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NASA Policy Directive

NPD 8831.1E

Effective Date: June 19, 2003

Expiration Date: June 19, 2013

COMPLIANCE IS MANDATORY[Printable Format \(PDF\)](#)

Request Notification of Change (NASA Only)

Subject: Maintenance and Operations of Institutional and Program Facilities and Related Equipment (Revalidated June 16, 2008)

Responsible Office: Facilities Engineering and Real Property Division

1. POLICY

- a. NASA's goal is to improve the institutional management of the Agency's capital assets.
- b. NASA's policy is to ensure that NASA-owned and operated assets are properly aligned with the NASA mission and are safe, environmentally sound, affordable, the right type and size, and in good operating condition (except for facilities in "mothballed" status).
- c. NASA's facilities and equipment shall be maintained in the most cost effective fashion to minimize risk to processes and products, protect the safety and health of personnel and the environment, protect and preserve capabilities and capital investments, provide quality work places for NASA employees, and enable the Agency's mission.
- d. NASA shall apply the NASA reliability-centered maintenance (RCM) approach that employs a full range of maintenance strategies varying from "run to failure" to "streamlined failure mode and effects analysis (FMEA) combined with predictive testing and inspection (PT&I)" to institutional and program facilities and related equipment.
- e. The Agency policy shall be accomplished by:
 - (1) Using state-of-the-art management techniques that optimize maintenance activities with respect to risk management and cost. RCM practices and appropriate modern PT&I diagnostic techniques shall be employed. RCM and PT&I shall be incorporated into facilities and/or equipment program development, improvement, and implementation to minimize life-cycle maintenance and repair costs, maintain facilities and equipment at the desired level of reliability, and maximize safety. These principles are outlined in the NASA Reliability Centered Maintenance Guide and the NASA Reliability Centered Building and Equipment Acceptance Guide. These guides and other resources are located at: http://www.hq.nasa.gov/office/codej/codejx/jxstaff_operations.html

- (2) Using accepted standards as guidelines to determine facilities and equipment maintenance funding requirements when a detailed requirements and associated estimates that serve as a basis for maintenance cost projections are not available; creating standards when accepted standards cannot be found.
- (3) Generating, tracking, trending, and managing facilities maintenance activities by using appropriate performance metrics to enable overall maintenance program review and continuous improvement.
- (4) Undertaking benchmarking activities resulting in the identifying, sharing, and implementing of "best practices."
- (5) Ensuring that each Center carries out the Agency policy by:
 - (i) Developing and documenting an appropriate failure analysis for all critical facilities and equipment when failure of the facility, facility component, or equipment might result in damage to flight hardware which in turn would cause significant disruption in flight, research, or operations schedules; cause severe injury or death; or cause significant embarrassment to the Agency. Failure analysis shall be documented FMEA or fault tree analysis or comparable analysis as appropriate to serve as a basis for risk mitigation planning.
 - (ii) Maintaining a list of critical facilities and equipment with accompanying rationale for the designation.
 - (iii) Establishing the most cost-effective approach regarding Computerized Maintenance Management Systems (CMMS) to best meet their particular needs and satisfy Integrated Financial and Integrated Asset Management Program requirements. Employing automated tools to facilitate maintenance is a benchmark for maintenance excellence.
 - (iv) Developing and monitoring performance of an Annual Work Plan (AWP) that defines and quantifies, in terms of budget dollars and/or workforce estimates, all scheduled maintenance to be accomplished in the following fiscal year and documenting all accomplishments in the current year. Annual maintenance and repair plans/proposals for institutional and program facilities and related equipment shall reflect the level of activity necessary to arrest annual growth of deferred maintenance, such as at the level indicated by the Facility Sustainment Model. The AWP shall address:
 - (a) preventive maintenance, programmed maintenance, repair, and replacement of obsolete items.
 - (b) projected Deferred Maintenance.
 - (c) projected operating costs for central utility plants and other services such as grounds care.
 - (d) allocations for nonscheduled work: trouble calls, emergency work, and nonmaintenance service requests.
- f. Accounting for facilities and equipment maintenance and repair expenditures in accordance with current NASA Financial Management policies. NASA contractors that are responsible for facilities maintenance shall be required to provide necessary maintenance spending data at individual facility-level detail.
- g. Assessing facility and equipment conditions by participating in the application of the

NASA Deferred Maintenance Parametric Estimating Guide. Scheduled and unscheduled maintenance and repair visits shall also be used to record condition codes of facilities and equipment for use in the CMMS.

h. Using Performance-Based Contracting (PBC) and best-value principles to the maximum extent feasible and practical to shift the appropriate degree of cost risk to contractors and maximize competitive pricing. PBC contracts for operations and maintenance of facilities shall be fixed-price and/or unit-priced when the scope of services can be determined. The maximum amount of known annual requirements shall be consolidated into the fixed-priced core of any PBC.

2. APPLICABILITY

This NPD is applicable to NASA Headquarters, all NASA Centers, Component Facilities, all contractors performing facilities maintenance for NASA, and to the Jet Propulsion Laboratory to the extent specified in their contracts.

3. AUTHORITY

- a. Section 203(c)(3) of the National Aeronautics and Space Act of 1958, as amended (42 U.S.C. 2473).
- b. Standard Numbers 6, 8, and 14 of the Federal Accounting Standards Advisory Board, dated February 28, 1997, as amended.

4. APPLICABLE DOCUMENTS

- a. NPR 8831.2D, NASA Facilities Maintenance and Operations Management.
- b. NASA Reliability Centered Maintenance Guide, February 2000.
- c. NASA Reliability Centered Building & Equipment Acceptance Guide, February 2001.

5. RESPONSIBILITY

- a. The Director, Facilities Engineering and Real Property Division, as designated by the Assistant Administrator for Infrastructure and Administration, is responsible for providing the tools, policies, and corporate leadership in a participative manner that fosters Agencywide ownership and continuous improvement in facilities maintenance. Agencywide ownership means taking a wholistic stewardship perspective. Primary roles in collaboration with the Director, Office of Program and Institutional Integration, include developing and disseminating policy, funding advocacy, facilitating broad guidance for adopting "best practices," and reporting Agencywide status.
- b. The NASA Chief Engineer is responsible for providing technical advice and support for the evaluation and introduction of new technology, analysis, and technical management techniques, such as RCM, for improving the facilities and equipment maintenance process.
- c. The NASA Chief Financial Officer, or designee, is responsible for ensuring proper accounting of facilities maintenance, repair, and operations expenses.
- d. The Assistant Administrator for Procurement, or designee, is responsible for ensuring

that all contracts containing facilities maintenance work require contractors to provide functional management costs to be used in the NASA accounting system and that fixed-priced/unit-priced performance-based contracting is used to the maximum extent feasible and practical for facilities maintenance and operations.

e. The Directors of NASA Centers and Component Facilities in collaboration with the Associate Administrator, have primary responsibility for budgeting and oversight of facilities maintenance requirements for both institutional and critical program facilities and equipment at assigned Centers and Component Facilities commensurate with the principles of this directive.

f. The Directors of NASA Centers and Component Facilities are responsible and accountable for implementing the responsibilities delineated to the Centers in the policy section of this directive as well as the overall condition, functional usability, reliability, safety, appearance, and long-term stewardship for the future use of all NASA facilities and equipment. As such, they shall identify and designate a single point of contact to serve as the focal point for all facilities and equipment maintenance issues; prepare the list of critical equipment, develop, and implement cost-effective, efficient, reliable, and safe facilities maintenance programs, incorporating the policy and implementing guidance as set forth in this directive and NASA NPR 8831.2D, Facilities Maintenance and Operations Management; and provide timely reports, as required, for the purposes of ascertaining program status.

6. DELEGATION OF AUTHORITY

None.

7. MEASUREMENTS/VERIFICATION

a. Performance measurements may be established in NPR 8831.2D, NASA Facilities and Operations Management, the Annual Budget Call of NASA Headquarters CFO, current called Planner, Programming, Budgeting, and Execution (PPBE), guidance, and/or memorandum from the Director, Facilities Engineering Division, or the NASA Chief Engineer.

b. Performance metrics for each NASA site for the past fiscal year are due to NASA Headquarters, Facilities Engineering and Real Property Division.

8. CANCELLATION

NPD 8831.1D, dated June 19, 2003.

ORIGINAL SIGNED BY

/s/ Sean O'Keefe
Administrator

ATTACHMENT A: (TEXT)

Definitions:

Critical Facilities/Equipment: Equipment necessary to manufacture, test, or process critical hardware (such as flight hardware). Equipment whose failure could cause injury or death, cause more than \$1,000,000 in damage (see NPD 8621.1G, NASA Mishap Reporting and Investigating Policy), could cause embarrassment to NASA or a specific Center, or could cause significant schedule impacts to important programs. This does not include typical building systems such as heating, ventilation, and air conditioning, and electrical distribution.

Facilities maintenance: The recurring day-to-day work required to preserve real properties (land, buildings, structures, utility systems, collateral equipment, and other permanent improvements) in such a 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, forestalling major repairs.

Failure Mode and Effects Analysis: Analysis used to determine what parts fail, why they usually fail, and what effect the failure has on the systems in total. An element of reliability-centered maintenance.

Reliability-Centered Maintenance: A process used to determine the most effective approach to maintenance which involves identifying the actions that, when taken, will reduce the probability of failure and which are the most cost-effective.

(URL for Graphic)

None.

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