



**WE FUEL AMAZING  
CAIRN INDIA LIMITED**

**GLOBAL EXPRESSION OF INTEREST (EOI) FOR PROCUREMENT SERVICES FOR  
DIFFERENT G & G STUDIES UNDER LONG TERM RATE CONTRACT FOR RAJASTHAN  
BLOCK**

Cairn India Limited ("CIL"), on behalf of itself and its Joint Venture (JV) partners Cairn Energy Hydrocarbons Limited (CEHL) and Oil and Natural Gas Corporation Limited (ONGC) is the Operator of the Onshore block RJ-ON-90/1 ("Block"), located in the state of Rajasthan, India. The Block contains number of major oil discoveries, including the Mangala, Bhagyam and Aishwariya Fields.

CIL on behalf of itself and its joint venture partners invites interested contractors (Indian and International) with proven capabilities and demonstrated HSE performance to express their interest for pre-qualification to participate in an International Competitive Bidding Process (ICB) for the packages listed below. CIL shall enter into Long Term Rate contract for the provision of G & G studies on call-out order basis.

<b>Package Ref No.</b>	<b>Item Description</b>	<b>Brief Technical specification</b>
<b>A 1</b>	<b>PVT Analysis</b>	The scope of work comprises the compositional and physical property analysis of reservoir fluids (oil/gas/water) produced during the drilling of E&A wells.
<b>A 2</b>	<b>Geochemical &amp; Petro graphic Analysis</b>	The scope of work includes petrographic descriptions and mineralogical analyses, biostratigraphic analysis, related inorganic geochemical analysis, source rock geochemical analysis and other specialist analytical services.

Package Ref No.	Item Description	Brief Technical specification
A 3	Core Analysis	<p>Contractors shall perform the services separately in three different sections, as follows:</p> <p><b>Laboratory Core Handling and Processing, Core Sampling, and Sample Preparation</b></p> <p>Core handling, core sampling/plugging, CT scanning of core samples &amp; whole cores, sample preparation/(re)preservation, layout when requested, white and UV digital photography, slabbing, biscuit cuts, eventual resination of whole core and provision of boxes etc.. together with associated procedures to be performed in Contractor's facility.</p> <p><b>Conventional Core Analysis (CCA) of Prepared Samples</b></p> <p>These include spectral gamma ray scanning of core, He/air poro-perm at ambient and overburden loading &amp; unloading cycle, specific liquid permeability, sand sieve particle analysis, Laser Particle Size Analysis (LPSA), Dean-Stark saturation fluid measurement etc.</p> <p>Note that the final analytical program for CCA will be decided by the Company depending on the quality of core retrieved and after any core preliminary preparation is completed.</p> <p><b>Special core analysis of prepared samples</b></p> <p>Detailed information and desired scope of work are detailed below. Analysis such as wettability, NMR, relative permeability, electrical properties, &amp; drainage Capillary Pressure (MICP, Pressure Equilibrium &amp;/or Centrifuge method to attain endpoint saturation Swirr) &amp; Imbibition cycle etc. are anticipated.</p> <p>Note that the final SCAL program will be decided by the Company depending on the quality of core retrieved and only after the conventional core analyses results are reviewed.</p> <p>Contractors are advised that Company requires all specialist SCAL work to be conducted at reservoir temperature, often also at NOBP, and on either native state or restored-aged core materials using reservoir fluids. This is a minimum requirement.</p>
A 4	Reservoir Characterization	<p>This scope of work and technical specifications for the provision of specialist geological consulting services pertaining to the description of these cuttings, RSWCs, SWC and core samples, along with any associated outcrop field samples that may be relevant.</p>

Package Ref No.	Item Description	Brief Technical specification
A 5	Image Log & Processing	<p>All the wells to be analyzed as a part of the study have image data recorded over an interval larger than the reservoir interval of interest. The Scope of Work is to carry out a detailed Image Log Analysis along with the integration with the core data and as well as wire-line log if applicable or required. The contractor may decide, in consultation with the company, based on the QC of the Image log, to process additional well if any if the Image quality is very bad in any of the wells mentioned in the quotation provided by the bidder. The company would ensure that interval provided by the company for the additional well or the replacement well in lieu of the bad quality Image in any of the mentioned wells in Quotation.</p> <p>There are 4 aspects to the study:</p> <p><b>1. Processing and QC:</b> Process the selected image logs recorded by various service providers to produce static and dynamic images for interpretation, after carrying out necessary pre-interpretation corrections, such as accelerometer corrections,.</p> <p><b>2. Structural Interpretation:</b></p> <p>a)</p> <ul style="list-style-type: none"> <li>• Interactive dip picking of laminations and bed boundaries</li> <li>• Recognition and picking of erosional surfaces and unconformities</li> <li>• Sub-division of study intervals based on geological structure, using dip trend analysis and stereographic analysis. Calculation of structural dips and interpretation of structural zone boundaries.</li> <li>• Identification structural features such as faults</li> <li>• Identification of bore hole break out direction and intensity for stress analysis.</li> </ul> <p><b>b) Fracture Identification and Analysis</b></p> <ul style="list-style-type: none"> <li>• True orientation of fracture</li> <li>• Fracture analysis open or closed fracture analysis</li> <li>• Spacing, intersections and clustering of fractures</li> <li>• Wellbore breakouts and Borehole shape.</li> <li>• Fracture orientation.</li> </ul> <p><b>3. Interpretation of sedimentological features and environments (Clastic Reservoir)</b></p> <ul style="list-style-type: none"> <li>• Definition of lithofacies from the image logs, calibrated to conceptual estuarine tidal depositional models and limited core data.</li> <li>• Quantification of proportions lithofacies and thicknesses and possible relation between facies, porosity and permeability.</li> <li>• Sediment dispersal analysis: hierarchy of different sandstone internal surfaces (foresets, set boundaries), bed-form architecture, palaeotransport/palaeoslope analysis, direction and sand-body orientations</li> <li>• Synthesis of lithofacies and palaeotransport analysis into depositional model</li> <li>• Interpretation of sand body geometry using lithofacies, facies associations, stacking patterns and dip.</li> </ul>

Package Ref No.	Item Description	Brief Technical specification
A 6	Sonic Log & Processing	<p>All the wells to be analyzed as a part of the study have image data recorded over an interval larger than the reservoir interval of interest. The Scope of Work is to carry out a detailed Sonic Log Analysis which includes the following.</p> <ul style="list-style-type: none"> <li>• Commercially available wireline and LWD tools; including many vintage logs.</li> <li>• Compressional, Shear slowness and Stoneley</li> <li>• Shear Wave Anisotropy analysis</li> <li>• Open Fracture Identification</li> <li>• Density Log Editing</li> <li>• Dispersion corrections</li> </ul> <p>Additional Services: Forward modeling of tool response</p>
A 7	Fluid Inclusion Studies	<p>The scope of work is to evaluate the possibility of deeper charge and proximity to the migration pathway in the basin. This includes the fluid inclusion studies on the core samples from no. of wells as well as out crop samples.</p>

**Specific Pre-Qualification Criteria ( "GO"/"NO GO")**

**Technical:**

- Minimum 3 Years of experience in providing similar services to reputed Operators / Clients

**Financial:**

- The average turnover in each of the immediately preceding two financial years should be 2 times of the annual contract value.
- Positive net-worth of at least 20% of annual contract value in each of the immediately preceding two financial years
- Liquidity ratio in each of the preceding 2 financial years shall not be less than 0.75

Only those contractors (both Indian & International) possessing substantial and proven record in any of above services of similar scale & who are interested to enter into Long Term rate Contract should respond to this notice. Contractors are requested, as a minimum, to submit the documents listed against package.

**In addition to the above requested document, contractor shall also submit credentials to support the specific qualification criteria for each package.**

Contractors are requested, as a minimum, to submit the following documents and details:

1. Letter of interest with detailed company information
2. Lists of similar services successfully executed in the last five years and those of currently under execution with performance records, job value, client certification, client references etc.(With emphasis of work carried out in Oil and Gas Sector)
3. Company's set up with Capacity details and Geographical location.
4. Current loading chart.
5. Experience of working in remote onshore location & desert terrain.
6. Quality assurance/control practices and certifications to manufacture such items.
7. Health, Safety and Environment (HSE) policies, certifications, procedures and statistics on HSE performance covering the last four (4) years.
8. Company's financial performance documents (Audited Balance sheets and Profit and Loss statements etc.) for last 3 years.

CIL requests interested contractors to submit their Expression of Interest for any / all of the above packages, clearly specifying the **Package Ref. No. with item description** {example - Ref No. A 1 - PVT Analysis} on the letter of interest along with pre-qualification documents.)

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 India website and submit their contact details online. Further to this, interested suppliers would be invited to submit their response via Smart Source (Cairn's e Sourcing Platform). The suppliers would be requested, as a minimum, to submit the following documents and details for prequalification via Smart Source

The interested suppliers should evince interest to participate in EoI within 14 days of publication of Expression of Interest.