

Draft UNFC Petroleum Resource Specifications and Guidelines (PRSG)

Personal Observations

Disclaimer

The following observations are personal and have not been reviewed or approved by the authors' employers nor any professional society of which we are members.

Comments

It is our understanding that the PRSG is intended to replace the Petroleum Resources Management System (PRMS, the latest version of which was released in 2018) as the underlying specifications for petroleum within the UNFC-2019.

Overall, the PRSG seems to follow the PRMS rather closely and at time provides verbatim copy of the text. There is presently limited reference to the PRMS as the source¹ of the text (the only explicit reference is in section 6.4, Resources Assessment Methods) and it is recommended that fuller attribution to the PRMS (and any other reference source such as the SEC Regulations) is properly included.

Numbers below refer to the paragraphs in the specifications.

- 1.0 Most of the labels and text on bottom figure are unreadable, even at 250% zoom. Because ensuing discussion centers around this figure, all axes labels, legend and notes should be clearly readable. It is suggested to replace the image with higher resolution graph.
- 1.2 "Project" – it is unclear in this text if "project" includes existing developed/producing wells as the text seems focused on "future operations" from "decision-making and investment". This could be seen as only applying to future drilling/development and should be clarified.
- 2 "Ethics" – it appears too weak to say that "unbiased estimates" should be made. Suggest that they "must be made".
- 3.3 Is it possible that "Development unclarified" would fit better in Section 3.2 "Potentially Viable Projects", rather than in Section 3.3 "Non-Viable Projects"? Unclarified implies that we simply do not know sufficient to make a decision at the time of the evaluation.
- 4.1 This section includes most of the requirements in PRMS-2018 Section 2.1.2 except B, project financing. It is suggested that this be included as a requirement.
- 4.2 This section seems to imply that the economic viability of a project (i.e., corporate decision making) is determined on a pre-tax basis. This is not in line with typical corporate evaluations or the PRMS-2018 (e.g., section 3.1.0.1). There is no mention of income (corporation) tax, and DD&A are explicitly excluded. It is recommended that the decision-making evaluation be carried out on an after-tax basis (as opposed to the economic limit test which is carried out before tax and undiscounted). If that is changed, there would be a need to consider past costs for, for instance, depreciation and/or cost recovery.
- 4.3 This section defines "economic" as providing a positive return on investment, which is different from PRMS-2018 and could therefore be confusing. The UNFC specification

¹ It would take some time to cite every such occurrence.

requires a “commercial” return, whereas the PRMS-2018 only requires undiscounted breakeven.

- 4.7 A minor point, but why are PSCs “more common”? They may be common, but more than what? Drop “more”.
- 5.2 Chance, probability and risk are not the same. For instance, risk = 1 – chance. As relevant to resource projects, risk is the opportunity of loss or failure. 1) In this section, risk is not clearly defined, and confused with probability, which is the chance of occurrence. 2) The “well accepted methodology” for assessing Pg should be described, or referenced. For example - how are the petroleum risk factors combined – added, multiplied, averaged or other treatment? 3) Also, uncertainty is mentioned in the third paragraph but not defined in the content of range estimates for input factors. Please add narrative to better explain. Suggest retitling the section as “5.2 Consideration of Uncertain Outcomes” and change text to read ...”associated chance (probability or likelihood) of viability,,,”. This removes the confusing term “risk” altogether.
- 5.6 In this table, F2.2 combines “on hold” and “unclarified” as did PRMS-2007. They are separate in PRMS-2018 as they are in UNFC-2019. It seems that this table needs to be updated. The table’s last column should be split for F2.2 into On hold (E2 F2.2) and Unclear (E3 F2.2) as noted in Section 3.2 and 3.3.
- Some of the descriptions are not clear and seem to combine elements of the F and G axes (e.g., F3 and F4). Perhaps it would help if the last column text added (for F3) “See Table 3 below” and (for F4) “See Table 4 below”.
- 6.1 The chart is misleading by apparently showing G1 and G1+G2+G3 at about 99% and 1% rather than P90 and P10 (which are defined later).
- 6.1 It is not clear what the light blue border text box is pointing to. There are three curves and two text boxes (i.e. if the light blue label is pointing to the light blue curve, what is the dark blue curve?) Also, there are two labels for the X axis – is it potential reserves or recovery? (Potential reserves is not an accepted term.) Suggest revision.
- 6.2 Minor point—suggest using brackets around (G1 + G2), for instance.
- 6.3.2 Third bullet point for ‘Fluid properties’ seems incomplete. No mention of other factors such as oil gravity, mobility, or initial solution GOR. Suggest rework bullets to summarize analogs with all corresponding components in parentheses and not using “etc.”. Also suggest some definition of net pay is included, as it can vary widely. This discussion seems to be based on published material defining analogous reservoir from the SEC Federal Register - Vol. 74, No. 9, pg. 2190, Wednesday, January 14, 2009 / Rules and Regulations definition of analog. If so, it should be referenced as such.
- 6.3.3 Third bullet “dynamic modelling” – suggest a clarification of what “calibration” really means such as “calibration is required (that is, idealistic models need to be tuned to realistic results through proper history-matching).”
- 6.5 Is there a typo here? “...aggregate results from field to a higher level (field, block ...). The second “field” should be dropped.
- 8 Typo at the top of page 24 line 3: “... based on the **in the** best estimate ...”

10 Minor disconnect in definitions of crude oil gravity classes. For instance:

- Light crude greater than 31.1 API
- Medium crude less than 31,1 API (note also erroneous use of decimal comma)

The explanations of what constitutes “reasonable expectations “ are helpful. Would it also be useful to add that the term should imply a “high degree of confidence”, as in the PRMS?

11 It is noted that the definition of CP requires membership of a self-regulating organization. Should a list of such organizations be provided?

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