RPS Notes on Somalia Data for Coastline, May 2022

The transferred files should be largely self-explanatory, but please contact RPS (LMD) if any clarifications are required. The provided files are the most recent and relevant, and have been selected from a much larger project database which also contains historic data, including the seismic acquisition/processing phase, which are probably not so relevant to Coastline's current interests.

The **Kingdom project** contains all of the seismic data, interpretation, time and depth structural mapping, gravity and magnetic data, velocity data, prospect polygons and prospect nomenclature, plus lots of cultural data. The key to the seismic horizon nomenclature can be found in the PPT files on the prospectivity of each region.

The **ArcGIS** project was mainly used for large scale map generation for presentation purposes.

Farmout presentations: The most recent presentations, Xodus 2017, are the best place to start. The 2016 conference presentation and associated published paper give an overview of the general geology, basin structure and stratigraphy. Note that the age dating of the deep water basin fill is very poorly constrained; well calibration is distant and difficult to correlate into the deep basin, so the assigned ages of the seismic horizons are uncertain. Likewise the lithological interpretations in the deep basin are based almost entirely on seismic stratigraphy with almost no well control.

The farmout folder has comprehensive presentations on the geology and prospectivity of the three regions, North, Central and South. The farmout presentation on Basin Modelling is the most recent summary, although more data can be found in the separate **Basin Modelling** folder. Note that there is very little relevant calibration data for the basin modelling, so the results must be treated with caution.

The prospectivity on the PSA applications is summarised in a farmout PPT, although note that 12 PSA applications were being considered at this time, and this number was later reduced to three.

Prospect Volumes and Risks: These XLS files have the data on the deterministic volume and risk calculations for all of the prospects. The large number of prospects and tight project schedule required this mass production style of assessment. Probabilistic volumes, using REP software, were later run on a few selected prospects, but the deterministic volumes are quoted in the PPT summaries. Note that the parameters used for prospect assessment have little or no well calibration.

The **PSA Applications** folder has data on the final 2017 applications as well as historic data from the 2015 applications which were not accepted by the Somali Gov. Note that the 2017 applications conform with the block boundaries defined by the Somali Gov, and these are based on XY coordinates which is contrary to the international standard of using Lat and Long for offshore boundaries. In 2015 RPS and Soma did try to persuade the Somalis to go with a Lat Long system but this was not accepted – see the PSA 2015 folder.

The **Seep Study** by Airbus is documented in ArcGIS.

The **Spectrum 2016 seismic** folder has navigation data on the 2016 survey which was not available for the RPS interpretation. The Spectrum acquisition used a more powerful source, longer cable and longer recording time than the Soma 2013/4 survey, hence the new data should provide better quality results. The folder also contains a proposal (2018) for acquiring the relevant new data over the final PSA blocks. RPS strongly recommends that these additional data are acquired and integrated into the existing interpretation, at least over the potential drill prospects.

Important Note on the N-B Prospect on PSA 2*

This large carbonate reef prospect on PSA 2* is documented in the farmout presentation **RPS Soma North V10 Plays and Prospects April 2017** PPT. At the north end of the prospect there is a zone of seismic disruption above the crest of the reef – as shown in slides 49 and 50. There are 2 possible interpretations for this:

1. The PPT states that this disruption is caused by a shadow zone underneath minor extrusive volcanics in the shallow sediments where a strong seismic reflector is observed. This interpretation was supported by 2D magnetic modelling which indicated the possible presence of a shallow igneous body, although the evidence was far from conclusive.
2. An alternative explanation is that the disruption is due to a gas chimney, with gas leaking from the crest of the prospect. In this scenario the strong shallow reflector would be caused by gas hydrate accumulation close to the seabed. Gas hydrates form in high pressure, low temperature environments such as those near the seabed in very deep water, and the crystalline hydrate has high acoustic impedance which can produce strong seismic reflectivity when encased in low impedance sediments.

RPS recommends that further investigation – perhaps new magnetic modelling -- should be done into the possibility of the gas chimney and hydrate scenario. This alternative interpretation would have important implications for the assessment of chance of success for the N-B prospect and also for safety considerations for any future drilling.

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