



File Name:

## Standards Resource & Research Request (SR<sup>3</sup>) Form Committee on Petroleum Measurement

rev5-28-09

### Document Information

<b>Standard Designation:</b>	API MPMS 11.3.2.1									
<b>Title:</b>	Ethylene Equations of State Suitable for Custody Transfer Measurement									
<b>Edition:</b>										
<b>Budget Year:</b>	2012									
<b>Committee/Subcommittee:</b> (check all that apply if a joint project)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Priority Matrix Ranking:</b> (to be completed by API)	<input type="checkbox"/> Class 1 (Rank 11-15)			<input type="checkbox"/> Class 2 (Rank 6-10)			<input type="checkbox"/> Class 3 (Rank 1-5)			
<b>Proposed Action:</b>	<input type="checkbox"/> New Standard			<input checked="" type="checkbox"/>			<input type="checkbox"/> Revise Current Standard			
	<input type="checkbox"/> Withdraw Current Standard						<input type="checkbox"/> Research Only			
<b>Proposed Funding Type:</b>	<input type="checkbox"/> Budget Request						<input type="checkbox"/> Special Solicitation			
<b>Total Funding Request (Parts A &amp; B):</b>	\$									
<b>Name of Submitter(s):</b>	Louis Yandoli, Kenneth Elliott									
<b>Date:</b>	10/26/2011									

### Part A – Resource Plan

#### I. Background and Information:

1. **Explain the business need for the proposed action.** Indicate potential cost savings to industry where possible.

Industry research indicates that the current API equation of state developed in the 1960s has significantly higher uncertainty than more modern equations of state such as the Wagner EOS included in NIST-23. The current 11.3.2.1 document is in the form of a measurement manual and is not confined to calculating the physical properties of ethylene. The document includes orifice and turbine metering calculation methods, and data that are not in agreement with the current API MPMS standards that cover these metering devices.

2. **What is the scope of the standard?**

This document identifies equations of state (EOS) suitable for use in custody transfer measurement of pure ethylene in the gaseous, liquid, and super critical phases. Given flowing temperature and pressure, each equation of state identified in this document is capable of calculating density, and other thermodynamic properties used to calculate mass and volumetric flow of ethylene to custody transfer accuracy.

3. **Should this be a joint project with the Energy Institute (i.e. progressed under the API/EI Phoenix Agreement)?**

Yes  No

**If No, what are the reasons that would justify independent API initiation of the proposed action?**

4. **Is this standard on the work program of another standards development organization (check all that apply)?**

ISO	<input type="checkbox"/>	ASTM	<input type="checkbox"/>	AGA	<input type="checkbox"/>	GPA	<input type="checkbox"/>	ASME	<input type="checkbox"/>
Other, please provide:		<input type="text"/>							



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If yes, is the work being coordinated with the appropriate group? Are there special circumstances that would justify independent API initiation of the proposed action?

5. Are a volunteer chair and group of experts available to perform the proposed action?

Please include names and company affiliation and indicate chair, if available.

Louis Yondoli, Exxon/Mobil

6. Is there a need to commit resources to supplement the development of the draft? Would a paid content specialist accelerate progress on the development/revision? Is there a readily available content specialist?

7. Are there special format requirements for final document, i.e. knowledge of ISO template required), significant graphics, photos or equations) required that would need extraordinary resources?

Yes  No

If Yes, please provide details:

8. Please provide any other information that is pertinent to the proposed action.

It is planned that the new document be limited to describing and specifying existing equations of state suitable for ethylene custody measurement, with comparisons of their relative uncertainties compared to the most accurate published data, over a wide range of temperature and pressure conditions encountered when transporting ethylene.

9. What are the implications of not initiating the proposed action? Include potential safety, reliability, environmental and financial impacts that may arise.

Inaccurate measurement due to the limitations of the 1960s EOS make it difficult to perform an accurate pipeline mass balance, leading to potential safety issues.

10. Is there research proposed to accomplish the proposed action?

Yes  No

If yes, complete Part B of this form.

## II. Project Timing

Proposed start date:	January 2012	Proposed date draft will be ready for letter ballot:	October 2012
TG/WG: (estimated number of volunteers needed)	2+	Content Management: (\$ amount "if needed" or volunteer)	

## PART B – Research Plan

### I. Background and Information

1. Proposed Research Title:



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**2. Proposed Project Scope:**

**3. Research Amount:**

\$	
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**4. What is the business need for the proposed research?**

**5. Is the proposed research edition-specific for a single standard or will it result in technology enhancement for multiple standards?**

Yes		No	
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If multiple standards, please cite the standards effected:	
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**6. Research Timing:**

	Research is necessary prior to scheduled revision.
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	Research can be done concurrent with revision.
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**7. How does the research support the proposed action identified in Part A?**

**8. Is a joint industry project (JIP) a possibility?**

Yes		No	
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If Yes, with whom?	
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**9. Are there opportunities for leveraged research with other organizations?**

Yes		No	
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What organizations?	
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**10. What are the implications of not performing the proposed research?**

**II. Dates and Funding:**

Estimated Completion Date	Prior Research Funding Requested	Anticipated Future Research Funding Needs					
	\$	Year 2: \$		Year 3: \$		Year 4: \$	

**PART C – Proposal Feedback/Approval Information**

For API Use ONLY

SC comments to Proposer/WG:	
Date approved by subcommittee:	
COPM comments:	
Date approved by COPM:	



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Date entered into API Publications DB: