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3. ROTORCRAFT MASTER PLAN

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I would like to talk about the vertical flight program and give you some insight into the bigger picture. Jim Erickson mentioned why simulation use for rotorcraft is not at the same stage as it is for scheduled airlines. We are working toward the day when the term "scheduled airline" includes rotor-borne flight as well. I would like to speak of our planning efforts that we hope will help make this happen. Maybe we can prove to Ed Boothe that we can get there from here.

In 1975 the Rotorcraft Task Force (ROTAF) was created to address issues associated with industry growth and to provide a forum for communication between government and industry. As a result of that task force's recommendations, the first rotorcraft master plan was published in 1983, updated annually through 1987, and again published in November of 1990 after extensive rewriting and reformatting. Although the master plan contains a comprehensive summary of vertical flight goals, it alone is not sufficient for tracking project status and monitoring progress; the Vertical Flight Program Plan (VFPP) will provide that capability. The FAA Executive Board recommended establishment of a vertical flight program focal point and preparation of the VFPP to tie together all vertical flight activities.

The Board also stipulated that the plan should be consistent and that the policy direction from the FAA must be ready to ensure a hospitable environment when industry presents a feasible vertical flight initiative. The Board agreed that the program should proceed in two phases, with the initial version of the VFPP covering the Phase 1 time frame.

Congress has shown interest in the potential that vertical-flight technology may hold for helping to solve some of the nation's problems, especially transportation problems. Hearings on the civil tilt-rotor were held in 1987 and 1990 by the House Transportation, Aviation, and Materials Subcommittee. In 1989 and 1990 both the House and Senate Armed Services Committees held hearings on the V-22 at which the Department of Defense was requested to provide a report on civil applications for the aircraft.

In development of the Reconciliation Act of 1990, Congress requested a blueprint for additional research needed to develop an economically feasible civil tilt-rotor aircraft. The study would also identify and describe the types and numbers of facilities needed to sustain an economically feasible tilt-rotor fleet and would specify changes in ATC procedures that must occur if the benefits of the tilt-rotor aircraft are to be realized.

Proof of further congressional interest is the Mag Lev/Tilt-Rotor Study currently being conducted by the Office of Technology Assessment. The Administration's national aeronautical R&D goals include an action plan to enhance the safety and capacity of the National Airspace System through advanced automation, electronics technology, and new vehicles concepts, including vertical and short takeoff and landing aircraft. In Moving America, the emergence of new technology such as the civil tilt-rotor is emphasized for its potential to provide transportation in dense corridors. The Office of the Secretary has requested that analysis be conducted into feasible alternatives. These studies are ongoing today. The civil tilt-rotor is considered a practical alternative for dense-corridor passenger transportation. Finally, the Administration has approved the development of a joint FAA/Industry Rotorcraft Master Plan.

State and local governments have shown great interest in the tilt-rotor as a mode of transportation that may reduce airport congestion and provide considerable time savings. To date, $3 million has been awarded to various states and cities, and to the Port Authority of New York and New Jersey for tilt-rotor feasibility studies and vertiport studies to investigate a potential intercity transportation system.

The hierarchy of plans that will be used to develop the VFPP is based on the National Transportation Policy endorsed by the secretary of transportation and the FAA's own National Aviation Policy for developing the air

transportation system through the next century. The three capital plans which support those established policies include the Capital Investment Plan (CIP), Research Engineering and Development Plan (RE&D), and the National Plan for Integrated Airport Systems (NPIAS).

The next level in the hierarchy is represented by two plans that are organized along functional lines, the Aviation System Capacity Plan, and the Rotorcraft Master Plan (RMP). In other words, there are these cross-cutting plans which may contain projects that receive their support from each of the capital plans in the previous tier, while at the same time providing for funding contained in these capital plans.

The levels below the RMP contain the two specialized documents that will relate specifically to vertical flight: the VFPP and project implementation plans (PIPs); and Contractual Flight Program Plan and PIPs. Not all of the projects in the VFPP will warrant a PIP, only those involving a large degree of intra-agency and interagency coordination and effort. The VFPP will integrate projects from two other primary vertical flight documents, the RMP and the National Civil Tilt-Rotor Initiative (NCTRI) implementation plan. This process will eliminate unneeded overlaps and gaps and provide cross-plan coordination.

The RMP coordinates existing programs and new actions needed for vertical-flight aircraft to reach their full potential within the NAS. Strategies and projects to accomplish vertical flight goals are divided into three issue areas: (1) infrastructure, including heliport and vertiport development; (2) NAS integration aircraft technology; and (3) pilot training and certification. Successful implementation of the RMP depends on the joint commitment of federal, state, and local government agencies and industry. Checkpoints described in the RMP provide the initial basis for ensuring that this common commitment exists at major investment decision points. The RMP appendix summarizes FAA and industry activities.

In 1988 the FAA initiated a comprehensive review of the 1987 version of the RMP. The review involved cooperation between the FAA and representatives of the rotorcraft industry. Efforts were refocused to emphasize NAS capacity enhancement using vertical flight. Integration of a civil tilt-rotor into the nation's air transportation system was a key element of the revised plan's strategy for accomplishing that goal. The revised version of the RMP was published in November 1990.

Vertical-flight technology has the potential to enhance NAS capacity at a fraction of the investment that would be necessary to build new or improved commercial airports. This potential is the underlying reason for the initiatives presented in the RMP. The RMP will be implemented incrementally, with checkpoints existing at the end of each phase to measure how the system is performing relative to the plan's goal. Resource commitments will be made on a quid pro quo basis with this plan being used to provide justification for committing resources to high-priority rotorcraft projects. By 2010 rotorcraft could provide as much as 10% of the intercity passenger operations capacity in the NAS. That would mean that rotorcraft would then account for 5 million of 50 million annual operations, and for 105 million of more than 1 billion enplaned passengers.

As mentioned earlier, implementation of the plan is divided into phases, with a major investment decision needed at the end of each. Between now and 1996 a successful demonstration of the civil tilt-rotor would be accomplished, along with development of one or more heliport/vertiport networks. Between 1997 and 2000 the focus would be on the transitioning of vertical flight activities more to the private sector, with the FAA providing technical assistance as appropriate.

After 2000 and beyond 2010 the FAA would hand off responsibility for most vertical flight activities to industry, as scheduled passenger service matures and expands. The RMP implementation phases (fig. 1) illustrate the relationship between the rate of investment of federal resources and the corresponding operations growth. As shown, there is about a five year lag between the necessary investment and the time that operations growth becomes evident. This time line shows the checkpoints in the RMP that will be used at the end of each implementation phase to evaluate system performance and to determine whether major investments in planned activities should be made or not. That is, should we proceed as planned to the next phase of implementation.

The milestones in the plan for 1990 and 1991 are listed in table 1. With reference to milestone 3, the FAA Rotorcraft National Survey is complete, and the publication of the survey results is expected soon. These data will help the FAA improve the services it provides to system users, as well as improve rotorcraft forecasts, which serve as a foundation for planning and developing future strategies. The other milestones include improving the public image of rotorcraft, defining heliport networks capable of supporting various rotorcraft applications, especially scheduled passenger service, and beginning preparations for tilt-rotor demonstration. I would like to

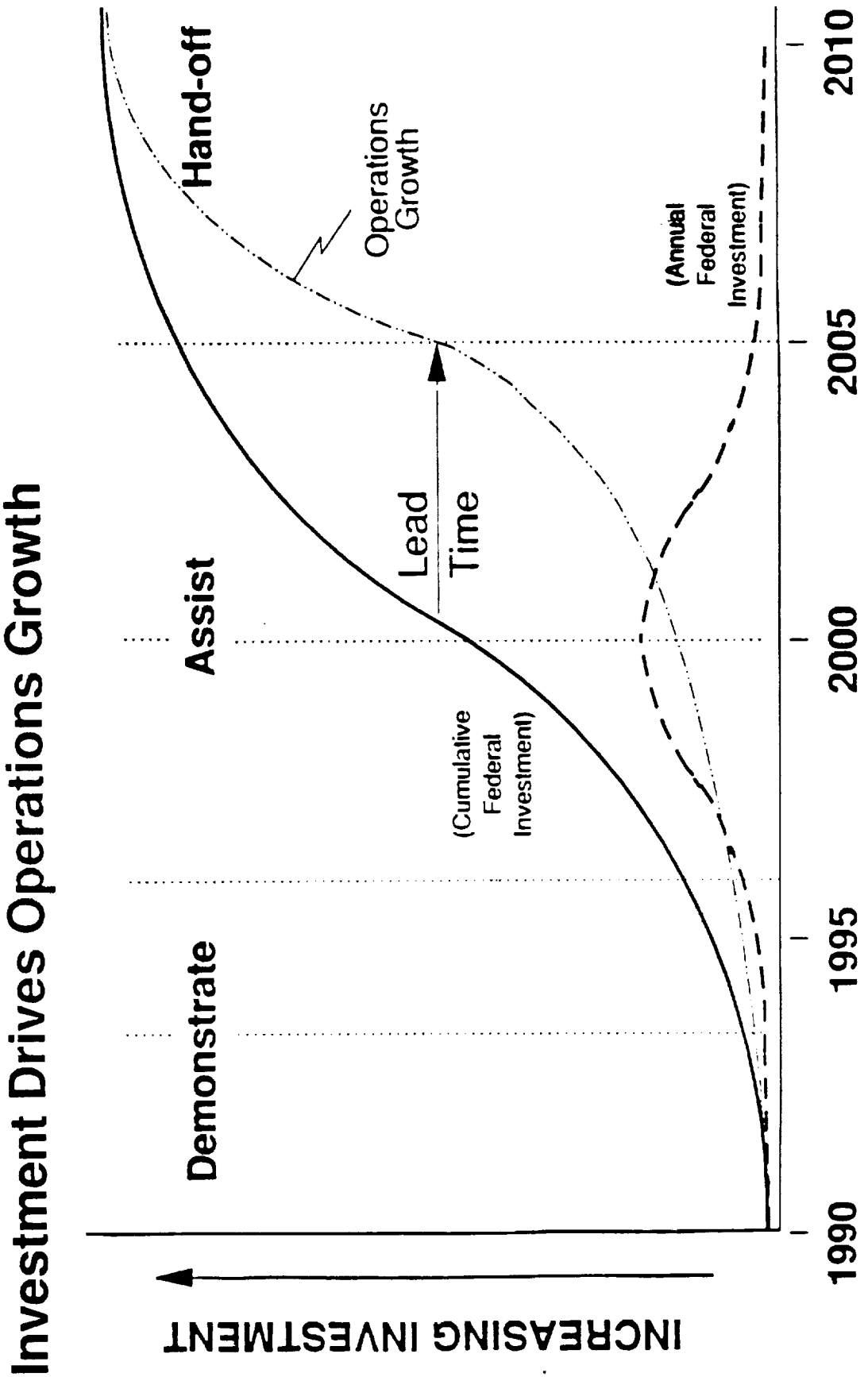


Figure 1. RPM implementation phases.

Table 1. RMP milestones: 1990-1991

All vertical-lift aircraft	Civil tilt rotor
1990	
1. Rotorcraft focal point	
2. Rotocraft public image program	
3. Program data systems	
1991	
4. Heliport networks defined	6. CTR demonstration sites chosen
5. Rotorcraft simulator certification criteria	7. Route structure guidance

Table 2. RMP milestones: 1992-1993

All vertical-lift aircraft	Civil tilt rotor
1992	
8. Rotorcraft public image improving	11. Funding for vertiport development or improvement
9. Rotorcraft TERPS complete	12. Civil tilt-rotor pilot program
10. Initial helicopter route charts	
1993	
13. Heliport networks operating	16. Route network complete (CTR demonstration)
14. U.S. helicopter sales grow	17. Operator chosen for CTR demonstration
15. Scheduled helicopter service	

add here that a recent slip in the military's V-22 development schedule has necessitated a similar slip in the civil tilt-rotor development. Rescheduling some of these milestones will be necessary as a result. They will be accurately reflected in the VFPP and in the next revision of the RMP.

Table 2 shows the milestones for 1992 through 1993. Activities during this period will include developing sufficient heliports to establish one or more networks, completing preparations for a civil tilt-rotor demonstration, and operating schedules for helicopter service. In addition, work and emphasis on rotorcraft TERPS will be completed; emphasis on improving the public image of rotorcraft will continue. This phase of the plan focuses on operations, support, and enhancements. It will also determine whether activity levels warrant commitments to expand significantly the use of vertical-flight aircraft as a NAS capacity enhancement tool. Specific accomplishments will include adding to and improving heliport/vertiport networks and evaluating the success of helicopter passenger services and the tilt-rotor demonstration.

The overall objective of this phase is to establish 100 public-use heliports and vertiports by the year 2000. Milestones leading to that checkpoint might include certification of the civil tilt-rotor for passenger operations, the beginning of scheduled intercity passenger service by vertical-lift aircraft, and public-use heliports/vertiports in all major hub metropolitan areas. Reaching any of these milestones would constitute an impressive achievement for vertical flight and mark a significant departure from its current applications in NAS.

In 1988, members of Congress clearly recognized the civil potential of technology advances exhibited by the XV-15 and V-22 and requested development of a plan for integration of tilt-rotor technology into the civil air transportation system. In response, the FAA assumed the lead role in launching the National Civil Tilt-Rotor Initiative (NCTRI). A five-point program to speed the introduction of tilt-rotor technology into the national air transportation system was formally started in August 1988, including establishment of a national focal point for tilt-rotor activity, the tilt-rotor program office, and a memorandum of agreement between the FAA and DoD to expedite acquisition of test and engineering data from the V-22 program.

The NCTRI implementation plan was drafted in the fall of 1989 to spell out the actions necessary to successfully implement the initiative. Included in that document were the tasks and projects to be carried out, a tentative schedule of major milestones, and preliminary cost estimates. In the NCTRI implementation plan, all of the

program tasks were grouped into four elements, or pillars, supporting the accomplishment of the demonstration projects and full integration of the CTR into the national air transportation system. These four pillars were aircraft development, public acceptance, infrastructure, and certification.

A series of six major milestones was spelled out in the plan, beginning with preparations for a civil operational demonstration period and ending with full integration into the NAS in December 2010. Critical factors affecting the success of the tilt-rotor program included congressional support, completion of the V-22 full-scale development, test, and evaluation program, and early industry and operator commitments. Other important information in the plan included a list of roles and responsibilities by office or organization, costs to government and industry, both in terms of yearly expenditures and cumulative estimates, and alternative aircraft development options that could be used to achieve the tilt-rotor development if the V-22 program was interrupted or discontinued.

Let's discuss in some detail the VFPP. The purpose of the plan is to ensure a hospitable environment when industry presents a feasible vertical flight initiative. Also it will develop detailed project plans for the period 1991 through 1994, which is the Phase 1 period; outline planned activities for 1995 through 2000, the Phase 2 period; and incorporate the contents of the RMP, the NCTRI implementation plan, and data from other appropriate plans into one comprehensive document. The primary objective of this plan is to make it possible to track project status and costs accurately and continually, something we are not now able to do. In this way, we will always know where the program stands. In addition the VFPP will provide cross-plan coordination, eliminate overlaps and gaps in existing plans, define schedules and resource requirements, and establish roles and responsibilities for the various participants in the plan. The plan will be organized in this format, with the bulk of the information contained in the project plans for Phase 1.

Increasing the role of vertical flight in the national transportation system is a cooperative venture requiring a successful partnership between government and industry. It is the government's role to create and enhance the climate in which the rotorcraft industry can continue to expand and realize its full potential, but it is up to the private sector to take advantage of opportunities to achieve commercially successful rotorcraft services. The plan will be prepared by using a matrix-type organization. The vertical flight special program office will be the overall program coordinator, and the matrix offices will be responsible for providing project managers, for project plans, and for project reporting. Primarily, the types of inputs needed from project managers are schedules, resources, and project status reports.

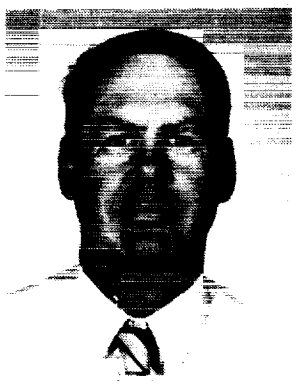
The plan will be updated yearly. In addition, quarterly status reports will be required from the managers, and quarterly meetings will be held to discuss problems and unresolved issues. The management of the plan will conform to the agency guidelines promulgated for program management. In this case under the line organization of ASD and ARD, the director of the Vertical Flight Program will serve as program manager. That office will have overall responsibility for assembling, monitoring, and coordinating the plan. Relationships with the various matrix team members will be in accordance with written operating agreements.

Vertical flight project manager will supply project details to the Vertical Flight Program Office for inclusion in the plan. They will be supplied with a sample format for submission of their input.

Finally, the Vertical Flight Program schedule is shown below.

1. Brief Associate Administrators	Mar. 11-15, 1991
2. Brief and train project managers	Mar. 18-22
3. Develop project plan data sheets	Apr. 5
4. Review/modify project sheets	Apr. 12
5. Prepare integrated schedule	Apr. 26
6. Prepare resource annex	Apr. 26
7. Deliver office-level draft	May 10
8. Deliver associate-level draft	Jun. 14
9. Final plan approval	Jul. 19

It is out of date for developing the plan itself. We finished the last briefing to the associates on April 19, so that item (1) is out of date. We still hope to meet the publication date for the first plan, which is the end of July.



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