EXPRESSION OF INTEREST (EOI)

FULL WAVEFORM INVERSION (FWI) SOFTWARE

1. INTRODUCTION

OIL INDIA LIMITED (OIL), a "Maharatna" Category Central Public Sector Enterprise of Government of India under Ministry of Petroleum & Natural Gas, is engaged in the exploration, production and transportation of crude oil & natural gas with its Headquarter at Duliajan, Assam. In India, OIL has its major onshore and offshore operations extending to different sedimentary basins including Assam-Arakan Basin, Cambay Basin, Bikaner-Nagaur Basin, Andaman Basin, Krishna-Godavari Basin, Mahanadi Basin, Kerala-Konkan Basin etc. Geophysics Department of OIL has established its in-house capabilities of executing seismic data processing projects through its own state-of-the art seismic data processing center called Processing, Reservoir Imaging & Subsurface Modelling (PRISM), which has high-end hardware & software capabilities. Geophysics department, OIL, intends to purchase software for executing Full waveform Inversion (FWI) of seismic data to augment its in-house seismic data processing capabilities.

View above, Oil India Limited (OIL) invites Expression of Interest (EOI) from reputed and technically competent vendors/companies with the purpose of exploring and identifying technically capable vendors who possess experience in (a) supply & support of FWI software and (b) execution of FWI projects.

This EOI is issued only for market survey to identify potential vendor's technical capability for FWI and shall not constitute any commitment by OIL for procurement or award of work.

2. OBJECTIVE

To explore and identify technically capable vendors who possess suitable experience for execution of FWI projects and provide supply & support of FWI software.

View above, we request you to kindly provide a technical note for your FWI solution, including the following details:

I. Company Introduction and Business Profile
II. Type of license (perpetual/subscription)
III. Key functionalities and modules included
IV. Standalone FWI modules or part of a software suite
V. Handling capability of vintage data (e.g. low offset & fold, frequency > 8 HZ, narrow azimuth etc.)
VI. Required inputs and processing workflow for FWI for both marine & land processing
VII. FWI workflow & Case studies for both onshore and offshore
VIII. Experience (with technical details) in executing FWI projects
IX. Training and support services in India
X. Hardware requirements and execution timeline for FWI up to 25Hz for quantum of 500 SqKm as per vendor's capabilities (with acquisition parameters mentioned as per **Annexure-I)**. The response to be provided as per **Annexure-II.**
XI. Execution timeline to run FWI up to 25Hz for quantum of 500 SqKm (with acquisition parameters mentioned as per **Annexure-I)** on OIL's PRISM hardware resources (24 nos. of Nvidia H100 GPU cards). The response to be provided as per **Annexure-II.**
XII. Inter-operability with Omega (M/s SLB) and Aspen Epos (M/s Aspentech) software
XIII. Also, provide details of your technical capabilities as per requirements mentioned in **Annexure-III**

3. SUBMISSION OF EXPRESSION OF INTEREST:

Interested parties are requested to submit their EOIs in electronic format to the following email ids:

I. abhijit_sonowal@oilindia.in
II. manish_singh@oilindia.in
III. amrinder_sharma@oilindia.in

or in hard copy to the following address no later than **07.11.2026**.

CGM-Geophysics (HoD)
GEOPHYSICS DEPARTMENT
INDUSTRIAL AREA
OIL INDIA LIMITED
P.O. DULIAJAN-786602
DIST. DIBRUGARH, ASSAM, INDIA

4. GENERAL NOTES

I. All documents/brochures submitted along with the EOI shall be self-certified and clear & legible.
II. Vendors are required to deliver a technical presentation on scheduled date which will be informed after EOI submission date.
III. The EOI is liable to be ignored in case of submission of any misleading/false representation.
IV. OIL reserves the right to ignore any or all EOI bids, without assigning any reason thereof.
V. Should you have any questions or require further clarification, please do not hesitate to contact us at abhijit_sonowal@oilindia.in, manish_singh@oilindia.in, amrinder_sharma@oilindia.in on or before **31.10.2026**

5. CONFIDENTIALITY

All information provided during the EOI process will be treated as confidential and used solely for the purpose of evaluating submissions and thereby enabling OIL to prepare a final Scope of Work / Schedule of Rate for OIL's upcoming tender if any for "Procurement of FWI software license". Please note that this invitation does not constitute a commitment to award the project or provide any form of reimbursement for costs incurred during the preparation of the EOI.

We look forward to receiving your Expression of Interest and exploring the potential of working together.

Annexure-I

ACQUISITION PARAMETERS (Offshore dataset)	
Cable Length	10000 m
No. of Streamers	8
Cable Separation	100 m
Group Interval	12.5 m
Groups per Streamer	800
Record Length	16 seconds
Sample Rate	2 ms
High Cut Filter	200 Hz, 270 dB/Oct
Low Cut Filter	2 Hz, 3 dB/Oct
Source Volume	3460 cu in
Source Depth	5m ± 1m
Source Separation	50 m
Shot point Interval	25 m flip flop
Nominal Fold	100

ACQUISITION PARAMETERS (Onshore dataset)			
Number of Active channels per shot	8624	Bin Size	10 m X 20 m
Type of shooting	Symmetrical Split Spread	Symmetric Split Spread	308-308
Source	Explosives	Number of active receivers per line	616
Receiver Line Interval	400 m	Number of receiver lines per swath	14
Source Line Interval	440 m	Number of receivers per template	8624
Group Interval	20 m	Inline fold	14
Shot Interval	40 m	Cross line fold	7
Maximum-Minimum Offset	594.64 m	Nominal Fold	98
Maximum Offset	6677.01 m	Max Min Offset	594.64 m
Record Length	8 sec	Max Offset	6677.01
Sampling Interval	2 ms	Type of Geometry	Orthogonal

Annexure-II

Sl.	**Inversion Physics & Workflows**	**Track A: Vendor In-House / Cloud Capability**	**Track B: OIL PRISM Infrastructure (Capped at 24 GPUs)**
		Allocated GPUs / Cores & Turnaround Time	**Turnaround Time (24 GPUs Only)**
1.0	**Acoustic FWI (Diving + Reflection)**		
1.1	Offshore Project	*Vendor to specify: [___ GPU and or nodes] → [___ Days]*	*Vendor to specify: [___ Days]*
1.2	Onshore Project	*Vendor to specify: [___ GPU and or nodes] → [___ Days]*	*Vendor to specify: [___ Days]*
2.0	**Elastic FWI (P- and S-wave Inversion)**		
2.1	Offshore Project	*Vendor to specify: [___ GPU and or nodes] → [___ Days]*	*Vendor to specify: [___ Days]*
2.2	Onshore Project	*Vendor to specify: [___ GPU and or nodes] → [___ Days]*	*Vendor to specify: [___ Days]*
3.0	**Multiparameter FWI (**V_p, V_s,Density $\rho, \epsilon, \delta, Q$**)**		
3.1	Visco-Acoustic Multiparameter ($V_p + Q_p + \epsilon, \delta$ TTI) (Offshore Project)	*Vendor to specify: [___ GPU and or nodes] → [___ Days]*	*Vendor to specify: [___ Days]*
3.2	Visco-Acoustic Multiparameter ($V_p + Q_p + \epsilon, \delta$ TTI) (Onshore Project)	*Vendor to specify: [___ GPU and or nodes] → [___ Days]*	*Vendor to specify: [___ Days]*
3.3	Visco-Elastic Multiparameter ($V_p + V_s + \rho + Q_p + Q_s$) (Offshore Project)	*Vendor to specify: [___ GPU and or nodes] → [___ Days]*	*Vendor to specify: [___ Days]*
3.4	Visco-Elastic Multiparameter ($V_p + V_s + \rho + Q_p + Q_s$) (Onshore Project)	*Vendor to specify: [___ GPU and or nodes] → [___ Days]*	*Vendor to specify: [___ Days]*

Annexure-III

Technical requirements for FWI:

Sul	**Functional Requirement**	**Vendor Compliance (Full / Partial / Nil)**	**Proposed Module Name**	**Technical Details/Reference document (with page no.)**
1.0	**Core Inversion Algorithms**			
1.1	Diving-wave Acoustic FWI			
1.2	Reflection FWI (RFWI)			
1.3	Multi-scale frequency continuation			
1.4	Robust cycle-skipping mitigation			
2.0	**Anisotropy & Physics Modelling**			
2.1	Anisotropic FWI (VTI & TTI)			
2.2	Visco-acoustic / Q Inversion			
2.3	Elastic FWI			
2.4	FWI Derived Reflectivity (FDR)			
2.5	Multiparameter FWI			
3.0	**HPC & Architecture Execution**			
3.1	Hybrid CPU / GPU Parallelization			

3.2	Distributed HPC Job Scheduling			
3.3	Checkpoint & Restart Capability			
3.4	Dynamic Job Monitoring & Dashboard			
4.0	**QC, Preconditioning & Wavefield Control**			
4.1	Illumination Compensation			
4.2	Gradient Preconditioning & Filtering			
4.3	Misfit / Residual Analysis			
4.4	Wavelet Estimation Engine			
5.0	**Specialized Solutions & Extensions**			
5.1	High-frequency FWI (≥ 25 Hz)			
5.2	Time-lag / Extended Space FWI			
5.3	4D Time-Lapse FWI			
5.4	Standalone vs. Base Module Dependency			