



STANFORD UNIVERSITY
SLAC National Accelerator Laboratory
 Operated by Stanford University for the U.S. Department of Energy



DOE Order 420.2C, Safety of Accelerator Facilities (7/21/2011)
Site Compliance Plan (final rev., 07/07/2016)

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Introduction

This Site Compliance Plan (SCP):

- a) corresponds with the version of the DOE Order on Safety of Accelerator Facilities listed in the Prime Contract,
- b) states how the Laboratory complies with applicable requirements as tailored to the risks at the Laboratory,
- c) identifies CRD sections that do not apply, and
- d) documents DOE-approved methods of compliance for applicable requirements and that there are no recurring deliverables*.

Impact on the Contract:

Under the SCP, sections of the CRD are incorporated into the Contract as-is, unless the SCP indicates that a section or portion thereof is inapplicable, or the section has been changed. Thus, for example, if “In compliance” is listed next to a CRD section, that section is incorporated into the Contract as-is. However, where an SCP indicates that a section or portion thereof is inapplicable, the section or portion thereof is excluded from the Contract. In addition, where a section or portion thereof is applicable, but changes to the section have been agreed by the Parties, the section, as modified by the Parties, shall be incorporated into the Contract. The SCP also memorializes the Parties’ agreement on how SLAC will comply with sections of the CRD (whether or not modified).

Attachment 1 – Contractor Requirements Document (CRD)

CRD §	Requirements from CRD, Attachment 1	Compliance Status	Method of Compliance	Deliverables* (managed through SLACTrak)			
				Item	Frequency	Due Date(s)	Recipient (e.g., SSO)
-	The following program elements are to be complied with by the contractor organization prior to routine operation, as applicable, and must be included in an accelerator safety program: <ul style="list-style-type: none"> • an approved accelerator safety envelope (ASE); • a safety assessment document (SAD); • clearly defined roles and responsibilities for accelerator activities including those for training and procedures; • an unreviewed safety issue (USI) process. A 	In compliance	SLAC’s accelerator safety program is implemented primarily through three documents: <ul style="list-style-type: none"> • SLAC Guidelines for Operations (SLAC-I-010-001-000-00) addresses accelerator operational issues such as ASE/SAD, USI, ARR, etc. • SLAC Radiation Protection Program (ESH Manual Chapter 9) addresses radiological safety of accelerators • SLAC ESH Manual (balance of chapters) addresses non-beam hazards associated with accelerators 	n/a	n/a	n/a	n/a

*Deliverables: Data delivered to DOE or other external agency (e.g., recurring reporting)



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				Item	Frequency	Due Date(s)	Recipient (e.g., SSO)
	<p>USI process supports configuration management efforts that helps to ensure facility and supporting safety documentation are current and periodically updated;</p> <ul style="list-style-type: none"> an accelerator readiness review (ARR) program that ensures facilities are adequately prepared for safe commissioning and/or operations; and a current listing/inventory of accelerators under this Order and exemptions or equivalencies granted in accordance with paragraphs 3.c.(2) and 3.c.(3) of this Order. 		<p>(NOTE: SLAC ESH Manual applies to all activities at SLAC, including accelerator operation).</p> <p>SLAC's inventory of accelerators is maintained by the SLAC Accelerator Directorate and is periodically supplied to the DOE SLAC Site Office. An inventory of Radiation-Generating Devices which are not subject to regulation under this order is maintained by the SLAC ES&H Office, Radiation Protection Department.</p>				
-	The contractor must request and obtain the necessary DOE approvals for exempted or equivalent accelerators, facilities or modules thereof, which will be processed by DOE as specified in paragraphs 3.c.(2), 3.c.(3) and 5 of this Order.		Not Applicable to SLAC; SLAC does not manage any accelerators through the exemption or equivalency processes as specified in paragraphs 3.c.(2), 3.c.(3) and 5 of the Order.				
1.	<p>ACCELERATOR SAFETY ENVELOPE (ASE)</p> <p>a. A documented ASE must define the physical and administrative bounding conditions and controls for safe operations based on the safety analysis documented in the SAD.</p> <p>b. The ASE must be submitted to DOE for approval and may be submitted as a separate document from the SAD.</p> <p>c. An activity expected to exceed the bounding conditions of the ASE requires DOE approval. Any activity violating the ASE must be terminated immediately and be put in a safe and stable configuration. Any activity that was shut down by DOE must not recommence until DOE approves the activity.</p>	In compliance	<p>Accelerator Safety Envelopes (ASEs) are kept current for all accelerator facilities and are approved by the DOE Site Office. The ASEs are updated whenever configuration and/or operating parameters fall outside of the approved specified boundaries. ASEs are managed per SLAC Guidelines for Operations (SLAC-I-010-00100000) Chapter 25 Safety Assessment Documents and Accelerator Safety Envelope.</p>	n/a	n/a	n/a	n/a

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CRD §	Requirements from CRD, Attachment 1	Compliance Status	Method of Compliance	Deliverables* (managed through SLACTrak)			
				Item	Frequency	Due Date(s)	Recipient (e.g., SSO)
2.	<p>SAFETY ASSESSMENT DOCUMENT (SAD). A SAD represents the technical basis for the ASE, is maintained current and must:</p> <ul style="list-style-type: none"> a. identify hazards and associated onsite and offsite impacts to workers, the public, and the environment from the facility for both normal operations and credible accidents; b. contain sufficient descriptive information and analytical results pertaining to specific hazards and risks identified during the safety analysis process to provide an understanding of risks presented by the proposed operations; c. provide detailed descriptions of engineered controls (e.g., interlocks and physical barriers) and administrative measures (e.g., training) taken to eliminate, control, or mitigate hazards from operation; and d. include or reference a description of facility function, location, and management organization in addition to details of major facility components and their operation. 	In compliance	All accelerator facilities have a current Safety Analysis Document (SAD). The SAD is updated whenever configuration and/or operating parameters fall outside of the approved specified boundaries. Safety Analysis Documents are managed per SLAC Guidelines for Operations (SLAC-I-010-001-000-00) Chapter 25 Safety Assessment Documents and Accelerator Safety Envelope .	n/a	n/a	n/a	n/a
3.	<p>UNREVIEWED SAFETY ISSUES (USIs). The USI process allows for the evaluation of accelerator activities that have the potential to significantly impact safety. Activities must not be performed if significant safety consequences could result from either an accident or a malfunction of equipment that is important to safety and for which a hazard analysis has not been performed. Activities involving identified unreviewed safety issues must not commence before DOE has provided written approval. The process for identifying USIs is considered to be an important component of configuration management.</p>	In compliance	The Unreviewed Safety Issue process is managed per SLAC Guidelines for Operations (SLAC-I-010-001-000-00) Chapter 23 Accelerator Safety Reviews and Unreviewed Safety Issues .	n/a	n/a	n/a	n/a
4.	<p>ACCELERATOR READINESS REVIEWS (ARRs). ARR must be performed before DOE approval for commissioning and routine operation and as directed by the DOE Program Secretarial</p>	In compliance	Outlined in sections 4a-4c below.	n/a	n/a	n/a	n/a

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CRD §	Requirements from CRD, Attachment 1	Compliance Status	Method of Compliance	Deliverables* (managed through SLACTrak)			
				Item	Frequency	Due Date(s)	Recipient (e.g., SSO)
	Officer/NNSA Deputy Administrator or a DOE Field Element Manager. As part of the ARR process, the contractor must demonstrate to the satisfaction of the Field Element Manager that the following processes are in place:						
4.a	A Contractor Assurance System that maintains an internal assessment process;	In compliance	SLAC has developed and implemented an Integrated Assessment Schedule (IAS) and utilizes an online IAS management and tracking system.	n/a	n/a	n/a	n/a
4.b	A Facility Configuration Management Program that is related to accelerator safety; and	In compliance	Accelerator safety configuration is managed per SLAC Guidelines for Operations (SLAC-I-010-001-000-00) Chapter 14 Configuration Control of Radiation Safety Systems .	n/a	n/a	n/a	n/a
4.c	Credited controls and appropriate administrative processes related to accelerator safety (e.g. training, procedures, etc.).	In compliance	Training is managed per the SLAC Training Program. Credited Controls are managed per SLAC ES&H Manual Chapter 1 , including General Policy and Responsibilities: Hazard Control Selection and Management Requirements	n/a	n/a	n/a	n/a

(end CRD)

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Attachment 2 – Definitions

1. **Accelerator:** a device employing electrostatic or electromagnetic fields to impart kinetic energy to molecular, atomic or sub-atomic particles and capable of creating a radiological area.
2. **Accelerator Facility:** the accelerator and associated roads within site boundaries, plant and equipment utilizing, or supporting the production of, accelerated particle beams and the radioactive material created by those beams to which access is controlled to protect the safety and health of workers, the public or the environment. The term facilities includes injectors, targets, beam dumps, detectors, experimental halls, non-contiguous support and analysis facilities, experimental enclosures and experimental apparatus utilizing the accelerator, etc., regardless of where that apparatus may have been designed, fabricated, or constructed, including all systems, components and activities that are addressed in the Safety Analysis.
3. **Accelerator Operations:** those activities of an accelerator and any associated accelerator facilities that are bounded by the Safety Assessment Document. Accelerator operations (and post operations) include the production, dispensing, analysis, movement, processing, handling and other uses, and storage of radioactive material within the accelerator facility.
4. **Accelerator Readiness Review (ARR):** an ARR is a structured method for verifying that hardware, personnel, and procedures associated with commissioning or routine operations are ready to permit the activity to be undertaken safely.
5. **Accelerator Safety Envelope (ASE):** a set of verifiable physical and administrative credited controls that define the bounding conditions for safe operation and address the accelerator facility hazards and risks.
6. **Commissioning:** a phase of an accelerator facility operation that is typically used to conduct beam testing and to verify specifications in a new or designed functional mode. Commissioning periods may be tailored to the needs of each facility and there may be great variations in their duration, breadth, and formality, but in all cases the activities will be bounded by an ASE and preceded by an ARR. At its conclusion, the accelerator is ready for performance of an ARR for routine operations, or directly for routine operations if the ARRs were part of the commissioning process.
7. **Credited controls:** controls determined through safety analysis to be essential for safe operation directly related to the protection of personnel or the environment.
8. **Criticality:** the condition in which a nuclear chain reaction becomes self-sustaining without the use of external beams of ionizing radiation from an accelerator.
9. **Safety Analysis:** a documented process to systematically identify the hazards of a given operation; including a description and analyses of the adequacy of measures taken to eliminate, control, or mitigate the hazards and risks of normal operation; and identification and analyses of potential accidents and their associated risks.
10. **Safety Assessment Document (SAD):** a document containing the results of a safety analysis for an accelerator facility pertinent to understanding the risks of operating the accelerator facility.
11. **Unreviewed Safety Issue (USI):** a significant increase in the probability of or consequences from (1) a planned modification that creates a previously unanalyzed postulated accident or condition that could result in a significant adverse impact or (2) a previously analyzed postulated accident or condition.



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Paragraphs 3.c.(2), 3.c.(3) and 5 of the Order – Exemptions and Equivalencies

- 3.c.(2) Exemption.
DOE may approve other accelerator exemptions, in addition to those examples listed in paragraph 3.c.(1), from the requirements of this Order in accordance with the provisions of paragraph 5 of this Order.
- 3.c.(3) Equivalency.
The DOE PSO/NNSA Administrator may specify alternate safety standards, requirements or DOE Directives that provide equivalent (or greater) protection in lieu of or in addition to the requirements of this Order. These alternate standards would be primarily for those accelerator facilities or modules thereof and their operations when they contain, use or produce fissionable materials in amounts sufficient to create the potential for criticality based on the configuration of the materials.
5. RESPONSIBILITIES.
- a. DOE Program Secretarial Officer (PSO)/NNSA Administrator.
- (1) Oversee the safe operation of accelerator facilities through the implementation of this Order, unless otherwise specified in this Order.
 - (2) Approve the Accelerator Safety Envelope for accelerator facilities where site boundary consequences for credible postulated accident scenarios potentially exceed 1 rem (0.01Sv) and/or Emergency Response Planning Guide ERPG-2.
 - (3) Approve Field Element Manager recommendations that require alternate safety standards, requirements or DOE Directives as they are applied to accelerator facilities in accordance with paragraph 3.c.(3) and ensure the appropriate DOE and ANSI standards are adequate to address the hazard.
 - (4) Grant equivalencies or exemptions from the requirements of this Order, as requested by the Field Element Managers.
- b. DOE Field Element Managers.
- (1) Ensure the safe operation of accelerator facilities through the implementation of this Order.
 - (2) Notify contracting officers of those contracts to which the CRD is applicable.
 - (3) Recommend to the PSO/NNSA Administrator any alternate safety standards, requirements or DOE Directives that are contractually-binding to the accelerator facility that are necessary to address the facility hazards in accordance with paragraph 3.c.(3).
 - (4) Approve the following except as provided in paragraph 5.a.(2):
 - (a) Accelerator Safety Envelope (ASE);
 - (b) Start of commissioning activities after ensuring that an appropriate Accelerator Readiness Review (ARR) has been conducted;
 - (c) Start of routine operations;
 - (d) Restart of an accelerator facility or activity after a DOE-mandated shutdown because of an USI or ASE violation;
 - (e) Activities that justify a USI;
 - (f) Decommissioning activities; and
 - (g) Exemption/Equivalency request in accordance with paragraphs 3.c.(2) and 3.c.(3).
 - (5) Notify the contractor of any approved or denied requests for exemptions or equivalencies.
- c. Cognizant Contracting Officer. Upon notification of applicability, the contracting officer is responsible for incorporating the CRD and any alternate safety standards, requirements or DOE Directives made applicable pursuant to paragraph 3.c.(3) into the contracts of affected contractors.



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Approvals

Name:	Title:	Signature:	Date:
Norbert Holtkamp	Deputy Director, SLAC	(on file)	
Scott Wenzholz	Physical Scientist, SSO	(on file)	

Please return signed document to: Contract Management, MS 75