WHAT IS CLAIMED IS:

1. A method for monitoring global crude oil quality comprising:

obtaining at least one sample of a crude oil representative of the current quality of the crude oil;

analyzing the at least one sample of the crude oil and generating characterization data based upon the analyzing of the at least one sample by laboratory distillation, spectroscopic techniques, or a combination of spectroscopic techniques and physical inspections;

estimating values of properties of an assay of the crude oil by analyzing the generated characterization data from the at least one sample to form an estimated assay;

storing the estimated values of the properties of the estimated assay in a database;

determining deviations of the values of the properties of the estimated assay for the crude oil from the values of the properties of a known recommended assay for crude oil having a known quality, wherein the values of the properties of the known recommended assay are stored in the database wherein the known recommended assay is a single representation of yields and qualities used to characterize current crude oil quality;

determining a statistical significance of the deviations of the values of the properties of the estimated assay from the values of the properties of the recommended assay to determine if the crude oil quality of the at least one sample is different from the quality of the recommended assay;

generating a new recommended assay for the crude oil if the deviations of the values of the properties of the estimated assay from the values of the properties of the recommended assay are significant; and

storing new recommended assay in the database.

2. The method of claim 1, wherein determining the statistical significance of the deviations of the values of the properties of the estimated assay from the values of the properties of the recommended assay includes determining if the statistical significance indicates a change in the economic valuation of the crude oil between the estimated assay and the recommended assay.

3. The method of claim 2 further comprising generating a notification if the economic difference is statistically significant.

4. The method of claim 2, wherein determining the statistical significance of the deviations of the values of the properties of the estimated assay from the values of the

properties of the recommended assay includes detecting and removing values which may be outliers that may distort the statistical significance of the economic difference.

4.5. The method of claim 1 , wherein determining deviations of the values of the properties of the estimated assay for the crude oil from the values of the properties of a known recommended assay for crude oil includes determining time series values for the properties of the estimated assay over a period of time.

5.6. The method of claim 4 5 further comprising comparing the properties of the time series values to values of the properties for the recommended assay.

~~6. The method of claim 2, wherein determining the statistical significance of the deviations of the values of the properties of the estimated assay from the values of the properties of the recommended assay includes detecting and removing values which may be outliers that may distort the statistical significance of the economic difference.~~

7. The method of claim 1 wherein determining the statistical significance is carried out by an exponential weighted moving average predictive algorithm.

8. The method of claim 1, wherein storing the new recommended assay in the database includes replacing the known recommended assay with the new recommended assay.

9. The method of claim 1, wherein the estimated assay is one of a virtual assay and a modified virtual assay.

10. The method of claim 1, wherein generating the new recommended assay is generated from a wet crude oil assay.

11. The method of claim 1, wherein generating the new recommended assay is generated from a modified virtual assay.