

**CENTER OF EXCELLENCE FOR
COMMERCIAL SPACE TRANSPORTATION
MANAGEMENT AND ADMINISTRATION PLAN**



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Revision History

Date	Section	Description	Signature
Jan 27, 2011	All	Creation of original document, including comments of FAA COE and FAA AST management. v0.5	KD
Feb 14, 2011	All	Inclusion of comments based on meetings held during AST Conference on Feb 8-10, 2011. v0.75	KD
Feb 22, 2011	All	Inclusion of comments to v0.75 from Pat Hynes and Scott Hubbard on Feb 15-22, 2011. Incorporates brief university descriptions submitted by PIs received to date. v0.9	KD
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March 23, 2011	0.1	FIT 3-line description added.	KD
May 23, 2012	All	Replacing the previous sections on Planning Committee and Coordinating Committee with a section on the Executive Committee. Updating text to reflect this change as well as updates and clarifications of the AST R&D organizational hierarchy.	KD
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May 6, 2013	3.0	Added the 3. Administrative Processes section and renamed the document.	KD
June 10, 2013	1.2	Updated the AST R&D Organization chart.	KD
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Jan 30, 2015			
Aug 4, 2015	3.6	Updated the process description of how to add an affiliate member.	KD
Aug 5, 2015	3.7	Added section on Receipt of Federal (non-FAA) Funds	KD
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Dec. 17, 2015	4.8	What information to include into an invoice	EB
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Feb. 24, 2017	4.8	Specified data to be entered into an invoice by a university	EB
Feb. 24, 2017	4.9	Added section 4.9 to add a new COE CST invoice approval process	EB
Dec 3, 2019	App A	Removed outdated Bylaws, they are maintained separately	DK
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Dec 4, 2019	4.6.2	Added 'How to initiate an associate membership (AsM)'	DK
May 1, 2020	4.6.1	Revised for AfM clarification	DK

MANAGEMENT PLAN

Date	Section	Description	Signature
May 1, 2020	4.6.2	Revised for AsM clarification	DK
May 1, 2020	All	Modified for consistency	CG

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1.0 Introduction

1.1 Background

In August 2009, the FAA Administrator signed a memo agreeing to the creation of a Center of Excellence (COE) for Commercial Space Transportation (CST) that would be supported at a minimum level of one million dollars per year for 10 years.

Following two public meetings conducted in February 2010, a competitive process was conducted over the following four months to solicit and then evaluate proposals for the COE CST.

In September 2010, Cooperative Agreements (CAs) were executed between the FAA Office of Commercial Space Transportation (AST) and nine universities to create the COE CST. The member universities are (in alphabetical order):

- The Baylor College of Medicine (BCM) – joined 2018
- Florida Institute of Technology (FIT, or Florida Tech)
- Florida State University (FSU)
- New Mexico Institute of Mining and Technology, (NMT, or New Mexico Tech)
- New Mexico State University (NMSU)
- Stanford University (SU)
- University of Central Florida (UCF)
- University of Colorado at Boulder (CU)
- University of Florida (UF)
- University of Texas Medical Branch at Galveston (UTMB)

Subsequently, the FAA distributed two million dollars to these universities to conduct the first set of research tasks. Through this Management Plan, the FAA encourages the COE CST member universities to cooperate and collaborate with the purpose of conducting world-class research in support of the Commercial Space Transportation industry.

Together, the ten member universities bring complementary strengths together for the benefit of the overall COE CST. FAA finds that each team member provides highly respected and accomplished experiences that directly address the research and study needs of the commercial space industry.

The Baylor College of Medicine (BCM) is home to the Center for Space Medicine (CSM). The CSM is the only academic department/center in space medicine at any university or medical school. Established in 2008, it has over 70 members and 15 interdisciplinary faculty members. It offers a unique and popular four-year Space Medicine Track and awarded (with Neuroscience) its first Ph.D.

in space medicine in 2015. BCM CSM was awarded a \$246M NASA cooperative agreement in 2016 to lead a 12-year Translational Research Institute in collaboration with Caltech and MIT. BCM CSM is recognized as the leading academic space medicine research and education program in the world.

Expansion plans for BCM CSM include a new Initiative called the Aerospace Medicine (ASM) program within the CSM. The CSM-ASM program will include membership in the FAA COE CST, new aerospace medicine clinical activities, enhanced educational activities, and expanded research programs. The result will be an unprecedented cutting-edge international center of excellence, combining research, education and clinical practice in aviation and space medicine. BCM CSM will be the go-to place in the world where space and medicine come together.

Florida Institute of Technology (FIT, or Florida Tech) performs doctoral research and undergraduate and graduate education through its six academic colleges and schools with emphases on aviation, aeronautics, science, technology, engineering and mathematics. Research at Florida Tech focuses on mechanical and aerospace engineering, software and hardware resilient systems, biomedical engineering, space resource utilization, corrosion and space-related engineering, cloud physics and space weather, space traffic management and launch operations, vehicle and payload analysis and design, thermal systems, propulsion, and commercial space industry viability. Florida Tech serves as the primary COE CST liaison to industry for research partnership, and affiliate membership to the government, the private sector as well as academia. Historically known as FIT, Florida Tech's preeminent research centers and institutes include the Buzz Aldrin Space Institute, the FAA Center of Excellence for General Aviation Research (PEGASAS), the FAA Center of Excellence for Commercial Space Transportation (COE CST), the School of Human-Centered Design, Innovation & Arts, the Harris Institute for Assured Information, and more.

Florida State University (FSU) brings a range expertise and unique infrastructure and unparalleled testing facilities in many areas relevant to the COE CST. These include but are not limited to: cryogenics, thermal management, vehicle aerodynamics and controls, sensors, actuators, system health monitoring and high-performance simulations including multi-physics mechanics and flow surface interactions. We have substantial expertise in simulating, experimentally and numerically, the Vehicle Launch Environment and the associated challenges in aeroacoustics and aero-structures.

New Mexico Institute of Mining and Technology, (NMT, or New Mexico Tech) is a science, math and engineering university that has more than a dozen research divisions that work with private industry, government agencies and other universities. The research divisions include the Petroleum Research and Recovery Center, the Institute for Complex Additive Systems Analysis, the Energetic Materials Research Testing Center, the world's largest lending library of seismology equipment, the Magdalena Ridge Observatory, the National

Center for Genome Resources, the National Cave and Karst Research Institute, and the Langmuir Laboratory for Atmospheric Research.

New Mexico State University (NMSU) and its Physical Sciences Laboratory have led space and aerospace research in areas of suborbital investigations from the time of Robert Goddard and Werner von Braun to the current era of commercial sub-orbital space transportation with Spaceport America and its operators, Virgin Galactic, SpaceX and UP Aerospace. New Mexico Space Grant Consortium, the 21st Century Aerospace Space Group and related aerospace research focuses on annual access to space for student and faculty experiments, unmanned aerial vehicles, and cube-satellite development.

Stanford University (SU) brings a 50-year history of aerospace research excellence and a broad scope of expertise to the COE CST, including the optimization and autonomous operation of complex systems, strategic research planning, organizational integration and distributed administration experience.

University of Central Florida (UCF) as partners of Florida Center for Advanced Aero-Propulsion (FCAAP) and the Center for Advanced Turbines & Energy Research (CATER), offers its experience and expertise in thermal protection system, propulsion system components, cryogenic systems and materials, composites, sensors and actuators, and guidance and control.

University of Colorado at Boulder (CU) offers the COE CST their experience in spacecraft life support systems and habitat design, spaceflight risk assessment, human factors engineering analysis, payload experiment integration, and expertise in space environment and orbital mechanics.

University of Florida (UF) has been performing aeronautical and aerospace research since 1941, with current emphasis in the Department of Mechanical and Aerospace Engineering on research in space systems, MEMS, computational sciences, structural dynamics, controls, gas dynamics, and propulsion.

University of Texas Medical Branch (UTMB) has a long history of medical support and human spaceflight physiological research with NASA. UTMB doctors have been involved in the commercial orbital and suborbital spaceflight industry, supporting space flight participant visits to the ISS, and preparing passengers and crew for suborbital space flights.

Additionally, the team members provided a comprehensive distribution of geographical coverage representing the entire Commercial Space Transportation industry. Combined, the ten universities bring over 50 other government, industry and academic organizations as research partners.

1.2 Overview

Key FAA Personnel

In this document, the following position titles are used. As of the distribution date of this document, the individuals named below hold each of these positions:

Dr. Ken Davidian, Director of Research and COE CST Program Manager, FAA
AST

Purpose

The purpose of the AST COE Management Plan is to define the relationships, roles, goals and membership of the COE CST organizational entities and AST.

Organizational Context

As of March 2018, the organizational position of R&D within AST has been fairly uncertain. AST plans to implement a new organizational structure in early 2020. Therefore, no organizational context of the R&D activities within AST are currently detailed in this document.

1.3 Scope

Administrative activities of the COE CST member universities are defined in COE CST Cooperative Agreements. For activities not specified in the COE CST Cooperative Agreements, member universities are at liberty to conduct business as agreed upon among them and by the Executive Committee through a consensus-driven decision-making process.

COE CST appraisal review and audits will be performed by the FAA COE Program Office in accordance with terms of the COE Policy Guide.

2.0 Executive Committee

2.1 Functions and Goals

The Executive Committee (EC) is responsible for the following COE CST functions:

DEVELOP A SET OF SELF-GOVERNANCE DOCUMENTS. Beginning with an EC Terms of Reference document, working through the second step of an EC Management Plan of its own, and culminating with an EC Constitution that will be iteratively refined over multiple years, these will evolve toward the foundational document for the COE CST entering its self-sustaining phase after 10 years of guaranteed FAA funding.

FOSTER COOPERATIVE EFFORTS AMONG THE COE CST MEMBER UNIVERSITIES. To respond not only to FAA funding solicitations but also to external funding solicitations, cooperative efforts will require some modified posturing. The intent is to demonstrate through signaling and subsequent action that being a member of the COE CST and partnering with other member universities enhances the chances of winning funding for related research tasks.

BEGIN CONDUCTING STRATEGIC PLANNING ANALYSES. Strategic planning analyses will be very valuable to the COE CST and can provide the basis for sustained, meaningful activities among the participating members. The long-term goal is self-sustenance after 10 years and the results of many structured

analyses will be essential to painting a more complete picture of how it can best be achieved.

2.2 Membership

Members of the EC include:

EXECUTIVE COMMITTEE CHAIR. Dr. David Klaus, University of Colorado - Boulder

EXECUTIVE COMMITTEE CHAIR Pro Tem. Dr. Ken Davidian, AST Director of Research and COE CST Program Manager

COE CST MEMBER UNIVERSITY REPRESENTATIVES. Each university can be represented by COE CST Principal Investigators (PIs) and other university personnel (including staff and student observers) on an "as interested" basis. However, each university will designate a primary and secondary PI to attend the EC as a voting member.

CESTAC. The COE CST Industry Advisory Council will be represented at the EC meetings by the CESTAC Chair, Vice-Chair and/or the COE CST CESTAC Point of Contact. Although they are contributing member in discussions leading to consensus, CESTAC participants are not voting members of the EC.

2.3 Meetings and Schedule

Attendance at the EC meetings will be generally inclusive (allowing multiple PIs, student observers and staff as needed to attend from any given university).

EC meetings will normally be conducted by teleconference on a monthly basis with face-to-face meetings twice a year (at the annual administrative and technical meetings).

The teleconferences will be normally short unless there were special briefings (for example, updates from the "Terms of Reference" team) or other topics to discuss.

The EC is intended to be a consensus-driven decision-making body, but if decisions were not able to be made by consensus in an open session, a closed-session vote may be necessary. Each member university would have a single vote given to their primary PI, regardless of the number of PIs representing any given university on the EC.

In the event the primary PI from a given university is not able to participate in a close-session vote, the designated secondary PI from that same university will be able to act as a substitute.

The agenda of these meetings will be determined by the EC Chair in consensus with the EC membership and distributed in advance of each meeting by the EC Chair or designee.

3.0 Intentionally Left Blank

4.0 Administrative Processes

4.1 How to Submit a COE CST Research Grant Proposal

- Enter www.grants.gov/
- Click on Apply for Grants
- FAA assigns each proposal a number and acknowledges receipt of each proposal

Proposal number must be referred to in all future correspondence concerning the proposal.

Provide Required Fields

- Enter CFDA 20.109
- Download Package
- Select CST New Funding Package and Download
- Complete Download Instructions and Application
- Submit

Once the proposal has been submitted to grants.gov, the following steps are executed by FAA personnel in AST, at the COE program office, and in Oklahoma City (OKC).

- Retrieve proposal from grants.gov.
- Generate a Grant Request Form (GRF).
- Get the appropriate signatures within AST on the GRF.
- Get the appropriate signatures from the funding certifier on the GRF.
- Send the signed GRF to the COE program office.
- Get the appropriate signatures from the COE program office (and possibly from legal)

4.2 How to Request a No Cost Extension

- Go to www.grants.gov
- Click on Apply for Grants
- Provide Required Fields
- Enter CFDA 20.109
- Download Package
- Select CST No Cost Extension Package
- Complete Download Instructions and Application
- Submit

Mandatory Requirement: Form SF424

4.3 How to Document Cost Share Contributions

- Refer to OMB Circular A-110 Section .23 Cost Sharing or Matching
- Complete FAA COE Matching Contribution Form

Submit prior to award when value of in-kind activities is calculated (vs cost of contribution) based on activities not solely used for supporting a funded COE project.

In the instance where the in-kind cost sharing activity is not solely for the benefit of the proposed project, the activities conducted and provided by a third-party source will be clearly defined in the proposal submission to justify the value of the anticipated contribution to the specific project(s).

- Each investigator proposing credit for such contributions will review the anticipated cost sharing plan with his/her Fiscal Officer.
- Prior to submission of the proposal to the FAA, the university COE member's Fiscal Officer will discuss the plan with the COE lead institution's Fiscal Officer for consideration in accordance with the lead institution's policies and procedures on cost-sharing. The university Fiscal Officer will notify the FAA COE Program Director/Grants Officer that such a proposal is under consideration and in the process of being submitted.
- In applying the value of a contribution versus the direct cost of contribution, the interpretation of the Fiscal Officer representing the COE Lead institution regarding the amount found to be "prudent and reasonable" will hold for all those participating on the project. The COE Lead institution is expected to conduct discussions and make a determination within 5 business days.
- The COE Lead institution will forward a concurrence notice to the COE Program Office with a justification for the value of the cost-share proposed.
- The FAA COE Program Director will consider each request on a case-by-case basis. The expectation is that all COE members and Leads will be prudent in developing value statements and formulas.
- In keeping with Legislative intent and the spirit of COE enabling legislation, Public Law 101-508, the FAA will not allow the in-kind nonspecific contributions that might be a result of one project to satisfy the matching obligations for an entire agreement Phase or for a significant number of other funded projects.

Although the COE Fiscal Officers and ultimately the FAA may accept the value of the documented contribution as reasonable, allowable and allocable, each university is subject to final acceptance by its own auditor(s). Any penalty imposed by a cognizant auditing agency is the sole responsibility of the recipient providing the contribution and the associated documentation (Prime or Sub recipient).

4.4 How to Do Quarterly Reporting

Quarterly reports cover three-month calendar increments.

- Q1: October 1 – December 31, due January 31.
- Q2: January 1 – March 31, due April 30.
- Q3: April 1 – June 30, due July 31.

- Q4: July 1 – September 30, due October 31.

Deadline for entering quarterly information is 30 days after the quarter ends

- Research accomplishments (measured against the proposed goals and objectives):
- Citation for written publications:
- Journal articles published or in press:
- Journal articles submitted:
- Conference papers submitted and accepted:
- Patents:
- Follow-on research proposals submitted:
- Transition of research results:
- Plans for next quarter:

4.5 How to Close-Out a Research Task

Project Closeout Requirements

The PI is responsible for completing all required documentation. The information has been entered into OMIS data fields.

Due Date: 90 days after expiration of award

- Send to: FAA Technical Monitor designated on FAA award letter
- The closeout requires the FAA Form 9550.5 be sent to Technical Director (Ken Davidian)
- TD forwards to Tech Monitors for concurrence
- TMs return approved form to TD
- TD signs off and forwards to COE Program Director
- COE Program Director approves
- Complete electronic file is sent to TD, PI, COE Program Director
- Completed project information resides in two places: COE Program Director and the OMIS where it awaits audit, etc.
- Electronic file to Technical Director (Ken Davidian), OAT Contract Support (Carol Gregorek),
- Completed FAA Form 9550-5 “Final Project Report” (www.faa.gov/documentLibrary/media/form/faa9550-5.pdf) with attachments below:

Required Documents attached to the completed 9550.5 form retrieved from OMIS:

- Abstracts of Theses
- Publication Citations (published and planned) including Title, Journal or other reference, Date, Author)
- Scientific Collaborators (including Co-Investigators, Research Assistants, Associate Professors, Graduate Students, Associate Members and short statement of their participation, and others as appropriate)

- Inventions or Proprietary Data (Patents and status)
- Technical Summary
- Additional Material required under the award instrument
- OMIS Report showing no outstanding reports due
- Budget sheet reflecting +/- balance
- Cost share with sources
- Short narrative discussing value of project and results
- Nationality report (including Name and Country of Origin)
- Completed SF 425 Financial Close out prepared by University Fiscal office

Final Unobligated Balance

FAA has a reversionary interest in the unobligated balance of a grant upon expiration or completion of the grant. Based on final disbursements reported on the SF-272, the final unobligated balance is to be computed by FAA and reported to the grantee. If the grantee's funding has been fully advanced and the unobligated balance deduction results in a negative balance, the grantee must refund by check, payable to FAA, the amount of the negative balance.

Compliance with Reporting Requirements

The FAA Technical Center accounting section monitors report submissions to ensure that the requirements for final disbursement information are fulfilled. The technical monitor is responsible for assuring that the final project reports on prior, expired awards have been submitted by principal investigators before new awards are made to those individuals.

Grant Closeout

Grant closeout is the process by which FAA determines that all applicable administrative actions and all required work of the grant are complete. Grants are closed upon receipt of final disbursement information in the final project report, and after determination that any other administrative requirements in the grant instrument have been met. In the event a final audit has not been performed prior to the closeout of the grant, FAA reserves the right to recover appropriate amounts after fully considering the recommendations on disallowed costs resulting from the final audit.

4.6 Affiliate and Associate Membership

4.6.1 How to Initiate an Affiliate Membership (AfM)

This section is intended only to provide guidance when setting up a research task led by an Affiliate Member (AfM) and should not be considered official FAA policy.

Affiliate Members. An Affiliate University Member or Affiliate Industry Member (generally referred to as an Affiliate Member) is distinguished by bringing its own self-funded, unique research activities to the COE CST network. An Affiliate Member is defined as a public or private organization that conducts research or educational activities that fall within research areas of interest to the COE CST. Affiliate Members are accepted into and removed from the COE CST by a simple majority vote of the Executive Committee. They require a host university and will be set up in OMIS for the host to track progress and document matching contributions. Upon completion of the specified research task, an Affiliate can be transferred to Associate Member status, if desired, to continue involvement with the COE CST. Otherwise, the Affiliate Member relationship will be terminated.

Application for Affiliate Membership uses the Membership Application form available on the COE CST Website.

When a new AfM research task is proposed, the HU must:

- Notify the FAA in advance of the pending AfM proposal
- Submit the AfM proposal via grants.gov using the standard FAA process. The AfM does not submit a proposal directly to grants.gov.
 - Proposals are typically 3-7 pages (no maximum length) and include:
 - Project Narrative (no page limit; typically 3-7 pages)
 - Project Title, PI, Research Personnel
 - Statement of Problem
 - Hypothesis
 - Objectives
 - Research Methodology a/o Study Design
 - Relevant COE CST Research Area
 - Start & End dates
 - Literature References
 - Project Summary (1 pg max)
 - Biographical Sketches for key personnel (2 pg max per person)
 - No-cost budget (1 pg max)
 - Note: COE CST PM shall submit a Grant Request Form for a New Task at no cost and specify the AfM name as a Primary Partner in the Notes section of the form. Upon acceptance, the task will be tracked in OMIS and the AfM will be setup as a “Primary Partner” permitting the OMIS to track the matching contributions
 - Note: The host university must manage the required documentation to account for matching funds that are applied against the Federal funding received. The host university needs to submit a NCE proposal into grants.gov for the period of performance covering the time period during which the matching contributions are provided.
- Submit FAA COE In-Kind Cost Sharing form with supporting documentation from the AfM

- Be responsible for all reporting by the AfM:
 - Establish a method of receiving financial reports from the AfM that will satisfy the Host University auditor(s) and their State regulations
 - Be responsible for entering the matching contributions in OMIS.

For more information

- OMB Uniform Guidance Title 2 Part 200 Cost Sharing or Matching for Allowable Support
- FAA COE CST In-Kind Contribution Form

Approval Process

Per the bylaws (Amended 11-13-18), Affiliate Members are accepted into and removed from the COE CST by a majority vote of the Executive Committee following review of the application or termination/completion of the intended effort.

4.6.2 How to Initiate an Associate Membership (AsM)

This section is intended only to provide guidance when accepting an Associate Member (AsM) and should not be considered official FAA policy.

Associate Members. An Associate Member is defined as a University, Government, Industry, Non-profit, or other external entity that seeks engagement with the COE CST, but does not require a host university, matching contributions or involvement with a specific research project (c.f. Affiliate Member). Associate Members are broadly defined as partners that provide input, information and resources pertinent to the COE CST Research Theme Areas. Associate Members are accepted into and removed from the COE CST by a simple majority vote of the Executive Committee. They will be set up in OMIS for optional status tracking but are not required to submit reports.

The AsM may participate in the monthly videoconferences and annual technical meetings of the COE CST, as well as refer to itself as such in reports, executive summaries, and other instruments of information dissemination regarding COE CST-related research areas or activities.

Unlike AfMs, a COE CST Host University is not required for the AsM and OMIS reporting is optional. In the event that a research project is contributed, a host university can be established for the AsM in a manner similar to being an AfM with relevant reporting as applicable.

Application for Associate Membership (AsM) uses the same *Affiliate* Membership (AfM) Application form available on the COE CST Website. Sections 1, 2, and 4 are required. Sections 3, 5, 6, 7, and 8 are required only for AsM applicants proposing to contribute research to the COE CST.

Approval Process

Per the COE CST Bylaws (Amended 11-13-18), Associate Members are accepted into and removed from the COE CST by a majority vote of the Executive Committee following review of the application or termination/completion of the intended effort.

An AsM may continue involvement with the COE CST indefinitely until such time either party deems the relationship is no longer applicable and requests termination.

4.7 Receipt of non-FAA Federal Funds

COEs may receive funds from and conduct work for any public or private U.S. or international entity. This approach is encouraged because the ability to generate external work becomes critical over time as this is the road to COE self-sufficiency, which is our goal.

FedGovt funding may be forwarded to FAA and awarded through the grant; however, the funding source should provide a tech monitor. Note: The sources and amounts of ALL funds (including those from other organizations/agencies):

- Must be indicated on the Grant Request
- Are specified in the award doc
- Must be tracked by the FAA OPI
- Must be accounted for by progress reports submitted quarterly as with any other FAA award
- Are subject to all terms and conditions of the FAA COE cooperative agreement
- Must be reported to the COE Program Office, and are reflected in our COE Congressional Report, and other reports, each year.

Any other funding source (including any agency of the federal government) may also award directly to any COE member, without the FAA serving as an intermediary. These funds are to be monitored by the funding agency/source, tracked by the university, and are reported by the university to the COE Program Office as received. The progress of these tasks may be included in COE CST Annual Reports

4.8 Invoice Required Information

If an amendment is associated with an award that is traceable in Delphi, the Host University shall include the following as a minimum

- Amendment Number

- Task Number and Title
- Funded Period of Performance (by the given Amendment)
- Invoiced Period of Performance

If an amendment is associated with an award that is not traceable in Delphi, i.e. it represents funds redirected from another amendment and task, the Host University shall include the following as a minimum

- All earlier Amendment Numbers – if more than one - from which funds were re-allocated in a chronological order, followed by the Amendment Number ("Child" Amendment) and associated funding amount, from which the invoice is to be paid
- Task Number and Title
- Funded Period of Performance of the last Amendment
- Invoiced Period of Performance on the Delphi screen, when entering invoice information
- Populate the *Description* field with an Amendment Number (or sequence of Numbers if need be), followed by a Task Number

On the Delphi screen, when entering invoice information

- Populate the *Description* field with an Amendment Number (or sequence of Numbers if need be), followed by a Task Number

4.9 Invoice Approval Process

Per the FAA Financial Manual Grants Accounting guidance (p.3):¹

The AST R&D Budget Lead retrieves invoices from Delphi (Form-270) and forwards them to the appropriate Technical Monitors (TM) along with Delphi generated information on the funds used and remaining.

The TM verifies all information that is required to be included in the invoice (Section 4.8 above), approves it in a narrative included in the electronic response, and sends it back to the AST R&D Budget Lead.

Upon receipt of the TM approval, AST R&D Budget Lead approves the invoice in Delphi.

¹ https://employees.faa.gov/org/staffoffices/afn/finance/media/documents/Vol11_Chpt2_Accounting_for_Grants.pdf