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NASA Procedural Requirements

COMPLIANCE IS MANDATORY FOR NASA EMPLOYEES**NPR 8831.2F**Effective Date: October 07,
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Subject: Facilities Maintenance and Operations Management (Updated w/Change 1 on September 2, 2016)

Responsible Office: Office of Strategic Infrastructure

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Appendix A. Definitions

Addition. A physical increase to a real property facility that adds to the overall dimensions of the facility.

Agency Execution Plan (AEP). A detailed financial plan based on the Agency Operating Plan and used to determine how funds will be distributed below the apportionment level, but within any controls established in the appropriation and apportionment.

Agency Operating Plan (AOP). An internal plan based on the Congressional Operating Plan and the budget which sets forth the specifics on how NASA intends to apply Agency financial resources during the fiscal year to fulfill its mission. It includes all programs and projects.

Allocation. The formal administrative assignment of funding targets below suballotment to the program, project, and Center levels to incur obligations within a specific amount. Overobligation or overexpenditure of an allocated funding target is not a violation of the Antideficiency Act (ADA) unless it results in overobligation or overexpenditure of appropriation, apportionment, allotment, or suballotment. However, overobligation or overexpenditure of an allocated funding target is subject to administrative action.

Allotment and Suballotment. The formal administrative division and subdivision of budget authority delegated to incur obligations within a specific amount pursuant to OMB apportionment or reapportionment action or other statutory authority making funds available for obligation at the mission (allotment) and theme (suballotment) levels. Making or authorizing an overobligation or overexpenditure of an allotment or suballotment is a violation of the ADA and need to be reported.

Assessment. The portion of joint or indirect cost assigned to a specific objective, such as program, function, project, job, or service. (NASA's Office of the Chief Financial Officer uses this term to distinguish the process from funds distribution.)

Alterations. Work that changes the configuration of a facility (not maintenance or repairs) but that does not increase the value of the facility, e.g., moving a door or electrical outlet.

Annual Budget Call by NASA's OCFO. An internal term used for the Agency's Planning, Programming, Budgeting, and Execution (PPBE) process and the data calls issued during this process. The data requested outlines time-phased work programs expressed in dollars and other resources required to accomplish NASA objectives for the applicable years. The approved budget then serves as a basis for the request and distribution of funds, which NASA coordinates with Mission Directorates and Mission Support Offices.

Annual Work Plan (AWP). A plan prepared on an annual basis, prior to the start of the applicable fiscal year, that systematically lays out the maintenance and repair work to be accomplished within the budget constraints of the Center. The AWP is based on the 5-Year Maintenance Plan and the mission of the Center.

Apportionment/Reapportionment. A distribution or change to the distribution of amounts available for obligation in an appropriation or fund account into amounts available for specified time periods, programs, activities, projects, objectives, or any combinations of these. Amounts need to be apportioned annually by OMB prior to obligation, and the apportioned amount limits the obligations that may be incurred. An apportionment may be further subdivided by an agency into allotments, suballotments, and allocations. Overobligation or overexpenditure of an apportionment is a violation of the ADA and need to be reported.

Appropriation. A provision of law (not necessarily in an appropriations act) authorizing the expenditure of funds for a given purpose. Usually, but not always, an appropriation provides budget authority. Appropriations may be annual (one-year), multiyear (more than one year but with a definite ending date), or no-year, which refers to the period the funds are available for new obligations. During the period of availability, appropriations are often referred to as "current."

Assets. Any item of economic value owned by NASA. The item may be physical (tangible) or a right to ownership (intangible) that is expressed in terms of cost or some other value.

Authorization Act. A law that established and continues the operation of a Federal program or agency, either indefinitely or for a specific period, or that sanctions a particular type of obligation or expenditure within a program.

Availability. The ratio of the actual run time of a machine or system divided by the scheduled time for the machine or system. Usually expressed as a percentage. For example, if an air handler is scheduled to run from 6 a.m. to 6 p.m., 5 days a week and, in fact, does run during those times, its availability was 100 percent. If the air handler was stopped one day during the week for one hour, its availability for that week was 98.3 percent (59 hours divided by 60 hours). **Bar Code.** A series of parallel lines with width and spacing that represents a number when scanned by a laser reader.

Benchmark. A standard against which something is measured.

Benchmarking. Seeking the best examples of methods, processes, procedures, and products to establish a standard and assess one's performance in terms of quality, productivity, or cost.

Book Value. The original capitalized value of an asset, adjusted for modifications where appropriate, as stated in the Agency's accounting records.

Breakdown Maintenance. See Repair.

Budget. A formal estimate of future revenues, obligations to be incurred, and outlays to be made during a definite period and, when determined to be appropriate, upon the basis of accrued expenditures and costs to be incurred.

Budget Authority. The authority provided by law to incur financial obligations that will result in outlays. NASA has two forms of budget authority: appropriations and spending authority from offsetting collections (working capital funds and reimbursables).

Budget Cycle. The period that elapses from the initiation of the budget process to the completion thereof for a particular fiscal year.

Budget Execution. The processes by which financial resources are made available to Agency organizations and are managed to achieve the purposes and objectives for which the budget was approved, including operating plans, execution plans, funds distribution, obligations, expenditures, and reporting requirements.

Budget Year. The fiscal year (FY) for which estimates are submitted. Budget submissions generally contain data concerning the prior year (the FY immediately preceding the current year), the current year (the FY immediately preceding the budget year), the budget year (the FY for which estimates are submitted), and 4 subsequent years.

Buildings. The classification that includes the cost of buildings, capital improvements of buildings, and fixed equipment that is normally required for the functional use of the buildings and becomes permanently attached to and made a part of the buildings and that cannot be removed without cutting into the walls, ceilings, or floors, such as plumbing, heating, and lighting equipment; elevators; central air-conditioning systems; and built-in safes and vaults. Also included is all equipment of any type built in, affixed to, or installed in real property in such manner that the installation cost, including special foundations or unique utilities or services, or the facility restoration cost after removal is substantial.

Capitalized Equipment. Individual items of property, plant, and equipment (PP&E) that have an acquisition cost of \$100,000 or more, an estimated useful life of two years or more, is not intended for sale in the ordinary course of operations, is acquired or constructed with the intention of being used or is available for use by the Agency, and have an alternative future use. If an item, when originally installed, consists of "severable components," each component will be individually subjected to the capitalization criteria. Maintenance costs involving collateral

equipment will be tracked as an expense versus a capitalization. These criteria are retroactive to October 1, 1997. (See NPR 8800.15.)

Center Support. A building, area, or system that supports the overall operation of the Center/Facility but does not meet the mission critical or mission support criteria.

Central Utility Plant Operations and Maintenance. This category is unique in that it includes the cost of operations in addition to maintenance costs. It should be used only to capture the costs of operating and maintaining institutional central utility plants, such as a central heating or steam plant, wastewater treatment plant, or a central air-conditioning (chiller) plant. The concept is that operators are assigned fulltime to operate the plant, but they perform maintenance between various operating tasks, making it almost impossible to segregate operational and maintenance costs; therefore, the costs of the full-time operators and operations personnel (and their materials) are included in this category.

Collateral Equipment. Encompasses building-type equipment, built-in equipment, and large, substantially affixed equipment/property and is normally acquired and installed as part of a facility project as described below (also see Noncollateral Equipment):

a. Building-Type Equipment. A term used in connection with facility projects to connote the equipment normally required to make a facility useful and operable. It is built in or affixed to the facility in such a manner that removal would impair the usefulness, safety, or environment of the facility. Such equipment includes elevators, heating, ventilating, and air-conditioning systems, transformers, compressors, and other like items generally accepted as being an inherent part of a building or structure and essential to its utility. It also includes general building systems and subsystems, such as electrical, plumbing, pneumatic, fire protection, and control and monitoring systems.

b. Built-in or Large, Substantially Affixed Equipment. A term used in connection with facility projects of any type other than building-type equipment that is to be built in, affixed to, or installed in real property in such a manner that the installation cost, including special foundations or unique utilities service, or the facility restoration work required after its removal is substantial.

Commissioning. Traditional commissioning involves performing random tests and checks on facility systems to ensure that they are properly balanced, functionally operational, and comply with the design intent. It systematically checks operating parameters, such as pressure, temperature, minimum and maximum air flow, lighting levels, electrical amperage and voltage, torque, fluid volumes, and other thermodynamic measures at key locations, as well as balanced conditions. It is a method of acceptance testing that, when performed on a random basis at random sampling points, checks to ensure that the outcome indices at those points are in compliance with the outcome requirements stated in the design specification.

Building and equipment acceptance is one element of a larger, more comprehensive construction quality program known as "commissioning." Currently, there are four variations of commissioning being practiced: Traditional commissioning, total building commissioning, total building recommissioning or retrocommissioning, and NASA's customized application of a portion of commissioning called, Reliability Centered Building and Equipment Acceptance (RCB&EA). The Facility Engineering Division, ECIC, and the OMFIT are developing a Commissioning Guide.

Component Facility. Center organizations that are geographically separated from the parent Center.

Computerized Maintenance Management System (CMMS). A set of computer software modules and equipment databases containing facility data with the capability to process the data for facilities maintenance management functions. They provide historical data, report writing capabilities, job analysis, and more. The data describe equipment, parts, jobs, crafts, costs, step-by-step instructions, and other information involved in the maintenance effort. This information may be stored, viewed, analyzed, reproduced, and updated with just a few keystrokes. The maintenance-related functions typically include the following:

- a. Facility/equipment inventory.
- b. Facility/equipment history.
- c. Work input control.
- d. Job estimating.
- e. Work scheduling and tracking.
- f. Preventive and predictive maintenance.
- g. Facility inspection and assessment.

- h. Materials management.
- i. Utilities management.
- j. Corrective maintenance and repair.

Condition Assessment. The inspection and documentation of the material condition of facilities and equipment, as measured against the applicable maintenance standards. It provides the basis for long-range maintenance planning as well as annual work plans and budgets.

Condition-Based Maintenance (CBM). Facility and equipment maintenance scheduled only when the condition of the facility or equipment requires it. CBM replaces maintenance scheduled at arbitrary time or usage intervals. It usually involves the application of advanced technology to detect and assess the actual condition. See Predictive Testing & Inspection and Reliability Centered Maintenance.

Condition Monitoring. Also known as Predictive Maintenance. The continuous or periodic monitoring and diagnosis of systems and equipment to forecast failure. Also see Predictive Testing & Inspection.

Construction. The erection, installation, or assembly of a new or replacement facility, or an addition in area, volume, or both to an existing facility.

Construction Project. A facility project relating to the erection, installation, or assembly of a new facility, replacement facility, or an addition in area, volume, or both to an existing facility.

Continuous Inspection. A program of periodic, scheduled inspections of facilities and equipment to determine their condition with respect to specified standards (including safety).

Contracting Officer's Representative. Any person who, by appointment in accordance with procedures prescribed by the NASA FAR Supplement (see Appendix C.2, resource 4), has the authority to enter into and administer contracts and to make determinations and findings with respect thereto, or has any part of such authority.

Contractor. The supplier of the end item and associated support items to the Government under the terms of a specific contract.

Contracts. All types of agreements and orders for the procurement of supplies or services. Includes awards and notices of award; contracts of a fixed-price, cost, cost-plus-a-fixed-fee, or incentive type; contracts providing for the issuance of job orders, task orders, or task letters thereunder; letter contracts; and purchase orders. It also includes supplemental agreements with respect to any of the foregoing.

Corrective Maintenance. See Repair.

Current Replacement Value. Escalated value of the initial cost of an asset including all subsequent modifications for all facilities. CRV is developed by escalating facility and collateral equipment acquisition cost and any incremental book value changes to current-year dollars using the Engineering News Record (ENR) Building Cost Index (BCI). (See NPR 8800.15 for dollar value.)The NASA Real Property Management System is used in performing the required calculations. CRV is solely an escalated value and should not be used as an actual replacement cost.

Current Year. The fiscal year immediately preceding the budget year. Deferred Maintenance (DM). DM is the total of essential, but unfunded, facilities maintenance work necessary to bring facilities and collateral equipment to the required acceptable facilities maintenance standards. It is the total work that should be accomplished but that cannot be achieved within available resources. It does not include new construction, additions, or modifications. DM does include unfunded maintenance requirements, repairs, ROI, and CoF repair projects.

Descriptor. A description of the relationship of the work units used in a metric.

Design. This term encompasses both preliminary design and final design for facility projects. Design costs are normally funded under the CoF appropriation. Design costs of facility projects proposed for funding under appropriations other than CoF are normally funded under the same appropriation from which the facility project is to be funded with such costs being identified separately from the facility project cost estimate.

Drawings. Graphic data, including drawings as defined in MIL-STD 100A and prepared in accordance with MIL-STD-1000, Category D; aperture cards in accordance with MIL-C-9877; and graphs or diagrams in accordance with industry standards and industry specifications on which details are represented with sufficient information to define completely, directly, or by reference the end result for use in the selection, procurement, and manufacture of the item required.

Emergency Repair. The restoration of an existing facility or the components, thereof, when such facilities or components have been made inoperative by major breakdown, accident, or other circumstances that could not be

anticipated in normal operations and the repair, thereof, is of such urgency that it cannot await programming and accomplishment in the normal budget cycle. In the process of emergency repair, the replacement of components or materials will be of the size or character currently required to meet firm demands or needs.

Estimated Cost. A calculated, anticipated amount, as distinguished from an actual outlay, based on related cost experience, prevailing wages and prices, or anticipated future conditions, usually for the purposes of contract negotiation, budgetary control, or reimbursement.

Facilities Condition Assessment. See Condition Assessment

Facility Condition Index. See Appendix G.

Facilities Contract. A contract type under which Government facilities and equipment are provided to a contractor by the Government for use in connection with the performance of separate, related procurement or support services contract(s) for supplies or services. The term includes facilities acquisition contracts, facilities-use contracts, and consolidated facilities contracts.

Facilities Management. The planning, prioritizing, organizing, controlling, reporting, evaluating, and adjusting of facility use to support NASA activities based on customers' facility needs and Center mission requirements. See also Facilities Maintenance Management.

Facilities Maintenance. The recurring day-to-day work required to preserve facilities (buildings, structures, grounds, utility systems, and collateral equipment) in such condition that they may be used for their designated purpose over an intended service life. It includes the cost of labor, materials, and parts. Maintenance minimizes or corrects wear and tear and, thereby, forestalls major repairs. Facilities maintenance includes PM, PT&I, grounds care, PGM, repair, TCs, ROI, and SRs (not a maintenance item but work performed by maintenance organizations). Facilities maintenance does not include new work, work on noncollateral equipment, or maintenance performed in the Central Plant by plant operations personnel.

Facilities Maintenance Management. The planning, prioritizing, organizing, controlling, reporting, evaluating, and adjusting of facilities maintenance operations to support NASA activities with quality facilities based on customers' facility needs and predetermined maintenance goals at minimum cost.

Facility. A term used to encompass land, buildings, other structures, and other real property improvements, including utilities and collateral equipment. The term does not include operating materials, supplies, special tooling, special test equipment, and noncapitalized equipment. The term facility is used in connection with land, buildings (facilities having the basic function to enclose usable space), structures (facilities having the basic function of a research or operational activity), and other real property improvement.

Facility Improvement. That construction necessary to upgrade or replace obsolete facilities or to expand a facility to improve the operating efficiency of an installation.

Facility Project. The consolidation of applicable, specific individual types of facility work, including related collateral equipment, which is required to fully reflect all of the needs, generally relating to one facility, which have been or may be generated by the same set of events or circumstances that are required to be accomplished at one time to provide for the planned, initial operational use of the facility or a discrete portion thereof.

Find. Discovery utilizing PT&I of an impending failure or degrading condition of a facility, system, or equipment that indicates action is required to prevent failure.

Fiscal Year. In the Federal Government, it is the 12-month period from October 1 of one calendar year through September 30 of the following year.

5-Year Maintenance Plan. The plan for maintenance work anticipated for the 5-year period beginning with the budget year. It comprises the maintenance (planned, level-of-effort, and anticipated unknowns) required to support the Center mission needs and to correct the deficiencies identified by the current assessment of facilities.

Full-Time Equivalents. The total number of regular straight-time hours (i.e., not including overtime or holiday hours) worked by employees divided by the number of compensable hours applicable to each fiscal year. Annual leave, sick leave, compensatory time off, and other approved leave categories are considered "hours worked" for purposes of defining full-time equivalent employment that is reported in the employment summary. The number of compensable hours is specified in OMB Circular No. A-11, Section 85.5.

Funding Availability. The amount of obligating authority provided by appropriations, contract authorizations, actual transfers to or from other appropriations, and anticipated reimbursements, which have an approved apportionment for the current year.

Funds Distribution. The formal administrative distribution/delegation of budget authority below the apportionment

level through allotments, suballotments, and allocation of funding targets.

Grounds Care. The maintenance of all grassy areas, shrubs, trees, sprinklers, rights-of-way and open fields, drainage ditches, swamps and water holding areas (lakes, ponds, lagoons, canals), fences, walls, grates, similar improvements to land that are included in the NASA Real Property Management System, and exterior pest and weed control. The maintenance tasks include mowing, spreading fertilizer, trimming hedges and shrubs, clearing ditches, snow removal, and related work. Also included in this category is the cost of maintaining grounds care equipment such as mowers and tractors.

Improvements. Additions to land, buildings, other structures, and other attachments or annexations to land that are intended to remain so attached or annexed such as sidewalks, drives, tunnels, utilities, and installed collateral equipment.

Inventory. The facilities and equipment inventory is the foundation of an effective facilities maintenance management program. It is the baseline for what is to be maintained. The inventory permits identifying maintainable items, including those subject to preventive maintenance or operator maintenance.

Life-Cycle Costs (LCC). A form of economic analysis that considers the total cost of owning, operating, and maintaining a building over its useful life. Life-cycle costs are the sum of the present value of the following:

- a. Investment costs less salvage values at the end of the study period.
- b. Nonfuel operation and maintenance costs.
- c. Replacement costs of replaced building systems less salvage costs.
- d. Energy costs.

Major Facility Work (Discrete Institutional or Program Funded). Construction and revitalization work in excess of \$5 million, Land Acquisition, and Emergency Repair approved under the provisions of Section 308(b) of the National Aeronautics and Space Act of 1958, as amended, at any cost.

Metrics. Meaningful measures. For a measure to be meaningful, it will present data that encompasses the right action. In the context of this NPR, metrics refer to management and performance measures.

Minor Facility Work (Institutional or Program Funded). Construction and revitalization work in excess of \$1 million but not exceeding \$5 million. **Mission Critical.** A building, area, or system that is critical to the Center's mission or is essential for Center of Excellence performance.

Mission Support. A building, area, or system that provides support to the Center's primary mission or Center of Excellence assignment.

Modification. See Rehabilitation and Modification.

Noncollateral Equipment. All equipment other than collateral equipment. Such equipment, when acquired and used in a facility or a test apparatus, can be severed and removed after erection or installation without substantial loss of value or damage, thereto, or to the premises where installed. Noncollateral equipment imparts to the facility or test apparatus its particular character at the time (e.g., furniture in an office building, laboratory equipment in a laboratory, test equipment in a test stand, machine tools in a shop facility, or computers in a computer facility) and is not required to make the facility useful or operable as a structure or building. (See also Collateral Equipment.)

Obligation. A legally binding agreement that will result in the outlay or expenditure of funds immediately or in the future. A bona fide is required to create an obligation, such as when a contract is awarded, an order is placed, or a service is received.

Operator Maintenance. The examination, lubrication, minor repair (usually no larger than trouble call scope) and adjustment of equipment and systems in the assigned plant.

Outage. The planned or unintentional interruption or termination of a utility service such as electricity, water, steam, chilled water, or communication.

Past Year. The fiscal year immediately preceding the current year.

Payback. The amortization period, in years, calculated by dividing the budget estimate by the total expected annual savings.

Planned Repair. Repair performed prior to failure. Material condition degradation, usually identified through PM, PT&I, or other inspection, is repaired to prevent catastrophic failure. Also, see Repair.

Planning, Programming, Budgeting, and Execution (PPBE). An Agency-wide methodology for aligning resources in a comprehensive, disciplined, top-down approach that supports the Agency's Vision and mission. It focuses on translating strategy into actionable programs and bringing together Agency priorities and strategic outcomes within the Agency's resource constraints. The four phases of alignment are:

- a. Planning. The analysis of changing internal and external conditions, trends, threats, and technologies that will affect NASA's mission. This includes examining alternative strategies, defining long term strategic goals, multiyear outcomes, and short-term performance goals.
- b. Programming. The defining and analyzing of programs and projects and their multi-year resource implications and evaluating alternatives and risks. Programming also serves to balance and integrate resources among the various programs according to identified priorities.
- c. Budgeting. The formulation and justification of the budget to OMB and Congress.
- d. Budget Execution. The process by which financial resources are made available to Agency organizations and are managed to achieve the purposes and objectives for which the budget was approved.

Predictive Testing & Inspection (PT&I). The use of advanced technology to assess machinery condition. The PT&I data obtained allows for planning and scheduling preventive maintenance or repairs in advance of failure. Also, see Condition Monitoring and Condition-Based Maintenance.

Preventive Maintenance (PM). Also called time-based maintenance or interval-based maintenance. PM is the planned, scheduled periodic inspection (including safety), adjustment, cleaning, lubrication, parts replacement, and minor (no larger than trouble call scope) repair of equipment and systems for which a specific operator is not assigned. PM consists of many checkpoint activities on items that, if disabled, would interfere with an essential Center operation, endanger life or property, or involve high cost or long lead time for replacement. To progress away from reactive maintenance, PM schedules periodic inspection and maintenance at predefined time or usage intervals in an attempt to reduce equipment failures. Depending on the intervals set, PM can result in a significant increase in inspection and routine maintenance. However, a weak or nonexistent PM program can result in safety and/or health risks to employees, much more emergency work, and costly repairs.

Proactive Maintenance. The collective efforts to identify, monitor, and control future failure with an emphasis on understanding and eliminating the cause of failure. Proactive maintenance activities include development of design specifications to incorporate maintenance lessons learned and to ensure future maintainability and supportability, development of repair specifications to eliminate underlying causes of failure, and performing Root Cause Failure Analysis (RCFA) to understand why in-service systems failed.

Program Year. A concept of accounting for funds, obligations, and outlays under a multi-year or no-year appropriation by the identification of transactions by the initial year in which an appropriation was available to the Agency for obligations.

Programmed Maintenance (PGM). Those maintenance tasks whose cycle exceeds one year, such as painting a building every fifth year. (This category is different from PM in that if a planned cycle is missed, the original planned work still remains to be accomplished. Whereas in PM, only the next planned cycle is accomplished instead of doing the work twice, such as two lubrications, two adjustments, or two inspections.)

Project. Within a program, this is an undertaking with a scheduled beginning and ending that normally involves one of the following primary purposes: (1) Design, development, and demonstration of major advanced hardware items; (2) design, construction, and operation of a new launch vehicle (and associated ground support) during its R&D phase; or (3) construction and operation of one or more aeronautical or space vehicles; this includes the necessary ground support to accomplish a scientific or technical objective.

Reactive Maintenance. See Repair.

Real Property. Land, buildings, structures, utility systems, and improvements and appurtenances, thereto, permanently annexed to land. Also includes collateral equipment (i.e., building-type equipment, built-in equipment, and large substantially affixed equipment).

Real Property Management System. A NASA-wide data system for real property that serves as an automated method for maintaining and reporting real property data. The RPMS includes the forms, codes, and procedures used in the RPMS that conform to NASA guidance and requirements. The RPMS contains information on all NASA real estate including land, buildings, structures, utility systems, improvements, and appurtenances thereto, permanently annexed to land. The data in the RPMS includes age, classification, CRV, and other information.

Recurring Maintenance. Maintenance performed on an item of equipment that is planned and performed on a set work schedule. The work and work schedules are based on established standards.

Rehabilitation and Modification. Facility work required to restore and enhance, alter, or adjust a facility or component, thereof, including collateral equipment, to such condition that it can be more effectively used for its presently designated purpose or to increase its functional capability. To simplify facility project titles, work may be properly identified as rehabilitation provided the primary reason for accomplishment is that the basic restoration work will be done in any event. It is prudent to accomplish any related enhancement, alteration, or adjustment work concurrently. If the pressing requirement is for alteration and adjustment work to achieve an increase in functional capability, then this may be simply classified as "modification," even though restoration is also involved.

Reimbursements. Amounts collected or to be collected for commodities, work, or services furnished or to be furnished to another appropriation or fund or to an individual, firm, or corporation that, by law, may be credited to an appropriation or fund account. Amounts to be collected include accounts receivable, reimbursements earned but not billed, and amounts anticipated for the remainder of the year. They may also include interagency orders accepted and on hand for which delivery has not been made, to the extent that the order is a valid obligation of the ordering agency, and the collection will be credited to the appropriation being reported.

Reliability Centered Building and Equipment Acceptance (RCB&EA). The use of RCM and PT&I technologies in conjunction with traditional and total building commissioning process prior to and during the equipment startup/checkout phase of new construction, repair, and rehabilitation projects to ensure quality installation and accurate baseline documentation.

Reliability Centered Maintenance (RCM). The process that is used to determine the most effective approach to maintenance. It involves identifying actions that, when taken, will reduce the probability of failure and that are the most cost effective. It seeks the optimal mix of Condition-Based Actions, other Time- or Cycle-Based actions, or a Run-to-Failure approach. (See also Condition-Based Maintenance, Predictive Testing & Inspection.)

Repair. Facility work required to restore a facility or component, including collateral equipment, to a condition substantially equivalent to its originally intended and designed capacity, efficiency, or capability. It includes the substantially equivalent replacements of utility systems and collateral equipment necessitated by incipient or actual breakdown. It includes restoration of function, usually after failure. (Also, see Planned Repair.)

Replacement of Obsolete Items (ROI). There are many components of a facility system that should be programmed for replacement as a result of becoming obsolescent (no longer parts-supportable), not meeting electrical or building codes, or being unsafe. The components, however, are still operational and would not be construed as a system repair. Examples are as follows:

- a. Electric switchgear, breakers, and motor starters.
- b. Elevators.
- c. Control systems.
- d. Boiler and central HVAC systems and controls.
- e. Fire detection systems.
- f. Cranes and hoists.
- g. A/C and other systems using CFC refrigerants.

Resources. The actual assets of a governmental unit, such as funds, human resources, and material.

Root-Cause Failure Analysis (RCFA). The process of exploring, in increasing detail, all possible causes related to a machine failure. Failure causes are grouped into general categories for further analysis. For example, causes can be related to machinery, people, methods, materials, policies, environment, and measurements.

Service Requests. Service requests are not maintenance items, but are so often performed by facilities maintenance organizations that they become a part of the baseline. Service requests are requests for facilities-related work that is new in nature and, as such, should be funded by the requesting organization. Requests are initiated by anybody at the Center, are usually submitted on a form, often require approval by someone before any action is taken, and usually are planned and estimated. Materials are procured and shop personnel are discretely scheduled to accomplish the work. Examples of these requests include installation of an outlet to support a new copier machine, providing a compressed air outlet to a new test bench, renovating an office, and installing special cabinetry.

Specifications. A document that stipulates methods, materials, performance, testing, limitations, or other criteria that need to be adhered to during the construction of a facility.

Standard. Maintenance standards are defined as the expected condition or degree of usefulness of a facility or

equipment item. A maintenance standard may be stated as both a desired condition and a minimum acceptable condition beyond which the facility or equipment is deemed unsatisfactory.

Time-Based Maintenance. See Preventive Maintenance.

Trouble Calls. Trouble calls are generally submitted by telephone or electronically by occupants of a facility (or facility managers or maintenance workers). This category is composed of two types of work:

- a. Routine Calls are minor facility problems that are too small to be estimated (usually less than about 20 work hours or \$2,000) and generally are responded to by grouping trouble calls by craft and location.
- b. Emergency Calls, which normally start as trouble calls, require immediate action to eliminate hazards to personnel or equipment, to prevent loss of or damage to Center property, or to restore essential services that have been disrupted. Emergency work is usually a response-type work effort, often initially worked by trouble call technicians. Due to its nature, emergency work is not restricted to a level of effort, as are trouble calls.

Unconstrained Maintenance and Repair (M&R). Maintenance and repair work that a reasonable manager would estimate is needed to maintain a facility inventory in a "good commercial" level of condition without funding restraints. The estimate would not allow DM to grow and would provide a level of reliability that the supported programs would find acceptable for their missions.

Work Control Center (WCC). The central organizational point for receipt, tracking, and management of work generated from all sources.

Work Generation. The process of identifying and documenting maintenance deficiencies and requirements.

Work Order. The document directing shops to perform certain items of maintenance work. It includes the specific maintenance task requirements (usually by craft), labor, material, and equipment estimates; coordinating instructions; and administrative and financial information.

Work Request. A written or oral request from a customer or internal maintenance personnel who has observed a deficiency and perceives a need for maintenance or repair work or who has a request for new work. The work request is evaluated by management and, if approved, converted into a work order for accomplishment.

Work-Year Equivalent (WYE). Contract hours computed by dividing the total hours compensated (includes regular hours, leave, compensatory time used, and overtime, but excluding leave without pay) by 2,087 hours.

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