

## AQRP Monthly Technical Report

<b>PROJECT TITLE</b>	Evaluating Methods for Determining the Vapor Pressure of Heavy Refinery Liquids	<b>PROJECT #</b>	16-007
<b>PROJECT PARTICIPANTS</b>	UT Austin	<b>DATE SUBMITTED</b>	May 4, 2017
<b>REPORTING PERIOD</b>	<b>From:</b> April 1, 2017 <b>To:</b> April 30, 2017	<b>REPORT #</b>	06

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 15<sup>th</sup> of the month following the reporting period shown above.

---

### Detailed Accomplishments by Task

During the month of April, the project team (PT) made progress on the following activities:

#### **Task 4.2 Project reports and presentation**

The March Monthly Technical Report was prepared and submitted.

#### **Task 4.3 Purchase and receipt of Automated Mini-method Instrument**

Discussions with both Grabner and Eralytics resulted in both units being made available for the study within the project budget. The Grabner unit was delivered and demonstrated by the sales representative. During the demo it failed to load the sample and was sent to the factory in Tulsa, OK for repair. Quotes for rental of the Eralytics unit are being sought so a purchase order for rental of the unit can be issued.

#### **Task 4.4 Identify labs to conduct the ASTM D2879, E1719, and D323 testing**

All labs to be used by the project have been identified.

#### **Task 4.5 Obtain Materials for testing and Material Safety Data Sheets**

All samples but one had been obtained at the end of April.

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

Work on assembly the sample-dispensing system is almost complete. It should be completed in May and some samples distributed to labs.

#### **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 work performed on this task during the reporting period.

**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**

Failed to find vacuum residual pseudo-components in the literature so decided to evaluate the effect of water using two six oil pseudo-components already acquired in combination with the NIST-modified UNIFAC model. ChemSep will then be used to evaluate the effect of water on the pseudo-component properties it builds from the boiling point curves using CONCAWE #1/15R. Began modeling with ChemSep and the write up for the final report of how ChemSep will be used for this part of the study.

**Task 4.9 Analyze and Assess the VP Measurements for First Stage Samples**

Began a review of the different specifications and terminologies for heavy marine fuels and how they compare; this comparison will require conversion of viscosity values to a consistent temperature, which will be done using Shell's BunkerCalc program.

**Task 4.10 Remove Identifying and VP Information from MSDSs, Prepare Samples, and Send Second Stage Samples with "Sanitized" MSDSs to Labs for Testing**

No work performed on this task during the reporting period.

**Task 4.11 For the Second Stage of Samples, Test Samples Using an Automated Mini-method Designed to Measure the VP of Low Volatility Materials (e.g., the Grabner MINIVAP VPXpert-L); Commercial Labs Conduct their Sample Measurements of First Stage Samples and Report Results**

No work performed on this task during the reporting period.

**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**

None.

**Goals and Anticipated Issues for the Succeeding Reporting Period**

None to report at this time.

**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       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 AQR Project Manager and your TCEQ Liaison?**

Yes       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       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       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       No

---

Submitted to AQRP by

Principal Investigator Vincent M. Torres