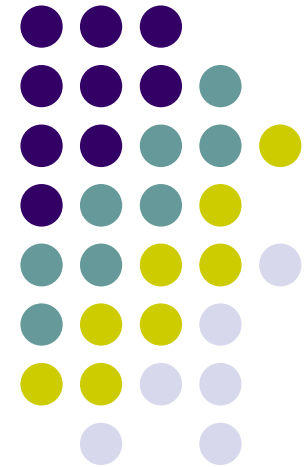
EFCOG
SAFETY SUBGROUP ISM/CAS/QA
TASK 3 White Paper

WP-SAF-ISM-CAS-QA-001-RA



ESTABLISHING A CONSISTENT APPROACH TO ADDRESSING IMPROVEMENT IN CONDUCT OF OPERATIONS TO MEET NNSA PERFORMANCE OBJECTIVE 5.5

May 2023

PURPOSE

- This White Paper is intended to provide a consistent approach to addressing Performance Objective (PO) 5.5, which states:

"Demonstrate improvement in formality and rigor for Organizational Culture in Conduct of Operations through the institutional implementation of effective and efficient countermeasures."

- It is intended to assist in developing consistent criteria for countermeasures to be considered for the identification and mitigation of potential "Operational Upsets"

SCOPE/BACKGROUND

- National Nuclear Security Administration (NNSA) Conduct of Operations A3 Working group performed an evaluation of reported events within NNSA Facilities and made conclusions and recommendations
- EFCOG organized a team to review the NNSA evaluation, conclusions, and recommendations
  - The team was made up of cross-cutting EFCOG Safety working groups and Task teams including CAS, Integrated Safety Management, Human Performance Improvement, Safety Culture, Work Planning and Control and Quality Assurance

THE EFCOG PRODCUCT White Paper

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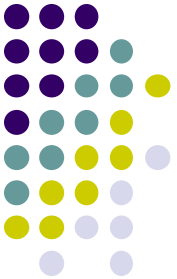


Purpose

Operational Upsets (Definition Used)

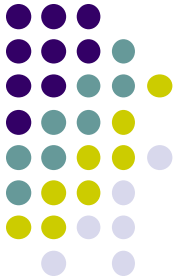
Scope/Background

Executive Summary

Detailed Narrative

- Current Observations - Where We Are Now
- Nine Strategic Countermeasures For Systematic Improvement
- Challenges, Good Practices, Identified Improvement Perspectives And References (For Additional Sources And Details For Implementation)

EFCOG SUMMARY RESULTS



- EFCOG Team concurs with NNSA results and recommendations.
  - These are valid but underlying challenges and issues seem go deeper than reported.
- Although several NSSA Contractors have demonstrated good improvement initiatives and include some good practices as noted in the report, the challenges and inconsistent results point to more basic Institution wide issues.
- Recommended 9 Strategic Countermeasures

CHALLENGES

There are many challenges in this initiative due to the inherent DOE/NNSA complexity reflected in the multitude of:

- Organizations, functions, nuclear safety requirements, type of projects, research, and diversity of internal and external oversight, and regulatory roles.
- Rapidly changing conditions in scope, regulations, or customer requirements can lead to cause transients that are difficult to plan, manage, and maintain performance expectations, much less improve them.
- Marketplace conditions, managerial & employee retirements, job changes, and new or changing roles all increase risks to expected performance.
- Project transitions, new assignments, joint venture formation, or changing requirements can stimulate potential negative performance impacts.
- Organization and project drift, new technologies, changing business & and information systems and the impact of access to remote workers, all challenge the culture and overall performance.

CHALLENGES

- Lack of teamwork and shared vision. As events occur improvements are made in silos, without a complex-wide, system approach.
- Failure to hold people accountable to a unified direction, often rewarding divergent and redundant initiatives.
- Direction for Improvement Initiatives: Complex-wide initiatives for operational performance improvements have limited impact.
- Lack of a true north for improvement, manifesting in a lack of clear expectation balancing mission need/desired results with an informality of expectations leading to inconsistent implementation.
- No robust Complex-level approach or established organizational framework that fully integrates assurance into mission execution.
- No agreement on what success looks like or what to measure.
- Lack of transparency and shared meaningful lessons learned.
- Ownership: Delays in planned operations, with formality and rigor of operations being a primary contributor. Formality of Operations/Lack of Integration has been consistently identified as either the cause or contributor to many issues.
- Senior Management/Stakeholder Engagement: Lack of field engagement by leaders leaves a gap in example setting and communication from top to bottom and vice versa.
- Mission enablement processes/systems lack adequate stakeholder engagement to drive effective mission execution and assurance.

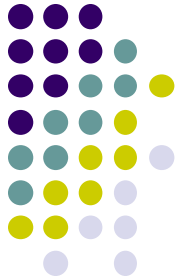
OBSERVATIONS AND IDENTIFIED IMPROVEMENT PERSPECTIVES

CURRENT STATE - WHERE WE ARE NOW

- This initiative has confirmed that NSSA contractors have started to or have been addressing Performance Objective PO 5.5 at an institutional level and are currently in the process of implementing new or updated initiatives as part of an overall continuous improvement effort.
- Executive strategy established to effectively achieve objective 5.5 starting to establish long-term and unified Lab-level assurance mechanisms to drive operational performance improvements.
- Approach is built on the foundation of the existing Management Systems Policy, integrated quality and contractor assurance policy and, performance expectations.
- Focus on activities such as:
  - Measuring and monitoring, analyzing metrics, strengthen organizational and safety culture, dedicated resources and programs for establishing meaningful metrics, developing institutional dashboards, escalating identified trends, integrating risk management activities with objective and key results (OKR's) and key performance indicators (KPI's)

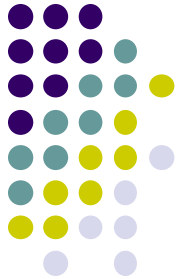
WHERE DO WE GO FROM HERE

SUGGESTED COUNTERMEASURES FOR SYSTEMATIC IMPROVEMENT



- Systematic plan must be developed that addresses these challenges and is structured in a way that drives performance improvement and also provides a mechanism for maintaining a high level of performance in a sustained manner.
- This systematic plan should factor in current organizational culture state and fit for purpose with the complex NNSA portfolio, including R&D activities.
- Elements involved include safety culture, safety conscious work environment, measuring and monitoring to show improvements, supervisory involvement, improvements in training, and continuously working towards becoming a better learning organization.
- The key to success is understanding & monitoring performance. This includes establishing a mission success model and a method to define/measure success.

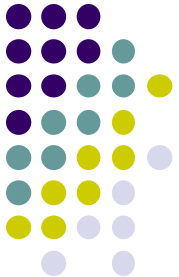
A STRATEGIC APPROACH IS RECOMMENDED



This generally includes:

- Enlist leadership to own and drive improvements in operational performance.
- Strengthened organizational culture and oversight.
- Invest in employee/worker selection, orientation, engagement, skills, knowledge, and proficiency. Increase skills and experience levels and strengthen training and OJT for managers, staff, and operations and maintenance personnel.
- Strengthen mission delivery with excellence through organization learning to cultivate a learning organization.
- Simplify, integrate, and streamline a robust management /process system (e.g., Procedures/Technical Work Documents, IT, Communication, etc.
- Provide coaches, specialists, experts and administrative support as needed to support supervisory involvement in oversight of the actual work being performed.
- Charter senior leadership improvement teams and review boards within the issues management process.
- Pilot and benchmark measuring and monitoring for improvement.
- Risk management/assessment.

A Nine PART STRATEGY FOR ADVANCING THE PERFORMANCE ACHIEVEMENT OF PO 5.5

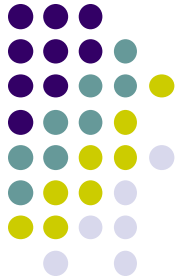


- Countermeasure 1: Engaged Leadership and Ownership
- Countermeasure 2: Effective Organizational Culture and Oversight
- Countermeasure 3: Employee/Worker Engagement and Proficiency
- Countermeasure 4: A Learning Organization
- Countermeasure 5: Well Integrated Robust Management Process System, e.g., procedures/technical work documents, IT, Communication, etc.
- Countermeasure 6: Supervisory Involvement
- Countermeasure 7: Issues Management
- Countermeasure 8: Effective Measuring and Monitoring for Improvement
- Countermeasure 9: Risk Management/Assessment

“OPERATIONAL Upsets”

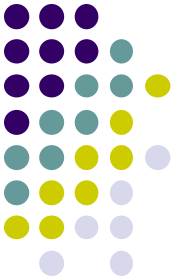
- An “Operational Upset”, for the purpose of this analysis, is any issue or event that creates a potential loss of operational control, achievement of mission, or undue stress on established Management Processes that may have adverse safety, health, quality assurance, operational or environmental implications.
- This includes unanticipated incidents, pauses, or stop work conditions which may cause delays or negative performance resulting in a threat to mission success.

COUNTERMEASURE 1: ENGAGED LEADERSHIP AND OWNERSHIP



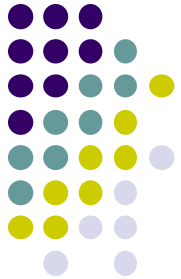
- Leadership, ownership, sponsorship, and engagement with cascading communication and feedback from the executive team down to the hands-on working teams is a critical countermeasure to assure mission success.
  - The executive leadership team should effectively integrate contractor leadership, project/organization, business-management, contractor governance, project management, and DOE oversight systems into a single, comprehensive performance management system to assure responsiveness to contractor assurance requirements and to assure that the mission is clearly defined, understood, communicated, and monitored throughout the organization.
  - Establishing effective governance, performance, and oversight teams with a trust-based communication process among executive leadership teams and partnering with the customer is critical.

COUNTERMEASURE 2: EFFECTIVE ORGANIZATIONAL CULTURE AND OVERSIGHT



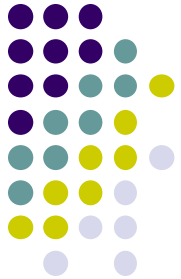
- Building a performance culture includes understanding the entire organization or enterprise.
  - Organizational culture is the final sum of the subcultures in the organization (e.g., safety culture, ethics and compliance culture, Con Ops, and HPI, etc.). The personality of an organization starts at the top with leadership. How leaders respond to failure matters. Senior leadership is watched and mimicked every day. We all want to please our boss, earn our pay, and deliver our mission. We learn the accepted behavior by watching our leaders.
  - Behavioral Science – State-of-the-art perspectives and human and organizational performance (HOP) skills and training are a must. Getting beyond a blame mentality (blame fixes nothing) and to a genuine concern for identifying the underlying causes that set up workers for failure (context drives behavior) will help to build error-resilient systems.
  - Senior leadership oversight and effective integrated assessment approaches are critical to success and sustainment. When DOE and Contractors partner in planning assessments, areas of concern can be discussed and planned together to meet common goals and reduce required resources.

COUNTERMEASURE 3: EMPLOYEE/WORKER ENGAGEMENT AND PROFICIENCY



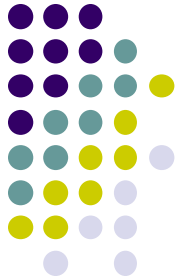
- Leadership/ Management/Supervision must plan and lead a process for selection training and orientation of all leaders and workers that leads to individual and team proficiency.
- This includes a clear process for building and maintaining individual and team proficiency “beyond training and qualification.”
  - Workforce adequately experienced, trained and proficient
  - Personal commitment to everyone’s safety and well being
  - Teamwork and mutual respect
  - Participation in work planning and improvement
  - Mindful of hazards and controls
  - Understanding WAI/WAD – work as imagined/work as done.

Countermeasure 4: A Learning Organization



- Learning is vital. The organization achieves improvement in mission execution by conducting proactive, credible, and critical assessments, and analysis of performance including abnormal events; identifying and correcting issues; performing trend analysis; generating and applying lessons learned; and conducting routine performance monitoring. Improvement in mission performance and risk reduction result from organizational learning efforts, such as learning teams, both after events and when work is going as planned.
  - Building a performance culture includes understanding the entire organization or enterprise.
  - Trust, accountability, transparency, integrity, and respect are maintained through all organizational levels via increased communication and integration of the overall organization or project. This includes effectively partnering among the team members, including NNSA.

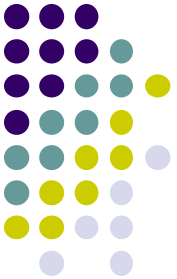
Countermeasure 5: Robust Management System



Starting with a formal and informal mutual understating of the requirements and client performance expectations and approval, problem resolution, and process.

- Take time to establish and communicate an integrated Project Management, or Organizational Operational Plan that addresses and integrates all the necessary management systems and approval basis, including both corporate and client expectations.
- Systematically streamline the management systems including all oversight and support organization systems to eliminate duplicate and overlapping requirement interpretation.
  - Remove complexity and burden.
  - Make it easy to do the right thing and hard to do the wrong thing.
- High Reliability Organizations (HRO): Those that operate in complex, high-hazard situations for extended periods while managing to avoid serious failures. These organizations continually evolve their operations to maintain this high standard, and technology is an essential part of that.
- At the core of an HRO, there are five key principles, which are essential for any improvement initiative to succeed: deference to expertise, reluctance to simplify, sensitivity to operations, commitment to resilience and preoccupation with failure.
- Establish a risk-based performance agreement on the relative importance to safety on areas of attention where a graded approach may be considered.

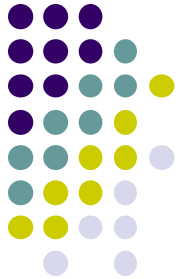
COUNTERMEASURE 6: SUPERVISORY INVOLVEMENT



Protecting the role, availability, and proficiency of First Line Supervision is a critical!

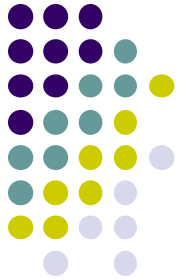
- Coaching and mentoring employees with independent and experienced people should be routine practice.
- A focus on the First Line Manager (FLM) is prudent. FLMs are the interface between the hands-on worker and management and often receive training but seldom the coaching/mentoring during the actual implementation of leadership principles.
- Independent coaches/mentors with actual leadership experience and experience in the nuclear field can be invaluable and provide the outside eyes that are not biased by day-to-day demands. They can also provide guidance to workers and middle level management at the same time.
- We operate in a complex environment with many administrative processes and requirements that challenge our FLMs' capacity and ability to be in the field effectively leading, coaching, and shaping organizational culture.

COUNTERMEASURE 7: ISSUES MANAGEMENT



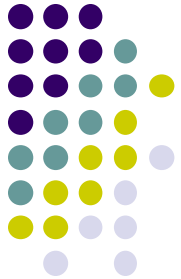
- Issues management activities are performed at every level of the organization to assure safe and effective project mission performance.
- This begins with the operations/project manager who provides the leadership for effective organizational learning, open communication, trust, and reporting of issues in an environment free from retribution.
- These practices must permeate through line management, support organizations, supervision, and the workforce, including clients and regulators.
  - Engage leadership to drive improvements in operational performance.
  - Engage leadership improvement teams and review boards.
  - Strengthen organizational and safety culture.
  - Streamline lessons learned.
  - Streamline/improve causal analysis process to focus on learning and improving.

COUNTERMEASURE 8: EFFECTIVE MONITORING AND MEASUREMENT



- The measuring and monitoring of ConOps events is imperative to driving improvement. How we measure performance will be influenced by an individual site's mission, risk level, and potential severity of impacts from ConOps events or upsets. Measures are either leading or lagging indicators of performance. Leading indicators should predict future performance and are necessary to give an organization opportunity to mitigate trends before suffering an impact on safety, security, or mission deliverables.
  - Monitoring trends and developing actions to drive timely improvements and, more challengingly, sustain realized improvements is critical to preventing future ConOps events
  - Determine metrics that measure performance of ConOps appropriate for the site mission, risk, and severity of consequences.
  - Determine leading metrics that indicate potential performance degradation and imply degradation of performance related to ConOps upsets (e.g., a degradation in safety or security performance could indicate a lack of discipline that could eventually lead to a ConOps event).
  - Lagging metrics are appropriate to measure ConOps specific performance for the purpose of monitoring performance and validating improvements.
  - Weighting measures based on severity and potential impact, or consequence is important to allow appropriate determination of responses and action development.
  - Analysis, trending, and measuring of ConOps performance should be tied directly to the Safety Performance Objectives, Measures, and Commitments (SPOMC) program. This suite of metrics ensures an agreed-upon approach to measuring and monitoring performance of key elements related to, and reflective of, ConOps performance.

Countermeasure 9: Risk Management/Assessment



- The fundamental goal of Enterprise Risk Management (ERM) is to support the achievement of the organization's core objectives by enabling informed business decisions that balance managing and taking risks.
  - Facilitate risk informed business decisions that intelligently manage risk to optimize business results.
  - Build risk management capability enterprise wide, ensuring focus on the most significant risks and ownership and accountability for effective risk management.
  - Provide transparency into risk management performance; leveraging clear metrics and dashboards that monitor progress and drive results.
  - Integrate risk management activities with OKRs and KPIs through institutional dashboard.
  - Support key operating activities, such as compliance and regulatory requirements, internal controls, and strategic planning.

QUESTIONS