Merlin
Energy Resources Ltd

AUDIT OF PROSPECTIVE RESOURCES,

SELECTED PROSPECTS, BLOCK 58,

OMAN

TETHYS OIL

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EXECUTIVE SUMMARY

Merlin Energy Resources Limited (MERL) has undertaken an audit of Tethys Oil's prospective resources for selected prospects and reservoirs within Block 58, Sultanate of Oman, as of 6th February 2023. The prospective resources data are risked estimates of the volume of prospective resources for each of the prospects evaluated within the Block; Fahd, Fahd South and Fahd South-West Prospects.

MERL has carried out this work in accordance with the June 2018 SPE/WPC/AAPG/PREE/SEG/SPWLA/EAGE Petroleum Resources Management System (PRMS) as the standard for classification and reporting. The full text of this can be downloaded from Petroleum Resources Management System – 2018 Update (spe.org).

The PRMS requires that an audit is performed to obtain reasonable assurance as to whether the prospective resources data are free of material misstatement. An audit also includes an assessment of whether the prospective resources data are in accordance with the principles and definitions presented in the PRMS.

The following table sets forth the risked volume of the prospective resources as audited. The resources are considered by MERL to constitute a fair and reasonable assessment.

PROSPECT	FORMATION	STOIIP (MMbbls)				RECOVERABLE (MMbbls)				Pg	RISKED Pmean REC (MMbbls)
		P90	P50	P10	Pmean	P90	P50	P10	Pmean		
Fahd South	Ara	26.3	99.5	289.6	135.0	4.6	18.8	60.8	27.1	0.18	4.9
	Buah	70.7	240.9	653.9	310.8	12.3	45.4	135.3	62.1	0.21	13.0
	Khufai	26.5	126.4	380.5	171.8	4.8	23.9	77.7	34.2	0.24	8.2
Fahd South-West	Ara	5.8	20.3	51.7	25.4	1.0	3.8	10.9	5.1	0.18	0.9
	Buah	14.8	42.8	94.5	49.9	2.5	8.0	20.0	10.0	0.21	2.1
	Khufai	5.6	22.7	61.1	29.0	1.0	4.3	12.7	5.8	0.24	1.4
Fahd (Block 58)	Buah	23.3	89.5	251.4	118.0	4.0	16.7	52.2	23.6	0.16	3.8
	Khufai	11.5	57.3	189.3	83.3	2.0	10.6	38.7	16.5	0.19	3.1

Table 1 – Audited Prospective Resources Block 58, Oman

In MERL's opinion, the prospective resources data audited have, in all material respects, been determined and are in accordance with the PRMS, which has been consistently applied.

MERL is an independent consultancy specialising in geoscience and engineering evaluation. Neither MERL nor the staff responsible for authoring this report have, at the date of this report, nor have had within the previous two years, any share holding in Tethys Oil. Consequently, MERL and the staff responsible for authoring this report consider themselves to be independent of the Company, it's directors and senior management.

MERL has the relevant and appropriate qualifications, experience, and technical knowledge to appraise professionally and independently the assets.

MERL's audit has largely been restricted to a validation of the interpretations presented by Tethys, which are considered to be reasonable. However, MERL expresses no opinion on the underlying data used by Tethys to constrain their interpretations, which were not themselves audited as part of this review. Prospective resources data are based on judgements regarding future events, actual results will vary and the variations may be material.

1   INTRODUCTION

Tethys Oil has matured three prospects in the Block 58, Oman (Figure 1) targeting carbonate reservoirs of the Nafun Group (Buah and Khufai Formations) and Ara Group:

- Fahd Prospect
- Fahd South Prospect
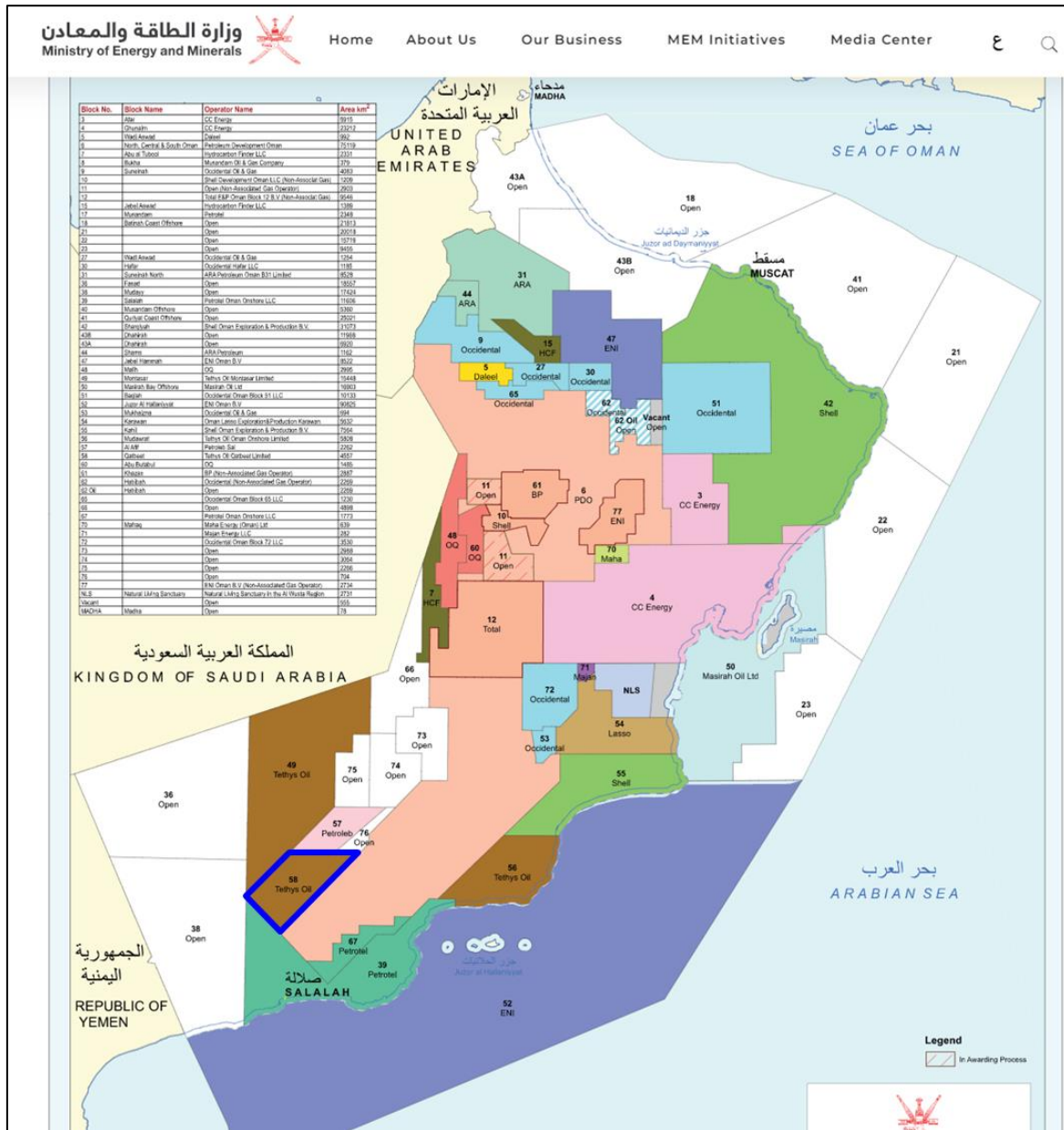- Fahd South-West Prospect

Figure 1 – Location Map (Block 58 Outlined in Blue)

MERL was asked to undertake an audit of the prospective resources and risking of the 3 prospects. The following report outlines the data made available for the audit and the process undertaken by MERL to confirm prospective resource volumes.

2   STRUCTURAL CHARACTERISATION

MERL was given access to the interpretation products of Tethys Oil's seismic interpretation exercise in Block 58, as a Kingdom seismic workstation project. Whilst MERL has not been tasked with the exhaustive validation of all aspects of the seismic interpretation, the depth maps presented for the purpose of volumetric assessment and risking were deemed to be reasonable.

MERL was able to assess the geological evolution of the three prospects and concur with Tethys Oil's interpretation that these structures are thrust anticlines, belonging to a compressional region widely known as the 'Western Deformation Front'.

MERL reviewed Tethys' assessment of the reservoir depth structure within each prospect and consider that the oil column heights modelled by Tethys Oil in its volumetric assessments (Table 2) are reasonable and are consistent with the geological model.

Prospect	Case	Formation	Gross Reservoir Thickness (m)	Oil Column Modelled (m)	Gross Rock Volume (MMm3)	N/G	Porosity	So	Boi	Recovery Factor
Fahd South	Low	Ara	10	66	13	0.10	0.02	0.50	1.7	0.05
Fahd South	Best	Ara	95	226	661	0.50	0.06	0.75	1.4	0.2
Fahd South	High	Ara	200	386	3494	0.90	0.10	0.90	1.1	0.35
Fahd South	Low	Buah	20	94	22	0.05	0.02	0.50	1.7	0.05
Fahd South	Best	Buah	120	346	1197	0.60	0.06	0.75	1.4	0.2
Fahd South	High	Buah	220	489	6630	0.95	0.12	0.90	1.1	0.35
Fahd South	Low	Khufai	10	94	11	0.05	0.02	0.50	1.7	0.05
Fahd South	Best	Khufai	50	346	678	0.50	0.07	0.75	1.4	0.2
Fahd South	High	Khufai	100	489	4116	0.95	0.11	0.90	1.1	0.35
Fahd South-West	Low	Ara	10	61	7	0.10	0.02	0.50	1.7	0.05
Fahd South-West	Best	Ara	95	140	211	0.50	0.06	0.75	1.4	0.2
Fahd South-West	High	Ara	200	201	562	0.90	0.10	0.90	1.1	0.35
Fahd South-West	Low	Buah	20	67	22	0.05	0.02	0.50	1.7	0.05
Fahd South-West	Best	Buah	120	207	466	0.60	0.06	0.75	1.4	0.2
Fahd South-West	High	Buah	220	252	815	0.95	0.12	0.90	1.1	0.35
Fahd South-West	Low	Khufai	10	67	13	0.05	0.02	0.50	1.7	0.05
Fahd South-West	Best	Khufai	50	207	248	0.50	0.07	0.75	1.4	0.2
Fahd South-West	High	Khufai	100	252	553	0.95	0.11	0.90	1.1	0.35
Fahd (Block 58)	Low	Buah	20	55	32	0.05	0.02	0.50	1.7	0.05
Fahd (Block 58)	Best	Buah	120	115	253	0.60	0.06	0.75	1.4	0.2
Fahd (Block 58)	High	Buah	220	261	2747	0.95	0.12	0.90	1.1	0.35
Fahd (Block 58)	Low	Khufai	10	55	17	0.05	0.02	0.50	1.7	0.05
Fahd (Block 58)	Best	Khufai	50	115	173	0.50	0.07	0.75	1.4	0.2
Fahd (Block 58)	High	Khufai	100	261	2159	0.95	0.11	0.90	1.1	0.35

Table 2 – Prospect Volumetric Input Parameters

3 RESERVOIR CHARACTERISATION

The prospectivity on Block 58 is characterised by carbonate reservoirs belonging to the Pre-Cambrian Nafun Group (Khufai & Buah Fm. Reservoirs) and Ara Groups. The Khufai and Buah Fm. reservoirs are widely understood to be carbonate ramp sediments deposited at the top of broad shallowing-up marine succession. The Ara Group is dominated by thick salt deposition with platform carbonates and carbonate stringers deposited during higher sea-level episodes in the basin. These geological characteristics are well understood in the South Oman Salt Basin.

Tethys Oil made available its log interpretation of key offset wells to the three prospects, including well data from Block 58 and neighbouring blocks. Together with the reviewers' experience working in the basin, this gave a strong indication of the likely presence, thickness and effectiveness of carbonate reservoirs over the three prospects. In order to further validate the petrophysical inputs to Tethys' volumetric assessments, MERL was given access to well data and reports for Blocks 3 and 4, where Tethys Oil has a non-operated interest in a number of discoveries within carbonates reservoirs of the Nafun Group. MERL carried out a brief audit of these data, in order to further validate the volumetric inputs in Block 58.

Data for the petrophysical evaluation comprised well data for 4 wells drilled into Blocks 3 and 4, Oman (Saiwan East-3, Samha-2, Shahd-F2, Ulfa-2). These offset data are the closest appropriate data that Tethys was able to share at the time of evaluation. Although significantly offset to Block 58, the Block 3 and 4 wells are interpreted to be in broadly the same carbonate ramp depositional setting and are thus appropriate for the broad validation of petrophysical inputs to volumetrics. Core descriptions of the wells highlights the importance of the early dolomitisation phase in the Block 3 & 4 wells for the maintenance of porosity in the carbonates. The data Tethys Oil holds for the offset well data in nearby blocks also indicate the presence of dolomitised reservoirs proximal to Block 58. These wells have not been included in the petrophysical review but do contribute to the assessment of gross reservoir thicknesses applied in the volumetric analyses. The overall uncertainty of the reservoir character is captured in the broad input ranges applied in the volumetric analysis.

Data provided for the petrophysical evaluation included; raw log data, interpreted log data for limited intervals, conventional core analysis, petrophysical parameterisation for a subset of the wells, extracts from field FDP documents covering the petrophysical analysis undertaken. The FDP documentation included the cementation exponent (m) and saturation exponent (n) parameters as derived from SCAL data, but no original SCAL report was available to confirm these parameters and their accuracy. No data was available to review the parameterisation of the Ara Group carbonates.

MERL reviewed the well logs and petrophysical analysis for wells Samha-2 and Ulfa-2 provided by Tethys and found the interpretation to be reasonable when compared against petrophysical curves derived by MERL.

Average parameters for each reservoir intervals were derived by MERL using the petrophysical cut-offs outlined in the FDP reports provided as these were deemed reasonable; 35% Vsh, 2% porosity, 50% water saturation. The resulting sums and averages were compared to those provided by Tethys. Whilst MERL was not able to accurately match the sums and averages presented in the reports for Blocks 3 and 4, MERL staff were able to

use their prior experience in the region to review the parameter ranges for the Block 58 volumetric analysis, Table 2.

Given the lack of data provided for the Ara Group reservoirs, the validity of the volumetric parameters in this interval was guided by prior experience from the region with uncertainty captured in the wide range of the inputs, Table 2.

Following its evaluation of the reservoir geology, MERL considers that the petrophysical inputs to Tethys' volumetric assessments, presented in Table 2, are fair and reasonable.

4   VOLUMETRICS

Monte Carlo simulations have been run on each prospective accumulation, constrained by the volumetric inputs set out in Table 2. These calculations were carried out following an industry standard methodology. MERL considers the resulting volumetric assessments, laid out in Table 1 to be a fair and accurate representation of the input data.

5   RISKING

5.1   FAHD SOUTH AND FAHD SOUTH-WEST PROSPECTS

MERL has reviewed Tethys Oil's risking of both the Fahd South and Fahd South-West Prospects and found both to be reasonable assessments, as set out in Table 3. In addition to the data available to Tethys Oil, MERL staff used their extensive technical experience in the area to guide the risking exercise. For the benefit of this assessment, all carbonate reservoirs within the Ara were considered as one.

Considering the traps, the availability of fair/high quality 3D seismic data renders the trap definition unequivocal, in MERL's view. The Trap effectiveness was generally found to be positively supported, given the strong indications for the presence of sealing salts and shales over the crests of the prospects.

In order to support the assessment of charge risk, MERL carried out a petroleum systems study, using data from key offset wells and involving the 1D modelling of 'pseudo wells' in the vicinity of the Fahad South and Fahad South-West prospects. 1D burial history and thermal maturity models were constructed at offset calibration wells and at pseudo wells in potential kitchen areas to the NW and SE of the prospects, and on the crest of the Fahd South-West Prospect. Estimates of missing section at key unconformities were made in the context of the area's structural history using seismic data available.

The results of the maturity modelling for most reasonable scenarios showed that potential source rocks charging the prospects were thermally mature for oil, and that the main phase of oil and gas expulsion occurred after the Fahad South and Fahd South-West traps were in place. Chance Factors for Charge and Trap Timing shown below are supported by this work.

Target	Reservoir			Trap				Charge			Pg
	Presence	Effectiveness	Overall	Presence	Effectiveness	Timing	Overall	SR Quality & Maturity	Effective Migration	Overall	
Ara	0.80	0.80	0.64	1.0	0.70	0.90	0.63	0.70	0.65	0.46	0.18
Buah	0.80	0.85	0.68	1.0	0.60	0.90	0.54	0.80	0.70	0.56	0.21
Khufai	0.90	0.70	0.63	1.0	0.70	0.90	0.63	0.80	0.75	0.60	0.24

Table 3 - Fahd South and Fahad South-West Prospect Risking

5.2 FAHD PROSPECT

Burial history and maturation modelling was not carried out on Fahad, or in the kitchen area for the prospect, so there is slightly more uncertainty in the charge and timing risk elements than for the Fahad South and Fahad South-West Prospects, see Table 4. The chance factors for charge and timing shown in Table 4 appropriately reflect this slightly higher uncertainty.

All other chance factors were considered to be the same as those applied in the equivalent reservoirs for Fahad South, reflecting the expected geological continuity between the three prospects.

Target	Reservoir			Trap				Charge			Pg
	Presence	Effectiveness	Overall	Presence	Effectiveness	Timing	Overall	SR Quality & Maturity	Effective Migration	Overall	
Buah	0.80	0.85	0.68	1.0	0.60	0.75	0.45	0.75	0.70	0.53	0.16
Khufai	0.90	0.70	0.63	1.0	0.70	0.75	0.53	0.75	0.75	0.56	0.19

Table 4 – Fahd Prospect Risking