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FEB 07 2012

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SUBJECT: UCHICAGO ARGONNE LLC – CONTRACTOR ASSURANCE SYSTEM (CAS) DESCRIPTION

Reference: Letter, D. Levy to J. Livengood, dated. January 17, 2012, same subject

As Contracting Officer for the Argonne Site Office (ASO) and in accordance with *Clause H.42 – Contractor Assurance System* of the Department of Energy's prime contract for Argonne National Laboratory, I approve the subject description. This update represents the considerable progress exhibited by UChicago and Argonne in the on-going maturity of the CAS at this site since the initial approval in December 2010.

ASO remains committed to effectively utilizing an oversight framework from CAS that delivers mission excellence and accountability for performance.

Sincerely,

Kristin E. Palmer

Kristin Palmer
Contracting Officer

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Contractor Assurance System Description

January 17, 2012
Revision 2

Contractor Assurance System Description

Acronym List

ALD	associate Laboratory director
ASO	Argonne Site Office
Board	board of governors
CAIRS	Computerized Accident/Incident Reporting System
CAS	contractor assurance system
CAWG	Contractor Assurance Working Group
CELS	Computing, Environment and Life Sciences Directorate
CFR	Code of Federal Regulations
CSPR	cyber security program representative
DOE	Department of Energy
DSC	Laboratory Director's Safety Council
EESA	Energy Engineering and Systems Analysis Directorate
EFCOG	Energy Facility Contractors Group
ERM	enterprise risk management
ESH	environment, safety and health
ESHC	Employee Safety and Health Committee
ESQ	Environment, Safety, and Quality Assurance Division
IEPA	Illinois Environmental Protection Agency
ISMS	integrated safety management system
ISO	International Organization for Standardization
LL	lessons learned
LLC	limited liability company
LMS	Laboratory Management System
NTS	Noncompliance Tracking System
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration
PAAA	Price-Anderson Amendments Act
PEMP	Performance Evaluation and Measurement Plan
PMA	Performance Management and Assurance Division
PMP	performance management plan
POC	point of contact
PS	Photon Sciences Directorate
PSE	Physical Sciences and Engineering Directorate
QA	quality assurance
QASR	Quality and Safety Recognition award
R2A2	roles, responsibilities, authorities, and accountabilities
RMS	Requirements Management System
SC	Office of Science
SME	subject matter expert
UChicago	UChicago Argonne, LLC
WSHP	Worker Safety and Health Program

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Contractor Assurance System Description

1.0 Introduction

Argonne National Laboratory (Argonne, Laboratory) is managed and operated by UChicago Argonne, LLC (UChicago), under Contract DE-AC02-06CH11357 (Prime Contract) with the U.S. Department of Energy's (DOE's) Office of Science (SC). In response to the requirements of Prime Contract Clause H.42 *Contractor Assurance System,* UChicago has formalized a contractor assurance system (CAS) that is executed by the UChicago Board of Governors and implemented throughout UChicago and Argonne. This system is to provide reasonable assurance that management system objectives are being accomplished.

All mission-enabling activities are included within the scope of the CAS, whether they are carried out by employees, subcontractors, or guests.

This overview document, combined with the hyperlinked documents it references, provides a comprehensive description of the UChicago and Argonne CAS, covering these elements:

- Establishing an effective corporate and laboratory management governance structure (Sections 2.1 and 2.2)
- Setting clear performance expectations with appropriately managed risk (Section 2.3)
- Performance management planning (Section 2.3.1)
- Developing a rigorous integrated assessment program (Section 2.3.2)
- Identifying, tracking, and correcting issues (Section 2.3.3)
- Consistently pursuing continuous improvement (Section 2.3.4)
- Analyzing and reporting performance (Section 2.4)
- Managing operational interfaces and approving changes to CAS elements (Section 2.5)

2.0 Assurance Elements

A critical success factor in the CAS vision is the active engagement of the corporate parent, Argonne line management, and the DOE Argonne Site Office (DOE-ASO) as partners in creating a unified culture that is focused on achieving mission outcomes within a climate of mutual trust. The CAS is effective when:

- Mission objectives are met
- Workers, the public, and the environment are protected
- Operational, facility, and business systems enable mission success
- Contract requirements are met
- Processes drive improvements
- Issues are self identified and corrected
- Third-party reviews and inspections indicate that systems and processes are effective
- Metrics demonstrate acceptable performance levels and consistent improvement
- Resources are appropriately applied to identify issues and solve problems that affect performance or impact the mission

The outcomes give reasonable assurance that UChicago and Argonne management systems provide effective and efficient means to adequately meet DOE requirements while accomplishing assigned missions, and enable DOE to revise its oversight activities.

The principle of reasonable assurance recognizes that systems to monitor and manage risk to acceptable limits are adequate within the constraints of budget. It also recognizes that the systems and controls will not prevent all unfavorable events, but that upon discovery, line management will act promptly to mitigate the impact of such events and learn from those events in an attempt to drive improvements.

A framework of assurance elements, with related key functions, recommended for achieving these goals has been developed by the Contractor Assurance Working Group (CAWG) of the Energy Facility Contractors Group (EFCOG). The Laboratory has adopted this framework, tailored to Argonne, as the method of achieving the outcomes above (Figure 1).

Elements		Key Functions
Performance Feedback	Assessments	• Used to collect actionable information associated with performance and risk management. • A risk-based approach is used to select, execute, and document assessments to identify issues, weaknesses, and opportunities for improvement for management. • Includes self-assessments, independent assessments, operational awareness, peer reviews, parent organization assessments, and third-party assessments as appropriate to ensure actionable feedback.
	Metrics	• Used to sustain and improve performance. • Selects organizational outcome measure and performance targets. • Selects leading indicator measures, as appropriate, needed to sustain or improve performance. • Includes routine evaluation of performance by management and actions, as needed, to attain performance targets.
Performance Improvement	Issues and Corrective Action Management	• Used to ensure that systems and processes perform as designed. • Translates performance feedback information into issues that are risk-prioritized for resolution. • Identifies actions required to resolve priority issues, using causal and other analysis methods. • Addresses extent of condition across the Laboratory for priority issues. • Applies resources to actions and then manages the actions to closure to ensure timely and effective issue resolution.
	Continuous Improvement	• Used to drive step- or break-through changes in performance. • Analyzes levels and trends in performance feedback information to identify opportunities for risk reduction and performance improvement. • Collects, screens, and communicates applicable lessons learned from sources internal and external to the Laboratory. Shares lessons learned with DOE as relevant to other sites. • Uses systematic approaches to improve processes to realize priority opportunities for risk reduction and performance improvement.

Figure 1 – Elements and Key Functions of Argonne's Contractor Assurance Program

2.1 Corporate Governance

UChicago Argonne, LLC (UChicago), an Illinois limited liability company, was established for the sole purpose of managing and operating the Laboratory in accordance with the prime contract with the DOE. The University of Chicago is the sole member of UChicago, which is governed by a three-person board of directors appointed by the University. The board of directors presently consists of the chairman of the board, who is also the president of the University; a chief executive officer, who is also the University's vice president for research and for national laboratories; and a general counsel/secretary, who is also general counsel for the University. The director of the Laboratory is appointed by the board of directors (with the approval of the DOE) is also the president of UChicago (Figure 2) and reports to the chief executive officer and the board of directors. The Laboratory director is responsible for the direction, performance and supervision of the work of the Laboratory in accordance with the prime contract and the policies and procedures of the board of directors.

UChicago partners with Jacobs Engineering Group, Inc., to help ensure that Argonne's world-class research is delivered through the safe and efficient management and operation of the Laboratory. UChicago also partners with the University of Illinois and Northwestern University to help inform the scientific direction of Argonne through the Science Policy Council, which meets quarterly and consists of the Laboratory director and the vice presidents for research from The University of Chicago (council chair), Northwestern and the University of Illinois.

2.1.1 Board of Governors

The role of the Argonne board of governors (Board) is appointed by the board of directors to assist in the oversight of the management and operations of the Laboratory. The Board consists of leaders from industry, government, academia and other non-profit organizations. The duties, powers, and governance of the Board are set forth in its bylaws and consist of three primary functional oversight areas:

- Stewardship: Ensure effective senior leadership is in place and adequately supported; the Laboratory carries out its mission in accordance with the terms of the prime contract and the policies and procedures of UChicago; and CAS is executed in accordance with Clause H of the prime contract.
- Guidance and Advice: Assist the Laboratory director in formulating a strategy that is embraced by the DOE and provides an intellectual environment conducive to the stimulation of world-class research and development; enabling collaborative research and educational programs among scientific and technological communities and the Laboratory; and providing expert advice from industry, government, and academia to assist the director and his leadership team in ensuring infrastructure, staffing and budget are appropriately established and maintained.
- Advocacy and Outreach: Serve as advocates and ambassadors on behalf of Argonne to help ensure adequate support is available for execution of the Laboratory's mission.

2.1.1.1 Board Committees

UChicago executes its stewardship function principally through the full Board and two types of Board committees: statutory oversight committees, whose charter, membership and scope are defined by Board by-laws and which meet at regular meetings of the Board; and standing review committees, which meet according to their individual timetables to assess the program and operations of the Laboratory and provide assurance to the Board. Additionally, UChicago or a standing review committee will periodically create ad hoc review committees to conduct specialized reviews as needs arise.

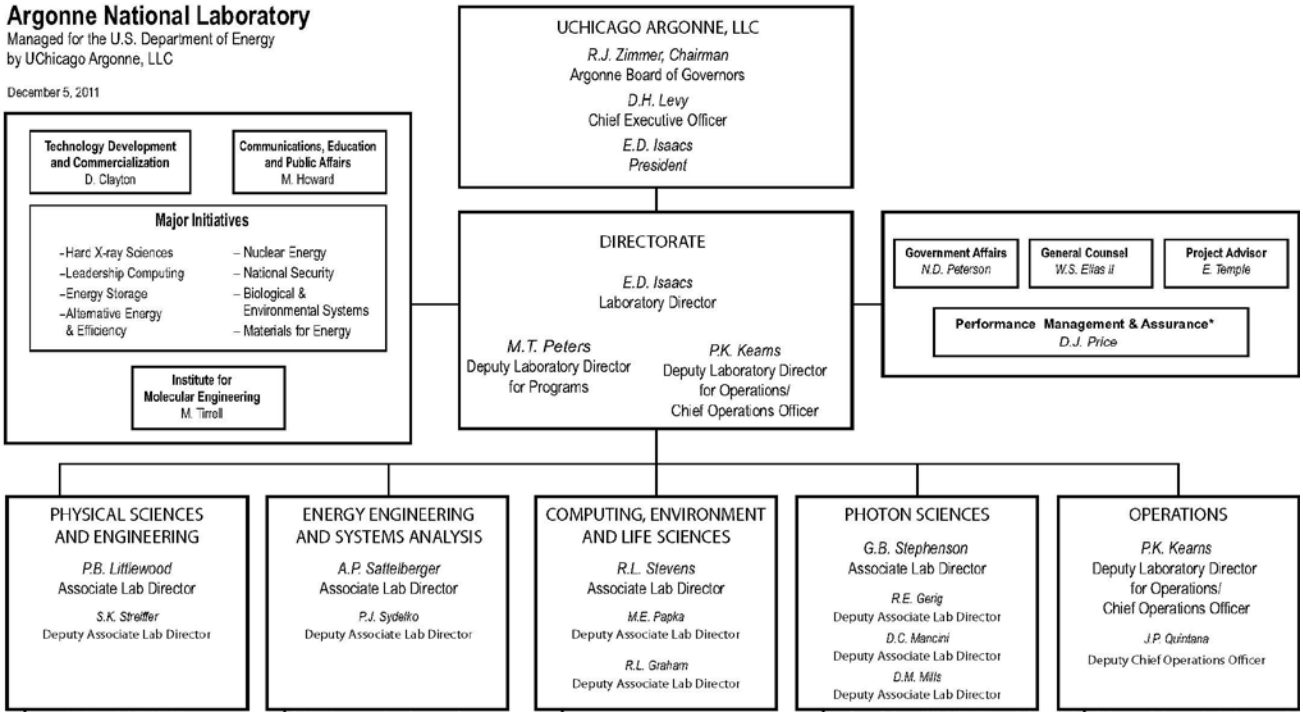


Figure 2: Argonne National Laboratory Organizational Structure

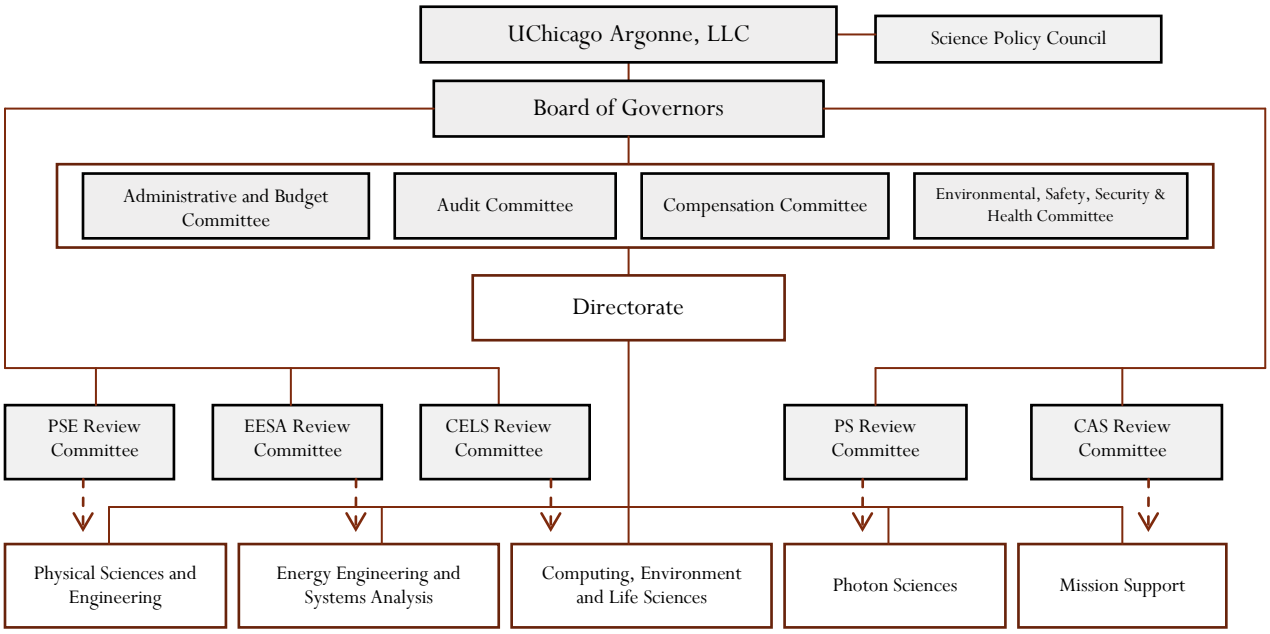


Figure 3: Alignment of Board Review Committees with Programmatic and Operating Units

There are presently six statutory board committees (four of which have direct oversight of Laboratory functions):

- Executive Committee – provides executive leadership for the Board and acts as a proxy for the full Board;
- Nominating – makes recommendations to UChicago and the Board regarding Board membership, and the processes surrounding the recruitment, selection, and training associated with Board members;
- Administrative & Budget – oversees the management of fiscal and operational systems;
- Audit – oversees the internal audit function and manages Laboratory-wide risk issues;
- Compensation – oversees personnel systems, compensation, and succession planning for key personnel; and
- Environment, Safety, Security & Health – oversees Lab policies, programs, and practices relevant to employee, customer, and public safety, security, and health.

The full Board and the statutory committees generally meet every four months (February, June, and October). At each full Board meeting, strategic topics are presented to the Board, which include: regular periodic reviews of the strategic plan; performance data; DOE requirements; and findings from programmatic (science and technology) and operational reviews, as well as the Laboratory's response. Staff members from Laboratory management and UChicago support each Board committee by documenting, monitoring, and facilitating the execution of action items from each meeting.

There are presently five standing review committees of the board, four of which assess programmatic directorates and one that is responsible for contractor assurance. Argonne's organization chart is shown in Figure 2; Figure 3 shows the relationship of Board committees to the Laboratory's functional areas.

Each standing review committee includes two board members and a sufficient number of subject matter experts to adequately assess the relevant area(s); meetings are conducted at least once annually. Review committee members serve staggered terms to ensure an appropriate balance of continuity and turnover.

The charge and scope of each review is determined by the standing review committee chair(s) in consult with UChicago and the Laboratory director.

After a programmatic review committee assesses the performance of a unit, findings and recommendations are reported first to UChicago and then to Laboratory management. The Laboratory then prepares a response, and both reports are shared and discussed with the Science Policy Council prior to reporting to the full Board.

After the CAS Review Committee assesses the performance of the Laboratory's assurance system, the findings are delivered to all partners from UChicago, DOE-ASO, and Laboratory management during an out-briefing, which is followed by the distribution of a formal report. Results from the reviews are shared at a subsequent Board meeting.

UChicago staff coordinate the reviews and are responsible for capturing action items and tracking and reporting the final outcomes.

2.1.1.2 Execution of Contractor Assurance

The CAS Review Committee comprises two Board members and three to four additional subject matter experts (SMEs). In addition to balancing continuity and turnover, the staggered terms for Board members also help ensure that, over time, a larger number of Board members will have developed expertise in

CAS, thereby enhancing oversight and establishing a more complete connection between CAS and the Board.

UChicago ▸ Argonne LLC

Board of Governors for Argonne National Laboratory
Contractor Assurance System Review Committee

Charter

The H.42 Clause of the prime contract between the U. S. Department of Energy (DOE) and UChicago-Argonne, LLC, for the management and operation of Argonne National Laboratory requires the Argonne Board of Governors to execute a contractor assurance system (CAS) that is implemented throughout the contractor's organization. To comply with this requirement, the Board of Governors, which maintains executive oversight of the CAS, has chartered a standing, non-statutory committee to review the implementation and ongoing function of the Argonne CAS and to provide expert advice and other forms of intellectual reach-back to Argonne to improve and optimize the function of the Argonne CAS. Overall, the Committee will provide assurance to the Board and the Department of Energy that Argonne has a robust and effective CAS in place.

The CAS Review Committee will be comprised of two members of the Argonne Board of Governors and an appropriate number of additional subject matter experts. Committee members will be appointed to staggered terms to ensure an appropriate balance of continuity and turnover. The CAS Review Committee will meet as often as necessary to review programs in place and provide expert advice related to the attribute areas listed in Clause H.42. In addition, the Committee will review partnerships and relationships among key stakeholder parties responsible for the overall delivery of the assurance program (i.e., UChicago, Argonne, and DOE Site Office). The Committee will report its findings and recommendations to the Argonne Board of Governors at regular meetings of the Board. It is expected that the Committee will conduct at least one on-site review of the Argonne CAS each fiscal year and will conduct additional meetings by teleconference or in person at its discretion and as ongoing needs and issues arise.

At the end of the annual assurance cycle, the CAS Review Committee will draft and submit to the Argonne Board of Governors an annual assurance letter summarizing the status of the Argonne CAS for the fiscal year just completed. The letter will detail the Committee's assessment of the ability of the Argonne CAS to provide reasonable assurance to the Department of Energy that mission objectives are met; workers, the public, and the environment are protected; operational, facility, and business systems are effectively run; and contract requirements are satisfied. Following discussion by the Argonne Board of Governors at its October meeting, the annual assurance letter will be finalized and signed by the Chairman of the Board and submitted to the Argonne Site Office before the end of each calendar year.

The CAS Review Committee functions as an extension of the Argonne Board of Governors and provides: 1) expert assurance to the Board that the Laboratory has a robust and effective CAS in place; and 2) advice and assistance to the Laboratory in identifying and managing issues related to its CAS and helping the Laboratory prepare for periodic external CAS peer reviews. Contractor assurance activities and performance data will help to inform and prioritize the review committee's assessment schedule. The CAS Review Committee meets as often as necessary to adequately perform its primary function.

A chair of the CAS Review Committee is required to present results of the CAS review(s) once annually to the full Board. Board members who serve on the CAS Committee are available to answer additional questions and provide Board perspectives. Following Board discussion, an annual assurance letter is communicated by the Board to the ASO communicating the Board's assessment of the effectiveness of CAS at the Laboratory.

The CAS Review Committee and its review process replace all former reviews of mission support functions that were conducted in an ad hoc manner by the Board. Focused mission support reviews may still occur, but they are conducted within the framework of CAS (e.g., targeting a specific issue or chronic challenge area as identified by the CAS review process).

2.1.1.3 Timely and Appropriate Communication

In order to ensure timely and appropriate communication to the contracting officer and other appropriate DOE staff, a data warehouse of CAS-related information (supported by SharePoint) was created. The data warehouse includes all detailed information utilized by the CAS Review Committee in conducting its assessments; and all reports generated by the committee and reported to the Board. The site is also fully accessible to appropriate ASO staff. In those instances where written reviews or assessments result in or address sensitive business or personnel matters, UChicago will identify these to the contracting officer so that appropriate safeguards can be established by the parties to prevent unintended disclosures. In addition, UChicago senior leadership will provide routine verbal CAS updates to ASO leadership throughout the year as part of standing UChicago-ASO meetings.

In regard to transparency more generally, UChicago routinely provides access to and shares management information with the DOE through a combination of informal and formal mechanisms. UChicago senior leadership conducts standing and impromptu meetings throughout the year with the ASO to provide information, obtain input and feedback and address issues as they arise. UChicago also meets by phone and in person as necessary with appropriate DOE officials at SC headquarters for the same purposes. In terms of formal mechanisms, the ASO manager and deputy manager are invited to attend regular meetings of the board of governors as well as assessment out-briefs; in addition, UChicago provides access to corporate governance records, including committee and board agendas, and provides

ASO with access to detailed information regarding the fulfillment of corporate commitments to the prime contract.

Additional operational interfaces are discussed in Section 2.5.

2.2 Laboratory Management System (LMS)

Overview

As documented in the LMS Description, Argonne operates under a line management structure. This structure establishes a hierarchical chain of command, as shown in Figure 2 and more detailed organization charts, and it defines job content through formal statements of roles, responsibilities, authorities and accountabilities (R2A2s), and position descriptions. Laboratory-wide policies and procedures, which set requirements for how work is done and define standard work processes, are established under enterprise "core processes" (such as financial management or strategic planning) that are "owned" by the line manager who holds functional responsibility for that process area (such as the chief financial officer or the deputy Laboratory director for programs, etc.). The combined system (Figure 4) achieves Argonne's mission in an efficient and effective manner.

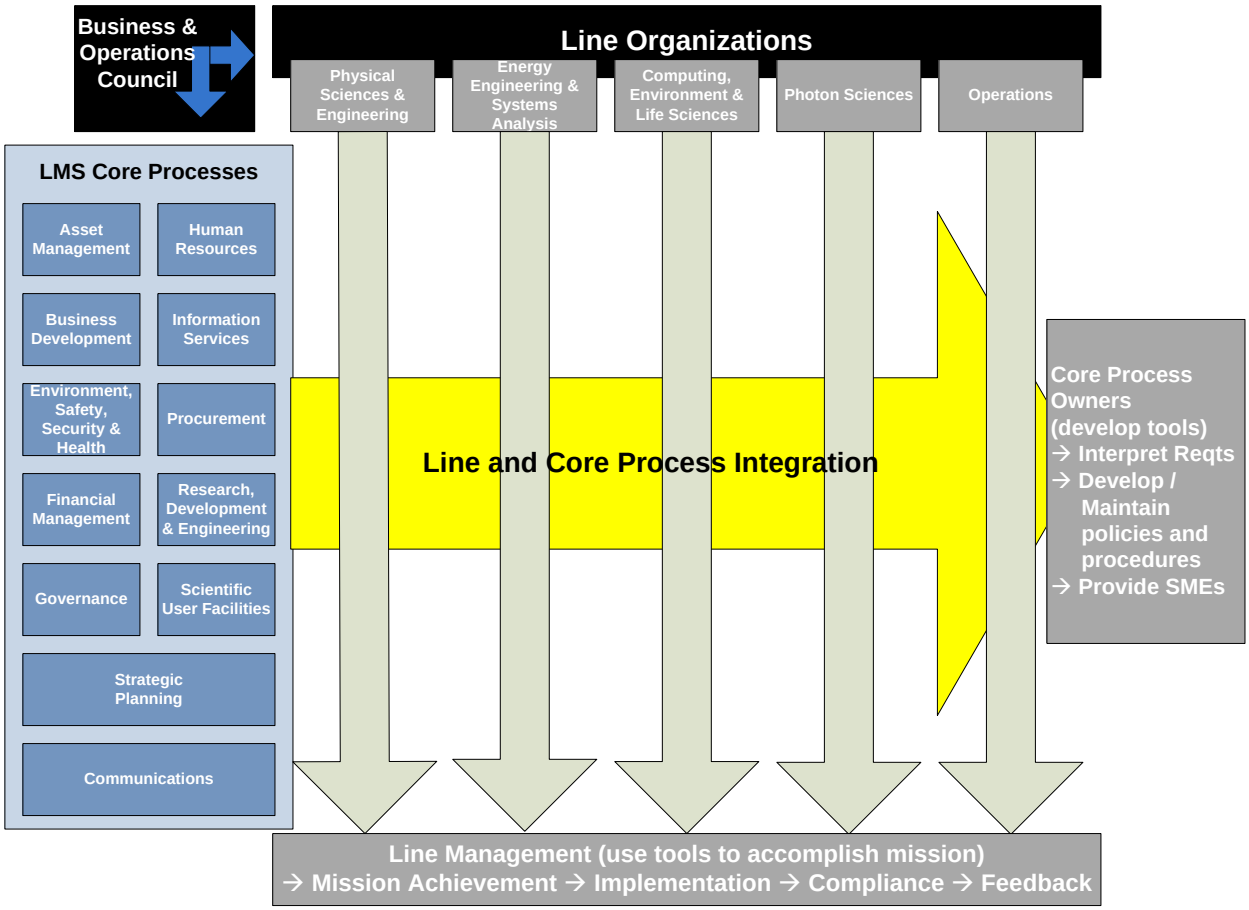


Figure 4: Integration of line management and process management

Argonne's process-based approach to establishing requirements for how work is done incorporates the ISO principles of continuous improvement and customer feedback and applies to all work performed at Argonne. Argonne is certified to the ISO 9001 (quality management) and ISO 14001 (environmental management) standards. A noteworthy demonstration of Argonne's commitment to the ISO principle of

customer feedback is the Business and Operations Council, a team of senior managers who advise the deputy Laboratory director for operations. The council provides a forum for internal customer feedback to mission support managers, facilitates continuous improvement in mission support functions, and supports effective decision-making on business and operational matters.

Requirements Management

Assurance that the Laboratory is operating in compliance with the requirements of the prime contract is provided through the responsibilities and processes defined by the following Laboratory-wide procedures:

- LMS-PROC-59, *Assignment of External Requirements*, defines the process used to identify the line managers (process owners) who are responsible for establishing the work processes through which Argonne complies with specific external requirements.
- LMS-PROC-61, *Responding to Prime Contract Modifications*, requires process owners to review draft and final DOE directives and other contract modifications, determine Argonne's current level of compliance, and develop implementation plans when existing processes are not in full compliance.
- LMS-PROC-119, *Exemptions from Laboratory-wide and External Requirements*, establishes the process for obtaining formal exemptions to external and internal requirements.

Risk Management

Argonne's enterprise risk management (ERM) process defines how line management identifies potential events (i.e., threats) that may have significant negative impacts on the Laboratory's ability to achieve its missions and how line management manages those risks. This process is documented in LMS-PROC-155, *Enterprise Risk Management.* This process provides the Laboratory's senior management, UChicago, and the board of governors with an understanding of Argonne's risk posture that enables them to act to mitigate threats to Argonne's success.

Integration with Other Management Systems

Argonne's overall Laboratory management system, as described above, provides the structure for both overall contractor assurance and for processes that focus on specific aspects of mission-enabling activities. As an example, the Laboratory's integrated safety management system (ISMS) and environmental management system are implemented in part through the same line responsibilities and Laboratory-wide policies and procedures that provide overall contractor assurance (see Sec. 2.3 for more detail):

- Formal assessment processes validate that the ISMS is functioning properly and/or to identify opportunities for improvement.
- Formal issues management processes track identified safety issues and actions to improve the ISMS.
- Formal lessons learned processes are integrated with documented work planning and control processes, supporting work scope definition (ISM core function #1), hazard identification (ISM core function #2), and selection of appropriate controls (ISM core function #3).
- Formal work planning and control processes achieve both the CAS worker feedback goals and the ISMS expectations for soliciting feedback from workers (ISM core function #5).

2.3 Performance Management

Argonne uses fundamental quality assurance principles to manage its performance, as shown in Figure 5. The Laboratory uses several planning mechanisms to align work with mission goals and translate

strategic plans into tactical actions. Assessment and other feedback activities provide line managers with assurance that objectives are being achieved and identify opportunities for improvement.

2.3.1 Strategic, Annual, and Performance Management Planning

Argonne's strategic planning process is defined in LMS-PROC-42, *Strategic Planning.* Figure 6 provides an overview of the planning process and its relationship with CAS elements.

This process is used to create and maintain strategic plans that identify multiyear goals, set priorities, determine needs, document approaches to achieving those goals, and identify the implementation pathway, in alignment with the missions of the DOE and Argonne's other sponsors.). The Laboratory strategic plan establishes Argonne's high-level mission, vision, and values, while coalescing major research efforts around a series of major initiatives. This plan also informs the DOE Office of Science annual Laboratory planning process.

The deputy Laboratory director for programs owns the strategic planning process and has overall responsibility for implementation of the Laboratory-wide strategic plan. Responsibility for the detailed execution of the strategic plan rests with line managers with support from designated initiative and strategy leaders. To communicate and formalize priorities for each fiscal year, the deputy director for programs also leads the preparation of an annual "Laboratory agenda" that documents actions to be taken that year to support strategic goals.

Mission support organizations in turn prepare annual performance management plans (PMPs) that integrate Laboratory agenda objectives, DOE goals from the Performance Evaluation and Measurement Plan (PEMP), and line management improvement priorities. Section 2.4 describes how Argonne reports progress against the PMPs.

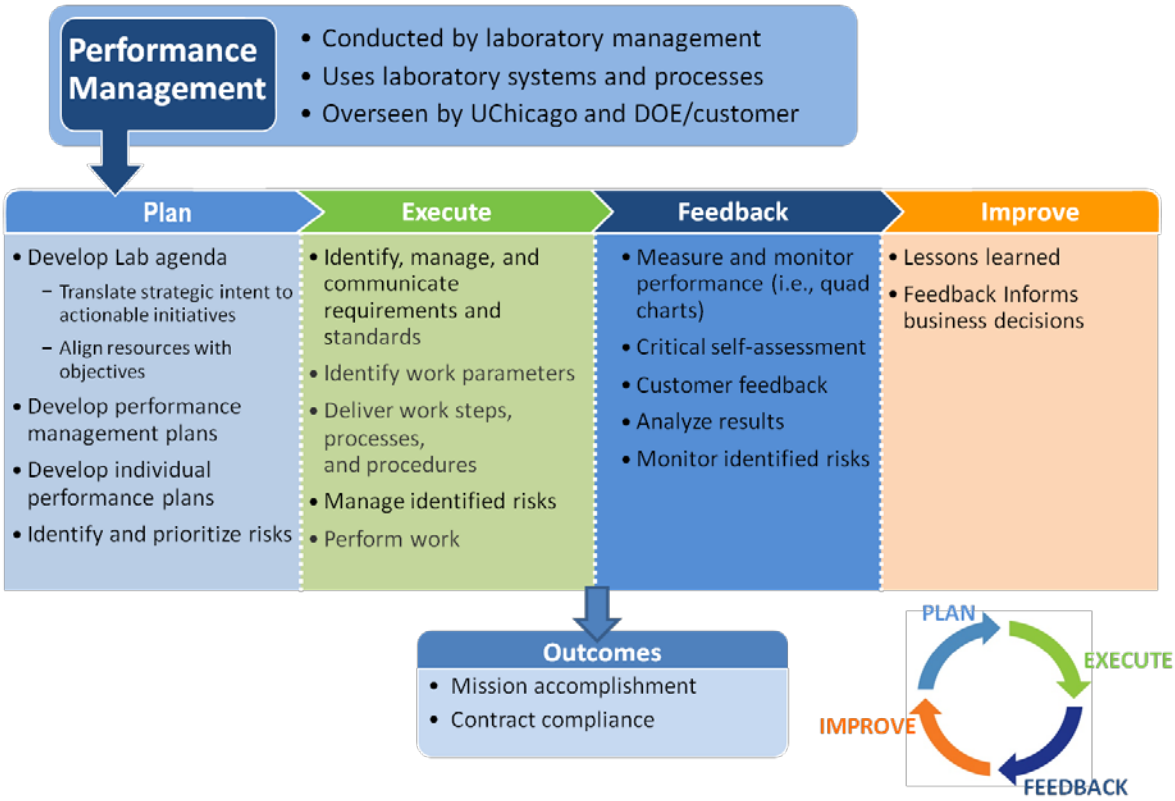


Figure 5 – Overview of performance management

Figure 6 – Relationship between planning documents and CAS program elements

2.3.2 Integrated Assessments

Argonne's integrated assessments program assures that requirements are being met and also provides a mechanism for identifying improvement opportunities. LMS-PROC-194, *Integrated Assessments Program*, establishes the process for risk-based planning and scheduling of assessments.

The integrated assessments program includes self-assessments by line organizations, independent assessments, corporate assessments, and external assessments (see Figure 7). Each assessment type is described in more detail later in the following sections.

Assessments are used to periodically evaluate performance at all levels by both employees and subcontractors, and to determine the effectiveness of policies, procedures, and standards and their implementation status. The performance feedback information gained from these assessments is shared with Argonne, UChicago, and DOE-ASO management and is used to effect continuous improvement through the issues management and corrective action processes described in Section 2.3.4.

The integrated assessments program plays a key role in achieving CAS, ISMS, and quality assurance goals. The program coordinates the scheduling of assessments to effectively allocate resources and avoid duplication of effort; it provides simple mechanisms by which Argonne shares its assessment plans with DOE-ASO. Triennial base line assessment lists are developed that provide the basis for assessments chosen to be conducted and scheduled on the annual assessment schedules developed by divisions and/or core process owners. These annual assessment schedules are then integrated at the Laboratory level and approved by Laboratory management. These assessments are entered into the IMTS and available for viewing using various search parameters through the use of the integrated assessment scheduling tool.

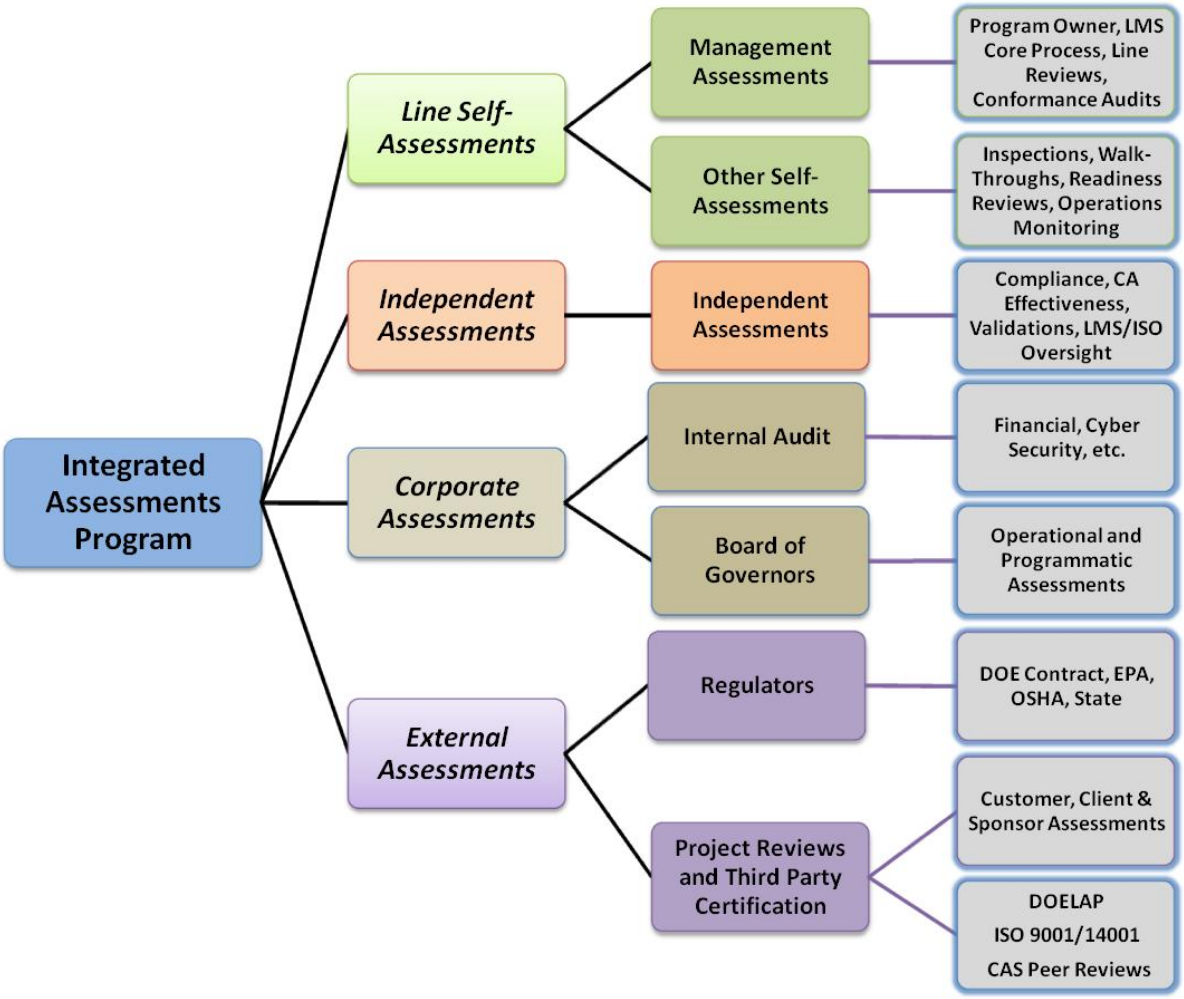


Figure 7: Hierarchy of Assessments

2.3.2.1 Line Self-Assessments

Line self-assessments include management assessments and other self-assessment activities. These assessments are described in the following Laboratory-wide documents:

- LMS-PROC-193*, Management Assessments*
- LMS-PROC-195*, Walkthroughs, Inspections, Operational Monitoring, and Other Self-Assessment Activities*
- LMS-PROC-196*, Extent of Condition Reviews*
- *Quality Assurance Program Plan*, "Criterion 9 – Management Assessment"

These assessments are designed as oversight activities to promote proactive behavior, early detection, and correction of potential issues. They provide line managers with an awareness of organizational performance and offer an opportunity to make improvements. The aim of these assessments is to review performance at the programmatic, process, and system levels. The Performance Management and Assurance (PMA) division provides mentoring and subject matter expertise to support the conduct of these assessments.

Line self-assessments are planned utilizing performance and expert-based risk grading that is derived primarily from line management and supported by PMA. Line managers use the following parameters as guidance when selecting assessment topics:

- How critical is performance area to programs and operations from a consequence-based perspective?
- What hazards are present and what are the associated risks?
- Have recent operational changes been reviewed?
- Regulatory / contract-required assessments
- Previous assessment activity or history
- Institutional trending and analysis results
- Mission needs
- Lessons learned / external feedback

2.3.2.2 Independent Assessments

Independent assessments are described in the following Laboratory-wide documents:

- LMS-PROC-6*, Independent Assessment*
- *Quality Assurance Program Plan*, "Criterion 10 – Independent Assessment"

Independent assessments include surveillances, internal audits, and other readiness reviews. These assessments may cover the same or similar programs, processes, and activities as management assessments, but include assessors who are independent of the program, process, or activity being assessed. They provide an independent evaluation of compliance with applicable laws, regulations, national standards, DOE directives, DOE-approved plans, and program documents. Line organizations may request independent assessments through PMA.

2.3.2.3 Corporate Assessments

Corporate oversight is accomplished by UChicago principally through its board of governors and its statutory committees and standing review committees as described in Section 2.1. An additional level of

corporate level assessment is executed by the Laboratory Internal Audit group. The chief audit executive reports directly to the UChicago chief executive officer and manages a comprehensive program of financial reviews designed to ensure adequate, cost-effective financial and operating controls. They also staff the Board Audit Committee and routinely report the results of audits and other issues to that statutory committee. Internal audits touch several of the Argonne core processes and, therefore, are integrated with the independent assessment function shown in Figure 7.

2.3.2.4 External Assessments

External assessments are performed by organizations outside of UChicago Argonne, LLC, such as the DOE-ASO, Illinois Environmental Protection Agency (IEPA), Occupational Safety and Health Administration (OSHA), and other third parties. In addition, external certification audits to the ISO9001 and ISO14001 standards are completed by an International Organization for Standardization (ISO) registrar, which conducts audits twice a year.

Under the CAS clause in the prime contract, third-party audits, peer reviews, independent assessments, and external certification may be used to verify the effectiveness of assurance system processes. However, the DOE-SC is currently using a peer review process for the initial review of CAS implementation at each of its laboratories, both to provide assurance of effective implementation and to identify and share best practices and lessons learned to enable continuous improvement. A peer review guide and associated lines of inquiry have been collaboratively developed by DOE-SC laboratories and DOE site offices to guide the conduct of these reviews.

2.3.3 Issues and Corrective Action Management

Argonne's issues and corrective action management program translates performance feedback information into issues that are prioritized for resolution based on significance. It captures issues identified by workers and managers in the course of day-to-day activities as well as issues identified by nonconformances and assessments.

Identified issues are managed to closure using the Laboratory-wide issues management tracking system (IMTS) according to the requirements specified in LMS-PROC-4, *Issues Management and Corrective and Preventive Action*. The following procedures require issues originating from assessments and incidents to be identified, documented, prioritized, screened for reportability to federal agencies or noncompliance with federal regulations, and evaluated to identify corrective action and the extent of an adverse condition:

- LMS-PROC-3, *Control of Nonconforming Products and Services*
- LMS-PROC-82, *Managing Noncompliance Issues Covered by the Argonne Enforcement Program* (applies to noncompliance issues covered by the Price-Anderson Amendments Act [PAAA], 10 CFR 851 Worker Safety and Health [WSH] program, 10 CFR 824 Classified Information Security and their implementing regulations)
- LMS-PROC-89, *Fact-Finding and Incident Investigation* (uses a graded approach).
- LMS-PROC-90, *Incident Scene Preservation and Collection and Control of Evidence*
- LMS-PROC-92, *Causal Factor Analysis*
- LMS-PROC-187, *Occurrence Reporting and Notification* (includes tracking and performance analysis as required by DOE O 231.1B).

- LMS-PROC-196, *Extent of Condition Reviews*

The issues management process provides for timely, effective resolution of deficiencies and is an integral part of the contractor assurance system. It uses a graded approach to provide a structure for prioritizing work, grading the level of causal analysis and management involvement, notifying the appropriate external authorities, and developing and verifying corrective and preventive actions.

High-impact, high-consequence, high-priority issues are reported to senior management and DOE-ASO in accordance with requirements established under the ORPS, PAAA, 10 CFR 851, and injury & illness programs. In addition, issues that have Laboratory-wide implications or require senior management attention are brought forward to the Business and Operations Council (described in Section 2.2) and/or the Laboratory Director's Safety Council (DSC), a body of senior managers that monitors the Laboratory's safety performance and advises the Laboratory director on needed actions to maintain or improve that performance.

Analysis of trends, based on data from the issues management system, is used to help identify emerging issues and risks. The issues and corrective action management process is a fundamental aspect of the quality management system, consistent with ISO 9001 principles. PMA staff present periodic reports to the BOC, the DSC, and senior management to assist in the timely resolution of issues, support the identification of trends and promote line management accountability.

2.3.4 Feedback and Improvement

Feedback and improvement systems are used to drive continuous improvement across mission support operations in various ways, as described below. In addition, a systematic approach (i.e., periodic management reviews of performance via LMS-PROC-53, *Annual Review of the Laboratory Management System*) is used to drive continuous improvement of Laboratory management system processes.

2.3.4.1 Worker Feedback

Argonne uses formal and informal processes to solicit feedback from workers. For example, worker feedback interactions are established and specified in the following Argonne documents (not meant to be all inclusive):

- LMS-POL-16, *Work Planning and Control*
- LMS-PROC-200, *Local Work Planning and Control Implementing Procedures*
- LMS-PROC-64, *Non-Experimental Work Planning and Control.*
- LMS-PROC-79, *Experimental Work Planning and Control*
- LMS-PROC-89, *Fact Finding and Incident Investigation*
- LMS-PROC-133, *Lessons Learned*
- LMS-PROC-159, *Facility Safety and Health Inspections*
- LMS-PROC-195 *Walkthroughs, Inspections, Operational Monitoring, and Other Self-Assessment Activities*
- HR-1.0.5, *Statement of Conduct – Policy*
- HR-6.2.0.0.2, *Employee Concerns and Suggestions – Procedure*
- Terms and conditions of subcontracts

Additional mechanisms for worker feedback include assessment interactions; issues reporting, tracking, and trending; meetings led by division and Laboratory management; daily routine interactions between employees and managers; and employee committees. For example, the Employee Safety and Health Committee (ESHC) and the safety@anl.gov email provide mechanisms to solicit worker feedback.

Feedback received is tracked to resolution in the IMTS and success stories are shared via the intranet to further promote use of the programs. Formal feedback can also be provided via either the DOE or Argonne employee hotlines; both give employees the opportunity for confidential reporting of ethical and compliance issues.

Awards programs have been established to allow managers and supervisors to recognize worker feedback, thus providing incentives for timely feedback. These programs include Impact, Pacesetter, Quality and Safety Recognition (QASR), and Spot awards. Additionally, board of governors annually issues a safety leadership award to recognize Laboratory leaders who have done an exceptional job practicing the principles of integrated safety management, contributing to a positive safety culture, and successfully addressing critical challenges.

2.3.4.2 Incident Investigation and Reporting

Various incident response procedures exist as required to satisfy DOE requirements for specific types of incidents. For example, Argonne has also established a formal set of cyber security incident response procedures as described in Section 9 of the Cyber Security Program Plan. All Laboratory users are trained to notify their cyber security program representative (CSPR) and other divisional authorities if they notice any indication of a cyber security breach. Once the incident is verified as real or suspicious, the CSPR reports the incident to the Cyber Security Program Office (CSPO). The CSPO tracks all incidents, notifies appropriate authorities, and confirms that appropriate actions have been taken.

The following subsections apply to safety related incident response and reporting.

Fact Finding and Causal Analysis

LMS-PROC-89, *Fact Finding and Incident Investigation* establishes Argonne's requirements for conducting formal fact finding exercises and incident investigations. An incident investigation is a type of unplanned assessment and also serves as a mechanism to solicit worker feedback. Such an investigation determines what happened and why and identifies steps to correct the situation and prevent recurrence.

LMS-PROC-92, *Causal Factor Analysis* establishes the process for completing causal analyses in conjunction with incident investigations, so that correction action can be taken and lessons learned identified. The procedure provides for a graded approach to the analysis.

Event Reporting

Argonne has established formal processes, as described below, for event reporting that vary depending on the type of event. Reports of conditions and resulting issues that arise from analysis of incidents and observations are tracked in IMTS, and conditions that are entered into the IMTS as ESH issues are evaluated to determine if they meet Occurrence Reporting and Processing System (ORPS) or Noncompliance Tracking System (NTS) reporting criteria.

LMS-PROC-187, *Occurrence Reporting and Notification* establishes requirements for timely identification and categorization of occurrences that are reportable through ORPS. Related corrective actions are tracked to closure within both ORPS and IMTS. PMA staff develop quarterly performance analysis reports to identify trends to enable management to take appropriate mitigating actions, and unexpected trends are discussed during Director's Safety Council meetings.

LMS-PROC-82, *Managing Noncompliance Issues Covered by the Argonne Enforcement Program* defines the process for reviewing issues that may involve noncompliance with the Price-Anderson Amendments Act (PAAA) and the DOE Worker Safety and Health Program described at 10 CFR 851. As part of this review, PMA staff also evaluates the issue for potential recurrence and indication of possible systemic or programmatic breakdown. PMA staff present to senior Argonne management any issues meeting the

PAAA or 10 CFR 851 reporting thresholds and consider those issues for documentation in the DOE Noncompliance Tracking System (NTS) as well as within Argonne's IMTS. Argonne requires that, for any PAAA or 10 CFR 851 NTS-reportable noncompliance issues, PMA staff conduct or lead an assessment to evaluate the effectiveness of the corrective actions.

LMS-PROC-89, *Fact Finding and Incident Investigation*, establishes the process for notifying line managers of work-related injuries and illnesses and collecting associated data to support recordkeeping. Argonne's Occupational Injury and Illness Review Committee, which is chaired by the director of the Health and Employee Wellness Division, reviews any employee report of injury or illness to determine if the injury/illness is occupational and/or covered by worker's compensation and if it is OSHA recordable.

2.3.4.3 Lessons Learned

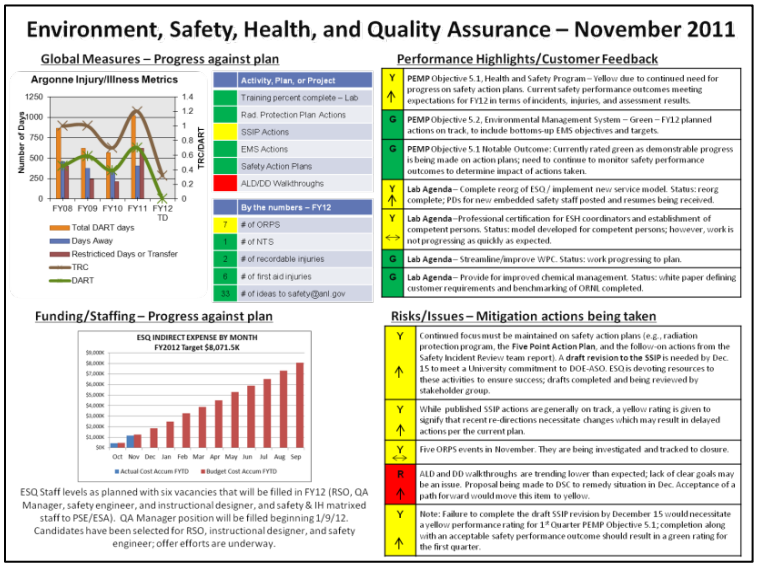
LMS-PROC-133, *Lessons Learned* establishes the process Argonne uses to identify and disseminate lessons learned. The program is facilitated by the Argonne lessons learned (LL) coordinator, who interfaces with division LL points of contact (POCs) to coordinate the screening, development, and distribution of lessons learned reports. The Argonne LL coordinator is the Laboratory's point of contact for the DOE Corporate Operating Experience Program as required by DOE O 210.2A, *DOE Corporate Operating Experience Program*.

Potential lessons learned are identified by a variety of sources, including employee feedback, assessments, investigations, and external industry/government information sources. Additionally, the work planning and control process includes a prompting for work planners to incorporate lessons learned during work package development. Further information is available at the Lessons Learned program website.

2.4 Performance Measurement and Reporting

Argonne uses performance measures to demonstrate performance relative to defined outcome measures and targets. Routine evaluation of measures by management enables early intervention when performance is not as expected. Performance measures are aligned with strategic and customer goals as described in Section 2.3.1 and are representative of overall performance at the Laboratory level. Measures include both leading and lagging indicators, as applicable.

Mission support organizations summarize performance data in their area of responsibility in a monthly "quad chart" format (see illustration); these charts are reviewed by the Laboratory director, deputy and associate Laboratory directors. Quad charts are consolidated and summarized to support quarterly Performance Evaluation and Measurement Plan (PEMP) self assessment and reporting requirements. Quad charts are also available on the intranet to support ongoing performance reporting and transparency.



Quad charts are divided into four quadrants:

- Quadrant 1 - Global Measures – Progress against plan: Displays the status of measures that relate to the organization's area of responsibilities, typically through a mix of graphs illustrating the trending of performance measures over time, pie charts, stoplight indicators, etc.
- Quadrant 2 - Performance Highlights/Customer Feedback: Provides highlights and performance status of major organizational objectives (i.e., PEMP objective, PEMP notable outcome, and Laboratory agenda objective). Organizations may also include the status of major objectives not covered by the PEMP or the Laboratory agenda.
- Quadrant 3 - Funding/Staffing – Progress against plan: Summarizes actual financial performance and staffing levels versus the approved plan, with an explanation of significant deviations from the plan.
- Quadrant 4 - Risks/Issues – Mitigation actions being taken: Lists the most significant activity-level risks that have the potential of preventing successful accomplishment of objectives.

2.5 Operational Interfaces

Operational interfaces are designed to assure customer transparency, a key element of the contractor assurance system. In this context, transparency is defined as timely, broad, and appropriate communication between Argonne, UChicago, and the DOE-ASO to establish credibility in the Laboratory and UChicago CAS processes. Transparency means unfettered access, within established protocols, to Argonne's facilities and information about Laboratory operations in the areas of assessments, performance measurements and analysis, issues identification, and corrective action plans. Toward this end, in addition to the various formal and informal communication and reporting mechanisms, both UChicago and the DOE-ASO have electronic access to CAS program information and data (e.g., quad charts, PEMP self assessments, performance management plans, etc.) via the Laboratory intranet and the CAS program website.

2.5.1 Integration of Oversight

Laboratory, UChicago, and the DOE-ASO management work together as partners in an effective assurance system. Argonne and UChicago assurance processes work together to provide reasonable assurance to the DOE-ASO that mission outcomes are being achieved in an efficient and effective manner. In addition to the mechanisms described above, Argonne, UChicago, and DOE-ASO leadership participate in periodic strategic partnership retreats. Together these assurance processes support the DOE-ASO oversight role, allowing that office to adjust its mix of oversight while enabling mission accomplishment by Argonne.

2.5.2 CAS Program Approval and Change Control

Argonne and UChicago management will notify the DOE-ASO contracting officer of significant changes to CAS elements in a timely manner. Significant changes are defined as those that alter the intent of the originally approved CAS process. Procedural changes within CAS elements, in general, are not considered significant changes unless the intent of the procedure has changed.