ORDER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

2500.8A

4/9/93

SUBJ: FUNDING CRITERIA FOR OPERATIONS, FACILITIES AND EQUIPMENT (F&E), AND RESEARCH, ENGINEERING AND DEVELOPMENT (R,E&D) ACCOUNTS

1. **PURPOSE**. This order defines funding criteria for the Federal Aviation Administration's (FAA) Operations, F&E, and R,E&D accounts. The formulation and execution phases of the budget cycle are to be carried out in accordance with the provisions of this order.

2. **DISTRIBUTION**. This order is distributed to the branch level in Washington headquarters, regions, centers, and to field sectors and facilities.

3. **CANCELLATION**. Order 2500.8, Operations vs. F&E Funding, dated April 7, 1965, is canceled.

4. **EXPLANATION OF CHANGES**.

a. The major revisions to Order 2500.8 (April 7, 1965) include guidelines for the R,E&D account and an explanation of the differences between "development" funding in the R,E&D and F&E accounts.

b. To supplement the guidelines, this order includes three appendices:

(1) "Appendix I, A-109 Major System Acquisition Process," to outline the phases of work to be undertaken. This is of particular importance in understanding the differences between development work in the F&E account and that to be accomplished in the R,E&D account.

(2) "Appendix II, FAA Funding Matrix for R,E&D and the F&E Accounts," which identifies specific circumstances to show which account is to be used to fund a phase of a program in accordance with OMB Circular A-109.

(3) "Appendix III, Summary of Funding Standards and Exceptions for Selected Items of Cost Common in All Accounts," which is intended as a quick reference to funding standards and exceptions on selected costs that are discussed in paragraphs 8, 9, 10, and 11 of this order.

5. **POLICY**. The FAA is required to use appropriated funds in accordance with the acts of Congress (Public Laws) that provide the appropriations. Criteria are provided in this order so that the terms and intent of those acts are applied consistently and uniformly. **Choosing to fund costs from appropriations merely for convenience or for the solution of transient funding problems in a manner inconsistent with the law and this order is not permissible.**

6. **SCOPE**.

a. This order provides policy guidance for determining the correct account to which obligations and expenditures should be assigned. These guidelines are consistent with the structure of FAA's appropriations and are intended to indicate the correct appropriation to be used for a proposed cost. The language of the appropriations act, which is the primary control, does not usually vary significantly from year to year. Where a project or activity would not be covered by the statutory language, revised appropriation language may be proposed in the President's budget. The Office of Chief Counsel should be consulted for assistance in preparing that proposal. A project or activity covered only by the proposed language may not be carried out unless Congress enacts that language and it becomes a part of the appropriation (Public Law).

b. In general, the Operations account funds the recurring administrative, operating, and maintenance costs of doing the agency's business. The F&E account generally provides for the capital investment for the agency by funding the procurement and installation of new equipment, facilities, and construction projects included in the Aviation System Capital Investment Plan (CIP). The R,E&D account generally provides for research and development (R&D) programs that improve the National Airspace System (NAS) by increasing its safety, security, productivity, capacity, and environmental compatibility to meet the expected air traffic demands of the future.

7. **ACTION**. Full implementation is to be effective on October 1, 1994 (FY 1995). Where appropriate and where criteria can be applied without reprogramming actions or adjustments between appropriations, guidance is to be applied in FY 1994.

8. **OPERATIONS ACCOUNT**.

a. Appropriation Language. As specified in the terms of the typical appropriations act, the Operations appropriation is: "For necessary expenses of the Federal Aviation Administration, not otherwise provided for, including administrative expenses for research and development, establishment of air navigation facilities and the operation and maintenance of aircraft. . .," and for unique provisions as may be specified.

b. General Application. On an annually recurring basis, this account funds the administration, operation, repair, and maintenance of FAA activities within the NAS. It finances the personnel and support costs of operating and maintaining the air traffic control system, the flight service facilities, navigation and landing aids, as well as the regulatory and inspection activities which provide for the safety and security of aircraft, flight procedures, and electronic signals from ground-based equipment. Functions or tasks funded include:

(1) Operation and maintenance of FAA equipment and facilities (Air Traffic and Maintenance activities).

(2) Agency-wide administrative services including: legal services, procurement, recurring real property requirements, material management (including building and equipment leases/rentals, e.g., employee housing)*, office furnishings, supply services, acquisition and management of spare parts, personnel/budget/ accounting services (including payroll), communications, administrative automated data processing (ADP), and information resource management (IRM) planning (Direction, Staff and Support; NAS Logistics; and Human Resource Management activities).

* See subparagraph 10.e. for further discussion on leases.

(3) Policy, planning, and executive direction and management of all FAA programs (Headquarters Administration activity).

(4) Leased and purchased administrative and operational telecommunications services (Leased Telecommunications activity).

(5) Development, publication, and administration of safety standards, rules, and regulations applicable to airmen and aircraft operations (Regulations/ Certification activity).

NOTE: Direct R&D work leading to the development of standards, rules, and regulations is to be funded in the R,E&D account. See subparagraph 11.d. of this order.

(6) Systematic registration and recordation of airmen and aircraft and performance of the aviation medicine program to maintain a high level of aviation safety (Aviation Standards activity).

(7) Monitoring the accuracy of signals emitted by air traffic control (ATC) devices and aids to air navigation and landing (Aviation Standards activity).

(8) Planning, directing, managing, evaluating, and enforcing civil aviation security (Security activity).

(9) Protecting the safety of passengers, crews, aircraft, and airports (Security activity).

(10) Provides resources necessary to develop the comprehensive plans for the R,E&D and the F&E accounts that are dedicated to achieving the FAA mission and to oversee R,E&D and F&E programs both in-house and contractual. Provides funding for the management and leadership necessary to direct, coordinate, control, and ensure adequacy of FAA plans and programs for system acquisitions, engineering, and management activities of the NAS (NAS Design and Management).

(11) Planning, development, capacity enhancement, and safety certification of public airports (Airport activity).

(12) Support for the FAA work force in the areas of recruiting, training, and human resource management programs (Human Resources Management activity).

9. **FACILITIES AND EQUIPMENT ACCOUNT**.

a. Appropriation Language. As specified in the terms of the typical appropriations act, the F&E appropriation is: "For necessary expenses, not otherwise provided for, for acquisition, establishment, and improvement by contract or purchase, and hire of air navigation and experimental facilities and equipment as authorized by the Federal Aviation Act of 1958, as amended (49 U.S.C. App. 1301 et seq.), including...to be derived from the Airport and Airway Trust Fund, . . .," and for unique provisions as may be specified.

b. General Application. On a **project basis**, this account supports capital improvement projects necessary for the FAA mission by providing funds for establishing, replacing, relocating, and improving NAS equipment and facilities. Projects include the construction, purchase, or lease to purchase of facilities, land, equipment, and software as required. This account funds direct federal salaries and benefits as well as related costs of FAA personnel implementing programs funded by the F&E appropriation. Functions or tasks funded include:

(1) Engineering, Development, Test, and Evaluation (Activity 1, EDT & E).

(a) All projects initiated with F&E funds as part of the FY 1992 budget or prior year F&E budget that may still be in a developmental stage are "grandfathered" and shall remain in the F&E appropriation through completion or termination.

(b) Projects initiated with R,E&D funds that will have F&E end products and have risks mitigated by the time of Key Decision Point (KDP) 3 approval will migrate to the F&E account at that point. Typically, subsequent development work to be done in the F&E account will include full-scale development and could include limited production. Follow on production will then be accomplished under Activity 2, 3, or 4 of this account. When development occurs under the "build" concept -- where within a segment of the project development all alternative design concepts are identified and explored, and an optimum solution selected, demonstrated, tested, and accepted before going to the next "build" level -- work may be retained in the R,E&D account through design integration, i.e., all the way to KDP-4 approval. Under those conditions, funding for a project would then shift to the F&E account for production. Software development initiated in the R,E&D account is a likely example.

(c) Funding for projects that are new initiatives of low technological risk, but that still have pre-KDP-3 work to be done, is also included in the F&E account. With regard to work of this nature and its relationship to the R,E&D account, the F&E account funds development work where the requirements definition indicates that a clear and rapid progression to KDP-4 approval is expected. Typically, this work would include concept analysis, demonstration of alternatives, full-scale development of selected alternatives, and/or limited production.

(2) Procurement and Modernization of Air Traffic Control Facilities and Equipment (Activity 2, P&M/ATC).

Capital procurement that provides products for or in direct support of ATC facilities, flight service facilities, as well as other navigation and landing aids (i.e., centers, towers, stations, surveillance, navigation and landing aid facilities and equipment). Projects funded in this activity will have procurement maturity and usually include items for which all development work has been completed or include non-development items such as commercial off-the-shelf equipment. Projects included must be approved for full-scale production before or within the budget year and by which also will have approval at KDP-4 before or within the budget year.

Examples of projects funded in this activity include:

(a) Long Range Radar

(b) Terminal Doppler Weather Radar

(c) Flight Service Facilities Improvements

(d) Direct support projects, such as:

1 Fuel Storage Tank Replacement/Monitoring
2 Land/Easement Purchases for Existing Airway facility
3 Flight Inspection Aircraft

(3) Procurement and Modernization of Non-Air Traffic Control Facilities and Equipment (P&M/Non-ATC).

Capital procurement that provides hardware, software, and construction improvements required for NAS facilities and equipment support. This activity includes projects for which the end products are not directly related to or attributable to other F&E projects required by or for air traffic control facilities or navigation and landing aid facilities. Projects in this activity represent the FAA's assessment of the various hardware, software, and construction improvements required for NAS supportability. Projects in this activity will have procurement maturity and usually include items for which all development work has been completed or include non-development items such as commercial off-the-shelf equipment. Projects included must be approved for full-scale production before or within the budget year and by which also will have approval at KDP-4 before or within the budget year.

Examples of projects funded in this activity include:

(a) Automated Data Processing Facilities Management better known as "CORN." F&E funds applications conversion and process transition. After full implementation, the service contract will be funded by charge-back to the account that funds the work requirement that utilizes CORN.

(b) NAS Management Automation Program

(c) Aviation Safety Analysis System

(d) Day Care Facilities for Children of Employees. When in compliance with P.L. 99-591 and required GSA and budget documentation has been approved, day care facilities space for children of FAA employees may be funded by FAA. The F&E account funds construction of required day care facilities at operating and support facilities where FAA has ownership or long term control of the parent facility. Funding may be accomplished through this activity for existing operating facilities, and funding for day care facilities for new facility projects (e.g., SCT) is to be included in the new facility project estimate. Day care space associated with non-operating facilities, such as Washington and regional headquarters, is to be provided within the lease, and, as may be appropriate, funded in the DOT Consolidated GSA Rent Account or in the Operations account.

(e) Also funded in this activity are "Training Equipment and Facilities." Included are such items as: Equipment and software for simulation based development and proficiency training at ARTCC's and ATCT's; equipment and courseware for computer based instruction technical training; planning and construction of training complexes and related infrastructure at the Aeronautical Center to replace obsolete facilities and to accommodate new equipment and systems coming into the NAS.

(4) Facilities and Equipment Mission Support (F&E/MS).

Provides direct systemwide contractual support for implementing capital procurement programs. Includes projects that provide systemwide integration, transition engineering, and technical contractual support (activity is generally for support contracts and is by nature non-equipment, non-construction, and non-federal personnel) for implementation of specific projects contained in F&E activities 1, 2, and 3 and provide for a mission support capability on a systemwide basis.

Examples of projects funded in this activity include:

(a) System engineering, integration, and support

(b) National airspace integrated logistics supports

(c) Logistic support services

(d) Technical services support

(e) Transition engineering support

(5) Personnel and Related Expenses (PCB&T).

Provides for the direct federal salaries, benefits, and related personnel costs of FAA employees implementing capital procurement projects funded in activities 1 through 4 of the F&E account.

The following categories of costs are included:

(a) Funds all direct and related costs of Personnel Compensation, Benefits and Travel (PCB&T) to support the F&E work force in establishment, test and evaluation, installation, and repair/rehabilitation of facilities and equipment for redeployment within the NAS and the accomplishment of airborne certification of facilities and equipment. Note: Repair/Rehab involves equipment which can be economically rehabilitated and returned to the field for use and applies to major equipment and systemwide deployment (e.g., refitting of ASR-7/8 for redeployment).

(b) Funds direct and related costs of PCB&T to support F&E quality control specialists and certain contract specialists in Washington headquarters. Quality control specialists review and monitor contractor performance and provide inspection of plants, equipment, materials, and services. Contract specialists are responsible for the solicitation, negotiation, award, and administration of the FAA headquarters contracts for investment projects.

(c) Funds direct and related costs of PCB&T to support Washington headquarters project and program management, project implementation planning, and directly related support functions.

(d) Also funded in F&E are costs of personnel authorized in the Operations account who are performing on a limited basis in a cross-utilization status and are performing direct work on F&E projects. Work accomplished by this means is usually for economic reasons where time and travel cost savings may be achieved. In this case, cost would be initially recorded against the account paying the employee (e.g., Operations) and then adjusted by transfer of the cost to the F&E account (Activity 5). Costs funded in this manner include: Salaries (including required back-up overtime), benefits, and related travel. See FAA Order 1380.26A, "Cross Utilization of Regional F&E and Operations Funded Manpower" for additional information on this policy.

10. **FUNDING DETERMINATIONS FOR SELECTED ITEMS IN OPERATIONS, F&E, AND R,E&D ACCOUNTS**. Since classes and purposes of costs are sometimes similar in all three accounts, the following specific guidance is provided for selected cost items:

a. Personnel Compensation and Benefits (PC&B). Salaries and benefits are budgeted for and paid from the account where the positions are authorized. By exception, there are certain personnel (e.g., Operations personnel performing direct work on F&E projects, including backup overtime and F&E personnel performing direct work to satisfy Operations requirements) that are to be funded by the benefiting account. In both cases, performance would be on a limited basis. In either case, cost would be initially charged to the account paying the employee and then adjusted by transfer of the cost to the benefiting account.

b. Permanent Change-of-Station (PCS) Moves. PCS costs are to be budgeted for and paid from the receiving account in which the transferee's salary is to be paid. By exception, F&E will pay for PCS moves for major establishment or consolidation efforts (i.e., New Denver Airport, Southern California TRACON, and Flight Service Station Consolidations) regardless of where the transferring employee's salary is to be funded. However, such PCS moves must be specifically planned and budgeted (or approved by reprogramming) for funding in the F&E account.

c. Travel. All travel costs (including administrative, training, conference, management review, job performance travel) are to be paid from the account where the traveler's salary is funded, with the following exceptions:

(1) Travel costs for Operations personnel required to do job performance travel in conjunction with work on **specific F&E projects** (typically performing new equipment installation) and specific project management and review are to be funded from the F&E account (Activity 5 only.) With regard to project management and review, an example would be a manager or technician attending a meeting to discuss commissioning and/or who is involved in preinstallation meetings, progress meetings, flight check, optimization, installation progress meetings, and project problem resolution.

(2) Travel costs for F&E personnel required to travel to satisfy Operations requirements (typically performing equipment maintenance work) are to be funded from the Operations account.

(3) In the event of R,E&D involvement, charges and transfers for performing and benefiting accounts as described above for F&E and Operations also apply for R,E&D.

d. Training Equipment, Course Development and Related Course Materials, and Contractor Provided Instruction. Training costs are to be funded by the appropriation from which the trainee's salary is paid, with the following exceptions:

(1) The F&E account is to fund the cost of training equipment for new equipment under procurement in F&E. Costs will be funded in the project estimate.

(2) All costs for course development work and course materials required for new equipment training are to be funded by the F&E account in the project estimate.

(3) The F&E account will fund initial contractor provided instruction to support new systems/equipment in the NAS. Based on the training policy and on in-house economies that may be achieved, courses should be considered for integration into the FAA Academy curriculum as soon as practical. When courses are established at the FAA Academy, whether contractor or FAA staff provided, cost of instruction will be funded by the Operations account. All recurrent training will be funded in the Operations account. (NOTE: In accordance with paragraph 10.c., of this order, **travel cost** associated with new equipment training is to be paid from the account where the trainee's salary is funded.)

e. Leases. By practice, various forms of lease agreements to procure leased services, lands, structures, or equipment (including aircraft) are funded to some degree in all of the accounts covered by this order. In the interest of efficient resource allocation through well informed decisionmaking, decisions to lease or to purchase should always be supported by appropriate lease-purchase analyses, and development of those analyses should be a routine part of acquisition planning. When analyses support the lease option, the following standards and exceptions are to be applied.

(1) As a standard, the Operations account is to fund:

(a) All operating (including leased services) or capital leases (including lease-purchase) for all administrative uses and all support purposes that are not directly required as services, equipment, or facilities that are used to provide air traffic control services or navigation/landing aids. Also see paragraph 8.b(2) for related discussion.

(b) All leased telecommunications costs except those to be F&E funded as provided for in subparagraph 10.k. of this order.

(2) As a standard, the F&E account is to fund:

(a) The long-term capital leases at the Aeronautical Center and the Technical Center.

(b) Capital leases (including leases to purchase) or operating leases (including asset costs in leased services agreements) that are for services, equipment, or facilities that are used to provide air traffic control services or navigation/landing aids or to provide direct support to such services or aids.

(3) In leased service contracts used to provide air traffic control services or navigation/landing aids, estimates are to be distributed between asset (capital) costs and operational expenses and funded respectively in the F&E and Operations accounts.

f. Equipment Maintenance Contracts. Maintenance contracts are to be funded in the Operations account with the following exception. Maintenance contracts on new equipment procured by the F&E account may be funded in the F&E account for up to one full fiscal year following the year of commissioning, if required, to allow time to integrate the requirements into the Operations account. The transition of contract maintenance funding from F&E to Operations is to be accomplished on a facility-by-facility basis. Therefore, where the commissioning schedule is on a project/program basis and may be spread over a 2, 3, or 4 year period, the maintenance contract may require both F&E and Operations funding in the later years of the project implementation. The purpose of the facility phased transition is to allow the Operations appropriation (base) to build up in gradual or in small increments and not have a large increase in one year as would occur if transition from F&E to Operations did not take place until the last facility was commissioned.

g. Facilities Maintenance and Repairs. All recurring maintenance costs for facilities and equipment are to be budgeted for and paid from the Operations account. These costs include special maintenance projects identified in the Operations budget as "Critical and Emergency Repairs to Structures and Grounds", e.g., structure painting, repairs to access roads and to fencing, replacement of carpeting, and repaving of parking lots. The following exceptions apply:

(1) Systemwide rehabilitation work for operating facilities and equipment is budgeted for and paid from the F&E account, e.g., replacement of equipment shelters, structural renovations, systemwide replacement of operating equipment, and service-life extension projects.

(2) Air Navigational Aids and Air Traffic Control Facilities (Local Projects) are not considered to be routine maintenance projects, but, instead, satisfy requirements unique to a particular region and provide a limited capability to modify, expand, and improve facilities and equipment. They are funded from the F&E account. Such improvements include: minor improvements to ATC work stations, antenna modifications and relocations, correction of fire hazard conditions, provisions for employee safety, projects to correct security problems in operating facilities, and correction of minor design deficiencies unique to an F&E equipment/site.

h. Spare Parts. Replenishment of spare parts, whether specific to particular equipment or generic, will be budgeted for and paid from the Operations account. Initial provisioning equivalent to the first year's supply of spares in support of new equipment procured under the F&E account will be budgeted for and paid from F&E to allow for time to integrate the supply/support requirements into the Operations account. Extraordinary provisioning requirements (relative to design or performance deficiency in new NAS equipment or F&E funded systemwide equipment modifications on older equipment) will be paid from the F&E account.

i. Software Development and Maintenance. The Operations account will fund all routine software maintenance and revisions to operational systems. The F&E account will fund development and production of software for new systems related directly to new F&E projects and new software or major enhancements to current software that is to be hosted on existing equipment which was procured as an F&E project.

j. Emergency Restorations. When emergency restoration is required as a result of facilities damaged by unforeseen causes, regions may take immediate action to preserve system safety, life, and property, and to maintain critical services to the public. The immediate actions should be restricted to the minimum necessary to accomplish these objectives. Initial estimates and complete follow-up estimates should be completed as quickly as possible and furnished to the Office of Budget (ABU). In developing the estimates, attention should be given to the distribution of costs between the Operations account and the F&E account. The distribution should be in accordance with guidance contained in this funding criteria order.

k. Leased Telecommunications. Costs of the Telecommunications Management and Operations program are to funded in the Operations account. All leased operational and administrative telecommunications costs are to be funded in the Operations account, with the exception of:

(1) The F&E account is to fund non-recurring site preparation and facility-end connection costs associated with leased circuits that are required for the fielding of new F&E equipment. Funding is to be included in the relevant project cost estimates.

(2) F&E may fund recurring leased telecommunications costs for new F&E equipment coming into the system for up to one full fiscal year beyond the year of commissioning/operation. Funding is to be included in the relevant project cost estimates.

(3) The F&E budget item, "Critical Telecommunications Support," identified in the FY 1993 Congressional submission as Budget Item 2A20 provides for non-recurring costs associated with change-over of existing circuits. Costs for such tasks as: addition of transmission circuit drop-insert capability, capacity expansion, circuit cut-overs, terminal equipment rearrangements, switching system minor expansions, and FAA procured equipment for use with leased services are included. Costs for such tasks should continue to be included in this F&E budget item.

l. Technical Center Facilities. The Technical Center provides test and evaluation support to the R,E&D, F&E, and Operations funded activities. This support is budgeted on a shared basis, based on facility usage. These facilities and supporting functions will continue to be financed on a shared basis from the R,E&D, F&E, and Operations accounts.

11. RESEARCH, ENGINEERING, AND DEVELOPMENT ACCOUNT.

a. Appropriation Language. As defined in the appropriation language, the R,E&D account is: "For necessary expenses, not otherwise provided for, for research, engineering, and development, in accordance with the provisions of the Federal Aviation Act of 1958, as amended (49 U.S.C. App. 1301 et seq.), including construction of experimental facilities and acquisition of necessary sites by lease or grant, . . ." and for unique provisions as may be specified.

b. General Application. This account funds research, engineering, and development programs to improve the NAS by increasing its safety, security, productivity, capacity, and environmental compatibility to meet the expected air traffic demands of the future. The FAA has R&D programs that fall into the categories of "basic research," "applied research," and "development" as described in subparagraph 11.c. R&D programs are funded on a project basis. This account also funds direct federal salaries and benefits as well as related costs of FAA personnel implementing projects funded by the R,E&D account.

c. OMB Circular A-11 requires that an agency's total R&D budget be divided into the following funding categories: basic research, applied research, and development. **Basic research** is defined as "systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind." **Applied research** is defined as "systematic study to gain knowledge or understanding necessary for determining the means by which a recognized and specific need may be met." **Development** is defined as "systematic use of the knowledge and understanding gained from research for the production of useful materials, devices, systems, or methods, including the design and development of prototypes and processes."

d. R,E&D Funding Schemes:

(1) R&D projects which are regulatory by nature (e.g., result in rulemaking or procedures) and/or have no equipment, facilities, or structures as end products to be funded in the production phase in the F&E account are to be funded in R,E&D. Such R&D projects generally involve "applied research" (see paragraph 11.c. for definition). Examples of research projects in this category are:

(a) Crashworthiness
(b) Aging Aircraft
(c) Catastrophic Failure
(d) System Security Integration (may involve "basic research")
(e) Aircraft Hardening
(f) Security Human Factors
(g) Human Factors

(2) Research and development projects included in the "development" research category would constitute the greater part of the R,E&D budget in terms of costs. Work of this nature will generally lead to end products for which full-scale development and/or limited or full production will be funded in the F&E account. R&D work of this kind typically requires extensive effort in the requirements definition, concept analysis, and demonstration phases. Also, high technological risk or unquantifiable risks are characteristic of this work. R,E&D funded development projects migrate to the F&E account for funding of full-scale development or limited or full production at one of two different acquisition phases as described below:

(a) Programs initiated in the R,E&D account that will have F&E end products that have associated risks mitigated by the time KDP-3 approval is achieved will migrate to the F&E account. Typically, subsequent development work to be done in the F&E account will include full-scale development and could include limited production. Examples of R&D projects of this nature are:

1 Dynamic Ocean Track System
2 Automatic Dependent Surveillance
3 Terminal ATC Automation
4 Airport Surface Traffic Automation
5 Airport Movement Area Safety System
6 Aeronautical Data Link - Communications and Applications

(b) In some instances where development is accomplished under the "build" concept, where within a segment of the project development all alternative design concepts are identified, explored, optimum alternative solution selected, demonstrated, tested, and accepted before going to the next build level, work may be retained in the R,E&D account through design integration--KDP-4 approval. A project under these conditions would then migrate to the F&E account for the production build (e.g., software development initiated in the R,E&D account).

12. **OMB CIRCULAR A-109**. In all accounts, acquisitions are to be in compliance with controls and guidance provided in OMB Circular A-109. In establishing federal policy for major system acquisitions (MSA's), OMB Circular A-109 defines a major system as a program that is critical to fulfilling an agency's mission, entails the allocation of relatively large resources, and warrants special management attention. While some projects in R,E&D and F&E are not considered MSA's, the approval steps described in A-109 for MSA's are to be applied to all R,E&D and F&E projects.

a. The A-109 major system acquisition process, as it is applied to FAA programs, is divided into five progressive phases: identification of mission needs, identification and exploration of alternative design concepts, demonstration of alternative design concepts, full-scale development, and limited production and full production. See Appendix I for the A-109 MSA Process Diagram.

b. After each of the first four phases cited above, the agency head is required to evaluate the cost, schedule, and performance of major projects and affirm the need for those projects. At each of these KDP's, the agency head is required to determine whether the project is ready to move to the next phase of the acquisition process.

(1) KDP-1 involves approving the mission needs statement and starts the major system acquisition process by granting authority to explore alternative system design concepts.

(2) Advancement to a competitive test/demonstration phase may be approved at KDP-2 if the agency's mission needs and program objectives are reaffirmed and the results of analysis of alternative design concepts can be shown to support selection of one or more of the alternatives for concept development and demonstration.

(3) Following reconfirmation of mission needs and program objectives, and verification that the chosen system concept design is sound and risks are acceptable, the agency head may authorize full scale development at KDP-3.

(4) After satisfactory test results and reconfirmation of mission needs and program objectives, the agency head may authorize full production at KDP-4.

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Director of Budget

A-109 Major System Acquisition Process

Phase 1: Determine Mission Needs

- Identify Mission Needs and Develop Mission Needs Statement
- Develop Program to Satisfy Needs

Key Decision Point 1
Approval of the mission needs statement starts the major system acquisition process by granting authority to explore alternative system design concepts.

Phase 2: Identify and Explore Alternative Design Concepts

- Identify Alternative Design Concepts
- Select Most Promising Design Concepts for Further Exploration

Key Decision Point 2
Advancement to a competitive test/demonstration phase may be approved when the agency's mission need and program objectives are reaffirmed and when alternative system design concepts are selected.

Phase 3: Demonstrate Alternative Design Concepts

- Design and Fabrication (normally involves a prototype)
- Test and Evaluation

Key Decision Point 3
Following reconfirmation of the mission need and program objectives and verification that the chosen system design concept(s) is sound and risks are acceptable, the agency head may authorize the next phase.

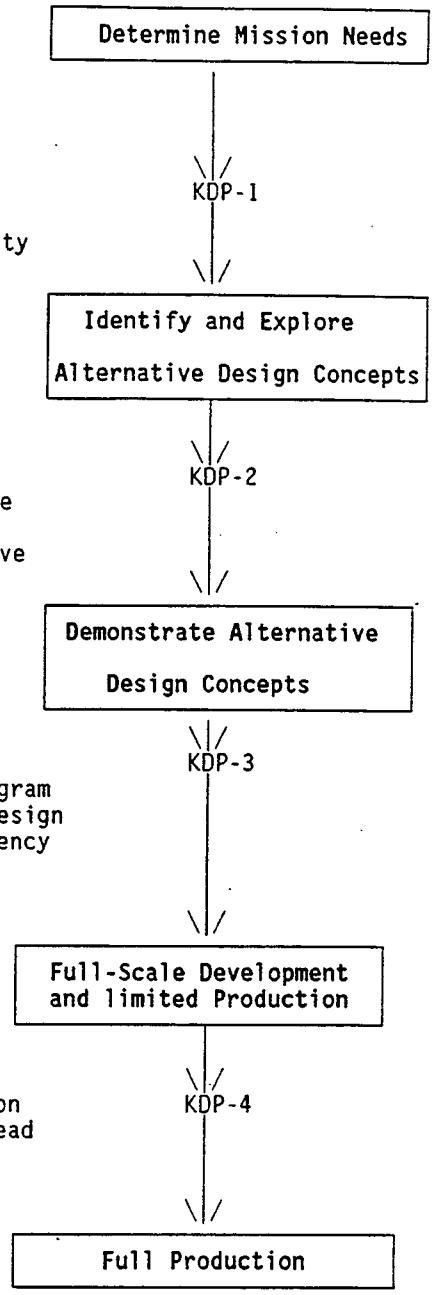
Phase 4: Full-Scale Development and Limited Production

- Full-Scale Development
- Independent Tests of System Performance
- Demonstration in Expected Operational Enviroment

Key Decision Point 4
Following satisfactory test results and reconfirmation of mission need and program objectives, the agency head may authorize full production.

Phase 5: Full Production

- Full Production
- Deploy Systems for Operational Use



FAA FUNDING MATRIX FOR R,E&D AND F&E APPROPRIATIONS

FUNDING SCHEMES (Text Reference to Paragraph and Circumstances)	ACQUISITION PHASES AND FUNDING SOURCES				
	REQUIREMENTS DEFINITION - A	CONCEPT ANALYSIS - B	DEMONSTRATION - C	FULL-SCALE DEVELOPMENT AND LIMITED PRODUCTION - D	PRODUCTION - E
I. 11.c(1) R,E&D Initiated with no F&E End Product.	RE&D	RE&D	RE&D	RE&D	Not Applicable
II. 11.c(2)(a) R,E&D Initiated where there are substantial risks in early acquisition cycle, but which are mitigated with KDP-3 approval.	RE&D	RE&D	RE&D	F&E	F&E
III. 11.c(2)(b) R,E&D Initiated where "Build"Concept employed with transition of funding to F&E at KDP-4.	RE&D	RE&D	RE&D	RE&D	F&E
IV. 9.b(1)(a) F&E projects initiated prior to FY 1993 that include on-going "development" work (Grandfathered)	F&E	F&E	F&E	F&E	F&E
V. 9.b(1)(c) New F&E projects that include development work where definition indicates clear and rapid progress to KDP-4 approval.	F&E	F&E	F&E	F&E	F&E
VI. 9.b(2-5) F&E production phase projects where development is completed or not required.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	F&E
KEY DECISION POINTS (KDP's):		• KDP-1: APPROVAL OF MISSION NEED STATEMENT; AUTHORITY GRANTED TO EXPLORE ALTERNATIVE SYSTEM DESIGN CONCEPTS	• KDP-2: MISSION NEED REAFFIRMED; ALTERNATIVE SYSTEM DESIGN CONCEPTS SELECTED	• KDP-3: RECONFIRMATION OF MISSION NEED; VERIFICATION OF CHOSEN SYSTEM DESIGN CONCEPT(S) AND RISKS	• KDP-4: CONFIRMATION OF MISSION NEED AND TEST RESULTS

NOTES:

A: CONDUCT THEORETICAL STUDIES/SCIENTIFIC EXPERIMENTS, BASIC, APPLIED RESEARCH, AND ANALYSIS OF MISSION NEED.

B: IDENTIFY ALTERNATIVE SYSTEM DESIGN CONCEPTS; CONCEPT ANALYSIS; FEASIBILITY DESIGN STUDIES; CONDUCT ENGINEERING STUDIES; RISK IDENTIFICATION.

C: DESIGN AND BUILD MODELS/ENGINEERING PROTOTYPES TO VERIFY FEASIBILITY OF SELECTED APPROACHES; BEST ALTERNATIVES SELECTION; DEVELOP FUNCTIONAL/PERFORMANCE/SYSTEM SPECIFICATIONS.

D: REFINE SELECTED APPROACHES; EVALUATE IMPACT ON HUMAN RESOURCES; DESIGN AND DEVELOP EQUIPMENT FOR TESTING, I.E., PREPRODUCTION PROTOTYPE; COMPLETE T&E.

E: PRODUCE OPERATIONAL EQUIPMENT; INSTALL/IMPLEMENT/COMMISSION OPERATIONAL EQUIPMENT INTO NAS; IMPLEMENT LOGISTICS/MAINTENANCE PLAN; PRODUCT IMPROVEMENTS.

Summary of Funding Standards and Exceptions for Selected Items of Cost

This appendix is intended as a quick reference to funding standards and exceptions on selected costs that are common to and may cut across all three accounts. See paragraphs 8, 9, 10, and 11 of this order for details on these items. The subparagraphs of paragraph 10 are outlined below:

Paragraph 10 Reference	Standard	Exception
a.	**PCB** - Paid from account where position is authorized.	Operations pays for other account personnel performing **direct** work on Operations requirements. F&E pays for other account personnel performing **direct** work on F&E projects. R,E&D pays for other account personnel performing **direct** work on R,E&D projects.
b.	**PCS** - Paid from receiving account in which transferee's salary is to be paid.	F&E pays PCS for major establishment and consolidation efforts regardless of where transferee's salary is to be paid.
c.	**Travel** - Paid from account where salary is paid.	Same exception as for reference a.
d.	**Training Equipment, Course Development, and Contractor Provided Instruction** - Paid from account from which trainees' salaries are paid.	F&E pays for: (1) Equipment for new and recurrent training on F&E procured equipment. (2) Course development and course materials for new equipment. (3) Initial contractor provided instruction on new equipment until moved in-house.

Paragraph 10 Reference	Standard	Exception
e.	**Leases** - Paid from all accounts.	Operation Pays for: (1) All leases for administrative and non-ATC or navigation/landing aids purposes. (2) Leased telecommunications costs except as provided under F&E in subparagraph 10.k. F&E pays for: (1) Long term capital leases at AAC and ACT. (2) Leases (including asset costs in leased services agreements) that are for ATC or navigation/landing aids purposes.
f.	**Equipment Maintenance Contracts** - Paid from the Operations account.	F&E pays for contract cost through first full fiscal year--then Operations funds.
g.	**Facilities Maintenance and Repair** - Paid from Operations account, including special maintenance projects.	F&E pays for: (1) Systemwide rehabilitation work for operating facilities and equipment. See F&E Budget Item "FAA Buildings and Equipment." (2) Minor improvements and modifications covered in F&E Budget as "Local Projects."
h.	**Spare Parts** - Paid from the Operations account.	F&E pays for: (1) Initial provisioning for new F&E equipment. (2) Extraordinary provisioning requirements relative to design or performance deficiency in new NAS equipment. (3) Provisioning required by systemwide equipment modifications on older F&E procured (existing) equipment.

Paragraph 10 Reference	Standard	Exception
i.	**Software Development and Maintenance** - Paid from the the Operations account for routine maintenance and revisions to operational systems.	F&E pays for: (1) Development and production of software for new systems related to new F&E projects. (2) New software or major enhancements to current software that is to be hosted on existing F&E equipment.
j.	**Emergency Restoration** - Paid from Operations or F&E based on guidance in this order.	(1) Operations pays for Operations salaries and expenses, including overtime, and for travel and support. (2) F&E pays for equipment, construction, and installation costs to repair or replace damaged operating equipment and facilities.
k.	**Leased Telecommunications** - Paid from Operations account.	F&E pays for: (1) Non-recurring site preparation and facility-end connection costs for leased circuits required for fielding new F&E equipment. (2) Recurring leased telecommunications cost for new F&E equipment for up to one full fiscal year beyond commissioning/operation. (3) Non-recurring costs for change over of existing circuits. See F&E budget item "Critical Telecommunications Support."
l.	**Technical Center Facilities** - Paid on a shared basis from all accounts.	Operations, F&E, and R,E&D pay costs on a shared facility usage basis.