environment. As such Fermilab has developed internal standards which appear as chapters in its ES&H Manual:
5040 - Defines basic policies and responsibilities. TA provides practical guidance and interpretations of external standards.
5041 - Requirements for working on equipment that goes beyond OSHA. Includes LOTO and work on energized equipment.
5042 - Guidance for work on premises wiring including work permit for energized systems.
5044 - Guidance for exposed conductors in accelerator enclosures.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Employment of safety related work practices and provision of appropriate training will achieve a level of risk commensurate with management performance goals. Past adherance to the statutory requirements in #3 combined with Fermilab's electrical safety programs in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Implementation is enhanced by appropriate application of National Electrical Code requirements, reasoned interpretations and guidance as provided by the Electrical Safety Subcommittee of the LSC, and by Fermilab ES&H Manual chapters related to electrical safety - Chapters 5040-5046, 5120 (LOTO). Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

039. Electricity - high power
041. Electricity - high current conductors / <50 volts
042. Electricity - stored energy / capacitors
043. Electricity - stored energy / inductors

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.147 (LOTO)
29 CFR 1910.332-333

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapters 5040-5042, 5044, and 5046.
In general, OSHA electrical safety standards are not a good match for electrical hazards in a research environment. As such Fermilab has developed internal standards which appear as chapters in its ES&H Manual:
5040 - Defines basic policies and responsibilities. TA provides practical guidance and interpretations of external standards.
5041 - Requirements for working on equipment that goes beyond OSHA. Includes LOTO and work on energized equipment.
5042 - Guidance for work on premises wiring including work permit for energized systems.
5044 - Guidance for exposed conductors in accelerator enclosures.
5046 - Guidance for low voltage high current power distribution systems.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Employment of safety related work practices and provision of appropriate training will achieve a level of risk commensurate with management performance goals. Past adherance to the statutory requirements in #3 combined with Fermilab's electrical safety programs in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Implementation is enhanced by appropriate application of National Electrical Code requirements, reasoned interpretations and guidance as provided by the Electrical Safety Subcommittee of the LSC, and by Fermilab ES&H Manual chapters related to electrical safety - Chapters 5040-5046, 5120 (LOTO). Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

040. Electricity - lightning

Focus group
☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
29 CFE 1910.307(b)(3) (Safe for hazardous [classified] location)
29 CFR 1910.308(e)(3)(i){b} (Seperation between lead-in and lightning protection conductors)
29 CFR 1910.106(e)(6)(i) (Ignition source for flammable vapors)
29 CFR 1910.106(h)(7)(i){a} (Ignition source for flammable vapors)
29 CFR 1926.152(i)(6) (Ignition source for flammable vapors)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because municipal and industrial standards have been selected for the standard residential/commercial/industrial electrical equipment. Insurers and municipalities have long found that statutory requirements were insufficient and that the building code and national fire code standards selected were necessary to achieve adequate protection.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The overall program exists and the internal standard has been implemented. Adoption of the BOCA National Building Code will require changes to construction and contract documents.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

044. Env - air emissions / nonrad

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Clean Air Act Amendments 1990, 42 USC 7401 et seq.
40 CFR 50
40 CFR 52 Subpart O
40 CFR 58
40 CFR 60-61
40 CFR 63
40 CFR 80
40 CFR 82
40 CFR 88 Subpart C
40 CFR 264-265
35 IAC Subtitle B and permits pursuant

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☒ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Continue current program. Implementation of Illinois' Clean Air Act Permit program may require the preparation of a federally enforceable state operating permit by the end of 1995.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

045. Env - air emissions / rad

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Clean Air Act Amendments 1990, 42 USC 7401 et seq.
40 CFR 61 Subpart H
35 IAC Subtitle B and permits pursuant

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The requirements identified in #3 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

046. Env - cultural resources

Focus group

☐ Emergency Management	☐ Fire Protection	☐ Occupational Safety
☒ Environmental Protection	☐ Management & Oversight	☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

National Historic Preservation Act of 1966 [amended]
Archaeological and Historic Preservation Act of 1974
Archaeological Resources Protection Act of 1979 [amended]
Native American Graves Protection and Repatriation Act of 1990
36 CFR 65
36 CFR 78-79
36 CFR 800
43 CFR 7

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The requirements identified in #3 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

047. Env - asbestos

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.1001
29 CFR 1926.58
TSCA, 15 USC 2601 et seq.
40 CFR 61 Subpart M
40 CFR 763

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab's asbestos control program is contained in Chapter 5052.4 of the ES&H Manual. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

048. Env - drinking water quality

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

SDWA, 42 USC 300f et seq.
40 CFR 141-142
40 CFR 144
40 CFR 146
40 CFR 147 Subpart O
Illinois Ground Water Protection Act, IRS 1989 Chapter 111 1/2
35 IAC Subtitle F Chapter I
77 IAC 890
77 IAC 900
77 IAC 920
77 IAC 925
DuPage County Health Department Private Water Supply Ordinance OH0002-90 Ch. 34
Kane County Ordinance 91-101 Water Well Code

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

Recommended Standards for Water Works, Great Lakes Upper Mississippi R. Bd. of State Public Health & Environmental Managers (1992)
Handbook for Sampling & Sample Preservation of Water and Wastewater, EPA-600/4-82-029

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. Some changes in the jurisdiction within which the Laboratory falls will be implemented in the near future. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution. The additional standards indicated in #8, above, is necessary as a reference for industry-wide practice in this area. It contains no "requirements" other than adherence to standard practices.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☒ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Essentially continue the current program, but with revision and upgrading. We assume jurisdiction by IDPH in the future, rather than IEPA. The effect is to remove some requirements, but add responsibility for analysis. Implementation of this program will include the utilization of adequate sampling and analytical methods as found in relevant documents.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

049. Env - endangered species

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Endangered Species Act 16 USC 1531 et seq.
50 CFR 17
Illinois Endangered Species Protection Act, IRS 1991, Ch. 8, par. 331 et seq.
17 IAC 525 and permit pursuant

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The requirements identified in #3 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

050. Env - groundwater protection

Focus group
☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Safe Drinking Water Act, 42 USC Section 300f et seq.
40 CFR 141-142
40 CFR 144
40 CFR 146
40 CFR 147 Subpart O
Illinois Ground Water Protection Act, IRS 1989 Chapter 111 1/2
35 IAC Subtitle F, Chapter I; 730 - 732
77 IAC 920
DuPage County Health Department Private Water Supply Ordinance (OH-0002-90, Ch.34, DuPage County Code)
Kane County Health Department Ordinance 91-101 Water Well Code

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The current program provides an acceptable level of protection by adhering to the Class I groundwater standards mandated by the state of Illinois. The implementation of a wellhead protection program as described in the Illinois Groundwater Protection Act will significantly increase the level of performance and protection for the Laboratory. This program will be implemented through appropriate procedures, utilizing accepted published guidelines.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The current program provides an acceptable level of protection, and the addition of a wellhead program will improve protection at modest cost. An important part of the implementation of the groundwater protection program program is the use of the concentration model to design shielding of targets. These design criteria are in the Fermilab RadCon Manual App.12B.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

051. Env - hazardous waste

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

RCRA, 42 USC 6901 et seq.
40 CFR 260- 270
RCRA Part B Permit (Illinois Log #131), including Emergency Contingency plan
29 CFR 1910.120
35 IAC Subtitle G
Federal Facility Compliance Act

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is largely an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Compliance with above cited laws and regulations requires that the current program be continued. Applicable regulations are implemented by Fermilab ES&H Manual Chapter 8021 (Regulated Chemical Waste Disposal), and HWSF Procedures Manual. When the above standards are approved in the N&S process, internal implementation programs will be modified to be consistent with the standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

052. Env - offsite radiation protection / penetrating

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

DOE Order 5400.5 Derived Concentration Guide Table and dose limits to the public (Chapter 2, section 1; Chapter 3)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

When the above standard is approved in the N&S process, internal implementation programs will be modified to be consistent with the standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

053. Env - ozone depleting substances

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Clean Air Act Amendments 1990, 42 USC 7401 et seq.
40 CFR 82
E.O. 12843

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

In the opinion of the invloved subject-matter experts, this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

054. Env - PCBs

Focus group
☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

TSCA, 15 USC 2601 et seq.
40 CFR 268
40 CFR 302
40 CFR 761
29 CFR 1910.1000
RCRA Part B permit
35 IAC 728
35 IAC 808-809

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. Strict adherence to the indicated statutes and regulations, supplemented by internal implementation procedures will ensure that the Laboratory is protected from legal vulnerability and dangers to personnel and the physics program. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Maintain current program, revise and update ES&H Manual chapters. Part of the ES&H Manual chapter 8021 or a Fermilab PCB policy should state that exempt quantities of PCBs (e.g. small ballasts, capacitors) will be managed as Illinois Special Waste. Lab policy should be to move toward eliminating all PCB's.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

056. Env - regulated chemical waste / non-hazardous

Focus group
☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

40 CFR 259
35 IAC 807- 810
35 IAC 700 Subpart F
E.O. 12580
E.O. 12856
E.O. 12873

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Current program includes ES&H Manual chapter 8021, which will be revised and modified. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

058. Env - sanitary and sewer discharges

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Clean Water Act, 33 USC 1251 et seq.
40 CFR 116-117
40 CFR 121-125 (exc. 123)
35 IAC Subtitle C and pre-treatment permits pursuant
Batavia Code of Regulations, City Ordinance, Section 8-3-10-3
City Code of Warrenville, IL Title 7, Chapter 4

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

Standard Methods for the Examination of Water and Wastewater, 18th Ed., APHA (1992)
DOE 5400.5 (Chapter 2, Section 3)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program of adherence to the indicated laws and regulations will be supplemented by a program of monitoring sewer effluent constituents and flow at the site boundaries. This combination will ensure that discharges from the site are within all appropriate limits. The level of risk is consistent with management performance goals because manaegement expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution. The additional standard indicated in #8, above, is necessary as a reference for industry-wide practice in this area. It contains no "requirements" other than adherence to standard practices.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

059. Env - solid waste management units and inactive waste sites

Focus group
☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

RCRA, 42 USC 6901 et seq.
RCRA Part B permit
35 IAC 620
35 IAC 724
35 IAC 815
CERCLA/SARA 42 USC 6901 et seq.
40 CFR 300
40 CFR 302
40 CFR 355
40 CFR 370
40 CFR 372

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will ensure compliance with applicable RCRA and CERCLA regulations and requirements. The current program also ensures that existing and future SWMUs will be effectively identified, investigated and remediated if necessary through our program supervised by the Illinois EPA. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

All implementation will be completed in conjunction with Illinois EPA officials. In the opinion of the involved subject-matter experts, this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

060. Env - surface water

Focus group
☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Clean Water Act, 33 USC 1251 et seq.
40 CFR 110 -125 (exc. 123)
40 CFR 131
40 CFR 136
40 CFR 230
40 CFR 401 - 403
33 CFR 320 - 323
33 CFR 328 - 330.
35 IAC Subtitle C
92 IAC 700 and all permits pursuant
92 IAC 704 and all permits pursuant
92 IAC 708 and all permits pursuant
E.O. 10988
E.O. 10990
10 CFR 1022

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

Standards and Specifications for Soil Erosion and Sediment Control, 10/87, IEPA 87-102
DOE Order 5400.5 (Ch. 2, sec. 1;Ch. 3)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution. The additional standard indicated in #8, above, is necessary as a reference for industry-wide practice in this area. It contains no "requirements" other than adherence to standard practices.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective. When the above standard is approved in the N&S process, internal implementation programs will be modified to be consistent with the standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

061. Env - transformer oil / non-PCB

Focus group
☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Clean Water Act, 33 USC 1251 et seq.
40 CFR 110
40 CFR 112
40 CFR 300 - 302
29 CFR 1910.106
35 IAC 808 - 809

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continued application of the appropriate regulations and laws will ensure the protection of the environment from transformer oil spills. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☒ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Implementation of these standards would require that a consistent policy for secondary containment strategy be adopted for all existing and new transformers. An adequate set of procedures will utilize appropriate industry and/or other association standards as necessary (NFPA 30, Factory Mutual 5-4/14-8,ANSI/IEEE 446).

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

062. Fire - boiler, heating systems, and (commercial) appliances

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
120 IAC - Boiler and Pressure Vessels
29 CFR 1910 Subpart E - Means of Egress
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1910 Subpart S - Electrical
29 CFR 1926 Subpart F - Fire Protection and Prevention
29 CFR 1926 Subpart K - Electrical

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

This is an industrial hazard, and the minimal statutory requirements have been found insufficient by municipalities and fire insurers. To be consistent with management performance goals, the level of risk must be further controlled by application of building code and national fire code standards as is the case in industry.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

There are a few known noncompliances regarding heating system clearances which would be mitigated as these existing older heating systems are replaced. (As noted in the title of this issue, these standards apply only to commerical appliances.)

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

063. Fire - cigarette smoking

Focus group
☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
29 CFR 1910 Subpart H - Hazardous Materials
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1926 Subpart F - Fire Protection and Prevention
EPA Air Quality Stds.

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The statutory requirements provide a level of risk that is consistent with management performance goals. The risk is the same as that encountered in commercial or industrial environments.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

064. Fire - electrical

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
29 CFR 1910 Subpart E - Means of Egress
29 CFR 1910 Subpart H - Hazardous Materials;
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1910 Subpart S - Electrical
29 CFR 1926 Subpart F - Fire Protection and Prevention
29 CFR 1926 Subpart K - Electrical

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapters 5043, Management and use of cable tray systems, and 5046, Low-Voltage, High-Current Power Distribution Systems.
These standards require proper installation of cable trays used for electrical conductors and overcurrent protection for all current carrying conductors in high-current, low-voltage power distribution systems. They have been fully implemented and integrated into management and oversight practices.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because municipal and industrial standards have been selected for the standard residential/commercial/industrial electrical equipment, and internal standards have been selected for the unique electrical equipment not found elsewhere. Insurers and municipalities have long found that statutory requirements were insufficient and that the building code and national fire code standards selected were necessary to achieve adequate protection.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☒ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective. Adoption of the BOCA National Building Code will require changes to construction and contract documents.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

065. Fire - flammable liquids and gases

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety;
160 IAC - Storage, Transportation, Sale and Use of Gasoline and Volatrile Oils: Rules Relating to General Storage
170 IAC - Storage, Transportation, Sale and Use of Petroleum and Other Regulated Substances
180 IAC - Storage Transportaition, Sale and Use of Volatile Oils
29 IAC - Emergency Services, Disasters, and Civil Defense, Chapter I: Emergency Services and Disaster Agency, Subchapter f: Chemical Safety
IL Public Act 84-852, Illinois Chemical Safety Act
29 CFR 1910 Subpart E - Means of Egress
29 CFR 1910 Subpart H - Hazardous Materials
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1910 Subpart S - Electrical
29 CFR 1926 Subpart F - Fire Protection and Prevention
29 CFR 1926 Subpart K - Electrical

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual, Chapter 6020.3, Storage and Use of Flammable Gases at Physics Experiments
This standard, which governs use of flammable gases in detectors, provides a graded approach based on the inventory of flammable gas involved. The measures and precautions called out are needed because particle detectors cannot be built to comply with the electrical guidelines from the National Electrical Code, NFPA70, Article 501 for NEC Class 1, Group D, Division 2 installations. This standard has been fully implemented and integrated into management and oversight practices.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because the standards selected are those used by industry, and an internal standard has been selected for those unique cases where the building code and national fire code standards cannot be applied. The internal standard was designed to provide an equivalent or superior level of hazard mitigation and comply with the intent of the codes.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☒ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective. Adoption of the BOCA National Building Code will require some changes to construction and contract documents.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

066. Fire - mobile structures

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

NOTE: There are no specific legal requirements identified as applicable solely to mobile structures. However, the entirety of OSHA and Illinois Law is applicable to the occupancy and specific use of the structure and contents.

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the standards chosen are industrial standards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

An implementation guide is needed to assure appropriate application of the cited standards. The existing DOE/EV 0043, covering Mobile Structures would serve as a model.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

067. Fire - special hazardous materials

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 IAC - Emergency Services, Disasters, and Civil Defense, Chapter I: Emergency Services and Disaster Agency, Subchapter f: Chemical Safety
IL Public Act 84-852, Illinois Chemical Safety Act
29 CFR 1910 Subpart E - Means of Egress;
29 CFR 1910 Subpart H - Hazardous Materials
29 CFR 1910 Subpart I - Personal Protective Equipment
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1910 Subpart S - Electrical
29 CFR 1926 Subpart F - Fire Protection and Prevention
29 CFR 1926 Subpart Z - Toxic and Hazardous Substances
41 IAC - Fire Protection
140 IAC - Policy and Procedures Manual for Fire Protection Personnel

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

There is always the possibility of introduction of unique one-of-a-kind materials by a physics experiment in order to achieve its research objectives. By making this entry, Fermilab acknowledges its responsibility to develop adequate internal standards for those cases where consensus external standards are not available or not applicable. Individual hazardous material usages may require specific implementation standards to provide for safe usage; this level of risk acknowledgement is to verify the commitment to do so.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the standards chosen are industrial standards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☒ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Implementation for identified hazards of this class has existed since the Laboratory began. The key element is recognition, identification and assessment of new instances. The present laboratory policies for screening and inspecting new initiatives or modifications to existing facilities are especially designed to capture special hazardous materials.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

067B. Fire - hydrogen targets

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 5032.2, Guidelines For the Design, Fabrication, Testing, Installation, and Operation of LH2 Targets Fermilab has developed these guidelines to address the hazards associated with these targets. The latest version of this document has been in existence and use for over 6 years.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The internal standards identified in #11 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

068. Fire - special occupancies / accelerator and beam line enclosures

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
29 CFR 1910 Subpart E - Means of Egress
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1910 Subpart S - Electrical
29 CFR 1926 Subpart F - Fire Protection and Prevention
29 CFR 1926 Subpart K - Electrical

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
NFPA 101 & 101A current editions
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 5043, Management and use of cable tray systems.
This standard requires proper installation of cable trays used for electrical conductors. It has been fully implemented and integrated into management and oversight practices.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because the current version of the life safety code is selected instead of the outdated version referred to in the OSHA regulation. The standards selected specify an acceptable level of risk, and the current editions provide for the alternate methods of compliance needed for accelerator and beam line enclosures. The internal standard addresses cable tray applications which are not addressed in Article 318 of NFPA 70.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab is committed to implement the standards utilizing good engineering practices to provide a level of safety consistent with the intent, in full accordance with recognized practice throughout industry. Accelerator and beam line enclosures, like subways, highway tunnels and mines, necessitate means equivalent to the prescribed ones to achieve the ES&H goals and simultaneously perform their function.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

069. Fire - spontaneous combustion

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
29 CFR 1910 Subpart E - Means of Egress
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1926 Subpart F - Fire Protection and Prevention

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the standards selected are industrial standards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☒ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Existing fire prevention, housekeeping, and self assessment activities adequately address this and many similar issues. However, there is a need for coordination to improve both the physical effectiveness and the cost effectiveness of these efforts.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

070. Fire - stationary combustion engines

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

NFPA 37: Standards for the Installation and Use of Stationary Combustion Engines and Gas Turbines.

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the standards selected are industrial standards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☒ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

There are a few known noncompliances which would be mitigated programmatically as older units are replaced or upgraded. In addition, where concerns merit, a hazard analysis could dictate more rapid action for compliance.
This item is to be considered in parallel with item 65 - Flammable Liquids and Gases. It is given that full compliance with the standards cited there is the case.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

071. Fire - storage of combustibles

Focus group
☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
29 IAC - Emergency Services, Disasters, and Civil Defense, Chapter I: Emergency Services and Disaster Agency, Subchapter f: Chemical Safety
IL Public Act 84-852, Illinois Chemical Safety Act
29 CFR 1910 Subpart E - Means of Egress
29 CFR 1910 Subpart H - Hazardous Materials
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1910 Subpart S - Electrical
29 CFR 1926 Subpart F - Fire Protection and Prevention
29 CFR 1926 Subpart Z - Toxic and Hazardous Substances

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the standards selected are industrial standards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The overall program exists and has been implemented. Regular inspections which include housekeeping/combustibles are included in mandatory self assessment activities.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

072. Fire - transportation / rail, vehicle, and fueling
077B. HazMat transport - fire/explostion / onsite

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
160 IAC - Storage, Transportation, Sale and Use of Gasoline and Volatrile Oils: Rules Relating to General Storage
170 IAC - Storage, Transportation, Sale and Use of Petroleum and Other Regulated Substances
180 IAC - Storage Transportaition, Sale and Use of Volatile Oils
49 CFR 383.23 Commercial Drivers License
49 CFR 393.95 Emergency Equipment on Vehicles
49 CFR 397.11 Fires
49 CFR 397.13 Smoking
49 CFR 397.15 Fueling
49 CFR177.848 C (Segregation table for hazardous materials)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
National Fire Protection Association National Fire Codes (NFPA Standards List)
UL Listing

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because the statutory requirements have been supplemented with building code and national fire code standards. This is the same solution that has been selected by industry and municipalities.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The standards have been implemented. Experience has demonstrated that this program is both successful and cost-effective. Regulation and inspection functions are performed by the State of Illinois authorities having jurisdiction.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

073. Fire - welding near combustibles
074. Fire - spark producing tools near combustibles

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1910 Subpart Q - Welding, Cutting and Brazing
29 CFR 1926 Subpart F - Fire Protection and Prevention

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA Fire Prevention Code
NFPA 1: Fire Prevention Code
NFPA 51: Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes
NFPA 51B: Standard for Fire Protection in Use of Cutting and Welding Processes.

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 6020.3, Storage and Use of Flammable Gases at Physics Experiments.
This standard calls for a minimum separation between welding, burning, brazing and grinding operations and physics experiment apparatus using flammable gases. If the minimum separation is not practical, the flammable gas inventory must first be removed from the apparatus before operations are permitted. This requirement has been integrated into the welding, burning and brazing permit control process.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because the standards selected are those used by industry, and an internal standard has been selected for those unique cases where the combustible is flammable gas in physics experiment apparatus. The internal standard was designed to provide an equivalent or superior level of hazard mitigation and comply with the intent of the codes.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Implementation has long been in place using the standard industrial practice of a formal permit process, also recognized as considerably more efficient than a fire watch approach. The permit process also unites need-to-know and ES&H protection concerns thus uniting two administratively separate concerns in a cost effective manner.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

075A. HazMat transport - bad road conditions / offsite

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

49 CFR 392.14 (Hazardous conditions; extreme caution)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

075B. HazMat transport - bad road conditions / onsite

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

49 CFR 392.14 (Hazardous conditions; extreme caution - not required onsite)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the external standard in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

For "onsite" transportation issues, it is assumed that access is restricted in a way which removes site roads from being considered "in commerce" per DOT. If not, the standards for the analogous "offsite" issue should be applied. Fermilab has its own Roads & Grounds Department. They perform road maintenance as needed, and will continue to do so. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

076A. HazMat transport - emergency response and spill clean up / offsite
081A. HazMat transport - spills and chemical releases /offsite

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

49 CFR 172.600G (Emergency response information)
49 CFR 171.15 (Immediate notice of certain hazardous material incidents)
40 CFR 112 (Oil pollution prevention)
40 CFR 761 (PCB spill cleanup policy)
40 CFR 302 (Designation, reportable quantities & notification)
40 CFR 355 (Emergency planning & notification)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

076B. HazMat transport - emergency response and spill cleanup / onsite
081B. HazMat transport - spills and chemical Releases / onsite

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.120 (Hazardous waste operations & emergency response)
40 CFR 112 (Oil pollution prevention)
40CFR 761 (PCB spill cleanup policy)
40 CFR 302 (Designation, reportable quantities & notification)
40 CFR 355 (Emergency planning & notification)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the requirement in #3 above has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

For "onsite" transportation issues, it is assumed that access is restricted in a way which removes site roads from being considered "in commerce" per DOT requirements. If not, the standards for the analogous "offsite" issue should be applied. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

077A. HazMat transport - fire and explostion / offsite

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

49 CFR 171.15 (Immediate notification of certain hazardous materials incidents)
49 CFR 172.600G (Emergency response information)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

078A. HazMat transport - loading and unloading / offsite

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

49 CFR 177.834B (Loading & unloading)
29 CFR 1910.176 (Handling materials - general)
29 CFR 1910.178 (Powered industrial trucks)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

078B. HazMat transport - loading and unloading / onsite
095B. Material handling - transportation / onsite

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.176 (Handling materials - general)
29 CFR 1910.178 (Powered industrial trucks)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

49 CFR 177.848C (Segregation table for hazardous materials - not required onsite)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The requirements cited in #3 above adequately address the mechanical aspects of handling materials. However, the portion of the standard cited in #8 above is necessary to control chemical incompatibilities. Past adherance to the requirements in #3 and the internal standard in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

For "onsite" transportation issues, it is assumed that access is restricted in a way which removes site roads from being considered "in commerce" per DOT requirements. If not, the standards for the analogous "offsite" issue should be applied. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

079A. HazMat transport - packaging hazardous materials / offsite

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

49 CFR 178.500L Subchapter C (Specifications for packagings)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

079B. HazMat transport - packaging hazardous materials / onsite

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

49 CFR 173.24(e)(1-2) (Chemical compatibility for single packagings - onsite)
49 CFR 173.24(e)(4)(i-111) (Chemical compatibility for multiple packagings - onsite)
49 CFR 173.24a (a)(1) (Positioning of inner receptacles - onsite)
49 CFR 173.24a (a)(3-4) (Packing for inner receptacles - onsite)
49 CFR 177.848C (Segregation table for hazardous materials - onsite)
49 CFR 178.500L Subchapter C (Segregation table for hazardous materials - onsite)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the external standards in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

For "onsite" transportation issues, it is assumed that access is restricted in a way which removes site roads from being considered "in commerce" per DOT requirements. If not, the standards for the analogous "offsite" issue should be applied. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

079C. HazMat transport - transportation of radioactive materials

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

49 CFR 100-199 and references

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Due to the requirements of 49 CFR 100-199, Fermilab plans on having restricted access to the site in order to relieve the need to certify and document onsite shipment of radioactive materials and eliminate a major training commitment. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The Fermilab Low Level Waste Certification Plan already exists and serves as implementation of 49 CFR 100-199 concerning the specifics of the transport of radioactive materials. The program as implemented coupled with the restriction of site access will be cost-effective and meet management performance goals and regulatory requirements.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

080A. HazMat transport - prolonged periods of driving / offsite

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

49 CFR 395 (Maximum driving and on-duty time)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

080B. HazMat transport - prolonged periods of driving / onsite

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

49 CFR 395.3 (Maximum driving & on-duty time - not required onsite)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

For "onsite" transportation issues, it is assumed that access is restricted in a way which removes site roads from being considered "in commerce" per DOT requirements. If not, the standards for the analogous "offsite" issue should be applied.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

081C. Hazardous material transport - spills and chemical releases

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

CERCLA/SARA 42 USC 6901 et seq.
40 CFR 116 - 117
40 CFR 300
40 CFR 302
40 CFR 311
40 CFR 355
49 CFR 172 Subpart G
35 IAC Subchapter H, Subpart D
35 IAC 808- 809

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. Compliance with above laws and regulations through the current program will ensure high level of protection of the environment. The level of risk is consistent with management performance goals because manaegement expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The requirements identified in #3 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

082. Magnetic fields - bioelectric implants
083. Magnetic fields - fringe fields
084. Magnetic fields - high magnetic fields

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ACGIH TLV for static magnetic fields

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the standard in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues. The limit regarding cardiac pacemakers is appropriate. By coincidence, it appears that the whole body exposure limit is useful to control rotational forces on ferromagnetic tools. Although the limits for direct biological action are clearly overly-conservative, Fermilab has the potential for some of the highest personnel exposures of any industry and #8 represents the only generally-accepted consensus standard for static magnetic magnetic fields.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab currently complies with #8 above as implemented by ES&H Manual Chapter 5062.2. Given the lack of evidence regarding direct biological effects, it is assumed that the associated exposure limits can be used as guides rather than absolute limits. In fact, the cited standard indicates that the values should be used as guides and not regarded as a fine line between safe and dangerous levels. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

086. Material handling - chemical spills

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.120
29 CFR 1910.1200
29 CFR 1910.176

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

087. Material handling - cranes and hoists

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.179 (Overhead and gantry cranes)
29 CFR 1910.180 (Crawler locomotive and truck cranes)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ANSI B30.20 - 1990 (Overhead and gantry cranes)
ANSI B30.5 - 1989 (Mobile and locomotive cranes)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 and the external standards in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues. The external standards provide guidance which is more complete and current than the associated statutory requirements in 29 CFR 1910.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

088. Material handling - elevators used for hazardous material

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual chapter 5032.3, Transporting Gases in Building Elevators, has been written and in force for several years. It was written to specifically address the hazards associated with transporting cryogenic dewars and room temperature gas cylinders in Wilson Hall elevators and to minimize the potential risks.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The internal standards identified in #11 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

089. Material handling - falling objects

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910 Subpart I (PPE)
29 CFR1910 Subpart N (Materials Handling and Storage)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

090. Material handling - forklift operation

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.178

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

091. Material handling - hazardous tools equipment and machinery

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.94
29 CFR 1910.106
29 CFR 1910.108
29 CFR 1910.215
29 CFR 1910.231
29 CFR 1910.242-244

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Hazards associated with hazardous tools, equipment, and machinery are known and associated risk are being handled through an on-going inspection program. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

092. Material handling - lifting objects

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.184 (Slings)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ASME B30.20 - 1993 (Below the hook lifting devices)
ANSI B30.9 - 1990 (Slings)
ANSI B30.10 - 1993 (Hooks)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 and the standard in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues. The requirement in #3 makes no mention of "below the hook lifting devices" which are widely constructed and used at the Lab. ASME B30.20 in #8 is the generally-accepted industry standard for lifting fixtures and it adequately covers all types. The guidance provided in the other external standards is more complete and current than the associated statutory requirements in 29 CFR 1910.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

093. Material handling - moving objects

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910 Subpart N (Materials Handling and Storage)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

094. Material handling - storage and handling of toxic materials.

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.176
29 CFR 1910.1200

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

095A. Material handling - transportation / offsite

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

49 CFR 177.834 Subpart B
29 CFR 1910.176
29 CFR 1910.178

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

096. NIR - intense light sources

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.133
29 CFR 1926.102 (Eye and face protection)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

It is assumed that incoherent (i.e., non-laser) sources are to be considered here. The primary source of intense light at Fermilab is sunlight and the major associated concern is glare. This is well addressed by the two OSHA eye and face protection standards noted in #3 above. Fermilab has had a compliant and effective eye protection program in place for many years which includes provision of occupationally-required lens tinting. Incidents associated with intense light sources have been virtually non-existent except, perhaps, from glare associated with motor vehicle operation (and these have not been frequent or costly). Therefore, the ongoing level of risk associated with this issue is judged to fall within management performance goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

As noted above, Fermilab has a long-standing eye protection program which includes provision of occupationally-required lens tinting. This program is described in Fermilab ES&H Manual Chapter 5102. Eye protection competitively procured and is provided only when occupationally-indicated. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

097. NIR - lasers

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.54 (Nonionizing radiation)
29 CFR 1910.269(w)(8) (Electric power...)

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

29CFR1926.54 (Nonionizing radiation) was apparently written for visible wavelength lasers. As such, it limits exposures to harmless intensities at longer wanvelengths. For example, direct staring is prohibited where intensities may exceed 1 microwatt per cm2 and incidental viewing is prohibited above 1 milliwatt per cm2. This includes hazard class 1 lasers for wavelengths exceeding 0.55 micrometers for the former and 1.18 micrometers for the latter . Hazard class 1 lasers are not capable of causing eye injury within 3E4 seconds (8 hours) of CONTINUOUS EXPOSURE. Although OSHA standard interpretations acknowledge this shortcoming, the Agency has noted they will continue to cite the standard, but as a de minimis violation. 29CFR1910.269(w)(8) invokes the use of 29CFR1926.54.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ANSI Z136.1-1993 (Lasers)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The requirement cited in #3 above applies only to construction industries and apparently does not address non-visible wavelengths or repetively-pulsed exposures. The standard cited in #8 provides exposure limits to which it is believed that nearly all workers can be repeatly exposed without adverse effect. This standard also addresses non-visible wavelengths and repetitively-pulsed exposures. Past adherance to this standard has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The current Fermilab laser safety policy is contained in ES&H Manual Chapter 5062.1 which is based on the external standard in #8. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

098. NIR - radiofrequency radiation

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.97 (Nonionizing radiation)
29 CFR 1926.54 (Nonionizing radiation)
29 CFR 1910.268(p) (Telecommunications)
29 CFR 1910.269(s) (Electric power...)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ACGIH TLV for radiofrequency/microwave radiation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The requirements cited in #3 above are based on ANSI C95.1-1966. Dependencies on wavelength, orientation, modulation, presence of ground planes, and electrical shock potential were poorly understood and not accounted for. Fermilab has been following the standard in #8 and this has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues. They are sufficient to prevent electrical shocks and provide a safety factor of at least ten for reasonably well understood minor transient EM radiation (behaviorial) effects.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

We believe we are currently in compliance with the standard cited in #8 above. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

099. NIR - ultraviolet light
149. Thermal - ultraviolet radiation / sun exposure

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.133(a)(5) (Eye and face protection)
29 CFR 1910 Subpart I Appendix B (PPE)
29 CFR 1910.252(b) (Welding, cutting, brazing)
29 CFR 1926.102(b)(1) (Eye and face protection)
29 CFR 1926.353(d) (Ventilation and protection in welding, cutting, brazing)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ACGIH TLV for ultraviolet radiation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The requirements cited in #3 above provide adequate protection against ultraviolet radiation encountered in electric metal joining and cutting operations. Compliant welding safety practices have been in place at Fermilab and, except when not obeyed, have acceptably prevented the occurrence of harmful ultraviolet exposure effects. Since exposure to incoherent ultraviolet radiation also infrequently occurs in association with other types of operations (UV lamps for sterilization or electronic applications), the requirements are not sufficient to preclude possible adverse effects. These remaining activities are addressed by the standard cited in #8 above. Past adherance to the these standard has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Given that even moderate exposures to sunlight exceed the standard cited in #8 above (~30 minutes at mid-day in summer) and the hazards are well-known and generally-accepted by most people, it is assumed that the exposure limits can be considered as guides, rather than absolute limits for typical sunlight exposures. In fact, the cited standard indicates that the values should be used as guides and not regarded as a fine line between safe and dangerous levels. With this single caveat, Fermilab is currently in compliance with the standards cited in #3 and #8. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

101. ODH - cryogenic gas or liquid leaks
102. ODH - cryogenic spills
103. ODH - gaseous argon or other detector gas
104. ODH - leak of supplied gas
085. Magnetic fields - quench effects

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual chapter 5064, Oxygen Deficiency Hazard, has been in force for over 15 years. It was developed to specifically address the ODH hazards at Fermilab and to minimize the potential risks.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals. There have been very few, if any, injuries or illnesses stemming from activities falling under the scope of Fermilab's ODH program since its initiation.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

This program is fully implemented, works well, and is a cost effective program. It is assumed that ODH is the only significant ES&H issue associated with "magnetic fields - quench effects." Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

105B. ODH - mechanical refrigeration systems

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ASHRAE - 15 - 1989 or later version

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 5035, Mechanical Refrigeration Systems, incorporates the above mentioned standard. This chapter effectively references the ASHRAE standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 (based on the external standard in #8) has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Adoption of the national standard in #11 (based on the external standard in #8) has made it easier to design and evaluate mechanical refrigeration rooms. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

106. Other mechanical hazards - general environmental control

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.94
29 CFR 1910.95
29 CFR 1910.96
29 CFR 1910.97
29 CFR 1926.50
29 CFR 1926.51
29 CFR 1910.52
29 CFR 1910.55
29 CFR 1926.56
29 CFR 1926.57
29 CFR 1926.59
29 CFR 1910 Subpart J

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

107. Other mechanical hazards - machine guarding

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910 Subpart O

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ANSI B15.1 (Power transmission apparatus)
ANSI O1.1 (Woodworking machinery)
ANSI B11 series (Metalworking - applicable sections)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 and the external standards in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues. The associated program includes annual inventories of machines and an on-going inspection program to verify compliance.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Adherence to machine guarding requirements has been well addressed at the Laboratory. Through an on-going process for verification all machines have been inspected, and inventoried. Machines built and purchased prior to the current legal requirements had guards designed and affixed. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

108. Other mechanical hazards - machinery and rotating parts

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910 Subpart F
29 CFR 1910 Subpart N
29 CFR 1910 Subpart O
29 CFR 1910 Subpart P

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ANSI B11 series (Metalworking - applicable portions)
ANSI B15.1 (Power transmission apparatus)
ANSI O1.1 (Woodworking machinery)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 and the external standards in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial issues. The associated program includes an on-going inspection program to verify compliance.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Machinery and rotating parts have been well addressed on an continuous basis where deficiencies arise. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

109A. Other mechanical hazards - medical and first aid
blood borne pathogens, lead, noise, asbestos, and respiratory protection

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.151 (medical services and first aid)
29 CFR 1910.1030 (Blood borne pathogens)
29 CFR 1910. 1025(j) (Lead)
29 CFR 1910.95(g) and (h) (Noise)
29 CFR 1910.1001(Asbestos)
29 CFR 1910.134 (b)(10) (Respiratory protection)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial standards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Implementation is on-going and effective. Personnel are Illinois licensed professionals with experience in occupational health. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

109B. Surveillance - tuberculosis

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

Il. Department of Public Health, DuPage County Dept. Public Health. CDC December 7,1990

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the standard in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial standards. Medical surveillance (administering the T. B. Mantoux skin tests) is available to our teachers at the Childrens' Center. These individuals are at a slightly higher risk of TB exposure due to international nature of children with whom they work.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

LSS/Medical Department Work Processes include medical surveillance for tuberculosis according to DuPage County Public Health Department. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

110. Other mechanical hazards - powered platforms

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910 Subpart F (Powered Platforms, Manlifts, and Vehicle Mounted Work Platforms)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

111A. Other mechanical hazards - pressurized tanks and containers

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR1910.169 (Air receivers)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ASME Pressure Vessel Code - Section VIII

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 5031, Pressure Vessels, has been written and in use for over 15 years. It has effectively minimized personnel exposure and equipment downtime from vessel failures.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals. There is a provision in 5031 that allows an exemption by the Director if certain portions of the Code requirements are not able to be met. This provision is important in our research environment and must be maintained in order for our mission to be met. The statutory requirement in #3 is limited to air compressors and is based on the 1968 edition of the standard in #8. Since Fermilab has a wider variety of vessels and gases to contend with, the standard in #8 is a much better and up to date "fit."

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The internal standards identified in #11 (based on the external standard in #8) have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

111B. Other mechanical hazards - pressurized lines and piping systems

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR1910.169 (Air receivers)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ASME/ANSI B31.1
ASME/ANSI B31.3
ASME/ANSI B31.5
ASME/ANSI B31.8

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 5031.1, Pressure Piping Systems, has been written and in use for over 15 years. It has effectively minimized personnel exposure and equipment downtime from piping failures.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals. There is a provision in 5031.1 that allows an exemption by the Director if certain portions of the Code requirements are not able to be met. This provision is important in our research environment and must be maintained in order for our mission to be met. The statutory requirement in #3 is limited to piping for fuel gases. Since Fermilab has a wider variety of piping applications, the standards in #8 are a much better and up to date "fit."

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The internal standards identified in #11 (based on the external standards in #8) have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

112. Other mechanical hazards - material grinding, cutting, and drilling

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.94
29 CFR 1910.212-213
29 CFR 1910.215
29 CFR 1910.243

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ANSI O1.1 (Woodworking machinery)
ANSI B11.8 (Drilling, milling, and boring machines)
ANSI B11.9 (Grinding machines)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 and the external standards in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards. The associated program includes provision of training and personal protective equipment.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Grinding, cutting, and drilling is performed frequently, through supervision, through the use of personal protective equipment made available to all employees, and training by supervision safe work practicies have been addressed. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

113. Other mechanical hazards (also fire) - means of egress

Focus group ☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

41 IAC - Fire Protection
100 IAC - Fire Prevention and Safety
71 IAC - Illinois Accessibility Code Subparts C-F
29 CFR 1910 Subpart E - Means of Egress
29 CFR 1910 Subpart L - Fire Protection
29 CFR 1926 Subpart F - Fire Protection and Prevention
Uniform Federal Accessibility Standards, Chapter 4, Accessible Elements and Spaces: Scope and Technical Requirements

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

Neither 29 CFR 1910 nor Title 41 of the IL Administrative Code incorporate the current versions of NFPA Standards 101 and 101A which regulate egress provisions. These inflexible, prescriptive versions do not allow alternative, equivalent or superior measures to achieve the ES&H goals in addressing thr deficiencies which are especially relevant to structures like accelerator tunnels where the prescription is not applicable.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

BOCA National Building Code
BOCA Fire Prevention Code
NFPA 101 & 101A current editions: Code for Safety to Life from Fire in Buildings and Structures

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because the standards selected are those applicable to all public and commercial structures.

13. Pick the basic implementing assumption from the list.

☒ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Compliance with the statutory prescription of providing a full exit every n-hundred feet throughout the beam line and accelerator enclosures would incur a very large cost for no discernible ES&H benefit. Since the enclosures are not designed for human occupancy and do not contain significant fire hazards, the full intent of the standards can be met using measures which provide levels of safety equivalent or superior to those prescribed by the dated requirement citations.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

114. Other mechanical hazards - moving vehicles, carts, and forklifts

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910 Subpart N
29 CFR 1910 Subpart F

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

115. Other mechanical hazards - special hand tools and power driven nail guns, etc.

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.243
29 CFR 1926.302

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards. The associated program includes provision of training, and eye, head, and face protction.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The use of power driven nail guns does not occur on a frequent basis. This type of equipment is usually kept in secure locations under the control of supervisors and or competent subcontractors. Implementation of safe work practices is enforced through internal oversight for Laboratory employees, and contractual agreements with subcontractors. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

116. Other mechanical hazards - work with roads and grounds equipment

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.132-133
29 CFR 1910.136
29 CFR 1910.212
29 CFR 1910.215
29 CFR 1910.241
29 CFR 1910.243-244
29 CFR 1928 Subpart C (Roll-over protective structures)
29 CFR 1928 Subpart D (Safety for agricultural equipment)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards. These requirements provide an equivalent level of safety as analogous requirements in 29 CFR 1928.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

It is assumed that compliance with the requirements given in #3 above are equivalent to those given in 29CFR1928. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

117. Other personal hazards - confined space

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.146-147

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

119. Other personal hazards - hazards requiring PPE
126. Other personal hazards - sharp edges

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910 Subpart I
29 CFR 1926 Subpart E
Other PPE requirements picked up in specfic OSHA standards

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

120. Other personal hazards - high noise levels

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.95

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirement in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

121. Other personnel hazards - housekeeping

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.25
29 CFR 1910.22
29 CFR 1910.106
29 CFR 1910.176
29 CFR 1910.141

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

122. Other personnel hazards - ice/walking surfaces
127. Other personnel hazards - slips, trips & falls
131. Other personnel hazards - work on wet surface

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.22
29 CFR 1926.25
29 CFR 1910.21
29 CFR 1910.23-30

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

123. Other personal hazards - lifting and carrying heavy objects

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 5084, Ergonomic Protection, was prepared as a consequence of the N&S standards process. It formalizes the ongoing program of medical reviews, training, and work practice evaluations associated with this issue.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The internal standards identified in #11 have proven to be both successful and cost-effective. When it is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

124. Other mechanical hazards - pinch points

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910 Subpart O
29 CFR 1910 Subpart P

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards. The associated program includes proper guarding and clearences.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Adherence to machine guarding requirements has been well addressed at the Laboratory. Through an on-going process for verification all machines have been inspected, and guarded. Machines built and purchased prior to the current legal requirements had guards designed and affixed. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

125. Other personal hazards - repetitive motion

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ANSI Z365 (draft)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 5084, Ergonomic Protection, was prepared as a consequence of the N&S standards process. This standard is based on successful and cost-effective internal past practices (rather than the draft ANSI standard cited in #8).

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the practices in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective. When the standard in #11 is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

129. Other personnel hazards - vacuum tanks

Focus group

☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual chapter 5033, Vacuum Vessel Safety, and a number of Fermilab Technical Memos have been written and in force for several years. These were written to specifically address the vacuum hazards at Fermilab and to minimize the potential risks.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The internal standards identified in #11 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

130. Other personal hazards - vibration

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ACGIH TLV for hand-arm segmental vibration

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Although there have been no recognized cases of vibration-related illness at Fermilab, exposures to vibrating equipment are fairly commonplace. The ACGIH TLV was selected because it serves as the generally-recognized consensus standard for industrial hygiene hazards which do not have a statutory requirement. This meets the management performance goal to use industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

In the opinion of the Fermilab subject-matter experts, compliance with the ACGIH TLV for vibration will prove to be both successful and cost-effective. The limits will be applied as guides in accordance with the cited standard. When this standard is approved in the N&S process, appropriate internal programs will be developed and implemented.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

132. Other personnel hazards - working at heights

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1926.104
29 CFR 1926.500-503
29 CFR 1910 Subpart D
29 CFR 1910.252(b)(1)(i)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

133. Radiation - radioactive contamination
138. Radiation - radioactivated soil
141A. Radiation - residual contamination

Focus group ☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.603
10 CFR 835.404
10 CFR 835.1101
10 CFR 835 Appendix D

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

The documentation requirements of 10 CFR 835.1101.(d) do not add value because they require excessive documentation of individual items released from Contamination Areas with commensurate requirements for training and recordkeeping. In addition they result in the collection of the documentation in an unusable format. Other measures, implemented with site-specific flexibility, can achieve a sufficient level of control in a more cost-effective manner. A request for an exemption from Subpart 10 CFR 835.1101(d) should be submitted to allow for a more reasonable, cost-effective documentation procedure.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

With the exemption as discussed above, implementation of the regulatory requirements provides a necessary and sufficient level of control of radioactive contamination in a manner consistent with general industry practice. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☒ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Program implementation is in progress by means of the policies of the Fermilab Radiological Control Manual. The cost-effectiveness would be improved if the exemption request described concerning 10 CFR 835.1101 is approved. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

134 /142. Radiation - special nuclear materials (SNM) and nuclear materials

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

Atomic Energy Act

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Section Specific Quality Implementation Plan (SQIP) RPS.8 constitutes an internal standard on nuclear material and special nuclear material based on DOE Orders 5633.3B, 5634.1B, 5632.1C, and 5660.1B.

12. Describe how the levels of risk and cost are consistent with management performance goals.

SQIP RPS.8 provides requirements mostly equivalent to those required by the NRC as applied to general industry. Thus the level of risk is consistent with management performance goals because mananagement expects to use industrial solutions for industrial issues and the level of cost and risk in this internal standard is consistent with that of industries under the NRC.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab has implemented successful and cost-effective programs to assure acceptable performance in the area of nuclear and special nuclear materials.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

135. Radiation - mixed waste
140. Radiation - radioactive waste

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

WHC-EP-0063 Rev (or equivalent that might receive FNAL wastes)
40 CFR 260-270
35 IAC 700-730 (also see hazardous waste regs.)

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

The State of Washington categorizes many forms of waste as mixed waste inconsistent with the Resource Conservation and Recovery Act (RCRA). This increases the cost significantly. Correction of this, however, would require revision of the State of Washington Administrative Code (WAC).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with performance goals except for the comment noted regarding the problems posed by provisions of the WAC. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The program is implemented by means of the Fermilab ES&H Manual Chapter 8020 and 8021, the Fermilab Radiological Control Manual, and the Fermilab Low Level Waste Certification Plan.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

136. Radiation - prompt radiation

Focus group ☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.501-502
10 CFR 835.601-603

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

10 CFR 835.603(c) specifies the lower threshold of a "Very High Radiation Area" to be 500 rads/hr. This threshold adds no value in controlling worker dose equivalent. It is too high, well above lethal or near-lethal levels. A request for an exemption lowering this threshold to some more workable operational value, perhaps 50 rads/hr, should be submitted. The requirement in 835.601(c) to use only DOE-approved signs adds no value when compared with commercially standard signs produced for , e.g., NRC licensees. Furthermore, because such signs have to be special-ordered, the costs are increased.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

With the approval of the exemptions discussed above, the level of risk remaining upon implementation of the regulatory requirement is consistent with and sufficient to meet management goals. (Also see issue "Safety Analysis Documentation" as it is related to prompt radiation issues.) The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue in that the regulations cited are essentially equivalent to the requirements imposed on general industry.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

This program is already implemented through Laboratory policies in the Fermilab Radiological Control Manual that also reflect various guidance documents developed by the accelerator radiation protection community including SLAC-327 "Health Physics Manual of Good Practices for Accelerator Facilities" and DOE Order 5480.25 and its guidance.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

137. Radiation - radioactive sources

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab Radiological Control Manual Articles (FRCM) 365 and FRCM Chapter 4 Part 3 constitute an internal standard. These Fermilab policies are based on and are consistent with DOE N5400.9.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The internal standard adequately protects against loss, damage, or unauthorized exposure due to radioactive sources. Such a standard is needed to assure proper usage and control of radioactive sources in a research environment where large numbers of such sources are used in a variety of ways as part of the physics research program.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact	☐ Minor negative impact
☐ Minor positive impact	☐ Major negative impact
☒ No net impact	

14. Describe the nature and status of implementation including cost-effectiveness.

The program has already been implemented by means of the cited portions of the Fermilab Radiological Control Manual. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

139. Radiation - radioactive liquids and gases

Focus group
☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.209
10 CFR 835.603
10 CFR 835.1101
10 CFR 835 Appendices A- C

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

See comment cited with respect to # 133.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab Radiological Control Manual Article 349 contains procedures needed to control radioactive liquids and gases in accelerator components. This constitutes an internal standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The regulation and the internal standard will adequately address the identified issue. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The program is presently implemented as set forth in the Fermilab Radiological Control Manual. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

141B. Radiation - residual activity
143. Radiation - storage and handling of radioactive materials

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.601-603
10 CFR 835.501-502
10 CFR 835 Appendix B
10 CFR 835 Appendix C

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab Radiological Control Manual Article 411.
DOE has approved Fermilab criteria for the release of material which is determined to be nonradioactive. These criteria are needed to augment the cited regulatory requirements which do not embody such release criteria. It is presently incorporated into Article 411 of the Fermilab Radiological Control Manual and thus exists as an internal standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The standards cited above, including the internal standard, provide a necessary and sufficient level of control of radioactive materials. Specifically, a net gain in cost-effectiveness is gained if the concept of the Radioactive Materials Management Area (RMMA), nowhere defined in regulations, is eliminated. At Fermilab RMMAs are redundant with other types of radiological areas defined by 10 CFR 835. The corresponding Fermilab policies on RMMAs add no value and their elimination will improve cost-effectiveness and simplify the radiological control program.

13. Pick the basic implementing assumption from the list.

☒ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The program to implement these standards is presently in place as expressed in the Fermilab Radiological Control Manual. A major improvement in cost-effectiveness can be realized by implementing the actions specified in 12. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

144. Thermal - battery bank and UPS equipment

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.178(g)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals including the use of industrial standards for industrial hazards. The associated program includes proper segregation, clearences, and training.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Segregated work areas for battery storage have been addressed at the Laboratory. Battery changing hazards is infrequent but through supervisory training well addressed. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

145. Thermal - cold work environments

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ACGIH TLV for cold stress

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the standard in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues. Although there have been few recognized cases of cold injury at Fermilab, winter exposures to are fairly commonplace. The ACGIH TLV was selected because it serves as the generally-recognized consensus standard for industrial hygiene hazards which do not have a statutory requirement.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Past application of the ACGIH TLV for cold stress has proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

146. Thermal - cryogens

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual chapters 5032 and 5032.1, Cryogenic System Review and Liquid Nitrogen Dewar Installation, respectively , are written and have been in force for several years. It was developed to specifically address the cryogenic hazards at Fermilab and to minimize the potential risks.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the internal standard in #11 has resulted in levels of ES&H and cost performance that are consistent with management goals. There have been very few, if any, injuries or illnesses stemming from activities falling under the scope of Fermilab's cryogenic system review program since its initiation.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The internal standards identified in #11 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

147. Thermal - high temperature equipment

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety ☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.107(c)(3)
29 CFR 1910.303(b)(1)(iv)
29 CFR 1910.305(j)(4)(iii)
29 CFR 1910.307
29 CFR 1910.335(a)(2)(ii)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues. The associated program includes proper covering, clearences, and training.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

High temperature equipment exists periodically and well address through segegration, clearance and equiping appropriate pesonnel with the proper person protective equipment and training. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☐ Identification Team

1. Issue(s)

148. Thermal - hot work environments

Focus group ☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

ACGIH TLV for heat stress

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the standard in #8 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Past application of the ACGIH TLV for heat stress has proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☒ Hazard analysis ☒ Identification Team

1. Issue(s)

152. Emergency preparedness - severe weather
029. Construction - high winds

Focus group

☒ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab Emergency Plan Sections 35A, 35B, and 41.
1.) Personnel Warning - Severe weather -- Fermilab Emergency Plan, 9/92, Section 35A
2.) Shelters - Severe weather -- Fermilab Emergency Plan, 9/92, Section 35B
3.) Warning Signals - Severe weather -- Fermilab Emergency Plan, 9/92, Section 41

12. Describe how the levels of risk and cost are consistent with management performance goals.

Fermilab's policy to ensure a safe environment for workers includes risk reduction of the hazards associated with severe weather. For Fermilab's geographic location the primary severe weather hazards are tornados, high winds, lightning, hail, and winter storms. Although the chances for tornado - the most severe hazard - occuring on site are real, the actual pobability is low; there has never been a tornado on site, though there were 10 tornados reported in the Fermilab area of Illinois in the 10 year period 1976 and 1985.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

It is a common best business practice fo prepare for weather related emergencies that may affect peronnel. Fermilab has provided outside tornado warning devices (sirens) which are being enhanced by a sitewide emergency warning system (SEWS) which functions inside facilities throughout the site where personnel are assembled when a tornado is imminent. The present program will continue to be implemented, upon approval of the proposed N&S internal standard. It is documented in the Fermilab Emergency Plan.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

153. Emergency preparedness - safeguards and security

Focus group
☒ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 860 (Trespass to land owned & leased by the U.S. government.)
18 U.S. Code Sections 841-848 (Use, or threat of use, of explosives; includes civil disorders.)
10 CFR 1046 Subpt. B, App A, Chpt X, Paragraphs H through I inclusive.
Illinois Compiled Statutes (ICS) Chapter 625 (State vehicle code)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Adherence to the cited legal requirements is sufficient in achieving a low level of risk that is consistent with management performance goals. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

No changes are anticipated in the emergency preparedness/response aspects of the safeguards and security program as presently implemented at Fermilab; this includes the following elements: the Site Security Plan; the (annual) Risk Assessments; the Fermilab Security Procedures; and employee identification badging. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

154. Emergency preparedness - generic

Focus group

☒ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.38 Employee emergency plans and fire prevention plans.
40 CFR 300.150 (EPA)
40 CFR 311.1 Worker Protection
E.O. 12356 of Aug. 1, 1982.
Title 5 U.S.Code 4103.
28 CFR 36 Sections 4.1.3 (9) and 302(b)(2).

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

NFPA 1561, Standard of Fire Dept. Incident Management System

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Adherence to the cited legal requirements and external standards is sufficient in achieving a low level of risk that is consistent with management performance goals. Adoption of NFPA 1561 is triggered by the Fermilab management's choice to utilize an in-house Fire Dept. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab's present extensive emergency management system includes hazard assessment, planning, preparedness, and response; an Incident Command System. It is documented in the Fermilab Emergency Plan. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

155. Env - underground storage tanks

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☒ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

RCRA, 42 USC 6901 et seq.
40 CFR 280
35 IAC 731 - 732
35 IAC 170
35 IAC 170 Subpart A

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The statutory requirements identified in #3 have proven to be both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

156. Other mechanical hazards - aviation

Focus group
☐ Emergency Management ☐ Fire Protection ☒ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

14 CFR 91 (General operating and flight rules)
SFAR 62 (Suspension of certain aircraft operations from the transponder...)
14 CFR 830 (Notification and reporting...accidents and incidents...)
14 CFR 135 (Air taxi operators and commercial operators)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Past adherance to the statutory requirements in #3 has resulted in levels of ES&H and cost performance that are consistent with management goals inlcuding the use of industrial standards for industrial issues. Given the low frequency of rental aircraft service usage (~few days per year) and small number of employees involved (~one per flight), it is reasonable for Fermilab to accept the cumulative level of risk associated with "industrial standards" (i.e., FAA compliance).

(SFAR = Special Federal Aviation Regulations)

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☒ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Reliance on FAA requirements would greatly simplify the process for securing aircraft services. This would result in a non-negligible time savings for all personnel involved in the procurement and approval process. Experience has demonstrated that this program is both successful and cost-effective.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

159. Emergency preparedness - hazardous materials

Focus group
☒ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.120 (q)(2) Elements of an Emergency Response Plan
Illinois Chemical Safety Act (as ammended by P.A. 85-1325, effective August 31, 1988)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Adherence to the cited legal requirements is sufficient in achieving a low level of risk that is consistent with management performance goals. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab's present extensive emergency management system includes hazard assessment, planning, preparedness, and response; an Incident Command System. It is documented in the Fermilab Emergency Plan. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

160. Emergency preparedness - toxicity in smoke or fumes

Focus group
☒ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.38 (evacuation, accountability during emergency)
29 CFR 1910.120 (emergency response)
29 CFR 1910.134 (respirators)
29 CFR 1910.1000 Subpart Z (Protective Exposure Limits)
41 IAC

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Adherence to the cited legal requirements is sufficient in achieving a low level of risk that is consistent with management performance goals. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab's present extensive emergency management system includes hazard assessment, planning, preparedness, and response; an Incident Command System. It is documented in the Fermilab Emergency Plan. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

161. Env - general environmental protection planning

Focus group

☐ Emergency Management	☐ Fire Protection	☐ Occupational Safety
☒ Environmental Protection	☐ Management & Oversight	☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

NEPA 42 USC 4321 et seq.
40 CFR 1500 - 1508
10 CFR 1021

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Continuation of the current program will provide an appropriate level of protection at an acceptable cost. The indicated statute and regulations are adequate to provide a planning program that assures the appropriate level of consideration for environmental impacts early in the project planning cycle.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

When the above standard is approved in the N&S process, internal implementation programs will be modified to be consistent with the standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

163. Occupational safety administrative requirements

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☒ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

5(a)(1) of the OSH Act (General duty clause)
29 CFR 1903.2 (Posting of notice...)
29 CFR 1903.13 (Imminent danger)
29 CFR 1904 (Recordkeeping and reporting occupational injuries and illnesses)
29 CFR 1910.20 (Access to employee exposure and medical records)
29 CFR 1977.4 (Persons prohibited from discriminating)
29 CFR 1977.12 (Exercise of any right afforded by the Act)

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

At least some of the requirements cited in #3 primarily support external oversight of Fermilab ES&H performance. Therefore, they are not directly useful to Fermilab management in limiting risks to employees. However, they are included here because they are viewed as essential, required components in the overall management of ES&H.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. These are industrial issues and the solutions chosen are industrial solutions.
5(a)(1) of the OSH Act (General duty clause) permits enforcement against "otherwise unregulated" hazards.
29CFR1903.2 (Posting of notice...) provides employees with info regarding their OSH rights and responsibilities.
29CFR1903.13 (Imminent danger) permits enforcement against imminent hazards.
29CFR1904 (Recordkeeping and reporting occupational injuries and illnesses) defines occupational injury/illness recording and reporting requirements.
29CFR1910.20 (Access to employee exposure and medical records) defines employee access and retention requirements for exposure and medical records.
29CFR1977.4 (Persons prohibited from discriminating) prohibits discrimination against employees presenting safety concerns.
29CFR1977.12 (Exercise of any right afforded by the Act) allows employees to refuse truly dangerous work assignments.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab has been subject to the requirements in #3 since DOE's adoption of OSHA standards and has implemented successful and cost-effective programs to assure acceptable performance.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

164. Occurrence Investigation and Reporting

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☒ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 3050 constitutes an internal standard on occurrence investigation and reporting based upon DOE 5000.3B. This standard defines the areas for which occurrence reporting is done including: 1) when laws or regulations require reporting of incidents and occurences outside the scope of normal operations, 2) when there is adverse public interest in an occurrence, 3) when a serious degradation in facility condition or personnel safety occurs, and 4) when the information is deemed to be, in the judgement of the Laboratory or the Contracting Officer, of significant value to other facilities in the DOE complex. Of necessity, occurrence reporting involves investigation of significant accidents, development, and tracking of related corrective actions.

12. Describe how the levels of risk and cost are consistent with management performance goals.

It is recognized that certain occurrences, as a management practice, should be reported to URA corporate headquarters and to DOE and that in some cases this information is potentially useful to similar facilities. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab has implemented successful and cost-effective programs to assure acceptable performance in the area of occurrence reporting.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

165. Radiation - radiological emergency response (see 154.)

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.1301
10 CFR 835.1302 (covers records and dose limits for), for more see Emerg. Prep. 154

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

10 CFR 835.1301 and .1302 directly address radiation emergencies. These requirements along with those for general emergency response standards (see emergency preparedness recommended standards) and general exposure control techniques covered elsewhere in 10 CFR 835 adequately address radiation emergencies. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The program is implemented in the Fermilab Radiological control Manual.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

166. Radiation - radiological training

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.901-903

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

The present requirements of 10 CFR 835 exclude from validity at DOE facilities all radiological worker worker training received at non- DOE-regulated facilities. Also, the requirements for the validation of radiological training only by written examination is excessive and adds limited value not matched to risk or cost. The management performance objectives could be met more effectively with an exception to these provisions of 10 CFR 835.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

With the exemption requested above, the training program in this area is sufficient to meet performance goals. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution. These training requirements are largely consistent with those imposed on NRC licensees.

13. Pick the basic implementing assumption from the list.

☒ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The program is implemented in the Fermilab Radiological Control Manual. A major positive impact in cost-effectiveness would be achieved if the above proposed exemption request were approved. This major positive impact is also a result of basing training on worker hazards at an accelerator rather than DOE training material. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

167. Radiation - monitoring and measurement of radiation

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.401-404
10 CFR 835.1101

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

Some technical and administrative provisions of the requirement to meet the Department of Energy Laboratory Accreditation Program [835.402(b)] do not add value. The management performance objectives could be met more effectively with an exemption to this provision of 10 CFR 835. The requirements of the National Voluntary Laboratory Accreditation Program (NVLAP) would provide adequate dosimetry and documentation for Fermilab operations. This would reduce cost by allowing the use of radiation dosimetry services provided by commercial vendors who meet the NVLAP standards and encourage more competitive bidding.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The performance requirements are adequately covered by compliance with the cited regulation. ANSI N323, N42.17, N322, N13.5, N319, N543, and N13.15 are already presently used as guidance documents in Fermilab's implementation of the regulation. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☒ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Adopting the NVLAP standard on personnel dosimetry will result in minor cost savings. The present requirements are implemented by Fermilab ES&H Section through Specific Quality Implementation Plan RPS.1. If the above exemption is approved, internal implementation programs may be modified to be compatible with revised requirements.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

168. Radiation - record keeping in occupational radiation protection

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.4
10 CFR 835.204
10 CFR 835.701-704
10 CFR 835.801
10 CFR 835.1101
10 CFR 835.1301
Privacy Act of 1974

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

1) The requirement in 10 CFR 835.702(c) to record cumulative dose equivalents since January 1989 adds no value but increases costs due to the need to collect such data. General industry practice is to collect this data for the worker's lifetime and dose not use the arbitrary date of January 1989 in this manner. An exemption request should be submitted to record only total cumulative lifetime dose equivalent.
2)The regulation of 10 CFR 835.1101. To create detailed records of removal of items from Contamination Areas adds no value because such records become irrelevant in a very short period of time but take extensive resources to collect. An exemption request should be submitted and approved to allow for a more reasonable and cost-effective protocol (see issue 133).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The recordkeeping requirements as specified above achieve management performance goals. The content of DOE Orders 1324.1A, .2A, and .5A have been used as guidance to develop Fermilab's present records management programs. With the exception of the particular requirements stated in box 5, these recordkeeping requirements are quite similar to those employed by general industry in the recording of radiation protection information. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☒ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☐ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

This program is presently implemented by the Fermilab Radiological Control Manual. The present program would be more cost effective if the proposed exemptions to requirements to 10 CFR 835 were made as above. This is particularly true if most of the content of DOE Orders 5000.3B and DOE 5484.1 are not adopted as Necessary and Sufficient Standards. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

169. Radiation - exposure control

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.101(c)
10 CFR 835.202-203
10 CFR 835. 206-208
10 CFR 835.1001-1003
10 CFR 835.1302

4. Are there any aspects of these necessary standard(s) which do not add value? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

The requirement in 10 CFR 835.101(c) to develop ALARA plans does not add value but adds significant cost. The "shalls" in 10 CFR 835.1001, and .1002 should be replaced with "shoulds" to be more consistent with the nature and goals of the ALARA process as promulgated by such bodies as ICRP and NCRP. An exemption request should be submitted along these lines.

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Meeting the requirements of the regulation adequately addresses this issue. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

The program is implemented in the Fermilab Radiological Control Manual. When the above standard is approved in the N&S process, internal implementation programs may be modified to be compatible with this standard.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

170. Radiation - QA in occupational radiation protection

Focus group

☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☒ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

10 CFR 835.102

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The cited regulation along with the Fermilab Self-Assessment Program Plan adequately address this issue. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

This program is implemented by means of the Fermilab Radiological Control Manual.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

171. safety analysis and documentation

Focus group
☐ Emergency Management ☐ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☒ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☐ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☐ YES ☒ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☐ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☒ YES ☐ NO

11. Describe nature and status of internal sufficient standard.

Fermilab ES&H Manual Chapter 2010 constitutes an internal standard on safety analy sis.

12. Describe how the levels of risk and cost are consistent with management performance goals.

The internal standard requires safety analysis and documentation at a level consistent with the goal that the hazards of laboratory activities will be assessed to the level necessary to assure achievement of management performance goals, one of which is to be in the upper quartile of accident/incident experience for comparable industrial situtations.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab has implemented successful and cost-effective programs to assure acceptable performance in the area of safety analysis. The scope and level of detail for safety analyses are determined on a case by case basis using a graded approach by the Director or designee. The specific approval mechanisms for all such documents are also determined by the Laboratory Director on a case by case basis.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

Issue origin ☐ Hazard analysis ☒ Identification Team

1. Issue(s)

172. Fire - emergency responder safety

Focus group
☐ Emergency Management ☒ Fire Protection ☐ Occupational Safety
☐ Environmental Protection ☐ Management & Oversight ☐ Radiation Protection

2. Is there a necessary standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 6.

3. Necessary standard(s)

29 CFR 1910.120 (emergency response)
29 CFR 1910.135 (occupational head protection)
29 CFR 1910.136 (occupational foot protection)
29 CFR 1910.156 (fire brigades)
41 IAC
Illinois Health and Safety Act

4. Are there any aspects of these necessary standard(s) which do not add value? ☐ YES ☒ NO

If yes, continue; otherwise skip to 6.

5. Description of non-value added aspects of necessary standard(s).

6. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with applicable necessary standards? ☐ YES ☒ NO

If no continue; otherwise skip to 12.

7. Is there a non-required external standard which applies to this issue? ☒ YES ☐ NO

If yes, continue; otherwise skip to 10.

FERMILAB IDENTIFICATION TEAM DOCUMENTATION

8. External sufficient standard citation

NFPA National Fire Codes (NFPA standards list)

9. Is the level of risk associated with the issue(s) consistent with management performance goals assuming compliance with the above (non-statutory) external standard? ☒ YES ☐ NO

If no continue; otherwise skip to 12.

10. Is an internal standard required to attain a level of risk consistent with management performance goals? ☐ YES ☒ NO

11. Describe nature and status of internal sufficient standard.

12. Describe how the levels of risk and cost are consistent with management performance goals.

Adherence to the cited legal requirements is sufficient in achieving a low level of risk that is consistent with management performance goals. The level of risk is consistent with management performance goals because management expects to use industrial solutions for industrial issues. This is an industrial issue and the solution chosen is an industrial solution.

13. Pick the basic implementing assumption from the list.

☐ Major positive impact ☐ Minor negative impact
☐ Minor positive impact ☐ Major negative impact
☒ No net impact

14. Describe the nature and status of implementation including cost-effectiveness.

Fermilab's present emergency response force (Fire Department) is currently implementing the above standards.

FERMILAB N&S STANDARDS PILOT
TABLE I - ISSUES AND STANDARDS SPREADSHEET

ISSUES | **STATUTORY REQUIREMENTS** / **INTERNAL STANDARDS** | **EXT STANDARDS** / **FG** | **IP**

Issue	Requirement	External	Internal	Issue Origin	FG
001. Bio - animals 004. Bio - insects 005. Bio - plants	29 CFR 1926.21(b)(4) 29 CFR 1910.132			OS	HA
002. Bio - bacteria (water) 151. Thermal - wet work environments	77 IAC 900 29 CFR 1910.141 29 CFR 1926.27 29 CFR 1926.51			OS	HA
003. Bio - bloodborne pathogens	29 CFR 1910.1030			OS	HA
006. Chem - acids, solvents, toxic agents and haz. liquids 009. Chem - chemical exposeures exceeding PEL. 013. Chem - nuisance dusts 016. Chem - use of toxic materials	29 CFR 1910.1200 29 CFR 1910.1000 40 CFR 355 40 CFR 370 40 CFR 372			OS	HA
007. Chem - carbon monoxide	29 CFR 1910.1200 29 CFR 1910.146 29 CFR 1910.1000			OS	HA
008. Chem - carcinogens	29 CFR 1910.1000-1200			OS	HA
010. Chem - chemical reactions	29 CFR 1910.1200 40 CFR 724.277			OS	HA
011. Chem - cutting and burning 015. Chem - toxicity in smoke or fumes 017. Chem - welding fumes	29 CFR 1910.1200 29 CFR 1910.1000 29 CFR 1910.146 29 CFR 1910.252-257			OS	HA
012. Chem - heavy metals such as lead	29 CFR 1910.1200 29 CFR 1910.1000 29 CFR 1910.1018 (inorganic arsenic) 29 CFR 1910.1025 (lead) 29 CFR 1926.62 (lead)			OS	HA
014. Chem - pesticides 055. Env - pesticide application and use	FIFRA (7 USC 136 et seq.) 40 CFR Subchapter E Illinois Pesticide Act, IRS Ch. 5, para. 801 et seq.; 45 IL. CS 60-1 Structural Pesticide Act, IRS Ch. 111 1/2, para. 2201 - 2225 29 CFR 1910.1200 29 CFR 1910.1000 35 IAC 302.302 35 IAC 602.110 35 IAC 652 77 IAC 830			EP OS	HA
018. Construction - compressed gasses	29 CFR 1926.350-352			OS	HA
019. Construction - demolition	29 CFR 1926.850 29 CFR 1926.58 (asbestos)			OS	HA
020. Construction - dewatering hazard	29 CFR 1926. 651(h)			OS	HA
021. Construction - earth cave-in and collapse	29 CFR 1926.651-652			OS	HA
022. Construction - earth moving equipment	29 CFR 1926.600-602			OS	HA
024. Construction - earth clearing	29 CFR 1926.604			OS	HA
025. Construction - fall hazards	29 CFR 1926.500-503 29 CFR 1926.104			OS	HA

FG (Focus Group) Key: EM = Emergency Management, EP = Environmental Protection, FP = Fire Protection, MO = Management & Oversight, OS = Occupational Safety, RP = Radiation Protection

IP (Identification Process) Key: HA = Hazard Analysis, IT = Identification Team

ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
027. Construction - hand tools	29 CFR 1926.300-301 29 CFR 1926.303 29 CFR 1926.305 29 CFR 1910.242			OS	HA
028. Construction - heavy equipment	29 CFR 1926.550 29 CFR 1926.600-602 29 CFR 1926.250 29 CFR 1926.251			OS	HA
030. Construction - ladder	29 CFR 1926.105 29 CFR 1926.1050-1053 29 CFR 1926.1060 29 CFR 1926.603 29 CFR 1926.550 29 CFR 1926.851 29 CFR 1926.951 29 CFR 1926.605 29 CFR 1926.451 29 CFR 1910.25-27 29 CFR 1910.31 29 CFR 1910.179 29 CFR 1910.333			OS	HA
032. Construction - materials handling	29 CFR 1926.250 29 CFR 1926.602			OS	HA
033. Construction - possibility of hitting utilities	29 CFR 1926.651(b)			OS	HA
034. Construction - scaffolding	29 CFR 1926.451			OS	HA
035. Construction - transportation 128. Other personnel hazards - traffic hazards	29 CFR 1926.600-601 29 CFR 1926.200-202 Illinois Compiled Statutes (ICS) Chapter 625 (State vehicle code)			OS	HA
036. Electricity - battery	29 CFR 1910.305(j)(7) (explosion prevention)			OS	HA
037. Electricity - exposed conductors / >50 volts 038. Electricity - high voltage	29 CFR 1910.147 (LOTO) 29 CFR 1910.332-333		Fermilab ES&H Manual Chapters 5040-5042, and 5044. In general, OSHA electrical safety standards are not a good match for electrical hazards in a research environment. As such Fermilab has developed internal standards which appear as chapters in its ES&H Manual: 5040 - Defines basic policies and responsibilities. TA provides practical guidance and interpretations of external standards. 5041 - Requirements for working on equipment that goes beyond OSHA. Includes LOTO and work on energized equipment. 5042 - Guidance for work on premises wiring including work permit for energized systems. 5044 - Guidance for exposed conductors in accelerator enclosures.	OS	HA IT

FG (Focus Group) Key: EM = Emergency Management, EP = Environmental Protection, FP = Fire Protection, MO = Management & Oversight, OS = Occupational Safety, RP = Radiation Protection

IP (Identification Process) Key: HA = Hazard Analysis, IT = Identification Team

ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
039. Electricity - high power 041. Electricity - high current conductors / <50 volts 042. Electricity - stored energy / capacitors 043. Electricity - stored energy / inductors	29 CFR 1910.147 (LOTO) 29 CFR 1910.332-333		Fermilab ES&H Manual Chapters 5040-5042, 5044, and 5046. In general, OSHA electrical safety standards are not a good match for electrical hazards in a research environment. As such Fermilab has developed internal standards which appear as chapters in its ES&H Manual: 5040 - Defines basic policies and responsibilities. TA provides practical guidance and interpretations of external standards. 5041 - Requirements for working on equipment that goes beyond OSHA. Includes LOTO and work on energized equipment. 5042 - Guidance for work on premises wiring including work permit for energized systems. 5044 - Guidance for exposed conductors in accelerator enclosures. 5046 - Guidance for low voltage high current power distribution systems.	OS	HA IT
040. Electricity - lightning	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 29 CFE 1910.307(b)(3) (Safe for hazardous [classified] location) 29 CFR 1910.308(e)(3)(i)b (Seperation between lead-in and lightning protection conductors) 29 CFR 1910.106(e)(6)(i) (Ignition source for flammable vapors) 29 CFR 1910.106(h)(7)(i)a (Ignition source for flammable vapors) 29 CFR 1926.152(i)(6) (Ignition source for flammable vapors)	BOCA National Building Code BOCA Fire Prevention Code National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing		FP	HA
044. Env - air emissions / nonrad	Clean Air Act Amendments 1990, 42 USC 7401 et seq. 40 CFR 50 40 CFR 52 Subpart O 40 CFR 58 40 CFR 60-61 40 CFR 63 40 CFR 80 40 CFR 82 40 CFR 88 Subpart C 40 CFR 264-265 35 IAC Subtitle B and permits pursuant			EP	HA
045. Env - air emissions / rad	Clean Air Act Amendments 1990, 42 USC 7401 et seq. 40 CFR 61 Subpart H 35 IAC Subtitle B and permits pursuant			EP	HA
046. Env - cultural resources	National Historic Preservation Act of 1966 [amended] Archaeological and Historic Preservation Act of 1974 Archaeological Resources Protection Act of 1979 [amended] Native American Graves Protection and Repatriation Act of 1990 36 CFR 65 36 CFR 78-79 36 CFR 800 43 CFR 7			EP	HA

FG (Focus Group) Key: EM = Emergency Management, EP = Environmental Protection, FP = Fire Protection, MO = Management & Oversight, OS = Occupational Safety, RP = Radiation Protection

IP (Identification Process) Key: HA = Hazard Analysis, IT = Identification Team

ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
047. Env - asbestos	29 CFR 1910.1001 29 CFR 1926.58 TSCA, 15 USC 2601 et seq. 40 CFR 61 Subpart M 40 CFR 763			EP OS	HA
048. Env - drinking water quality	SDWA, 42 USC 300f et seq. 40 CFR 141-142 40 CFR 144 40 CFR 146 40 CFR 147 Subpart O Illinois Ground Water Protection Act, IRS 1989 Chapter 111 1/2 35 IAC Subtitle F Chapter I 77 IAC 890 77 IAC 900 77 IAC 920 77 IAC 925 DuPage County Health Department Private Water Supply Ordinance OH0002-90 Ch. 34 Kane County Ordinance 91-101 Water Well Code	Recommended Standards for Water Works, Great Lakes Upper Mississippi R. Bd. of State Public Health & Environmental Managers (1992) Handbook for Sampling & Sample Preservation of Water and Wastewater, EPA-600/4-82-029		EP	HA
049. Env - endangered species	Endangered Species Act 16 USC 1531 et seq. 50 CFR 17 Illinois Endangered Species Protection Act, IRS 1991, Ch. 8, par. 331 et seq. 17 IAC 525 and permit pursuant			EP	HA
050. Env - groundwater protection	Safe Drinking Water Act, 42 USC Section 300f et seq. 40 CFR 141-142 40 CFR 144 40 CFR 146 40 CFR 147 Subpart O Illinois Ground Water Protection Act, IRS 1989 Chapter 111 1/2 35 IAC Subtitle F, Chapter I; 730 - 732 77 IAC 920 DuPage County Health Department Private Water Supply Ordinance (OH-0002-90, Ch.34, DuPage County Code) Kane County Health Department Ordinance 91-101 Water Well Code			EP	HA
051. Env - hazardous waste	RCRA, 42 USC 6901 et seq. 40 CFR 260- 270 RCRA Part B Permit (Illinois Log #131), including Emergency Contingency plan 29 CFR 1910.120 35 IAC Subtitle G Federal Facility Compliance Act			EP	HA

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
052. Env - offsite radiation protection / penetrating		DOE Order 5400.5 Derived Concentration Guide Table and dose limits to the public (Chapter 2, section 1; Chapter 3)		EP	HA IT
053. Env - ozone depleting substances	Clean Air Act Amendments 1990, 42 USC 7401 et seq. 40 CFR 82 E.O. 12843			EP	HA
054. Env - PCBs	TSCA, 15 USC 2601 et seq. 40 CFR 268 40 CFR 302 40 CFR 761 29 CFR 1910.1000 RCRA Part B permit 35 IAC 728 35 IAC 808-809			EP	HA
056. Env - regulated chemical waste / non-hazardous	40 CFR 259 35 IAC 807- 810 35 IAC 700 Subpart F E.O. 12580 E.O. 12856 E.O. 12873			EP	HA IT
058. Env - sanitary and sewer discharges	Clean Water Act, 33 USC 1251 et seq. 40 CFR 116-117 40 CFR 121-125 (exc. 123) 35 IAC Subtitle C and pre-treatment permits pursuant Batavia Code of Regulations, City Ordinance, Section 8-3-10-3 City Code of Warrenville, IL Title 7, Chapter 4	Standard Methods for the Examination of Water and Wastewater, 18th Ed., APHA (1992) DOE 5400.5 (Chapter 2, Section 3)		EP	HA
059. Env - solid waste management units and inactive waste sites	RCRA, 42 USC 6901 et seq. RCRA Part B permit 35 IAC 620 35 IAC 724 35 IAC 815 CERCLA/SARA 42 USC 6901 et seq. 40 CFR 300 40 CFR 302 40 CFR 355 40 CFR 370 40 CFR 372			EP	HA

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
060. Env - surface water	Clean Water Act, 33 USC 1251 et seq. 40 CFR 110 -125 (exc. 123) 40 CFR 131 40 CFR 136 40 CFR 230 40 CFR 401 - 403 33 CFR 320 - 323 33 CFR 328 - 330. 35 IAC Subtitle C 92 IAC 700 and all permits pursuant 92 IAC 704 and all permits pursuant 92 IAC 708 and all permits pursuant E.O. 10988 E.O. 10990 10 CFR 1022	Standards and Specifications for Soil Erosion and Sediment Control, 10/87, IEPA 87-102 DOE Order 5400.5 (Ch. 2, sec. 1;Ch. 3)		EP	HA
061. Env - transformer oil / non-PCB	Clean Water Act, 33 USC 1251 et seq. 40 CFR 110 40 CFR 112 40 CFR 300 - 302 29 CFR 1910.106 35 IAC 808 - 809			EP	HA
062. Fire - boiler, heating systems, and (commercial) appliances	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 120 IAC - Boiler and Pressure Vessels 29 CFR 1910 Subpart E - Means of Egress 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1910 Subpart S - Electrical 29 CFR 1926 Subpart F - Fire Protection and Prevention 29 CFR 1926 Subpart K - Electrical	BOCA National Building Code BOCA Fire Prevention Code National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing		FP	HA
063. Fire - cigarette smoking	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 29 CFR 1910 Subpart H - Hazardous Materials 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1926 Subpart F - Fire Protection and Prevention EPA Air Quality Stds.			FP	HA
064. Fire - electrical	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 29 CFR 1910 Subpart E - Means of Egress 29 CFR 1910 Subpart H - Hazardous Materials; 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1910 Subpart S - Electrical 29 CFR 1926 Subpart F - Fire Protection and Prevention 29 CFR 1926 Subpart K - Electrical	BOCA National Building Code BOCA Fire Prevention Code National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing	Fermilab ES&H Manual Chapters 5043, Management and use of cable tray systems, and 5046, Low-Voltage, High-Current Power Distribution Systems. These standards require proper installation of cable trays used for electrical conductors and overcurrent protection for all current carrying conductors in high-current, low-voltage power distribution systems. They have been fully implemented and integrated into management and oversight practices.	FP	HA

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
065. Fire - flammable liquids and gases	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety; 160 IAC - Storage, Transportation, Sale and Use of Gasoline and Volatrile Oils: Rules Relating to General Storage 170 IAC - Storage, Transportation, Sale and Use of Petroleum and Other Regulated Substances 180 IAC - Storage Transportaition, Sale and Use of Volatile Oils 29 IAC - Emergency Services, Disasters, and Civil Defense, Chapter I: Emergency Services and Disaster Agency, Subchapter f: Chemical Safety IL Public Act 84-852, Illinois Chemical Safety Act 29 CFR 1910 Subpart E - Means of Egress 29 CFR 1910 Subpart H - Hazardous Materials 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1910 Subpart S - Electrical 29 CFR 1926 Subpart F - Fire Protection and Prevention 29 CFR 1926 Subpart K - Electrical	BOCA National Building Code BOCA Fire Prevention Code National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing	Fermilab ES&H Manual, Chapter 6020.3, Storage and Use of Flammable Gases at Physics Experiments This standard, which governs use of flammable gases in detectors, provides a graded approach based on the inventory of flammable gas involved. The measures and precautions called out are needed because particle detectors cannot be built to comply with the electrical guidelines from the National Electrical Code, NFPA70, Article 501 for NEC Class 1, Group D, Division 2 installations. This standard has been fully implemented and integrated into management and oversight practices.	FP	HA
066. Fire - mobile structures	NOTE: There are no specific legal requirements identified as applicable solely to mobile structures. However, the entirety of OSHA and Illinois Law is applicable to the occupancy and specific use of the structure and contents.	BOCA National Building Code BOCA Fire Prevention Code National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing		FP	HA
067. Fire - special hazardous materials	29 IAC - Emergency Services, Disasters, and Civil Defense, Chapter I: Emergency Services and Disaster Agency, Subchapter f: Chemical Safety IL Public Act 84-852, Illinois Chemical Safety Act 29 CFR 1910 Subpart E - Means of Egress; 29 CFR 1910 Subpart H - Hazardous Materials 29 CFR 1910 Subpart I - Personal Protective Equipment 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1910 Subpart S - Electrical 29 CFR 1926 Subpart F - Fire Protection and Prevention 29 CFR 1926 Subpart Z - Toxic and Hazardous Substances 41 IAC - Fire Protection 140 IAC - Policy and Procedures Manual for Fire Protection Personnel	BOCA National Building Code BOCA Fire Prevention Code National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing	There is always the possibility of introduction of unique one-of-a-kind materials by a physics experiment in order to achieve its research objectives. By making this entry, Fermilab acknowledges its responsibility to develop adequate internal standards for those cases where consensus external standards are not available or not applicable. Individual hazardous material usages may require specific implementation standards to provide for safe usage; this level of risk acknowledgement is to verify the commitment to do so.	FP	HA IT

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
067B. Fire - hydrogen targets			Fermilab ES&H Manual Chapter 5032.2, Guidelines For the Design, Fabrication, Testing, Installation, and Operation of LH2 Targets Fermilab has developed these guidelines to address the hazards associated with these targets. The latest version of this document has been in existence and use for over 6 years.	OS	IT
068. Fire - special occupancies / accelerator and beam line enclosures	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 29 CFR 1910 Subpart E - Means of Egress 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1910 Subpart S - Electrical 29 CFR 1926 Subpart F - Fire Protection and Prevention 29 CFR 1926 Subpart K - Electrical	BOCA National Building Code BOCA Fire Prevention Code NFPA 101 & 101A current editions National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing	Fermilab ES&H Manual Chapter 5043, Management and use of cable tray systems. This standard requires proper installation of cable trays used for electrical conductors. It has been fully implemented and integrated into management and oversight practices.	FP	HA IT
069. Fire - spontaneous combustion	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 29 CFR 1910 Subpart E - Means of Egress 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1926 Subpart F - Fire Protection and Prevention			FP	HA
070. Fire - stationary combustion engines		NFPA 37: Standards for the Installation and Use of Stationary Combustion Engines and Gas Turbines.		FP	HA
071. Fire - storage of combustibles	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 29 IAC - Emergency Services, Disasters, and Civil Defense, Chapter I: Emergency Services and Disaster Agency, Subchapter f: Chemical Safety IL Public Act 84-852, Illinois Chemical Safety Act 29 CFR 1910 Subpart E - Means of Egress 29 CFR 1910 Subpart H - Hazardous Materials 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1910 Subpart S - Electrical 29 CFR 1926 Subpart F - Fire Protection and Prevention 29 CFR 1926 Subpart Z - Toxic and Hazardous Substances	BOCA National Building Code BOCA Fire Prevention Code National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing		FP	HA

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
072. Fire - transportation / rail, vehicle, and fueling 077B. HazMat transport - fire/explostion / onsite	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 160 IAC - Storage, Transportation, Sale and Use of Gasoline and Volatrile Oils: Rules Relating to General Storage 170 IAC - Storage, Transportation, Sale and Use of Petroleum and Other Regulated Substances 180 IAC - Storage Transportaition, Sale and Use of Volatile Oils 49 CFR 383.23 Commercial Drivers License 49 CFR 393.95 Emergency Equipment on Vehicles 49 CFR 397.11 Fires 49 CFR 397.13 Smoking 49 CFR 397.15 Fueling 49 CFR177.848 C (Segregation table for hazardous materials)	BOCA National Building Code BOCA Fire Prevention Code National Fire Protection Association National Fire Codes (NFPA Standards List) UL Listing		FP	HA IT
073. Fire - welding near combustibles 074. Fire - spark producing tools near combustibles	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1910 Subpart Q - Welding, Cutting and Brazing 29 CFR 1926 Subpart F - Fire Protection and Prevention	BOCA Fire Prevention Code NFPA 1: Fire Prevention Code NFPA 51: Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes NFPA 51B: Standard for Fire Protection in Use of Cutting and Welding Processes.	Fermilab ES&H Manual Chapter 6020.3, Storage and Use of Flammable Gases at Physics Experiments. This standard calls for a minimum separation between welding, burning, brazing and grinding operations and physics experiment apparatus using flammable gases. If the minimum separation is not practical, the flammable gas inventory must first be removed from the apparatus before operations are permitted. This requirement has been integrated into the welding, burning and brazing permit control process.	FP	HA
075A. HazMat transport - bad road conditions / offsite	49 CFR 392.14 (Hazardous conditions; extreme caution)			OS	HA IT
075B. HazMat transport - bad road conditions / onsite		49 CFR 392.14 (Hazardous conditions; extreme caution - not required onsite)		OS	HA IT

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
076A. HazMat transport - emergency response and spill clean up / offsite 081A. HazMat transport - spills and chemical releases /offsite	49 CFR 172.600G (Emergency response information) 49 CFR 171.15 (Immediate notice of certain hazardous material incidents) 40 CFR 112 (Oil pollution prevention) 40 CFR 761 (PCB spill cleanup policy) 40 CFR 302 (Designation, reportable quantities & notification) 40 CFR 355 (Emergency planning & notification)			EP OS	HA IT
076B. HazMat transport - emergency response and spill cleanup / onsite 081B. HazMat transport - spills and chemical Releases / onsite	29 CFR 1910.120 (Hazardous waste operations & emergency response) 40 CFR 112 (Oil pollution prevention) 40CFR 761 (PCB spill cleanup policy) 40 CFR 302 (Designation, reportable quantities & notification) 40 CFR 355 (Emergency planning & notification)			EP OS	HA IT
077A. HazMat transport - fire and explostion / offsite	49 CFR 171.15 (Immediate notification of certain hazardous materials incidents) 49 CFR 172.600G (Emergency response information)			OS	HA IT
078A. HazMat transport - loading and unloading / offsite	49 CFR 177.834B (Loading & unloading) 29 CFR 1910.176 (Handling materials - general) 29 CFR 1910.178 (Powered industrial trucks)			OS	IT HA
078B. HazMat transport - loading and unloading / onsite 095B. Material handling - transportation / onsite	29 CFR 1910.176 (Handling materials - general) 29 CFR 1910.178 (Powered industrial trucks)	49 CFR 177.848C (Segregation table for hazardous materials - not required onsite)		OS	HA IT
079A. HazMat transport - packaging hazardous materials / offsite	49 CFR 178.500L Subchapter C (Specifications for packagings)			OS	HA IT

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
079B. HazMat transport - packaging hazardous materials / onsite		49 CFR 173.24(e)(1-2) (Chemical compatibility for single packagings) 49 CFR 173.24(e)(4)(i-iii) (Chemical compatibility for multiple packagings) 49 CFR 173.24a (a)(1) (Positioning of inner receptacles) 49 CFR 173.24a (a)(3-4) (Packing for inner receptacles) 49 CFR 177.848C (Segregation table for hazardous materials) 49 CFR 178.500L Subchapter C (Segregation table for hazardous materials)		OS	HA IT
079C. HazMat transport - transportation of radioactive materials	49 CFR 100-199 and references			RP	IT HA
080A. HazMat transport - prolonged periods of driving / offsite	49 CFR 395 (Maximum driving and on-duty time)			OS	HA IT
080B. HazMat transport - prolonged periods of driving / onsite		49 CFR 395.3 (Maximum driving & on-duty time - not required onsite)		OS	HA IT

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
081C. Hazardous material transport - spills and chemical releases	CERCLA/SARA 42 USC 6901 et seq. 40 CFR 116 - 117 40 CFR 300 40 CFR 302 40 CFR 311 40 CFR 355 49 CFR 172 Subpart G 35 IAC Subchapter H, Subpart D 35 IAC 808- 809			EP	HA
082. Magnetic fields - bioelectric implants 083. Magnetic fields - fringe fields 084. Magnetic fields - high magnetic fields		ACGIH TLV for static magnetic fields		OS	HA
086. Material handling - chemical spills	29 CFR 1910.120 29 CFR 1910.1200 29 CFR 1910.176			OS	HA
087. Material handling - cranes and hoists	29 CFR 1910.179 (Overhead and gantry cranes) 29 CFR 1910.180 (Crawler locomotive and truck cranes)	ANSI B30.20 - 1990 (Overhead and gantry cranes) ANSI B30.5 - 1989 (Mobile and locomotive cranes)		OS	HA
088. Material handling - elevators used for hazardous material			Fermilab ES&H Manual chapter 5032.3, Transporting Gases in Building Elevators, has been written and in force for several years. It was written to specifically address the hazards associated with transporting cryogenic dewars and room temperature gas cylinders in Wilson Hall elevators and to minimize the potential risks.	OS	HA
089. Material handling - falling objects	29 CFR 1910 Subpart I (PPE) 29 CFR1910 Subpart N (Materials Handling and Storage)			OS	HA
090. Material handling - forklift operation	29 CFR 1910.178			OS	HA
091. Material handling - hazardous tools equipment and machinery	29 CFR 1910.94 29 CFR 1910.106 29 CFR 1910.108 29 CFR 1910.215 29 CFR 1910.231 29 CFR 1910.242-244			OS	HA
092. Material handling - lifting objects	29 CFR 1910.184 (Slings)	ASME B30.20 - 1993 (Below the hook lifting devices) ANSI B30.9 - 1990 (Slings) ANSI B30.10 - 1993 (Hooks)		OS	HA
093. Material handling - moving objects	29 CFR 1910 Subpart N (Materials Handling and Storage)			OS	HA
094. Material handling - storage and handling of toxic materials.	29 CFR 1910.176 29 CFR 1910.1200			OS	HA
095A. Material handling - transportation / offsite	49 CFR 177.834 Subpart B 29 CFR 1910.176 29 CFR 1910.178			OS	HA IT

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
096. NIR - intense light sources	29 CFR 1910.133 29 CFR 1926.102 (Eye and face protection)			OS	HA
097. NIR - lasers	29 CFR 1926.54 (Nonionizing radiation) 29 CFR 1910.269(w)(8) (Electric power...)	ANSI Z136.1-1993 (Lasers)		OS	HA
098. NIR - radiofrequency radiation	29 CFR 1910.97 (Nonionizing radiation) 29 CFR 1926.54 (Nonionizing radiation) 29 CFR 1910.268(p) (Telecommunications) 29 CFR 1910.269(s) (Electric power...)	ACGIH TLV for radiofrequency/microwave radiation		OS	HA
099. NIR - ultraviolet light 149. Thermal - ultraviolet radiation / sun exposure	29 CFR 1910.133(a)(5) (Eye and face protection) 29 CFR 1910 Subpart I Appendix B (PPE) 29 CFR 1910.252(b) (Welding, cutting, brazing) 29 CFR 1926.102(b)(1) (Eye and face protection) 29 CFR 1926.353(d) (Ventilation and protection in welding, cutting, brazing)	ACGIH TLV for ultraviolet radiation		OS	HA
101. ODH - cryogenic gas or liquid leaks 102. ODH - cryogenic spills 103. ODH - gaseous argon or other detector gas 104. ODH - leak of supplied gas 085. Magnetic fields - quench effects			Fermilab ES&H Manual chapter 5064, Oxygen Deficiency Hazard, has been in force for over 15 years. It was developed to specifically address the ODH hazards at Fermilab and to minimize the potential risks.	OS	HA
105B. ODH - mechanical refrigeration systems		ASHRAE - 15 - 1989 or later version	Fermilab ES&H Manual Chapter 5035, Mechanical Refrigeration Systems, incorporates the above mentioned standard. This chapter effectively references the ASHRAE standard.	OS	IT
106. Other mechanical hazards - general environmental control	29 CFR 1910.94 29 CFR 1910.95 29 CFR 1910.96 29 CFR 1910.97 29 CFR 1926.50 29 CFR 1926.51 29 CFR 1910.52 29 CFR 1910.55 29 CFR 1926.56 29 CFR 1926.57 29 CFR 1926.59 29 CFR 1910 Subpart J			OS	HA
107. Other mechanical hazards - machine guarding	29 CFR 1910 Subpart O	ANSI B15.1 (Power transmission apparatus) ANSI O1.1 (Woodworking machinery) ANSI B11 series (Metalworking - applicable sections)		OS	HA

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
108. Other mechanical hazards - machinery and rotating parts	29 CFR 1910 Subpart F 29 CFR 1910 Subpart N 29 CFR 1910 Subpart O 29 CFR 1910 Subpart P	ANSI B11 series (Metalworking - applicable portions) ANSI B15.1 (Power transmission apparatus) ANSI O1.1 (Woodworking machinery)		OS	HA
109A. Other mechanical hazards - medical and first aid blood borne pathogens, lead, noise, asbestos, and respiratory protection	29 CFR 1910.151 (medical services and first aid) 29 CFR 1910.1030 (Blood borne pathogens) 29 CFR 1910. 1025(j) (Lead) 29 CFR 1910.95(g) and (h) (Noise) 29 CFR 1910.1001(Asbestos) 29 CFR 1910.134 (b)(10) (Respiratory protection)			OS	HA
109B. Surveillance - tuberculosis		II. Department of Public Health, DuPage County Dept. Public Health. CDC December 7,1990		OS	HA IT
110. Other mechanical hazards - powered platforms	29 CFR 1910 Subpart F (Powered Platforms, Manlifts, and Vehicle Mounted Work Platforms)			OS	HA
111A. Other mechanical hazards - pressurized tanks and containers	29 CFR1910.169 (Air receivers)	ASME Pressure Vessel Code - Section VIII	Fermilab ES&H Manual Chapter 5031, Pressure Vessels, has been written and in use for over 15 years. It has effectively minimized personnel exposure and equipment downtime from vessel failures.	OS	HA IT
111B. Other mechanical hazards - pressurized lines and piping systems	29 CFR1910.169 (Air receivers)	ASME/ANSI B31.1 ASME/ANSI B31.3 ASME/ANSI B31.5 ASME/ANSI B31.8	Fermilab ES&H Manual Chapter 5031.1, Pressure Piping Systems, has been written and in use for over 15 years. It has effectively minimized personnel exposure and equipment downtime from piping failures.	OS	HA IT
112. Other mechanical hazards - material grinding, cutting, and drilling	29 CFR 1910.94 29 CFR 1910.212-213 29 CFR 1910.215 29 CFR 1910.243	ANSI O1.1 (Woodworking machinery) ANSI B11.8 (Drilling, milling, and boring machines) ANSI B11.9 (Grinding machines)		OS	HA

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
113. Other mechanical hazards (also fire) - means of egress	41 IAC - Fire Protection 100 IAC - Fire Prevention and Safety 71 IAC - Illinois Accessibility Code Subparts C-F 29 CFR 1910 Subpart E - Means of Egress 29 CFR 1910 Subpart L - Fire Protection 29 CFR 1926 Subpart F - Fire Protection and Prevention Uniform Federal Accessibility Standards, Chapter 4, Accessible Elements and Spaces: Scope and Technical Requirements	BOCA National Building Code BOCA Fire Prevention Code NFPA 101 & 101A current editions: Code for Safety to Life from Fire in Buildings and Structures		FP	HA
114. Other mechanical hazards - moving vehicles, carts, and forklifts	29 CFR 1910 Subpart N 29 CFR 1910 Subpart F			OS	HA
115. Other mechanical hazards - special hand tools and power driven nail guns, etc.	29 CFR 1910.243 29 CFR 1926.302			OS	HA
116. Other mechanical hazards - work with roads and grounds equipment	29 CFR 1910.132-133 29 CFR 1910.136 29 CFR 1910.212 29 CFR 1910.215 29 CFR 1910.241 29 CFR 1910.243-244 29 CFR 1928 Subpart C (Roll-over protective structures) 29 CFR 1928 Subpart D (Safety for agricultural equipment)			OS	HA
117. Other personal hazards - confined space	29 CFR 1910.146-147			OS	HA
119. Other personal hazards - hazards requiring PPE 126. Other personal hazards - sharp edges	29 CFR 1910 Subpart I 29 CFR 1926 Subpart E Other PPE requirements picked up in specfic OSHA standards			OS	HA
120. Other personal hazards - high noise levels	29 CFR 1910.95			OS	HA
121. Other personnel hazards - housekeeping	29 CFR 1926.25 29 CFR 1910.22 29 CFR 1910.106 29 CFR 1910.176 29 CFR 1910.141			OS	HA
122. Other personnel hazards - ice/walking surfaces 127. Other personnel hazards - slips, trips & falls 131. Other personnel hazards - work on wet surface	29 CFR 1910.22 29 CFR 1926.25 29 CFR 1910.21 29 CFR 1910.23-30			OS	HA
123. Other personal hazards - lifting and carrying heavy objects			Fermilab ES&H Manual Chapter 5084, Ergonomic Protection, was prepared as a consequence of the N&S standards process. It formalizes the ongoing program of medical reviews, training, and work practice evaluations associated with this issue.	OS	HA
124. Other mechanical hazards - pinch points	29 CFR 1910 Subpart O 29 CFR 1910 Subpart P			OS	IT

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
125. Other personal hazards - repetitive motion		ANSI Z365 (draft)	Fermilab ES&H Manual Chapter 5084, Ergonomic Protection, was prepared as a consequence of the N&S standards process. This standard is based on successful and cost-effective internal past practices (rather than the draft ANSI standard cited in #8).	OS	HA
129. Other personnel hazards - vacuum tanks			Fermilab ES&H Manual chapter 5033, Vacuum Vessel Safety, and a number of Fermilab Technical Memos have been written and in force for several years. These were written to specifically address the vacuum hazards at Fermilab and to minimize the potential risks.	OS	HA
130. Other personal hazards - vibration		ACGIH TLV for hand-arm segmental vibration		OS	HA
132. Other personnel hazards - working at heights	29 CFR 1926.104 29 CFR 1926.500-503 29 CFR 1910 Subpart D 29 CFR 1910.252(b)(1)(i)			OS	HA
133. Radiation - radioactive contamination 138. Radiation - radioactivated soil 141A. Radiation - residual contamination	10 CFR 835.603 10 CFR 835.404 10 CFR 835.1101 10 CFR 835 Appendix D			RP	HA
134/142. Radiation - special nuclear materials (SNM) and nuclear materials	Atomic Energy Act		Presently the Fermilab ES&H Section Specific Quality Implementation Plan (SQIP) RPS.8 constitutes an internal standard on nuclear material and special nuclear material based on DOE Orders 5633.3B, 5634.1B, 5632.1C, and 5660.1B. Upon approval of the N&S Set of standards, this internal standard will be improved to be consistent with management performance goals.	RP	HA IT
135. Radiation - mixed waste 140. Radiation - radioactive waste	WHC-EP-0063 Rev (or equivalent that might receive FNAL wastes) 40 CFR 260-270 35 IAC 700-730 (also see hazardous waste regs.)			RP	HA
136. Radiation - prompt radiation	10 CFR 835.501-502 10 CFR 835.601-603			RP	HA
137. Radiation - radioactive sources			Fermilab Radiological Control Manual Articles (FRCM) 365 and FRCM Chapter 4 Part 3 constitute an internal standard. These Fermilab policies are based on and are consistent with DOE N5400.9.	RP	HA IT
139. Radiation - radioactive liquids and gases	10 CFR 835.209 10 CFR 835.603 10 CFR 835.1101 10 CFR 835 Appendices A- C		Fermilab Radiological Control Manual Article 349 contains procedures needed to control radioactive liquids and gases in accelerator components. This constitutes an internal standard.	RP	HA

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
141B. Radiation - residual activity 143. Radiation - storage and handling of radioactive materials	10 CFR 835.601-603 10 CFR 835.501-502 10 CFR 835 Appendix B 10 CFR 835 Appendix C		Fermilab Radiological Control Manual Article 411. DOE has approved Fermilab criteria for the release of material which is determined to be nonradioactive. These criteria are needed to augment the cited regulatory requirements which do not embody such release criteria. It is presently incorporated into Article 411 of the Fermilab Radiological Control Manual and thus exists as an internal standard.	RP	HA
144. Thermal - battery bank and UPS equipment	29 CFR 1910.178(g)			OS	HA
145. Thermal - cold work environments		ACGIH TLV for cold stress		OS	HA
146. Thermal - cryogens			Fermilab ES&H Manual chapters 5032 and 5032.1, Cryogenic System Review and Liquid Nitrogen Dewar Installation, respectively , are written and have been in force for several years. It was developed to specifically address the cryogenic hazards at Fermilab and to minimize the potential risks.	OS	HA
147. Thermal - high temperature equipment	29 CFR 1910.107(c)(3) 29 CFR 1910.303(b)(1)(iv) 29 CFR 1910.305(j)(4)(iii) 29 CFR 1910.307 29 CFR 1910.335(a)(2)(ii)			OS	HA
148. Thermal - hot work environments		ACGIH TLV for heat stress		OS	HA
152. Emergency preparedness - severe weather 029. Construction - high winds			Fermilab Emergency Plan Sections 35A, 35B, and 41. 1.) Personnel Warning - Severe weather -- Fermilab Emergency Plan, 9/92, Section 35A 2.) Shelters - Severe weather -- Fermilab Emergency Plan, 9/92, Section 35B 3.) Warning Signals - Severe weather -- Fermilab Emergency Plan, 9/92, Section 41	EM	HA IT
153. Emergency preparedness - safeguards and security	10 CFR 860 (Trespass to land owned & leased by the U.S. government.) 18 U.S. Code Sections 841-848 (Use, or threat of use, of explosives; includes civil disorders.) 10 CFR 1046 Subpt. B, App A, Chpt X, Paragraphs H through I inclusive (Physical protection of security interests, protective force personnel) Illinois Compiled Statutes (ICS) Chapter 625 (State vehicle code)			EM	IT
154. Emergency preparedness - generic	29 CFR 1910.38 Employee emergency plans and fire prevention plans. 40 CFR 300.150 (EPA) 40 CFR 311.1 Worker Protection E.O. 12356 of Aug. 1, 1982 (National security information - security training) Title 5 U.S.Code 4103 (Training - security) 28 CFR 36 Sections 4.1.3 (9) and 302(b)(2) (Americans with disabilities act - accomodations and accessiblity)	NFPA 1561, Standard of Fire Dept. Incident Management System		EM	IT

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
155. Env - underground storage tanks	RCRA, 42 USC 6901 et seq. 40 CFR 280 35 IAC 731 - 732 35 IAC 170 35 IAC 170 Subpart A			EP	IT
156. Other mechanical hazards - aviation	14 CFR 91 (General operating and flight rules) SFAR 62 (Suspension of certain aircraft operations from the transponder...) 14 CFR 830 (Notification and reporting...accidents and incidents...) 14 CFR 135 (Taxi operators and commercial operators)			OS	IT
159. Emergency preparedness - hazardous materials	29 CFR 1910.120 (q)(2) Elements of an Emergency Response Plan Illinois Chemical Safety Act (as ammended by P.A. 85-1325, effective August 31, 1988)			EM	IT
160. Emergency preparedness - toxicity in smoke or fumes	29 CFR 1910.38 (evacuation, accountability during emergency) 29 CFR 1910.120 (emergency response) 29 CFR 1910.134 (respirators) 29 CFR 1910.1000 Subpart Z (Protective Exposure Limits) 41 IAC			EM	IT
161. Env - general environmental protection planning	NEPA 42 USC 4321 et seq. 40 CFR 1500 - 1508 10 CFR 1021			EP	IT
163. Occupational safety administrative requirements	5(a)(1) of the OSH Act (General duty clause) 29 CFR 1903.2 (Posting of notice...) 29 CFR 1903.13 (Imminent danger) 29 CFR 1904 (Recordkeeping and reporting occupational injuries and illnesses) 29 CFR 1910.20 (Access to employee exposure and medical records) 29 CFR 1977.4 (Persons prohibited from discriminating) 29 CFR 1977.12 (Exercise of any right afforded by the Act)			MO	IT
164. Occurrence Reporting			Presently, Fermilab ES&H Manual Chapter 3050 constitutes an internal standard on occurrence reporting based upon DOE 5000.3B. This standard should be modified to define the areas for which occurrence reporting to DOE and to URA corporate headquarters will, in general, be done, once the ES&H N&S Standards set has been officially adopted for implementation. These areas include 1) when laws or regulations require reporting of incidents and occurences outside the scope of normal operations, 2) when there is adverse public interest in an occurrence, 3) when a serious degradation in facility condition or personnel safety occurs, and 4) when the information is deemed to be, in the judgement of the Laboratory or the Contracting Officer, of significant value to other facilities in the DOE complex. Such reports will be provided to the Contracting Officer and shall be deemed to be sufficient.	MO	IT

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ISSUES	STATUTORY REQUIREMENTS INTERNAL STANDARDS	EXT STANDARDS FG	IP		
165. Radiation - radiological emergency response (see 154.)	10 CFR 835.1301 10 CFR 835.1302 (covers records and dose limits for), for more see Emerg. Prep. 154			RP	IT
166. Radiation - radiological training	10 CFR 835.901-903			RP	IT
167. Radiation - monitoring and measurement of radiation	10 CFR 835.401-404 10 CFR 835.1101			RP	IT
168. Radiation - record keeping in occupational radiation protection	10 CFR 835.4 10 CFR 835.204 10 CFR 835.701-704 10 CFR 835.801 10 CFR 835.1101 10 CFR 835.1301 Privacy Act of 1974			RP	IT
169. Radiation - exposure control	10 CFR 835.101(c) 10 CFR 835.202-203 10 CFR 835. 206-208 10 CFR 835.1001-1003 10 CFR 835.1302			RP	IT
170. Radiation - QA in occupational radiation protection	10 CFR 835.102			RP	IT
171. Safety analysis and documentation			Presently, Fermilab ES&H Manual Chapter 2010 constitutes an internal standard on safety analy sis. Upon approval of the N&S Set of standards, this internal standard will be improved by considering DOE Order 5480.25.	MO	IT
172. Fire - emergency responder safety	29 CFR 1910.120 (emergency response) 29 CFR 1910.135 (occupational head protection) 29 CFR 1910.136 (occupational foot protection) 29 CFR 1910.156 (fire brigades) 41 IAC Illinois Health and Safety Act	NFPA National Fire Codes (NFPA standards list)		FP	IT

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FERMILAB PILOT NECESSARY AND SUFFICIENT IDENTIFICATION TEAM DOCUMENT

Submitted to the Convened Group by
The Fermilab N&S Identification Team

July 12, 1995

Introduction - The N&S Process

This summary report documents the results of the work of the Identification Team for the pilot "Necessary and Sufficient Closure Process" for ES&H Standards at Fermilab, which was carried out in February-June, 1995. (The "Necessary and Sufficient Closure Process" was developed by the DOE's Department Standards Committee, to implement Criterion 6.3 of the Department's Standards Program, which defines the process whereby DOE line management and Contractor management develop, approve, and maintain a necessary and sufficient set of standards for Department and Contractor operations.)

The implementation of the N&S pilot process at Fermilab was initiated by a February 23, 1995 memorandum from Wilmot Hess (ER-20) to Andrew Mravca (Manager, BAO). This activity was subsequently authorized by Martha Krebs[1] (ER-1) and Tara O'Toole[2] (EH-1). Fermilab management has made every effort to implement its pilot in strict accordance with the "Necessary and Sufficient Closure Process" protocols.

The Convened Group for the Fermilab Pilot N&S Process met several times to establish the protocols for the Pilot and create the Identification Team, and fulfill all the other requirements for the Convened Group as defined in Process Elements 1, 2, and 3. Fermilab management appointed Larry Coulson to be the Process Leader. In consultation with the Convened Group, the Process Leader subsequently assembled the Identification Team, and developed a Charter for and Charge to the Identification Team.

The Process Leader also solicited information necessary to define the work to which the standards will apply. A bottoms-up, worker safety oriented "Hazard Identification Process" was employed by Fermilab to develop an initial list of hazard issues at the

[1] Letter from Martha Krebs to John Peoples, Fermilab Director, 3/21/95.
[2] Letter from Tara O'Toole to Frederick Bernthal, URA President, 4/21/95.

Laboratory. This list of hazard issues was the starting point for determining the set of N&S ES&H Standards for Fermilab.

Proposed N&S ES&H Standards

The proposed List of Fermilab Necessary & Sufficient (N&S) ES&H Standards is based on a comprehensive final set of hazard issues that were considered by the Identification Team. The Team has documented its analysis of these issues in "Fermilab Identification Team Documentation" (FITD) reports which describe, for each hazard issue considered, the nature of the N&S standards chosen (necessary, external sufficient, or internal sufficient), the extent to which they are both necessary and sufficient, and the impact of implementing them.

The attached table, "Rolled-up Standards List", contains the necessary, external sufficient, and internal sufficient standards selected by Fermilab's Identification Team. This is the list which is proposed for inclusion in the DOE-URA Contract. However, it must be made clear, if these are incorporated into the URA/DOE contract, that only the applicable and enforceable parts of these standards are to be implemented. This needs to be done because in order to preserve sufficiency of the set, portions of citations were included that are not applicable to Fermilab operations and/or not enforceable (i.e., guidance). Rather than attempt an explicit and precise analysis of all necessary standard citations to remove each and every part that is not applicable, broad and inclusive citations were made and thus must be qualified by the phrase "applicable and enforceable parts thereof". The Team also understands that there may be unforeseen instances where the application of these standards can present significant barriers to implementation. In such cases Fermilab should notify the Batavia Area Office and work out an "equivalency" arrangement.

Are the Proposed Standards "Necessary"?

The following elements of the Identification Team process provide confidence that the standards included in the proposed N&S set are necessary:

1. Where a necessary standard was cited by the ID Team, that requirement is included in the N&S List. Necessary standards are deemed to include those to which Fermilab is legally required to comply, as well as those which would be legally-applicable if Fermilab were a private sector employer. Although there are hazard issues for which non-value added aspects of necessary standards are identified in

Part 4 of the FITD analysis reports, the cited standards are still considered part of the N&S List.

2. Other external and internal standards are included in the N&S List where, in the opinion of the Identification Team, often with the advice of Subject Matter Experts (SMEs), they are required to achieve a "sufficient" level of ES&H risk (i.e., that is consistent with the Laboratory management's expectations of ES&H performance). The basis for this conclusion is documented in Part 12 of each FITD analysis report.

3. Laboratory management decisions can result in additional standards to be required that otherwise would not apply. (For example, the decision to locate a Fire Station on site instead of relying on local fire fighting capabilities makes Fermilab subject to fire station standards.) Those standards whose inclusion is triggered by such Fermilab management decisions were also identified, and included in the N&S List.

It is the consensus of the ID Team that the List of Standards presented in the attached table is a list of necessary standards.

Are the Proposed Standards "Sufficient"?

The following elements of the Identification Team process provide confidence that the proposed set of N&S Standards is sufficient:

1. It was based on an initial list of hazard issues identified by the line managers at the Laboratory, which was subsequently validated and supplemented by the Identification Team and SMEs.

2. Each hazard issue was reviewed by one or more Identification Team "Focus Groups" (six sub-groups of the Identification Team, which were charged with identification of ES&H standards in six topic areas -- fire protection, radiation protection, environmental protection, occupational safety & health, emergency response, and management & oversight issues), in consultation with SMEs, through a deliberative process represented by the fourteen parts of the FITD analysis reports.

3. Finally, the full Identification Team reviewed and discussed each functional area focusing on any complex hazard issues.

It is the consensus of the ID Team that the List of Standards presented in the attached table is a sufficient set of standards.

Recommendation

The Identification Team believes that adoption of this set of standards, along with appropriate implementation, is necessary and sufficient for Fermilab to achieve a level of ES&H performance consistent with Fermilab management's goals; that is, adequate protection of people and the environment at the lowest cost.

In conclusion, the Identification Team considers the "N&S List of Standards" presented in the attached table to be a Necessary and Sufficient Set of ES&H Standards for Fermilab, and recommends its approval.

Implementation Considerations

In order for the Laboratory to meet the "sufficient" criteria in the future, the following considerations must be addressed. Sometimes more than one acceptable approach to satisfying a particular ES&H standard may exist. If the Laboratory wishes to conduct an activity in a manner which is not in strict conformance with the N&S Set but offers equivalent protection, determination of the Contracting Officer will be necessary. If the Laboratory wishes to make a minor change, not affecting the level of protection, to an internal standard called out in the N&S set it will do so. If the Laboratory wishes to make a significant change to an internal standard called out in the N&S set, one affecting the level of protection, it will consult the Contracting Officer prior to the change.

In those situations where the Laboratory determines that a particular standard (or part of a standard) is not appropriate or not applicable, the Laboratory Director, with the advice of the Laboratory's Senior Safety Officer, will decide whether to formally request an exemption. The Laboratory will work with the Contracting Officer if any exemption from the N&S set is needed. The Director will transmit any exemption request to the Contracting Officer to forward, as appropriate, to the regulatory unit which has jurisdiction.

Team Comments on Management Systems

The Identification Team was asked to address Conduct of Operations, Quality Assurance, Self-Assessment, and Maintenance Management. The Team agreed that, because of the burdensome nature of the current orders in these areas, these issues need to be addressed in a process such as the N&S Process. The Team discussed these issues at length. However, the Team did not reach consensus. The Team Leader offers this analysis. These subjects are considered as ES&H issues by some parts of DOE and as management issues in other parts of DOE--similarly, some DOE Laboratories treat these as management issues and some as ES&H issues. Clearly, these issues are management issues with significant ES&H impacts. It is apparent from the Team discussions that, as management issues, these would be resolved within each of the represented Laboratories in ways appropriate for their management styles. These issues do not easily lend themselves to standardization--"one-size-fits-all". It is suggested that the best way to resolve these issues is to let the management of the Agreement Parties find solutions with which they are comfortable. The Team Leader strongly suggests, as provided in the Pilot Charter, that the Convened Group, as representatives of the management of the Agreement Parties, address these important subjects.

Boundary Issue: Property Loss/Program Interruption due to Fire

The bottoms-up approach to worker safety and public protection utilized in this Pilot N&S Closure Process did not draw out the issue of property protection or program interruption due to fire. This issue has historically been integrated into an overall fire protection program, as formulated by DOE Order 5480.7A, which implements, in an ill-defined manner, the insurance industry methodology for Highly Protected Risk (HPR). The choice to implement a system to control property loss and program (business) interruption is a business management decision primarily based on financial considerations. It is the recommendation of the Identification Team that this issue be addressed through an independent N&S process. The process to address this issue would vary significantly from the extant Pilot in that the primary effort would be to develop a site-specific set of criteria and then to reach consensus on both the criteria and the application of those criteria to each facility or structure on a site-wide basis. Also included in the process should be the assignment of property loss liability for each of the stakeholders - URA, BAO, and ER. Lastly, it is envisioned that the loss control criteria would allow for a new facility classification of "conventional/commercial facility" for which the application of the local building code and NFPA standards is sufficient, be based on Maximum Credible Loss (instead of Maximum Possible Loss), and provide for the graded application of protective measures consistent with the mission.

Discussion of the N&S Process and Lessons Learned

The principal conclusion of the ID Team is that the N&S Process works well and as designed. The sequence of steps for the N&S Closure Process (prescribed by the DOE Standards Program) in the Charter for the Fermilab N&S Process and in the Charge to the Fermilab ID Team was faithfully followed. It was found to be an entirely satisfactory mechanism for getting the work done.

An important comment, though, is that one should realize that the role of the Process Leader is a critical and exacting one. The Process Leader's effective coordination of a complicated mix of working and advisory groups (the Convened Group, Extended Convened Group, Steering Committee, ID Team, Focus Groups, and Focus Group Leaders) is vital to the successful implementation of the N&S Process.

The following is a collection of assorted "lessons learned" from the implementation of the N&S Pilot Process at Fermilab; it is hoped that these remarks could be of value to organizations which are planning their own N&S Process in the future:

- Time and Hard Work: A successful N&S Process requires a lot of hard work by highly qualified and highly motivated people. In particular, the ID Team phase of the work required significantly more time and effort than had been anticipated by the Process Leader.

- Careful Organization: Careful organization of each step of the process, including faithful implementation of all of the prescribed formalities of the process, is very important. In the Fermilab Pilot Process, this organizational effort helped to prevent misunderstandings and contributed to assuring continued buy-in by all interested parties as the ID Team's work progressed. The efforts of the Process Leader to assure that all interested parties were kept informed about the progress of the process were most worthwhile.

- Facilitator: The participation of management consulting firm in the Fermilab N&S Process was helpful, especially in its role as a process facilitator at the outset of the ID Team's initial two week period of concentrated work in mid-May. The facilitator introduced several concepts (the use of flip charts, groundrules, specific goals, pre-determined breaks, role playing- devil's advocate, etc.) that proved to be very useful in keeping the Team and Focus Groups focused on the issues, the process and the final objective.

- Standards vs. Implementation Plans: One must keep in mind the differences between a standard and an implementation plan. Standards are more universal. Implementation plans are the site-specific methods used to ensure that one is in compliance with the standards. One does not want to adopt an implementation plan as a standard.

- OSH Issues: The scope of the work of the Occupational Safety and Health (OSH) Focus Group was too broad. Over 100 of the ES&H hazard issues identified by the workers at Fermilab were in the OSH area. The assessment of these issues by at least two separate Focus Groups would probably have been a more effective arrangement.

- Boundary Conditions: Thoughtful consideration by the Process Leader, throughout the duration of the ID Team Process, of "boundary conditions" is important. It is not always clear what is an ES&H issue or if one should include a closely related topic associated with a particular ES&H issue. Examples of this are property loss prevention in the fire safety area, or safeguards & security considerations in the emergency response area.

FERMILAB N/S STANDARDS PILOT
ROLLED UP STANDARDS LIST
DRAFT 7/12/95

Standards	Necessary	External sufficient	Internal sufficient	Emergency management	Environmental protection	Fire protection	Management & oversight	Occupational safety	Radiation protection	Transportation safety
10 CFR 1021 (DOE NEPA rules)	X				X					
10 CFR 1022 (Compliance with Floodplain/Wetlands environmental review requirements)	X				X					
10 CFR 1046 Subpt. B, App A, Chpt X, Paragraphs H through I inclusive. (Physical protection of security interests, protective force personnel)	X			X						
10 CFR 835 (Occupational radiation protection - applicable and enforceable portions)	X								X	
10 CFR 860 (Trespass to land owned & leased by the U.S. government.)	X			X						
100 IAC (Fire prevention and safety)	X					X				
120 IAC (Boiler and pressure vessels)	X					X				
14 CFR 135 (Air taxi operators and commerical operators)	X							X		
14 CFR 830 (Notification and reporting...accidents and incidents...)	X									X
14 CFR 91 (General operating and flight rules)	X									X
140 IAC (Policy and procedures manual for fire protection personnel)	X					X				
160 IAC (Storage, transportation, sale and use of gasoline and volatrile oils: rules relating to general storage)	X					X				
17 IAC 525 and permit pursuant (Nuisance animal trapping permits)	X				X					
170 IAC (Storage, transportation, sale and use of petroleum and other regulated substances)	X					X				
18 U.S. Code Sections 841-848 (Use, or threat of use, of explosives; includes civil disorders.)	X			X						
180 IAC (Storage, transportaition, sale and use of volatile oils	X					X				

28 CFR 36 Sections 4.1.3 (9) and 302(b)(2) (Americans with Disabilities Act - accomodations and accessiblity)	X			X						
29 CFR 1903.13 (Imminent danger)	X							X		
29 CFR 1903.2 (Posting of notice...)	X							X		
29 CFR 1904 (Recordkeeping and reporting occupational injuries and illnesses)	X							X		
29 CFR 1910 (OSHA general industry standards - applicable and enforceable portions)	X							X		
29 CFR 1926 (OSHA construction industry standards - applicable and enforceable portions)	X							X		
29 CFR 1977.12 (Exercise of any right afforded by the Act)	X							X		
29 CFR 1977.4 (Persons prohibited from discriminating)	X							X		
29 IAC Chapter 1, Subchapter f (Emergency services, disasters, and civil defense /ESDA/ chemical safety)	X					X				
33 CFR 320-323, 328-330 (Army corp of engineers wetlands regs)	X				X					
35 IAC (State of IL environmental regs - applicable and enforceable portions)	X				X					
36 CFR 60, 63, 65 (National historic landmark program)	X				X					
36 CFR 78-79 (NHPA waiver and collection curation regs)	X				X					
36 CFR 800 (Protection of historic and cultural properties)	X				X					
40 CFR (Federal environmental regs - applicable and federally-enforceable portions)	X				X					
41 IAC (Fire protection)	X					X				
43 CFR 7 (Archaeological collections)	X				X					
49 CFR 100-199 and references (Hazardous materials transportation)	X									X
49 CFR 383.23 (Commercial drivers license)	X									X
49 CFR 392.14 (Hazardous conditions; extreme caution)	X									X
49 CFR 393.95 (Emergency equipment on vehicles)	X									X
49 CFR 395 (Maximum driving and on-duty time)	X									X
49 CFR 397.11 (Fires)	X									X
49 CFR 397.13 (Smoking)	X									X
49 CFR 397.15 (Fueling)	X									X

50 CFR 17 (Endangered species rules)	X				X					
71 IAC (Illinois accessibility code, Subparts C-F)	X					X				
77 IAC 830 (Structural pest control code)	X				X					
77 IAC 890 (Plumbing code)	X				X					
77 IAC 900 (Drinking water systems requirements)	X				X					
77 IAC 920 (Water well construction code)	X				X					
77 IAC 925 (Well pump installation)	X				X					
92 IAC 700 and all permits pursuant (Construction in water course permit application)	X				X					
92 IAC 704 and all permits pursuant (Regulation of public waters)	X				X					
92 IAC 708 and all permits pursuant (Floodway construction permit application)	X				X					
ACGIH TLV for cold stress		X					X			
ACGIH TLV for hand-arm segmental vibration		X					X			
ACGIH TLV for heat stress		X					X			
ACGIH TLV for radiofrequency/microwave radiation		X					X			
ACGIH TLV for static magnetic fields		X					X			
ACGIH TLV for ultraviolet radiation		X					X			
ANSI B11 series (Metalworking - applicable portions)		X					X			
ANSI B15.1 (Power transmission apparatus)		X					X			
ANSI O1.1 (Woodworking machinery)		X					X			
ANSI Z136.1 (Lasers)		X					X			
ANSI/ASHRAE 15 (Mechanical refrigeration)		X					X			
ANSI/ASME B30.10 (Hooks)		X					X			
ANSI/ASME B30.2 (Overhead and gantry cranes)		X					X			
ANSI/ASME B30.20 (Below the hook lifting devices)		X					X			
ANSI/ASME B30.5 (Mobile and locomotive truck cranes)		X					X			
ANSI/ASME B30.9 (Slings)		X					X			
ANSI/ASME B31.1 (Power piping)		X					X			
ANSI/ASME B31.3 (Chemical plant and petroleum refinery piping)		X					X			

ANSI/ASME B31.5 (Refrigeration piping)		X						X		
ANSI/ASME B31.8 (Gas transmission and piping systems)		X						X		
Archaeological and Historic Preservation Act of 1974	X				X					
Archaeological Resources Protection Act of 1979 [amended]	X				X					
ASME Pressure Vessel Code - Section VIII		X						X		
Atomic Energy Act	X								X	
Batavia Code of Regulations, City Ordinance, Section 8-3-10-3	X				X					
BOCA Fire Prevention Code		X				X				
BOCA National Building Code		X				X				
CERCLA/SARA 42 USC 6901 et seq.	X				X					
City Code of Warrenville, IL Title 7, Chapter 4, sewer/sewerage ordinance	X				X					
Clean Air Act Amendments 1990, 42 USC 7401 et seq. and Illinois State Implementation Plan 40 CFR 52 Subpart O	X				X					
Clean Water Act, 33 USC 1251 et seq.	X				X					
DOE Order 5400.5 Derived Concentration Guide Table and dose limits to the public (Chapter 2, section 1; Chapter 3)		X			X					
DuPage County Health Department Private Water Supply Ordinance (OH-0002-90, Ch.34, DuPage County Code)	X				X					
E.O. 10988 (Floodplain management)	X				X					
E.O. 10990 (Protection of wetlands)	X				X					
E.O. 12356 (National security information - security education)	X			X						
E.O. 12580 (Implementation of superfund)	X				X					
E.O. 12843 (Procurement of ozone-depleting substances)	X				X					
E.O. 12856 (Federal compliance with EPCRA and PP)	X				X					
E.O. 12873 (Recycling)	X				X					
Endangered Species Act 16 USC 1531 et seq.	X				X					
EPA Air Quality Stds.	X				X					
Federal Facility Compliance Act	X				X					
FEmP 35A (Personnel warning - severe weather)			X	X						
FEmP 35B (Shelters - severe weather)			X	X						

FEmP 41 (Warning signals - severe weather)			X	X						
Fermilab ES&H Section SQIP RPS.8 (Control and accountability of nuclear materials)			X						X	
FESHM 2010 (Planning and review of facilities and their operations)			X				X			
FESHM 3050 (Occurrence reporting)			X				X			
FESHM 5031 (Pressure vessels)			X					X		
FESHM 5031.1 (Pressure piping systems)			X					X		
FESHM 5032 (Cryogenic system review)			X					X		
FESHM 5032.1 (Liguid nitrogen dewar installation rules)			X					X		
FESHM 5032.2 (Guidelines For the Design, Fabrication, Testing, Installation, and Operation of LH2 Targets)			X					X		
FESHM 5032.3 (Transporting gases in building elevators)			X					X		
FESHM 5033 (Vacuum vessel safety)			X					X		
FESHM 5035 (Mechanical refrigeration systems)			X					X		
FESHM 5040 (Fermilab electrical safety program)			X					X		
FESHM 5041 (Electrical utilization equipment safety)			X					X		
FESHM 5042 (AC electrical power distribution safety)			X					X		
FESHM 5043 (Management and use of cable tray systems)			X			X				
FESHM 5044 (Protection against exposed electrical bus)			X					X		
FESHM 5046 (Low voltage, high current power distribution systems)			X			X				
FESHM 5064 (Oxygen deficiency hazards)			X					X		
FESHM 5084 (Ergonomic protection)			X					X		
FESHM 6020.3 (Installation of flammable gas lines in or near cable trays)			X			X				
FESHM 9020 (Hazardous materials transportation - packaging)			X							X
FIFRA (7 USC 136 et seq.)	X				X					
FRCM Article 349 (Controls for radioactive liquids and gases typically found at Fermilab)			X						X	
FRCM Article 365 (Radiation generating devices)			X						X	
FRCM Article 411 (Radioactive material identification, storage and control - requirements)			X						X	

FRCM Chapter 4 Part 3 (Radioactive source controls)			X						X	
Handbook for Sampling & Sample Preservation of Water and Wastewater, EPA-600/4-82-029		X			X					
Illinois Chemical Safety Act (as ammended by P.A. 85-1325, effective August 31, 1988)	X			X						
Illinois Compiled Statutes (ICS) Chapter 625 (State vehicle code)	X									X
Illinois Department of Public Health, DuPage County Dept. Public Health. CDC December 7,1990		X						X		
Illinois Endangered Species Protection Act, IRS 1991, Ch. 8, par. 331 et seq.	X				X					
Illinois Ground Water Protection Act, IRS 1989 Chapter 111 1/2	X				X					
Illinois Health and Safety Act	X					X				
Illinois Pesticide Act, IRS Ch. 5, para. 801 et seq.; 45 IL. CS 60-1	X				X					
Illinois Public Act 84-852, Illinois Chemical Safety Act	X					X				
Kane County Health Department Ordinance 91-101 Water Well Code	X				X					
National Fire Protection Association National Fire Codes (NFPA Standards - applicable portions)		X		X		X				
National Historic Preservation Act of 1966 [amended]	X				X					
Native American Graves Protection and Repatriation Act of 1990	X				X					
NEPA 42 USC 4321 et seq.	X				X					
OSH Act, paragraph 5(a)(1) (General duty clause)	X							X		
Privacy Act of 1974	X								X	
RCRA Part B Permit (Illinois Log #131), including Emergency Contingency plan	X				X					
RCRA, 42 USC 6901 et seq.	X				X					
Recommended Standards for Water Works, Great Lakes Upper Mississippi R. Bd. of State Public Health & Environmental Managers (1992)		X			X					
Safe Drinking Water Act, 42 USC Section 300f.	X				X					
SDWA, 42 USC 300f et seq.	X				X					
SFAR 62 (Suspension of certain aircraft operations from the transponder...)	X									X

Standard Methods for the Examination of Water and Wastewater, 18th Ed., APHA (1992)		X			X					
Standards and Specifications for Soil Erosion and Sediment Control, 10/87, IEPA 87-102		X			X					
Structural Pesticide Act, IRS Ch. 111 1/2, para. 2201 - 2225	X				X					
Title 5 U.S.Code 4103 (Training - for security personnel)	X			X						
TSCA, 15 USC 2601 et seq.	X				X					
UL Listing		X				X				
Uniform Federal Accessibility Standards, Chapter 4, Accessible Elements and Spaces: Scope and Technical Requirements	X					X				
WHC-EP-0063 Rev (or equivalent for other states that might accept FNAL wastes)	X								X	

Report on the Fermilab Pilot N&S Closure Process
Participants in Confirmation

James Boyce, Identification Team
Jon Cooper, Identification Team
Don Cossairt, Identification Team
Larry Coulson, Process Leader
Michael Flannigan, Subject Matter Expert for CH
Dave Gassman, Subject Matter Expert (Legal)
Dave Goodwin, Convened Group
David Gordon, Identification Team
Steve Gray, Confirmation Panel
Nancy Grossman, Identification Team
Beverly Hartline, Confirmation Panel
Kenneth Kase, Confirmation Panel
Cherri Langenfeld, Extended Convened Group
Rod McCullum, Technical Advisior to Convened Group
Tomas McDermott, Identification Team
David McGraw, Confirmation Panel
Tim Miller, Identification Team
Andrew Mravca, Convened Group
Steve Musolino, Identification Team
Paul Neeson, Identification Team
Kim O'Malley, Facilitator
Lincoln Read, Identification Team
Mary Hall Ross, Identification Team
Ken Stanfield, Extended Convened Group
Ray Stefanski, Convened Group
Tim Tess, Identification Team
Rod Walton, Identification Team
Bob Wynveen, Confirmation Panel

Necessary and Sufficient Set Approval Documents

Fermilab

Director's Office

July 13, 1995

To: Convened Group Members

From: Larry Coulson, Process Leader

Subject: Confirmation and Approval of the N&S Set

This memo documents the confirmation of the ES&H N&S SET contained in the Fermilab Pilot Necessary and Sufficient Identification Team Document, signed and submitted to the Convened Group on July 12, 1995 (Attachment 1), which was challenged at our meeting on July 12, 1995. In accordance with The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards (February 24, 1995), the Convened Group verified:

- The information available to and used by the Identification Team was found satisfactory.
- The Convened Group and the Peer Review Panel confirmed that the set of standards is necessary and sufficient to satisfy the performance expectations and objectives of the work.
- Implementation of the set of standards should be feasible.

Three issue sheets were collected during the confirmation process. All three have been resolved to the satisfaction of those who raised the issue. I am maintaining documentation of the issues and their satisfactory resolution. They have resulted in some minor modification to the SET. A revised, and final SET is attached (Attachment 2).

The two issues discussed in the Team report have also been resolved as follows:

1. Property protection: The contract will continue to use DOE Order 5480.7 for property protection purposes only. The Convened Group will apply the N&S process at a later date to the property protection issue.

2. Management Systems: The Convened Group decided to remove the referenced Management Systems orders and replace them with special requirements in the contract. The DOE/URA contract modification will require that FNAL continue to maintain management systems that ensure that the agreed-upon standards are implemented.

The Identification Team followed all applicable protocols and documentation requirements, therefore, I request that you indicate approval to proceed with this process by recommending to the Agreement Parties that they approve the N&S SET as attached to this memo.

_____ Date _____
Ray Stefanski

_____ Date _____
Dave Goodwin

_____ Date _____
Andy Mravca

Fermi National Accelerator Laboratory
P.O.Box 500 • Batavia, Il. • 60510-0500
708-840-3211 Fax: 708-840-2939

Director's Office

July 14, 1995

Dr. Fred Bernthal, President, URA
1111 19th Street, NW, Suite, 430
Washington, D.C. 20036

Dr. John R. O'Fallon, Director
High Energy Physics Division, U.S. DOE
19901 Germantown Road
Germantown, MD 20874

Mr. Andrew E. Mravca, Manager
Batavia Area Office, U.S. DOE
P.O. Box 2000
Batavia, IL 60510

Dear Dr. Bernthal, Dr. O'Fallon, and Mr. Mravca:

Subject: Fermilab Pilot on the Closure Process--Necessary and Sufficient ES&H Standards Set Approval

Attached is documentation of the sucessful conclusion of the Fermilab Pilot for the Department of Energy Closure Process for Necessary and Sufficient Sets of Standards. The pilot has sucessfully produced a confirmed set of ES&H standards which fully meets the requirements of the process. Therefore, we recommend that you indicate approval of the attached set by signing below.

Responsible Organization - _____ _____
Fred Bernthal, President — Date
Universities Research Association

Resource Authority - _____ _____
John R. O'Fallon, Director — Date
High Energy Physics Division
Office of Energy Research

Customer Organization - _____ _____
Andrew Mravca, Manager — Date
DOE Batavia Area Office

Yours truly,

Larry Coulson, Process Leader for the

Convened Group: Larry Coulson
Ray Stefanski
Dave Goodwin
Andy Mravca

Contract Modification Documents
July 14, 1995

Modification No. M201
Supplemental Agreement to
Contract No. DE-AC02-76CH03000

THIS SUPPLEMENTAL AGREEMENT is effective the 14th day of July, 1995, between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), acting through the U.S. DEPARTMENT OF ENERGY (hereinafter referred to as "DOE"), and the UNIVERSITIES RESEARCH ASSOCIATION, INC. (hereinafter referred to as the "Association" or "Contractor"), a corporation organized and existing pursuant to the District of Columbia Non-Profit Corporation Act.

RECITALS

The Parties have conducted a Pilot of the Department of Energy's "Closure Process for Necessary & Sufficient Sets of Standards" (draft 2/24/95). The result of this pilot is a set of standards (the Set) which the Parties agree will provide an adequate level of protection of the environment, and of the health and safety of workers and the public, for activities under the contract.

The Set has been approved by the Agreement Parties in accordance with the "Charter for the Department of Energy /Fermilab Standards Closure Process", dated 3/31/95. The Parties have agreed to modify the contract to incorporate the Set, to replace existing DOE environmental protection, safety and health (ES&H) Orders. The modification will revise and/or delete certain articles of this contract, and add two Appendices: Appendix H which contains the Set of ES&H Standards applicable to Fermilab, and Appendix I, which contains a list of those DOE Orders which are currently applicable to Fermilab, modified to reflect agreement on the Set.

AGREEMENT

NOW, THEREFORE, the parties hereto mutually agree that Contract No. DE-AC02-76CH03000, as amended, is hereby further amended as follows:

1. Article 27. SAFETY AND HEALTH is deleted and a new Article 27 is added as follows:

"ARTICLE 27. ENVIRONMENTAL PROTECTION, SAFETY AND HEALTH (SPECIAL)

(a) The Contractor shall take all reasonable precautions in the performance of the work under this contract to protect the environment, the safety and health of employees, and the safety and health of members of the public.

(b) The Contractor shall:

(1) Comply with the environmental protection, safety and health standards identified in the Necessary and Sufficient Set ('the Set') contained in Appendix H to this contract, initially identified and approved in accordance with the 'Charter for the Department of Energy/Fermilab Standards Closure Process' ("Charter") dated

3/31/95, including Attachment A thereto: draft 'Department of Energy Closure Process for Necessary and Sufficient Sets of Standards,' dated 2/24/95). The Set is in lieu of DOE ES&H directives which otherwise would be applicable to performance of this contract under Article 105. DOE ORDERS.

(2) Identify and inform the Contracting Officer, in writing, of any inconsistencies among these standards which would affect or preclude the Contractor's ability to perform its work, and bring such inconsistencies to the attention of the Contracting Officer;

(3) Continue to maintain management systems that ensure that the agreed-upon standards are implemented.

(4) Implement internal environmental protection and safety and health performance evaluation and corrective action systems to provide Laboratory management with a continuing assessment of the adequacy and implementation of these management systems and a mechanism for assuring that deficiencies are corrected. The results of such evaluations shall be made available to DOE.

(c) The Parties shall endeavor to keep apprised of changes to standards in the Set. Subject to paragraphs (b)(2) and (f) of this Article, changes to any standard in the Set shall be addressed as follows:

(1) If the standard is a requirement applicable by law, the changed standard shall supersede the standard in the Set and become the new standard, effective immediately.

(2) If the standard is not required by law, the Contractor may substitute the changed standard, including a modification of an internal standard, with notice to the Contracting Officer if the change does not affect the level of protection. If the change in the standard does affect the level of protection, the change requires the approval of the Contracting Officer.

(3) The Contracting Officer may direct (i) substitution of a changed standard or (ii) modification of an internal standard, unless, within 30 days from receipt of notification of the change from the Contracting Officer, the Contractor submits the matter to the Agreement Parties for a decision. If the Agreement Parties determine that the modified standard is necessary, the Contractor shall take all appropriate measures to comply with the change in the standard.

Modification No. M201
Supplemental Agreement to
Contract No. DE-AC02-76CH03000
Page No. 3

(d) The Parties shall review and revalidate the Set periodically. The Necessary and Sufficient closure process may be re-initiated by any Agreement Party upon a determination that the existing set is no longer appropriate due to changes in mission, activity, degree of hazard, performance expectation, or knowledge. Approval of any revised Set shall be by the Agreement Parties, and Appendix H will be revised accordingly (whether or not by formal modification to this contract).

(e) The Contractor and Contracting Officer shall identify and, if appropriate, agree to, any changes to contract terms and conditions, including cost and schedule, associated with a change to the Set or to a standard in the Set.

(f) The Contractor may at any time seek an exception, exemption, waiver, or variance from, or propose an equivalent alternative to, all or part of any standard in the Set, and with respect to all or part of the activities under this contract, by submitting a request to the Contracting Officer. The Contracting Officer shall be responsible for taking any necessary and appropriate action to seek relief from any standard which is required by law.

(g) In the event that the Contractor determines it is not in compliance with, or cannot comply with, any standard in the Set, the Contractor shall notify, in writing, the Contracting Officer of such actual or anticipated noncompliance and shall propose the corrective action to be taken. After receipt of authorization from the Contracting Officer, the Contractor shall, within a reasonable time agreed upon by the parties, take the agreed upon corrective action.

(h) The Contractor shall include in all of its subcontracts involving performance of work at the site, provisions requiring subcontractors to comply with the Contractor's environment, safety and health standards. However, such provisions in the subcontracts shall not relieve the Contractor of its obligation to assure compliance with the provisions of this clause for all aspects of the work.

(i) If at any time during the performance of the contract work, the Contractor's acts or failure to act may cause substantial harm or an imminent danger to public or worker safety or health, or to the environment, or the Contractor fails to take the corrective action approved in accordance with paragraph (g) above, the Contracting Officer may, without prejudice to any other legal or contractual rights of DOE, issue an order stopping all or any part of the work; thereafter, a start order for resumption of the work may be

issued at the discretion of the Contracting Officer. The Contractor shall make no claim for an extension of time or adjustment of its management allowance or damages by reason of, or in connection with, such work stoppage.

(j) For purposes of this Article, the term 'Agreement Parties' means the President, Universities Research Association, Inc.; the Director, High Energy Physics Division, Office of Energy Research DOE; and the Manager, DOE Batavia Area Office."

2. Article 29. PRESERVATION OF INDIVIDUAL OCCUPATIONAL RADIATION EXPOSURE RECORDS is deleted in its entirety.

3. Article 44. PERMITS OR LICENSES is revised in its entirety to read as follows:

"ARTICLE 44. DEAR 970.5204-29 PERMITS OR LICENSES (DEVIATION)

(a) In addition to its obligations under Article 27. ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH, and Article 105. DOE ORDERS, the Contractor shall, unless otherwise directed by the Contracting Officer, abide by all applicable laws, codes, ordinances and regulations of the United States, states or territories, municipalities, or political subdivisions which are applicable to the work under this contract.

(b) The Contractor's obligations include, but are not limited to, the identification of required permits and licenses, the compilation of information and data required for applications for permits and licenses, and the provision of any supplemental information required by law, code, ordinance, or regulation as requested by the regulatory authority involved. The Contracting Officer shall promptly inform the Contractor of any required permit or license of which DOE is aware or becomes aware.

(c) The Parties commit to full cooperation with regard to acquiring any necessary permits or licenses required by environmental laws, codes, ordinances, and regulations of the United States, states or territories, municipalities or other political subdivisions, and which are applicable to the performance of work under this contract. It is recognized that certain environmental permits will be obtained jointly and others will be obtained by either party in its individual capacity.

(d) The Contractor, unless otherwise directed by the Contracting Officer, shall procure all necessary non-environmental permits or licenses."

4. Article 94. ENVIRONMENTAL PROTECTION, is deleted in its entirety.

Modification No. M201
Supplemental Agreement to
Contract No. DE-AC02-76CH03000
Page No. 5

5. Article 105. DOE ORDERS is revised to read as follows:

"ARTICLE 105. DOE ORDERS (SPECIAL)

Appendix I is a list of all DOE Orders which are applicable to this contract, as of July 14, 1995. Any Order distributed prior to this date, which is not contained in the list or is not otherwise directly incorporated into the specific terms of this contract shall be deemed inapplicable.

The Association understands that, from time to time, the DOE will issue additional or revised DOE Orders that are intended to apply certain DOE policies or procedures to management and operating contracts. Normally, such Orders or revisions are issued initially in draft form for comment by DOE field offices, and in such instances, the Contracting Officer will use his best efforts to elicit the Association's comment(s) on the draft. When a final DOE Order is issued, the Contracting Officer shall transmit to the Association a copy of the Order along with a written determination that the Order should be applied under this contract. The Association will be given an opportunity to state reasons why the Order either should not be applied, or whether it should be modified in its application under this contract.

If thereafter directed by the Contracting Officer to follow the Order, said direction shall be deemed a modification of Appendix I. The Association agrees to use its best efforts to implement the Order to the extent that the Order is not inconsistent with provisions of this contract. The Association shall promptly provide the Contracting Officer with a compliance action plan, including costs and schedule."

6. Appendices H and I, attached hereto and made a part hereof, are hereby incorporated into this Contract.

IN WITNESS WHEREOF, the parties hereby execute this document.

UNITED STATES OF AMERICA UNIVERSITIES RESEARCH ASSOCIATION, INC.

By: _____ By: _____

_____ _____
(Title) (Title)

_____ _____
(Date) (Date)

FERMILAB N/S SET OF ES&H STANDARDS
JULY 14, 1995

10 CFR 1021 (DOE NEPA rules)
10 CFR 1022 (Compliance with Floodplain/Wetlands environmental review requirements)
10 CFR 1046 Subpt. B, App A, Chpt X, Paragraphs H through I inclusive. (Physical protection of security interests, protective force personnel)
10 CFR 835 (Occupational radiation protection - applicable and enforceable portions)
10 CFR 860 (Trespass to land owned & leased by the U.S. government.)
100 IAC (Fire prevention and safety)
120 IAC (Boiler and pressure vessels)
14 CFR 135 (Air taxi operators and commerical operators)
14 CFR 830 (Notification and reporting...accidents and incidents...)
14 CFR 91 (General operating and flight rules)
140 IAC (Policy and procedures manual for fire protection personnel)
160 IAC (Storage, transportation, sale and use of gasoline and volatrile oils: rules relating to general storage)
17 IAC 525 and permit pursuant (Nuisance animal trapping permits)
170 IAC (Storage, transportation, sale and use of petroleum and other regulated substances)
18 U.S. Code Sections 841-848 (Use, or threat of use, of explosives; includes civil disorders.)
180 IAC (Storage, transportaition, sale and use of volatile oils
28 CFR 36 Sections 4.1.3 (9) and 302(b)(2) (Americans with Disabilities Act - accomodations and accessiblity)
29 CFR 1903.13 (Imminent danger)
29 CFR 1903.2 (Posting of notice...)
29 CFR 1904 (Recordkeeping and reporting occupational injuries and illnesses)
29 CFR 1910 (OSHA general industry standards - applicable and enforceable portions)
29 CFR 1926 (OSHA construction industry standards - applicable and enforceable portions)
29 CFR 1928 Subpart C (Roll-over protective structures - applicable and enforceable portions)
29 CFR 1928 Subpart D (Safety for agricultural equipment - applicable and enforceable portions)
29 CFR 1977.12 (Exercise of any right afforded by the Act)
29 CFR 1977.4 (Persons prohibited from discriminating)
29 IAC Chapter 1, Subchapter f (Emergency services, disasters, and civil defense /ESDA/ chemical safety)
33 CFR 320-323, 328-330 (Army corp of engineers wetlands regs)
35 IAC (State of IL environmental regs - applicable and enforceable portions)
36 CFR 60, 63, 65 (National historic landmark program)
36 CFR 78-79 (NHPA waiver and collection curation regs)
36 CFR 800 (Protection of historic and cultural properties)

40 CFR (Federal environmental regs - applicable and federally-enforceable portions)
41 IAC (Fire protection)
43 CFR 7 (Archaeological collections)
49 CFR 100-199 and references (Hazardous materials transportation - offsite)
49 CFR 173.24(e)(1-2) (Chemical compatibility for single packagings - onsite)
49 CFR 173.24(e)(4)(i-111) (Chemical compatibility for multiple packagings - onsite)
49 CFR 173.24a (a)(1) (Positioning of inner receptacles - onsite)
49 CFR 173.24a (a)(3-4) (Packing for inner receptacles - onsite)
49 CFR 177.848C (Segregation table for hazardous materials - onsite)
49 CFR 178.500L Subchapter C (Segregation table for hazardous materials - onsite)
49 CFR 383.23 (Commercial drivers license - offsite and onsite)
49 CFR 392.14 (Hazardous conditions; extreme caution - offsite and onsite)
49 CFR 393.95 (Emergency equipment on vehicles - offsite and onsite)
49 CFR 395.3 (Maximum driving and on-duty time - offsite and onsite)
49 CFR 397.11 (Fires - offsite and onsite)
49 CFR 397.13 (Smoking - offsite and onsite)
49 CFR 397.15 (Fueling - offsite and onsite)
50 CFR 17 (Endangered species rules)
71 IAC (Illinois accessibility code, Subparts C-F)
77 IAC 830 (Structural pest control code)
77 IAC 890 (Plumbing code)
77 IAC 900 (Drinking water systems requirements)
77 IAC 920 (Water well construction code)
77 IAC 925 (Well pump installation)
92 IAC 700 and all permits pursuant (Construction in water course permit application)
92 IAC 704 and all permits pursuant (Regulation of public waters)
92 IAC 708 and all permits pursuant (Floodway construction permit application)
ACGIH TLV for cold stress
ACGIH TLV for hand-arm segmental vibration
ACGIH TLV for heat stress
ACGIH TLV for radiofrequency/microwave radiation
ACGIH TLV for static magnetic fields
ACGIH TLV for ultraviolet radiation
ANSI B11 series (Metalworking - applicable portions)

ANSI B15.1 (Power transmission apparatus)
ANSI O1.1 (Woodworking machinery)
ANSI Z136.1 (Lasers)
ANSI/ASHRAE 15 (Mechanical refrigeration)
ANSI/ASME B30.10 (Hooks)
ANSI/ASME B30.2 (Overhead and gantry cranes)
ANSI/ASME B30.20 (Below the hook lifting devices)
ANSI/ASME B30.5 (Mobile and locomotive truck cranes)
ANSI/ASME B30.9 (Slings)
ANSI/ASME B31.1 (Power piping)
ANSI/ASME B31.3 (Chemical plant and petroleum refinery piping)
ANSI/ASME B31.5 (Refrigeration piping)
ANSI/ASME B31.8 (Gas transmission and piping systems)
Archaeological and Historic Preservation Act of 1974
Archaeological Resources Protection Act of 1979 [amended]
ASME Pressure Vessel Code - Section VIII
Atomic Energy Act
Batavia Code of Regulations, City Ordinance, Section 8-3-10-3
BOCA Fire Prevention Code
BOCA National Building Code
CERCLA/SARA 42 USC 6901 et seq.
City Code of Warrenville, IL Title 7, Chapter 4, sewer/sewerage ordinance
Clean Air Act Amendments 1990, 42 USC 7401 et seq. and Illinois State Implementation Plan 40 CFR 52 Subpart O
Clean Water Act, 33 USC 1251 et seq.
DOE Order 5400.5 Derived Concentration Guide Table and dose limits to the public (Chapter 2, section 1; Chapter 3)
DuPage County Health Department Private Water Supply Ordinance (OH-0002-90, Ch.34, DuPage County Code)
E.O. 10988 (Floodplain management)
E.O. 10990 (Protection of wetlands)
E.O. 12356 (National security information - security education)
E.O. 12580 (Implementation of superfund)
E.O. 12843 (Procurement of ozone-depleting substances)
E.O. 12856 (Federal compliance with EPCRA and PP)
E.O. 12873 (Recycling)

Endangered Species Act 16 USC 1531 et seq.
EPA Air Quality Stds.
Federal Facility Compliance Act
FEmP 35A (Personnel warning - severe weather)
FEmP 35B (Shelters - severe weather)
FEmP 41 (Warning signals - severe weather)
Fermilab ES&H Section SQIP RPS.8 (Control and accountability of nuclear materials)
FESHM 2010 (Planning and review of facilities and their operations)
FESHM 3050 (Occurrence reporting)
FESHM 5031 (Pressure vessels)
FESHM 5031.1 (Pressure piping systems)
FESHM 5032 (Cryogenic system review)
FESHM 5032.1 (Liguid nitrogen dewar installation rules)
FESHM 5032.2 (Guidelines For the Design, Fabrication, Testing, Installation, and Operation of LH2 Targets)
FESHM 5032.3 (Transporting gases in building elevators)
FESHM 5033 (Vacuum vessel safety)
FESHM 5035 (Mechanical refrigeration systems)
FESHM 5040 (Fermilab electrical safety program)
FESHM 5041 (Electrical utilization equipment safety)
FESHM 5042 (AC electrical power distribution safety)
FESHM 5043 (Management and use of cable tray systems)
FESHM 5044 (Protection against exposed electrical bus)
FESHM 5046 (Low voltage, high current power distribution systems)
FESHM 5064 (Oxygen deficiency hazards)
FESHM 5084 (Ergonomic protection)
FESHM 6020.3 (Installation of flammable gas lines in or near cable trays)
FIFRA (7 USC 136 et seq.)
FRCM Article 349 (Controls for radioactive liquids and gases typically found at Fermilab)
FRCM Article 365 (Radiation generating devices)
FRCM Article 411 (Radioactive material identification, storage and control - requirements)
FRCM Chapter 4 Part 3 (Radioactive source controls)
Handbook for Sampling & Sample Preservation of Water and Wastewater, EPA-600/4-82-029
Illinois Chemical Safety Act (as ammended by P.A. 85-1325, effective August 31, 1988)
Illinois Compiled Statutes (ICS) Chapter 625 (State vehicle code)

Illinois Department of Public Health, DuPage County Dept. Public Health. CDC December 7,1990
Illinois Endangered Species Protection Act, IRS 1991, Ch. 8, par. 331 et seq.
Illinois Ground Water Protection Act, IRS 1989 Chapter 111 1/2
Illinois Health and Safety Act
Illinois Pesticide Act, IRS Ch. 5, para. 801 et seq.; 45 IL. CS 60-1
Illinois Public Act 84-852, Illinois Chemical Safety Act
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NEPA 42 USC 4321 et seq.
OSH Act, paragraph 5(a)(1) (General duty clause)
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Safe Drinking Water Act, 42 USC Section 300f.
SDWA, 42 USC 300f et seq.
SFAR 62 (Suspension of certain aircraft operations from the transponder...)
Standard Methods for the Examination of Water and Wastewater, 18th Ed., APHA (1992)
Standards and Specifications for Soil Erosion and Sediment Control, 10/87, IEPA 87-102
Structural Pesticide Act, IRS Ch. 111 1/2, para. 2201 - 2225
Title 5 U.S.Code 4103 (Training - for security personnel)
TSCA, 15 USC 2601 et seq.
UL Listing
Uniform Federal Accessibility Standards, Chapter 4, Accessible Elements and Spaces: Scope and Technical Requirements
WHC-EP-0063 Rev (or equivalent for other states that might accept FNAL wastes)
Rather than attempt a precise analysis of all necessary standard citations to exclude non-applicable parts, inclusive citations were made qualified by the phrase "applicable and enforceable parts thereof."
To the extent these standards apply to DOE and not the contractor, the contractor will assist DOE in complying with them.
This Set does not change any existing Federal, State or local enforcement authority.
All references contained herein shall be the version in effect on July 14,1995.

DOE ORDERS
AND SECRETARY OF ENERGY NOTICES (SENS)
APPLICABLE FOR IMPLEMENTATION
UNDER CONTRACT NO. DE-AC02-76CH03000

July 13, 1995

-- New Additions or Changes in Italics

ORDERS	DATES	TITLE
1000.3B	7/05/88	Internal Control Systems
1300.2A	5/19/92	Department of Energy Technical Standards Program
1300.3	8/23/90	Policy on the Protection of Human Subjects
1322.2C	10/22/91	Forms Management
1324.5B	1/12/95	Records Management Program
1330.1D	5/18/92	Computer Software Management
1332.1A Chg. 1	10/15/85 6/12/92	Uniform Reporting System
1340.1B	1/07/93	Management of Public Communications Publications & Scientific, Technical & Engineering Publications
1350.1 Chg. 1	10/28/81 3/26/84	Audiovisual and Exhibits Management
1360.1B	1/07/93	Acquisition and Management of Computing Resources
1360.2B	5/18/92	Unclassified Computer Security Program
1360.3C	10/19/92	Information Technology Standards
1360.6A	11/12/92	Automatic Data Processing Equipment/Data Systems
1360.8A	5/18/92	Analyses of Benefits and Costs for Information Technology Resource Initiatives
1430.1D	6/30/94	Scientific and Technical Information Management
1430.4A	5/18/92	Library Services
1450.3A Chg. 1	9/12/91 4/09/92	Call Control/ Verification Programs and Authorized Use of Government Telephone Systems

ORDERS	DATES	TITLE
1500.3 Chg. 4 Chg. 5 Chg. 6 Chg. 7	11/10/86 3/30/89 5/18/90 2/28/92 7/06/94	Foreign Travel Authorization
1800.1A Chg.1	8/31/84 5/18/92	Privacy Act
2030.4B	5/18/92	Reporting Fraud, Waste, and Abuse to the Office of the Inspector General
2100.8A	1/27/93	Cost Accounting, Cost Recovery, & Interagency Sharing of Information Technology Facilities
2110.1A Chg. 2	7/14/88 5/18/92	Pricing of Departmental Materials & Services
2200.4 Chg. 1	3/31/88 6/08/92	Accounting Overview
2200.6A Chg. 1 Chg. 2	1/07/93 4/13/93 6/13/94	Financial Accounting
2200.7	5/02/88	Cost Accounting
2200.8B	6/08/92	Accounting Systems, Organizations, & Reporting
2200.9B Chg. 1 Chg. 2	6/08/92 11/12/92 1/12/93	Miscellaneous Accounting
2200.10A Chg. 1 Chg. 2 Chg. 3 Chg. 4 Chg. 5	8/09/89 2/27/90 10/17/90 1/15/92 6/08/92 3/10/93	Accounts, Codes, and Illustrative Entries
2300.1B	6/08/92	Audit Resolution and Followup
2320.1C	5/18/92	Cooperation with the Office of Inspector General
2320.2A Chg. 1 Chg. 2	7/19/88 8/28/89 3/28/90	Establishment of Departmental Position on Inspector General Reports

ORDERS	DATES	TITLE
3220.1A	5/14/92	Management of Contractor Personnel Policies and Programs
3220.2A	5/14/92	Equal Opportunity in Operating & Onsite Service Contractor Facilities
3220.4 Chg. 1	6/04/85 6/28/90	Contractor Personnel and Industrial Relations Reports
3220.6A	5/14/92	Federal Labor Standards
3830.1	8/23/82	Policies and Procedures for Pension Programs Under Operating & Onsite Service Contracts
3890.1	6/07/85	Contractor Insurance and Other Health Benefits Programs
4220.5	12/19/91	Dependent Care Programs for Department of Energy Management & Operating Contractors
4300.1C Chg. 1	6/28/92 6/13/94	Real Property Management
4300.2B Chg. 1 Chg. 2	7/16/91 7/29/91 2/07/92	Non-Department of Energy Funded Work (Work for Others)
4320.1B Chg. 1	1/7/91 3/26/92	Site Development Planning
4320.2A	2/10/94	Capital Asset Management Process
4330.2D	5/18/92	In-House Energy Management
4540.1C	6/08/92	Utility Acquisition and Management
4700.1 Chg. 1	3/06/87 6/02/92	*** Project Management System
4700.3 Chg. 1	9/16/91 11/16/92	General Plant Projects
5100.3	8/23/84	Field Budget Process
5100.4	10/31/84	Internal Review Budget Process
5100.5	7/21/83	Office of Management and Budget Process
5300.1C	6/12/92	Telecommunications

ORDERS	DATES	TITLE
5400.5 Chg. 1 Chg. 2	2/08/90 6/05/90 1/07/93	Radiation Protection of the Public and the Environment *(Only Chapter 2, Section 1; and Chapter 3, as stated in the N & S set)*
5480.7A	2/17/93	Fire Protection *(For Property Protection Only)*
5630.11B	8/02/94	Safeguards and Security Program
5630.12A	6/23/92	Safeguards and Security Inspection and Assessment Program
5630.14	11/16/88	Safeguards and Security Program Planning
5630.16A	6/03/93	Safeguards and Security Acceptance and Validation Testing Program
5631.5 Chg. 1	2/12/88 7/02/90	Violation of Laws, Losses, and Incidents of Security Concerns
5632.7A	4/13/94	Protective Force Program
5632.10	1/12/90	Safeguards and Security Equipment Standardization
5700.2D	6/12/92	Cost Estimating, Analysis, and Standardization
5700.7C	5/18/92	Work Authorization System
5800.1A	5/18/92	Research & Development Laboratory Technology Transfer Program
6430.1A	4/06/89	General Design Criteria

*** Reference Letter from Mravca to Chrisman dated June 3, 1993 granting exceptions to implementation of Orders. Orders to be appropriately applied by the contractor.

SECRETARY OF ENERGY NOTICES

SEN	DATE	TITLE
22	5/08/90	DOE Policy on Signatures of RCRA Permit Applications
25A	10/02/91	Strategic Planning Initiative
30A	12/07/92	Staying the Course for Technology Transfer at the Department of Energy

THE FERMILAB N&S PROCESS AND MANAGEMENT SYSTEMS 8/8/95

The DOE/URA contract was modified on July 14, 1995, as a result of the N&S Pilot. The contract modification replaced the existing list of applicable ES&H DOE Orders with a modified list of applicable orders and the "N&S" list of Standards. Questions have been asked why the new contract no longer contains the orders for Quality Assurance, Conduct of Operations, Self-Assessment, and Maintenance Management.

The Pilot was exercised in full faithful accord with The Department of Energy Closure Process for Necessary and Sufficient Sets of Standards. Process Element 4 of that document, after [7], states: "NOTE: No justification or documentation is required for applicable non-regulatory standards that are NOT selected (for example, DOE Orders, manuals, and technical standards, and industry consensus standards)."

The referenced orders are management orders which have historically been associated with the ES&H activities of laboratories. Enforcement, auditing for compliance, and corrective action plans are all linked to the DOE ES&H oversight machinery. These orders are also an important consideration because as management orders they impact the implementation of the N&S set.

The Identification Team of the Pilot was asked by the Convened Group to address these management systems and make recommendations to the Convened Group. However, the Team, could not reach consensus on the best management systems to use as "standards". Each member of the team had a view of management that reflected the management of their home institution. Management systems do not lend themselves to prescription, but must be tailored to fit each institution. Therefore, the Process Leader referred these issues back to the Convened Group--who as representatives of the agreement parties should decide upon appropriate management requirements. The Convened Group discussed these issues with the Identification Team and the Confirmation Panel. It was noted that QA for ES&H is addressed explicitly in many of the selected standards--e.g. CFR 835.102, ASME Pressure Vessel Code, and the Handbook for Sampling & Sample Preservation of Water and Wastewater (EPA-600/4-82-029). The conclusion of the Convened Group was unanimous--the referenced orders are not value-added, are not necessary, and therefore, should not be included in the contract. This is consistent with the Criteria for Departments

Standards Program, page 4, in the paragraph **Take Necessary and Sufficient Approach** :

> *Contractor management identifies a sufficient set of standards for performance of work and submits it to the Department for acceptance. Applicable requirements contained in Federal, state, and local laws and regulations must be included in the set. Other requirements are included as the result of mutual agreement that takes into account the particular circumstances. The result of the approach is the agreed-upon necessary and sufficient set of standards. This necessary and sufficient approach permits good judgment to be exercised at the appropriate decision level, increases effectiveness of work and reduces arbitrary imposition of requirements that add cost but no value.*

Requirements are those standards that are mandatory. The URA contract with the Department of Energy contains requirements. Management standards are treated as non-mandatory, and are kept as internal standards. They are all contained in the Fermilab Quality Assurance Program Plan and the Fermilab Self-Assessment Program Plan. All of these will be held subordinate to the Criteria for the Department Standards Program until a better understanding of the implementation process is achieved. Thus conditions are avoided which limit flexibility in selecting the best method for implementing standards by declaring discretionary standards to be mandatory. This also avoids confusing and conflicting direction that would lead to maintenance of costly parallel methods of compliance.

Fermilab and the DOE-CH Fermi Group, formerly known as the Batavia Area Office, are the owners of the implementation plan for our standards. Ownership means responsibility for key decisions (such as reaching closure on risks and priorities) and accountability for actually accomplishing work consistent with the standards. Methods for implementing the program are developed at the organizational level (site, facility, or activity) appropriate for effective management.

Assurance of performance comes through contractor self assessments and Department and external oversight. The contractors and the Department monitor and verify that work is conducted in accordance with the agreed-upon set of standards. The standards based approach provides an effective means for measuring and monitoring performance to requirements.

What was done? The following clause was inserted into the contract:

1,b,(3). (Fermilab will) Continue to maintain management systems that ensure that the agreed-upon standards are implemented.

This requires:

1. Fermilab to maintain adequate management systems, and
2. The Fermi Group to audit our management systems.

What is being done? The Lab is maintaining its "prior-to-July 14" management systems and will continue to do so until modified in concert with the Fermi Group. These systems were written and approved by the Fermi Group, CH, and ER prior to the N&S process. It is intended that these systems stay in place, but evolve into systems which are fully value-added as determined by the agreement parties.