



Energy for India

CAIRN ENERGY INDIA PTY LIMITED

(Incorporated in New South Wales, Australia – ACN 002 066 784)

EXPRESSION OF INTEREST FOR DIGITAL OIL FIELD PROJECT INTEGRATION SERVICES NORTHERN AREA FIELD DEVELOPMENT PROJECT, RAJASTHAN.

Cairn Energy India Pty Ltd ('CEIL') is the Operator, on behalf of Joint Venture partners Cairn and ONGC, of the Contract Area RJ-ON-90/1 in the State of Rajasthan, India. Subsequent to several successful oil & gas field discoveries in the area, CEIL is in the process of development of these fields. Production is expected to commence this year. The Mangala Processing Terminal will process the crude oil & transport the oil to the Gujarat coast via a 660 Km long 24" diameter pipeline. Raageshwari Terminal will process the gas & accompanying condensate for transporting to Mangala Processing Terminal / Export Pipeline. Raw Water for use in these facilities will be supplied from Thumbli aquifer.

CEIL seeks Expressions of Interest (EOI) for integration services of 30+ IT systems (implemented in phases over several years) required to manage and monitor the Rajasthan assets. The individual systems range from allocating the gross export volumes back to the individual wells, monitoring and trending various parts of the process equipment remotely, system for recording and analyzing well test information, tracking pigging operations, HSE systems, digital security architecture, and many more. This includes integrating Cairn provided hardware and software solutions to gather disparate field data and present to the end users in a common platform for managing, monitoring, reporting and invoicing, from reputable quality approved contractors with previous experience of integration for respective services as per details given below.

SOW of Integration Services

The integrator contractor shall manage deployment of the Digital Oil Field Systems for following:

- SUPP, Mangala & Raageshwari Processing Terminals located in Rajasthan and its associated wells (500+ wells)
- Midstream Integration 680 km Pipeline from Mangala (Rajasthan) to Salaya (Gujarat) terminals.
- Suvali and Ravva terminal in later phase (this scope may be added to phase 3 below).

The scope of work for the Digital Oil Field Integration contractor includes but not limited to; possible purchase and supply of hardware/software, configuration, FAT, integration and turn key delivery of following:

A) General Services and Key Deliverables

- To act as the focal point for all integration matters and take complete accountability for integrating various software and hardware modules listed below to meet business requirements
- To assess all the specifications of various software and hardware components mentioned in the list and their integration capability with each other.
- Facilitate Cairn in vendor selection for various software and hardware modules to be integrated. Creating product and vendor evaluation matrix, technical capability ranking, historical performance delivery, etc.
- Option to purchase and supply all hardware/software/licences required as part of the Digital Oilfield Project.
- Understanding the requirements from business w.r.t each module to be customised so as to deliver this business requirement within agreed timelines.
- Requirements definition from business w.r.t each module and detailed design as per business requirements.
- Design reviews and coordinate appropriate work shops to further define scope and requirements of specific systems
- System staging
- Module configuration
- Customisation and creation of various reporting and dashboard requirements as per requirements captured above
- Setup the hardware infrastructure and deploy the same within Cairn premises.
- Integration testing & factory acceptance testing (FAT) of software modules, various softwares and hardware.
- Field deployment
- Commissioning and go live

- End User training and start-up support
- Site acceptance testing (SAT) and handover
- Project Management of the entire project starting from product identification, facilitate in procurement of hardware, software modules & licenses, to integration of various stages outlined above.
- Logistics and Handling of software/hardware modules if the some part of integration is done outside India.
- Documentation of various process, flow diagrams and Work instructions related to configuration of modules.
- Training of Cairn specialists on the above modules and help in establishing the Cairn support team for future operation and maintenance of these systems.

B) SOW for Software and Hardware (Phase Wise)

Phased Approach for Implementation

The Digital Oilfield Systems implementation will be done in phases. Critical systems delivered in Phase 1 for First Oil, Midstream and integrity management in phase 2, and performance management and optimization in Phase 3. This phased approach allows for further definition of midstream requirements, risk management, Management of Change from an early stage, with a focus of delivery on First Oil. Furthermore, tight delivery schedule doesn't allow concurrent delivery of phases and hence these three phases will overlap.

Phase	Phase Name	Estimated timelines	Locations
Phase 1	Critical for first oil	12 months	Rajasthan Upstream & skeleton midstream
Phase 2	Midstream applications and Integrity Mgmt.	12 months	Midstream pipeline
Phase 3	Incremental performance improvements	8 months	Rajasthan, Ravva and Suvali upstream

Phase – I: Critical for first Oil

The scopes of work shall include, but not limited to, integration of following modules

Components/Modules	Potential/typical Products for integration	Comments
Data Historian	Aspen. OSI PI	
Facilities Visualization	ISS Babelfish, Matrikon, DecisionSpace	
Production Dashboards	ISS Babelfish, Matrikon	Customised dashboards
Well Surveillance	PDMS Oil & Gas Suite, Babelfish front-end	
Well Test	PDMS Well Test Module	With custom change & Babelfish front-end
Rate & Phase	PDMS Well test Module	With custom changes and Babelfish
Multi-phase Metering	HAIMO/ SLB's Vx	Be-spoke integration using PRS module
Production Reporting	Energy Components PRS / ISS Production Reporting & Allocation module	
Export Management	No specific product	Using above PRA Module
Liquids Balancing		
Remote Access to ICS screens	No specific product	Using terminal services or other options
IT Infrastructure	HP Servers, Storage and Cisco for general networking	as per Cairn program office standards
Systems Integration	-	Overall integration of above components and cost for integration.
Remote Connectivity Project	-	Integration of above components with Real time drilling & completion (pre-existing)
Web based eLogbook	eLogbook	Web based e-logbook for shift handovers
Production Upset Reporting		
Lab Data Archive		

Phase- II : Midstream applications and Integrity Management

Components/Modules

Export Management System
Pig tracking
Lab data Archive
Liquids balancing system
Central Alarm Management system
Management of change
IT and Integration (phase-II)
Overall Integration phase-II
Provisioning third party connectivity
Project Management

Phase-III – Incremental Performance Improvements

The scopes of work shall include, but not limited to, integration of following modules

Components/Modules

Engineering Data Warehouse (optional)
Asset Performance Management Software
Loss reporting & Analysis
Health Management
Integrated Collaboration Environment
Electronic Permit to Work system

EOI is requested for turn-key integration services for Phase-I, with the option of extending services to the remaining phases. Only those companies / consortiums possessing a proven track record of performance delivery in executing configuration and integration systems of similar or greater size and complexity of above modules should respond to this notice. Companies are requested, as a minimum, to submit the following documents and details:

1. Letter of interest with detailed company/consortium information.
2. Lists of similar work (magnitude & complexity) successfully executed in the last five years and similar projects/agreements currently under execution. (With particular emphasis on projects with major Oil and Gas Operators).
3. For item 'B' details (phase-I), we require integrators with specific experience of integrating all of the components mentioned in the list together, preferably we would like to get references of companies where similar integration was done previously by integrator.
4. CVs of key qualified personnel with experience of integrating similar modules who are likely to be engaged for this project, mentioning their oil and Gas experience
5. Estimates of manhours required for the configuration, installation, customization and integration of each of the various components/modules. These manhour estimates should also be converted into what percentage of the work could be 'lump sum' or 'schedule of rate' based.
6. Ability of the company to purchase and supply both the hardware, software and licences together with undertaking the Integration Services specified.
7. Where the integration work is to be carried out and what element is to be carried out outside of India.
8. The integration company requires to demonstrate 'Vendor Independency' as this will be a key element of technically comparing and justifying the correct product for use.
9. Health, Safety and Environment (HSE) policies, procedures and statistics covering the last 4 years.
10. Corporate financial details for last 3 years.

All information and documentation shall be provided at address below within 7 days of publication of this EOI by e-mail as attached PDF file and via courier to:

Deputy General Manager - Contracts

Cairn Energy India Pty Limited, 3rd & 4th Floors, Orchid Plaza, Suncity, Sector 54, Gurgaon 122 002

E-mail : rjnprocurement@cairnindia.com