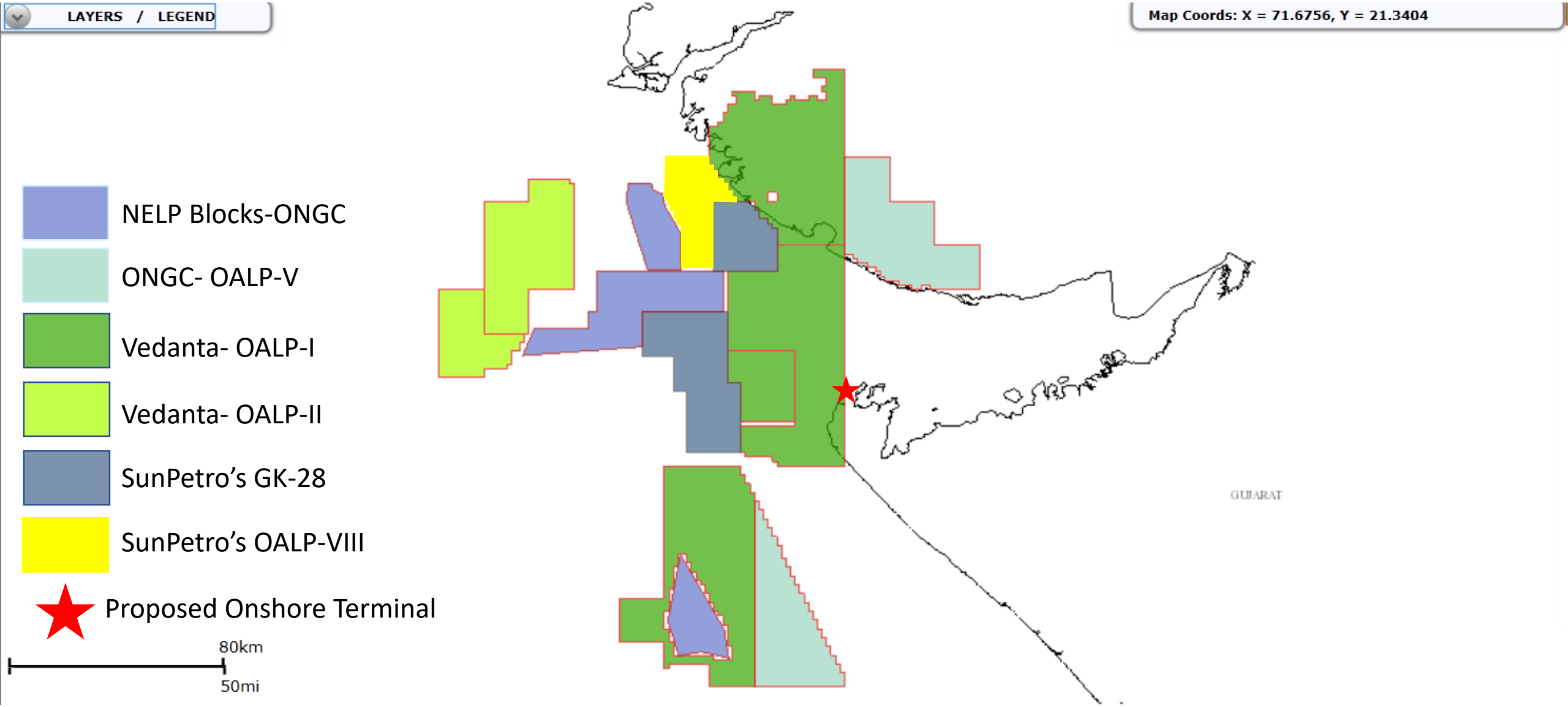
Development of Bhaskar-3 (GK-28) Field of SunPetro

Sun Petrochemicals Private Limited (SunPetro).
8th, 9th & 10th Floors. ATL Corporate Park.
Powai. Andheri (E).
Mumbai – 400072.

Assets of SunPetro

Blocks Of Kutch Basin



Blocks Of Kutch Basin…contd.

ONGC BLOCKS

1. GSOSN-2004/1
   - NELP-VI
   - 100% PI : ONGC
2. GKOSN-2009/1
   - NELP-VIII
   - PI : ONGC (50%), IOCL (25%), AWEL(25%)
3. GKOSN-2010/1
   - NELP-IX
   - PI : ONGC (60%), OIL (30%), GAIL(10%)
4. GKOSN-2009/2
   - NELP-VI
   - 100% PI : ONGC
5. GKOSN-2010/2
   - NELP-VI
   - 100% PI : ONGC

VEDANTA BLOCKS

1. GKONHP-2017/1
   - OALP-I
   - 100% PI : VEDANTA
2. GKOSHP-2017/1
   - OALP-I
   - 100% PI : VEDANTA
3. GKOSHP-2017/2
   - OALP-I
   - 100% PI : VEDANTA
4. GKOSHP-2018/1
   - OALP-II
   - 100% PI : VEDANTA
5. GKOSHP-2018/2
   - OALP-III
   - 100% PI : VEDANTA
6. GK-OSHP-01
   - DSF-III
   - 100% PI : VEDANTA

SunPetro BLOCKS

1. GKOSHP-GK-28
   - DSF-III
   - 100% PI : SunPetro

2. GKOSHP-2021/1
   - OALP-VIII
   - 100% PI : SunPetro

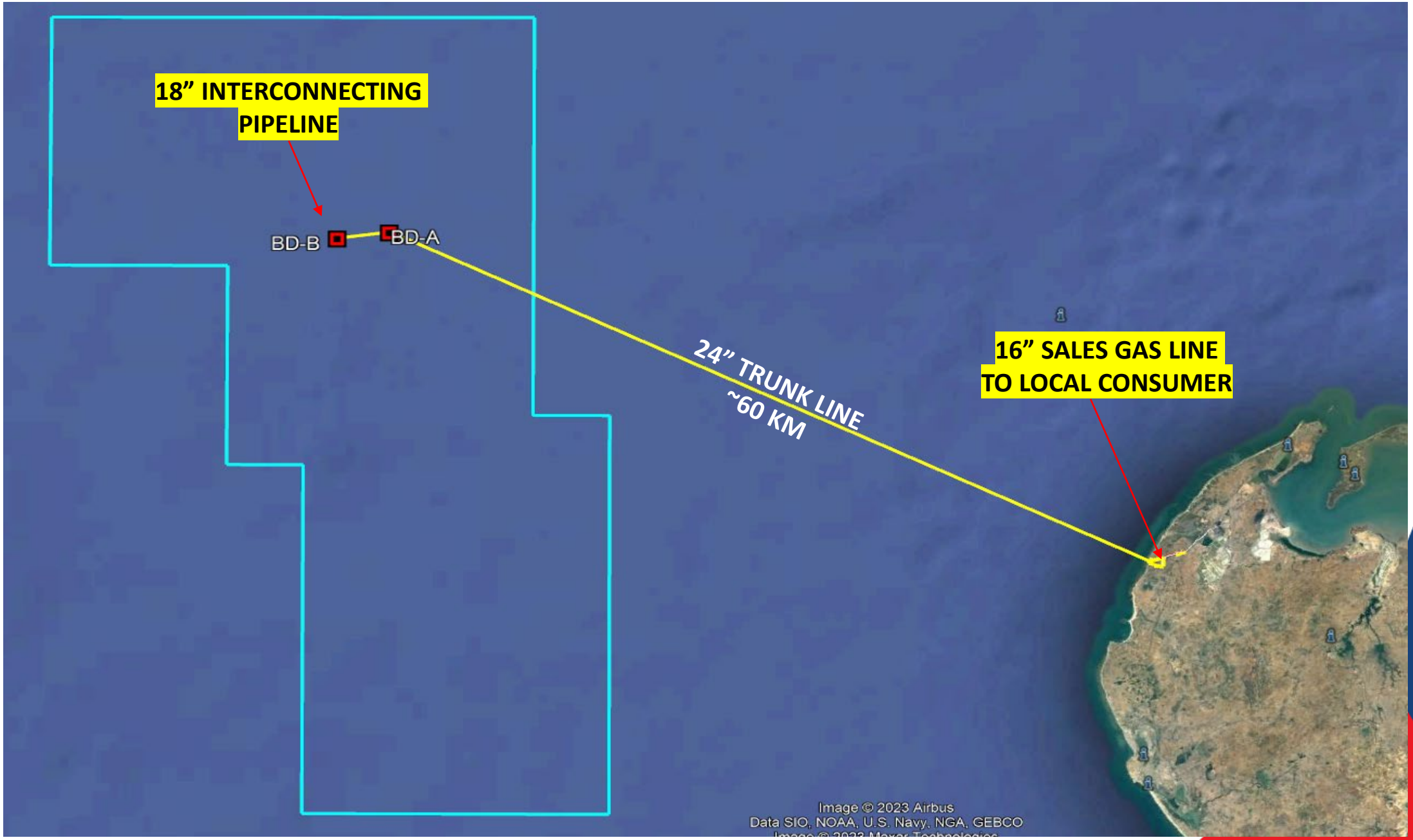
Bhaskar-3 Field : Salient Features & Development Strategy

- This field is spread over an area of 1455 sq. kms and consists of various pools. It is mainly a gas field with associate condensate & oil.
- Field consists of two formation, to be developed in phases.
  - Tertiary : 19 Pools [Chhasra (700 m), Jakhau (1100 m) & Nakhatrana (1300 m), N2 upto 15%].
  - Mesozoic : 03 Pools [~3300 m], CO2 upto 5%.
- 1st Phase: Development of Tertiary sands in sub-phases starting with Sub-Phase-1, developing the larger pool (first) to smaller pools. Sub-Phase-1 envisages production of 2.5 MMSCMD of gas and 2,400 BOPD of oil and condensate.
- Gas potential of the field from Tertiary & Mesozoic reservoirs may be of the order of 10 – 20 MMSCMD which will be established after Sub-Phase-1.
- 2nd Phase: Development of Mesozoic sands planned after completing the 1st Phase development.
- FDP is aproved by DGH.

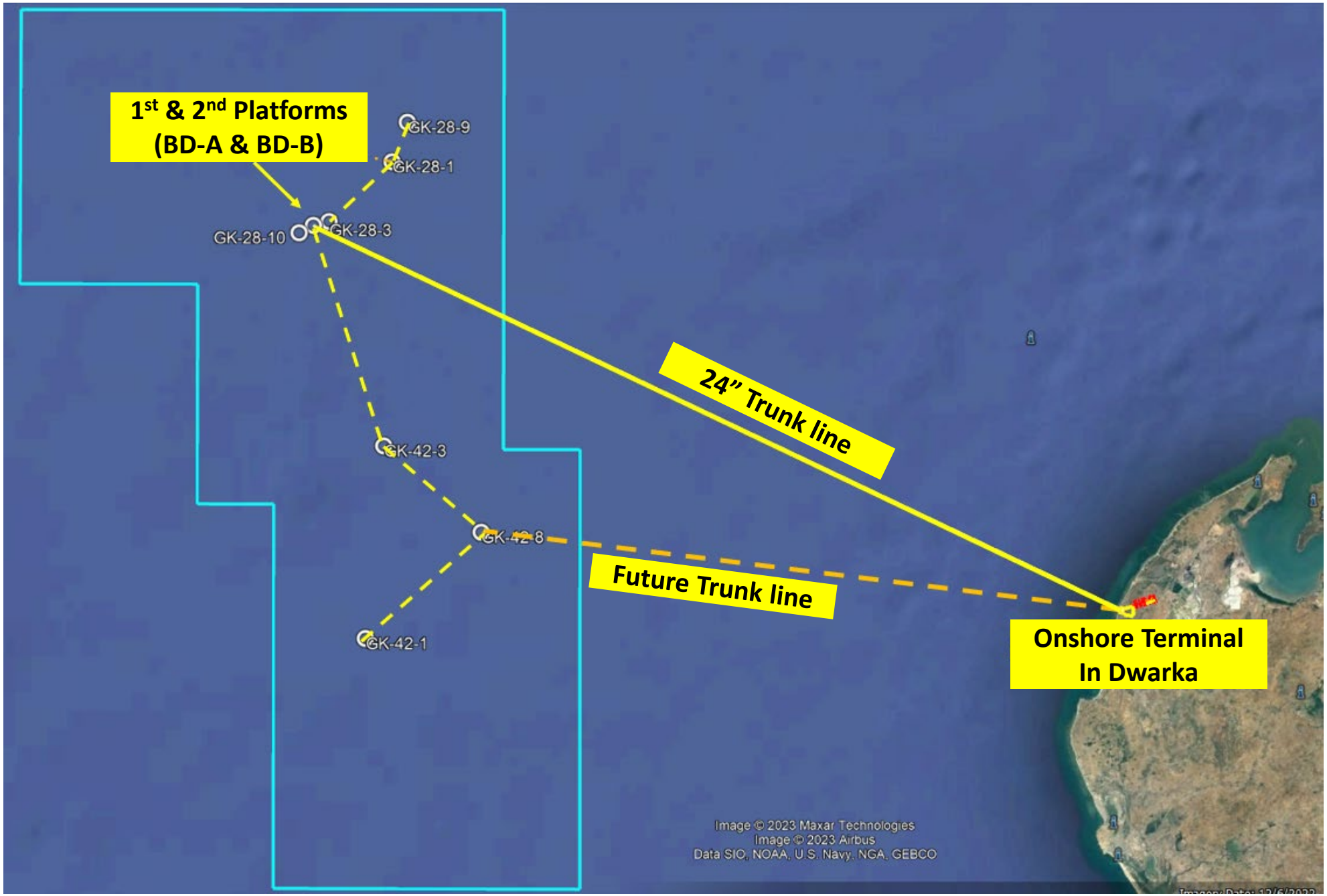
Bhaskar-3 Gas Composition

Component	% v/v	
	Upper Zone	Lower Zone
Methane	85.70	86.16
Ethane	3.20	5.57
Propane	0.40	0.77
Iso-butane	0.20	0.29
N Butane	0.08	0.24
Iso-Pentane	0.01	0.14
N Pentane	0.01	0.07
Hexane	0.34	0.34
Nitrogen	10.00	1.22
Carbon Di Oxide	0.03	5.20

Bhaskar-3 Field Development Plan: Sub-Phase-1



Bhaskar-3 Field Development Plan: Phase-1



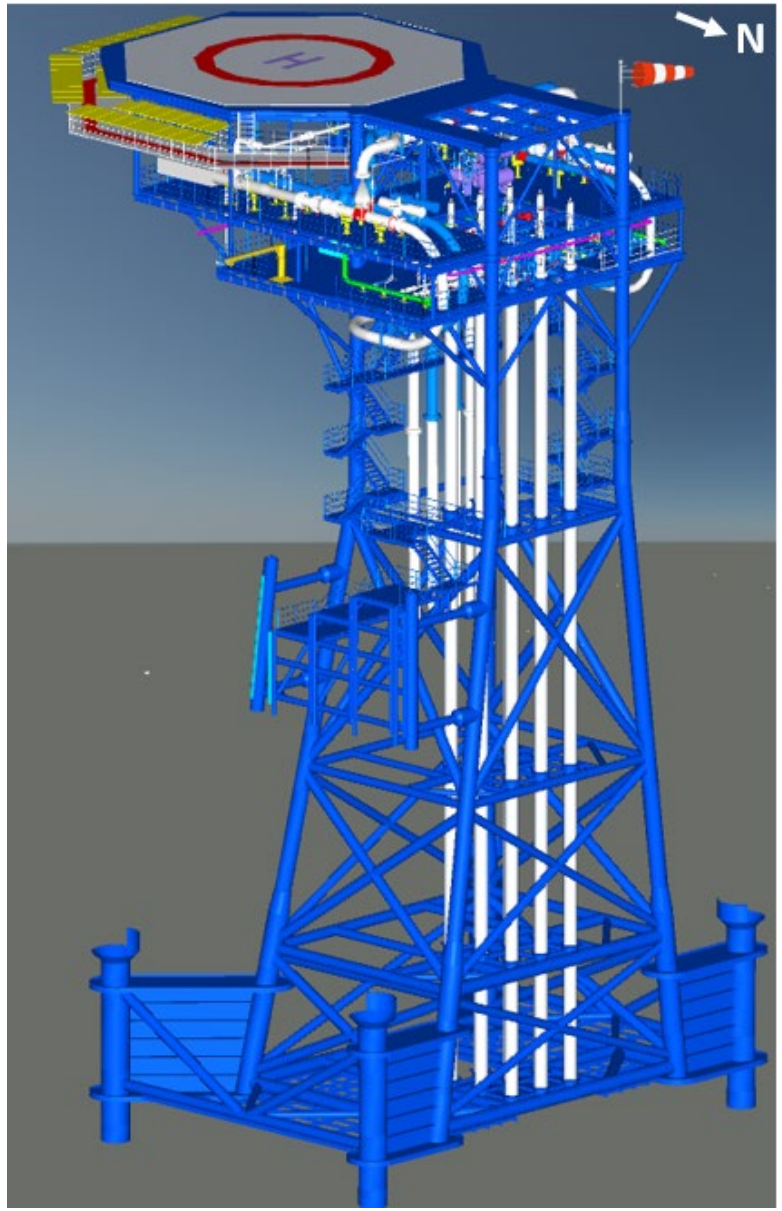
Updates on Bhaskar-3 (GK-28)

1	Commencement of development work is getting delayed due to environment related approvals.
2	Non-availability of infrastructure / pipeline for evacuation of produced gas is a challenge for development.
3	PSTM processing of broadband data completed. PSDM broadband processing is in progress.
4	Contracts awarded for marine warranty and geophysical / geotechnical surveyors.
5	Bids for Loadout, Marine Spreads and Transportation & Installation (T&I) services are under evaluation.

- **Progress Update:**

- **Platform#1 at M/s Chowgule's Mangalore Yard : ~85%.**
- **Platform#2 at M/s DAS Offshore's Rohini Yard: ~70%.**

Smart Wellhead Platform



Having total weight of about 1300 Tons without compromising safety aspects against conventional platforms of other operators having weight of about 3800 Tons

Status of Smart Wellhead Platform for Bhaskar-3 (GK-28) at Mangalore Yard

Mezzanine deck fabrication in progress

Helideck fabrication in progress

Upended cellar deck

Status of Smart Wellhead Platform for Bhaskar-3 (GK-28) at Mangalore Yard...contd.

JACKET

Anode & Skirt Sleeve Erection in Progress

Status of Smart Wellhead Platform for Bhaskar-3 (GK-28) at Mangalore Yard...contd.

Boat Landing

Status of Smart Wellhead Platform for Bhaskar-3 (GK-28) at Rohini Yard

Jacket Flap-up Preparation

Status of Smart Wellhead Platform for Bhaskar-3 (GK-28) at Rohini Yard...contd.

Jacket Flap-up for Row-2 (Right Side)

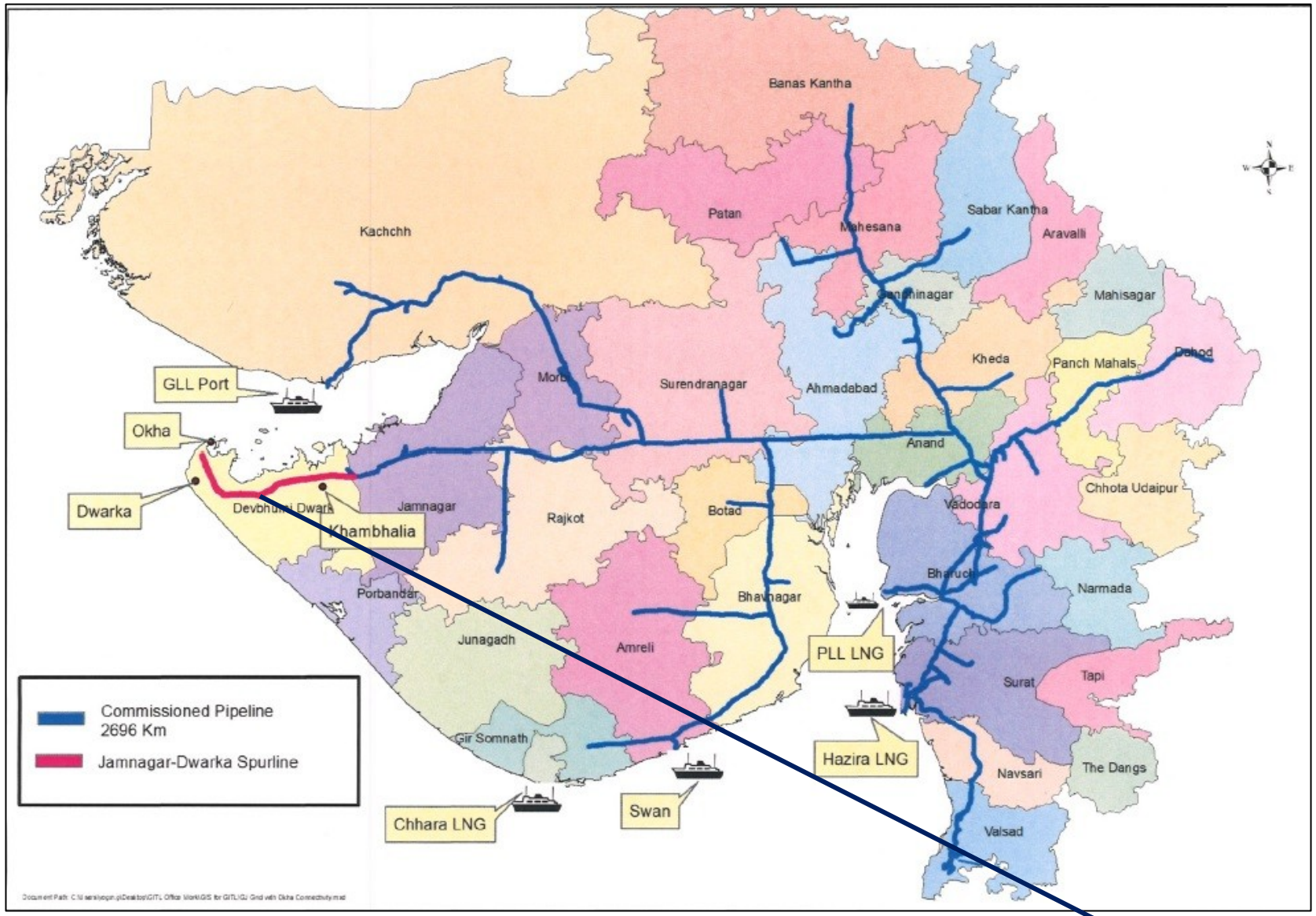
Status of Smart Wellhead Platform for Bhaskar-3 (GK-28) at Rohini Yard...contd.

Skirt Sleeve Yoke Plate Fabrication in progress

Loadout and Transportation & Installation (T&I) for Platforms

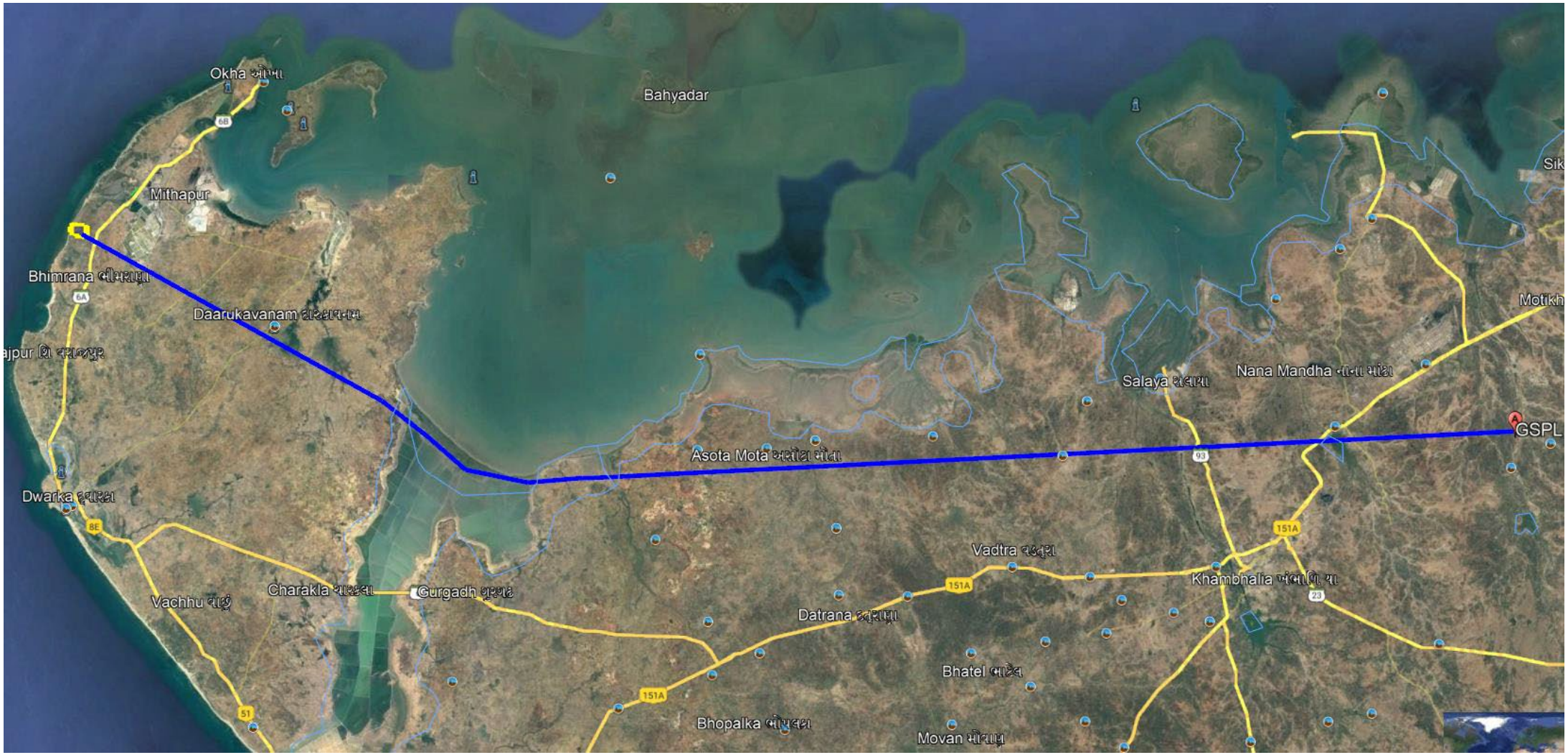
- **Bids under evaluation.**
- **Installation of both platforms being planned in December 2024.**

Plan for Gas Evacuation from GK-28 (Bhaskar-III) Field



SunPetro plans to connect with existing gas network, with or without JV for laying ~ 90 km pipeline between Dwarka & Jamnagar

Route of Proposed Gas Pipeline from Dwarka to Vadinar / Jamnagar (~90 km)



Status of Land for Onshore Terminal

- **LAQ for ~150 Acre land is ongoing for OT near Dwarka.**
- **A jetty will be constructed at the OT for meeting construction as well as for Oil / Condensate evacuation.**

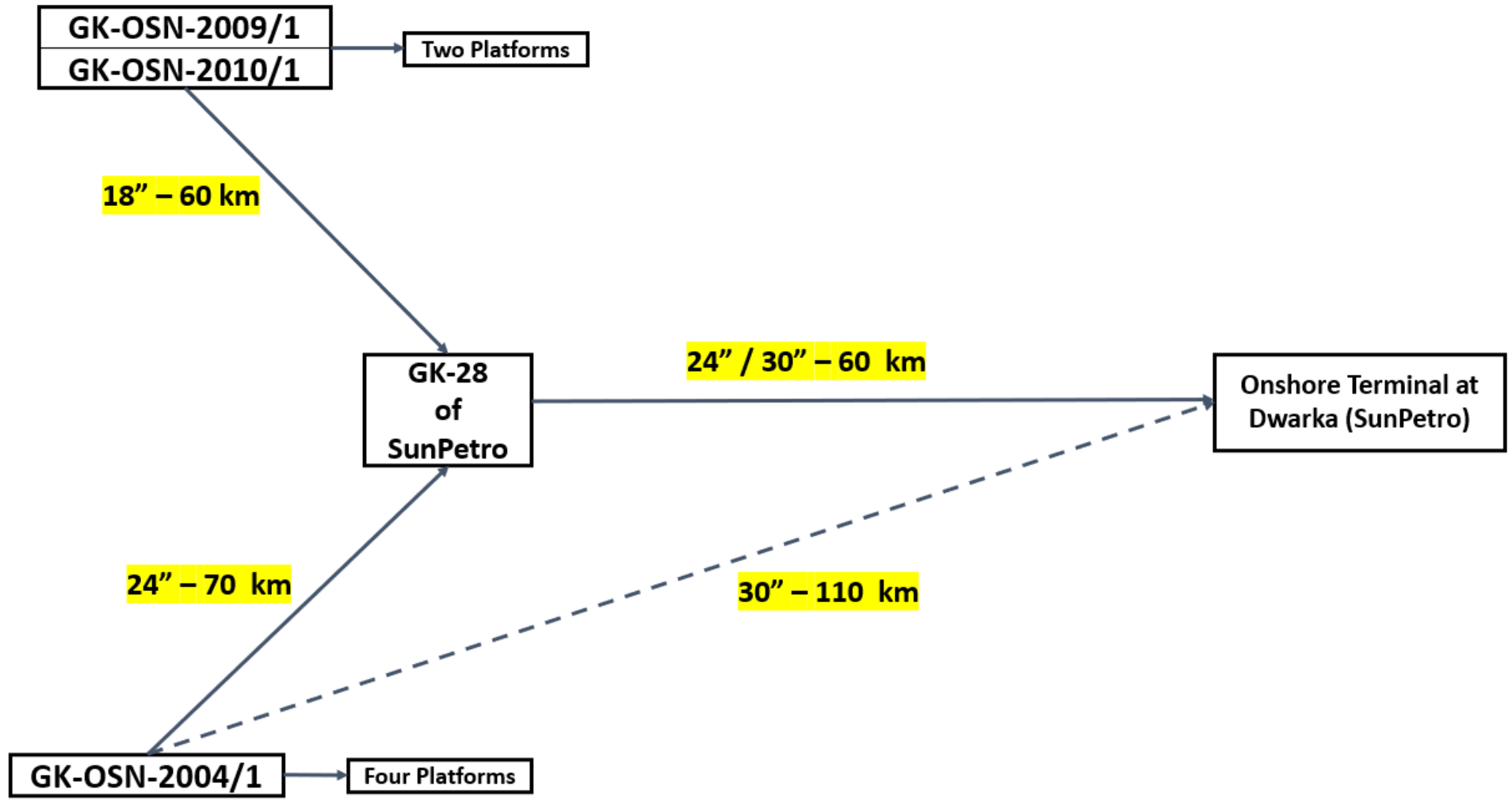
Status of Various Studies for Bhaskar-3

- **Pre-feasibility Report submitted by EIL on N2 removal up to 5% and production of Methanol & Ammonia.**
- **Study on going with IIT-BHU:**
  - **Separation of Nitrogen from N2 - rich Natural Gas (with 15% N2) to less than 5% N2 Natural Gas.**
  - **Production of Methanol from Natural Gas by direct method of low-pressure GTL Technology.**
- **In-house experiment is ongoing for separation of N2 from NG by Hydro-Cyclone.**

Past Discussions with ONGC

S. No.	Agenda	Date
1	Team from IEOT and IOGPT of ONGC visited for design & engineering supports required for development of Oil & Gas fields	23-Nov-22
2	A team from ONGC's Offshore Engineering Services visited for understanding the development activities ongoing at SunPetro	19-May-23
3	Meeting held at ONGC (Vasudhara Bhavan) for possibility of joint development	19-Jun-23
4	Meeting convened by DGH at ONGC's Vasudhara Bhavan for development of GK Basin	19-Oct-23
5	One of the Directors from ONGC visited SunPetro for a discussion on GK-28 development	5-Jan-24
6	ONGC Team visited to discuss on the development of GK Fields	23-Jul-24 & 31-Aug-24

Economics of ONGC's Fields - Development Concept



Economics of ONGC's Fields…contd.

Standalone Basis Development by ONGC: As per ONGC's data considering water depth of 70 – 80 m and well depth of 4,600 m.

S. No.	Item	Quantity	UOM	Rate, USD MM	Total, USD MM
1	Platform (Unmanned)	6	Nos.	65	390
2	18" Interconnecting Pipeline	120	km	0.8	96
3	Facilities for interconnecting all the Platforms	6	Lot	5	30
4	Main Collector Pipeline 30"	110	km	1.3	143
5	Main Collector Pipeline from North Part to OT in Dwarka	120	km	1.2	144
6	OT Facilities in Dwarka	1	Lot	180	180
7	Cost of Wells	15	Nos.	25	375
8	T&I	1	Lot	100	100
8	Sub-Total				1458
9	Considering Engineering + Contingency @ 15%				1677
10	With 10% Escalation Total Project Cost				1845

Economics of ONGC's Fields…contd.

Integrated Development: If ONGC Fields are developed in integration with SunPetro's GK-28 Field

S. No.	Item	Quantity	UOM	Rate, USD MM	Total, USD MM
1	Platform (Unmanned)	6	Nos.	65	390
2	Pipeline Interconnection	100	km	0.8	80
3	Facilities for interconnection	6	Lot	2.5	15
4	24" Collector Pipeline to connect SunPetro Facility	100	km	1.2	120
5	Incremental Cost of Main 30" Pipeline	60	km	0.4	24
6	Cost of Wells	15	Nos.	25	375
7	Additional Facilities at OT	1	Lot	50	50
8	T&I	1	Lot	100	100
9	Sub-Total				1154
10	Considering Engineering + Contingency @ 15%				1327
11	With 10% Escalation Total Project Cost				1460

Economics of ONGC's Fields…contd.

Sensitivity Analysis:

S. No.	Basis	Capex, USD MM / year	Gas Price, USD / MMBTU	Breakeven In-place Reserve, TCF	Production Profile to Support, MMSCMD
1	Standalone	369	6	3.4	17
2		369	7.5	2.6	13
3		369	9	2.1	11
4		369	10	1.9	9
5		369	12	1.5	8
6	Integrated	292	6	2.7	13
7		292	7.5	2.1	10
8		292	9	1.7	8
9		292	10	1.5	7
10		292	12	1.2	6

Note: Profile of gas is not possible.

Conclusion

- **The project is not viable on standalone basis.**

- **On integration with other nearby operator, the fields of ONGC can be developed. There may be estimated savings in Capex of the order of USD 400 MM i.e. about 20%.**

- **The project may be incentivized by Government by paying premium of USD 2 per MMBTU over and above the market gas prices.**

Thank You