

OIL INDIA LIMITED
DULIAJAN

EXPRESSION OF INTEREST (EOI)
NO. EXPL/20/EOI/01/2023

FOR

DESCRIPTION: 3D PETROLEUM SYSTEM MODELING (PSM) OF OIL'S OPERATIONAL AREAS IN ASSAM AND ARUNACHAL PRADESH ADOPTING INTEGRATED PLAY BASED EXPLORATION APPROACH USING ARTIFICIAL INTELLIGENCE / MACHINE LEARNING (AI / ML) TECHNOLOGY WHEREVER APPLICABLE, AND STUDY OF KOPILI PLAY IN DETAIL FOR PROSPECT GENERATION THROUGH ENGAGING AN INTERNATIONALLY REPUTED CONSULTANCY FIRM.

I. PREAMBLE:

- 1.1 OIL INDIA LIMITED (OIL), a Government of India Enterprise under the Ministry of Petroleum and Natural Gas, is a premier upstream Navaratna Oil Company engaged in the business of Exploration, Production & Transportation of Crude Oil & Natural Gas as well as production of LPG. It's Field Headquarters (FHQ) is at Duliajan, Dibrugarh, Assam (INDIA) and Corporate office is in Noida, UP (INDIA). OIL's operations are largely based in the North-Eastern parts of India particularly in Assam, Arunachal Pradesh, Nagaland, Mizoram and Tripura. Additionally, OIL operates in Rajasthan, Andhra Pradesh, Andaman and Kerala-Kankan and also has overseas presence.
- 1.2 As part of the renewed exploration efforts it is planned to carry out 1 (one) 3D Petroleum System Modeling (PSM) of OIL's Operational Areas in Assam and Arunachal Pradesh adopting Integrated Play Based Exploration approach using Artificial Intelligence / Machine Learning (AI / ML) Technology wherever applicable, and study of Kopili play in detail for prospect generation. The studies are planned to be carried out under single contract by engaging internationally reputed consultancy firm.

II. OBJECTIVE OF THE STUDY:

- 2.1 The planned studies will be carried out with following broad objectives:
 - a) To carry out a 3D PSM for OIL's Operational Areas in Upper Assam Shelf Basin, adopting Integrated Play Based Exploration approach.
 - b) Play based study for regional understanding (with special emphasis to understand the regional seal & reservoir facies development - Kopili Play).

- c) To adopt AI / ML Technology wherever applicable, especially for data-gap area and also to enhance data quality wherever necessary for the study.
- d) To incorporate all key geoscientific data, geochemical data, production and well completion data available in the study area.
- e) Detailed seismic horizon / well top mapping for at least eight (8) horizons (may incorporate OIL's existing horizons / faults, to carryout necessary refinement.)
- f) Regional geological evaluation using Sequence stratigraphic approach for depositional Environment/ chronostratigraphic correlation of different stratigraphic units/ plays.
- g) Sedimentological / depositional model building, paleo-structural analysis, paleogeographic reconstruction, Petrophysical & facies analysis/ modeling.
- h) To evaluate Generation, Expulsion, Migration and Entrapment within the basin with different tectonic episodes and to evaluate regional cap-rock/ seal integrity with reservoir facies development in the basin.
- i) To adopt 1D / 2D / 3D Basin modelling approach to understand the basinal evolution.
- j) Identification of plays, generation of play fairway and play risk maps.
- k) To evaluate/ estimate hydrocarbon resources and also to estimate yet to find (YTF) resources in the study area based on 3D PSM Study.
- l) 3D Structural framework and fault seal analysis shall be carried out to understand risks associated with seal capacity of the structures.
- m) Evaluation/estimation of hydrocarbon resources for the study area including Kopili Play.
- n) To identify focus exploration areas within the study area based on 3D PSM Study.
- o) To identify and generate lead / prospects based on interpretations and to estimate in-place hydrocarbon resources for each prospect within Kopili Play following the latest SPE-PRMS guideline.
- p) To carry out techno-economic evaluation for newly identified prospects.

- q) Ranking of the identified/evaluated prospects generated under each study based on both geological and techno-economic considerations to prioritize areas/locations for drilling.

2.2 Phase wise detail scope of the studies will be incorporated during tendering process.

2.3 Maps & Co-ordinates of the study areas (both Phase-I & II) are given in **Figure 1(a) & 1(b)**.

III. TENTATIVE PROJECT TIME LINE:

3.1 Both the studies are planned to be completed under single contract in two phases (**Phase-I and Phase-II**) and the project timeline for both the phases is planned to be 52 weeks. Phase wise project details is given in the following table:

Text Table-I: Details of the Studies in Phase-I and II

PHASE	TIMELINE	STUDIES	REMARKS
Phase-I*	32 Weeks	3D PSM Study	To adopt, i) Integrated play based Exploration (PBE) Approach. ii) AI/ ML technology wherever applicable (in data-gap areas and to enhance data quality)
	4 Weeks	Report Submission	
Phase-II*	12 Weeks	Kopili Play Study	To adopt, i) AI/ ML technology wherever applicable (in data-gap areas and to enhance data quality) ii) To generate prospect
	4 Weeks	Report Submission	

Text Table-II: Details of the Deliverables

Deliverables*	<ol style="list-style-type: none"> 1. PSM Study outputs 2. Play Based Study results 3. Play Map / Play Fairway Map / Play Risk Map 4. Prospect Map 5. Target Areas for Drillable Prospects Inventory.
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Note: *Detail scope of work and deliverables will be finalized during tendering

3.2 Detail timeline of the project (Phase-I & II) will be integrated during tendering process.

IV. DEPLOYMENT OF MANPOWER BY CONSULTANCY FIRM:

4.1 The deployment of manpower for Project (Phase-I & II) shall be as under:

- a) **Project Coordinator:** One Project Co-coordinator for the project (Phase-I & II) with single point responsibility/ authority with all the delegations of power for all the proposed two (2) studies. The Project Coordinator should have experience of coordinating three (3) or more regional/ PSM projects for globally reputed E&P Company in the last 10 years.
 - b) **Senior Consultant(s):** Senior Consultant(s) with at least 25 years of experience in carrying out 3D PSM study, Prospect Evaluation, Resource Estimation, Techno-Economics Analysis in various sedimentary basins. The candidate should have experience in delivering three (3) or more regional/ PSM projects as Senior Consultant (s) for globally reputed E&P Company in the last 10 years.
 - c) **Domain Experts:** Domain Experts with relevant experience in the field of Geo-Chemistry, 1D/2D/3D Basin Modeling, Sequence Stratigraphy, Structural & Stratigraphic interpretation, Structural Geology, Petrophysical Analysis, Basin Scale Modeling and Resource Estimation/ Techno-economics with minimum requisite work experience of 20 years. The Domain Expert also should have relevant experience in AI/ ML technology.
 - d) **Geoscientist (s) / Reservoir Engineer (s):** Adequate nos. of Geoscientist (s) / Engineer (s) for each study with experience in seismic interpretation / reservoir characterization / petrophysical analysis / PSM with minimum 10 years of experience.
- 4.2 The consultancy firm may include additional manpower with requisite experience as per their convenience without additional financial load on OIL, however, the Project time-line shall be maintained strictly.
- 4.3 **Deployment of OIL's personal:** At least Five (5) nos. of OIL's Geoscientists / Reservoir Engineers shall be associated as per requirement of the project.

V. PLACE OF WORK AND FACILITY/RESOURCES:

- 5.1 The planned studies shall be carried out at suitable place of the Consultancy Firm. The project to be completed by utilizing consultancy firm's facilities / resources and fit for purpose software(s) / hardware(s).
- 5.2 A team of geoscientists of OIL shall be associated with the consultancy team during all phases of the Project. Consultancy firm to arrange facilities viz. working space / hardware / software for OIL's Geoscientists (minimum two persons at a time) while QC of the job at their work-place. The out-put of all projects shall be submitted to OIL in compatible format with OIL's existing software platform(s).
- 5.3 A fortnightly discussion on progress of the project to be held in online / offline mode. Interim progress of the project shall be discussed with OIL's Geoscientists

on monthly basis (online/offline mode) and final results on these proposed studies shall be presented at OIL's FHQ, Duliajan and Corporate Office, NOIDA.

VI. DELIVERABLES:

- 6.1 The results to be submitted in the form of a report on successful completion of the Project. The Report (hard and soft copy) shall provide details of methodology adopted for the study, results of the study incorporating recommendation thereof, etc. The Consultant has to discuss and present the findings of the study at Draft stage in FHQ, Duliajan prior to submit the Final Report.
- 6.2 The Consultant shall provide the data/models/results including the economic analysis spreadsheets in digital format including Geo-cellular models to OIL in PETREL & KINGDOM compatible format.
- 6.3 Based on the above study, the consultant(s) shall provide specific recommendations for exploratory/extension drilling and focus areas for future exploration.
- 6.4 Phase wise detail deliverables of the project will be incorporated in the tender.

VII. SUPPORTING DOCUMENTS/ INFORMATION:

- 7.1 The Consultancy Firm shall provide information pertaining to past experience in handling similar studies indicated in aforesaid Text Table No. I.
- 7.2 The Consultancy Firm shall provide, phase wise details of technical specifications for softwares/ hardware to be used during the studies.
- 7.3 Experience in use of AI / ML Technology by the Consultancy Firm.
- 7.4 **Budgetary Quotation:** Budgetary Quotes with item-wise break up (including all applicable Taxes) as per format enclosed as **Annexure-I** duly signed with Company seal by authorised representative on official letter head. The validity of the Budgetary Quotes should be at least for six (6) months from the date submission of EOI. The budgetary quotes shall be addressed to following address:

DGM & HoD-EXPLORATION BASIN
OIL INDIA LIMITED
EXPLORATION BASIN DEPARTMENT
P.O. DULIAJAN-786602
DIST. DIBRUGARH, ASSAM, INDIA
e-mail: TEAMCenter@oilindia.in / expl_basin@oilindia.in

VIII. GENERAL NOTES:

- 8.1 All documents/brochures submitted along with the EOI shall be self-certified and clear & legible.
- 8.2 The EOI is liable to be ignored in case of submission of any misleading/false representation.
- 8.3 OIL reserves the right to ignore any or all EOIs, without assigning any reason thereof.
- 8.4 The financial credentials (viz Company's Net worth, Financial Turnover etc) of the interested vendors will be incorporated during tendering process

IX. EOI MEETING:

- 9.1 An EOI meeting with interested vendor(s) is scheduled to be held on **10.07.2023 & 11.07.2023 at Delhi/ Noida**. The final venue/ time for the proposed EOI meeting will be intimated nearer the time.

X. SUBMISSION OF EOI:

- 10.1 Interested parties are invited to submit their EOI and any related queries at our e-mail ID: **expl_basin@oilindia.in** and **TEAMCenter@oilindia.in** latest by **07.07.2023**.
- 10.2 OIL reserves the right to (a) accept or reject any/all EOI(s) submitted by parties and cancel the process at any time without any liability and assigning any reason thereof

FIGURE 1 (a) : MAP AND COORDINATES OF 3D PSM STUDY AREA

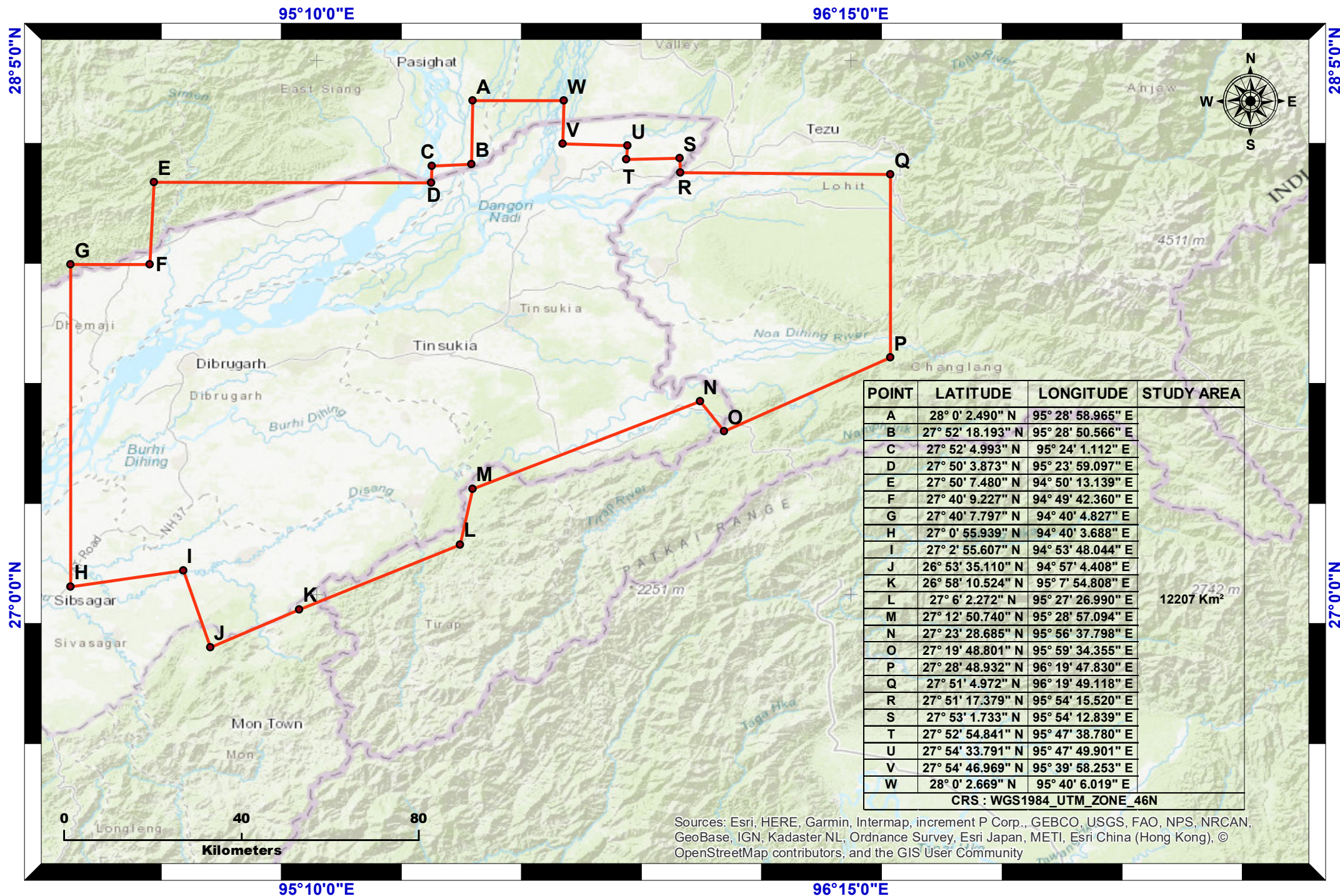
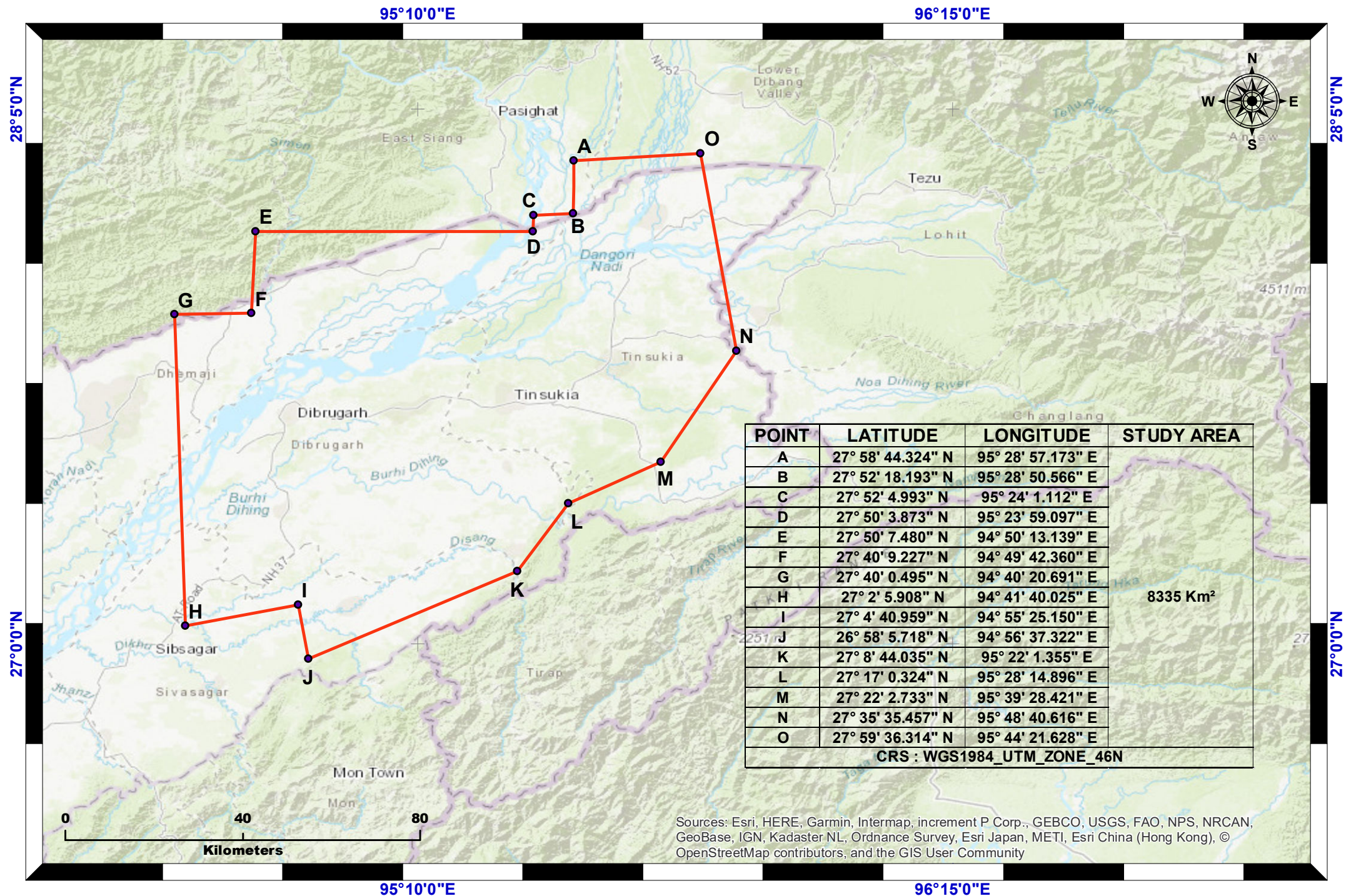


FIGURE 1 (b) : MAP AND COORDINATES OF KOPILI STUDY AREA



Budgetary Quotation (BQ)**Annexure-I****Name of the Consultancy Firm:****BQ Validity:**

Phase	ITEM	UNIT	Quantity	Unit Price (USD/INR)	TOTAL PRICE (USD/ INR)
I	3D PSM Study (using AI/ ML Tecnology wherever applicable) with Report Submission	Km ²	12207		
II	Kopili Play Study (using AI/ ML Tecnology wherever applicable) with Report Submission	Km ²	8335		
All Applicable Taxes					
TOTAL					

Signature :
Name :
Designation :
Place :
Date :
Seal of the Bidder :