

W

September 22, 1998

TO: H/Acting Associate Administrator for Procurement
R/Associate Administrator for Aeronautics and Space Transportation Technology

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Report on the National Technology Transfer Center (NTTC)
Assignment No. A-HA-97-049
Report Number IG-98-031

The subject final report is provided for your use. Please refer to the executive summary for the overall audit results. Your comments on the draft report were responsive to our recommendations. The report provides our evaluation of your response. We wish to remain in the concurrence cycle for all recommendations.

If you have questions concerning the report, please call Mr. Lee T. Ball, Deputy Assistant Inspector General for Auditing, at 757-864-8500, or Ms. Mary Anderson, Auditor-in-Charge, at 301-286-8137. We appreciate the courtesies extended to the audit staff. See Appendix F for the report distribution.

[original signed by]

Russell A. Rau

Enclosure

cc:

B/Chief Financial Officer

G/General Counsel

JM/Director, Management Assessment Division

AUDIT REPORT

NATIONAL TECHNOLOGY TRANSFER CENTER (NTTC)

September 22, 1998

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ACRONYMS

FY	Fiscal Year
NAPA	National Academy of Public Administration
NASA	National Aeronautics and Space Administration
NCTMT	NASA Commercial Technology Management Team
NPG	NASA Procedures and Guidelines
NTTC	National Technology Transfer Center
OMB	Office of Management and Budget
PCA	Program Commitment Agreement
RTTC	Regional Technology Transfer Center

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NATIONAL TECHNOLOGY TRANSFER CENTER

EXECUTIVE SUMMARY

INTRODUCTION

The National Technology Transfer Center (NTTC) fosters NASA and Federal technology transfers with U.S. industry and provides businesses with access to information, expertise, and facilities. Located at Wheeling Jesuit University (the University) in Wheeling, West Virginia, NTTC operates under a 5-year cooperative agreement¹ with NASA. NTTC is one element in NASA's technology transfer network. Other major elements include the 6 Regional Technology Transfer Centers (RTTCs) and the 10 Center Technology Offices at NASA field installations. The Commercial Programs Division, Office of Aeronautics and Space Transportation Technology, provides management oversight of NASA-wide technology activities. Prior Office of Inspector General and other reviews are shown in Appendix D.

OBJECTIVES

The audit objective was to answer the following questions:

1. Is the NTTC effectively carrying out its stated functions? Can these functions be performed more efficiently and cost-effectively by some other existing method?
2. Do any of the functions performed by NTTC duplicate activities conducted by other NASA technology transfer organizations?
3. What metrics does NASA use to measure NTTC performance?
4. Is the NTTC managed in accordance with an operating plan?
5. Does NASA provide appropriate oversight of NTTC?

See Appendix A for scope and methodology information.

¹ Cooperative Agreement NCCW-0065 was awarded on November 1, 1994, for \$49 million.

RESULTS OF AUDIT

The following issues require management's attention:

- NASA needs to clarify NTTC's mission. In 1995 NASA directed NTTC to shift from a national to a NASA technology transfer focus without formally defining NTTC's revised mission. Consequently, NTTC's mission is unclear, similar to that of the RTTCs, and not fully integrated into NASA's technology transfer organization. Also, some NASA-specific activities are inappropriate under the cooperative agreement.
- NTTC's monthly reports to NASA do not include enough information on NTTC's performance to assist NASA in fulfilling its oversight responsibilities.
- NTTC charged NASA \$19,500 of unallowable salary costs for the former NTTC Executive Director.

The "Findings and Recommendations" section of this report describes these issues in detail.

RECOMMENDATIONS

We recommended that the Director, Commercial Programs Division, clearly define the NTTC and RTTC missions, incorporate the revised missions in award instruments, acquire services related to technology transfer activities by using the appropriate award instrument, and revise the format of the NTTC monthly report. We also recommended the recovery of unallocable costs.

MANAGEMENT'S RESPONSE

Management concurred or partially concurred with all recommendations.

EVALUATION OF MANAGEMENT'S RESPONSE

Management's planned actions are responsive to the recommendations.

BACKGROUND

BACKGROUND

In 1988 Senator Robert C. Byrd identified the need for a national center to promote technology transfer activities among participating Federal agencies and from those agencies to the private sector. In fiscal year (FY) 1990, NASA provided \$4 million in its commercial programs budget for initial funding for the NTTC at the University. Although Congress did not earmark funds for NTTC in the FY 1990 NASA appropriation, NASA provided the funds in response to the recommendation of the Senate Committee on Appropriations. The Committee's report stated, "The NTTC would promote the private sector use of federally funded and developed technologies." NASA awarded the University a grant of \$654,000 to define the functions of a national center. Subsequently, NASA awarded successive cooperative agreements to the University to construct and operate the NTTC. The current 5-year cooperative agreement will expire on October 31, 1999.

**National Technology Transfer
Center
Wheeling Jesuit University
Wheeling, West Virginia**



Federal research and development laboratories produce a wealth of technologies that have commercial potential. Private industry can use these technologies to create innovative products and services. A key element in transferring Federal technology to the private sector is the national network of technology transfer centers sponsored by NASA. The network includes the NASA Centers with the six RTTCs and the NTTC as its core structure. The NTTC's task is to take technologies off laboratory shelves and put them to work in U.S. businesses and industries. See Appendix B for examples of NTTC technology transfers.

A NASA Commercial Programs Division Program Manager is responsible to provide oversight of the NTTC. The Commercial Programs Division provides strategic direction, budgeting, policy, and management oversight of NASA-wide technology activities. Although the Commercial Programs Division has oversight responsibility for the Center Technology Offices and the RTTCs, each is managed by a NASA Center.

NASA formed the NASA Commercial Technology Management Team (NCTMT) to develop and implement an Agency-wide plan for commercial technology. The Commercial Programs Division Director is the NCTMT chair. To ensure broad Agency participation, team membership includes representatives from NASA Centers and Headquarters program offices.

FINDINGS AND RECOMMENDATIONS

CLARIFICATION NEEDED FOR NTTC'S CURRENT MISSION

NTTC's current mission differs from the mission stated in Cooperative Agreement NCCW-0065 and the Senate guidance that recommended NASA fund the NTTC. The cooperative agreement specifies that the NTTC mission is to facilitate Federal technology transfers to the private sector. In 1995, NASA instructed NTTC to concentrate primarily on transfers of NASA technology rather than technology developed by other Federal agencies. NASA and the University did not revise the cooperative agreement to reflect this change. Also, NASA has not issued guidance that describes the NTTC mission relative to those of the Agency's other technology transfer agents. In addition, NASA's guidance to NTTC regarding its function as part of the NASA technology transfer network has not been consistent and clear. As a result, the NTTC mission is unclear and not fully integrated into NASA's technology transfer organization and some NASA-specific activities are inappropriate under the cooperative agreement.

Cooperative Agreement Specifies Both National and NASA Responsibilities

The cooperative agreement requires that NTTC serve as a national resource for the U.S. private sector, NASA, and other Federal and state-level commercialization efforts. NTTC is to maintain and develop activities and services in the following core areas of technology transfer: information collection, national gateway,² training, and outreach and promotion.

NTTC Mission Has Changed

NTTC's mission has changed over time. From its inception to 1995, NTTC operated with limited involvement from NASA. In its national role, NTTC focused primarily on providing free gateway service and training. In 1995, NASA directed NTTC to focus 90 percent of its efforts toward NASA programs and initiatives. At the time of the change, NTTC had focused only 20 percent of its efforts on NASA activities. NASA's objective for the change was to develop a partnership that fully integrated NTTC into the NASA technology transfer system and to realign NTTC core areas with that of the Agency's technology policy directive "Agenda for Change," dated July 1994.

To accomplish the revised focus, NASA specified tasks NTTC was to do under each of its core areas. The tasks are stated in an operating plan that NASA reviews and approves.

² National gateway is a free service that provides private sector callers with contacts in the Federal laboratory system.

Although NASA changed the NTTC mission, NASA did not revise the cooperative agreement accordingly or develop other guidance to clarify the mission.

***Contract Is Proper
Instrument for Supplies
and Services***

NASA Procedures and Guidelines (NPG) 5800.1D, "Grant and Cooperative Agreement Handbook," contains guidance for the use of a cooperative agreement. NPG 5800.1D specifies that NASA should use a contract to acquire supplies or services. Conversely, the NPG specifies that NASA should use a cooperative agreement whenever the principal purpose is to transfer anything of value to a recipient and that extensive collaboration is required between NASA and the recipient. A cooperative agreement is appropriate for most of the technology transfer activities that NTTC performs for NASA. These technology transfer activities require extensive collaboration between NASA and NTTC. However, NTTC also provides services to NASA that include marketing the Agency's capabilities to targeted industries and technology areas and designing, developing, and delivering training to NASA personnel. The current Commercial Programs Division Program Manager stated that, "NASA would not have the ability to provide training in the magnitude that NTTC does." As required by NPG 5800.1D, NASA should acquire training and marketing services under a contract rather than the cooperative agreement.

***NASA Guidance Not
Clear***

NASA provided unclear and, in some cases, conflicting guidance and direction to NTTC.

- After changing the NTTC to a NASA focus, NASA did not revise the cooperative agreement to reflect the new focus.
- NASA did not formally define the responsibilities of NTTC, causing other NASA technology transfer organizations to believe that NTTC was taking over their functions.
- A 1994 strategic review requested by NASA showed that NTTC had progressed substantially in fulfilling its objectives and overall mission. Conversely, in 1995, the NASA Administrator directed a refocus of NTTC because it had not successfully supported the NASA mission.

Clear Mission Is Needed

The lack of a clear NTTC mission has caused confusion and has reduced NTTC's effectiveness.

- The missions of NTTC and RTTCs are similar. The RTTCs help U.S. firms access, assess, and acquire NASA and other federally funded technologies for commercial and industrial applications. According to the cooperative agreement, NTTC's mission is to "facilitate the transfer to, and the commercial use by, the U.S. private sector of Federally sponsored research and technology . . . to enhance and strengthen U.S. economic growth" The similar mission statements create confusion about the role of the respective organizations. Several NTTC Advisory Board members indicated that they were uncertain about the NTTC mission relative to that of other technology transfer components.
- Some members of the NCTMT also voiced concerns about whether the NTTC mission was distinct from that of other technology components. Some members stated that NTTC was performing the same role as the RTTCs. Some RTTCs viewed the NTTC as a "competitor" and were sometimes reluctant to communicate and cooperate with NTTC. In contrast, NTTC managers expressed to us a willingness to cooperate with other technology transfer components. As one NTTC manager noted, the overall expenditure for technology transfer is a small fraction of Federal research expenditures. He pointed out that the need and opportunity to assist the private sector is so vast that rivalry between the technology transfer organizations should not exist.
- Some Center Technology Office representatives at NASA field installations differed on the scope of NTTC's mission. One representative stated that the NTTC should work primarily with industry consortia and business sectors and not deal directly with individual companies. Another representative said that NTTC should be free to work with companies to effectively accomplish technology transfer.
- Some participants in the NASA technology transfer system stated that NTTC was overfunded. In their opinion, NTTC's budget should be about \$4 to \$5 million annually, which would support training, marketing, and gateway operations. NTTC's FY 1998 budget is \$9.2 million.

NASA needs to clarify NTTC's mission. The National Academy of Public Administration (NAPA) made similar observations. In January 1997, NAPA issued a report on NASA's Commercial

Technology Transfer Division, the predecessor of the Commercial Programs Division. The report noted,

. . . for their part, the RTTCs view the NTTC as a competitor and threat to their scarce resources. Unless NASA clarifies the roles and functions of both entities, this unhealthy tension will persist. An explicit statement of the roles and functions of the RTTCs and NTTC is called for as a way to remove this continuing tension.

NASA did not respond to the recommendations of the NAPA report.

Effective technology transfer is a multistep process; the various technology transfer organizations may share similar steps. However, the process requires cooperation between the various organizations. Effectiveness is seriously compromised when technology transfer representatives do not communicate and lack a mutual understanding of each other's responsibilities. NTTC's operations and NASA's commercial technology transfer program are not as productive as they could be because of the lack of communication and clarification of responsibilities.

In March 1998, NASA and NTTC management executed a Program Commitment Agreement (PCA), which is effective for the remaining period of the cooperative agreement. The PCA specifies key NTTC capabilities available to NASA and strategic guidance and metrics for the operation of NTTC. The PCA helps clarify NTTC's mission, and we commend the Agency for this positive step. However, NASA management needs to make sure NTTC receives adequate support. In the PCA, several metrics for measuring NTTC's achievements depend heavily on the activities of the NASA Center Technology Offices and the RTTCs. For NTTC to achieve success, NASA management must ensure that technology transfer organizations are supportive of each other's responsibilities.

RECOMMENDATION 1

The Director, Commercial Programs Division, Office of Aeronautics and Space Transportation Technology, should:

- a. Clearly define the mission and responsibilities of the NTTC and the RTTCs.
- b. Incorporate the revised mission of the NTTC and that of the RTTCs in future contracts, cooperative agreements, or other acquisition instruments.

- c. Acquire services supporting NASA's technology transfer activities using the appropriate award instrument.

Management's Response

- a. Partially concurred. Management stated the overall mission of NTTC has not changed, rather, the implementation approach and strategies have evolved to increase NTTC's effectiveness and relevance. In 1994, NASA and NTTC management determined that NTTC should become more aligned with the NASA commercial technology program and mission. NASA provided guidance, which was fully accepted and understood by NTTC management. NTTC may have experienced confusion due to the 1994 restructuring of NASA technology transfer and commercialization operations and NTTC management changes. However, since that time, NTTC's responsibilities have stabilized and the organization's capabilities and working relationships have matured.

To fully clarify the operational responsibilities of NTTC, NASA plans to transition the program to a contract in the first quarter of FY 2000. The transition will also serve to further clarify the respective responsibilities of the NTTC and the RTTCs. The complete text of management's comments is in Appendix E.

Evaluation of Management's Response

The actions planned by management are responsive to the recommendation. NASA management plans to develop the statement of work for the new contract during the second quarter of FY 1999. We will keep this recommendation open, pending our review of management's planned action.

Management's Response

- b. Concurred. NASA management plans to transition the NTTC program to a contract after the cooperative agreement expires in October 1999. The contracts for the RTTCs will require procurement action for their renewal or recompetition in FY 2000. The respective missions and responsibilities of the NTTC and RTTCs will be addressed and incorporated into future contracts for the two programs.

Evaluation of Management's Response

The actions planned by management are responsive to the recommendation. We will keep this recommendation open, pending our review of the planned contract action.

Management's Response

- c. Concurred. NASA management plans to transition the NTTC program from a cooperative agreement to a contract in FY 2000. The transition will ensure that the products and services

of the NTTC program are acquired appropriately and effectively.

***Evaluation of
Management's Response***

The actions planned by management are responsive to the recommendation. We will keep this recommendation open, pending our review of the planned contract action.

***NTTC MONTHLY
PROJECT REPORT
NEEDS IMPROVEMENT***

The reports NTTC submits to NASA do not include sufficient information on performance. Information is lacking because the report format does not require information on NTTC accomplishments. The report does not identify completed, missed, or revised milestones. As a result, the NASA Program Manager cannot make informed decisions useful to NASA in its oversight responsibilities.

***Cooperative Agreement
Requires Quarterly
Status Reporting***

The cooperative agreement requires quarterly status reports on NTTC performance and activities relating to the annual Operating Plan. NTTC provides the report on a monthly basis, instead of quarterly, at the request of the Commercial Programs Division Program Manager. NTTC carries out its technology efforts under four core units. The monthly report contains project sheets for the applicable core unit.

The former NASA Program Manager developed the monthly report format. The current monthly report shows a project sheet for each NTTC project. The sheets have a "schedule" and "NTTC task" section. The schedule shows NTTC project tasks and the targeted time for their completion. The task section shows who at NTTC is responsible for the task, but does not indicate its state of completion. As a result, it is difficult to determine which tasks are completed, the status of ongoing projects, and the extent to which milestones may have slipped.

***Monthly Report Use in
Monitoring Status of
NTTC Tasks***

The monthly report does not provide a complete perspective on the status of NTTC tasks under the cooperative agreement. The report does not show instances in which NTTC has exceeded project metrics. The report also does not show tasks completed and whether they were completed on time, canceled, or delayed. Further, the report lacks information on significant NTTC accomplishments. For example, we observed two technology prototypes that the NTTC developed in cooperation with local firms. These significant accomplishments did not appear in the report.

We believe the project milestones in the report should succinctly identify the current project status and the planned status. The report should explain why NTTC missed or changed a milestone. The absence of task status information and accomplishments diminishes the usefulness of the report. We discussed changing the report with NTTC management. Management stated that it was using the format requested by NASA, but had concerns about its usefulness and was willing to revise the report to make it more meaningful.

RECOMMENDATION 2

The Director, Commercial Programs Division, Office of Aeronautics and Space Transportation Technology, in cooperation with NTTC, should revise the format of the monthly report to clearly identify accomplishments, current and planned status of tasks, and the reasons for missed or revised milestones.

Management's Response

Concurred. NASA management has discussed with NTTC management the importance, timing, and content of the formal reporting. NTTC management has committed to improving the reporting. To ensure that the NTTC reporting serves as an effective management tool, the operating plan for the final year of the Cooperative Agreement (FY 1999) will specifically address the objectives, content, and format of the NTTC reporting. The planned contract instrument for the NTTC program will identify reporting requirements as a contract deliverable.

**EVALUATION OF
MANAGEMENT'S
RESPONSE**

The actions planned by management are responsive to the recommendation. We will keep this recommendation open, pending our review of management's planned action.

**SALARY COSTS
CHARGED TO THE
COOPERATIVE
AGREEMENT**

NTTC charged NASA for unallowable salary costs paid to the former Executive Director. The costs are not allowable because they are not allocable to the cooperative agreement under Office of Management and Budget (OMB) Circular A-21, "Cost Principles for Educational Institutions."³ As a result, the University charged unallowable costs of \$19,500⁴ to the NASA cooperative agreement.

³ To be allowable under OMB Circular A-21, a cost must be reasonable, allocable, given consistent treatment, and conform to any limitations in the Circular or in the cooperative agreement. See Appendix C for additional information on allocable costs under OMB Circular A-21.

⁴ We obtained the amount of \$19,500 from NTTC's records. It equates to 65 percent of the former Executive Director's salary for 3 months. We consider the amount to be "questioned costs."

Salary Costs Paid After Termination

In a written statement, dated October 3, 1997, the University placed the Executive Director on "special assignment" with pay for 90 days, from October 3 to the end of the year. Even though the former Executive Director had no further involvement with NTTC, the University allocated 65 percent of his salary to the cooperative agreement. The University considered the costs allowable as "severance pay." The amount paid to the former Executive Director after October 3, 1997, was not severance pay. It was compensation for his continued employment by the University. According to documentation provided by the University, the University placed the employee in a position not involving NTTC duties. He remained a University employee until December 31, 1997, but had no NTTC responsibilities. Therefore, the costs for the former Executive Director's salary were not allocable to NASA after his removal from NTTC duties. Under OMB Circular A-21, the costs are unallocable and unallowable.

RECOMMENDATION 3

The Director, Commercial Programs Division, Office of Aeronautics and Space Transportation Technology, in coordination with the Grants Officer for Cooperative Agreement NCCW-0065, should recover the \$19,500 in unallowable salary costs paid to the former NTTC Executive Director.

MANAGEMENT'S RESPONSE

Concurred. NASA management fully supports any actions to determine the appropriate expenditure of NASA funds for the NTTC program and to recover costs as may be warranted. The questioned costs will be resolved by October 30, 1998.

EVALUATION OF MANAGEMENT'S RESPONSE

The actions planned by management are responsive to the recommendation. We will keep this recommendation open, pending our review of the resolution of the identified questioned costs.

Objectives, Scope, and Methodology

OBJECTIVES

The audit objective was to answer the following questions:

1. Is the NTTC effectively carrying out its stated functions? Can these functions be performed more efficiently and cost-effectively by some other existing method?
2. Do the functions performed by NTTC duplicate activities conducted by other NASA technology transfer organizations?
3. What metrics does NASA use to measure NTTC performance?
4. Is the NTTC managed in accordance with an operating plan?
5. Does NASA provide appropriate oversight of NTTC?

SCOPE AND METHODODOLOGY

We interviewed key NASA personnel at Headquarters and selected NASA Centers. We made two site visits to NTTC, during which we interviewed the University President, the University Chief Financial Officer, the NTTC Executive Director, the Acting NTTC Executive Director, and other key management personnel to determine their roles and responsibilities.

We interviewed selected NTTC Advisory Board members from Government agencies, industry, academia, and NASA technology offices.

In addition, we reviewed samples of NTTC products. We selected projects under each NTTC core unit and interviewed personnel regarding the status of those projects as stated in the August 1997 monthly report. We obtained various reports and other documents to validate the status of the selected projects.

AUDIT FIELD WORK

We conducted our audit from April 1997 to June 1998 in accordance with generally accepted government auditing standards.

Examples of Technology Transfer

NTTC TECHNOLOGY TRANSFER

The following are examples of technology transfers that NTTC has helped to foster.

- A small business supplier of optical companies worked with NTTC to develop new products that are based on NASA technology. The technology produces scratch-and-lint-free lens wipes and is the same technology that shielded space missions from the devastating effects of tiny particles. NTTC is researching several new products by making prototypes that will be mass produced.
- A West Virginia company licensed a retractable, spiked barrier strip from a division of Lockheed Martin. The company manufactures, markets, and sells the device, which provides police with a safer way to halt high-speed chases. NTTC located the company for the division.
- NTTC is working with Georgetown University Medical Center to leverage its experience and expertise to establish telemedicine services for Wheeling, West Virginia, community hospitals.

OMB Circular A-21, Allocable Costs

According to OMB Circular A-21, a cost is allocable if it can be assigned to a cost objective in accordance with relative benefits or other equitable relationships. The cost must:

- be incurred solely to advance the work under the sponsored agreement;
- benefit both the sponsored agreement and other work of the institution, in proportions that can be approximated through use of reasonable methods; or
- be necessary to the overall operation of the institution and assignable in part to sponsored projects.

The Circular defines “severance pay” as compensation in addition to regular salary and wages that an institution pays to terminated employees. Costs of severance pay are allowable only to the extent that such payments are required by law; by employer-employee agreement; by established policy that constitutes, in effect, an implied agreement on the institution’s part; or by circumstances of the particular employment.

Prior Office of Inspector General and Other Reviews

“A Review of the Commercial Technology Division’s Program,” January 1997, National Academy of Public Administration

“Strategic Review of the National Technology Transfer Center (NTTC),” July 1994, Frank Penaranda, Chairman, NTTC Strategic Review Team Executive Report

“Improved Oversight of Planning Grant for the National Technology Transfer Center (NTTC) Needed,” February 20, 1992, Report A-HQ-91-007, NASA Office of Inspector General

Management's Response

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001



SEP 2 1998

Reply to Attn of: R

TO: W/Assistant Inspector General for Auditing
FROM: R/Deputy Associate Administrator for Aeronautics
and Space Transportation Technology
SUBJECT: Response to Draft Report on the National Technology Transfer Center
(NTTC), Assignment No. A-HA-97-049

Thank you for the opportunity to review and respond to your July 9, 1998 draft report. Please find enclosed our responses to the recommendations on the subject report. Should you have any questions concerning our response, contact Bob Norwood, Code RW, at 358-2320 or Tina Kearney, Code RB, at 358-4730.

Michael Mann
Mike Mann

Enclosure

cc:
RB/Mr. Fuller
RW/Mr. Norwood
JM/Ms. Peterson

(9/1/98)

**Code R Response
to the
Draft NASA IG Report on the National Technology Transfer Center
(NTTC), Assignment No. A-HA-97-049**

Recommendation 1: The Director, Commercial Programs Division, Office of Aeronautics and Space Transportation Technology, should:

- a. Clearly define the mission and responsibilities of the NTTC and the RTTCs.
- b. Incorporate the revised mission of the NTTC and that of the RTTCs in future contracts, cooperative agreements, or other acquisition instruments.
- c. Acquire services supporting NASA's technology transfer activities using the appropriate award instrument.

Management Response to 1a: Partially Concur. The overall mission of the NTTC, as initially implemented in 1990 under Congressional direction and as stated in the current Cooperative Agreement (NCCW-0065), is "to facilitate the transfer to, and commercial use by, the U.S. private sector of Federally-sponsored research and technology (and associated capabilities) to enhance and strengthen U.S. economic growth and the competitiveness of U.S. industry." This overall mission has not changed, rather the implementation approach and strategies for its achievement have evolved to enable the NTTC's increased effectiveness and relevance in the changing environment for Federal technology transfer.

In 1994, following a strategic review of the NTTC program, it was determined in concert with the NTTC management and its host institution, that the NTTC should become integrated and aligned with the NASA Commercial Technology Mission and Program. Over the next several years, the NTTC became increasingly engaged with the Commercial Technology Program through the implementation of mutually agreed upon operating plans and the execution of joint projects with NASA. This approach was re-affirmed in NASA's strategic guidance for the FY 1998 (Year 4) operating plan for the Cooperative Agreement (dated August 29, 1997), which was fully endorsed by the NTTC management. The guidance stated that, "The NTTC's cooperative operations and projects with NASA provide a foundation upon which the NTTC may fulfill its overall mission and roles through programs funded by other agencies and the provision of cost-recovery products and services." The guidance also stated that, "In keeping with Cooperative Agreement NCCW-0065, the NTTC will work cooperatively with NASA to conduct operations, projects, and provide products and services in support of the NASA Commercial Technology Mission." The guidance, which was fully accepted and understood by the NTTC management, served as the basis for their proposed operating plan, thus demonstrating that the NTTC's overall mission and the supporting implementation approach and strategies are clearly defined and understood. At that time, it was also determined through discussions between NASA and NTTC management that the Cooperative Agreement did not require revision, given that the overall mission and core roles remained valid, and that the guidance and resulting operating plan reflected the agreed upon implementation approach and strategies.

NASA guidance for the NTTC program was also re-affirmed and strengthened in the NASA / NTTC Program Commitment Agreement (PCA) signed by the senior management for each party. The PCA was distributed to the Directors of the NASA centers in March 1998 to further support teamwork between the NTTC, the NASA centers and the NASA Regional Technology Transfer Centers operating under contract to the NASA centers. Overall, NASA's guidance of the NTTC program has resulted in the center becoming a productive, integrated part of the Commercial Technology Program, and has fully enabled the NTTC to successfully leverage NASA-funded capabilities to undertake programs with other agencies and to develop cost-recovery products and services in pursuit of their overall role as a national resource for Federal technology transfer.

Given that NASA's technology transfer and commercialization operations underwent significant restructuring during the initial implementation in 1994 of the Commercial Technology Mission and the supporting *Agenda for Change*, the NTTC may have experienced periods of confusion, compounded by their management instability, as the NTTC's operational responsibilities were aligned with the strategies and elements of the Commercial Technology Program and updated to reflect current needs and opportunities. However, over the last several years the responsibilities of the NTTC under the Cooperative Agreement have been largely stabilized as the NTTC's capabilities and working relationships have matured.

In order to fully clarify the operational responsibilities of the NTTC program and to improve cost-effectiveness of NTTC operations funded by NASA, NASA is currently planning to transition the program to a contract instrument in the first quarter of FY 2000. This transition will also serve to further clarify the respective responsibilities of the NTTC and the RTTCs, which are currently coordinated through the NASA Commercial Technology Management Team (NCTMT).

Management Response to 1b: Concur. The current Cooperative Agreement for the NTTC program will expire on October 31, 1999. NASA is currently planning to transition the NTTC program to a contract instrument in the first quarter of FY 2000. Also in FY 2000 the contracts for the RTTCs will require procurement action for their renewal or re-competition. The respective missions and responsibilities of the NTTC and RTTCs, as they may be revised during the procurement planning for the programs, will be addressed and incorporated into future contracts for the two programs.

Management Response to 1c: Concur. NASA is currently planning to transition the NTTC program from a cooperative agreement to a contract instrument in the first quarter of FY 2000. This transition will ensure that the products and services of the NTTC program that support the NASA Commercial Technology Mission and Program are acquired appropriately and effectively. The planned transition reflects the successful development and maturation of NTTC operations and capabilities funded by NASA since 1990, and will enable the NTTC to become more effectively integrated into the Commercial Technology Program.

Recommendation 2: The Director, Commercial Programs Division, Office of Aeronautics and Space Transportation Technology, in cooperation with NTTC, should revise the format of the monthly report to clearly identify accomplishments, current and planned status of tasks, and the reasons for missed or revised milestones.

Management Response: Concur. The current Cooperative Agreement requires the NTTC to provide the following reports to NASA:

- Quarterly Status Reports highlighting NTTC performance and activities relative to Annual Operating Plan;
- Monthly Metrics Information Reports; and,
- An Annual Program Assessment as part of the fourth quarter Status Report.

The reporting requirements, which were mutually agreed upon in the Cooperative Agreement, were designed to provide useful information for both the NTTC management and the NASA management, without placing an undue burden or cost on the program. The NTTC's formal reporting has been historically lax and incomplete, despite the efforts of NASA management to improve the timeliness and content of the reporting. Given that the reporting is not defined as a deliverable with associated payment in the Cooperative Agreement, the NTTC has not experienced adverse financial consequences as a result of inadequate reporting. During the current operating year, the NASA management has discussed with the NTTC management the importance, timing, and content of the formal reporting. The NTTC management has committed to improving the reporting, which has thus far resulted in the NTTC providing an improved and timely quarterly report, and the scheduling of monthly telecons to review the monthly metrics information reports. In addition, as addressed in the Cooperative Agreement, the formal reporting is supplemented by frequent verbal communication as needed to discuss program matters.

In addition, the PCA states that, "The NTTC will provide Quarterly Reports ... to NASA Headquarters (Code R) that summarize the status of the NTTC program with NASA and track the accomplishment of the top-tier metrics and supporting milestones." The first quarterly report under the PCA was provided within an acceptable time-frame. It was suggested to the NTTC management that the quarterly reports for the PCA and the Cooperative Agreement be combined; however, the NTTC management has elected to keep the reports separate.

To ensure that the NTTC reporting serves as an effective management tool, (1) by October 30, 1998 the operating plan for the final year of the Cooperative Agreement (FY 1999) will specifically address the objectives, content and format of the NTTC reporting, and (2) the contract for the NTTC program planned for FY 2000 and beyond will identify and define reporting requirements as a contract deliverable.

Recommendation 3: The Director, Commercial Programs Division, Office of Aeronautics and Space Transportation Technology, in coordination with the Grants Officer for Cooperative Agreement NCCW-0065, should recover the \$19,500 in unallowable salary costs paid to the former NTTC Executive Director.

Management Response: Concur. NASA fully supports any actions necessary to investigate and determine the appropriate expenditure by Wheeling Jesuit University of NASA funds for the NTTC program, and to recover costs as may be warranted. GSFC, which administers Cooperative Agreement NCCW-0065, has been tasked with resolving the identified "questioned costs" by October 30, 1998.

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