Compagnie Pétrolière et Gazière, INC.

REQUEST FOR PROPOSAL
RFP #: TF – F3.H1

TITLE: OIL AND GAS EXPLORATION AND PRODUCTION – PHASE 1
CLOSING DATE AND TIME: NOVEMBER 14. 2016 @ 5:00 PM

Oil & Gas Exploration and Production – Phase 1: TF – F3.H1

Background and Purpose

By responding to this Request for Proposal (RFP), the Proposer agrees that s/he has read and understood all documents within this RFP package.

Submission Details

Responders to this RFP should supply:

- A business report up to 3 pages (not including cover page or table of contents), including any supporting plots and tables.
- The commented code used to produce the results.

The report should address **all points described in the "Objective" section** below.

The report should be returned in the following way:

- Electronic (mailto: Aric_LaBarr@ncsu.edu; Subject Line: Phoenix Temperature Forecast)

Objective

Compagnie Pétrolière et Gazière, INC. (hereafter the "Company"), acting by and through its department of *Price Analysis* is seeking proposals for analytics services. The scope of services includes the following:

- Simulate possible future values of 2017 drilling costs.
    - Currently, only previous information is available for 1960 – 2007.
    - Since the industry has changed tremendously over those decades, only the information from 1990 – 2006 will be useful for this analysis. 2007 was an outlier and should be ignored.
    - Instead of looking at the distribution of actual costs, the Company's analysts recommend simulating possible annual changes in costs to get to 2017. They have calculated geometric changes in the data set already, but they are open to other options if you explain why you chose them.
    - Instead of focusing on costs for oil, gas, and dry wells individually, the Company's analysts recommend to treat them all equally and assume an average cost applies to them all. (HINT: You should have 48 observations. Geometric changes from 1991 – 2006.)
- Previously the *Price Analysis* group has worked under the assumption that these geometric changes from one year to the next follow a Normal distribution. Use QQ-plots or formal tests to see if you agree.
- Build a kernel density estimate of the distribution of geometric changes, using the 48 observations described above.
- Simulate possible future values of 2017 drilling costs under both the assumption of Normality as well as under the kernel density estimate you created (HINT: Run two simulations). Make a recommendation for which one you feel the company should use.

Data Provided

The following set of data is provided for the proposal:

- The data set **ANALYSIS_DATA** contains the following two sets of information:
    - Estimated drilling costs for Crude Oil, Natural Gas, and Dry Wells. These costs are collected from 1960 – 2007. The geometric annual change on these costs has been calculated.
    - Oil price projections from 2017 – 2040. There are estimates of the high, low, and actual price of oil (reference price).