

EUCG Standard Nuclear Performance Model

Revision 5

December 2007

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EXECUTIVE SUMMARY

Since 1998 the Standard Nuclear Performance Model (SNPM) has provided a concise summary of nuclear processes including cost definitions, staffing definitions and key performance indicators together with references and industry leader contact information. The material is useful for understanding the processes used to operate a nuclear power plant. The processes and related data are useful for making performance comparisons and benchmarking.

This model is the governing basis for defining process scope for standards established in the nuclear industry. Improvements in processes are ongoing within individual companies and through cooperative efforts of Communities of Practice (CoPs) who act as process owners on behalf of the industry.

In June 2007, NEI informed EUCG leadership that NEI would no longer be involved with industry business process improvement. Based on this change this will be the last revision to the SNPM document. EUCG will continue collecting cost and staffing data for the industry. Cost and staffing classifications will be contained in the survey instructions and therefore do not need to be published separately.

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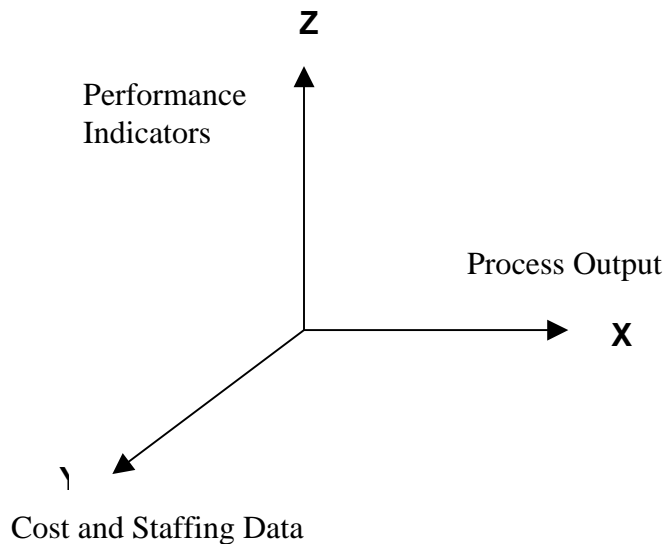
1 INTRODUCTION

To facilitate benchmarking efforts and allow meaningful comparison of information among plants, a uniform model has been developed for the nuclear industry. The model provides a method to consistently define the process that is being compared, identify meaningful performance measures and ensure a standard basis for cost and staffing comparisons. This is a coordinated effort among EUCG, INPO, EPRI, and NEI.

1.1 OVERVIEW

The standard nuclear performance model provides a process management tool that consolidates three critical dimensions to analyze plant performance. Viewed as a three-dimensional model (Figure 1-1), there is a relationship between process output (X-axis), cost and staffing data (Y-axis) and performance indicators (Z-axis). Consideration of all three elements is critical to successful use of the model.

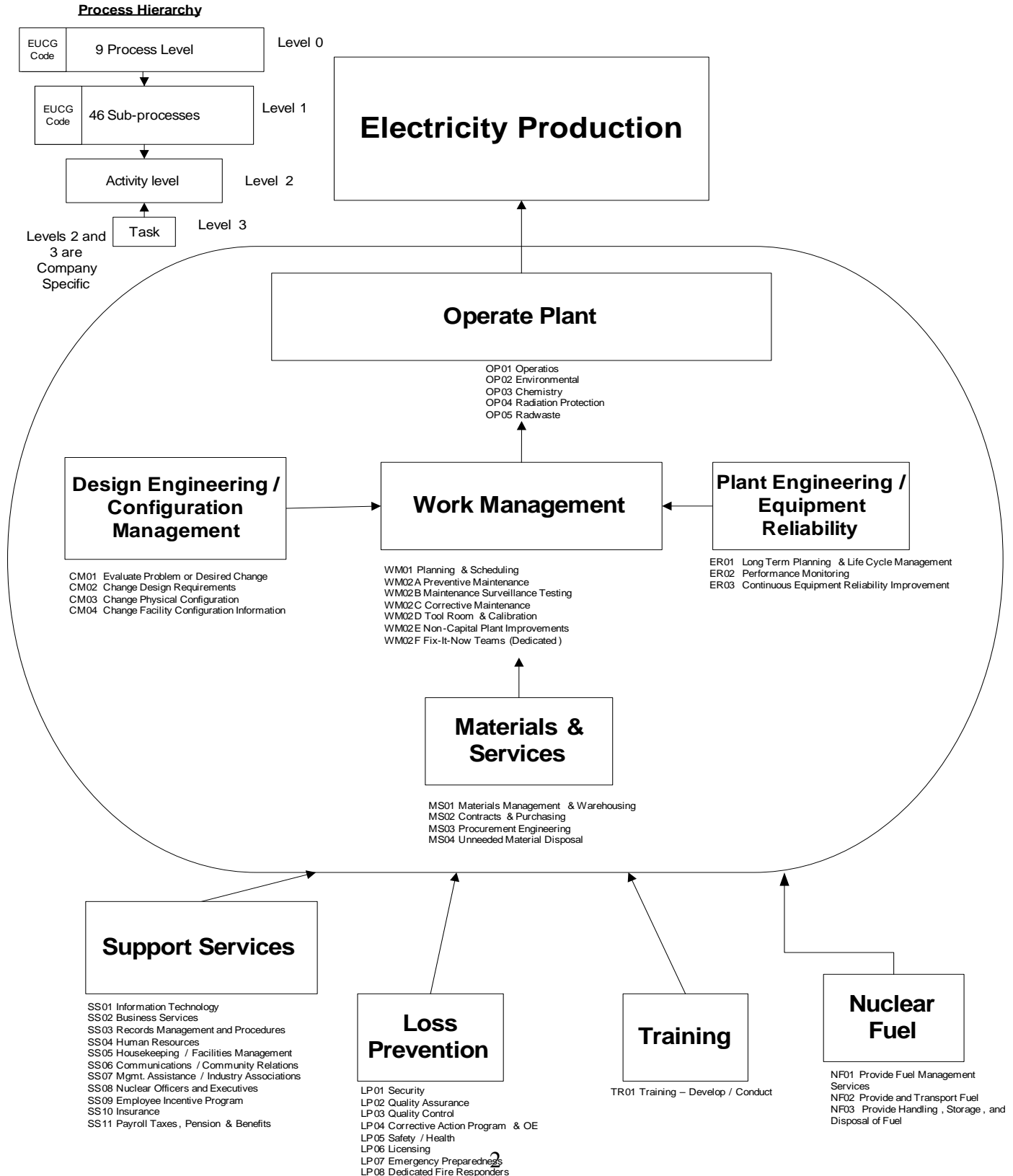
Figure 1-1 Standard Nuclear Performance Model Dimensions



1.2 PROCESS ARCHITECTURE DETAILS

Process definitions provide the language for comparison of processes at different plants. In this report, process definitions are organized into nine overall groups that constitute level zero processes. Each process is further divided into sub-processes (level one). Companies may choose to further define the structure into activities (level two) and tasks (level three). However industry standardization occurs only at level zero and level one. This model accounts for all process work associated with a nuclear generation facility. The SNPM process architecture is shown in Figure 1-2.

Figure 1-2 Standard Performance Model Architecture Details



1.3 DATA COLLECTION

EUCG has determined the level for industry-wide detail in process data collection and sharing. The process and sub-process definitions are provided in this report. Use of these definitions assures that member utility data submitted is comparable with other members.

Nuclear plant data is submitted to the EUCG on a regular basis. EUCG data is shared on a "give-to-get" basis among members and a sharing agreement exists between EUCG, INPO and NEI. The EUCG database contains cost, staffing and performance indicator data making it a very useful tool for benchmarking.

1.3.1 Cost

Nuclear Operating Costs are collected for each functional process / sub-process.

1.3.2 Key Performance Indicators

Performance indicators measure process characteristics in quantifiable terms. Performance indicators are established by the Communities of Practice. Most are economic in nature. This report does not include World Association of Nuclear Operators (WANO) / INPO performance indicators or Nuclear Regulatory Commission Oversight Process indicators.

1.3.3 Staffing

Staffing data is collected as a part of the SNPM in order to enable proper cost comparisons, performance calculations, and understanding of resource application. For example, both cost and staffing data are necessary to be able to compare a utility that will outsource versus one that does all work internally.

1.4 BACKGROUND

In 1993, the concept for the Standard Nuclear Performance Model was initiated by the industry Nuclear Power Oversight Committee's *Strategic Plan for Improved Economic Performance*.

In 1994, INPO created a process management group to develop efficient processes for use in Advanced Light Water Reactors (ALWRs). Each process description consisted of a series of flow diagrams and associated process step definitions. These flowcharts were linked together in an overall arrangement to form an activity-based management (ABM) model for safely producing electricity. The processes were also recognized as having standardization value for existing plants.

In 1996, a preliminary process model and associated key performance indicators were developed and field tested by EUCG with guidance from an NEI/EUCG Economic Benchmarking Issues Task Force (EBITF). INPO had also developed a series of draft process descriptions in support of the advanced light water reactor program known as "AP-NNN" process descriptions.

In 1998, the EBITF reached consensus with the industry and published the original SNPM. The consensus was based on using the INPO AP documents as core processes and EUCG data for cost and performance information. NEI became the integrating business advocate and support from EPRI evolved around specific projects supported by their activities.

Between 1997 and 2003 a large number of industry-wide benchmarking projects were conducted using the SNPM for guidance. In the later stages, process description changes reflected increased understanding of the business process and they were captured in SNPM revisions.

In 2002 the EBITF was disbanded. Responsibility for maintaining the SNPM then rested with EUCG. EUCG has been collecting nuclear industry data since 1973 and continues to perform the associated annual data surveys. The EUCG Nuclear Committee chartered an SNPM Committee. The purpose of this committee was administration and facilitation of the Standard Nuclear Performance Model updates.

In 2007 the SNPM was revised to shift from an activity based cost methodology to more recognizable functional processes. This was done to increase consistency in reporting within the industry and to incorporate lessons learned from prior years. Also NEI withdrew from participation in the SNPM and the final revision (Rev 5) was issued. EUCG will continue to collect industry cost and staffing data using their survey instructions thus eliminating the need in the SNPM document.

2 PROCESS MANAGEMENT

2.1.1 Process

All aspects of a nuclear generating business are encompassed in nine processes as shown in Figure 1-2.

2.1.2 Sub-process

A sub-process is a subset of process activities within the bounds of a single process. All 46 categories within the nine standard processes are referred to as sub-processes. Sub-processes each have a stand alone process description.

2.1.3 Activity

An activity is set of plant specific tasks as determined by each company that are grouped together logically beneath a sub-process. No information is collected by activity for comparison in the industry; however, they are of value for trending within each facility.

2.1.4 Task

A task is a detailed portion of work done within an activity to partially accomplish the overall purpose of the activity.

2.2 PROCESS OWNERS

2.2.1 Definition

The company process owners are the primary customers for the data contained in the SNPM and they serve as advocates for process excellence by coordinating the various work activities at all levels. They have the responsibility and job skills to evaluate overall process operation and to evaluate potential process improvements. They design and manage the process end-to-end so as to ensure optimal performance. The process owner is responsible for ensuring the total process is both effective and efficient, and that appropriate performance measures are in place to measure the process accordingly and ensure performance is continually managed. A process owner may or may not have resource control over all areas of the process.

2.2.2 Responsibility

The process owner is responsible for implementation of process improvement action plans. The performance of a given process must be considered in the context of the overall system of processes that support the company's vision for safe, reliable, and cost-effective operation. Process owners work together to optimize the overall system of processes and avoid an isolated focus on only their own processes. It is recommended that process owners be trained in methods of process improvement, benchmarking practices, change management and team dynamics. Process owners are

responsible for improvement planning to ensure processes are aligned to support business goals.

2.2.3 Process Management Actions

To take full advantage of the SNPM a nuclear utility should do the following:

- Adopt a process management philosophy
- Identify process owners who could participate in industry improvement
- Develop an ongoing method to study and improve processes
- Report costs, staffing and performance indicators in the specified format
- Benchmark performance and adopt best practices from those results.

Process owners are encouraged to participate in the activities of Communities of Practice as identified in Appendix B.

2.3 PROCESS REFERENCE DOCUMENTS

2.3.1 Process Descriptions

A process description is a document capturing generic knowledge about a specific process defined in the SNPM. This document is typically written in “AP-NNN” format, is published by either NEI or INPO and should contain the following information:

- Process steps and interfaces to other processes
- Cost and staffing definitions at the sub-process level
- Key performance indicator definitions for industry comparisons

Most of the SNPM processes / sub-processes have industry process descriptions. Usually they include a flowchart and companion text outline describing how the process may be implemented. These documents are listed in Appendix B. The responsibility for several INPO process descriptions were transferred to NEI beginning in 2001. Responsibilities for processes are divided amongst the three industry organizations EPRI, INPO, and NEI considering NEI 05-08 “Executive Task Force on Industry Coordination.”

2.3.2 Benchmarking Reports

| Process | Title | Date | Publishing Organization |
|----------------|---|-------------|--------------------------------|
| CM | Configuration Control | Aug-2001 | NEI |
| CM/OP1 | Fire Protection | Aug-2002 | NEI |
| ER | Equipment Reliability | Sep-2002 | NEI |
| LP02 | Trending Activities | Jun-2000 | NEI |
| LP02 | Corrective Action Programs | Nov-2000 | NEI / EUCG |
| LP06 | Licensing and Permits | Sep-2002 | NEI |
| LP07 | Emergency Planning | Jul-1998 | NEI |
| LP07 | Self-Assessment | Dec-1999 | NEI |
| LP07 | Human Performance | Sep-2001 | NEI / INPO / EPRI |
| MS01 | Materials and Services | May-2000 | NEI |
| MS02 | Strategic Sourcing Methods | Nov-2001 | NEI |
| OP04 | Health Physics and Radwaste Best Practices Report | May-1996 | NEI |
| OP04 | Radiation Protection | Nov-1998 | NEI |
| OP1 | Operations Best Practices | May-1996 | NEI |
| SS01 | Information Technology | Mar-2000 | NEI / NUSMG |
| SS01 | Computer Software Applications | Feb-2003 | NEI / NITSL |
| SS01 | Process Computer | | |
| SS02 | Business Services | Jun-1999 | NEI |
| SS02 | Long Range Planning and Project Evaluation | Sep-2000 | NEI / EUCG |
| SS03 | Nuclear Records Management | Mar-2002 | NEI / NIRMA |
| SS04 | Human Resources | Mar-2001 | NEI / NHRG |
| WM | Work Management | Sep-1997 | NEI |
| WM | Work Management Process Benchmarking Workshop | Nov-1997 | NEI |
| WM01 | Work Management Role in Nuclear Asset Management | Oct-2003 | NEI |
| WM02 | Maintenance Best Practices Report | May-1996 | NEI |

The above reports can all be found on the NEI web site.
The above table does not include INPO Good Practices or Topical Reports.

2.4 COMMUNITIES OF PRACTICE

A Community of Practice is an industry peer group of experts in a business process or sub-process defined in the SNPM. The group serves as the “owner” of a particular process or sub-process, managing the solution of issues for the industry in that area. A sample of responsibilities performed or supported by a CoP is listed below:

- Recommend adjustments to cost and staffing definitions in the SNPM
- Develop, approve, adjust process Key Performance Indicators
- Support and guide industry management of strategic business process issues
- Administer appropriate industry projects for their process area
- Integrate, coordinate and provide guidance to special issue group activities to gain synergies on related industry process issues
- Determine future benchmarking needs.

3 DATA COLLECTION DETAILS

3.1 COST DATA

Cost is identified by Operating Cost categories. By employing the SNPM cost codes in conjunction with a more detailed company-specific tracking system, a number of overall benefits may be achieved including:

- Process cost ranking within the industry
- Evaluation of pilot project results at a specific plant within a nuclear fleet

Appendix C provides the Nuclear Operating Cost definitions.

3.2 KEY PERFORMANCE INDICATOR DATA

Performance indicators are continually assessed within the industry to gain insight into how the process performance might be improved. This includes review of existing KPI indicators, sampling current work practices and surveying industry groups to find sources of expertise for specific processes and types of measurement. The SNPM is a common platform that effectively ties together the best information available to measure business performance.

The use of performance information derived from KPIs assists the process owner in driving improvements in process efficiency. Performance indicators are generally classified as being either internal process measures or process output measures. The SNPM attempts to develop, collect and tabulate high level output measures only. Process descriptions may include internal process measure recommendations for utilities. Appendix D provides the KPI definitions.

Each KPI definition contains the following elements for each indicator:

- Process-sub-process reference
- Title
- Definition
- Units of measurement: (number, percentage, dollars, etc.)
- Reporting level (Unit, Plant or Site)
- Reference

Some measures may be derived from model inputs such as process cost as a percentage of all process costs, process cost per employee, process cost contribution per megawatt output, etc. Specific input is not required as part of the EUCG data collection and protocol. These measures are called “derived measures” and they are listed in *italics*.

3.3 STAFFING DATA

Since 2003, staffing data has been collected to make comparisons between similar plants and processes. Staffing, like cost data, is reported at the plant level and includes on-site utility employees, off-site corporate support and baseline contractors. The definitions for these categories are as follows:

- On-site Utility Employees - individuals (headcount, not full time equivalents (FTE's)) who are direct employees of the utility who perform core or baseline activities at the plant.
- Off-site/Corporate Support - individuals assigned to or supporting multiple locations such as off-site utility staff and/or corporate headquarter activities that support nuclear operations. For fleet operators, these staff positions should be allocated to plants proportionally to the support they provide.
- Baseline Contractors - contractors (not utility employees) that perform core or steady state functions in support of routine plant activities. This would not include functions performed on a seasonal or intermittent basis, not does it include managed task or turnkey services that are typically tracked by cost only. Contractors supporting capital projects, outage preparation or outage activities are not counted. Baseline contractors are reported as FTE's.

Appendix E provides the staffing definitions.

4 SNPM UPDATE

This section describes the process that ensures the SNPM is updated as part of an overall industry data collection cycle. The SNPM Committee guides the scope of recommended data collection and communicates with industry organizations. The specific roles and responsibilities of the SNPM Committee are described in PR-NC11 SNPM Committee Procedure. SNPM revisions are communicated at EUCG workshops. Table 4-1 identifies the steps and responsibilities for maintaining the SNPM.

Table 4-1 SNPM Data Collection Milestones

| Date | Milestone | Responsible |
|--------------------|---|----------------|
| March 15 | Communicate update schedule for the next data cycle | SNPM Committee |
| July 1 | Provide cost and staffing definitions and performance indicator updates to the SNPM Committee | CoP Leadership |
| September 1 | Identification of final update information to be included in next survey update. | SNPM Committee |
| Fall EUCG Workshop | Proposed changes are presented to workshop attendees | SNPM Committee |
| October 1 | All approved changes are provided to EUCG Database Manager | SNPM Committee |

4.1 COMMUNITY OF PRACTICE RESPONSIBILITIES

Community of Practice leaders are the key stakeholders for their respective process or sub-process. Their responsibilities include:

- Collect, review, and compile cost, staffing, and performance indicator changes from associated Community of Practice
- Promote the model within the respective Community of Practice
- Communicate changes to the Community of Practice
- Maintain CoP leader contact information (name, phone number, email) in Appendix B

4.2 NAM COMMUNITY OF PRACTICE RESPONSIBILITIES

- Support and guide industry management of process issues
- Define and administer appropriate industry projects for their process area
- Determine future benchmarking direction
- Integrate, coordinate with other special issue group activities to gain synergies on related industry process issues

4.3 NUCLEAR UTILITY COMPANIES RESPONSIBILITIES

- Ensure company data is submitted as outlined in the EUCG survey requests
- Communicate process/sub-process revisions within their company

4.4 SNPM REVISION 5 SCOPE OF CHANGE

- Recognized disbanding of EBITF (Economic Benchmark Issues Task Force)
- Structure alignment and definitions between cost and staffing surveys
- Shifted from an activity based cost methodology to more recognizable functional processes

APPENDIX A

Nuclear Operating Cost & Staffing Structure

| Cost Account | Account Description | Staffing Account | Account Description |
|--|--|------------------|-----------------------------------|
| Design Engr. / Configuration Management | | | |
| CMTOT | Design Engineering / Configuration Mgmt | CMTOT | Total - Configuration Management |
| or | | CM0A | Design/Mods/Technical Engineering |
| CM01 | Evaluate Identified Problem or Desired Change | CM0B | Plant Computer Engineering |
| CM02 | Change Design Requirements | CMADM | CM Administrative Support |
| CM03 | Change Physical Configuration | CMMGMT | CM Management |
| CM04 | Change Facility Configuration Information | | |
| Plant Engr. / Equipment Reliability | | | |
| ERTOT | Plant Engineering / Equipment Reliability | ERTOT | Total - Equipment Reliability |
| or | | ER0A | Plant Engineering |
| ER01 | Performance Monitoring & Predictive Maint | ER0B | Non-destructive Exams - NDE |
| ER02 | Continuous Equip Reliability Improvement | ERADM | ER Administrative Support |
| ER03 | LT Planning & Life Cycle Management | ERMGMT | ER Management |
| Loss Prevention | | | |
| LP01 | Security | LP01 | Security |
| LP02 | QA | LP02 | QA |
| LP03 | QC | LP003 | Quality Control |
| LP04 | CAP & OE | LP04 | Corrective Action Program & OE |
| LP05 | Safety / Health | LP05 | Safety/Health |
| LP06 | Licensing | LP06 | Licensing |
| LP07 | Emergency Preparedness | LP07 | Emergency Preparedness |
| LP08 | Dedicated Fire Responders | LP08 | Dedicated Fire Responders |
| | | LPADM | LP Administrative Support |
| | | LPMGMT | LP Management |
| LPTOT | TOTAL Loss Prevention | LPTOT | Total - Loss Prevention |
| Materials & Services | | | |
| MS01 | Materials Management & Warehousing | MS01 | Materials Mgmt/Warehousing |
| MS02 | Contracts & Purchasing | MS02 | Contracts/Purchasing |
| MS03 | Procurement Engineering | MS03 | Procurement Engineering |
| MS04 | Unneeded Material Disposal | MSADM | MS Administrative Support |
| | | MSMGMT | MS Management |
| MSTOT | TOTAL Materials & Services | MSTOT | Total - Materials & Services |
| Nuclear Fuel | | | |
| NFTOT | Fuel Management | NFTOT | Total - Nuclear Fuel |
| or | | NF00 | Nuclear Fuels/Reactor Engineering |
| NF01 | Provide Fuel Management Services | NFADM | NF Administrative Support |
| NF02 | Provide and Transport Fuel | NFMGMT | NF Management |
| NF03 | Provide Handling, Storage and Disposal of Fuel | | |
| Operate Plant | | | |
| OP01 | Operations | OP01A | Operations |
| | | OP01B | Operations Support |
| OP02 | Environmental | OP02 | Environmental |
| OP03 | Chemistry | OP03 | Chemistry |
| OP04 | Radiation Protection | OP04 | Radiation Protection |
| OP05 | Radwaste | OP05 | Radwaste |
| | | OPADM | OP Administrative Support |
| | | OPMGMT | OP Management |
| OPTOT | TOTAL Operate Plant | OPTOT | Total - Operate Plant |

| Cost Account | Account Description | Staffing Account | Account Description |
|-------------------------|---|-------------------------|---------------------------------------|
| Support Services | | | |
| SS01 | Information Technology | SS01 | Information Technology |
| SS02 | Business Services | SS02 | Business Services |
| SS03 | Records Mgmt and Procedures | SS03 | Record Management & Procedures |
| SS04 | Human Resources | SS04 | Human Resources |
| SS05 | Housekeeping/Facilities Management | SS05 | Housekeeping/Facilities Management |
| SS06 | Communications/Community Relations | SS06 | Communications/Community Relations |
| SS07 | Management Assistance/Industry Associations | SS07 | Management Assistance/Industry Assoc |
| SS08 | Nuclear Officers and Executives. | SS08 | Nuclear Officers and Executives. |
| | | SSADM | SS Administrative Support |
| | | SSMGMT | SS Management |
| SS09 | Employee Incentive Payments | | |
| SS10 | Employee Benefit Insurance | | |
| SS11 | Payroll Taxes, Pension & Benefits | | |
| SSTOT | TOTAL Support Services | SSTOT | Total - Management & Support Services |
| Training | | | |
| | | TR00 | Training - Develop / Conduct |
| | | TRADM | Training Administrative Support |
| | | TRMGMT | Training Management |
| TR00 | Training - Develop / Conduct | TRTOT | Total - Training |
| Work Management | | | |
| WM01 | Planning & Scheduling | WM01A | Planning |
| | | WM01B | Maintenance/Construction Support |
| | | WM01C | Scheduling |
| | | WM01D | Outage Management |
| | | WM01E | Project Management |
| | | WM01TOT | |
| WM02SUB | PM, CM, Surveillance Testing & Tool room Subtotal | WM02J | Electrical Maintenance |
| or | | WM02K | I&C Maintenance |
| WM02A | Preventive Maintenance | WM02L | Mechanical Maintenance |
| WM02B | Maintenance Surveillance Testing | WM02M | Other Craft/Tool room/Calibration |
| WM02C | Corrective Maintenance | WM02TOT | |
| WM02D | Tool room & Calibration | | |
| WM02E | Non-Capital Plant Improvements | | |
| WM02F | Fix-It-Now Teams (Dedicated) | | |
| | | WMADM | WM Administrative Support |
| | | WMMGMT | WM Management |
| WMTOT | TOTAL Work Management | WMTOT | Total - Work Management |
| TOTNUC | TOTAL NUCLEAR OPERATING COSTS | STAFFTOT | TOTAL STAFFING |
| | | CAPTOT | Total - Capital Workforce Staffing |
| | | ALLSTAFFTOT | TOTAL STAFFING WITH CAPITAL WORKFORCE |

Please note that the cost and staffing categories are correlated to the extent practical. However, even when the scope is the same, the staffing approach is to segregate out administrative and management support for a process.

APPENDIX B

Communities of Practice List

| EUCG Code | Process | Community of Practice Group Name | Community of Practice Leader | NEI Point Contact | INPO Point Contact | EPRI Point Contact |
|-------------------------------|---|--|---|--|---|---|
| Overall Business All Accounts | All Processes | Nuclear Asset Management Task Force | Ken Riches (269) 697-5146 kwriches@aep.com | Jim Slider (202) 739-8015 jes@nei.org | Clair Goddard (770) 644-8204 goddardcs@inpo.org | Steve Hess (610) 429-9834 shess@epri.com |
| CM01 to CM04 | Configuration Management | Configuration Management Benchmarking Group | Rick Harris (704) 875-5589 raharris@duke-energy.com | Jim Riley (202) 739-8137 am@nei.org | David Hembree (770) 644-8991 hembreejd@inpo.org | Rick Easterling (704) 595-2045 rneaster@epri.com |
| ER01 to ER03 | Equipment Reliability | Industry Equipment Reliability Working Group | Johnny Dills (919) 362-2929 Johnny.dills@pqnmail.com | Jim Riley (202) 739-8137 jvg@nei.org | Steve Johnson (770) 644-8457 johnsonsm@inpo.org | Neil Wilmshurst (704) 595-2238 nwilmshu@epri.com |
| NF01 | Nuclear Fuel | (None) | (None) | Steve Kraft (202) 739-8116 spk@nei.org | David Hembree (770) 644-8991 hembreejd@inpo.org | Kurt Edsinger (650) 855-2271 kedsinger@epri.com |
| NF02 | Provide and Transport Fuel | (None) | (None) | Rod McCullum (202) 739-8082 rxm@nei.org | Jeff Place (770) 644-8212 placejj@inpo.org | John Kessler (650) 855-2069 jkessler@epri.com |
| NF03 | Provide Handling, Storage, and Disposal of Fuel | (None) | (None) | Rod McCullum (202) 739-8082 rxm@nei.org | Jeff Place (770) 644-8212 placejj@inpo.org | John Kessler (650) 855-2069 jkessler@epri.com |
| LP01 | Security | (None) | (None) | Doug Walters (202) 739-8093 djw@nei.org | Clair Goddard (770) 644-8204 goddardcs@inpo.org | Bob Kassawara (650) 855-2775 rkassawa@epri.com |
| LP02 | Quality Assurance | Nuclear Quality Management Leaders | Dennis Winchester (856) 339-2900 dennis.winchester@pseq.com | Jim Fiscaro (202) 739-8018 jjf@nei.org | | |
| LP03 | Quality Control | Nuclear Quality Management Leaders | Dennis Winchester (856) 339-2900 dennis.winchester@pseq.com | Jim Fiscaro (202) 739-8018 jjf@nei.org | | |

| EUCG Code | Process | Community of Practice Group Name | Community of Practice Leader | NEI Point Contact | INPO Point Contact | EPRI Point Contact |
|--------------|--------------------------------|---|---|--|--|---|
| LP04 | Corrective Action Program & OE | (None) | (None) | | | |
| LP05 | Safety & Health | Nuclear Industrial and Health Association | Wayne Rowe (623) 393-1956 Wrowe01@apsc.com | | Jeff Place (770) 644-8212 placejj@inpo.org | |
| LP06 | Licensing | Licensing Actions Task Force(LATF) | | Mike Schoppman (202) 739-8011 mas@nei.org | George Mortensen (770) 644-8779 mortensengk@inpo.org | Gary Vine (202) 293-6347 gvine@epri.com |
| LP07 | Emergency Preparedness | NEI EP Managers Task Force | Brian McBride (804) 273-2484 brian.mcbride@dom.com | Alan Nelson (202) 739-8110 apn@nei.org | Jeff Place (770) 644-8212 placejj@inpo.org | Steve Hess (610) 429-9834 shess@epri.com |
| LP08 | Dedicated Fire Responders | Fire Protection CoP | Vern Patton (419) 321-7653 vjpatton@firstenergycorp.com | Brandon Jamar (202) 739-8043 btj@nei.org | David Hembree (770) 644-8991 hembreejd@inpo.org | Robert Kassawara (650) 855-2775 rkassawa@epri.com |
| MS01 to MS04 | Materials & Services | Nuclear Supply Chain Strategic Leadership | Joe DiChiara (914) 272-3302 jdchia@entergy.com | | Rick Nielsen (770) 644-8696 nielsenfm@inpo.org | Marc Tannenbaum (704) 595-2110 mtannenbaum@epri.com |
| OP01 | Operations | (None) | (None) | Jack Roe (202) 739-8138 jwr@nei.org | Phil Polefrone (770) 644-8395 polefronepm@inpo.org | Rick Easterling (704) 595-2045 rneaster@epri.com |
| OP02 | Environmental | (None) | (None) | Ralph Andersen (202) 739-8111 rla@nei.org | Jeff Place (770) 644-8212 placejj@inpo.org | Sean Bushart (650) 855-2978 sbushart@epri.com |
| OP03 | Chemistry | (None) | (None) | Jim Riley (202) 739-8137 jhr@nei.org | Joe Sears (770) 644-8744 searsjt@inpo.org | Keith Fruzzetti (650) 855-2211 kfruzzet@epri.com |
| OP04 | Radiation Protection | NEI RP Task Force | (None) | Ralph Andersen (202) 739-8111 rla@nei.org | Jeff Place (770) 644-8212 placejj@inpo.org | Sean Bushart (650) 855-2978 sbushart@epri.com |
| OP05 | Radwaste | (None) | (None) | Ralph Andersen (202) 739-8111 rla@nei.org | Jeff Place (770) 644-8212 placejj@inpo.org | Sean Bushart (650) 855-2978 sbushart@epri.com |

| EUCG Code | Process | Community of Practice Group Name | Community of Practice Leader | NEI Point Contact | INPO Point Contact | EPRI Point Contact |
|------------------|--|---|---|--|---|---|
| SS01 | Information Technology | Nuclear Information Technology Strategic Leaders | Cynthia Broadwell (919) 546-3751 cynthia.broadwell@pgnmail.com | John McIntire (202) 739-8041 jdm@nei.org | Ruth Todd (770) 644-8624 toddre@inpo.org | Joe Naser (650) 855-2107 jnaser@epri.com |
| SS02 | Business Services | Electric Utility Cost Group-Nuclear Committee (Models and Data) | David Ward (704) 382-4943 drward@duke-energy.com | Elizabeth King (202) 739-8095 ejk@nei.org | Chet Harris (770) 644-8641 harrisch@inpo.org | Steve Hess (610) 429-9834 shess@epri.com |
| SS03 | Records Mgmt & Procedures | Nuclear Information Management Strategic Leaders (NIMSL) | Gerald Lewis (361) 972-8338 glewis@stpegs.com | Jack Roe (202) 739-8138 jwr@nei.org | Ruth Todd (770) 644-8624 toddre@inpo.org | Leonard Loflin (704) 595-2010 leloflin@epri.com |
| SS04 | Human Resources | Nuclear Human Resources Group | Diana Sorfleet (630) 657-4200 diana.sorfleet@exeloncorp.com | Carol Berrigan (202) 739-8050 clb@nei.org | Jeff Wheelock (770) 644-8529 wheelockjt@inpo.org | Nancy Mason (650) 855-2983 nmason@epri.com |
| SS05 | Housekeeping & Facilities Maintenance | (None) | (None) | | | |
| SS06 | Communications & Community Relations | (None) | (None) | Scott Peterson (202) 739-8044 jsp@nei.org | Clair Goddard (770) 644-8204 goddardcs@inpo.org | Gary Vine (202) 293-6347 gvine@epri.com |
| SS07 | Management Assistance & Industry Relations | (None) | (None) | Alex Marion (202) 739-8080 am@nei.org | Clair Goddard (770) 644-8204 goddardcs@inpo.org | Gary Vine (202) 293-6347 gvine@epri.com |
| TR00 | Training – Develop / Conduct | (None) | (None) | Jack Roe (202) 739-8138 jwr@nei.org | Kent Hamlin (770) 644-8503 hamlinkw@inpo.org | Rick Easterling (704) 595-2045 rneaster@epri.com |
| WM01 To WM02F | Work Management | INPO Work Management Working Group | Don Roland (570) 542-3984 deroland@pplweb.com | | Rick Nielsen (770) 644-8769 nielsenfm@inpo.org | Marty Bridges (704) 595-2175 mbridges@epri.com |

APPENDIX C

Nuclear Operating Cost Definitions

Note:

The definitions below outline the specific work associated with each process. Direction regarding the treatment of direct, indirect or corporate overhead costs to be collected in support of these processes is the responsibility of the EUCG Nuclear Committee and will be communicated to EUCG members as part of the annual data survey instructions.

Design Engineering / Configuration Management (CM)

CMTOT Design Engineering / Configuration Management Total

All costs associated with the following technical/engineering activities from the standpoint of **STUDY and DESIGN**: engineering support, contractor coordination, performance monitoring/analysis, code compliance (ASME, NFPA, IEEE, etc.) engineering required for plant modification, base design data base and design document maintenance, technical/engineering support for operations and maintenance, nondestructive examination and in-service inspection programs, and systems engineering. Also includes general analysis engineering and estimating services.

ALTERNATIVELY, the following sub-process definitions may be used and their total will match CMTOT. These definitions are from INPO AP-929 as written by the Configuration Management Benchmarking Group.

CM01 Evaluate Identified Problem or Desired Change

When a change to the CM equilibrium is considered (either as a desired change or as required to resolve a CM discrepancy) and is determined to be valid, gather information to evaluate which solution path(s) (change design requirements, change the physical configuration, change the facility configuration information, or do nothing more) is the best solution path, considering regulations, costs, and the impact on the other CM activities and other facility processes. This includes evaluation of regulatory, design basis and business factors. If the chosen path does not produce success, this activity is repeated, using the additional information gained.

CM02 Change Design Requirements

Process the Design Requirements change in accordance with established procedure(s), i.e., review calculations or analyses. If required, request a change to the licensing basis from the regulator. Changing Design Requirements may also entail changes to the Physical Configuration and will require changes to Facility Configuration Information. This activity includes all forms of engineering analysis and evaluation that may result in new design requirements or affirmation of existing requirements.

CM03 Change Physical Configuration

Complete all activities required to produce the outputs (design documents, work documents, procedures, etc.) that will result in changing the physical configuration as required. This includes developing design change packages, replacement part equivalency evaluations and other similar engineering activities, which enable the physical changes. Changing the Physical Configuration may necessitate changing associated Facility Configuration Information.

CM04 Change Facility Configuration Information

Modify all affected existing sources of facility configuration information to; (1) revise existing "as-built" and/or "as-engineered" information, (2) develop and issue for use new facility configuration information, or (3) review, approve and issue for use vendor-provided information. This includes maintaining drawings, vendor manuals, calculations, design basis documents, licensing documents, databases and procedures, which contain facility configuration information.

Plant Engineering / Equipment Reliability (ER)

ERTOT Plant Engineering / Equipment Reliability Total

All costs associated with the following technical/engineering activities from the standpoint of **IMPLEMENTATION**: engineering support, contractor coordination, performance monitoring/analysis, code compliance (ASME, NFPA, IEEE, etc.) engineering required for plant modification, base design data base and design document maintenance, technical/engineering support for operations and maintenance, nondestructive examination and in-service inspection programs, and systems engineering. Also includes general analysis engineering and estimating services.

ALTERNATIVELY, the following sub-process definitions may be used and their total will match ERTOT.

EWRG EQUIPMENT RELIABILITY SUB- PROCESS from AP-913 Rev. 1 (related EUCG sub-process)

1. Scoping and Identification of Critical Components (not steady state, combine with ER03)
2. Performance Monitoring (ER02)
3. Corrective Action (LP04)
4. Continuing Equipment Reliability Improvement (ER03)
5. Long-Term Planning and Life Cycle Management (ER01)
6. Preventive Maintenance Implementation (WM02A)

ER01 Long Term Planning & Life Cycle Management

All aspects of developing a long-term planning and life cycle management strategy and maintenance plan to ensure the optimum performance of plant structures, systems and components. Includes prioritization of activities and integration into the business plan. Includes system health assessment and reporting.

ER02 Performance Monitoring

All activities related to planning, performing, evaluating and monitoring the performance of components or systems. Includes operator rounds data, testing and inspection results. Trending is performed on the data, including evaluating system and component performance, thermal performance/efficiency monitoring, and maintaining logs, reports and records regarding equipment performance to determine conditions adverse to quality. Includes in-service inspections and tests (ISI/IST), performance of LLRT or ILRT or other code required hydrostatic testing (when not included in support of corrective maintenance or modification activity), testing equipment, and any engineering evaluations in support of testing requirements or evaluating results-

Includes all activities related to the development and implementation of predictive maintenance for structures, systems, components or equipment. This includes the identification and integration of the technologies and equipment to be used (vibration analysis, thermography, oil analysis, motor current analysis/motor health analysis and airborne ultrasonic analysis) for preventive maintenance, and the development of qualification/certification of personnel in these areas.

ER03 Continuous Equipment Reliability Improvement

All activities related to integration and coordination of all tasks associated with improving overall equipment reliability. Includes analysis of identified plant problems, development and use of PM templates. Continuous adjustment to the PM tasks and frequency based on station and industry operating experience. Documentation of PM Technical bases. Consideration of alternate strategies and plant staff recommendations. It includes:

- Scoping criteria and classifying of components as critical, non-critical or run to failure.
- Coordination with the corrective action process.
- Coordination with the work management process.

It also includes the maintenance rule programs including EPIX reporting, the control of preventive maintenance scope and frequency including the PM Bases, and the valve actuator (MOV, AOV) reliability programs

Loss Prevention (LP)

LP01 Security

All activities associated with managing access control, providing physical security, managing security regulatory and administrative matters, and protecting plant resources and public safety. Also includes response to alarms and administering/participating in fitness for duty processing, excluding training.

LP02 Quality Assurance

All activities associated with the quality assurance program involved in operational quality assurance.

- a. Quality audits of plant activities and vendors
- b. Quality surveillance of plant activities
- c. In-line review of documents and procedures by QA
- d. Maintenance of QA program manuals and QA procedures
- e. Administer vendor verification program

LP03 Quality Control

All activities associated with quality control involved in plant inspection including nondestructive examinations, receiving inspections, plant modification surveillance.

- a. Visual inspection/ASME section XI program
- b. Performance nondestructive examinations (MT, PT & UT flaw)
- c. Tech spec surveillance on snubbers and fire barrier seals
- d. Inspection of maintenance modifications activities
- e. Review and reporting of nuclear reliability data system (NPRDS)
- f. Nonconformance material report (NMR) processing
- g. Review and closeout of work request and preventive maintenance
- h. Perform material testing for commercial grade dedication program
- i. Receipt inspection of equipment and materials
- j. Quality control tasks associated with reviewing safety related and quality related work orders.
- k. Quality control activities such as ensuring and verifying component integrity
- l. Performing quality inspections and monitoring
- m. Visual inspection of installed changes and change documentation
- n. Provide for authorized nuclear inspection activities

LP04 Corrective Action Program & Operating Experience

All activities related to the Corrective Action Program organization and Operating Experience group. Personnel in other groups performing root cause investigations and corrective action implementation are considered part of line activities and are not charged to this account.

LP05 Safety / Health

All activities related to the preparation, research and interpretation of regulations, and implementation of safety procedures, industrial hygiene programs and medical services. Includes routine safety meetings and hazardous materials response service.

LP06 Licensing

All activities associated with managing regulatory (NRC and non-NRC) relationships, obtaining and maintaining the operating license, providing regulatory guidance and interpretation, monitoring and evaluating regulatory and industry trends, and evaluating, assessing and negotiating current and future commitments. Includes supporting the following activities: LER's, NOV's, 50.59 evaluations, license and FSAR amendments, NRC user fees, DOE high level waste fee, responding to generic letters, obtaining and maintaining environmental permits, reviewing and evaluating proposed legislation, rulemaking and issues.

LP07 Emergency Preparedness

All activities associated with developing, conducting and supporting Emergency Preparedness (EP) plan, and maintenance of equipment. Includes all costs associated with EP training, drills, rehearsals and graded exercises. Also provides coordination and establishes priorities for the nuclear power emergency communication and data transmission programs.

LP08 Dedicated Fire Responders

For those companies with full time fire responders / departments this would be all activities associated with maintaining the fire responder's organization, e.g. staffed fire station. Companies without full time fire responders would not have any costs identified in this category.

This category does not include costs for developing, administering and supporting fire protection programs. For example fire brigade activities, maintenance of fire protection equipment and engineering of fire systems are included in their respective organizations.

Materials and Services (MS)

MS01 Materials Management & Warehousing

All activities associated with inventory planning, inventory control and optimization, the development of inventory management control policies/procedures and the identification of unneeded inventory and scrap materials.

All activities relating to receipt, inspection, storage, counting, distribution, issuance and shipping of equipment and materials. All activities associated with on-site receipt, inspection and reservation, warehouse storage (identification, tracking and stock level maintenance) and distribution of materials prior to use. Includes receipt/dispatch of materials, warehouse operation handling and storage, packaging reduction, initial issuing of equipment and materials, handling and storage of nuclear grade materials, bulk gasses and chemicals. Also includes expenses associated with onsite and offsite repairs, refurbishment and returns including quality control activities and disposition of discrepant repaired, refurbished and returned materials.

MS02 Contracts & Purchasing

All activities associated with contract services and the evaluation and purchasing of materials and services. Includes developing, negotiating and monitoring service contracts from outside agencies/vendors. Also includes processing and administration of purchase requisitions, purchase orders and internal supply request, contracts and leases. Includes expediting materials, filing claims for damage, resolution of shipping discrepancies, life cycle cost planning, decisions to make/buy, the standardization of materials/variety reduction and customer contact/service. Also includes activities associated with the planning, development of contracting and leasing strategies, market intelligence and performance, and strategic sourcing of materials and services.

MS03 Procurement Engineering

All activities associated with qualification and technical specifications of plant materials, parts, and equipment. This includes parts substitution, the identification and resolution of supplier non-conformance, commercial parts dedication testing and like-for like replacement analysis. Includes other functions in support of procurement (e.g. commercial grade dedication, procurement engineering and quality related receipt inspection). Includes other functions in the support of periodic nuclear vendor qualification and oversight related to procurement.

MS04 Unneeded Material Disposal

All costs relating to the disposal of unneeded materials. This includes 1) activities to dispose of obsolete inventory due to technological advances and/or design changes 2) activities to disposition inventory that may not be obsolete but may be in excess supply and therefore not useful, whether discarded or sold to outside parties as investment recovery 3) the book value of unneeded material written off to expense (net of investment recovery).

Nuclear Fuel (NF)

NFTOT Nuclear Fuel Management

A rollup summary for following sub accounts as defined below:

| | |
|------|---|
| NF01 | Provide Fuel Management Services |
| NF02 | Provide and Transport Fuel |
| NF03 | Provide Handling, Storage, and Disposal of Fuel |

NF01 Provide Fuel Management Services

All activities associated with the provisions required for fuel management services. This includes developing core designs, providing safety analysis calculations and support, monitoring fuel performance, providing strategies for reactivity management, maintaining the tools (computer programs and hardware) used to support the described tasks. Also included in this activity are all tasks associated with monitoring and analyzing the fuel market and the selection of alternative fuel designs. This does not include probabilistic safety/risk assessment or radiological engineering, which are included in the configuration management process.

Note: Costs which are capitalized, recorded directly or “fuel burn”, or balance sheet accounts should not be included.

NF02 Provide and Transport Fuel

All activities associated with the provision and transportation of fuel, including contract negotiations, contract administration and transportation. This does NOT include the cost of fuel.

NF03 Provide Handling, Storage and Disposal of Fuel

All activities associated with receiving and storing new fuel, storage analyses, managing spent fuel shipping and storage, cask fleet, irradiated channel disposal, developing dry storage contingency and disposing of spent fuel.

Operate Plant (OP)

OP01 Operations

All activities associated with preparing and placing systems and components in and out of service (e.g., tag-outs and clearances) to support normal and off-normal system operations and actions required to maintain the plant in a safe operating condition in all modes of operation including the costs associated with inside company purchased power agreements. Includes plant walkdowns and inspections, plant problem identification (generation of a trouble ticket), and maintenance of operations logs, reports and records regarding equipment performance. Includes routine system and component lineup changes, actions required to address abnormal occurrences (including reducing power or removing and restoring the unit to service), routine actions required for fuel burnup (i.e., dilution at a PWR or control rod sequence exchanges at a BWR), fuel shuffling and actions required to maintain the plant in a safe operating condition in all modes of operation. Also, includes writing routine and emergency operating procedures that address this activity.

OP02 Environmental

All activities associated with establishing and maintaining environmental programs and monitoring the environment, including sampling and reporting.

OP03 Chemistry

All activities associated with establishing and maintaining chemistry program, monitor and control plant chemistry, and managing chemical use and safety program to maintain component integrity and optimize plant efficiency. Also collecting and processing analytical chemistry samples and preparing reports.

OP04 Radiation Protection

All activities associated with providing radiation exposure control. Includes establishing and monitoring health physics program, controlling and monitoring personnel work and their work locations, performing activities necessary to maintain ALARA (shielding, respiratory protection, calculations, stay times, radiation work permits, etc.). All activities associated with providing contamination control. Includes controlling and monitoring contaminated areas of plant, and providing decontamination services.

OP05 Radwaste

All activities associated with treatment, measurement, control, minimization, collection, compaction, storage, filtration, ion exchange and other processing, reporting, handling, shipping, disposing of low-level waste and effluents. Includes liquid radwaste, gaseous radwaste, dry active radwaste, hazardous waste, mixed waste, industrial solid waste, industrial air emissions, and non-radioactive liquid effluents.

Support Services (SS)

SS01 Information Technology

All activities related to planning, development, maintenance and operation of the company's information systems (enterprise, departmental, individual). This includes the operation and maintenance of the supporting network and mainframe infrastructure. Also included are planning, designing, constructing, operating and maintaining telecommunications facilities and equipment, electronic mail services, and providing telecommunications consulting services. Also includes administrative oversight of maintaining the plant process computer and digital embedded devices. (Recommended major sub-accounts include: resource management, telecommunications, network services, mainframe, desktop services, applications and process computer). Does not include activities associated with software and hardware engineering for plant process computers and digital embedded devices. Includes corporate related Information technology expenses associated with nuclear to support corporate infrastructure tools / applications / processes (payroll, employee benefits, etc.) not 100 % dedicated to nuclear operations.

SS02 Business Services

Business services activities include all activities associated with the financial management of the business. This also includes activities for corporate allocations. There are two primary aspects to business services, strategic and tactical. Nuclear asset management activities are strategic and include strategic planning, generation planning (including decommissioning), long-range planning, project evaluation, and fleet valuation.

Other business services activities are tactical and include planning, budgeting, accounting, reporting, and assessment. These include the following activities: perform planning and management accounting, perform planning/budgeting/forecasting, perform cost accounting and control, perform cost management, evaluate and manage financial performance, perform general accounting and reporting, perform capital project accounting (property accounting), process accounts payable and expense reimbursements, manage payroll taxes, measure organizational performance and benchmarking, manage internal controls

Business services costs include executive discretionary funds used for activities not associated with a specific process. All activities associated with preparing financial/regulatory statements, including maintaining fuel, tax and joint owner data; providing accounting research and cost reporting data; analyzing fixed asset records; controlling fixed asset accounting system reporting; processing invoices; administering company payroll; and maintaining subsidiary ledgers. Also includes severance and retirement incentives, managing the workers compensation self-insured program, administering claims for the organization and performing loss control analysis. Preparing and filing claims on permanent and non-permanent plant equipment including loss control analysis, and compiling costs associated with losses for insurers. Benchmarking of processes should be charged against the subject process.

Also there are some corporate activities that are not directly related to nuclear operations and they should not be included. Examples of these are revenue accounting, treasury operations and income taxes. However allocations from other corporate departments such as payroll and accounts payable that provide services to nuclear operations should be included.

SS03 Records Management & Procedures

All activities associated with processing records to ensure they are legible, identifiable and retrievable by establishing and complying with procedures that provide for their collection, review indexing, distribution, protection and disposition. Publishing and maintaining guidelines, approval documents, processes, programs, procedures, manuals and the maintenance of revisions, files and distribution lists. This includes typing, word processing and other software applications, keying, filing, records support, library support, microfilming, reproduction and fax services, graphics, mail processing, and other administrative support that cannot be directly related to a specific activity such as maintaining office supplies (inventory and ordering), furniture (inventory and ordering), air charter reservations, conference room reservations. Not included in this sub process is all procedure writing activities which should be included in the appropriate sub process (Operations, Maintenance, etc.). Even "pooled" clerical and procedure writing groups should be allocated to the sub processes they are supporting.

SS04 Human Resources

All activities associated with providing compensation and benefits, workforce planning, organizational development, performance management, employee/labor relations and human resource management. Compensation and benefits consists of compensation review, development of job competencies, position descriptions, benefits, and incentive programs. Workforce planning consists of needs analysis, recruitment and staffing, supplemental workforce planning, retention, succession planning, diversity management, compliance, HR information systems inputs, displacement, redeployment and HR-related community relations. Organizational development consists of organizational culture (including safety culture), change management, leadership development, first line supervisor development, employee development, and organizational design. Performance management includes performance planning and review (setting individual performance goals, measures, monitoring performance, and providing feedback), employee recognition, coaching/mentoring and the discipline process. Employee/labor relations consists of employee feedback/surveys, management feedback, employee issues identification, investigations and resolution, labor strategy, wellness, EAP, nuclear employee concerns (including Safety Conscious Work Environment), quality of life and conflict resolution. Human resource management consists of HR administration, employee-management facilitation and consulting, benefits administration, in-processing, out-processing, new employee orientation, retirement programs, HR communications, HR policies and procedures/compliance, job postings, testing and plant access, HR Information System requirements, educational assistance and relocation/employee expenses.

SS05 Housekeeping & Facilities Management

All activities related to the planning, administration and maintenance of buildings, facilities, utilities and grounds housekeeping and maintenance. Includes activities associated with providing transportation services and maintenance of other company vehicles.

SS06 Communications & Community Relations

All activities associated with involving the company in the community for the betterment of the community and the economic well being of the company (includes visitor center and public communications). Also includes activities related to political action committee (PAC) and governmental affairs such as filing reports and informational requests.

SS07 Management Assistance / Industry Associations

All activities associated with assisting management not included in any other functional activity. All legal related activities are included in this process. This includes support for management processes such as management oversight meetings, review boards, coordinating self assessment program management, and coordinating human performance reviews. All activities associated with efforts to represent the company and provide technical input to committees, owner groups and industry, professional and trade associations that support the electric utilities' interest. Includes full-time employees loaned to NEI, INPO, etc.

SS08 Nuclear Officers and Executives

All activities by the senior plant management officers / executives for a nuclear facility including the Chief Nuclear Officer. This includes executive assistants/secretaries.

SS09 Employee Incentive Payments

Includes all costs associated with the payout of annual and/or outage incentive programs which apply to all employees at the site. This excludes any incentive payments or stock options paid to executives which are not provided to the general employee population. Costs related to time off with pay granted as an incentive for outage performance should be included with the function the individual employee supports.

SS10 Insurance

All non-employee benefit insurance costs Insurance (such as ANI, NEIL), including liability, property, replacement power, etc. Include face-value of premium cost (gross cost). Do not include refunds or recoveries.

- required regulatory insurance costs
- inspection fees for personal and public liability (American Nuclear Insurers)
- Nuclear mutual limited insurance premiums.

SS11 Payroll Taxes, Pension & Benefits

Cost of direct payments or company-paid employee-related insurance for any activity benefiting the employee. These costs are typically defined as labor loading and are entered as a labor cost. Includes such items as:

- Payroll Taxes: taxes based on payroll to provide for unemployment insurance, social security, and other benefits provided for under Social Security Act.
- Accident or death benefits
- Hospitalization
- Medical Insurance
- Recreational allowances
- Company supported or matched savings funds
- Long Term Disability
- Postretirement Benefits Other Than Pensions (PROP) (FASB 106)

Training (TR)

TR00 Training - Develop & Conduct

All activities associated with the development and conduction of training programs, including instructor preparation and instruction delivery time, production of class materials and the assessment of the training. Some examples are INPO accreditation activities, human performance improvement, qualification/certifications, fire drills, employee development training, job specific (discipline) training and operator training. Also includes all upgrades to training software including changes to the simulator software.

Training associated with EP drills and exercises should be charged to Perform Emergency Preparedness, LP07.

This does not include time for attending training.

Work Management (WM)

WM01 Planning & Scheduling

All activities associated with the performance of work order planning and scheduling. Includes the detailed planning required to maintain all structures, systems and components in optimum condition. This includes any formal evaluations required to support this activity, and quality control tasks associated with reviewing safety related and quality related work orders. Includes the scheduling of outages, corrective, preventive and plant improvement maintenance and surveillance and performance testing. This activity also includes the scheduling of all related supporting tasks such as clearance application/removal, scaffold erection/removal, radiological protection and industrial safety.

WM02SUB PM, CM, Surveillance Testing & Tool Room Support

A rollup summary for following sub accounts as defined below:

| | |
|-------|----------------------------------|
| WM02A | Preventive Maintenance |
| WM02B | Maintenance Surveillance Testing |
| WM02C | Corrective Maintenance |
| WM02D | Tool Room & Calibration |

WM02A Preventive Maintenance

All activities directly related to the planned, periodic and preventive maintenance of structures, systems, components or equipment. Includes staging/acquiring parts, the actual performance of the work, post-maintenance testing, cleanup of job site during and after work, writing of procedures, documentation closeout (signatures and delivery for storage) and any engineering evaluations in support of this activity.

WM02B Maintenance Surveillance Testing

All activities directly related to the maintenance surveillance testing of systems, components or equipment.

WM02C Corrective Maintenance

All activities directly related to the repair, restoration or rework of structures, systems, components or equipment that fail to perform designed function. Includes all tasks associated with emergent work (excluding minor maintenance and Fix-It-Now maintenance), staging parts, tagout requests/submittals, cost to repair fuel assemblies or core components that were damaged after receipt inspection, performance of the work, post-maintenance testing, cleanup of job site during and after work, writing of procedures, documentation closeout (signatures and delivery for storage), and any engineering evaluations in support of this activity.

WM02D Tool Room & Calibration

All activities related to the planning, administration and maintenance of non-plant equipment and tool room support. Includes activities associated with maintenance of Health Physics instruments and measurement and testing equipment (M&TE), and routine tool maintenance. Includes tool control and tool room activities, consumable / free issue management, and records maintenance.

WM02E Non-Capital Plant Improvements

All activities associated with constructing, implementing, or testing modification projects (includes AFUDC). Includes project planning and project management, pre-installation preparations and fabrication; visual inspection of installed change and change documentation, identification of exceptions to approved design, post-installation acceptance testing, operational testing, acceptance of change and/or declaration of operability, and corresponding simulator modifications.

WM02F Fix-It-Now Teams (Dedicated)

All activities associated with Fix-It-Teams for those companies with dedicated teams. Companies without dedicated Fix-It-Teams would not have any costs identified in this category.

APPENDIX D

Key Performance Indicator Definitions

Configuration Management (CM)

None

Equipment Reliability (ER)

No current indicators however ER Working Group has drafted a set of indicators for possible collection in 2007.

Loss Prevention (LP)

LP008B Fire Events

Number of fires that occur over time.

Unit of Measure: 36 month rolling average
Reporting Level: Plant
Reference: None

LP008D Open Impairments

Number of open fire impairments at the end of each year.

Unit of Measure: Number
Reporting Level: Unit
Reference: None

Materials and Services (MS)

MSTOT1 Total Spend Dollars

Total dollars invoiced for parts and services, including both O&M and Capital. Includes invoiced amounts whether paid or unpaid, based on calendar year

Unit of Measure: Dollars in thousands
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MSTOT2 Total Materials & Services Cost

Three year average cost of the materials and services process per unit. Includes all fully loaded labor and material used in performing activities under MS001-MS006. Costs include software operation, but do not include administrative overheads such as HR, corporate adders, or IT costs (including leases, workstations, services, etc.).

Unit of Measure: Dollars
Reporting Level: Plant, with prorated corporate procurement support costs included
Reference: NEI AP-908 Rev. 2 November 2003

MS001A Inventory Dollar Value

Total dollar value of line items in O&M. Inventory value comprises the value of O&M spares, and un-depreciated capital spares. Includes all shared inventory carried on plant's books. Annual snapshot

Unit of Measure: Dollars
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS001B Inventory Line Items

Total number of line items in O&M and capital. The total number of unique line items with stock on hand greater than zero. Includes both plant materials and non-plant materials. Annual snapshot.

Unit of Measure: Number of unique stock numbers
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002B Monthly Average Jobs on Materials Hold

Monthly number of planned corrective and preventative maintenance orders on hold for parts. The average number of monthly corrective and preventive maintenance jobs on hold for parts before scope freeze. The Value should be a rolling average, based on individual fuel cycle duration (i.e. 12, 18 or 24 month).

Unit of Measure: Average Number
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002C Monthly Average of Percent of Jobs on hold for Materials

Note: This measure will be derived from other data supplied.

$$\frac{(\text{Monthly Average Jobs on Materials Hold})}{(\text{Monthly Average Jobs})} * 100$$

Unit of Measure: Percent
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002D Stockouts

The total number of line items with demand and a min/max >0 at the time of scope freeze. Does not include material available after scope freeze that supports continuation of work. Material requested before scope freeze excludes emergent parts. The value should be a rolling average, based on individual fuel cycle duration (i.e. 12, 18 or 24 month).

Unit of Measure: Number
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002E Field Issue/Return Efficiency

Note: This measure will be derived from other data supplied.

Derived measure using output of total quantities issued and total quantities returned measures. This measure is a ratio number of items returned to number of items issued. This measure is the percentage of material reserved and not used. Use previously defined measures without normalization to unit.

$$\frac{(\text{Total Units Returned to Inventory})}{(\text{Total Units Issued from Inventory})} * 100$$

Unit of Measure: Percentage
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002F Receiving Discrepancy Ratio

A ratio of receiving discrepancies to total receipts. Reports total line items identified as discrepant as a result of both receiving and receiving inspection activities. Uses total line item receipts - defined as line items received through the warehouse with a cat id/stockcode but excludes items managed through Vendor Managed Inventory (VMI), and repairable items. Ratio of total line items found discrepant divided by total line items received measured as a percent. This includes items fixed immediately but does not include those items removed for refurbishment or repair.

This is a rolling monthly average for the number of months in the fuel cycle.

Unit of Measure: Percentage
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002G Total Issue Value from Inventory

Reports the total value of items in inventory physically released to the field from inventory. This includes all cat id/stockcode materials from inventory (O&M or capital). This measure excludes items that are "staged," materials issued without a cat id/stockcode (e.g., Vendor Managed Inventory) tools. This is a rolling monthly average for the number of months in the fuel cycle.

Unit of Measure: Dollars
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002H Total Units Issued from Inventory

Reports the total inventory items released from the warehouse to the field. This includes all catalog identification/stockcode materials from inventory (O&M and capital). This measure excludes items that are "staged," materials issued without a cat id/stockcode (e.g., Vendor Managed Inventory) tools. This is a rolling 12 month average.

Note: This is not based on the fuel cycle as identified in AP-908. This makes the figure compatible with MS004F, which is necessary for the proper calculation of MS004H.

Unit of Measure: Number
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002I Total Value of Returns to Inventory

Reports the total value of items returned to inventory from the field. This includes all cat id/stockcode materials. This measure excludes items that are “staged,” materials returned without a cat id/stockcode (e.g., Vendor Managed Inventory) tools. This is a measure of the total value of material reserved but not used. This is a rolling monthly average for the number of months in the fuel cycle.

Unit of Measure: Dollars in thousands
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002J Total Units Returned to Inventory

Reports the total quantities returned to inventory from the field. This includes all cat id/stockcode materials. This measure excludes items that are “staged,” materials returned without a cat id/stockcode (e.g., Vendor Managed Inventory), tools. This is a rolling 12 month average.

Unit of Measure: Number
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

MS002K Percent Dollars Used

Note: This measure will be derived from other data supplied.

Derived measure from standard measure of Total Issue Value from Inventory and Total Value of Returns to Inventory.

*(Total Issue Value from Inventory – Total Value of Returns to Inventory) *100*
(Total Issue Value from Inventory)

Unit of Measure: Percentage
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

OP01D Lost Generation due to Personnel Errors

Previous three years (year end) of the annual effective full power days (EFPD) of lost generation relative to net MDC, due to personnel error (NERC/GADS personnel error codes 9900-9920) resulting in inadvertent on-line plant scram/trip, unscheduled shutdown, load reduction, unscheduled outage or an extended startup. (NERC/GADS event codes : U1, U2, U3, D1, D2, D3, or SF,). (MWh lost / (net MDC X 24).

Unit of Measure: Number of Days
Reporting Level: Unit
Reference: None

OP01E Control Room Deficiencies

The number of control room deficiencies at the end of the year.

Unit of Measure: Dimensionless integer
Reporting Level: Unit
Reference: None

OP01F Clearance Problems

The number of clearance (tagging) deficiencies during the year.

Unit of Measure: Dimensionless integer
Reporting Level: Unit
Reference: None

OP004 RPM Number

Calculation of Site O&M Cost in cents/kwh multiplied by Person-Rem of the site (all quantities are 3 year averages).

Unit of Measure: Number (cents-REM/kwh-site)
Reporting Level: Plant
Reference: None

Support Services (SS)

SS01 Information Unit Technology Staffing (FTE/MWe)

Note: *This measure will be derived from other data supplied.*

Ratio of IT staff in FTE divided by net MDC rating in MWe including approximate FTE allocation from nuclear and/or corporate IT resources supporting the site.

Unit of Measure: Percentage
Reporting Level: Plant
Reference: None

SS02 Business Services Ratio

Note: *This measure will be derived from other data supplied.*

Ratio of Business Services staff in FTE divided by Total Site Population in FTE including approximate allocation from nuclear and/or corporate Business Services resources supporting the site.

Unit of Measure: Percentage
Reporting Level: Plant
Reference: None

SS03A Records Management Cost per Employee

Note: *This measure will be derived from reported cost and staffing data.*

Total site cost to perform records management process activities, normalized to eliminate variations in staff size and wage rates.

$$SS03 = \frac{(SS03 \text{ Total FTE} \times \$50/\text{hr} \times 2080 \text{ hours/year}) + SS03 \text{ Materials} + \text{Serv} + \text{Other}}{\text{Plant Total Staff}}$$

Unit of Measure: Dollars per employee
Reporting Level: Plant
Reference: NEI-AP-907 Rev. 1 July 2003 Provide Information Services p. D-2

SS03B Procedure Quality

Average monthly number of procedure content problems identified as adverse to quality in the corrective action system during the previous year. If more than one procedure is affected by the original request, for the purposes of performance measures they are

counted as multiple requests. For reporting at a plant (site), the number of corporate content problems should be added to the plant (site) number.

Unit of Measure: whole number of procedures

Reporting Level: Plant

Reference: NEI-AP-907-001 Rev. 0 2006 Procedure Process Description p. D-1

SS03C Incoming Change Request Quantity

Average monthly number of change requests received during the previous year.

Unit of Measure: whole number of requests

Reporting Level: Plant

Reference: NEI-AP-907-001 Rev. 0 2006 Procedure Process Description p. D-1

SS04A Turnover Rate

Turnover is the permanent movement of people out of the nuclear organization. Divide the number of full time equivalent (FTE) employees who have "permanently" left the organization by the total number of the workforce. FTE is Full-Time Equivalent.

The purpose of this data element is to account for the total number of regular/full or part-time positions that are not temporary or contract. Types of turnover include retirement, voluntary termination (resignation), involuntary termination, disability/death, transfer out of nuclear organization. Excludes cyclical layoffs, reductions in force, cutbacks due to mergers and temporary or contract employees.

Turnover Rate = $\frac{(\# \text{ FTEs who left the Nuclear organization})}{(\# \text{ FTEs in Nuclear Organization on Dec 31})} * 100$

Unit of Measure: Percentage

Reporting Level: Plant

Reference: HRB - HR Metrics Report, December 2003.

SS04B Employee Labor Cost

Note: This measure will be derived from other data supplied.

$EMPLOYEE\ LABOR = \frac{\text{Total Cost (including fuel)}}{\text{FTEs (excluding contractors)}}$

Unit of Measure: Dollars per FTE

Reporting Level: Plant

Reference: HRB - HR Metrics Report, December 2002.

SS04C Productivity Factor

Note: This measure will be derived from other data supplied.

$$\text{PRODUCTIVITY FACTOR} = \frac{\text{Mw Hours}}{\text{FTE}}$$

Unit of Measure: MWh per FTE

Reporting Level: Plant

Reference: HRB - HR Metrics Report, December 2002.

SS04D Total Overtime Cost Ratio

Track % of payroll for both exempt and non-exempt employees where OT (Exempt) = % of (Exempt) Payroll and OT (Non-Exempt) = % of Non-Exempt Payroll. Include Extra Straight Time pay for exempt and non-exempt employees. No Contractors included in calculation.

$$\text{TOTAL O.T. \%} = \frac{(\text{Exempt O.T. Costs} + \text{Non-exempt O.T. Costs})}{(\text{Total Payroll})} * 100$$

Unit of Measure: Percentage

Reporting Level: Plant

Reference: HRB - HR Metrics Report, December 2002.

SS04E Exempt Overtime Cost Ratio

Overtime percent of payroll for exempt employees. Overtime includes extra straight time pay for exempt employees. No contractors included in calculation.

$$\text{Exempt .O.T. \%} = \frac{(\text{Exempt O.T. Costs})}{(\text{Exempt Payroll})} * 100$$

Unit of Measure: Percentage

Reporting Level: Plant

Reference: HRB - HR Metrics Report, December 2002.

SS04F Non-Exempt Overtime Cost Ratio

Overtime percent of payroll for non-exempt employees. No contractors included in calculation.

$$\text{Non-exempt O.T. \%} = \frac{(\text{Non-exempt O.T. Costs})}{(\text{Non-exempt Payroll})} * 100$$

Unit of Measure: Percentage

Reporting Level: Plant
Reference: HRB - HR Metrics Report, December 2002.

SS04G HR Staffing Ratio

Note: This measure will be derived from other data supplied.

HR professionals – defined as HR Management, HR consultants, and generalists that directly support the plant.

$$\text{HR STAFF RATIO} = \frac{(\text{HR Professionals (FTE)})}{(\text{Total Site (FTE)})} * 100$$

Unit of Measure: Percentage

Reporting Level: Plant

Reference: HRB - HR Metrics Report, December 2002.

SS04H Unit Production Costs

Note: This measure will be derived from other data supplied.

Productivity is measured by labor cost per unit electrical output.

$$\text{Unit Production Cost} = \frac{(\text{Total Labor Costs (including O\&M Contractors)})}{(\text{KwHours})} * 100$$

Unit of Measure: Cents per kwh

Reporting Level: Plant

Reference: HRB – HR Metrics Report, December 2002.

Training (TR)

TR00 Training Hours per Employee

The average number of hours per person per year spent in training. This includes all training, technical as well as administrative.

$$\frac{(\text{Number of training hours (all types) for all site employees})}{(\text{Number of site employees})}$$

Unit of Measure: Hours

Reporting Level: Plant

Reference: None

Work Management (WM)

WM01A Forced Outage Readiness

Forced Outage Work Orders ready to work (work package, materials, and tagouts available) divided by Total Forced Outage Work Orders expressed as a percentage.

Unit of Measure: Percentage
Reporting Level: Unit
Reference: INPO AP-928 December 2000

WM01B Monthly Average Jobs

Average number of scheduled jobs. Number of activities placed on the work schedule to include the total number of monthly jobs (planned corrective and preventive maintenance work to include all emergent work added to the schedule). The value should be a rolling monthly average, based on individual fuel cycle duration (i.e. 12, 18 or 24 month). Total jobs including both those requiring parts, and those not requiring parts.

Unit of Measure: Average number
Reporting Level: Plant
Reference: NEI AP-908 Rev. 2 November 2003

WM01C Scope Stability

Number of work orders at TF ("scope freeze") less changes (losses plus additions) divided by total work orders at "scope freeze" expressed as a percent. "T-01" is the end of the week prior to the execution week.

$$SS = \frac{\text{Scope[TF]} - (\text{losses [TF-T01]} + \text{additions[TF+T01]})}{\text{Scope [TF]}}$$

Unit of Measure: Percentage (report weekly average for the year)
Reporting Level: Unit
Reference: INPO AP-928 December 2000

WM01D Delinquent PM's

Total number of annual Delinquent PM work orders

Unit of Measure: Number
Reporting Level: Unit
Reference: INPO AP-928 December 2000

WM01E Deferred PM's

Total number of annual Deferred PM work orders

Unit of Measure: Number
Reporting Level: Unit
Reference: INPO AP-928 December 2000

WM01F Corrective Maintenance Backlog

Average weekly on-line corrective maintenance backlog

Unit of Measure: Number
Reporting Level: Unit
Reference: INPO AP-928 December 2000

WM01G Emergent Work (CM)

Average ratio of Emergent Work Orders to scheduled work for all work items added after schedule freeze until completion of execution week (T-0) expressed as a percentage.

(Emergent work should not include work assigned via the short-cycle or to the FIN team because both of these are parts of normal scheduled work management process).

Unit of Measure: Percentage
Reporting Level: Unit
Reference: INPO AP-928 December 2000

WM02F FIN Process Effectiveness

Weekly average Fix-it-Now completed items divided by total work orders added weekly, expressed as a percent. Completed tasks include those cancelled or otherwise dispositioned by the team.

Unit of Measure: Percentage
Reporting Level: Unit
Reference: INPO AP-928 December 2000

APPENDIX E

Staffing Definitions

Design Engineering / Configuration Management (CM)

CM0A Design/Modification/Technical Engineering

All activities associated with design/modification/technical engineering services, and ensure design integrity for:

Civil/Structural Engineering, including site buildings, roads, bridges, and waterfront structure. Performs soils and foundations analyses, and reviews and approves hanger and support locations. Provides stress analysis and support evaluation services. Provides architecture and site layout services.

Electrical/I&C Engineering including high, medium and low voltage distribution systems (including DC and instrument power), related components (including motors, circuit breakers, transformers, batteries, chargers and inverters) and instrumentation and control systems and components.

Mechanical Engineering including primary, secondary, and auxiliary systems, and associated components including piping, insulation and hangers.

All activities associated with the development of design changes. Performs manual and computer-aided design engineering functions. Resolves field questions, and maintains piping and instrument diagrams and electric power line diagrams. Prepares stress isometrics.

All activities associated with technical engineering issues. Includes providing technical support to modification engineers and plant/system engineers, and provides research and analysis of technical engineering issues. Also includes disposition of non-conformances and other assigned items. Responds to design basis and configuration control issues and questions. Serves as technical consultants on engineering issues. Responds to technical inquiries and information requests from internal and external sources. Responsible for engineering services and key programs in specialized technical areas not included in other engineering functions, such as equipment qualification, configuration management, in-service inspection, fire protection engineering, and probabilistic risk assessment. Ensures design integrity for assigned specialized areas.

CM0B Plant Computer Engineering

All activities associated with hardware and software engineering for supporting plant process computers, radiation monitoring systems, and other operational /support computers and systems. Includes personnel who provide similar services for the training simulators. This function does not include those positions supporting operation and maintenance of the supporting network and mainframe infrastructure, such as: resource management, telecommunications, network services, mainframe, desktop services, and enterprise applications.

CMADM Design Engr / Configuration Mgmt Administrative Support

All activities associated with all secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors in Design Engineering / Configuration Management performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

CMMGMT Design Engr / Configuration Mgmt (Management)

All activities associated with all management personnel above the level of first line supervisor in Design Engineering / Configuration Management functions.

PLANT ENGINEERING / EQUIPMENT RELIABILITY

ER0A Plant Engineering

All activities associated with development of a long term planning and life cycle management strategy and maintenance plan to establish, maintain and analyze information related to the condition and efficiency of structures, systems and components, the administration of preventive, predictive maintenance programs and thermal performance monitoring program. Includes surveillance testing program, in-service inspections (ISI) and in-service tests (IST), calibrating/cataloging /maintaining/testing equipment (M&TE), and any engineering evaluations in support of testing requirements or evaluating results. Includes post maintenance testing, writing of procedures, documentation closeout maintaining logs, reports and records regarding equipment performance to determine conditions adverse to quality. Also includes System Health Assessment and Reporting.

ER0B Non-destructive Examination - NDE

All activities associated with the non-destructive examination program in support of engineering, maintenance and modifications. Examples include radiography, ultrasonic, eddy current, liquid penetrant and magnetic particle examinations to identify, ensure and/or verify component and/or equipment integrity. Includes ASME Code, safety related and balance of plant activities

ERADM Plant Engr / Equipment Reliability Administrative Support

All activities associated with secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors in Plant Engineering / Equipment Reliability performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

ERMGMGT Plant Engr / Equipment Reliability Management

All activities associated with management personnel above the level of first line supervisor in Plant Engineering / Equipment Reliability functions.

LOSS PREVENTION

LP01 Security

All activities associated with managing access control, providing physical security, managing security regulatory and administrative matters, and protecting plant resources and public safety. Also includes response to alarms and administering/participating in fitness for duty processing, excluding training.

LP02 Quality Assurance

All activities associated with the quality assurance program involved in operational quality assurance.

- a. Quality audits of plant activities and vendors
- b. Quality surveillance of plant activities
- c. In-line review of documents and procedures by QA
- d. Maintenance of QA program manuals and QA procedures
- e. Administer vendor verification program

LP03 Quality Control

All activities associated with quality control involved in plant inspection including nondestructive examinations, receiving inspections, plant modification surveillance.

- a. Visual inspection/ASME section XI program
- b. Performance nondestructive examinations (MT, PT & UT flaw)
- c. Tech spec surveillance on snubbers and fire barrier seals
- d. Inspection of maintenance modifications activities
- e. Review and reporting of nuclear reliability data system (NPRDS)
- f. Nonconformance material report (NMR) processing
- g. Review and closeout of work request and preventive maintenance
- h. Perform material testing for commercial grade dedication program
- i. Receipt inspection of equipment and materials
- j. Quality control tasks associated with reviewing safety related and quality related work orders.
- k. Quality control activities such as ensuring and verifying component integrity
- l. Performing quality inspections and monitoring
- m. Visual inspection of installed changes and change documentation
- n. Provide for authorized nuclear inspection activities

LP04 Corrective Action Program & Operating Experience

All activities related to the Corrective Action Program organization and Operating Experience group. Also includes the full time staff for administering human performance programs. Personnel in other groups performing root cause investigations and corrective action implementation are considered part of line activities and are not charged to this account.

LP05 Safety/Health

All activities related to the preparation, research and interpretation of regulations, and implementation of safety procedures, industrial hygiene programs and medical services. Includes routine safety meetings and hazardous materials response service.

LP06 Licensing

All activities associated with managing regulatory (NRC and non-NRC) relationships, obtaining and maintaining the operating license, providing regulatory guidance and interpretation, monitoring and evaluating regulatory and industry trends, and evaluating, assessing and negotiating current and future commitments. Includes supporting the following activities: LER's, NOV's, 50.59 evaluations, license and FSAR amendments, NRC user fees, DOE high level waste fee, responding to generic letters, obtaining and maintaining environmental permits, reviewing and evaluating proposed legislation, rulemaking and issues.

LP07 Emergency Preparedness

All activities associated with developing, conducting and supporting Emergency Preparedness (EP) plan, and maintenance of equipment. Includes all costs associated with EP training, drills, rehearsals and graded exercises. Also provides coordination and establishes priorities for the nuclear power emergency communication and data transmission programs.

LP08 Dedicated Fire Responders

For those companies with full time fire responders / departments this would be all activities associated with maintaining the fire responder's organization, e.g. staffed fire station. Companies without full time fire responders would not have any costs identified in this category.

This category does not include costs for developing, administering and supporting fire protection programs. For example fire brigade activities, maintenance of fire protection equipment and engineering of fire systems are included in their respective organizations.

LPADM Loss Prevention Administrative Support

All activities associated with secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors in Loss Prevention performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

LPMGMT Loss Prevention Management

All activities associated with management personnel above the level of first line supervisor in Loss Prevention functions.

MATERIALS & SERVICES

MS01 Materials Management & Warehousing

All activities associated with inventory planning, inventory control and optimization, the development of inventory management control policies/procedures and the identification of unneeded inventory and scrap materials.

All activities relating to receipt, inspection, storage, counting, distribution, issuance and shipping of equipment and materials. All activities associated with on-site receipt, inspection and reservation, warehouse storage (identification, tracking and stock level maintenance) and distribution of materials prior to use. Includes receipt/dispatch of materials, warehouse operation handling and storage, packaging reduction, initial issuing of equipment and materials, handling and storage of nuclear grade materials, bulk gasses and chemicals. Also includes all activities associated with onsite and offsite repairs, refurbishment and returns including quality control activities and disposition of discrepant repaired, refurbished and returned materials.

MS02 Contracts & Purchasing

All activities associated with contract services and the evaluation and purchasing of materials and services. Includes developing, negotiating and monitoring service contracts from outside agencies/vendors. Also includes processing and administration of purchase requisitions, purchase orders and internal supply request, contracts and leases. Includes expediting materials, filing claims for damage, resolution of shipping discrepancies, life cycle cost planning, decisions to make/buy, the standardization of materials/variety reduction and customer contact/service. Also includes activities associated with the planning, development of contracting and leasing strategies, market intelligence and performance, and strategic sourcing of materials and services.

MS03 Procurement Engineering

All activities associated with qualification and technical specifications of plant materials, parts, and equipment. This includes parts substitution, the identification and resolution of supplier non-conformance, commercial parts dedication testing and like-for like replacement analysis. Includes other functions in support of procurement (e.g. commercial grade dedication, procurement engineering and quality related receipt

inspection). Includes other functions in the support of periodic nuclear vendor qualification and oversight related to procurement.

MSADM Materials & Services Administrative Support

All activities associated with secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors in Materials and Services performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

MSMGMT Materials & Services Management

All activities associated with management personnel above the level of first line supervisor in Materials and Services functions.

NUCLEAR FUEL

NF00 Nuclear Fuels/Reactor Engineering

All activities associated with performing and/or reviewing reload safety evaluation, reload design analyses, and thermal, hydraulic and transient analyses. Provides support to operations for core analysis. Supports fuel licensing and fuel management activities. Includes personnel who manage and monitor the nuclear fuel acquisition process.

All activities associated with analyzing fuel performance, performing core performance monitoring and trending, and providing support and technical direction to operations during refueling, startup and shutdown. This includes developing core designs, providing safety analysis calculations and support, monitoring fuel performance, and providing strategies for reactivity management.

All activities associated with the provision and transportation of fuel, including contract negotiations, contract administration and transportation

All activities associated with receiving and storing new fuel, storage analyses, managing spent fuel shipping and storage, cask fleet, irradiated channel disposal, developing dry storage contingency and disposing of spent fuel.

NFADM Nuclear Fuel Administrative Support

All activities associated with secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors in Nuclear Fuel performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

NFMGMT Nuclear Fuel Management

All activities associated with management personnel above the level of first line supervisor in Nuclear Fuel functions.

OPERATE PLANT

OP01A Operations

All activities associated with preparing and placing systems and components in and out of service (e.g., tag-outs and clearances) to support normal and off-normal system operations and actions required to maintain the plant in a safe operating condition in all modes of operation. Includes plant walk downs and inspections, plant problem identification (generation of a trouble ticket), and maintenance of operations logs, reports and records regarding equipment performance. Includes routine system and component lineup changes; actions required to address abnormal occurrences (including reducing power or removing and restoring the unit to service); routine actions required for fuel burn up (i.e., dilution at a PWR or control rod sequence exchanges at a BWR); fuel shuffling and actions required to maintain the plant in a safe operating condition in all modes of operation. Includes on-shift staff and supervisors responsible for operating primary, secondary and liquid radwaste systems; if performed by shift staff, includes preparing or reviewing responses to operating events and associated inquiries from other organizations. Includes Shift Technical Advisors.

OP01B Operations Support

All activities associated with functions to support Plant Operations. This function includes non-shift personnel supporting the operations staff, including functions supporting work control through Operations. This includes dedicated procedure writers, ops / work control clearance orders, training coordinators, corrective action program coordination, root cause investigators, non-modification project management, and technical specialists. Includes persons in licensed operator training classes.

OP02 Environmental

Includes all activities associated with establishing and maintaining environmental programs and monitoring the environment. Also includes persons responsible for the non-radiological environmental monitoring programs and related requirements, audits, and thermal monitoring.

OP03 Chemistry

All activities associated with establishing and maintaining chemistry program, monitor and control plant chemistry, and managing chemical use and safety program to maintain component integrity and optimize plant efficiency. Also includes collecting and processing analytical chemistry samples and preparing reports. Includes chemistry technicians for normal and emergency shift functions such as chemical additions and chemical/radiochemical analyses. Also includes persons coordinating all aspects of chemistry program and providing guidance on chemistry standards; conducting evaluations of plant chemistry programs; and addressing and resolving chemistry operating problems. Also includes staff responsible for radioactive effluents program.

OP04 Radiation Protection

All activities associated with providing radiation exposure control and contamination control. Includes establishing and monitoring health physics program, controlling and monitoring personnel work and their work locations, performing activities necessary to maintain ALARA (shielding, respiratory protection, calculations, stay times, radiation work permits, etc.). Includes personnel responsible for technical oversight of health physics program. Includes persons involved with respiratory protection, radiological environmental and dosimetry programs. Also includes controlling and monitoring contaminated areas of plant, and providing decontamination services. Includes waste and decontamination radiation protection services. Includes radiation protection technicians involved with such activities as routine and special surveys, and data reading and analysis. Also includes persons collecting and analyzing radiation system samples.

OP05 Radwaste

All activities associated with treatment, measurement, control, collection, compaction, storage, filtration, ion exchange, and other processing, reporting, handling, shipping, disposing of low-level waste and effluents. Includes liquid radwaste, gaseous radwaste, dry active radwaste, hazardous waste, mixed waste, industrial solid waste, industrial air emissions and non-radioactive liquid effluents.

OPADM Operations Administrative Support

All activities associated with secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors supporting Operations performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

OPMGMT Operations Management

All activities associated with management personnel above first line supervisors managing operations of the plant.

SUPPORT SERVICES

SS01 Information Technology

All activities related to planning, development, maintenance and operation of the company's information systems (enterprise, departmental, individual). This includes the operation and maintenance of the supporting network and mainframe infrastructure. Also included are planning, designing, constructing, operating and maintaining telecommunications facilities and equipment, electronic mail services, and providing telecommunications consulting services. Also includes administrative oversight of maintaining the plant process computer and digital embedded devices. (Recommended major sub-accounts include: resource management, telecommunications, network services, mainframe, desktop services, applications and process computer). Does not include activities associated with software and hardware engineering for plant process computers and digital embedded devices. Includes corporate related Information technology expenses associated with nuclear to support corporate infrastructure tools / applications / processes (payroll, employee benefits, etc.) not 100 % dedicated to nuclear operations.

SS02 Business Services

Business services activities include all activities associated with the financial management of the business. This also includes activities for corporate allocations.

There are two primary aspects to business services, strategic and tactical. Nuclear asset management activities are strategic and include strategic planning, generation planning (including decommissioning), long-range planning, project evaluation, and fleet valuation.

Other business services activities are tactical and include planning, budgeting, accounting, reporting, and assessment. These include the following activities: perform planning and management accounting, perform planning/budgeting/forecasting, perform cost accounting and control, perform cost management, evaluate and manage financial performance, perform general accounting and reporting, perform capital project accounting (property accounting), process accounts payable and expense reimbursements, manage payroll taxes, measure organizational performance and benchmarking, manage internal controls

Business services costs include executive discretionary funds used for activities not associated with a specific process. All activities associated with preparing financial/regulatory statements, including maintaining fuel, tax and joint owner data; providing accounting research and cost reporting data; analyzing fixed asset records; controlling fixed asset accounting system reporting; processing invoices; administering company payroll; and maintaining subsidiary ledgers. Also includes severance and retirement incentives, managing the workers compensation self-insured program, administering claims for the organization and performing loss control analysis. Preparing and filing claims on permanent and non-permanent plant equipment including loss control analysis, and compiling costs associated with losses for insurers. Benchmarking of processes should be charged against the subject process.

SS03 Records Management & Procedures

All activities associated with processing records to ensure they are legible, identifiable and retrievable by establishing and complying with procedures that provide for their collection, review indexing, distribution, protection and disposition. Publishing and maintaining guidelines, approval documents, processes, programs, procedures, manuals and the maintenance of revisions, files and distribution lists. This includes typing, word processing and other software applications, keying, filing, records support, library support, microfilming, reproduction and fax services, graphics, mail processing, and other administrative support that cannot be directly related to a specific activity such as maintaining office supplies (inventory and ordering), furniture (inventory and ordering), air charter reservations, conference room reservations. Not included in this sub process is all procedure writing activities which should be included in the appropriate sub process (Operations, Maintenance, etc.). Even "pooled" clerical and procedure writing groups should be allocated to the sub processes they are supporting.

SS04 Human Resources

All activities associated with providing compensation and benefits, workforce planning, organizational development, performance management, employee/labor relations and human resource management. Compensation and benefits consists of compensation review, development of job competencies, position descriptions, benefits, and incentive programs. Workforce planning consists of needs analysis, recruitment and staffing, supplemental workforce planning, retention, succession planning, diversity management, compliance, HR information systems inputs, displacement, redeployment and HR-related community relations. Organizational development consists of organizational culture (including safety culture), change management, leadership development, first line supervisor development, employee development, and organizational design. Performance management includes performance planning and review (setting individual performance goals, measures, monitoring performance, and providing feedback), employee recognition, coaching/mentoring and the discipline process. Employee/labor relations consists of employee feedback/surveys, management feedback, employee issues identification, investigations and resolution, labor strategy, wellnessEAP, nuclear employee concerns (including Safety Conscious Work Environment), quality of life and conflict resolution. Human resource management consists of HR administration, employee-management facilitation and consulting, benefits administration, in-processing, out-processing, new employee orientation, retirement programs, HR communications, HR policies and procedures/compliance, job postings, testing and plant access, HR Information System requirements, educational assistance and relocation/employee expenses.

SS05 Housekeeping & Facilities Management

All activities related to the planning, administration and maintenance of buildings, facilities, utilities and grounds housekeeping and maintenance. Includes activities associated with providing transportation services and maintenance of other company vehicles.

SS06 Communications & Community Relations

All activities associated with involving the company in the community for the betterment of the community and the economic well being of the company (includes visitor center and public communications). Also includes activities related to political action committee (PAC) and governmental affairs such as filing reports and informational requests.

SS07 Management Assistance / Industry Associations

All activities associated with assisting management not included in any other functional activity. All legal related activities are included in this process. This includes support for management processes such as management oversight meetings, review boards, coordinating self assessment program management, and coordinating human performance reviews. All activities associated with efforts to represent the company and provide technical input to committees, owner groups and industry, professional and trade associations that support the electric utilities' interest. Includes full-time employees loaned to NEI, INPO, etc.

SS08 Nuclear Officers and Executives

All activities by the senior plant management officers / executives for a nuclear facility including the Chief Nuclear Officer. This includes executive assistants/secretaries.

SSADM Support Services Administrative Support

All activities associated with secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors in Support Services performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

SSMGMT Support Services Management

All activities associated with management personnel above the level of first line supervisor in Support Services functions.

TRAINING

TR00 Training

All activities associated with the development and conduction of training programs, including instructor preparation and instruction delivery time, production of class materials and the assessment of the training. Some examples are INPO accreditation activities, human performance improvement, qualification/certifications, fire drills, employee development training, job specific (discipline) training and operator training. Also includes all upgrades to training software including changes to the simulator software.

Training associated with EP drills and exercises should be charged to Perform Emergency Preparedness, LP07.

This does not include time for attending training.

TRADM Training Administrative Support

All activities associated with secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors in Training performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

TRMGMT Training Management

All activities associated with management personnel above the level of first line supervisor in Training functions.

WORK MANAGEMENT

WM01A Planning

All activities associated with work order planning (outage and non-outage). This includes job package development, assembling, completing and review documentation associated with the maintenance effort. This also includes detailed planning required to maintain all structures, systems and components in optimum condition and any formal evaluations required to support this activity.

WM01B Maintenance & Construction Support

All activities associated with the support of the work of maintenance/construction craft. non-engineering degreed maintenance technical experts; non-engineering degreed persons developing maintenance strategies and resolving maintenance rules issues; personnel coordinating with plant engineers on the development of corrective maintenance procedures and other technical matters; and maintenance procedure writers.

WM01C Scheduling

All activities associated with the performance of scheduling. Includes the scheduling of outages, corrective, preventive and plant improvement maintenance and surveillance

and performance testing. This activity also includes the scheduling of all related supporting tasks such as clearance application/removal, scaffold erection/removal, radiological protection and industrial safety. Includes persons who schedule non-refueling outage work activities. Also includes coordinating with maintenance, construction management, and engineering for daily schedule review and update.

WM01D Outage Management

All activities associated with planning and coordinating all outage activities. Includes central contact point for refueling and maintenance outage planning and management, and forced outage management. Includes dedicated outage work window managers.

WM01E Project Management

All activities associated with direct control and monitoring contractors and in-house design packages and other work in support of engineering functions. This includes processes required to ensure design changes are justified based on the value, safety, reliability and efficiency. Reviews products to ensure high quality work. Participates in developing bid packages. Establishes and monitors milestone schedules for assigned work. Also assists in reviewing contractor proposals and recommending contract award. Coordinates resolution of technical questions directed to, or originated by contractors.

WM02J Electrical Maintenance

All activities associated with electrical maintenance and construction work within the power block. This includes routine electrical preventive maintenance, corrective maintenance, predictive maintenance, and fix-it now maintenance activities on plant components. It also includes major and minor modifications. It includes the staging/acquiring of parts, the actual performance of the work, pre & post maintenance testing, cleanup of job site during and after work, documentation closeout (signatures and delivery for storage)

WM02K I&C Maintenance

All activities associated with I&C maintenance and construction work within the power block. This includes routine I&C preventive maintenance, corrective maintenance, predictive maintenance, and fix-it now maintenance activities on plant components. It also includes major and minor modifications. It includes the staging/acquiring of parts, the actual performance of the work, pre & post maintenance testing, cleanup of job site during and after work, documentation closeout (signatures and delivery for storage).

WM02L Mechanical Maintenance

All activities associated with mechanical maintenance and construction work within the power block. This includes routine Mechanical preventive maintenance, corrective maintenance, predictive maintenance, and fix-it now maintenance activities on plant components. It also includes major and minor modifications. It includes the staging/acquiring of parts, the actual performance of the work, pre & post maintenance

testing, cleanup of job site during and after work, documentation closeout (signatures and delivery for storage).

WM02M Other Craft/Toolroom/Calibration

All activities associated with other craft (utility, painters, HVAC, crane, insulators, and coaters). All activities associated with the toolroom. Includes personnel performing metrology activities. Includes tool control and tool room activities, consumable/free issue management, and records maintenance.

WMADM Work Management Administrative Support

All activities associated with secretaries, administrative assistants who are not functional professionals, clerks, and clerical pools including clerical pool supervisors supporting Work Management performing administrative support functions including coordinating meetings and conferences, word processing, spreadsheet development and maintenance, graphic/presentation materials, and non-technical analysis of data.

WMMGMT Work Management - Management

All activities associated with management personnel above first line supervisors managing Work Management of the plant.

CAPTOT Capital Staffing

All activities associated with major capital projects which require dedicated (100%) employees. Plants involved with plant refurbishment due to extended years of operations would be a key example of this type of workforce. This is not allocated current workforce across minor or routine capital work.