

Federal Aviation Administration

**COOPERATIVE RESEARCH AND
DEVELOPMENT AGREEMENT**

OVERVIEW

March 2002

**Technology Transfer Program Office
FAA William J. Hughes Technical Center
Atlantic City International Airport, NJ 08405**

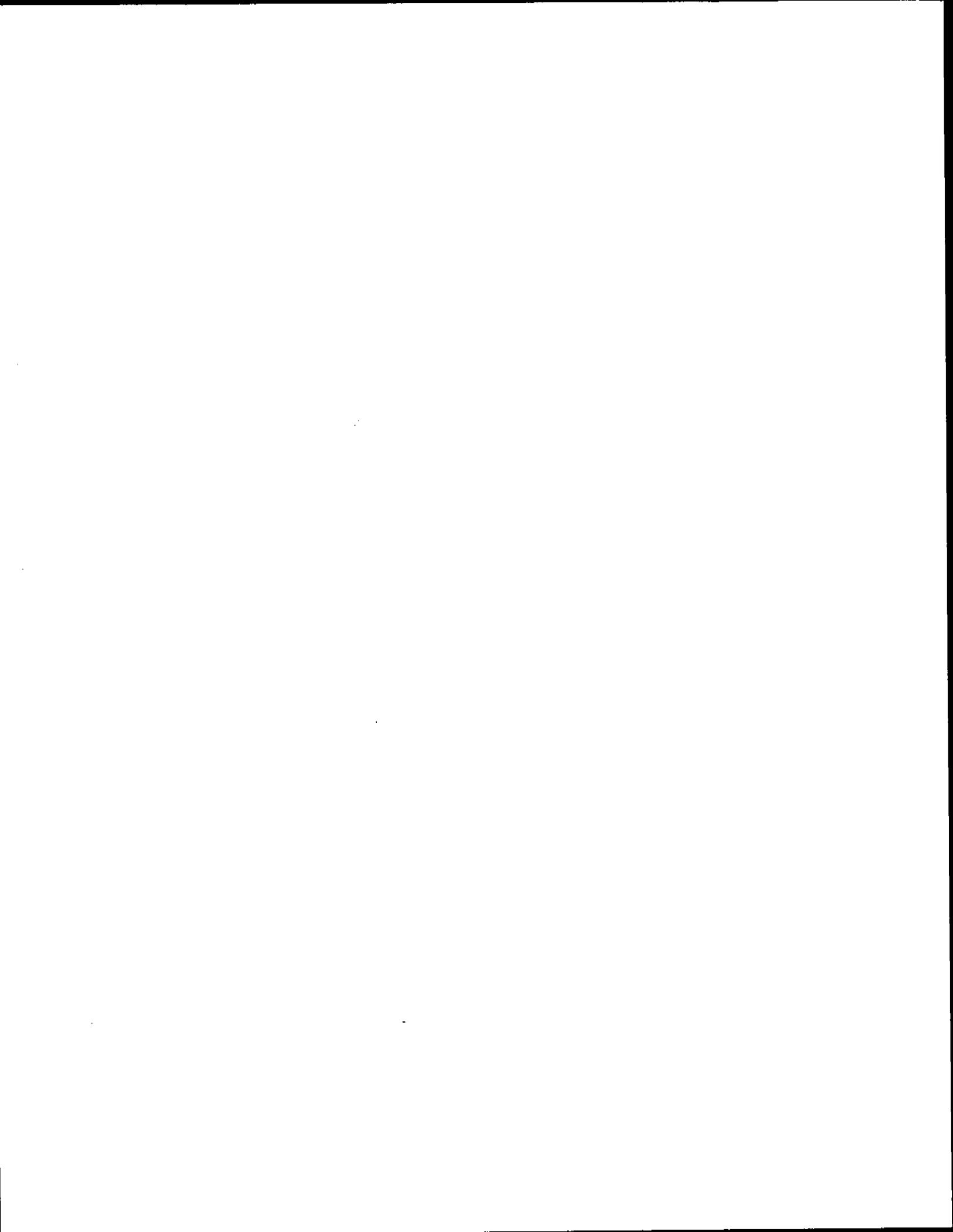


Table of Contents

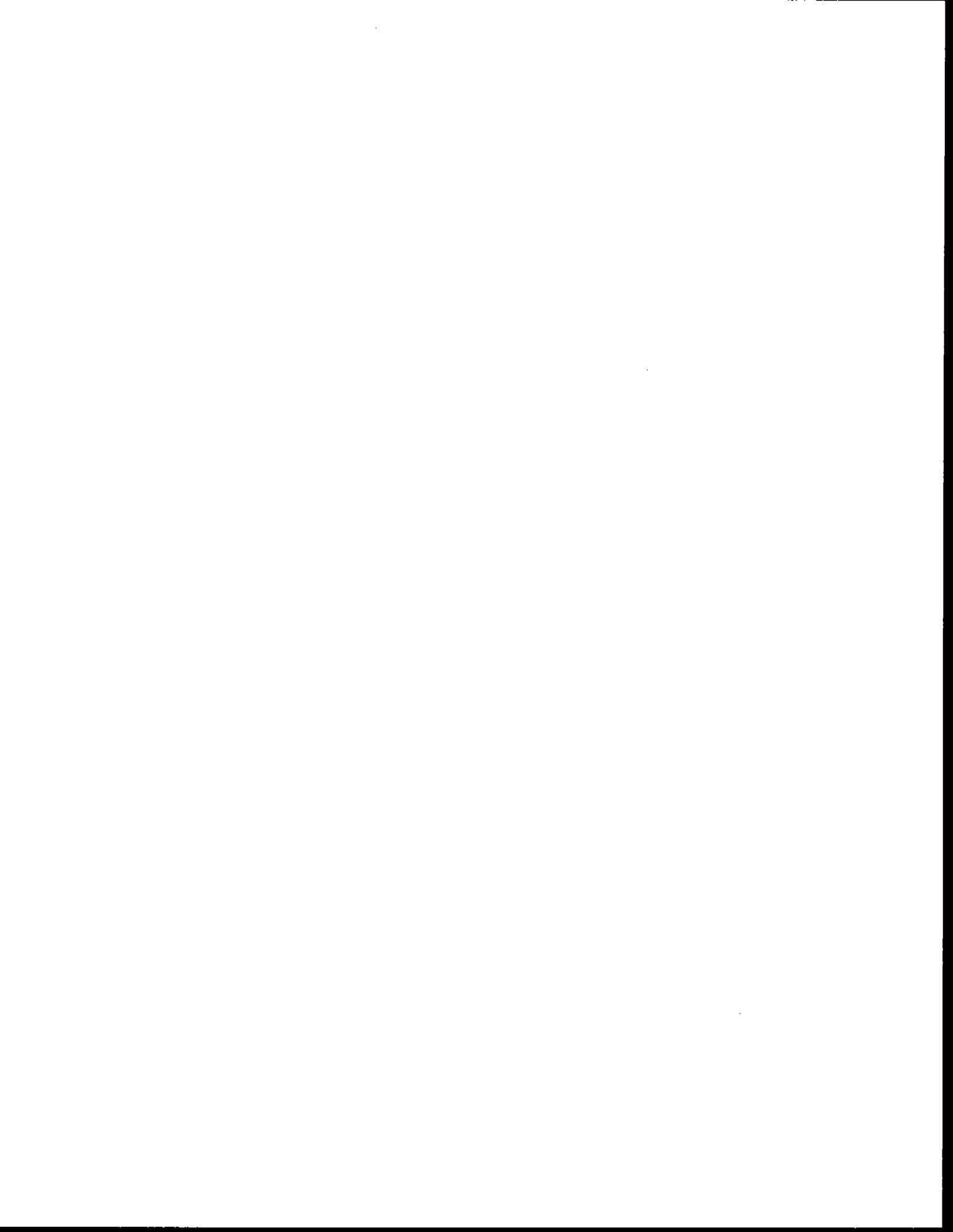
| | |
|--|-----|
| Introduction | vii |
| Section 1. Context: An Overview of Technology Transfer | |
| 1.1 The Goals of Technology Transfer..... | 1-1 |
| 1.2 The History of Technology Transfer..... | 1-3 |
| 1.3 Overview of the FAA Technology Transfer Program | 1-8 |
| Section 2. The Cooperative Research and Development Agreement | |
| 2.1 Purpose and Function of CRDAs..... | 2-1 |
| 2.2 Ownership of Intellectual Property Developed in CRDAs | 2-3 |
| Section 3. How CRDAs Develop | |
| 3.1 Scenarios: Two Paths to a CRDA..... | 3-1 |
| 3.2 CRDA Process Overview..... | 3-3 |
| Appendix A Model Cooperative Research and Development Agreement | |

List of Figures

| | |
|---|------|
| 1. Knowledge Required to Develop CRDAs..... | viii |
| 2. Definitions and Goals..... | 1-2 |
| 3. Technology Transfer: Laws and Policies | 1-7 |
| 4. Characteristics of CRDAs | 2-2 |
| 5. Intellectual Property Issues | 2-4 |
| 6. Paths to a CRDA | 3-2 |
| 7. The CRDA Flow | 3-5 |



Introduction



Introduction

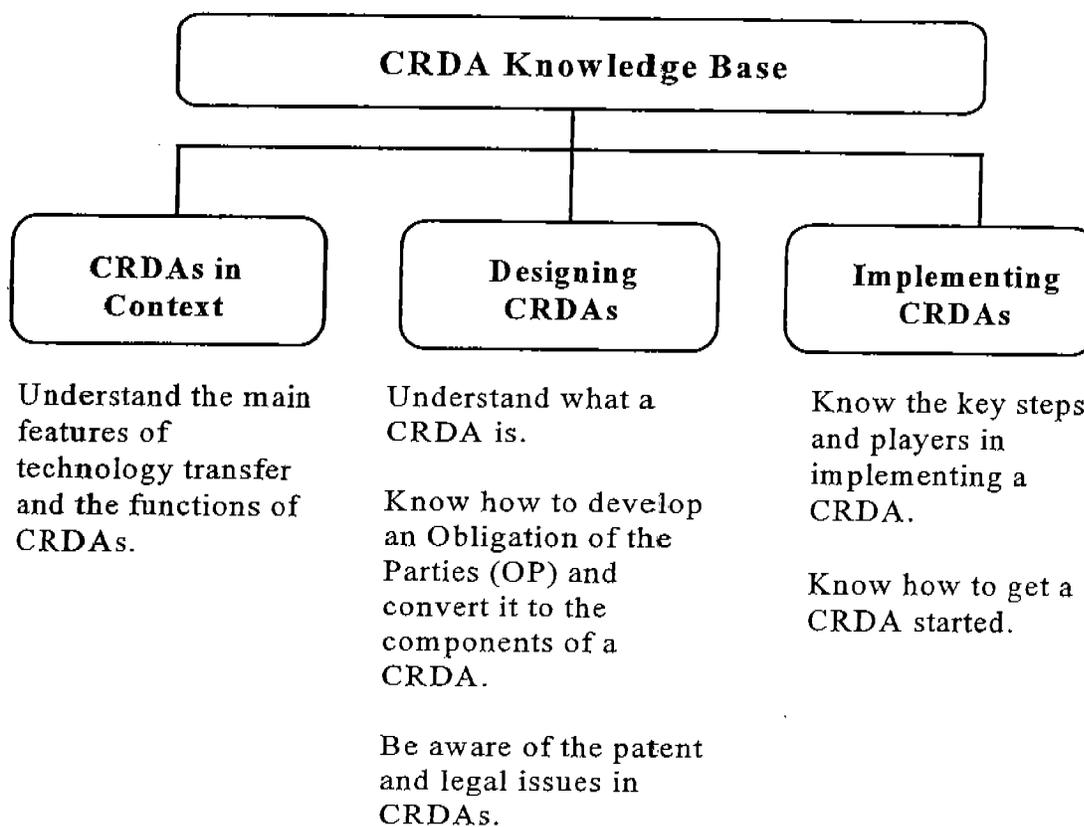
This overview provides a brief summary of technology transfer, describes the Cooperative Research and Development Agreement (CRDA) and their role in technology transfer, and outlines the procedures for developing a CRDA.

CRDAs and Technology Transfer: CRDAs are research and development (R&D) projects involving collaboration between FAA engineers, scientists, and managers and non-FAA firms or organizations. CRDAs are one of several mechanisms developed since 1980 to encourage technology transfer—the application of science and knowledge developed in one place and for one purpose (such as Federal laboratories) to some other place and purpose (such as the commercial sector) to enhance the competitive position of the United States in relation to those industrial nations in which government-industry-university consortiums are commonplace.

Developing CRDAs: As seen in Figure 1, three broad areas of knowledge are required as a foundation for developing CRDAs:

1. *CRDAs in Context*—Understanding the importance and goals of the FAA's Technology Transfer Program and the agency's strong commitment to its success.
2. *Designing CRDAs*—Understanding what a CRDA is; knowing how to develop the technical content of a CRDA (*i.e.*, how to convert a conventional technical proposal/plan into the appropriate segments of the CRDA); and understanding how to address the legal components of the CRDA—both the substantive negotiation over rights and responsibilities and the "boilerplate" legal components.
3. *Implementation*—Understanding the key players and their responsibilities at each stage and knowing how to get a CRDA started through the technical and administrative review processes.

FIGURE 1
KNOWLEDGE REQUIRED TO DEVELOP CRDAS



Section 1

Context: An Overview of Technology Transfer



1.1 The Goals of Technology Transfer

Technology Transfer is a constellation of laws, programs, and mechanisms aimed at enhancing the U.S. position in the world marketplace.

Forms of Transfer:

As defined in Figure 2, the Federal technology transfer policy is designed to enable knowledge and technology developed in Federal laboratories to be transferred to other parties for other uses. Ideally, this process will result in the commercial use of that knowledge. Technology transfer may entail:

- **Scientific Dissemination**—Sharing information with interested parties in government, industry, or academia.
- **Direct Application**—Putting knowledge to work directly in the programs of the FAA or other agencies.
- **Commercial Transfer**—Sharing knowledge with other organizations, especially from industry, that can realize the commercial potential of new or improved technologies.
- **Importing Resources**—Bringing in outside technology in a cooperative effort to enhance FAA services.

Strategy:

To ensure the success of technology transfer, several changes in Federal law and administrative policy have been implemented. To accelerate the development cycle, technology transfer laws have encouraged the use of innovative mechanisms of collaboration and cooperation (such as CRDAs) that can be developed and implemented much more rapidly than traditional contracts and procurements. Technology transfer laws also protect market-significant intellectual property (*i.e.*, patents, copyrights, etc.) and the sharing of licenses, royalties, and other income from that property between the FAA and non-FAA partners.

Dynamics:

Technology transfer may be responsive to *market pull*, in which a need or problem causes companies to seek a new technology to improve safety, curtail costs, or modify existing products. Technology transfer may also provide *technology push*, in which innovations and inventions create new markets and new "needs." In either case, there is a need to get federally supported R&D into the marketplace more efficiently

and to get industry into the "R&D pipeline" as early as possible.

Results:

In these ways, the immense Federal investment in R&D will yield a much greater return—enabling the U.S. to compete more effectively in a highly competitive global economy.

**FIGURE 2
DEFINITIONS AND GOALS**

Technology Transfer Is . . .

The process in which technology or knowledge developed in one place and for one purpose is applied and exploited in another place for some other purpose.

From the FAAs perspective, it means making federally-funded science and technology more responsive to the needs of the marketplace.

Goals of Technology Transfer Are . . .

To leverage the immense Federal R&D budget, thereby increasing the return on investment and enhancing American competitiveness in the world marketplace.

1.2 The History of Technology Transfer

Beginning in 1980, Congress initiated legislation that requires the Federal Government to work closely with United States businesses, industry, and state and local Governments to assist them in applying the knowledge, processes, and products that have been developed through Federal research and development programs at Federal laboratories with private sector funding. It is envisioned that through this technology transfer process, the benefits of national investment will assist the private sector productivity, create new industries and employment opportunities, improve public services, and enhance the competitiveness of the United States in world markets.

History: The following is a brief history of the Federal technology transfer effort.

Stevenson-Wydler Technology Innovation Act (1980). This Technology Innovation Act (P.L. 96-480) committed the government to actively encouraging technology transfer and named it as a central mission of Federal laboratories. It enabled funding for Offices of Research and Technology Application (ORTAs) in every lab and stipulated that laboratory budgets shall provide sufficient funding for technology transfer activities.

Bayh-Dole (1980 and 1984). These Patent and Trademark Acts (P.L. 96-517 and P.L. 98-620) encouraged cooperation between government laboratories and outside partners by allowing universities, nonprofits, and certain small businesses to retain (or share) invention rights in federally-sponsored projects.

Federal Technology Transfer Act (1986). The Federal Technology Transfer Act of 1986 (P.L. 99-502) intensified the themes in the Stevenson-Wydler Technology Innovation Act by making technology transfer a priority not only for Federal laboratories but also for **every laboratory employee**. Indeed, it stipulates that success in technology transfer should figure prominently in employee appraisal. The Act enabled direct cooperative agreements between government-operated laboratories and private industry. It allowed government labs to license patents to non-government cost-sharing partners and required that government-employed inventors share in royalties from patent licenses. It also created the CRDA mechanism for

History (continued): government-owned, government-operated labs (GOGO) and provided cash and equity incentives for GOGO inventors.

Executive Order 12591: Facilitating Access to Science and Technology (1987). This order, which required Federal agencies and government laboratories to assist universities and private industry in improving the nation's technology base, underscored the government's commitment to technology transfer and urged GOGOs to enter into cooperative agreements to the limits of the law.

Omnibus Trade and Competitiveness Act (1988). The Omnibus Trade and Competitiveness Act (P.L.100-418) extended intellectual property protection, thereby permitting certain international cooperative agreements.

National Competitiveness Technology Transfer Act (1989). The National Competitiveness Technology Transfer Act of 1989 (P.L.101-189) extended the CRDA mechanism to government-owned, contractor-operated (GOCO) laboratories. It encouraged all Federal laboratories to enter into CRDAs while protecting commercially valuable information for up to 5 years. It required sufficient agency funding.

Intermodal Surface Transportation Act (1991). The Intermodal Surface Transportation Act of 1991 (P.L.102-240) authorized the Department of Transportation (DOT) to provide up to 50% of the cost of CRDAs for highway research and development and stimulated the marketing of new technologies on a cost-shared basis of more than 50% if there is a substantial public interest or benefit.

American Technology Preeminence Act (1991). The American Technology Preeminence Act of 1991 (P.L.102-245) included intellectual property as potential contributions under CRDAs and allowed laboratory directors to give excess equipment to educational institutions and nonprofit organizations as a gift.

National Department of Defense Authorization Act for 1993. This law (P.L.102-25) facilitated and encouraged technology transfer to small businesses.

History (continued):

National Defense Authorization Act for FY1993. This act (P.L.102-484) extended the streamlining of small business technology transfer procedures for non-Federal laboratory contractors.

FAA Order 9550.6A: Technology Transfer Program (1995). This order defines in detail the FAA's assignment of responsibilities for various phases of the FAA Technology Transfer Program, including its detailed policies affecting CRDA eligibility and handling of royalties. This order also incorporated the Technology Transfer Awards Program and stipulated that laboratory budgets shall provide sufficient funding, in some cases up to 0.5%, for technology transfer activities.

National Technology Transfer and Advancement Act (1995). This act (P.L.104-113) amends the Stevenson-Wydler Technology Innovation Act of 1980 with respect to inventions made under CRDAs by providing the collaborating partner with the option to choose an exclusive or nonexclusive license for a resulting CRDA invention. In addition, the Act provides, with regard to income distribution from intellectual property received by Federal laboratories, agency payments of \$2,000 plus 15% of future royalties to the inventor; payments to contributing personnel; and laboratory use of royalties for related research and other expenses.

Federal Aviation Reauthorization Act (1996). This act (P.L. 104-264) appropriated \$2 million for innovative/cooperative research projects and activities. The act also allows the Administrator to cooperate with public and private entities concerning the use of services, equipment, personnel, and facilities.

Technology Transfer Commercialization Act (1999). This act (P.L. 106-404) amends the Stevenson-Wydler Technology Innovation Act of 1980 by setting the circumstances under which federal laboratories may license existing patented inventions as a part of CRDAs; defines the terms and conditions for granting exclusive or partially exclusive licenses; and clarifies the right under which an inventor may

History (continued):

share royalties and the retention of such income by the federal agency; increased the flexibility for federal laboratory partnership intermediaries.

Amends the Bayh-Dole Act to provide a mechanism whereby the non-federal inventing entity can voluntarily transfer its rights by license or assignment to the federal agency in return for a share of any subsequent income.

A brief listing of U.S. technology transfer laws and policies is provided in Figure 3.

FIGURE 3
TECHNOLOGY TRANSFER: LAWS AND POLICIES

| | |
|------|---|
| 1980 | Stevenson-Wydler Technology Innovation Act |
| | Bayh-Dole Act (amended 1984) |
| 1986 | Federal Technology Transfer Act |
| 1987 | Executive Order 12591: Facilitating Access to Science and Technology |
| 1988 | Omnibus Trade and Competitiveness Act |
| 1989 | National Competitiveness Technology Transfer Act |
| 1991 | Intermodal Surface Transportation Act |
| | American Technology Preeminence Act |
| 1993 | National Department of Defense Authorization Act for 1993 |
| | National Defense Authorization Act for FY1993 |
| 1995 | FAA Order 9550.6A: Technology Transfer Program |
| | National Technology Transfer and Advancement Act |
| 1996 | Federal Aviation Reauthorization Act |
| 1999 | National Technology Transfer and Advancement Act |

1.3 Overview of the FAA Technology Transfer Program

FAA Order 9550.6A defines in detail the FAA's Technology Transfer Program, which was developed in response to the series of technology transfer laws and orders that began with the Stevenson-Wydler Technology Innovation Act. The passages below summarize the most relevant material in the order.

Policy:

It is the FAA's policy to:

- **Encourage dissemination of information** consistent with security requirements.
- **Promote sharing** of technology that advances the security and socioeconomic well-being of the United States.
- **Support coordination** among industry, university, and government research and development activities through shared planning and, where appropriate, facilities.

Technology Transfer Program Office:
(Located at the FAA William J. Hughes Technical Center, Atlantic City International Airport, New Jersey):

The Technology Transfer Program Office (TTPO) is responsible for encouraging and leading the technology transfer activity, encouraging broad-based participation, and ensuring consistency with agency missions and regulations. The TTPO will develop FAA policy and procedures regarding technology transfer; coordinate technology transfer activities while acting as the focus for the development of CRDAs; maintain files of all CRDAs, MOUs, and other technology transfer documentation; and ensure legal reviews of all agreements by the Office of Assistant Chief Counsel.

The TTPO will, whenever practicable, participate in and cooperate with the National Technical Information Service (NTIS), the Federal Laboratory Consortium (FLC), various Federal programs, state and local governments, industry conferences, and any other activity that stimulates technology transfer of FAA knowledge and science.

Partners:

Although the FAA will show preference for small businesses that will manufacture products substantially in the United States, CRDAs may be formed with other Federal agencies, state and local governments, industrial organizations, public and private foundations, or nonprofit organizations. The FAA may provide any resource other than funds.

Rights: The FAA may grant its partners patent licenses, assignments, or options in any invention made by a Federal employee under the agreement while retaining a nonexclusive, nontransferable, irrevocable, paid-up license to practice the invention throughout the world, by, or on behalf of, the Government and such other rights that the FAA deems appropriate.

Royalties: Royalty income from inventions will be payable to the inventor(s) if they were employed by the agency at the time of the invention. The payments will continue for as long as the FAA continues to receive such income—regardless of the eventual employment status of the employee. If an invention is licensed for commercial use and royalty or other income results, the inventor(s) receives a total of \$2,000 plus 15% (25% for the FAA) of the income, and contributing personnel will receive payments as well. Payments from royalties to an employee cannot exceed \$150,000 per year without presidential approval.

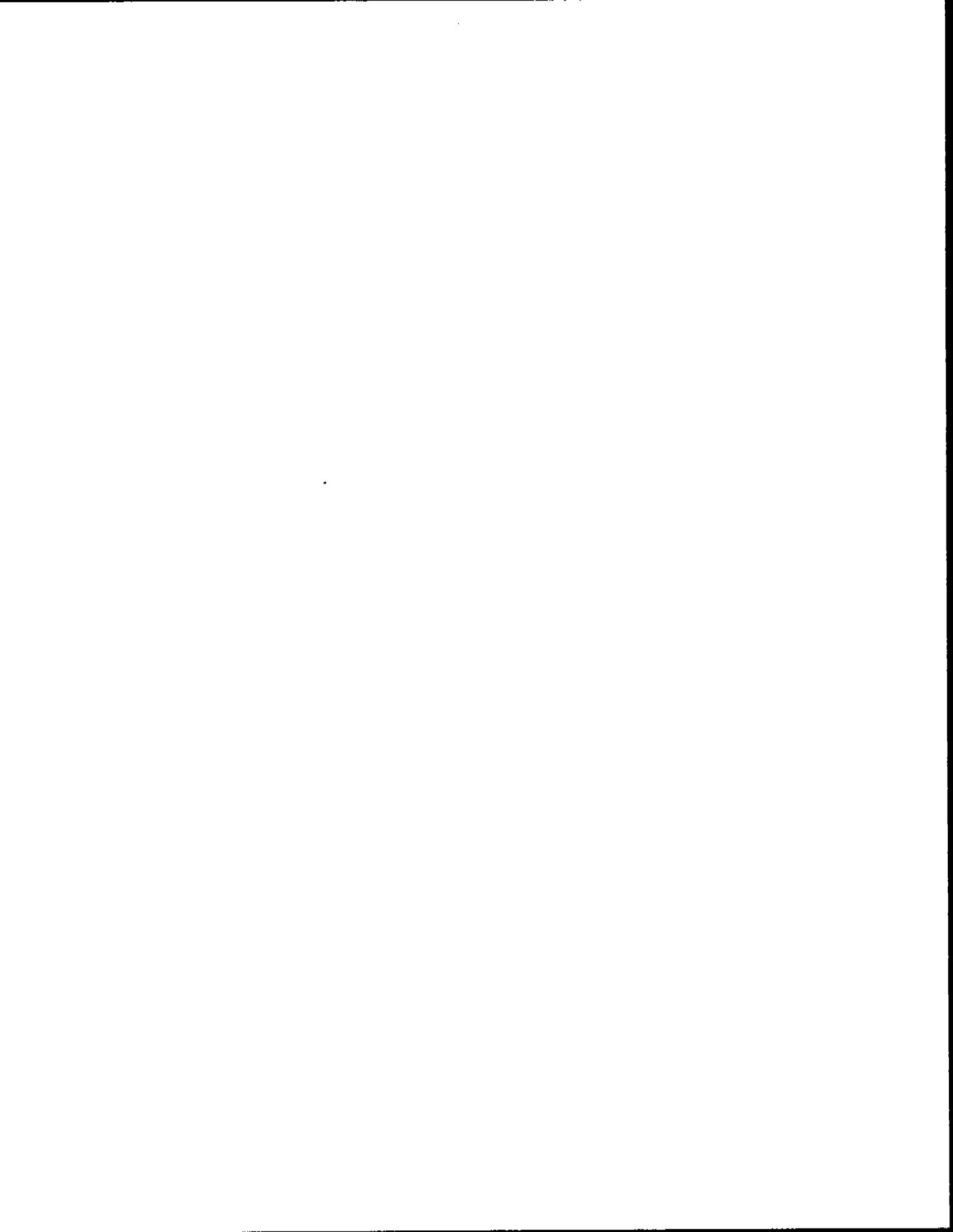
Awards: The FAA Technology Transfer Awards program is designed to monetarily reward and recognize FAA scientific, engineering, and technical personnel responsible for inventions, innovations, or other outstanding scientific or technology achievements that contribute to the mission of the FAA or the Federal Government. It provides an incentive to FAA personnel to participate in the Technology Transfer Program. The awards and their respective monetary values include: Innovative Efforts Award (\$2,000); Intellectual Property Award (\$3,000); CRDA Award (\$2,000); Management Award (\$1,500); and Technology Transfer Assistance Award (\$1,500).

Report: As part of its responsibilities under the Stevenson-Wydler and Bayh-Dole Acts, the FAA will prepare an annual report that summarizes (among other matters) the amount of royalties and other income received by the agency and the amount of awards paid to inventors.



Section 2

The Cooperative Research and Development Agreement



2.1 Purpose and Function of CRDAs

Unlike contracts, CRDAs may NOT involve "funds out" (i.e., the laboratory may not provide funds to the collaborating party). Instead, the FAA may provide only personnel, facilities, equipment, intellectual property, or other resources, as listed in Figure 4.

- Unique Agreement:** In contrast to the wide range of grants, contracts, and other traditional financial arrangements between the FAA and the private sector, there can be no payments to the non-FAA partner in any CRDA. The FAA's participation is "in kind" rather than funds.
- FAA May Provide:** The FAA may provide engineers, scientists, or any other form of professional or clerical personnel; facilities and equipment (especially facilities that cannot be found in private industry and are necessary to the testing and development of aviation technology); or any other resources, with or without reimbursement. Again, the FAA may provide anything but money to the non-Federal partner.
- Partner May Provide:** In contrast, the non-FAA partner may provide funds, as well as personnel, facilities, equipment, intellectual property, or any other resources consistent with the agency's mission and the appropriate laws.
- Confidentiality:** Because of the security needs of the technology marketplace, the FAA may agree, when appropriate, that data generated by the CRDA will remain confidential in order to protect the competitive position of the industry partner. Such protection of proprietary information is limited to 5 years by the National Competitiveness Technology Transfer Act of 1989.
- Caution:** A CRDA is not a procurement contract, grant, or cooperative agreement (as defined in U.S.C. 6303-6305, Using Procurement Contracts, Using Grant Agreements, Using Cooperative Agreements). The CRDA shall not be used as a way to circumvent proper procurement procedures.

FIGURE 4
CHARACTERISTICS OF CRDAs

- No laboratory funds go to the non-FAA partner.
- The FAA may provide personnel, facilities, intellectual property, or equipment.
- Non-Federal partners may provide funds, personnel, facilities, intellectual property, or equipment.
- Royalties and other income from intellectual property are negotiated between the lab and the non-FAA partner.
- Some proprietary data may be protected for up to 5 years.

2.2 Ownership of Intellectual Property Developed in CRDAs

Technology Transfer encourages the sharing of information. To succeed, however, it must also protect commercially sensitive information. Moreover, for private industry and government inventors to be enthusiastic about technology transfer, there must be an economic incentive for both. The provisions for protecting intellectual property developed through CRDAs, as described in Figure 5, reassure industry and encourage individual inventors to participate.

Sharing Information: An essential part of technology transfer is the earliest possible sharing and publication of information that might have commercial potential. The tradition of government-sponsored research is to make information gathered through public sponsorship publicly accessible—except in undisputed matters of national security. However, this accessibility is not an incentive for industry.

Protecting Information: Part of the CRDA negotiation process is the plan to hold secret any commercially sensitive information (*i.e.*, any information affecting competitive advantage) for up to 5 years (in accordance with the Freedom of Information Act). Information for which the party requests protection should be clearly marked. Industry partners also need assurances that "trade secrets" and other commercial "know-how" they bring to the project will be protected from their competitors.

Financial Incentives: Starting in the mid-1970s and continuing through the 1980s, several Federal laws allow government contractors to retain proprietary interest in their inventions. (Before these changes, the intellectual property—including copyrights—stayed with the government sponsor.) The CRDA emphasizes the negotiation of these rights so that the industry partner can profit from the project and not be forced to sacrifice its financial interest.

Similarly, until the 1980s, individual inventors and creators who worked for the Federal government relinquished their interest to their employer. *In a CRDA, however, the financial returns are distributed among the government, the industry partner, and the individual FAA engineer or scientist.*

Negotiated Awards:

A CRDA, then, must protect proprietary knowledge and assign ownership of *copyrights* (especially for software), *patents* (and their associated royalties), and any other potential income from the inventions or materials developed in the project.

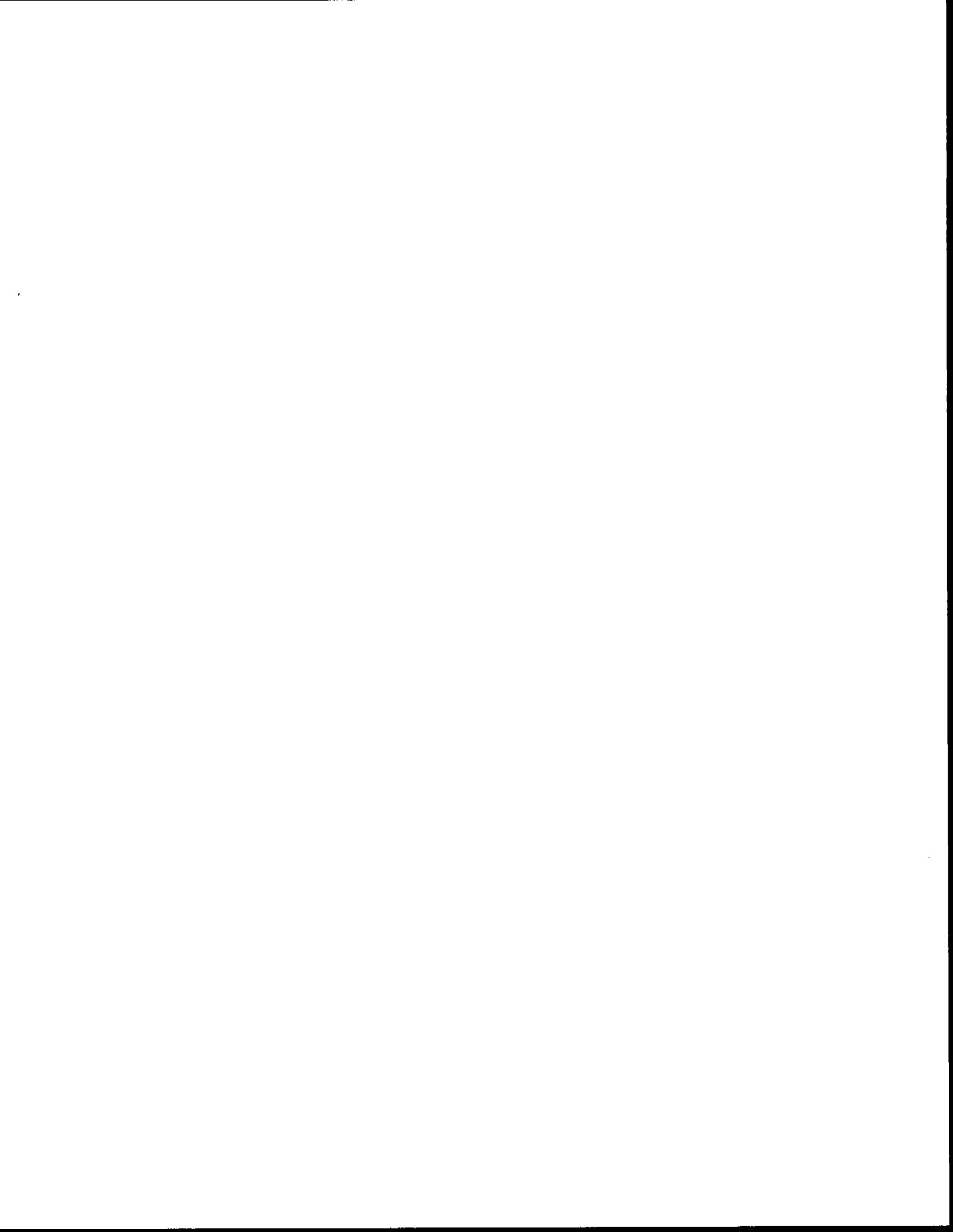
**FIGURE 5
INTELLECTUAL PROPERTY ISSUES**

- **Information/Data**
CRDAs must limit free access to scientific knowledge in order to protect commercially valuable data, trade secrets, and industry know-how.

- **Inventions/Patents/Copyrights**
CRDAs must define the ownership of patents and licenses and their associated royalties and fees for publications, software, and industrial and commercial products.

Section 3

How CRDAs Develop



3.1 Scenarios: Two Paths to a CRDA

CRDAs grow out of good professional relationships between the FAA initiator (Principal Investigator [PI]) and the non-FAA partner (Cooperating Research Organization [CRO]). Most CROs come from industry. Although the majority of CRDAs are FAA-initiated, some are initiated by industry (see Figure 6).

Relationships: The scenarios described below require strong, trusting relationships between the FAA and its partners. There must be reason to believe that the promises in the agreement will be kept, and nothing in the agreement can appear legally actionable to other agencies or companies.

FAA-Initiated: Most CRDAs begin when an FAA engineer or scientist (*i.e.*, the PI) perceives one of the following three opportunities:

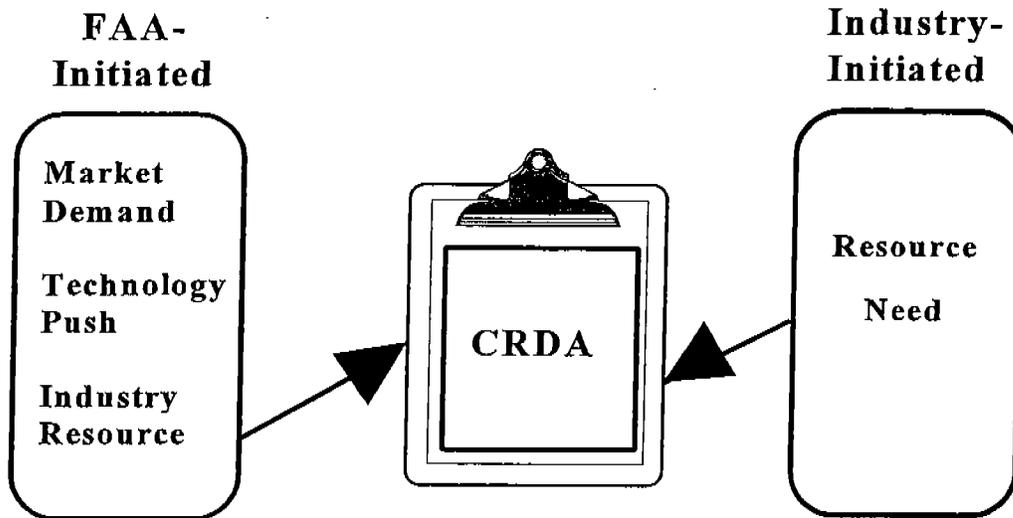
1. **Market Demand.** The PI believes that a laboratory invention or idea has commercial potential in the aviation industry and that this potential will be evident as soon as the invention is announced. In other words, the market is already prepared and eager for this innovation. In this case, the PI needs a business (or other enterprise) that will enable the invention to become a marketable commercial product. Thus, the PI identifies a partner (the law favors small, U.S. firms) with the right resources and industry position to advance the invention.
2. **Technology Push.** The PI has an idea or technology so new and original that there is not yet a market demand. (The market can only demand what it can imagine.) In this case, the FAA inventor must find an industry partner who will eventually stimulate a market demand for the product or technology. Naturally, secrecy is especially important in such projects.
3. **Industry Resource.** The PI determines that industry has unique resources needed to develop an FAA technology or idea. In this case, sharing the resources will lead to mutual benefits for the FAA and its partner.

Industry-Initiated: An aviation industry firm has begun the development of a commercial product but requires the unique resources of the FAA to perform critical testing and refine the product. The firm, which will become the CRO, believes either that it

Industry-Initiated
(continued):

cannot proceed without using the unique resources of the FAA or that a joint ownership agreement (through a CRDA) is the most cost-effective way to access those resources.

FIGURE 6
PATHS TO A CRDA



3.2 CRDA Process Overview

The CRDA process begins with a technical statement known as the Obligations of the Parties (OP) and progresses through a series of reviews into a full-blown agreement.

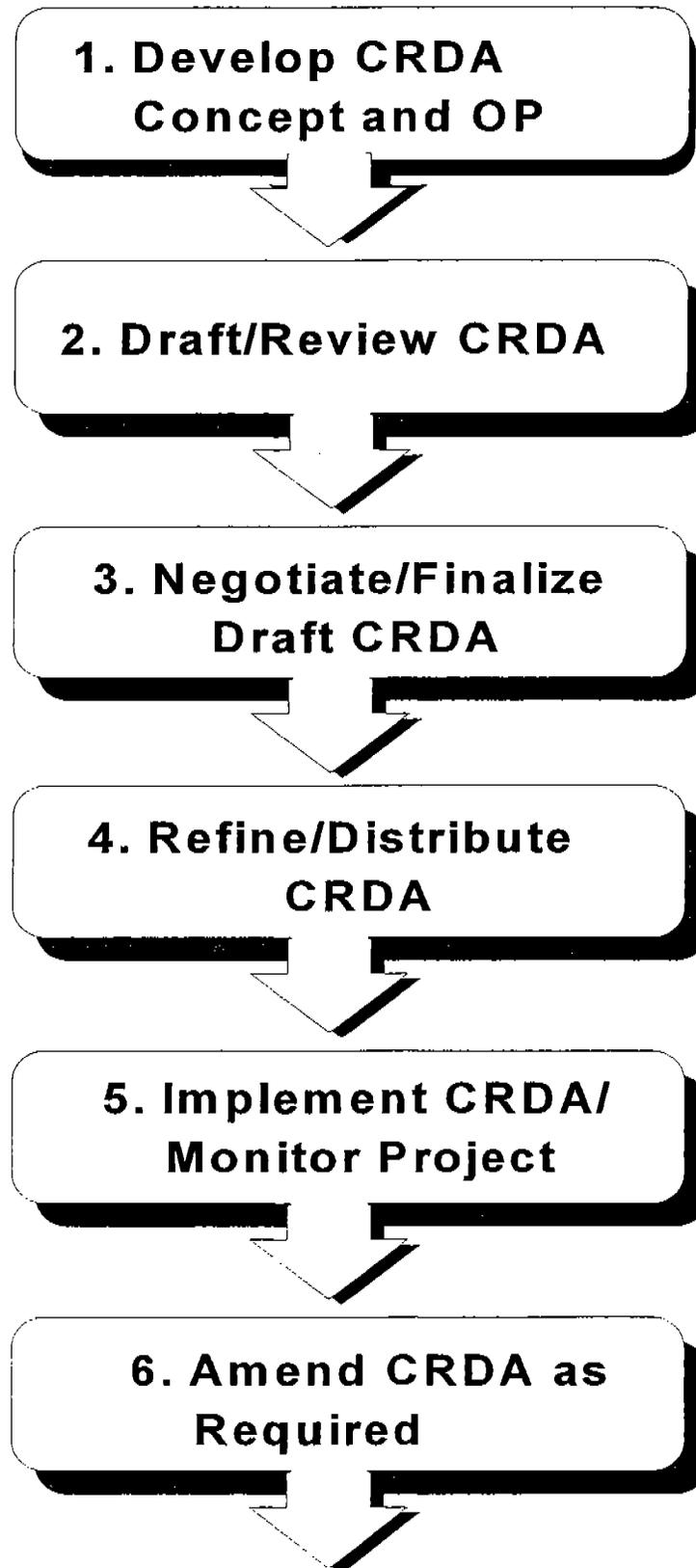
- Phase 1:** In Phase 1, the CRDA is conceived, and the PI negotiates a technical OP with the CRO. The output of this phase is the OP and other technical data, which are then reviewed by the FAA Technology Transfer Program Office (TTPO).
- Phase 2:** In Phase 2, the TTPO receives a *CRDA Generator* data disk from the PI and uses it to draft a preliminary CRDA, which is then reviewed by the CRO and PI. Comments of the CRO and PI are reviewed by the TTPO. The TTPO incorporates appropriate comments and forwards the remaining legal-related comments and redrafted CRDA to the FAA Assistant Chief Counsel, ACT-7.
- Phase 3:** In Phase 3, ACT-7 negotiates the remaining legal-related comments from the CRO and PI. The final negotiated wording is forwarded to the TTPO.
- Phase 4:** In Phase 4, a refined, final version is written and distributed for appropriate signatures—including those of the designated manager and the Director of the FAA Technical Center, ACT-1.
- Phase 5:** In Phase 5, the TTPO implements the complete CRDA, acts on any modifications required by the Associate Administrator for Research and Acquisitions (ARA-1), and tracks the progress of the work (via progress reports submitted by the PI) to ensure that the CRDA is properly implemented and documented.
- Phase 6:** In Phase 6, the implemented CRDA may be amended or modified, as required, to extend the term of the effort, revise the Statement of Work (SOW) or OP, etc.
- Legend:**
- TTPO* = Technology Transfer Program Office
- ACT-1* = Director of the FAA Technical Center

Legend (continued):

- ACT-7* = The FAA Assistant Chief Counsel
- ARA-1* = Associate Administrator for Research and Acquisitions
- PI* = Principal Investigator--the FAA engineer or scientist in charge of the project
- CRO* = Cooperating Research Organization, the non-Federal partner in the agreement

This six-phase CRDA process is illustrated in Figure 7.

**FIGURE 7
THE CRDA FLOW**





Appendix A

Model Cooperative Research and Development Agreement



The following is a Model Cooperative Research and Development Agreement, dated February 17, 1998. The "agreement" between Studebaker Motor Car and the FAA William J. Hughes Technical Center is fictitious and is used here as a sample of a "legally binding document" that includes a quarterly progress report as well as a final report. For instructions on how to complete these documents, please refer to Appendix B of the handbook, *FAA CRDA Generator User's Manual*.



COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT

00-CRDA-0000

**STUDEBAKER MOTORCAR INCORPORATED
DESIGN DIVISION, TAILFIN GROUP**

and

**THE FEDERAL AVIATION ADMINISTRATION
WILLIAM J. HUGHES TECHNICAL CENTER**

This Cooperative Research and Development Agreement (CRDA), dated _____ is entered into by and between Studebaker Motorcar Incorporated [STUDEBAKER], and the United States of America, as represented by the Federal Aviation Administration William J. Hughes Technical Center [FAA Technical Center], located at the Atlantic City International Airport, New Jersey.

A. BACKGROUND

Studebaker has manufactured great automobiles for the American driver for decades. Recently, however, sales have dropped off severely. In fact, Studebaker hasn't sold a car in years. Studebaker believes that it can make a great leap forward and regain its share of the market by bringing back tailfins as an integral part of the design of the motorcar for the 21st century.

B. OBJECTIVE AND PLAN

This CRDA is designed to develop a team that will accelerate the reemergence of the great American contribution to automotive engineering - the tailfin. This program will tap the long dormant expertise of Studebaker design engineers and the FAA reservoir of airfoil technology.

C. AGREEMENT

The Federal Technology Transfer Act of 1986, as amended, 15 U.S.C. 3710a, *et seq.* permits the Director of the FAA Technical Center to enter into Cooperative Research and Development Agreements consistent with that Act, associated Executive Orders, and agency policies.

Article 1. Definitions

As used in this AGREEMENT, the following terms shall have the following meanings:

1.0 The term "AGREEMENT" means this Cooperative Research and Development Agreement, or "CRDA." "CRDA" means any agreement between one or more Federal laboratories and one or more non-Federal parties under which the Government, through its laboratories, provides personnel, services, facilities, equipment, intellectual property, or other resources with or without reimbursement (BUT NOT FUNDS TO NON-FEDERAL PARTIES) and the non-Federal parties provide funds, personnel, services, facilities, equipment, intellectual property, or other resources toward the conduct of specified research or development efforts which are consistent

with the mission of the laboratory; except that such term does not include a procurement contract or cooperative agreement as those terms are used in sections 6303, 6304, and 6305 of Title 31; nor does such term include "other transactions," as that term is used in section 106(l) of Title 49. See 15 U.S.C. 3710a(d)(1).

1.1 The term "Cooperative Research and Development Program" means the research and development work as defined in the Obligation of the Parties (OP) in Article 2, paragraph 2.1.

1.2 The term "effective date" means the date on which the Director of the FAA Technical Center signs the AGREEMENT.

1.3 The term "made" in relation to any invention means the conception or first actual reduction to practice of such invention.

1.4 The term "invention" means any invention or discovery (including software-related invention) which is or may be patentable or otherwise protected under Title 35 of the United States Code or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 7321 et seq.).

1.5 The term "proprietary information" means information which could provide a competitive advantage to the party possessing such information and which either embodies trade secrets developed at private expense and outside of any Government contract or is confidential technical, business, or financial information provided that such information:

- a) is not generally known, or is not available from other sources without obligations concerning its confidentiality;
- b) has not been made available by the owners to others without obligations concerning its confidentiality; or,
- c) is not already available to the public without obligations concerning its confidentiality.

1.6 "Subject invention" means any invention conceived or first actually reduced to practice in the performance of work under this AGREEMENT.

1.7 The term "created" in relation to any copyrightable software work means when the work is fixed in any tangible medium of expression for the first time, as provided for at 17 U.S.C. 101.

Article 2. Cooperative Research and Development Program

2.1 Obligation of the Parties. The cooperative research and development program performed under this AGREEMENT shall be performed in accordance with the Obligations of the Parties [OP], attached as Appendix A. The utilization of the FAA Technical Center's personnel, resources, facilities, equipment, skills, know-how, computer software and information will be consistent with its own policies, missions, and requirements. It is understood that the nature of this cooperative research is such that completion within the period of performance specified, or within the limits of financial support allocated, cannot be guaranteed. Accordingly, it is agreed that all cooperative research is to be performed on a best efforts basis. Any modifications of the OP shall be by mutual agreement between the parties and shall be incorporated into this AGREEMENT by a formally executed written amendment.

2.2 Review of Work. Periodic conferences may be held, when deemed necessary by both parties, between personnel of the FAA Technical Center and STUDEBAKER for the purpose of reviewing the progress of work defined in the OP of paragraph 2.1.

2.3 Principal Investigator. The Airfoil Research and Development Service agrees to assign a substantial portion of the work to be performed pursuant to the OP to the Airfoil Research and Development Service, ARG-61. The work will be performed under the supervision of Samuel Spade who, as Principal Investigator, has the responsibility for the scientific and technical conduct of this project.

2.4 Scope Change. If at any time the Principal Investigator determines that the research data dictates a substantial change in the direction of the work, the FAA Technical Center shall promptly notify STUDEBAKER and the parties shall make a good faith effort to agree on any necessary change to the OP. Any substantial change in the direction of work will be formalized by a mutual agreement and a change to the OP that specifies the new work to be performed.

Article 3. Reports

The FAA Technical Center shall prepare quarterly and final reports. These reports shall follow the guidelines in Appendix B. The final report shall be prepared within three (3) months after completing the work called for in the OP. Copies of all reports shall be forwarded to AAR-201. Any other reports as called for in the OP shall be in a format agreed upon by STUDEBAKER and the PI and shall be forwarded to STUDEBAKER and AAR-201.

Article 4. Financial Obligation

The FAA Technical Center does not condition the performance of research under this AGREEMENT on any advance payment of funds by STUDEBAKER.

Article 5. Term

The term of this AGREEMENT is for a period of 36 months, commencing on the effective date of this AGREEMENT, unless otherwise modified pursuant to Article 13.

Article 6. Title to Property

6.1 Capital Equipment. All capital equipment developed, acquired, and paid for under this AGREEMENT by the FAA Technical Center shall be the property of the FAA Technical Center, except that title to the following items of capital equipment provided to the FAA Technical Center by STUDEBAKER or acquired by the FAA Technical Center with funds supplied by STUDEBAKER shall remain or vest in STUDEBAKER:

Capital Equipment:

Under this agreement, STUDEBAKER shall furnish to the FAA one or more of its prototype tailfins and tailfin monitoring systems for testing and data collection at the FAA Technical Center, or at appropriate sites, for times and durations that are mutually agreeable.

6.2 Software. Title to software developed by STUDEBAKER exclusively at private expense shall remain in STUDEBAKER. Except to the extent that such software may constitute a subject invention, the Government acquires no additional rights to software developed by STUDEBAKER in the course of participating in this AGREEMENT. Rights acquired in patentable software are set out in Article 9.

Article 7. Publicity, Use of Name, and Endorsement

7.1 Use of Technical Center Name Prohibited. STUDEBAKER shall not use the name of the FAA Technical Center on any product or service which is directly or indirectly related to either this AGREEMENT or any patent license or assignment Agreement which implements this AGREEMENT without the prior approval of the FAA Technical Center.

7.2 No Endorsement by FAA. By entering into this AGREEMENT, the FAA Technical Center does not directly or indirectly endorse any product or service provided, or to be provided, by STUDEBAKER, its successors, assignees, or licensees. STUDEBAKER shall not in any way imply that this AGREEMENT is an endorsement by the FAA Technical Center of any such product or service.

Article 8. Publication

The FAA Technical Center and STUDEBAKER agree to confer and consult with each other prior to publication or other public disclosure of the results of work under this AGREEMENT to ensure that no proprietary information or military critical technology is released. Furthermore, prior to submitting a manuscript for publication or before any other public disclosure, each party will offer the other party ample opportunity to review such proposed publication or disclosure, to submit objections, and to file patent applications in a timely manner.

Article 9. Patents

9.1 Reporting of Inventions. The FAA Technical Center shall promptly report to STUDEBAKER each subject invention reported to the FAA Technical Center by its employees. STUDEBAKER shall promptly disclose to the FAA Technical Center each subject invention reported to STUDEBAKER by any of its employees. Each party shall provide the other party with copies of the patent applications it files on any subject invention along with the power to inspect and make copies of all documents retained in the official patent application files by the applicable patent office, except as may be prohibited by 35 U.S.C. 181, relating to inventions affecting the national security.

9.2 Inventions Made Solely by Employees of STUDEBAKER. The FAA Technical Center, on behalf of the U.S. Government, waives any ownership rights the U.S. Government may have in subject inventions made solely by STUDEBAKER employees and agrees that STUDEBAKER shall have the option to retain title to any such employee subject invention. STUDEBAKER shall notify the FAA Technical Center promptly upon making this election and agrees to file timely patent applications on such subject invention at its own expense in the United States and in such countries which STUDEBAKER, in its own discretion, deems expedient. Nothing in this AGREEMENT shall be interpreted to require STUDEBAKER to continue the prosecution of such patents, nor to maintain them in force. Should STUDEBAKER choose to abandon an

application once filed or decide not to pay any maintenance fee when due, STUDEBAKER shall immediately grant title to such application or patent to the Government of the United States.

9.3 Inventions Made Solely by Government Employees and Joint Inventions.

9.3.1 Government Inventions

The FAA Technical Center, on behalf of the U.S. Government, shall retain title to each subject invention made solely by its employees. STUDEBAKER agrees to assign to the Government whatever right, title and interest STUDEBAKER has in and to such subject invention.

9.3.2 Joint Inventions

The FAA Technical Center, on behalf of the U.S. Government, shall have the initial option to retain title to each subject invention made jointly by STUDEBAKER and Government employees. IN the event that the FAA Technical Center informs STUDEBAKER that it elects to retain title to such joint subject invention, STUDEBAKER agrees to assign to the Government whatever right, title and interest STUDEBAKER has in and to such joint subject invention.

9.4 Grant of Non-Exclusive License in U.S. Government Inventions and in Joint Inventions

The FAA Technical Center, on behalf of the U.S. Government, agrees to grant to STUDEBAKER, for reasonable compensation, a nonexclusive license in any invention made under this AGREEMENT, in whole or in part, by a Government employee.

9.5 Exclusive License in U.S. Government Invention and in Joint Inventions in Specific Field of Use

The FAA Technical Center, on behalf of the U.S. Government, agrees to grant to the collaborating party, for reasonable compensation, an exclusive license in any invention made under this AGREEMENT, in whole or in part, by a Government employee in the following specific field of use:

Airfoil Technology as Applied to Motor Vehicles

9.6 Filing of Patent Application. The party having the right to retain title and file patent applications on a specific subject invention may elect not to file patent applications thereon provided it so advises the other party within sixty (60) days from the date it discloses the subject invention to the other party. Thereafter, the other party may elect to file patent applications on such subject invention and the party initially reporting such subject invention agrees to assign its right, title and interest in such subject invention to the other party and cooperate with such party in the preparation and filing of patent applications thereon. The assignment of the entire right, title, and interest to the other party pursuant to this paragraph shall be subject to the retention by the party assigning title of license of the following scope: If the party assigning title is the collaborating party, it shall have a non-exclusive, irrevocable, paid-up license to practice, or have practiced on its behalf, the subject invention throughout the world. If the party assigning title is the Government, it shall have the license described in Article 9.9.1 below. In the event neither of the parties to this AGREEMENT elect to file a patent application on a subject invention, either or both (if a joint invention) may, at their sole discretion

and subject to reasonable conditions, release the right to file to the inventor(s) with a license in each party of the same scope as set forth immediately above.

9.7 Patent Expenses. The expenses attendant to the filing of patent applications as specified in 9.6 above, and all maintenance fees, shall be borne by the party filing the patent application. Any party having an obligation to pay a maintenance fee who decides not to pay such maintenance fee, shall so notify the other party of that decision in sufficient time to permit the other party to act to preserve its interest in the patent.

9.8 Prior Patents of STUDEBAKER. The following inventions of STUDEBAKER are the subject of an issued patent or patent application:

U.S. Patent No. 5,660,027 - Tail Attenuator

U.S. Patent No. 5,667,977 - Method of Securing Useless Chrome Accent Pieces to Curved Metal Surfaces

9.9 Retention of Government Rights in Inventions Made Under this AGREEMENT.

9.9.1 Government License. STUDEBAKER agrees to grant to the U.S. Government a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced throughout the world by or on behalf of the Government each invention made in whole or in part by its employees under this AGREEMENT. This license shall be evidenced by a confirmatory license agreement prepared by STUDEBAKER in a form satisfactory to the FAA Technical Center.

9.9.2 March-in Rights. In the event the FAA Technical Center assigns title or grants an exclusive license to a subject invention made in whole or in part by a Government employee, the Government shall retain the right:

- a) to require the collaborating party to grant to a responsible applicant a nonexclusive, partially exclusive, or exclusive license to use the invention in the applicant's licensed field of use, on terms that are reasonable under the circumstances; or
 - b) if the collaborating party fails to grant such a license, to grant the license itself.
- See 15 U.S.C. 3710a(b)(1)(B).

9.9.3 Government Exercise of March-in Rights. The Government may exercise its rights under Article 9.9.2 only in exceptional circumstances and only if the Government determines that

- a) the action is necessary to meet health or safety needs that are not reasonably satisfied by the collaborating party;
- b) the action is necessary to meet requirements for public use specified by Federal regulations, and such requirements are not reasonably satisfied by the collaboration party; or
- c) the collaborating party has failed to comply with an agreement containing provisions described at 15 U.S.C. 3710a(c)(4)(B) pertaining to domestic manufacture of products embodying subject inventions. See 15 U.S.C. 3710a(b)(1)(C) and Article 15.1.3 of this AGREEMENT.

9.10 Rights in Inventions Made by Third Parties. STUDEBAKER shall have no rights in any inventions made by third parties to this AGREEMENT, except as provided by separate agreement between STUDEBAKER and such third party. Such separate agreement regarding rights in inventions shall not denigrate any rights allocated by this AGREEMENT between STUDEBAKER and the U.S. Government. Should an invention be made jointly by an employee of the U.S. Government, and one or more third parties to this AGREEMENT, and not by any employee of STUDEBAKER, STUDEBAKER shall have no rights in any such invention, except as provided by separate agreement among all inventors or their assignees. Should an invention be made jointly by employees of the U.S. Government, STUDEBAKER, and any third parties to this AGREEMENT, all joint inventors, or their assignees, agree to negotiate such cross licenses as may be necessary to effect the maximum commercialization of the invention.

Article 10. Copyrights

10.1 Ownership of Copyright. STUDEBAKER shall have the right to copyright all software (including modifications and enhancements thereto), documentation, and other works created in whole or in part by STUDEBAKER under this AGREEMENT, which is subject to being copyrighted under Title 17, United States Code. STUDEBAKER shall mark any such works with a copyright notice showing STUDEBAKER as the author or co-author and shall in its reasonable discretion determine whether to file applications for registration of copyright. Should STUDEBAKER choose not to retain ownership of the copyright in any such software, it will execute an assignment of the copyright to the U.S. Government. The Government, as represented by the FAA Technical Center, agrees to license such software to STUDEBAKER on terms acceptable to the parties.

10.2 Copyright Notice. STUDEBAKER will clearly mark all copyrighted software or other works provided to the Government with appropriate notices.

Article 11. Copyright Royalties - RESERVED

Article 12. Proprietary Information

12.1 Ownership of Proprietary Information. Subject to Articles 9 and 10, any proprietary information developed solely by a party under this AGREEMENT shall be owned by the party which developed it. The FAA Technical Center and STUDEBAKER shall jointly own any jointly developed proprietary information. Computer software developed solely by STUDEBAKER is covered by Article 6.2 "Software."

12.2 Proprietary Notice. The parties will mutually develop an appropriate proprietary notice(s) for use in connection with this AGREEMENT. The parties agree to cooperate in removing or re-marking any information marked as proprietary information which ceases to be proprietary information, for reasons set forth in Article 1.5 or because the information was publicly disclosed in a patent, copyrighted work, or as may be required by law.

12.3 Effect of the Freedom of Information Act [FOIA], 5 U.S.C. 552

12.3.1 Proprietary Information Developed by the Collaborating Party

No proprietary information that constitutes trade secret, commercial or financial information that is privileged or confidential under the meaning of section 552(b)(4) of Title 5, which is obtained in the conduct of research or as a result of activities under this chapter from a non-Federal party participating in a CRDA shall be disclosed. See 15 U.S.C. 3710a(c)(7)(A).

12.3.2 Jointly Owned Proprietary Information and Government Owned Proprietary Information

Jointly owned proprietary information and Government owned proprietary information that constitute trade secret, commercial or financial information that is privileged or confidential under the meaning of section 552(b)(4) of Title 5, which is obtained in the conduct of research or as a result of activities under this chapter by the FAA shall not be released before the date that is five years after the effective date of this agreement.

Article 13. Expiration, Termination, Disputes and Extensions

13.1 Expiration and Termination. This AGREEMENT shall expire as specified in Article 5 unless both parties hereto agree in writing to extend it further. However, either party may terminate this AGREEMENT upon delivery of written notice at least ninety (90) days prior to such termination. Each party shall bear its own costs resulting from or related to the termination.

13.2 Disputes. STUDEBAKER and the FAA Technical Center recognize that disputes arising under this AGREEMENT are best resolved at the local working level by the parties directly involved. Both parties are encouraged to be imaginative in designing mechanisms and procedures to resolve disputes at this level. Any dispute arising under this AGREEMENT which is not disposed of by agreement of the parties shall be submitted jointly to the Administrator, Federal Aviation Administration, or her designee, for resolution. The decision of the Administrator, or her designee, shall be final.

13.3 Continuation of Cooperative Research Pending Resolution. Pending the resolution of any dispute under this Article, work under this AGREEMENT will continue as elsewhere provided herein.

13.4 Obligations Surviving Termination. Termination of this AGREEMENT by either party for any reason shall not affect the rights and obligations of the parties accrued prior to the effective date of termination of this AGREEMENT. No termination of this AGREEMENT, however effectuated, shall release the parties hereto from their rights, duties and obligations under Articles 3, 4, 6, 7, 8, 9, 10, 11, and 12.

13.5 Extensions. Extensions of the term of this AGREEMENT may be made prior to the expiration of the AGREEMENT without the need for additional review beyond that of the Director, FAA Technical Center, ACT-1. If the parties wish to continue the work called for under the OP after the expiration of this AGREEMENT, they may enter into a new CRDA.

Article 14. Independent Contractors

The parties to this AGREEMENT are independent contractors and are not agents of each other, joint venturers, partners or joint parties to a formal business organization of any kind. Neither party is authorized or empowered to act on behalf of the other with regard to any contract, warranty or representation as to any matter and neither party will be bound by the acts or conduct of the other. Each party will maintain sole and exclusive control over its own personnel and operations.

Article 15. Representations and Warranties

15.1 Representations and Warranties of the FAA Technical Center. The FAA Technical Center hereby represents and warrants to STUDEBAKER as follows:

15.1.1 Mission. The performance of the activities specified by this AGREEMENT are consistent with the mission of the FAA Technical Center.

15.1.2 Authority. All prior reviews and approvals required by regulations or law have been obtained by the FAA Technical Center prior to the execution of the AGREEMENT. The FAA Technical Center official executing this AGREEMENT has the requisite authority to do so. Notwithstanding the delegation of authority to execute the AGREEMENT to the Director of the FAA Technical Center, ACT-1, the Administrator, Federal Aviation Administration, or her designee, pursuant to 15 U.S.C. 3710a(c)(5)(A), may disapprove or require the modification of this AGREEMENT within thirty (30) days of the date it is presented to her by the FAA Technical Center.

15.1.3 Statutory Compliance. The FAA Technical Center, prior to entering into this AGREEMENT, has (1) given special consideration to entering into CRDAs with small business firms and consortia involving small business firms; (2) has given preference to business units located in the United States which agree that products embodying inventions made under the AGREEMENT or produced through the use of such inventions will be manufactured substantially in the United States and; (3) in the event this AGREEMENT is made with an industrial organization or other person subject to the control of a foreign company or Government, taken into consideration whether or not such foreign Government permits United States agencies, organizations, or other persons to enter into CRDAs and licensing agreements with such foreign country.

15.2 Representations and Warranties of STUDEBAKER. STUDEBAKER hereby represents and warrants to the FAA Technical Center as follows:

15.2.1 Corporate Organization. STUDEBAKER, as of the date hereof, is a corporation duly organized, validly existing and in good standing under the laws of the State of Washington.

15.2.2 Statement of Ownership. STUDEBAKER is neither foreign controlled nor a subsidiary of a foreign controlled entity.

15.2.3 Power and Authority. STUDEBAKER has the requisite power and authority to enter into this AGREEMENT and to perform according to the terms thereof.

15.2.4 Due Authorization. The Board of Directors and shareholders of STUDEBAKER have taken all actions required to be taken by law, STUDEBAKER's Certificate or Articles of Incorporation, its bylaws or otherwise, to authorize the execution and delivery of this AGREEMENT.

15.2.5 No Violation. The execution and delivery of this AGREEMENT does not contravene any material provision of, or constitute a material default under any material Agreement binding on STUDEBAKER or any valid order of any court, or any regulatory agency or other body having authority to which STUDEBAKER is subject.

Article 16. Liability

16.1 Tort Liability of Government. The U.S. Government shall not, except for gross negligence, fraud, abuse, or misuse, be responsible for any property of STUDEBAKER consumed, damaged, or destroyed in the performance of this AGREEMENT. Any liability of the U.S. Government is determined pursuant to the Federal Tort Claims Act, 28 U.S.C. 2671 et seq.

16.2 Personal Injury and Damage to Property. STUDEBAKER agrees to save and hold the Government, its officers, agents, and employees harmless from liability of any nature or kind, including costs and expenses, for, or on account of, any or all suits or damages of any character whatsoever resulting from injuries or damages sustained by any person or persons or property by virtue of negligence on the part of STUDEBAKER, its officers, agents, and employees in the performance of this AGREEMENT.

16.3 No Warranty. Except as specifically stated in Article 15, the FAA Technical Center makes NO express or implied warranty as to any matter whatsoever, including the conditions of the research or any invention or product, whether tangible or intangible, made or developed under this agreement, or the ownership, *MERCHANTABILITY*, or fitness for a particular purpose of the research or any invention or product.

16.4 Indemnification. STUDEBAKER holds the U.S. Government harmless and indemnifies the Government for all liabilities, demands, damages, expenses and losses arising out of the use by STUDEBAKER, or any party acting on its behalf or under its authorization, of the FAA Technical Center's research and technical developments or out of any use, sale or other disposition by STUDEBAKER, or others acting on its behalf or with its authorization, of products made by the use of the FAA Technical Center's technical developments. This provision shall survive termination of this AGREEMENT.

16.5 Disposal of Toxic or Other Waste. STUDEBAKER shall be responsible for the removal from FAA Technical Center property of any and all toxic or other material used, provided, or generated in the course of performing this AGREEMENT. STUDEBAKER shall obtain at its own expense all necessary permits and licenses as required by local, State, and Federal law and shall conduct such removal in a lawful and environmentally responsible manner.

Article 17. Force Majeure

Neither party shall be liable for any unforeseeable event beyond its reasonable control not caused by the fault or negligence of such party, which causes such party to be unable to perform its obligations under this AGREEMENT (and which it has been unable to overcome by the exercise of due diligence), including, but not limited to, flood, drought, earthquake, storm, fire, pestilence, lightning and other natural catastrophes, epidemic, war, riot, civic disturbance or disobedience, strikes, labor dispute, or failure, threat of failure, or sabotage, or any order or injunction made by a court or public agency. In the event of the occurrence of such a force majeure event, the party unable to perform shall promptly notify the other party. It shall further use its best efforts to resume performance as quickly as possible and shall suspend performance only for such period of time as is necessary as a result of the force majeure event.

Article 18. Miscellaneous

18.1 No Benefits. No member of, or delegate to the United States Congress, or resident commissioner, shall be admitted to any share or part of this AGREEMENT, nor to any benefit that may arise therefrom; but this provision shall not be construed to extend to this AGREEMENT if made with a corporation for its general benefit.

18.2 Governing Law. The construction, validity, performance, and effect of this AGREEMENT for all purposes shall be governed by the laws applicable to the Government of the United States.

18.3 Entire Agreement. This AGREEMENT constitutes the entire agreement between the parties concerning the subject matter of this AGREEMENT.

18.4 Headings. Titles and headings of the Sections and Subsections of this AGREEMENT are for the convenience of references only and do not form a part of this AGREEMENT and shall in no way affect the interpretation thereof.

18.5 Waivers. None of the provisions of this AGREEMENT shall be considered waived by any party hereto unless such waiver is given in writing to all other parties. The failure of any party to insist upon strict performance of any of the terms and conditions hereof, or failure or delay to exercise any rights provided herein or by law, shall not be deemed a waiver of any rights of any party hereto.

18.6 Severability. The illegality or invalidity of any provisions of this AGREEMENT shall not impair, affect or invalidate the other provisions of this AGREEMENT.

18.7 Amendments. If either party desires a modification in this AGREEMENT, the parties shall, upon reasonable notice of the proposed modification by the party desiring the change, confer in good faith to determine the desirability of such modification. Such modification shall not be effective until a written amendment is signed by all the parties hereto by their representatives duly authorized to execute such amendment.

18.8 Assignment. Neither this AGREEMENT nor any rights or obligations of any party hereunder shall be assigned or otherwise transferred by either party without the prior written consent of the other party.

18.9 Export Controls. Information and/or products developed pursuant to this AGREEMENT may contain information for which export is restricted by the Arms Export Control Act (22 U.S.C. 2751 et seq.) or the Export Administration Act (50 U.S.C. App. 2401 et seq.). Nothing in this AGREEMENT shall be construed to permit any disclosure in violation of those restrictions.

Article 19. Notices

Notices, communications, and payments hereunder shall be deemed made if given by registered or certified envelope, postage prepaid, and addressed to the party to receive such notice, communication or payment at the address given below, or such other address as may hereafter be designated by notice in writing.

A. Formal notices under this AGREEMENT shall be addressed as follows:

FAA Technical Center:

Name: jennelle Derrickson, AAR-201
Address: Federal Aviation Administration
William J. Hughes Technical Center
Atlantic City International Airport
New Jersey, 08405
Telephone: 609 485-5096

STUDEBAKER:

Name: Matthew Kane Jeeves
Address: 5730 Belmar Terrace
Suite 15
Dead Dog Hollow, Washington 90210
Telephone: 202-555-6453

B. Correspondence relating to technical matters should be addressed as follows:

FAA Technical Center:

Name: jennelle Derrickson, AAR-201
Address: Federal Aviation Administration
William J. Hughes Technical Center
Atlantic City International Airport
New Jersey, 08405
Telephone: 609 485-5096

February 17, 1998

ARG-61:

Name: Samuel Spade, ARG-61
Address: 800 Independence Avenue, S.W.
Suite 900
Washington, DC 20591
Telephone: 202-555-1234

STUDEBAKER:

Name: Matthew Kane Jeeves
Address: 5730 Belmar Terrace
Suite 15
Dead Dog Hollow, Washington 90210
Telephone: 202-555-6453

Article 20. Review and Ratification

20.1 Review of CRDA by ARA-1. One copy of this document must be presented to the Associate Administrator for Research and Acquisitions, ARA-1, Federal Aviation Administration, for review. Receipt of this document by ARA-1 will begin a thirty (30) day period during which the AGREEMENT may be disapproved or modification required. If no notice of disapproval or required modification is received from the ARA-1 during the review period, this AGREEMENT shall enter into effect as of the date of the signature of the Director of the FAA Technical Center, ACT-1.

20.2 Ratification by STUDEBAKER. In the event that the Associate Administrator for Research and Acquisitions, ARA-1, Federal Aviation Administration, exercises the authority reserved by Article 15.1.2, STUDEBAKER shall have thirty (30) days from notification of the required modifications to ratify the modifications or terminate the AGREEMENT.

20.3 Certification. This AGREEMENT has been received by the Airfoil Research and Development Service of the Federal Aviation Administration, MiG-1. The effort called for under this AGREEMENT is consistent with the mission of the FAA Technical Center and the participation by the Technical Center in this AGREEMENT is endorsed and supported by the Director of the Airfoil Research and Development Service, MiG-1.

Jose F. Maldonado
Director, Airfoil Research and Development Service, MiG-1

DATE: _____

February 17, 1998

IN WITNESS THEREOF, the Parties have caused this AGREEMENT to be executed in duplicate by their duly authorized representatives as follows:

STUDEBAKER MOTORCAR INCORPORATED

BY: _____

NAME: Fritz Chrysler

TITLE: President

DATE: _____

FAA WILLIAM J. HUGHES TECHNICAL CENTER

BY: _____

NAME: Anne Harlan

TITLE: Director

DATE: _____

APPENDIX A**COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT
FAA Technical Center/STUDEBAKER****OBLIGATION OF THE PARTIES****1.0 Statement of Work****Background**

Studebaker has manufactured great automobiles for the American driver for decades. Recently, however, sales have dropped off severely. In fact, Studebaker hasn't sold a car in years. Studebaker believes that it can make a great leap forward and regain its share of the market by bringing back tailfins as an integral part of the design of the motorcar for the 21st century.

Objective and Plan

This CRDA is designed to develop a team that will accelerate the reemergence of the great American contribution to automotive engineering - the tailfin. This program will tap the long dormant expertise of Studebaker design engineers and the FAA reservoir of airfoil technology.

Expected Results

From this CRDA, Studebaker will present the data collected during this demonstration in the form of a final report to the FAA Technical Center. IT is expected that all of the objectives listed above will be met.

Constraints

Final Report - Studebaker shall furnish to the cognizant FAA representative three bound copies of the draft final report detailing the results and evaluation of the tailfin airfoil demonstration within 2 weeks of the conclusion of the test. This draft final report shall be submitted in the format according to the Department of Transportation Order 1700.8C. Upon receipt of this draft report, the FAA shall have 60 days to review, modify, or change the report. The draft report will then be returned to the cognizant Studebaker representative for incorporation of the FAA modifications. The final report, with FAA modifications, shall be delivered to the FAA representative within 30 days after the Studebaker representative receives the draft report with the FAA modifications. The final deliverable shall be one camera-ready copy and three bound copies of the modified final report.

Demonstration Time Schedule: The actual dates of tailfin airfoil demonstration will be decided mutually by personnel from Studebaker and the FAA.

2.0 Obligations of the Parties

2.1 Obligations of the FAA Technical Center

Airfoil Test Facility

It is intended to utilize the full-scale commercial Airfoil Test Facility at the FAA Technical Center. This facility is ideal for the proposed demonstration since it can accommodate tailfins that are typically found in many aging automobiles. A key feature of this facility is the ability to simulate the stresses typically experienced by automobile tailfins.

All tasks involving the setup, calibration, selection of control parameters of the activation equipment, and any operation, including decisions as to safe operation of the Airfoil Test Facility, will be the responsibility of the FAA Technical Center. The cost of these operations will be the burden of the FAA Technical Center.

The fatigue cycling rate of a constant amplitude shall be selected to conduct and conclude the demonstration in a timely manner. The period of 3 to 4 days is considered optimal for this demonstration.

2.2 Obligations of Studebaker:

Studebaker will operate its tailfin monitoring system at the Airfoil Test Facility during the test operation. The tasks performed by Studebaker personnel will be accomplished at no charge to the FAA Technical Center.

A Studebaker tailfin monitoring system, including all peripheral support equipment will be provided by Studebaker to the Airfoil Test Facility at the FAA Technical Center.

Studebaker will provide the personnel and equipment to perform the following tasks:

1. Perform general setup of equipment and plan the locations of the deployment of the tailfin monitoring system sensors.
2. Attach and test each sensor at predetermined monitoring locations on the test tailfin.
3. Calibrate zone location systems.
4. Set parameters before final test start-up monitoring.

Tailfin Test Demonstration

The actual demonstration will commence when the tailfin monitoring system is fully calibrated and operational. Studebaker personnel will be responsible for the operation of the monitoring system and for conducting the data analysis during the demonstration.

The demonstration will run for 12 hours each day. The demonstration will be considered over when the tailfin has been monitored sufficiently to deduce whether the tailfin could be utilized in automobile designs for the 21st century.

At the conclusion of the demonstration, Studebaker personnel will be responsible for the dismantling and removal of their tailfin monitoring equipment from the Airfoil Test Facility.

February 17, 1998

APPENDIX B
QUARTERLY PROGRESS REPORT (PAGE 1)

CRDA #: 98-A-0000 Quarterly Report # _____ Date: _____

Subject: Utilize airfoil technology to facilitate the reemergence of the tailfin as an integral part of the design of the motorcar for the 21st century.

PI: Samuel Spade

Route Symbol: ARG-61 Phone: 202-555-1234

Initiation Date: _____ Term: 36 months

Collaborator (CRO): Studebaker Motorcar Incorporated

STATUS:
(Brief narrative)

Check appropriate box:

- Will complete on time
- Will require more time (only)
- Will require more time and minor change in Obligations of the Parties
- Will require major change in Scope of Work
- Will complete on time and extend activities under a new CRDA
- Other: _____

QUARTERLY PROGRESS REPORT (PAGE 2)

Please provide supplementary cost data for the FAA that reflect any changes from the original cost estimate you submitted to the TTPO.

Supplementary Cost Data: FAA

| CATEGORY | DATA |
|--|-----------|
| 1. Personnel | |
| A. Number of people | _____ |
| B. Person hours (total) | _____ |
| C. Cost/hour | _____ |
| B x C = dollars | (1) _____ |
| 2. Facilities | |
| A. Storage | |
| 1. Days used | _____ |
| 2. Cost/day | _____ |
| B. Facilities usage | |
| 1. Hours used | _____ |
| 2. Cost/hour | _____ |
| A.1 x A.2 = dollars | (2) _____ |
| B.1 x B.2 = dollars | (3) _____ |
| 3. Equipment/Supplies | |
| A. Existing equipment | |
| 1. Hours used | _____ |
| 2. Cost/hour | _____ |
| A.1 x A.2 = dollars | (4) _____ |
| B. Newly purchased for this CRDA (total dollars) | (5) _____ |
| Total Value of CRDA (1 + 2 + 3 + 4 + 5) | _____ |

QUARTERLY PROGRESS REPORT (PAGE 3)

Please provide supplementary cost data for the FAA that reflect any changes from the original cost estimates you submitted to the TTPO.

Supplementary Cost Data: CRO (Collaborator)

| CATEGORY | DATA |
|--|-----------|
| 1. Personnel | |
| A. Number of people | _____ |
| B. Person hours (total) | _____ |
| C. Cost/hour | _____ |
| B x C = dollars | (1) _____ |
| 2. Facilities | |
| A. Storage | |
| 1. Days used | _____ |
| 2. Cost/hour | _____ |
| B. Facilities usage | |
| 1. Hours used | _____ |
| 2. Cost/hour | _____ |
| A.1 x A.2 = dollars | (2) _____ |
| B.1 x B.2 = dollars | (3) _____ |
| 3. Equipment/Supplies | |
| A. Existing equipment | |
| 1. Hours used | _____ |
| 2. Cost/hour | _____ |
| A.1 x A.2 = dollars | (4) _____ |
| B. Newly purchased for this CRDA (total dollars) | (5) _____ |
| 4. Funds (Other dollars expended for this CRDA) | (6) _____ |
| Total Value of CRDA (1 + 2 + 3 + 4 + 5 + 6) | _____ |

FINAL REPORT (PAGE 1)

CRDA # 98-A-0000 Date: 1/27/97

Subject: Utilize airfoil technology to facilitate the reemergence of the tailfin as an integral part of the design of the motorcar for the 21st century.

PI: Samuel Spade

Route Symbol: ARG-61 Phone: 202-555-1234

Initiation Date: _____ Term: 36 MONTHS

Collaborator (CRO): Studebaker Motorcar Incorporated

Prepare a brief narrative report discussing the highlights of the project. Address the following topics (use additional pages if necessary).

Successes (How the project met or exceeded its objectives):

Shortcomings (Disappointments, limitations, shortfalls):

Continuing Activities (Follow-on work; other research; additional agreements):

Technology Transfer Applications (Commercial applications, markets, etc.):

February 17, 1998

FINAL REPORT (PAGE 2)

Please provide supplementary cost data for the FAA that reflect any changes from the original cost estimates you submitted to the TTPO.

Supplementary Cost Data: FAA

| CATEGORY | DATA |
|--|-------------------------------|
| 1. Personnel | |
| A. Number of people | <u>2</u> |
| B. Person hours (total) | <u>120</u> |
| C. Cost/hour | <u>40.</u> |
| B x C = dollars | (1) <u>4800</u> |
| 2. Facilities | |
| A. Storage | |
| 1. Days used | <u> </u> |
| 2. Cost/hour | <u> </u> |
| B. Facilities usage | |
| 1. Hours used | <u>120</u> |
| 2. Cost/hour | <u>250</u> |
| A.1 x A.2 = dollars | (2) <u>0</u> |
| B.1 x B.2 = dollars | (3) <u>30000</u> |
| 3. Equipment Supplies | |
| A. Existing equipment | |
| 1. Hours used | <u> </u> |
| 2. Cost/hour | <u> </u> |
| A.1 x A.2 = dollars | (4) <u>0</u> |
| B. Newly purchased for this CRDA (total dollars) | (5) <u> </u> |
| Total Value of CRDA (1 + 2 + 3 + 4 + 5) | <u>34800</u> |

FINAL REPORT (PAGE 3)

Please provide supplementary cost data for the FAA that reflect any changes from the original cost estimates you submitted to the TTPO.

Supplementary Cost Data: CRO (Collaborator)

| CATEGORY | DATA |
|--|----------------|
| 1. Personnel | |
| A. Number of people | _____ |
| B. Person hours (total) | _____ |
| C. Cost/hour | _____ |
| B x C = dollars | (1) 0 _____ |
| 2. Facilities | |
| A. Storage | |
| 1. Days used | _____ |
| 2. Cost/hour | _____ |
| B. Facilities usage | |
| 1. Hours used | _____ |
| 2. Cost/hour | _____ |
| A.1 x A.2 = dollars | (2) 0 _____ |
| B.1 x B.2 = dollars | (3) 0 _____ |
| 3. Equipment Supplies | |
| A. Existing equipment | |
| 1. Hours used | _____ |
| 2. Cost/hour | _____ |
| A.1 x A.2 = dollars | (4) 0 _____ |
| B. Newly purchased for this CRDA (total dollars) | (5) _____ |
| 4. Funds (Other dollars expended for this CRDA) | (6) _____ |
| Total Value of CRDA (1 + 2 + 3 + 4 + 5 + 6) | 0 _____ |

