

Table 1 Characterization of the reservoir characteristics and the collected water samples

Reservoir characteristics	Lu field block					Liu field block						
Oil Reservoir												
Formation lithology	Sandstone					Conglomerate						
Average depth (m)	1200					1088						
Pressure (MPa)	10.2					7.2						
Stratal temperature (°C)	37					22.6						
Average water content, %	80.8%					86.8%						
Interwell distances, m	300-425					100-150						
Average permeability, μm^2	522×10^{-3}					362×10^{-3}						
Effective porosity, %	29.9					18.96						
Water flooding (yr)	13					30						
Crude oil properties												
Density (g/cm ³)	0.846					0.912						
Viscosity in situ (mPa·s)	18					80.0						
Saturates (%)	71.29					61.94						
Aromatic (%)	14.85					11.24						
Resin (%)	5.94					18.85						
Asphalte (%)	5.94					7.97						
Well number	Lu3084	Lu1039	Lu2180	Lu3073	Lu3095	T86-0	T86-8	T93-0	T93-7	T90	T95	T96
Well type	Injection well	Production well				Injection well					Production well	
Mineralization	10850	11690	11170	10545	11102	10101	11313	11399	13991	13203	8997	9710
Total nitrogen, mg/L	15.1	11.5	10.6	12.7	11.6	7.6	6.8	10.2	11.5	5.7	6.3	8.5
Total phosphorus, mg/L	20.2	19.1	17.5	18.8	19.5	16.8	15.1	22.6	21.2	18.5	16.2	12.1
Na ⁺ K ⁺	4524.9	4803.1	4565.3	4308.7	4486.9	3364.3	3630.1	3801.6	4348.5	4014.2	3097	3139.8
Mg ²⁺	21.7	32.07	31.55	26.03	28.83	33.1	63.05	28.37	63.05	68.09	17.46	50.2

Ca ²⁺	191.3	281.9	284.7	181.6	216.4	70.18	77.98	72.78	77.98	96.17	86.36	108.66
Cl ⁻	5640	6125	5820	5160	5850	3010.24	3629.99	2921.7	3452.92	3098.77	3816.21	3405.92
SO ₄ ²⁻	116.2	14.04	4.86	23.13	8.86	483.4	89.4	523	362.4	89.9	65.6	165.1
HCO ₃ ⁻	356	434.1	464	846.29	511.4	3140.1	3823	4051.8	5686.9	5836.6	1914.9	2840.6