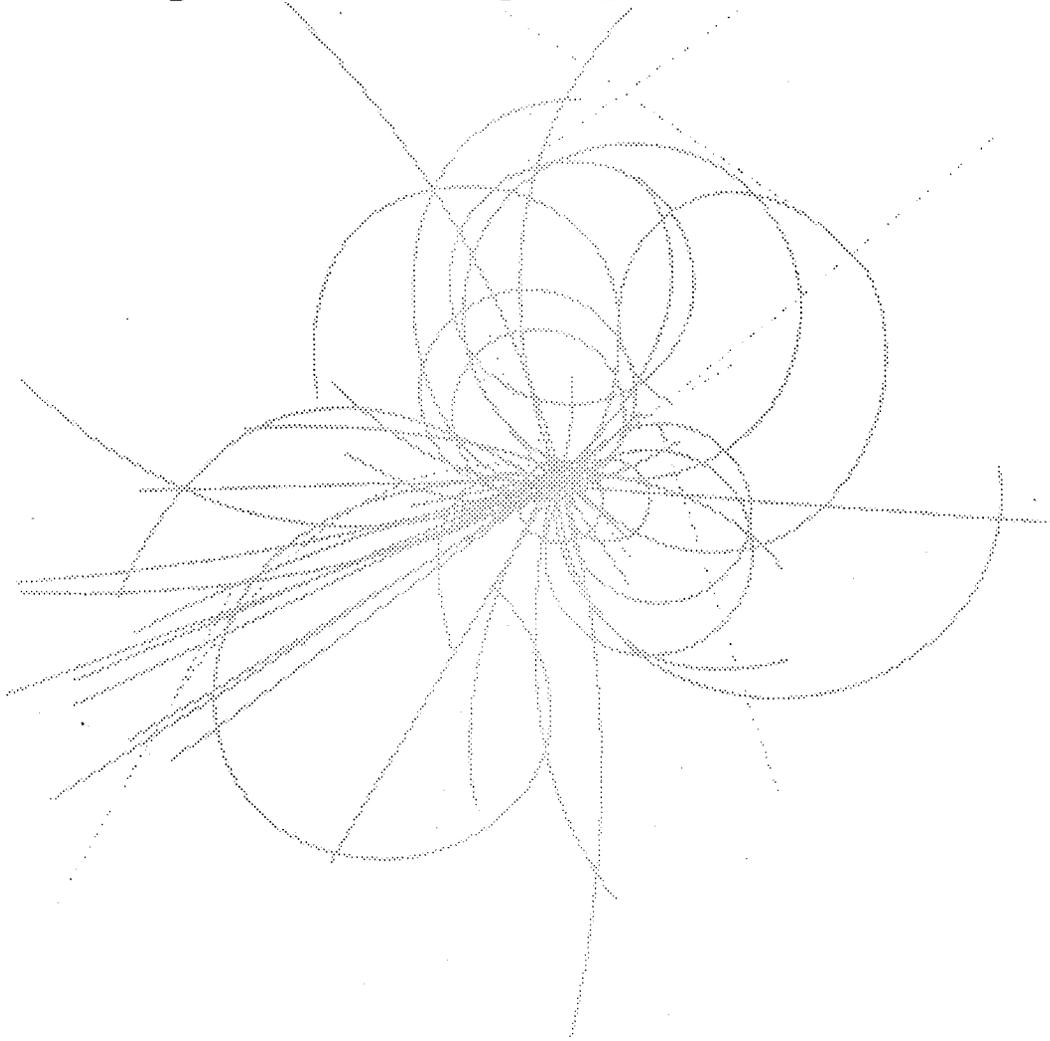


Superconducting Super Collider Laboratory



Successful NEPA Compliance at the Superconducting Super Collider Laboratory: A Case Study

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SUCCESSFUL NEPA COMPLIANCE AT THE SUPERCONDUCTING SUPER COLLIDER LABORATORY: A CASE STUDY

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INTRODUCTION

On January 1, 1970, the President signed the National Environmental Policy Act (NEPA) into law. NEPA has become the basic policy-setting federal law relating to protection of the environment and has provided the initiative for passage of other federal and state environmental statutes. Although many of these statutes have unique requirements, there is a need to coordinate NEPA compliance with review requirements of the other environmental statutes in order to avoid delays that can be caused by proceeding separately under each statute. Because of its multi-purpose scope, the NEPA process is an excellent means for accomplishing the required coordination.

The Director of the Superconducting Super Collider Laboratory (SSCL) has committed the Laboratory to *Total Environmental Compliance*. Environmental Compliance involves a dynamic set of factors—requiring system maintenance with integrated planning and control—that by design will identify requirements, ensure implementation of mitigative actions, track follow-on efforts, and plan for future requirements.

The Record of Decision to proceed with the building of the SSC required that several mitigation actions be addressed. Identifying these requirements, their sources, and whether they can be addressed within the context of existing policies and procedures is required to ensure appropriate and timely mitigative actions. Applicable requirements may include federal, state, and local regulations, applicable Department of Energy (DOE) Orders, best management practices, Laboratory requirements, and the adequacy and effectiveness of DOE and contractor management programs.

Mitigative action is a principal aspect of total environmental compliance, conducted at all levels of the Laboratory, not just as an environmental function. Identified requirements are prioritized. Goals and objectives are set for implementing and successfully completing each mitigative action. Feedback mechanisms required for tracking the progress of each action are developed.

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Technical assistance and environmental support is provided and/or managed by sub-contract. A scope, schedule, and cost estimate are developed for each mitigation action. Execution priorities may need adjustment due to fiscal, regulatory, or time constraints.

Throughout the mitigation action process, it is critical to document whatever measures have been taken. This will (1) provide an audit trail, and (2) provide backup information in support of any regulatory requirements. Continual interface with the regulatory community is necessary, as ultimately concurrence on any mitigative action that requires permits or specific regulatory review will be required.

Compliance occurs on at least two levels. As each potential impact is addressed through completion of a mitigation action, compliance is obtained. When all mitigative actions are addressed through completion, program compliance is achieved. Throughout this process, regulatory approval at all levels is essential for claiming compliance. Compliance in and of itself may not require any specific action; however, remaining in compliance may require follow-on activities. Therefore, compliance should not be perceived as a stopping point, but rather as a point in the cycle.

Compliance maintenance is the mechanics of tracking progress on the actions and any follow-on activities associated with them. Feedback occurs throughout the process. Tracking may include permitting status, monitoring results, training, reporting requirements, meetings, documentation, and program budget execution.

Throughout the process of achieving and maintaining compliance, it is necessary to continuously integrate requirements identification, mitigative action, and compliance maintenance. This is being accomplished by staff of the Environmental Affairs Office in concert with the Environment, Safety and Health function through policy development, planning and programming, oversight, and staff coordination.

Policies are developed to incorporate legal and regulatory requirements with Laboratory objectives, and they are promulgated by the appropriate authority. Planning provides the strategy for implementing the policies, and programming provides the fiscal resources for implementing the plan. Oversight is the control mechanism for determining the degree to which the plan, as funded, is implemented.

The Environmental Affairs Office at the SSCL provides the framework for an integrated planning and control function for achieving and maintaining total NEPA compliance by: (1) tracking progress on currently identified requirements, (2) continuously examining current operations to identify new requirements, and (3) identifying future requirements based on proposed federal, state, local, and/or organizational rules.

COMPLIANCE ACTUALIZED

Environmental Affairs Office

The Environmental Affairs Office (EAO) of the SSCL was established in the Project Management Office (PMO) for the primary purpose of representing and monitoring the SSC for NEPA compliance issues and providing oversight of Mitigation Action Plan compliance during construction and start-up operations. The initial function of the EAO was to collect and coordinate the data for and support the preparation of the Supplemental Environmental Impact Statement (SEIS). This role has evolved into the coordination and oversight of subsequent NEPA activities resulting from the SEIS process, such as the development of the Mitigation Action Plan and its 38 related documents.

As one of the first organizations established as part of the SSCL, the role of the EAO has been to provide the statute-required NEPA support during the planning, design, and construction of the SSC and associated facilities. This support is to establish, coordinate, and manage a base of technical experts and contacts that can collect, review, manage, and interpret environmental data.

The EAO is composed of a cadre of experts who have the historical knowledge and experience with the SSC project from the beginning. The mission of the EAO is to provide management of environmental issues as they arise and to provide a vast technical resource that is capable of resolving these issues.

Responsibilities

Several elements of the environmental impact analysis process influence risk to the decision maker. These elements include proposed action and alternatives, schedule, budget, affected environment, agency consultations, permits, potential impacts, and public involvement. Each element can be viewed from both an operational perspective and an environmental perspective. The outcome of the environmental impact analysis process may reveal that the operationally preferred alternative and the environmentally preferred alternative are diametrically opposed; that is, the action as originally described to accomplish the mission may significantly degrade the environment. The decision maker has an option to choose either alternative as long as the environmental impact analysis process is properly performed and potential impacts are accurately quantified. Most importantly, the decision maker must have sufficient information to understand the environmental consequences of a decision. This does not, however, give the decision maker the authority—by taking actions out of context of the original—to violate other environmental statutes later in the project.

Compliance with NEPA allows the program managers and other decision makers to maintain schedules and to meet environmental laws. The NEPA process can be viewed as a balance between risk of program delays and the time necessary to properly achieve environmental compliance. Prudent decision makers can balance the risk by planning and budgeting, preparing documents, consulting with other agencies, committing to mitigation measures, obtaining permits, and establishing an administrative record. The NEPA process is a proactive mechanism for ensuring that programs are prepared for a life of environmental compliance. The decision makers at the Lab have worked closely with the EAO during all the phases of the NEPA process, which has ensured that the program remains on an environmentally safe course from cradle to grave. Program managers and other decision makers should use the NEPA process to minimize risk and to maximize successful program completion.

The EAO functions to assist the PMO decision makers in ensuring compliance with NEPA throughout the construction phase of the project.

The primary responsibilities of the EAO are to:

- provide technical expertise on NEPA compliance issues
- serve as liaison between the Laboratory, the Department of Energy, and external agencies for resolution of environmental compliance issues related to construction
- act as a single point of contact for the PMO on environmental issues
- participate in working-group design review compliance
- provide independent and objective reviews of issues that reflect environmental concerns
- monitor and update SSCL policies and procedures when changes in NEPA compliance orders and directives occur
- enhance SSCL staff capabilities by providing short-term, expert consultation on environmental topic areas
- support the Change Control Board with respect to possible environmental impacts of deviations from the assessed baseline.

NEPA COMPLIANCE ISSUES

Technical Expertise

As a prescription, NEPA serves as the focus for environmental review planning and as an integral part of “phased compliance,” the term given to a comprehensive, integrated environmental planning strategy (DOE Order 4700.1). The EAO provides guidance and technical expertise to the SSCL to assure compliance with the NEPA process.

A NEPA Compliance Audit Protocol, developed by the Office of NEPA Oversight (EH-25), will be used to guide the assessment in the following areas:

- Overview of NEPA Issues
- Management Structure
- NEPA Compliance Planning
- NEPA/CERCLA and NEPA/RCRA Integration
- Determination of the Level of NEPA Review Required
- Procedural Aspects of NEPA Documents
- Technical Content of NEPA Documents.

The EAO serves as the lead to the SSCL in providing NEPA support. As the focus for NEPA compliance, the EAO develops the necessary documentation, informs the PMO of environmental regulatory requirements, and assists in the compliance with applicable environmental regulations. Specific technical experts are used as required. Using this cadre of technical experts, the EAO coordinates NEPA issue resolution, manages technical input, and provides the PMO with an efficient means to NEPA compliance.

Design Reviews

The EAO will provide guidance to SSCL working groups to ensure NEPA compliance. To meet the environmental protection requirements, the SSCL has adopted a general "as low as reasonably achievable" (ALARA) approach to the design, construction and operation of the SSC. Under this approach, normal operations of the SSC will produce environmental impacts at or below regulatory thresholds. This approach simplifies the compliance process and provides a margin for compliance to future environmental protection requirements. In addition, all SSC facilities will be designed to minimize waste through reduction and recycling, and to minimize the exposure of workers and the public to any hazards.

One significant area of NEPA compliance relates to the "Conventional Construction" aspects of the project. Due to the scope and scale of the planned facility, there are a great many components related to construction that continue to evolve and develop to a higher order of final design. It was not feasible to have a complete final design available on which to base the SEIS; therefore, "Mitigation by Design" has been a very effective method of assuring progress without fully defining the complete action.

A "worst case" scenario was developed for a number of elements and situations that define the envelope of acceptable alternative considerations. Each time an activity advances through a stage of design or is adjusted as a result of improved technical definition or increased knowledge of the environment, the "original" assessment is re-visited to determine any associated deltas which would exceed the expected/identified impacts. When a consequence of design creates an impact of greater negative impacts, the design is challenged to determine if an alternative of lesser impact exists. In many areas, design evolution has led to impact avoidance by adjustment to facility plans and location. Of significance in this area is the relatively small infringement upon wetlands and floodplains, which resulted in the following statement by the U. S. Army Corps of Engineers:

Our review of the proposed SSC project, and the planning efforts of the DOE and the TNRLC to date, reveal a strong commitment to avoiding impacts on the natural environment, particularly waters of the United States, to the maximum extent practicable. We commend you for those efforts, and encourage you to continue that commitment throughout the planning, construction, and operation of the project.

The day-to-day process for compliance of Conventional Construction activities involves a number of participants. These include participants from DOE, the State of Texas, several SSCL departments, and the Laboratory's subcontractors. The process involves a number of iterative steps that function through a facilities working group. The working groups are chaired by a team leader who represents the primary "customer" or user of the facility. Design requirements are generated in the working group, with continual reviews for compliance with regulations and commitments made in the Final Environmental Impact Statement and the SEIS, and in their respective Records of Decision. The commitments are summarized and tracked through the Mitigation Action Plan. Once the working group has reached development of final technical requirements for a facility, these technical

requirements are developed into a Design Requirements Document (DRD) for incorporation with a Notice to Proceed to the Architect-Engineer/Construction Manager (A-E/CM) subcontractor. The A-E/CM then develops a draft list of permits and applicable commitments and regulations that apply to the specific facilities on the basis of an analysis of the DRD. These are presented for review and acceptance by the Environmental Compliance Committee, chaired by DOE. The A-E/CM develops a draft Environmental Compliance Plan (ECP) for the facilities. The ECP is reviewed and accepted by the SSCL once it is considered complete. The ECP is then utilized as a tool for the designers to follow for detailed design and development of construction documents and specifications. The process is an iterative one in which modifications are continually monitored and re-evaluated as necessary to maintain the commitments.

Due to the large scale of this project and the nature of a one-of-a-kind facility, there is also a need to evaluate emerging opportunities to advance the state of design. These often will include an assessment of the compliance aspects related to NEPA. The EAO is provided technical reports on preliminary conceptual studies that the Project Management Office has deemed worthy of evaluation. The EAO then runs through the inventory and environmental analysis categories covered by the Impact Statements. The various impacts are quantified, and an opinion is developed as to whether the concept was satisfactorily covered in the Impact Assessment. This process relies on a detailed depth of understanding of earlier analysis. The continuity of the EAO, from the early stages of the project to the present, is a tremendous asset to the process. When thresholds are perceived to be violated, working sessions are held with the technical groups and designer to (1) modify the concept to eliminate the violation, or (2) develop mitigation strategies and applications. The process has been very effective in maintaining compliance, minimizing potential impacts, and documenting the procedure.

Monitoring of Environmental Issues

As part of each working group of the SSCL, the EAO is able to assure full compliance with all federal, state, and local environmental regulations. In fulfilling this oversight and monitoring responsibility, the EAO will:

- assist the PMO in determining environmental requirements and impacts to the project and in coordinating the respective planning efforts, and will participate, to the extent requested, in the regulatory process
- assist in the planning and implementation of PMO compliance activities
- assist in ensuring compliance with all applicable environmental, human health, and safety statutes, standards, and regulations
- act as a liaison among federal, state, and local regulatory agencies and respond to public and organizational interests and concerns.

