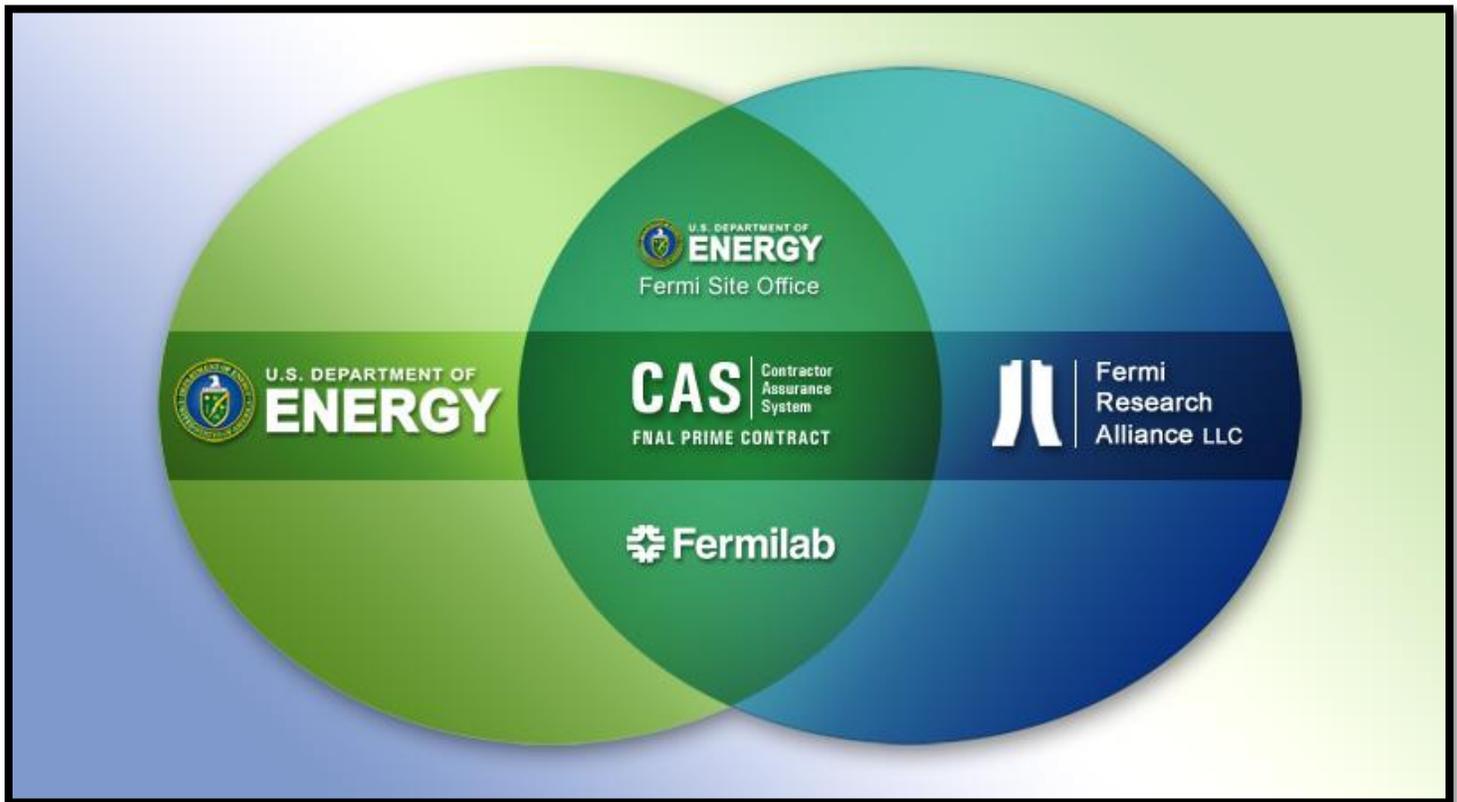




Contractor Assurance System



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Contractor Assurance System Description

1.0 Introduction

Fermilab National Accelerator Laboratory (Fermilab) is a federal-government-owned, contractor-operated (GOCO) laboratory under the stewardship of the DOE Office of High-Energy Physics (HEP). Fermilab is managed and operated by Fermi Research Alliance (FRA), LLC, under Prime Contract DE-AC02-07CH11359 with the U.S. Department of Energy (DOE) Office of Science (SC). The Prime Contract's Clause H.13, Contractor Assurance System (CAS), requires FRA to develop a CAS that is managed by the three parties: DOE as sponsor/steward, the Management & Operations (M&O) contractor (FRA) as holder of the Prime Contract, and the laboratory (Fermilab) staff as performer of the work.

1.1 Contract Requirement

Prime Contract Clause H.13 requires the CAS to provide reasonable assurance that the objectives of the contractor-management system are being accomplished and that the system and controls will be effective and efficient. The CAS, at a minimum, shall include the following key attributes:

- 1) A comprehensive description of the assurance system with processes, key activities, and accountabilities clearly defined.
- 2) A method for verifying/ensuring effective assurance system processes. Third party audits, peer reviews, independent assessments, and external certification may be used.
- 3) Timely notification of the DOE-Fermilab Site Office (FSO) Contracting Officer of significant assurance system changes prior to changes.
- 4) Rigorous, risk-based, credible self-assessments, and feedback and improvement reviews to assess and improve Fermilab's work process and to carry out independent risk and vulnerability studies.
- 5) Identification and correction of negative performance/compliance trends before they become significant issues.
- 6) Integration of assurance system with other management systems including Integrated Safety Management (ISM).
- 7) Metrics and targets to assess performance, including benchmarking of key functional areas with other DOE contractors, industry and research institutions. Assure development of metrics and targets that result in efficient and cost-effective performance.
- 8) Continuous feedback and performance improvement.
- 9) An implementation plan (if needed) that considers and mitigates risks.
- 10) Timely and appropriate communication to the FSO Contracting Officer, including electronic access, of assurance related information.

2.0 Design/Management/Oversight of the CAS

FRA views contractor assurance as the primary tool for demonstrating that operations are compliant with legal and Prime-Contract requirements and that Fermilab is meeting its missions' goals and objectives.

2.1 Roles

Each party has a distinct role and focus on the Contractor Assurance System.

The Department of Energy, Fermilab Site Office (FSO) is the sponsoring DOE program office (Office of High Energy Physics). They, along with the laboratory Director and FRA, have signed a formal Partnership Agreement to declare their commitment to achieve the mission of the laboratory and fulfill their responsibilities to the public, the employees, the scientific community, and the American people through clear and concise communication. The Agreement is revised as needed.

FRA, LLC is responsible for governing lab operations in accordance with the letter and intent of the contract between FRA and DOE. FRA's actions are guided by two distinct roles: the **corporate-parent members of the LLC** (The University of Chicago and Universities Research Association, Inc.) and its self-appointed **FRA Board of Directors**. In performing its role, the Board of Directors:

- Select, appoint, and support a chief executive to whom responsibility for the administration of the organization is delegated;
- Review and evaluate the chief executive's performance regularly. Govern the organization by broad policies and objectives that are formulated by the chief executive;
- Ensure appropriate management of DOE supplied resources for the organization's operations; and
- Account to the stakeholders and public for the management and work activities of the organization.

The **Fermilab Director** serves as the **FRA President** and is the bridge between the laboratory and the Board of Directors. His/her/their primary responsibility is to carry out the strategic plans and policies as approved by the Board of Directors and by DOE. The Director is accountable to the board for:

- Contributing to the development of annual goals and objectives;
- Ensuring that policies and procedures are designed in accordance with established board policy;
- Informing the Board of existing or impending policy issues; and
- Issuing an assurance declaration to the DOE that describes the compliance status of requirements defined by the M&O contract for the laboratory.

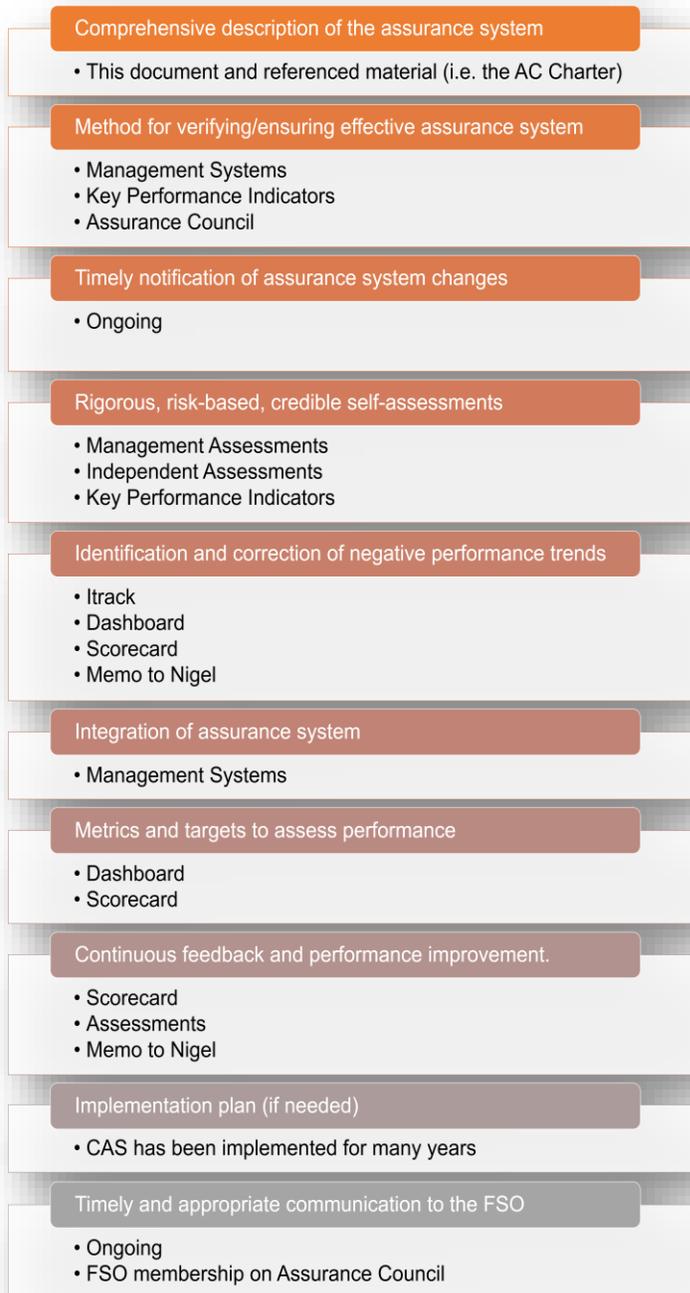
Reporting to the laboratory director, the Fermilab **Chief Operating Officer (COO)** (Key Personnel jointly appointed by the FRA President and the FRA Board) is accountable for assurance.

The **Fermilab Division and Section (D/S) Heads** have day-to-day, line-management responsibilities that include managing and directing specific projects or tasks in order to advance laboratory strategic goals and objectives as communicated in the Annual Lab Plan. That is, **Fermilab Line Management** determines "what" should be done to advance laboratory goals and objectives to execute the laboratory strategy.

The **Fermilab Management System Owners (MSOs)** are responsible for the day-to-day oversight and management of defined management systems. Management Systems are lab-wide functions that support line organizations. Management Systems provide lab-wide policy and guidance to ensure the lab meets expectations for consistency, compliance and quality. Their primary focus is ensuring that all elements of each management system are applied as appropriate across the laboratory to accomplish the mission as defined by the strategic plan. MSO assure plans define assessments that are conducted to determine whether work is being performed per Management System policy and procedure. MSOs are committed to continuous improvement of their Management Systems and use benchmarking and other forms of assessment to drive progress.

The **Laboratory Assurance Council (AC)** provides confidence to the laboratory director that the CAS is working by monitoring the performance of the management systems and other key performance indicators. It plays a role in the identification of enterprise risks which are monitored by the Enterprise Risk Management Board. The Assurance Council informs the laboratory director on top concerns and upcoming milestones and events that are directly relevant to the laboratory's mission.

Figure 1 maps the requirements in the H.13 Claus to the documents/processes/work the lab does to meeting those requirements



2.2 FRA CAS Overview

Fermilab's CAS was initially approved in April 2011 (attachment 1) and has evolved over time. In FY20 the CAS underwent four major changes:

- 1) Refined management systems to limited administrative functions
- 2) Expanded to include all key performance indicators
- 3) Summarized performance in a simple dashboard
- 4) Revised AC membership to be a smaller, senior level group
 - Made the AC accountable for oversight of performance
 - Enabled greater discussion with the Director, AC, and senior lab leaders on overall lab performance

Management Systems are groupings of similar-work-related requirements of the Prime Contract and other applicable rules and regulations that form sets of policies, procedures, and standards (sometimes presented in the form of a manual) that prescribe "how" work is to be executed by the laboratory. MSOs are accountable for the design and implementation of these Management Systems as well as providing reasonable assurance about laboratory performance against the requirements. The number of Management Systems have been reduced to ten - only those functions that truly cut across the entire organization or are heavily regulated. The management systems include: Finance, Procurement, Environment, Safety & Health (ESH), Quality Assurance (QA), Engineering, Information Systems (IS)/Cyber, Partnerships, Physical Security and Emergency Management, Property and Infrastructure, and Human Resources.

Additional key performance indicators (KPIs) have been added to the assurance process to ensure the AC has a comprehensive look at the performance of the laboratory and can adequately advise the Director on gaps or potential issues. All indicators are evaluated each month and as directed by the laboratory director; new indicators may be added.

At Fermilab, CAS is managed and overseen through the Office of the COO in coordination with the FRA members and the FRA Board of Directors. The Operations and Finance Committee of the FRA Board of Directors has oversight of the program.

In order to facilitate timely and appropriate communication to the DOE Fermi Site Office Manager, Contracting Officer and other appropriate DOE staff, FRA and the laboratory provide information through multiple channels: CAS related information is posted on Fermilab websites; the AC provides routine verbal and written CAS updates to the Director and DOE throughout the year; a member of the Fermilab Site Office sits as an observer on the AC to ensure complete transparency with the process and outcomes; and senior leaders conduct standing and impromptu meetings throughout the year with the FSO to provide information, obtain input, feedback and address issues as they arise. Members of FRA, LLC, the University of Chicago and the Universities Research Association, Inc. also meet regularly by phone and in person with appropriate DOE officials at FSO and the Office of Science headquarters for the same purposes.

CAS applies to all work activities and to all personnel performing work at Fermilab and its leased spaces including employees, users, subcontractors and authorized guests.

2.3 Laboratory Management of Contractor Assurance

The laboratory senior management team is comprised of leaders of technical Divisions, business-function Sections, and other laboratory programs and offices. Based on the laboratory's strategic plan (submitted as a rolling, three-year plan to DOE as the Annual Lab Plan), line management determines and manages specific work activities to advance Fermilab goals and objectives. Cross-cutting management system owners set the standards for performance and provide assurance that these standards are being met. This effort is focused on achieving Fermilab's science mission in an efficient and effective manner.

2.3.1 Fermilab Management Structure

Fermilab's organizational structure, a hierarchical chain of command from the laboratory director down to front-line employees, provides clear roles, responsibilities, authorities, and accountabilities (R2A2s) for the workforce so work at the laboratory can be directed in an efficient manner.

2.3.2 Management of the CAS

The Laboratory Director is responsible for all systems and delegates day-to-day management of the Contractor Assurance System to the COO. The Contractor Assurance System includes several major components: Management Systems, KPIs, an assessment process, metrics, reports, and the AC. The MSOs, the Quality Assurance Section, and third-party entities organize and execute site-wide assessments to assure effective implementation of Management System policies and procedures. Line organizations provide assurance information in the form of documents, procedures, self-assessment reports, and metrics. The results of the assessments are reviewed by the AC and feedback is provided to the functional organizations.

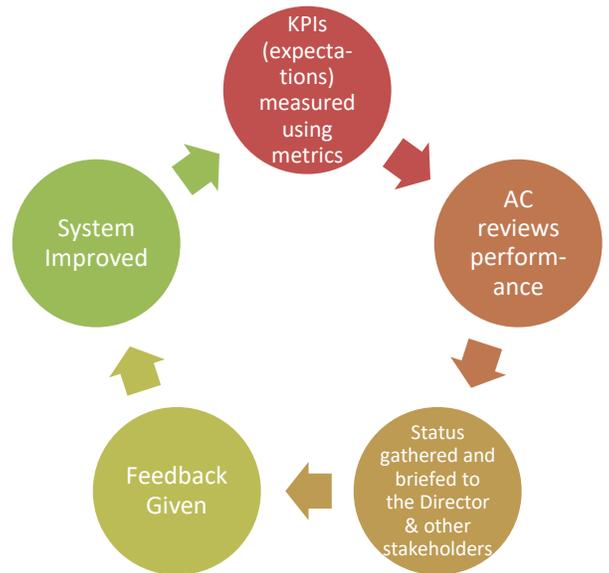
2.3.3 Contractor Assurance Oversight within the Laboratory

CAS oversight is provided by the AC, chaired by the COO. The AC consists of the AC Chair, Head of Accelerator Division, Head of Neutrino Division, Chief Project Officer, Chief Financial Officer and the Chief Strategic Partnership Officer. The General Counsel, Deputy COO and the Enterprise Risk Management Board Chair serve as advisors to the AC and the DOE FSO delegate serves as an observer.

The AC Chair is appointed by the laboratory director. All other members are appointed by the Chair. Additional members of the laboratory management team are invited to brief the AC depending on current events and the needs of the AC and/or laboratory director.

The AC meets monthly to review CAS metrics, identify issues, and provide input and recommendations to the Director. The Director is briefed on these results and acts as needed.

Routinely, the corporate parents are briefed during the Board of Directors, Operations and Finance Committee meetings. The AC Charter (attachment 2) provides additional details.



3.0 Execution of the CAS

CAS provides assurance (driven by data and process) that the laboratory is performing work according to the policies, procedures, and guidelines provided by the Prime Contract and other applicable rules and regulations and meeting the mission objectives.

3.1 Provision of Assurance

The system requires each Management System to provide two critical deliverables: (1) a report card of compliance/consistency across the organization and (2) an annual assessment plan. The AC reviews this data monthly to ensure the Management System Owners are on track.

In addition, the CAS provides assurance through the AC's evaluation of data from KPIs. These include, but are not limited to, the status of the laboratory's performance against the PEMP goals and objectives, the status of previous fiscal year corrective action plan against PEMP feedback, project input, safety and security data, risk management data, status of contract deliverables, accelerator performance data, detector performance data and budget performance data.

The FermiDash platform for web-based viewing of performance and assurance metrics is used to centralize and consolidate the data. The data is incorporated into end-of-year transmittals by FRA to DOE about annual performance according to the PEMP.

3.2 Assessments

The laboratory uses a combination of management assessments and independent assessments to ensure the requirements and controls applicable to the laboratory are satisfied. Results of these assessments are shared with the DOE sponsors as well as the FRA Board.

- **Management Assessments** (also referred to as self-assessments): Management assessments at Fermilab are conducted by, or under the direction of the lab management at all levels including MSOs, to identify and correct problems that hinder their organizations from achieving their objectives or to identify opportunities for improvement. Management assessments are performed by an organization on its own processes and programs.
- **Independent Assessments:** Independent assessments at Fermilab are conducted by external or internal parties independent from work or process being evaluated. These assessment activities include audits, surveillances, verification and validation reviews, gap analyses, or inspections. The Fermilab FRA Board

may participate by convening assessments or suggesting external experts to participate in such assessments.

3.3 Issues and Corrective Action Management

Issues management is utilized to ensure that significant items requiring the laboratory leadership's involvement and/or commitment on resources, problems, trends, and issues are identified, documented, analyzed, and prioritized to promote effective resolution in a timely manner.

Issues management applies to issues identified through contractual obligations, corrective actions, assessments, lessons learned, and worker feedback, as well as injury, incident, and event (mishap) reporting which tend to be of significant consequence, need lab-wide attention, and/or need senior management involvement. Fermilab's issues management process utilizes a centralized database, iTrack, to track, trend, manage, and report the status of identified issue. Active monitoring and trending data allow the identification of negative trends prior to becoming significant issues.

Additionally, the AC provides the laboratory director, FSO, and senior lab leadership a monthly summary of the laboratory's performance based on established metrics. The summary includes recommendations for the director, recommendations for the AC, top concerns and upcoming milestones and events. This ensures that the highest levels of lab management and the FSO are always aware of the current status of the lab's performance against its mission and contract requirements.

3.4 Risk Management

The laboratory views risk management as part of the work execution process. This risk management approach focuses on where threats and vulnerabilities can threaten fulfillment of laboratory goals and objectives. However, the laboratory recognizes that additional risks may arise from the execution of these objectives, considering the requirements driven by the Prime Contract and other applicable rules and regulations. To connect these spheres, the laboratory assurance council tracks performance assurance issues and escalates them to the ERMB as appropriate.

3.5 Feedback and Improvement

Feedback and improvement systems are used to drive continuous improvement across the operation. Trends in performance are analyzed to identify opportunities for improvement in both performance and risk reduction.

3.5.1 Worker Feedback

Fermilab promptly addresses employee concerns about environment, safety, health, security, fraud, waste, abuse, or mismanagement of DOE and Fermilab managed activities. Resolution of employee concerns/complaints about environment, safety and health issues is expected to occur at the lowest management level possible.

3.6 Lessons Learned

The Fermilab Lessons Learned Program establishes the processes that do the following:

- Ensure identification, documentation, validation, and dissemination of a lesson learned;
- Ensure utilization and incorporation of processes that includes identification of applicable lessons learned, identification of actions that will be taken as a result of the lesson learned, and follow-up to ensure that the identified actions were taken; and
- Ensure measurement of operational performance improvement and program effectiveness.

4.0 CAS Approval and Change Control

The minimum review cycle for this FRA Contractor Assurance System Description is triennially or whenever new contract requirements change the nature of the CAS. This description is also modified if lessons learned throughout the laboratory indicate a need for revision.

The COO and the AC review all revisions other than minor editorial changes. If a review results in revisions, the revised CAS description is submitted to FSO for review and approval. If no revisions are made, FSO will be notified that a review was conducted and that no revisions were necessary.

5.0 References

Fermi National Laboratory Prime Contract, Contract No. DE-AC02-07CH11359, Clause H.13 - *Contractor Assurance System*

Title 10 CFR Part 851, *Worker Safety and Health Program*

DOE Order 205.1B, *Department of Energy Cyber Security Program*

DOE O 470.4B, *Safeguards and Security Program*

Fermilab Quality Assurance Manual (QAM)

Fermilab Environment, Safety, and Health Manual (FESHM)

FRA Contractor Assurance System webpage

Assurance Council Charter