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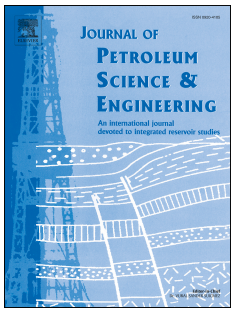

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Murat Fatih Tugan, Caglar Sinayuc

PII: S0920-4105(18)30390-5

DOI: 10.1016/j.petrol.2018.05.001

Reference: PETROL 4924

To appear in: *Journal of Petroleum Science and Engineering*

Received Date: 17 January 2018

Revised Date: 30 March 2018

Accepted Date: 1 May 2018

Please cite this article as: Tugan, M.F., Sinayuc, C., A new fully probabilistic methodology and a software for assessing uncertainties and managing risks in shale gas projects at any maturity stage, *Journal of Petroleum Science and Engineering* (2018), doi: 10.1016/j.petrol.2018.05.001.

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ACCEPTED MANUSCRIPT

A New Fully Probabilistic Methodology and a Software for Assessing Uncertainties and Managing Risks in Shale Gas Projects at Any Maturity Stage

Murat Fatih Tugan[a,*], Caglar Sinayuc[b]

[a] *Turkish Petroleum, Sogutozu Mah. 2180 Cad. No:10, 06530, Ankara, TURKEY*
[b] *Middle East Technical University, Petroleum and Natural Gas Engineering Department, 06800, Ankara, TURKEY*

Abstract

Shale oil and shale gas projects generally have marginal economics, hence should be carefully analyzed from the economic standpoint. Generating an economically recoverable resource (ERR) probability function that shows the full uncertainty range is highly important for such an economic analysis. Furthermore, the net present value (NPV) of the project together with the uncertainties inherent in it should be revealed so that the primary decision of entering a shale oil or shale gas project will be determined. As progressing through the project phases, judicious go/no-go decisions should be given at several decision gates.

In this study, a methodology to evaluate shale gas projects at any project maturity stage via a fully probabilistic approach is developed. Moreover, a new user-friendly software with graphical user interface is developed to make our methodology applicable.

Considering the available input parameters at each of the three different project phases; exploration, appraisal and development phases, specific probabilistic reserves estimation methodologies are designed to reveal the effect of uncertainties in input parameters on the ERR probability ranges. Moreover, by utilizing the economical parameters such as market prices, tax rates and various

*Corresponding author
Email addresses: ftugan@tpao.gov.tr (Murat Fatih Tugan), caglars@metu.edu.tr (Caglar Sinayuc)

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