**GLOBAL EXPRESSION OF INTEREST (EOI) FOR**

**WATER MANAGEMENT STUDIES**

Cairn Oil and Gas, Vedanta Limited, (the “Company”) is the Operator of the Onshore RJ-ON-90/1 block (located in Barmer District of Rajasthan, India), Offshore CB-OS/2 (located on the West Coast of India) and Offshore Ravva Block (located on the East Coat of India) on behalf of itself and its Joint Venture (JV) partners.

In this regard, Cairn Oil and Gas invites partners to manage upstream operations in our three major fields, Mangala, Bhagyam and Aishwarya. A high-level summary of the fields is presented in Appendix I. Cairn would like to invite partners to deliver an end to end solution for the injection water and polymer system. The high-level objective is to inject water which is not damaging to reservoir permeability, gives the desired reservoir viscosity of polymer at low specific consumption, minimizes polymer degradation in the reservoir, reduces reservoir souring, is not corrosive to the surface pipes and tubulars and reaches w

ell bore wax appearance temperature. Cairn works strictly on the policy of zero harm to environment and all of the above should be achieved with no damage to people or environment.

Production from MBA fields mainly flows into the Mangala Processing Terminal (MPT). MBA fields produce nearly 100,000 barrels of oil per day with 700,000 barrels of water. The fluids go through the oil-water separation process through gravity settling tanks, skimming tanks and depurators, chemical treatment package, heaters and filters. The produced water stream is mixed with about 70,000 barrels per day local saline aquifer water at MPT and pumped through intra field pipelines to the well pads. The injection water is mixed with the concentrated polymer solution prepared in the local aquifer water before being injected at the well pad. Reservoir was initially sweet but produced water reinjection has led to some reservoir souring as well. The approximate specifications of the injection water and Thumbli aquifer water are given in Appendix II.

The partner is suggested to target the parameters below. These are just guidelines to achieve the objectives above.

1. Low total suspended solids

2. Low oil in water

3. Dissolved oxygen < 5ppb

4. Reducing hardness and salinity

The partner can among other things look at

1. Testing and implementing use of more thermal or shear resistant types of polymer.

2. Improving of oil-water and solids separation

3. Improve chemical dosing system

4. Increasing dilution of produced water with aquifer water

5. Augmentation of surface facilities.

6. Drilling additional disposal /re injection wells.

7. Lab studies, field sampling studies for monitoring and hypothesis testing for the above scope.

The partner will be suitably remunerated based on a per barrel increase in oil production with respect to an agreed base line. Maintaining Vedanta’s strict environmental protection standards, managing polymer consumption cost and overall water processing cost will also form part of the performance indices for payments.

Cairn Oil & Gas invites interested Consultants/Service providers with proven capabilities and demonstrated performance in similar requirements to express their interest in pre-qualification to participate in the International Competitive Bidding (ICB) Process for the services.

Interested companies meeting following criteria should respond to this EoI:

Technical Criteria:

Interested parties should demonstrate proven expertise in water flood management, polymer flood management, chemical EOR, polymer flood surveillance, lab studies etc. The parties should be self-sufficient with expert manpower and deploy required manpower on location.

Financial Criteria:

1. Turnover in each of the immediately preceding two financial years should be equal to or more than the estimated average annual contract value.

2. Positive net worth in each of the immediately preceding two financial years.

3. Liquidity ratio shall not be less than 1.00 in each of the preceding Two (02) financial years.

Also, note –

i. Normally standalone financials of the bidding entity only will be considered. However, consolidated financials at the bidding entity level, if available, can also be submitted. Parent/holding company financials can be submitted and considered, subject to submission of financial guarantee and commitment letter, as described under (ii).

ii. Where the bidding entity is unable to meet the Financial Evaluation Criteria, Parent/Holding Company Audited Financials can be considered, subject to:

a) Submission of Financial guarantee in the form of 10% Bank guarantee of contract value.

b) Commitment Letter from Parent/Company to provide financial support to the bidding entity.

iii. Evaluation will be based on the published annual reports / audited financials containing Auditor’s report, Balance sheet, Profit & Loss a/c and Notes to Accounts.

iv. In case of unaudited statements (if there are no audit requirements for auditing of financials as per the local law), the financials shall be accompanied by a certificate from a Certified Accountant. Certificate should also mention the fact that there is no requirement of audit of the financials as per the local law.

All qualifications and exceptions brought out in Auditor’s report and Notes to Accounts would be factored in while undertaking financial evaluation.

The interested suppliers should evince interest to participate in the Expression of Interest by clicking on the “Evince Interest” link against the corresponding EoI listing on the Cairn website i.e. http://www.cairnindia.com and submit their contact details online. Further to this, interested suppliers/ contractors would be invited to submit their response via Smart Source (Cairn’s e Sourcing Platform).

The Consultants/Service providers may be requested to submit the following pre-qualification documents at an appropriate stage:

1. Letter of interest clearly indicating the Project references.

2. Company's financial performance documents (Audited Balance sheets and Profit and Loss statements, Auditors Report and Notes to Accounts etc.) for last 2 (two) years. Latest financial statement should not be older than 12 months on the date of submission of response to Expression of interest.

3. Detailed Company Information with Organisation structure.

4. Details of completion of similar type of projects in the last five years under headings:

a. Brief scope of work

b. Value of work in INR/USD

c. Contractual Duration

d. Actual completion of Project

e. Clients name

f. Contact details of the Client (Cairn may approach the client directly for the feedback)

g. Safety Certification / Inspection of plant and machineries

h. HSE statistics, LTI graph etc.

5. Typical Project Planning and Execution methodology.

6. List of all jobs under execution with the value of the Job and percentage completion (with particular emphasis on projects of similar magnitudes carried out in Oil and Gas Sector).

7. Experience of working in similar terrain and remote areas.

8. HSE policy and implementation procedures in line with internationally accepted practices with statistics for last four years.

9. Quality assurance & Quality control practices currently in place for the execution of similar work/services.

The interested suppliers should “Evince interest” to participate in EoI within 14 days of publication of Expression of Interest by clicking on the “Evince Interest” link against EoI listing on the Cairn website i.e. http://www.cairnindia.com and submit their contact details online.

In case of any issue faced by the vendor during the evincing of interest please contact Manjushree.Samanta@cairnindia.com/Mithun@cairnindia.com.

**APPENDIX I**

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| --- | --- | --- | --- |
|  | **Mangala** | **Bhagyam** | **Aishwarya** |
| Estimated  Oil Originally in place (million stock tank barrels) | 1329 | 515 | 300 |
| Recovery factor as on July 2020 | 34% | 11% | 17% |
| Field development plan under implementation | Polymer flooding | Water flooding transitioning to polymer flood | Water flooding transitioning to polymer flood |
| In-situ Oil Viscosity | 16 cp to 20 cp | 15 cp to 400 cp | 8 cp to 12 cp |
| Depth of oil water contact (true vertical depth below mean sea level) | 963 m | 448 m | 1157 m |
| Rock type | Sandstone | Sandstone | Sandstone |
| Permeability (milli Darcies) | 1000-5000 | 500-3000 | 500-2000 |
| Initial Reservoir pressure at oil water contact | 1629 psi | 892 psi | 1906 psi |
| Initial Reservoir Temperature | 65-67 deg C | 55-58 deg C | 72-75 deg C |
| Production rate as on September 2020 (1000 barrels of oil per day) | 78 | 10 | 12 |

**APPENDIX II**

Typical specs of injection brine and Thumbli aquifer water for evaluation purpose -

