NASA Procedural Requirements

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COMPLIANCE IS MANDATORY

NASA Spare Parts Acquisition w/Change 2 (12/19/08)

Responsible Office: Office of Procurement

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Change History

Chg#	Code/Center	Approved	Description/Comments
1	Office of Procurement	04/09/04	Deletions of paragraph, references, etc, per Jennings memo dated 12/5/03 and administrative changes made throughout to change NPG to NPR.
2	Office of Procurement	12/19/08	P.2 Applicability - delete the word nonexpendable 3.8 Pricing - 3.8.2 - revise the Federal Acquisition Regulation references in the pricing section for accuracy

Preface

P.1 Purpose

This NPR provides internal guidance in the following areas for Agencywide roles in procuring spare parts:

a. Program

b. Procurement

c. Logistics

d. Engineering

P.2 Applicability

This NPR is applicable to NASA Headquarters and Centers, including Component Facilities, the Jet Propulsion Laboratory, and contractors to the extent specified in their contract(s). The concept and policies contained herein shall be applied to major systems as defined in Office of Management and Budget Circular A-109, and may be used in other systems at the discretion of the program/project manager. OMB Circular A-109 defines a major system as that combination of elements that will function to produce the capabilities required to fulfill a mission need. The elements may include, for example, hardware, equipment, software, construction, or other improvements or real property. Major systems acquisition programs are those programs that (1) are directed at and are critical to fulfilling an Agency mission, (2) entail the allocation of relatively large resources, and (3) warrant special management attention. While a number of NASA major systems have passed significant program milestones, these guidelines shall be applied to all programs.

P.3 Authority

a. 10 U.S.C. Subtitle A, Part IV, Chapter 137.

b. 42 U.S.C. 2473 (c) (1) of the National Aeronautics and Space Act of 1958, as amended.

c. 48 CFR Chapter 1, Federal Acquisition Regulations (FAR).

d. NPD 5101.32, Procurement.

P.4 References

a. 48 CFR Chapter 1, Federal Acquisition Regulations (FAR).

b. 48 CFR Chapter 18, NASA FAR Supplement (NFS).

c. OMB Circular A-109

d. NPR 7120.5, NASA Program and Project Management Processes and Requirements

e. NPD 7500.1, Program and Project Logistics Policy

P.5 Cancellation

None.

REVALIDATED 4/19/2008 ORIGINAL SIGNED BY

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Chapter 1. Policy

1.1 Goal

The Spare Parts Acquisition Policy establishes a uniform policy for the acquisition and provisioning of NASA spare parts.

1.2 definitions

1.2.1 BREAKOUT: Breakout means the purchase of spare parts, either by the Government or a contractor, directly from the original equipment manufacturer (OEM) or another source close to the original manufacturer. The goal of breakout is to eliminate any added costs that can be incurred because of subcontractor tiers, when no value added or enhancements are made. Breakout is best used on reprocurements or replenishing initial spare stock levels to the probability of sufficiency as determined from history.

1.2.1.1 Excluded from breakout are situations where the prime contractor has an existing contract in place and the cost of the part is lower by purchasing it through a prime contractor rather than generating a new contract with OEM.

1.2.1.2 Value added means that the part, subassembly, or subsystem is enhanced by the addition or inclusion of a necessary capability or function. Enhancement may involve a physical change in the part, subassembly, or subsystem, or additional testing.

1.2.2 INITIAL PROVISIONING: Initial provisioning means the process by which a list of proposed spare parts and related purchase quantities is developed (usually by the major system prime contractor) and submitted to the Government for consideration. This list is generally based on use of Logistics Support Analysis or supportability assessments per MIL-HDBK-502. NASA makes the initial purchase and inventory-stocking decisions to acquire the spare parts necessary to maintain the major system in its early phases of operation. Initial provisioning shall be done as part of the original major system acquisition.

1.2.2.1 The determinants evaluated include probable future acquisition method, technical data needed, and probabilistic equations using parameters such as predicted/designed mean-time-between-failure, repair turnaround time, and predicted/designed consumption rate.

1.2.2.2 This strategy is best used on major developments of new technology with high quantity end items and long sustained production runs. Generally, high quantity is in excess of 50 end items, e.g., 50 airplanes built over a period of 7 or more years. The intent is to provide a limited number of spares to support an initial period of time and allow the system to mature and then adjust spares stock levels based on usage data. This strategy also eliminates the risk of large quantities of spares becoming obsolete due to design changes made to correct deficiencies during this initial period. Note: Generally, production spares are used to cover any development testing that is part of the Design, Development, Test and Evaluation phase, and initial provisioning is for operational use.

1.2.3 INITIAL PROVISIONING PERIOD: Initial provisioning period means a specified length of time with a finite end consisting of an operational test and evaluation and an initial operational period.

1.2.4 LIFE OF TYPE BUYS: Life of type buys means to execute lot procurements of the total quantity of spares needed to support a system/subsystem for its intended operational life based on predicted demand rates. Life of type procurements are used on limited production programs due to obsolescence or where vendors are closing production lines. These are one-time purchases of hardware with no plan to reprocure these items later in the program's life cycle. Programs will rely on repair capabilities to sustain the equipment throughout its intended life.

1.2.5 REPLENISHMENT: Replenishment means the process of pricing, ordering, and stocking spare parts needed to maintain or repair a major system over its life based upon the initial provisioning list and usage patterns established during the initial provisioning period. Replenishment begins when the initial provisioning period ends. Either the Government or a designated contractor, where it has proven to be cost effective, may accomplish replenishment.

1.2.6 SPARE PART: Spare part means a replacement part (reparable or expendable supplies) purchased for use in the maintenance of systems such as aircraft, launch vehicles, spacecraft, satellites, ground communication systems, ground support equipment, and associated test equipment. It can include line-replaceable units, orbit replaceable units, shop-replaceable units, or piece parts used to repair subassemblies.

1.2.7 SPARES ACQUISITION INTEGRATED WITH PRODUCTION (SAIP): SAIP means consolidating spare part buys along with the end item initial production procurements and manufacturing. The goal of SAIP is to reduce spares costs by using concurrent procurements. Spares material buys are consolidated with the end item production material buys, which reduces costs by increasing volume. This approach requires early identification and acquisition of spare parts during the production phase.

NASA's policy is to support its major systems by applying sound management and engineering judgment in selecting and acquiring spare parts, determining the quantities of spare parts necessary for major systems, and acquiring spare parts at fair and reasonable prices consistent with program needs. While the lowest cost is certainly a factor upon which to acquire spare parts, it is not the only factor. The quality of a part and the fact that it meets minimum specified parameters is also a critical factor. To the maximum extent practicable, NASA major systems program managers shall use breakout and competitive procurement of spare parts, with particular emphasis on procurement of replenishment parts.

Chapter 2. Responsibilities

2.1 Program

Program managers/Enterprise Associate Administrators have the overall responsibility for spare parts management for programs under their cognizance. Program managers are responsible for direction and management of spare parts required to support their assigned system. The program manager shall ensure that adequate quantities of spare parts are obtained throughout the system's life cycle. Program managers are responsible for establishing appropriate channels of communication among users, contractors, logistics personnel, engineering and technical personnel, and procurement personnel to maintain accurate spare parts requirements lists and stocks on hand. Reference NPR 7120.5 for more specific information on NASA Program and Project Management Processes and Requirements.

2.2 Procurement

The Assistant Administrator for Procurement is responsible for the acquisition of spare parts. This authority is delegated through the Head of the Contracting Activity to cognizant contracting officers. Contracting officers shall respond promptly to requests for spare parts acquisition and shall acquire the parts in accordance with acquisition policies and procedures from the source most advantageous to the Government, with price and other factors including schedule and past performance considered.

2.3 Logistics

Logistics/program managers are responsible for establishing logistics support methodologies for systems, which includes repairing of hardware and identifying spare parts needed to support the systems; identifying procurement strategies to obtain needed spare parts; and determining optimum quantities of parts and support locations based on predicted usage, need, initial cost, and life-cycle cost. The managers may delegate these functions to personnel within the program's organization. Logistics personnel shall maintain the types and numbers of spare parts required to support the system.

2.4 Engineering

Discipline and system engineers are responsible for providing technical and engineering support to program managers to assist in making spare parts determinations using logistics support analysis techniques and reliability and maintainability programs.

Chapter 3. Procedures

3.1 Initial Provisioning

3.1.1 Initial provisioning shall be accomplished during the original phase of a major system program. Regardless of the type of program, all provisioning should be accomplished before the manufacturing lines are closed in order to not incur manufacturing restart costs. Life of type buys would apply as well. On programs with short development production schedules, an SAIP process shall be used. A requirement covering procedures for the conduct of initial provisioning shall be included in the synopsis and solicitation, with the contractor's obligations to perform initial provisioning set forth as a separately priced line item.

a. Develop a list of proposed spare parts and related quantities needed to support the major system during the initial provisioning period. Recommended sparing strategy and schedules shall be included. The list should provide the basis for an assessment of the potential for breakout and competition on reprocurement items. For each item, there shall be a unit price and identification of the OEM. Whenever possible, the specific spare parts and quantities proposed should be based upon probabilistic equations using parameters such as predicted/designed consumption rates, any empirical data available, engineering estimates of predicted use of the spare parts, and the overall probability of sufficiency (POS) assumed. POS is the probability that the spare parts will be available when needed.

b. Submit the list to NASA and participate in an initial provisioning conference in which NASA evaluates the contractor's recommendations and the data upon which they are based and makes initial purchase and inventory-stocking decisions.

3.1.2 The contractor makes recommendations only. The decisions (a) on how to procure, (b) to purchase or not purchase an individual item suggested by the contractor as a spare part, and (c) on the quantity of each item to be purchased are made solely by NASA. Program managers shall ensure that recommendations on spares are processed and that decisions on purchases are made in a timely manner in order to minimize procurement costs and to ensure that spare parts are available in time to support the need.

3.1.3 Program managers shall screen for parts availability from Government sources and obtain parts from those sources if available at a lower cost, provided that traceability standards can be maintained. To the maximum extent practicable, follow-on spares procurement should be purchased directly from the actual manufacturer, i.e., lowest-tier subcontractor, or from other qualified manufacturers to eliminate the layers of support costs at each tier.

NOTE: NASA would need to have the staff in place to effect such procurements and be willing to accept the overhead costs of such a task. It may be cost effective to use existing prime or subcontractor personnel and processes to effect such procurements. Purchase requirements shall be consolidated upon completion of NASA decisions of the contractor's provisioning recommendations.

3.1.4 NASA personnel shall identify, as early as possible in the development cycle, the technical data, and the attendant rights thereto, that NASA needs to acquire. Such identification will facilitate the making and implementation of breakout decisions.

3.2 Initial Provisioning Period

3.2.1 The basic contract shall define an initial provisioning period. This period must be specified in the major systems contract and be defined in terms of some significant event in the program cycle, e.g., assembly complete plus 2 years of continuous operation of four successful flights. The period should cover test and evaluation, plus a short period of operation, so that sufficient operational experience can be gained with the system to provide a basis for adjusting spares stock levels and fully competitive acquisition of follow-on spare parts. However, this may not be possible for production runs that are relatively short and when the program would incur manufacturing restart or requalification costs.

3.2.2 To provide a vehicle for ordering spare parts during this period, the contract shall include a separate line item, obligating the contractor to provide any parts identified during initial provisioning and ordered by the Government. Unless otherwise justified, prices shall be negotiated before the contractor begins work on an individual order. If possible, each order should be on a firm fixed-price basis with individual items separately priced. If experience can be gained with the operational system, the items selected as spare parts and the quantities needed may change. Individual item pricing will facilitate making these changes and provide a pricing history for later purchases.

3.3 Replenishment

3.3.1 Replenishment begins prior to the conclusion of the initial provisioning period, i.e., when demand and usage patterns are becoming clearer. Requirements for replacement of parts used but not reordered during the initial provisioning period are considered replenishment requirements. Spares replenishment then continues throughout the life of the system. The key is to stock the right parts in the right quantities at the appropriate location(s). These factors seldom remain static during the system's useful life. Early in the initial provisioning period, NASA typically orders spare parts exclusively from the major systems contractor. As experience is gained, however, opportunities to break out items for competitive acquisition may become apparent. Before ordering spare parts under the major systems contract, the contracting office should examine the alternate sources.

3.3.2 Replenishment may be accomplished by NASA or by a prime or support contractor. The decision should be based on the lowest overall cost to NASA in a full- cost environment, including consideration of such factors as major system contractor total-system responsibility, inventory-stocking costs, overhead charges, and Government contract administration costs. In any case, NASA retains the final overall responsibility for replenishment, and program managers must ensure that periodic reviews and oversight are conducted and ensure that there is timely, efficient program support. The requirements for effective management and financial reporting of program stock, as specified in NPR 4100.1, NASA Materials Inventory Management Manual, may apply. This inventory control may be achieved by the use of NASA's supply management system.

3.3.3 Any purchases of spare parts for replenishment, whether accomplished by NASA or a contractor, shall be separate from the major system development contract and shall comply independently with the requirements for full and open competition.

3.3.4 Program managers shall ensure that prime contractors and subcontractors are directed to identify and provide timely notification of parts that have the potential to become obsolete or nonavailable.

3.3.5 NASA participates in the Government-Industry Data Exchange Program (GIDEP), which includes significant Diminishing Manufacturing Sources and Material Shortages (DMSMS) information. NPR 8735.1, Procedures For Exchanging Parts, Materials, and Safety Problem Data

Utilizing the Government-Industry Data Exchange Program and NASA Advisories, includes requirements for NASA and contractor participation in GIDEP with respect to alerts concerning discrepant material and equipment. GIDEP at http://www.gidep.org/ maintains information related to obsolete parts at no cost to the contractor. Contracts should incorporate GIDEP participation and requirements to evaluate GIDEP DMSMS information for applicability to NASA equipment.

3.4 Life of Type Buys

3.4.1 Life of type buy decisions will be driven by several factors. Hardware obsolescence notice can drive the decision to procure what is needed while stock/capability is still available. Limited production runs due to unique one-of-a-kind development programs, can drive the cost of trying to keep the vendor's production line open for limited spare buys at later dates.

3.4.2 Cost tradeoffs should be made on life of type buys based on such factors as the quantity required to support the life of the program, production schedules, cost for spares, keeping production lines open, retooling, and potential obsolescence.

3.5 Spares Acquisition Integrated with Production (SAIP)

SAIP implementation is best applied to major programs that have distinct acquisition phases. Program managers should have the contractor provide development schedules and identify spares order decision dates to implement SAIP buy orders. On programs that combine acquisition phases, SAIP shall be implemented on items that are more mature and pose less risk of design changes. On items that still pose a risk of change, SAIP should be deferred until the design matures and implemented before production lines close.

3.6 Breakout

3.6.1 Breakout, as defined in paragraph 1.2.1, reflects two different approaches. It refers to purchase of a completed assembly, subassembly, component, or part directly from the OEM, or from other qualified manufacturers on a competitive basis. Breakout may apply whether the procurement is conducted by NASA or by an authorized contractor; however, the Government is responsible for all breakout decisions affecting program and project performance.

3.6.2 Breakout shall be an ongoing consideration throughout the program or project life cycle. Program and project managers shall include breakout as a part of their logistics planning and analyses requirements. Individual breakout decisions shall be based on the results of the logistic support analysis required by NPD 7500.1, Program and Project Logistics Policy, or an economic analysis for nonprogram hardware that shall take into account the following considerations:

a. Design stability of the items of supply to be acquired.

b. Availability of drawings, technical data, hardware and software documentation, production process, test and quality specifications, tools, test equipment, and materials required to ensure competition.

c. Potential benefits of the competition compared to the cost to reprocure from the original source of supply.

d. Liability assumed by the Government.

3.6.3 Breakout shall be explicitly recognized in the structuring of major systems contracts. Contract

provisions shall require prime contractors to identify actual hardware manufacturers and to furnish data for evaluating breakout benefits. Decisions to retain the original source of supply for the life of a program or project due to proprietary processes, quality considerations, safety, or cost will be documented for future audits.

3.6.4 In rare cases, it may be possible to use initial spare parts to develop technical data for use in future spares replenishment by reverse engineering. While legal, the practice of reverse engineering can be difficult and costly and should be used only when other alternatives are not feasible.

3.7 Technical Data

3.7.1 A major factor in breakout decisions will be the availability of technical data, including its completeness, accuracy, timeliness of delivery, cost, and attendant rights for manufacture and/or reprocurement. To the extent that drawings, specifications, production processes, data, and documentation result from designs and developments fully funded by NASA, the data should be available for manufacture and/or reprocurement at little or no additional cost. In general, Government representatives should challenge proprietary and restrictive markings on drawings, specifications, and production process documentation. The lack of technical data or manufacture and/or reprocurement rights thereto need not, in itself, preclude the purchase of items directly from the actual manufacturer by either the Government or a higher tier contractor. Actual manufacturers having a legitimate proprietary interest in data relating to items, components, or processes developed at private expense shall not be required, as a condition of a contract, to provide manufacture and/or reprocurement rights to such data. Rather, if such rights are needed, they are to be separately negotiated at a fair price and on reasonable terms and conditions regarding the use and disclosure of the data.

3.7.2 Programs and projects shall include strategies to ensure the acquisition of technical data adequate to competitively reprocure spare parts in their acquisition plans. Such strategies should include, as appropriate, the following considerations:

a. Establishment of separate contract line items for technical data, normally broken down in terms of the subsystem, assembly, or subassembly to which the data relates and to individual parts and components. Also, to the extent feasible, the breakdown should include the pricing of such data if related to designs and developments first produced under the contract.

b. Identification by the contractor of any technical data that, if delivered, will be with limitations or restrictions on NASA's right to use it, or have others use it, for manufacture or reprocurement purposes.

c. Establishment of delivery schedules and/or options for delivery on a phased basis keyed to component design stability.

d. Establishment of procedures for inspection of technical data needed for breakout, both for technical completeness and accuracy, as well as for any unauthorized limitations or restrictions on its availability for use for manufacture or reprocurement. Where Government expertise does not exist, a verification contract may be awarded to a manufacturing or production engineering firm with related experience.

e. Requirements that the contractor correct any deficiencies in the technical data regarding its completeness and accuracy and revise the technical data regarding any engineering changes made during contract performance that affect the form, fit, and function of any spare part designated for breakout.

f. Contractual provisions and procedures to correct in a timely manner, and without cost to the Government, any unauthorized restrictions on the right to use the technical data for manufacture and/or reprocurement.

3.8 Pricing

3.8.1 Each purchase of spare parts must meet the requirement that the price is fair and reasonable. Several different methodologies can be used by contractors to price spare parts. Some of these can result in unrealistic and unreasonable prices for individual items even though the total cost of a particular spare parts order is reasonable, e.g., distribution of management and/or management-related oversight costs by prorating the costs equally to each line item of the order without regard to the cost and/or complexity of the items involved. The concept of value added can help avoid this pitfall. NASA personnel are encouraged, when selecting and pricing spare parts, to use a value-based method of distributing costs to individual items of a spare parts order, i.e., ensure that the intrinsic value of the unit prices are in proportion to an item's base cost (the cost necessary to manufacture or acquire the individual item). NASA personnel shall review cost proposals to ensure that nonrecurring development cost (design engineering, quality testing) is not imposed on the spare buys.

3.8.2 The Federal Acquisition Regulation (FAR), at 48 CFR 15.215.14, Integrity of Unit Prices, specifically prohibits any method of distributing costs to line items that distorts the unit prices. FAR 15.214-14 also requires contractors, to identify items that they will not manufacture or to which they will not contribute significant value. Value added includes such items as required quality assurance, calibration, and configuration management. Other activities, such as sustaining engineering, provisioning, and cleaning, shall be separately priced.

3.8.3 When a program or project determines that Life of Type (LOT) procurements are in the best interest of the Government, consideration may be given to pricing related units as an integrated production run under a single provisioning item order. This could prove especially cost effective when the SAIP approach is employed in conjunction with LOT procurements. Such an approach should be proposed in the program or project acquisition plan, and Head of Contracting Activity approval should be obtained before execution.

3.8.4 If spare parts management and support are performed by contractors, special care shall be taken by NASA personnel in pricing. In such situations, human resources associated with the acquisition of spares (e.g., sustaining engineering, procurement support, and logistics) and related overhead may be priced separately from the cost of the spare parts to the support contractor. If so, overhead, general and administrative expense, and fees charged directly against the spare parts prices shall be limited. Particular attention shall be given to proposed overhead charges and whether the costs included therein are for value added and are incurred in support of the spare parts purchase.