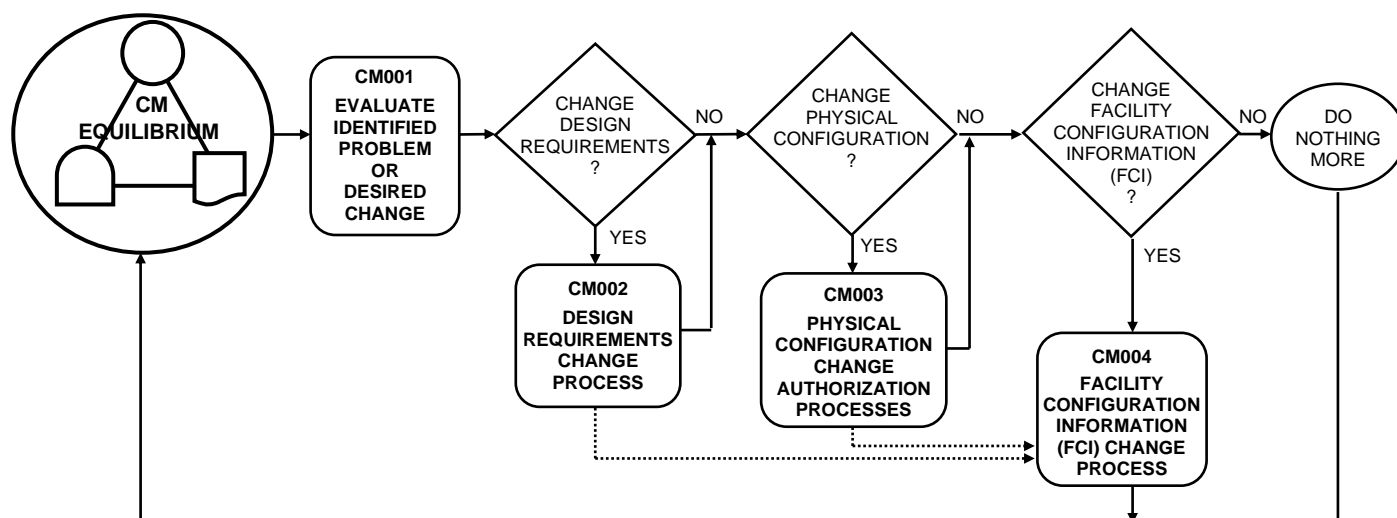


CMBG CM Performance Indicators



CM Equilibrium Restoration Diagram

Assumptions

1. CM is understood to include all plant personnel and processes – not just Engineering
2. These PIs are independent of any specific utility/plant process or resource base
3. Measurement techniques/methods probably don't exist for some indicators at this time
4. The CM Conformance Restoration Diagram is adopted and used by NEI and INPO
5. All CM problems/discrepancies are reported on CRs
6. Either CR cause or event codes and their assignments allow binning and tracking of CM-related information or someone familiar with CM will need to evaluate them for the period.

Definitions/Notes

1. Configuration Management (CM) – An integrated management program that assures:
 - a. governing requirements are identified and satisfied in the physical configuration and the facility configuration information, and
 - b. the physical configuration matches the facility configuration information.
2. In addition to CM self-assessments performed by Engineering or CM, other departments and process checks should be considered. For example, Operations clearance tag audits, Chemistry sampling, audits of Temporary Modification times, etc. Problems found during these assessments would be reported on CRs.
3. CRs = Condition Reports, commonly used problem reporting mechanism. Some facilities call them Problem Reports (PRs), Problem Evaluation Reports (PERs), etc. CRs may cover the gamut of configuration problems, from an oil leak in someone's car in the plant parking lot to a pump's failure to meet rated output to an unexpected flux change in the core. It may also be appropriate to record and monitor the number of "repeat" occurrences of CRs by category. It would also be advisable to identify "legacy" issues so as not to distort the significance of current problems. Facilities are encouraged to review their existing event-coding scheme to determine if they can be used effectively to evaluate CM issues.

CMBG CM Performance Indicators

4. Change Requests are typically a uniform requesting mechanism to get items into a review cycle for scoping, validity determination, action assignment, etc. Some facilities call them Action Requests (ARs), Engineering Change Requests (ECRs), Engineering Service Orders (ESOs), etc.
5. Cumulative effects of pending or temporary changes to the design basis calculations, e.g., piping stress calcs, heat load calcs, service water heat load calcs, containment heat load calcs, electrical load calcs, etc. should be considered as a leading indicator to potential design requirement problems. Tracking of incremental changes is advised so that individual changes that do not erode design/safety margin will not collectively present a problem.
6. FCRs = Field Change Requests, mechanism for identifying in-process changes for Physical Configuration changes after authorization was received. The term could also apply to Physical Configuration package revisions. Avoidable FCRs and Physical Configuration package revisions are those that should not have occurred with adequate prior planning or design development. Tracking the number, percentage and age of FCRs and/or Physical Configuration package changes may be an informative measure.
7. Physical Configuration changes include items/processes in addition to traditional modifications or engineering changes. For example, Physical Configuration changes apply to Operations valve and equipment line-ups, chemistry changes, computer hardware/software changes, nuclear fuel/core changes, etc.
8. Facility Configuration Information needs to include documents/databases outside of engineering. For example, Operations/Chemistry/Maintenance procedures or training materials that include structure, system, or component design/license basis information.
9. CM001, CM002, etc. correspond to the core process designators in the NEI Standard Nuclear Performance Model.

CMBG CM Performance Indicators

Process: **CM Equilibrium**

Examples: CM Culture
 Recognizing & Managing return to Equilibrium
 Roll-up of issues identified in other Areas

A	Indicator Name:	Overall CM Program Effectiveness
	Definition:	Composite score for CM-related leading and lagging indicators
	Reason for Reporting:	<ol style="list-style-type: none"> 1. To Advise Management (Problems, ways to Improve) 2. 10CFR Requirements for Safety-Related items 3. Minimize/Avoid Cost of Recovery when equilibrium is upset 4. Check/Adjust Program
	Calculations:	How indicator is arrived at: <ol style="list-style-type: none"> 1. For leading indicators – develop customer survey 2. For lagging indicators – composite of results from CM001-004
	Reporting Frequency	<ol style="list-style-type: none"> 1. For leading indicators - annually 2. For lagging indicators - monthly
	INPO OEO Reference	4c
	Comments	Goal would be to show a positive trend over a period of time Results can be displayed using a red, green, yellow, white color scheme

B	Indicator Name:	CM Awareness and Training
	Definition:	# of CRs or other plant indicators indicating in-adequacies in CM awareness or training
	Reason for Reporting:	<ol style="list-style-type: none"> 1. People need to understand process to ensure success 2. Improve Human Performance
	Calculations:	How indicator is arrived at: Review of CRs or other indicators (either all, % sample or CR database word search))
	Reporting Frequency	Monthly
	INPO OEO Reference	2f, 2i, 3a, 3l
	Comments	See Assumptions 5 & 6 Goal would be to show positive trend

C	Indicator Name:	CM Self-Assessment
	Definition:	# of CRs written as result of CM self assessments
	Reason for Reporting:	Identify/Prioritize and Propose Corrective Actions for Improvements
	Calculations:	How indicator is arrived at: Review of CRs (either all, % sample or CR database word search)
	Reporting Frequency	Monthly
	INPO OEO Reference	1k, 1j
	Comments	Include all functional areas, i.e., Ops tagging audit, Temp Mod audit, etc. It may be appropriate to distinguish between internal self-assessments versus external driven assessments/audits/inspections. See Definition 2

CMBG CM Performance Indicators

Process: CM001 – Evaluate Identified Problem Or Desired Change

Examples: Problems identified by CRs such as:

- Documents ≠ Physical Plant
- Ops Lineup ≠ Procedure
- Equipment Out-of-Tolerance

Desired Changes such as:

- Modification/Temp Mod Change Request
- Tech Spec / Procedure Change
- Equivalency
- Abandon-In-Place
- Red Tag Components
- Storage Requirements
- Scaffolding Request

A	Indicator Name:	Effectiveness of Identification Process for CM Related CRs
	Definition:	1. # and % of CM-related CRs to total CRs per period 2. # and % of CM-related CRs considered valid
	Reason for Reporting:	Effectiveness of process in identifying CM Problems for Improvement
	Calculations:	How indicator is arrived at: Review of CRs (either all, % sample or CR database word search)
	Reporting Frequency	Monthly
	INPO OEO Reference	1a, 4c
	Comments	See Assumptions 5 & 6 and Definition 3 & 4

B	Indicator Name:	Timeliness of Identification for CM Related CRs
	Definition:	1. Time from initiation of CR to assignment of action to resolve 2. # of open CM related CRs 3. Time from initiation of change request to assignment of action to resolve 4. # of open CM related Desired Changes
	Reason for Reporting:	Reduce Risk Exposure for CM Related Issues – How Long Out of Equilibrium
	Calculations:	How indicator is arrived at: Review of CRs (either all, % sample or CR database word search)
	Reporting Frequency	Monthly
	INPO OEO Reference	1d, 2i
	Comments	See Assumptions 5 & 6 and Definition 3 & 4

C	Indicator Name:	Cost Performance for Evaluation Process
	Definition:	Work-hours to evaluate CM-related CRs
	Reason for Reporting:	1. Identify Process Improvements 2. Effective Use of Resources
	Calculations:	How indicator is arrived at: From data extracted from facility time keeping records
	Reporting Frequency	Monthly for internal use, may be averaged for annual reporting
	INPO OEO Reference	N/A
	Comments	Excludes work-hours to develop changes indicated in CM002, 3 & 4

CMBG CM Performance Indicators

Process: CM002 - Design Requirements Change Process

Examples: Problems identified by CR Process

- SAR/ Tech Spec Changes
- Calculation / Design Basis / Specification Changes
- Setpoint changes
- New / Revised Requirements

Desired Changes such as:

- Power Uprate
- Steam Generator Replacement
- Condenser Retubing

A	Indicator Name:	Effectiveness of Design Requirement Change Process
	Definition:	# of CRs written specifically against Design Requirements change process
	Reason for Reporting:	Potential for CM Problems (Process is not working properly.)
	Calculations:	How indicator is arrived at: Review of CRs (either all, % sample or CR database word search)
	Reporting Frequency	Monthly
	INPO OEO Reference	1a, 4d, 4e, 4f, 4l
	Comments	

B	Indicator Name:	Timeliness of Design Requirements Change Process
	Definition:	1. Time from assignment of action as a Design Requirement change to closure 2. # of outstanding changes in Design Requirements Change process
	Reason for Reporting:	1. To reduce Risk Exposure 2. Improve Performance: Effective use of Resources
	Calculations:	How indicator is arrived at: From work tracking system, from initiation to closeout (excludes regulator time)
	Reporting Frequency	Monthly
	INPO OEO Reference	4k
	Comments	Average all items in process See Definition 5

C	Indicator Name:	Cost Performance for Design Requirements Change Process
	Definition:	Work-hours to process Design Requirements changes
	Reason for Reporting:	1. Identify Process Improvements 2. Promote Effective Use of Resources
	Calculations:	How indicator is arrived at: From data extracted from facility time keeping records
	Reporting Frequency	Monthly for internal use, may be averaged for annual reporting
	INPO OEO Reference	N/A
	Comments	Typically these hours are in the Engineering and Licensing Depts.

CMBG CM Performance Indicators

Process: CM003 - Physical Configuration Change Authorization Processes

Examples: Problems identified by CR Process

- Midnight Mods
- Drawing not matching Plant
- Improper Maintenance
- Part No. / Model No. Discrepancy
- Vendor Changes (not 'design')

Desired Changes such as:

- Resolve Obsolescence issues
- Improvements in Reliability
- Margin Risk Reduction
- Software (process)

A	Indicator Name:	Effectiveness of Physical Change Authorization Processes
	Definition:	1. # of CRs written specifically against Physical Configuration change authorization processes 2. Score on Physical Configuration Change package review 3. # of avoidable FCRs
	Reason for Reporting:	Potential for CM Problems if Process is not working properly
	Calculations:	How indicator is arrived at: Review of CRs (either all, % sample or CR database word search)
	Reporting Frequency	Monthly
	INPO OEO Reference	4e, 4f
	Comments	Can be subdivided by processes: Mods, Temp Mods, Facility Changes, Equivalencies, Valve / Equipment lineups, etc

B	Indicator Name:	Timeliness of Physical Change
	Definition:	1. Time from assignment of action as a Physical Configuration change to closure 2. # of outstanding changes in the Physical Config change processes
	Reason for Reporting:	Reduce risk exposure how long you were out of equilibrium
	Calculations:	How indicator is arrived at: From work tracking system
	Reporting Frequency	Monthly
	INPO OEO Reference	2i
	Comments	

C	Indicator Name:	Cost Performance
	Definition:	Work-hours to develop Physical Configuration Changes
	Reason for Reporting:	1. To Identify Potential Problems 2. Promote Effective Use of Limited Resources
	Calculations:	How indicator is arrived at: From data extracted from facility time keeping records
	Reporting Frequency	Monthly for internal use, may be averaged for annual reporting
	INPO OEO Reference	N/A
	Comments	

CMBG CM Performance Indicators

Process: CM004 - Facility Configuration Information (FCI) Change Process

Examples: Changes to:

- SAR
- Drawings
- Databases
- Procedures containing Configuration Information
- Vendor Tech Manuals
- Software (data)

A	Indicator Name:	Effectiveness of Facility Configuration Information (FCI) Change Process
	Definition:	1. # of CRs written specifically against FCI change process 2. # of CRs written against problems or discrepancies with FCI
	Reason for Reporting:	To identify Potential Problems in CM Program
	Calculations:	How indicator is arrived at: Review of CRs (either all, % sample or CR database word search)
	Reporting Frequency	Monthly
	INPO OEO Reference	4e
	Comments	

B	Indicator Name:	Timeliness of FCI Process
	Definition:	1. Time from assignment of action as a FCI change to closure 2. # of open items (or backlog) in FCI change process 3. # of Physical Configuration Changes completed, but paperwork still outstanding
	Reason for Reporting:	Reduce Risk
	Calculations:	How indicator is arrived at: From work tracking system
	Reporting Frequency	Monthly
	INPO OEO Reference	4e
	Comments	

C	Indicator Name:	Cost Performance of FCI Process
	Definition:	Work-hours to process FCI changes
	Reason for Reporting:	1. To identify potential problems 2. Promote the Effective Use of Limited Resources
	Calculations:	How indicator is arrived at: From data extracted from facility time keeping records
	Reporting Frequency	Monthly for internal use, may be averaged for annual reporting
	INPO OEO Reference	N/A
	Comments	