

Submitting Superior CAAP Applications



Competitive Academic Agreement Program 1/20/2015



Welcome!

- Thanks for joining us!
- CAAP is a very important evolution for our program
- We strive to learn and adjust to support the needs of all participants
- We look forward to program efficiency and effectiveness in the near future!
- FYI - We will share this file afterwards and cite it as a reference when we annually solicit



Outline

- De-Brief Objective
- CAAP Background, History to Date and Performance Metrics
- Promoting the Program
- Generation of Topics
- Solicitation Frequency and Requirements
- Submitting Superior Applications
- Next Steps
- Questions for You and from You
- Adjourn



De-Brief Objectives

- Update you on the program goals and performance to date
- Provide feedback with suggestions on how to improve the technical quality of your applications
- Hear from you on what we can do to adjust any aspect of the CAAP annual execution



CAAP Objectives

1. Spur innovation through enabling an academic research focus on high risk and high pay-off solutions for the many pipeline safety challenges
 - Intended to potentially deliver desired solutions that can be a “hand-off” to further investigations in this or PHMSA’s core research program
2. Expose “students” to subject matter common to pipeline safety challenges and illustrating how their engineering or technical discipline is highly desired and needed in the pipeline field



History to Date

- Early FY 2013 – Growing desire to evolve our research program into more basic investigations and having much discussion of ways to address workforce planning challenges
- Funding Opportunity Announcement (FOA) issued in FY13 and FY14 with plan to be annually announced in winter with awards in spring
- Already very successful – see next slide...



Performance to Date (FY13&FY14)

- Two FOAs, 45 Applications, 15 Awards
 - \$1.5M PHMSA + \$745K Resource Sharing
 - Seventy-One involved students!!!
- Nine student poster papers at Aug 2014 R&D Forum https://primis.phmsa.dot.gov/rd/mtg_080614.htm
 - Two resulting internships reported

CAAP Summary Totals

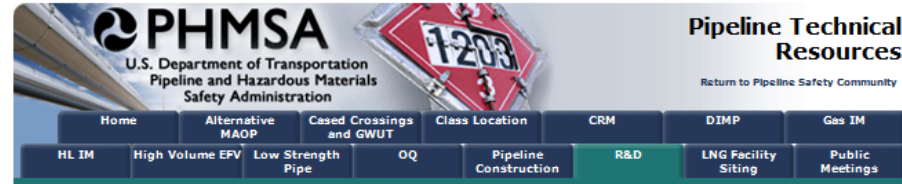
Annual Announcement	# Awards	PHMSA	Resource Sharing	# U-Grad Students	# Grad Students	# PhD Students	Total # Students
CAAP-1-13	8	\$ 814K	\$ 353K	21	18	13	52
CAAP-2-14	7	\$ 699K	\$ 391K	2	8	9	19
Grand Totals:	15	\$1,513K	\$ 745K	23	26	22	71



CAAP Webpage

<https://primis.phmsa.dot.gov/rd/universitypartners.htm>

- We are proud of your work and this program!
- Transparency and information sharing is important to us
- Program summary, stats, metrics and project pages key to good government



Research & Development: University Partnerships

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Competitive Academic Agreement Program (CAAP)

In 2013, PHMSA's Pipeline Safety Research Program implemented a new program entitled CAAP breathing further innovation into pipeline safety research. CAAP targets University Graduate students for the future pipeline safety workforce. PHMSA's vision for this program is to select 5 or more awards annually utilizing \$100,000 PHMSA plus a 30% cost sharing by our university partners on each project. These are Cooperative Agreements that are competitively selected and can run up to 24 months in duration. However, the number of awards are dependent upon quality of submissions and budget limitations. These initiatives are intended to research a wide set of solutions for many known pipeline integrity challenges.

The CAAP is intended to spur innovation through enabling an academic research focus on high risk and high pay-off solutions for wide ranging pipeline safety challenges. The CAAP is different in focus, execution and reporting than PHMSA's core program on Pipeline Safety Research. It is intended to potentially deliver desired solutions that can be a "handed-off" to further investigations in CAAP or in PHMSA's core research program that employs partnerships with a variety of public/private organizations. One goal in this strategy would be to validate proof of concept of a thesis or theory potentially all the way to commercial penetration into the market.

Another goal for CAAP is to expose graduate and PhD research students to subject matter common to pipeline safety challenges for illustrating how their engineering or technical discipline is highly desired and needed in the pipeline field. The pipeline industry and federal/state regulators are all experiencing low numbers of entry level applications to positions that are engineering or technically focused. Public conferences, meetings and journals have identified similar shortfalls. The ultimate benefits from this goal would be to reflect new talent in all aspects of pipelining similar to how programs at other Federal Agencies and non-profit organizations have provided talent to other industries over time.

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Example Summary Tables

- Summarizes awards from an annual FOA
- Viewable from the CAAP main webpage
- Links to project pages – next slide...

No.	Source	Pri No	Status	AOTR	Contractor	Project Title	PHMSA	Resource Sharing	Start
1.	CAAP-1-13	505	Active	Merritt, James	Texas A&M Engineering Experiment Station	"Radio Frequency Identification (RFID) Smart Corrosion Coupon"	\$103,258	\$43,895	Oct 2013
2.	CAAP-1-13	506	Active	Merritt, James	University of Tulsa	"Scaling Factors and Self-Sensing in Composite Repairs of Corrosion Defects"	\$102,073	\$42,701	Oct 2013
3.	CAAP-1-13	507	Active	Merritt, James	University at Buffalo	"Permanently Installed Pipeline Monitoring Systems"	\$102,750	\$42,972	Oct 2013
4.	CAAP-1-13	508	Active	Merritt, James	University of Colorado Denver	"Proactive and Hybrid Sensing based Inline Pipeline Defects Diagnosis and Prognosis"	\$104,795	\$42,857	Oct 2013
5.	CAAP-1-13	509	Active	Merritt, James	North Dakota State University	"Composite Self-sensing Thermal Sprayed Coatings for Pipeline Corrosion Prevention and Mitigation"	\$101,483	\$42,217	Oct 2013
6.	CAAP-1-13	510	Active	Merritt, James	Columbia University	"Mitigating External Corrosion of Pipelines Through Nano-Modified Cement-Based Coatings"	\$96,751	\$40,742	Oct 2013
7.	CAAP-1-13	511	Active	Merritt, James	Iowa State University	"Advanced Nondestructive Characterization of Pipeline Materials"	\$101,750	\$50,000	Oct 2013
8.	CAAP-1-13	512	Active	Merritt, James	Ohio University	"Enhanced Mitigation of Pipeline Biocorrosion Using A Mixture of D-Amino Acids with A Biocide"	\$101,325	\$48,540	Oct 2013
GRAND TOTALS:							\$814,186	\$353,924	



Example Project Page



Mitigating External Corrosion of Pipelines Through Nano-Modified Cement-Based Coatings

Main Objective

This project consists of three main tasks. The first task will be to develop an effective processing technique to produce the cement-based coating, namely effective dispersion of the nanomaterials. This will be approached through physical and chemical methods: sonication and surfactant treatment, respectively. The second task will be to characterize key rheological properties of the coating material: thixotropic structural rebuilding and fresh-state adhesive properties. This will be done through a shear rheological "breakdown-recovery" protocol and the tack test, respectively. The last task will be to characterize key hardened properties: porosity and crack resistance under fatigue and restrained shrinkage. This will be done through monitoring weight loss, flexural testing under cyclic loading, and the ring test, respectively.

Public Abstract

External corrosion is a critical concern for pipelines, as it can lead to leakages and ruptures from which environmental, safety, and economic issues can arise. In the aim to mitigate external corrosion of pipelines, the proposed work will engineer a cement-based coating material that exhibits superior sealing properties and ease of implementation. The advantage of cement-based coatings over other types is that they can be designed to possess mechanical properties to provide structural stability for the pipeline, as well as offset buoyancy. To attain the properties desired for pipeline coating, the approach will involve utilization of nanomaterials and supplementary cementitious materials (SCMs), investigation of advanced processing techniques, and thorough characterization of key properties relevant to coating applications, i.e. rheology, porosity, dimensional stability, and crack resistance.

Fast Facts	
Research Award Recipient:	Columbia University 615 West 131st Street Room 254, Mail Code 8725 New York, NY 10027-7922
AOTR:	James Merritt, james.merritt@dot.gov , (303)638-4758 Robert Smith, Robert.W.Smith@dot.gov , 919-238-4759
Contract #:	DTPH56-13-H-CAAP06
Project #:	510
Researcher Contact Info:	Primary Contact: Shiho Kawashima, Ph.D. Assistant Professor of Civil Engineering and Engineering Mechanics sk2294@columbia.edu , (212) 854-2701
Financial and Status Data	
Project Status:	Active
Start Fiscal Year:	2014 (10/01/2013)
End Fiscal Year:	2015 (06/30/2015)
PHMSA \$\$ Budgeted:	\$96,751.00

OTHER FILES

Poster from R&D Forum August 2014

[CAAPPOSTER_2014-08-05_OPT.PDF](#) (825,404 bytes) [\[VIEW\]](#) [\[DOWNLOAD/SAVE...\]](#)

QUARTERLY STATUS REPORTS

1st Quarter Report

[CAAPQUARTERLYREPORT_03-01-2014.DOC](#) (36,352 bytes) [\[VIEW\]](#) [\[DOWNLOAD/SAVE...\]](#)

2nd Quarter Report

[CAAPQUARTERLYREPORT_06-01-2014.DOCX](#) (258,682 bytes) [\[VIEW\]](#) [\[DOWNLOAD/SAVE...\]](#)

3rd Quarter Report

[CAAPQUARTERLYREPORT_09-01-2014.DOCX](#) (248,185 bytes) [\[VIEW\]](#) [\[DOWNLOAD/SAVE...\]](#)

4th Quarter Report

[CAAPQUARTERLYREPORT_12-01-2014.DOCX](#) (552,842 bytes) [\[VIEW\]](#) [\[DOWNLOAD/SAVE...\]](#)

Generation of Topics

- Stakeholder driven via our public events
- Challenge is to identify best ones for academics
- Some may have technical facets to address
- Others may be very general in nature

<https://primis.phmsa.dot.gov/rd/workshops.htm>



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Research & Development: Meetings/Events

R&D Workshops, Forums, & Briefings

In establishing R&D policy and in developing a national pipeline research agenda, PHMSA systematically seeks out information and informed opinion using a spectrum of public events such as workshops, forums and public meetings. These public events bring together representatives from federal, state, and foreign governments along with domestic and foreign operators of natural gas and hazardous liquid pipeline systems and the trade organizations that represent them. At these events information and opinions are shared to help clarify key challenges facing industry and government, to share information on current research efforts, and to identify new research that has the potential to meet present and future challenges.

Workshops:

- Improving Pipeline Leak Detection System Effectiveness and Understanding the Applications of Automatic/Remote Control Valves - March 27-28, 2012
- Safe & Reliable Ethanol Transportation & Storage Technology Roadmapping - October 25, 2007
- Mechanical Damage Technical Workshop - February 28-March 1, 2006
- Advanced Welding & Joining Technical Workshop - January 25-26, 2006
- Advanced Coatings R&D for Pipelines and Related Facilities - June 9-10, 2005
- International Workshop on Advanced Research & Development of Coatings - April 14-16, 2004
- Stress Corrosion Cracking (SCC) Workshop - December 2, 2003
- Direct Assessment Workshop - November 4, 2003
- International Offshore Pipeline Workshop 2003 - February 26-28, 2003
- Workshop on Human and Org. Factor Disciplines - April 8-10, 2002
- R&D Workshop - November 27, 2001

Forums:

- Pipeline R&D Forum - August 6-7, 2014
- Pipeline R&D Forum - July 18-19, 2012
- Pipeline R&D Forum - June 24-25, 2009
- Pipeline R&D Forum - February 7-8, 2007
- Pipeline R&D Forum - March 22-24, 2005
- Pipeline R&D Forum - December 11-12, 2003

Briefings:

- BAA Briefings - April 23-25, 2002



Frequency and Requirements

- Announced/Awarded Annually Winter-Spring
- Program goal is to make 5+ awards/yr
 - Currently at \$100k per award with 30% cost sharing by the applicant
 - Duration currently 18-24 months
- Cost sharing, duration and other parameters may change – PHMSA Leadership discussions are ongoing
- See each FOA for Minimum, Eligibility and other requirements



Submitting Superior Applications

Please do the following...

- Provide the required letters and information to meet “all non technical requirements”
 - Some have not and will be screened from the review and ineligible for award
- Submit a complete application
 - *Some have omitted narrative specific to our review criteria*



Submitting Superior Applications

Please do the following...

- Match your work scope to the solicited topic as best as possible
 - *Some have not tailored their narrative to the topic and seemingly submitted pet project ideas*
- Make sure students are involved and include the requested information about them
 - *Our CAAP objectives involve students even though the award is made to the institution*



Submitting Superior Applications

Please do the following...

- Find the right balance of background narrative vs work scope details
 - *Applications have page limits and some have written more about prior work than the proposed future work in which they will be evaluated*
- Work with Pipeline Industry to clarify gaps & challenges
 - *Industry input to your application and involvement in your projects helps produce more meaningful outcomes*



Next Steps

- Feedback Survey
 - We will send it towards the end of your project
 - Please respond – data will sustain the reporting of program metrics
- Student Poster Papers
 - We will modify active awards with resources to attend specific events – we hope you can participate
- Stay tuned for program adjustments
 - Program expansion and to align to your feedback



Questions for You

- We will not utilize Grants but is our use of Cooperative Agreements acceptable?
 - Are you open to other Agreement types?
- Do you like Grants.gov?
 - If we switch agreement types we may use FedBizOps removing most if not all current financial reporting requirements via OMB Circular No. A-102. OMB Circular No. A-110

You can email or call us with any thoughts at a later date!



Questions for You

- Any feedback on when we announce/solicit?
 - Does it align to your needs in securing funding or students?
 - Does a duration of 18-24 months help relieve funding or student involvement challenges?
- How can we find topics that align to your expertise without providing favoritism if we were to solicit ideas from you?

You can email or call us with any thoughts at a later date!



Questions from You?

See the following slides for the questions and answers seen during the January 20th discussion.



Questions from You?

Question #1 – Are there Frequently Asked Questions (FAQs) associated with funding opportunities?

Answer – Yes, each FOA provides a link to FAQs which may contain FAQs that are both general in nature and or specific to various issues.



Questions from You?

Question #2 – Does PHMSA provide an opportunity for applicant de-briefs in the case that an applicant does not receive an award?

Answer – Yes, PHMSA does provide a summary of an application's performance in the case if that application was not funded. The Procurement Official identified in each FOA should be contacted for more details.



Questions from You?

Question #3 – How can academic programs better align to the specificities seen in PHMSA FOAs?

Answer – It is recommended that interested past/future applications attend PHMSA's R&D Forum which is periodically held but always announced in the Federal Register. You can register to receive event announcements via...

<https://www.federalregister.gov/> .



Thank You!/Program Contacts

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