AQRP Monthly Technical Report

PROJECT TITLE	Evaluating Methods for Determining the Vapor Pressure of Heavy Refinery Liquids	**PROJECT #**	16-007
PROJECT PARTICIPANTS	UT Austin	**DATE SUBMITTED**	January 10, 2017
REPORTING PERIOD	**From:** December1, 2016 **To:** December 31, 2016	**REPORT #**	02

A Financial Status Report (FSR) and Invoice will be submitted separately from each of the Project Participants reflecting charges for this Reporting Period. I understand that the FSR and Invoice are due to the AQRP by the 15th of the month following the reporting period shown above.

Detailed Accomplishments by Task
During the month of December, project team (PT) made progress on the following activities:

Task 4.2 Project reports and presentation
The November Monthly Technical Report was prepared and submitted.

Task 4.3 Purchase and receipt of Automated Mini-method Instrument
Members of the PT had email and phone conversations with the US Graebner sales representative who informed the PT that their instrument could not be used for this application. A request was made to provide a technical explanation of why this instrument cannot be used when their literature implies otherwise. Another mini-method instrument made by Eralytics was identified and investigated in light of the applicability information provided by Graebner. Plans were made to supply Eralytics with samples of surrogate materials to provide verification that their instrument is suitable for this application.

Task 4.4 Identify labs to conduct the ASTM D2879, E1719, and D323 testing
Made first contact with American Testing Labs; they are supposed to get back to the PT with a quote of their analytical services. Continued to attempt to reach Perry Johnson Laboratory Accreditation to see if they have a way to identify labs that are accredited for the methods of interest to this project. Fesco Labs was also asked if they can perform any of the methods our project is interested in; they haven't answered yet. Got a price and order form from Savant Labs for Method D323. Talked to Blake Branson at Petrolab; will continue to try to find out why their already very high price for Method D2879 went up after a PT member had spoken to him. Tried to reach Wiltec Research Company about their vapor pressure measurement capability.

Task 4.5 Obtain Materials for testing and Material Safety Data Sheets
Talked to John McDonald (Houston Fuel Oil) about sourcing samples. Contacted Castrol and Radco about their low-vapor pressure fluids; based on these discussions, the Radco fluid will be not be used for this project. The Castrol vapor pressure values were obtained using Method

D2879. Tried to find a hydraulic fluid mil spec that requires D2879 and failed; inquired with Scott Hutzler (SWRI and the ASTM chair for the D2879 ILS) for a lead and he hasn't responded; will follow up with the ASTM staff.

4.6 Remove Identifying and VP Information from MSDSs, Prepare Samples, and Send First Stage Samples with "Sanitized" MSDSs to Labs for Testing

Sent an informal tsansard operating procedure (SOP) for dispensing heavy refinery liquids out to a select group of individuals with technical expertise in areas relevant to this field and application for comment; made revisions to the verification section based on their inputs. Designed and part-sourced the dispensing apparatus that is proposed for sample preparation. Participated on and spoke during the API's evaporative losses committee call. Inquired with Scott Hutzler, Mike Ciolek (EPA), and Joe Dauner (Magellan) about providing technical comments on the SOP and other documents.

Task 4.7 For first stage of samples, UT Austin measures VP of materials using Automated Mini-method and reports results; Commercial labs conduct their sample measurements of first stage samples and report results

No further progress on this task.

Task 4.8 Conduct study of activity model binary interaction parameters to gain insight into the applicability of using light end composition and Raoult's Law to estimate the vapor pressure of heavy refinery liquids

Continued to work with Vladimir Diky at NIST to verify that the NIST-modified UNIFAC model created in November is working correctly and made the necessary corrections. Worked out a potential 5-component surrogate for fuel oil no. 6. Read through the papers Dr. Bruno (of NIST) sent me about NIST's advanced distillation curve approach and talked to him about how that could be used.

Preliminary Analysis

None performed during the report period.

Data Collected

None collected during the report period.

Identify Problems or Issues Encountered and Proposed Solutions or Adjustments

The sales representative for the vendor of the automated mini method instrument we were planning on purchasing informed us their instrument cannot be used for our type of materials. This information apparently conflicts with their literature and is being verified with the instrument manufacturer's technical staff. Another vendor with a comparable instrument who believes theirs can be used was contacted and plans are being made to send surrogate samples to them.

Goals and Anticipated Issues for the Succeeding Reporting Period

Verify which if either automated mini-vap instrument can be used to measure the vapor pressure of the materials being investigated on this project.

Detailed Analysis of the Progress of the Task Order to Date

Do you have any publications related to this project currently under development? If so, please provide a working title, and the journals you plan to submit to.

___Yes __X_No

Do you have any publications related to this project currently under review by a journal? If so, what is the working title and the journal name? Have you sent a copy of the article to your AQRP Project Manager and your TCEQ Liaison?

___Yes __X_No

Do you have any bibliographic publications related to this project that have been published? If so, please list the reference information. List all items for the lifetime of the project.

___Yes __X_No

Do you have any presentations related to this project currently under development? If so, please provide working title, and the conference you plan to present it (this does not include presentations for the AQRP Workshop).
___Yes __X_No

Do you have any presentations related to this project that have been published? If so, please list reference information. List all items for the lifetime of the project.

___Yes __X_No

Submitted to AQRP by

Principal Investigator Vincent M. Torres