

peritusint.com

Middle East To India Deep Water Oil Pipeline

MEIDOP Feasibility Study

Peritus



Confidential | ©2026 Peritus International

23 June 2026

- Input Parameters
- Assumptions
- Pipeline Routing
- Flow Assurance
- Wall Thickness
- Installation Review

Input Parameters

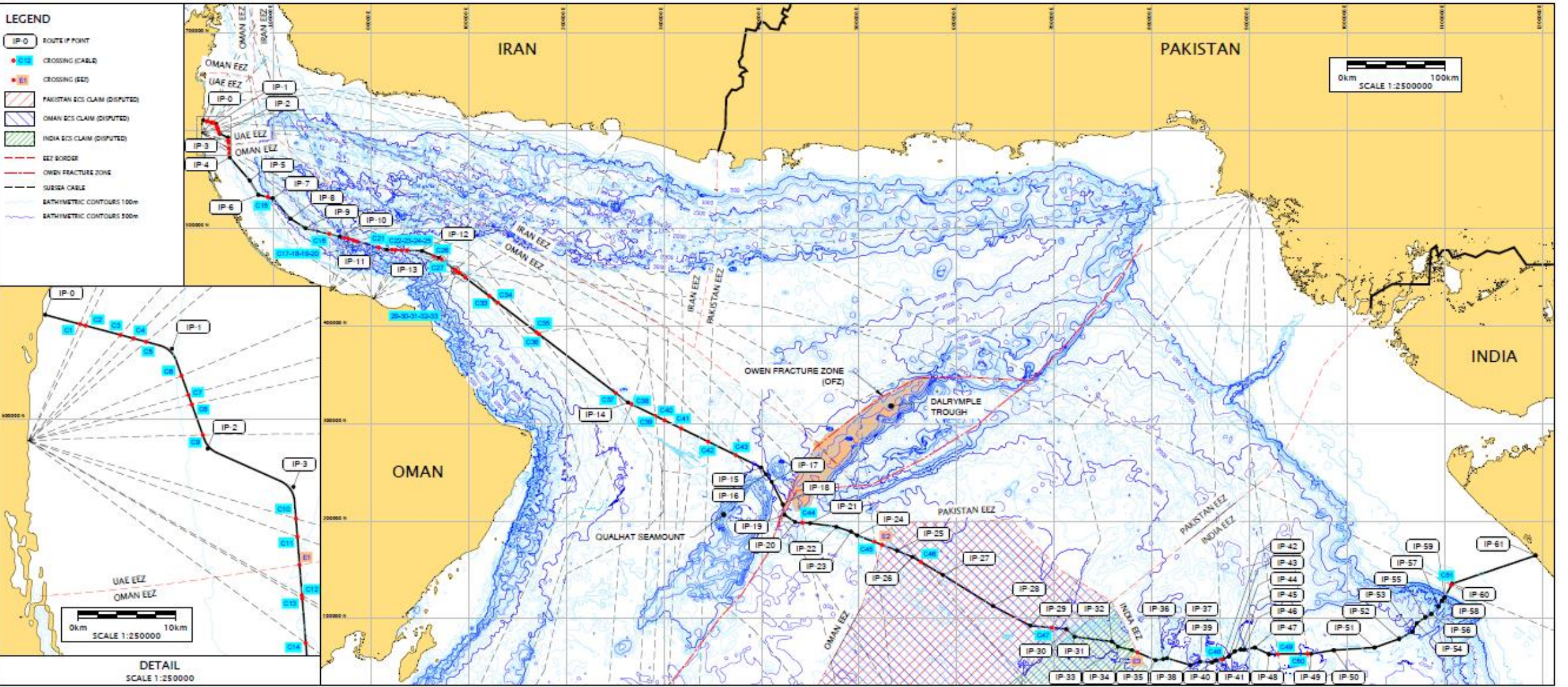
- Pipe ID: 28'' – 42''
- Flowrate: 10 – 20 million tonnes per year (200,000 to 400,000 barrels/day)
- Oil Density: 874kg/m³ (Dubai API 30.2) and 825kg/m³ (Marban API 40.0)
- WD: 0 to 3500m
- Two routes : 1200km (Ra's al Jifan Oman) and 1600km (Fujairah UAE) with landing point in Gujarat India

Assumptions

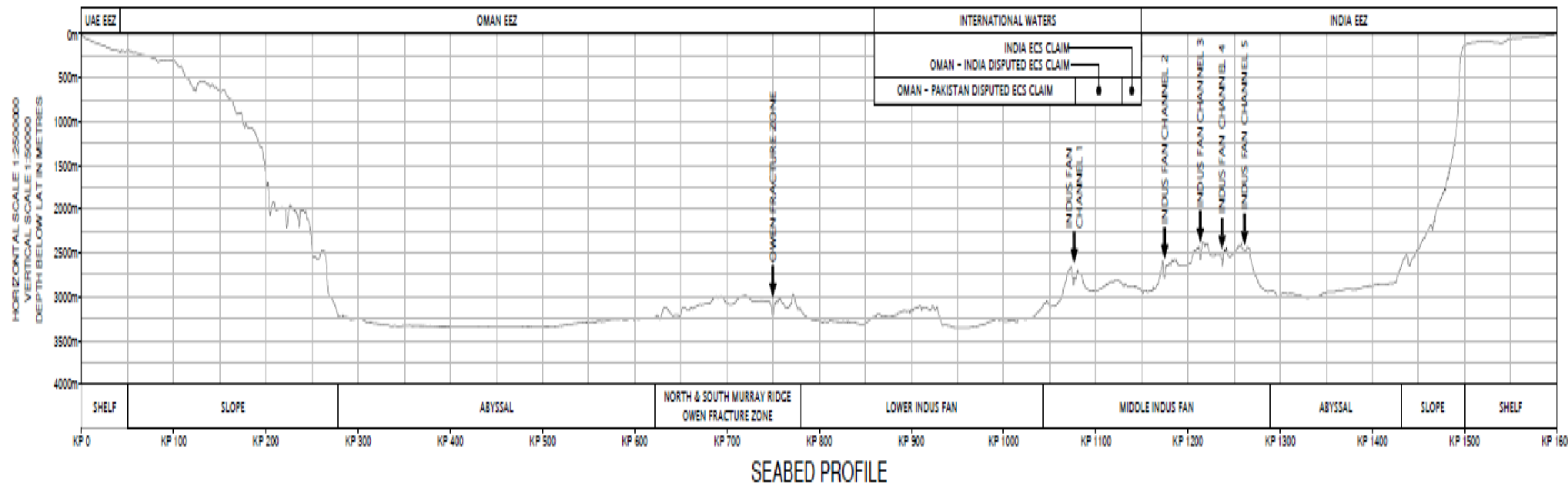
- Pipeline will be laid flooded and will never be left empty. Therefore removing the collapse requirement associated with the gas pipeline systems.
- Pumping capacity is assumed within current technological limits.
Market survey of available pump to achieved required flowrate.
- Installation assessment assumes current vessel capacities.
- Maximum J-lay vessel top tension approximately 2000 tonnes
- Maximum S-lay vessel top tension approximately 2000 tonnes
- Viscosity range for API-30 Oil is 5cP to 20cP
- Viscosity range for API-40 Oil is 2cP to 10cP
- Exported Oil has a pour point and wax appearance temperature < 4°C

- KAMAT - Quintuplex Plunger Pump (Assumed in calculations)
 - 10529 L/min at 160 bar at 3000kW
- Uraca - Quintuplex Plunger Pump
 - 10970 L/min at 175 bar at 3470kW
- OilRiver - Quintuplex Plunger Pump QP-2500SD
 - 7170 L/min at 140 bar at 1864kW

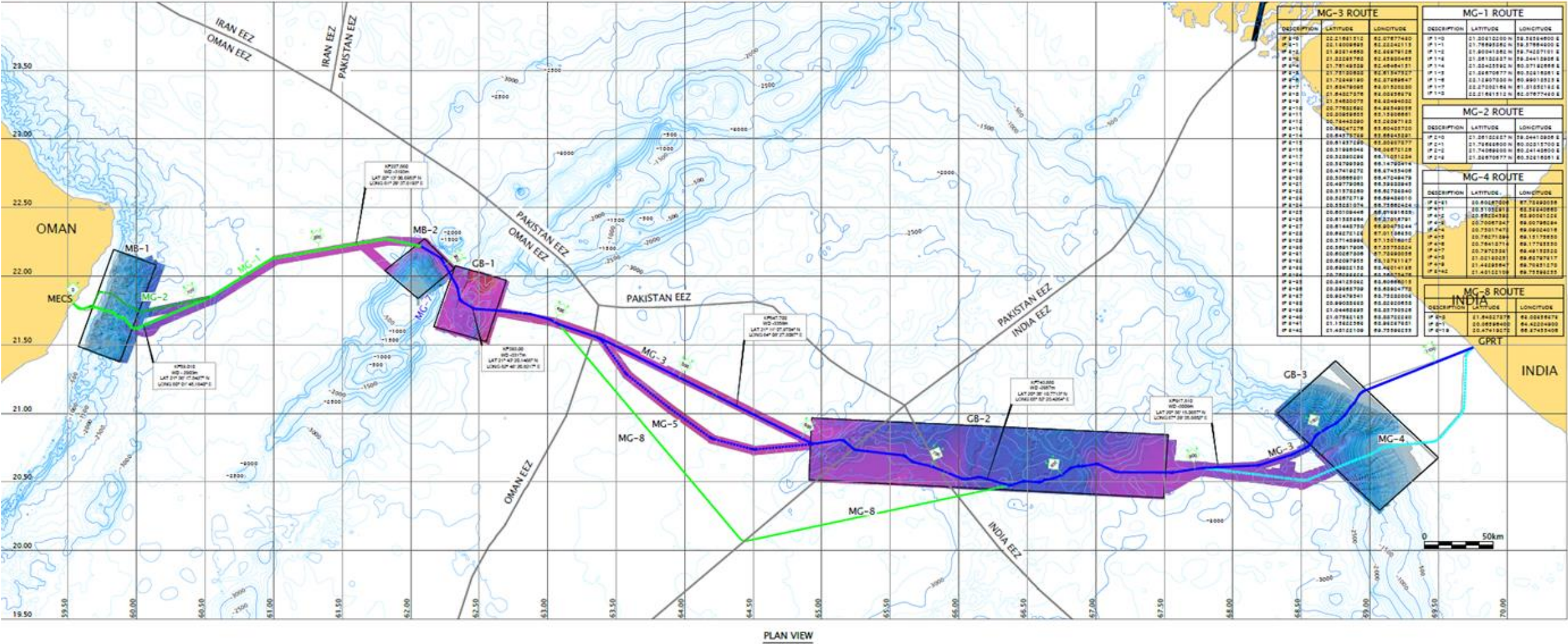
SAGE - MEIDOP – PIPELINE ROUTING UAE TO INDIA



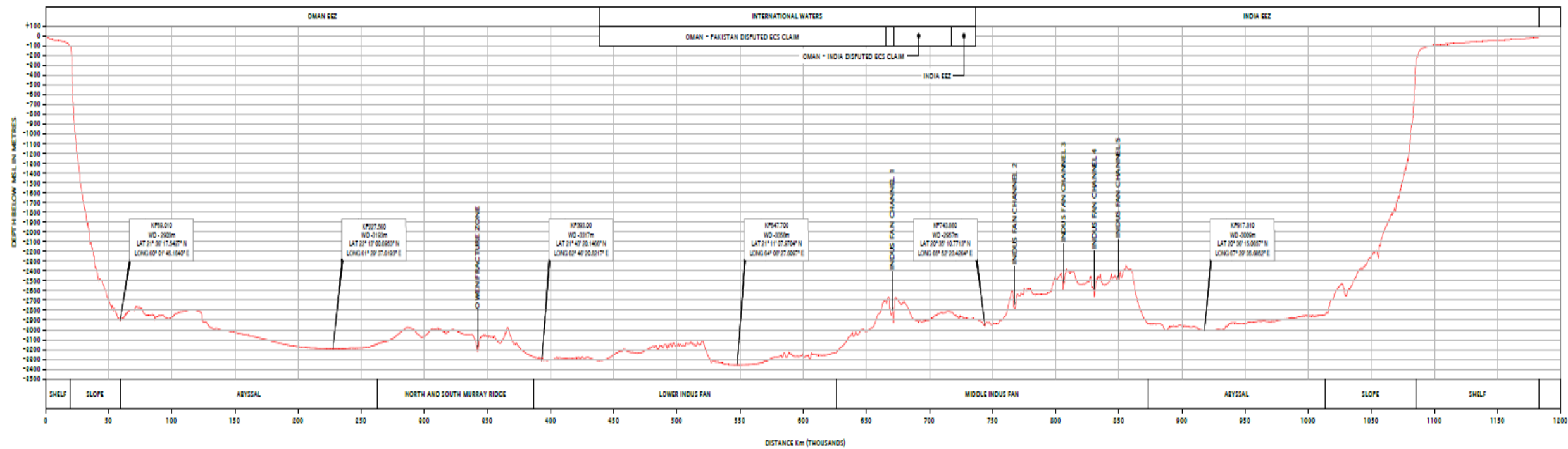
SAGE - MEIDOP – PIPELINE PROFILE UAE TO INDIA



SAGE - MEIDOP – PIPELINE ROUTING OMAN TO INDIA



SAGE - MEIDOP – PIPELINE PROFILE OMAN TO INDIA



4. BATHYMETRY AND CONTOURS ARE BASED ON GEBCO 08 GRID, 20100927 AND

MEIDP INDICATIVE DEPTH PROFILE

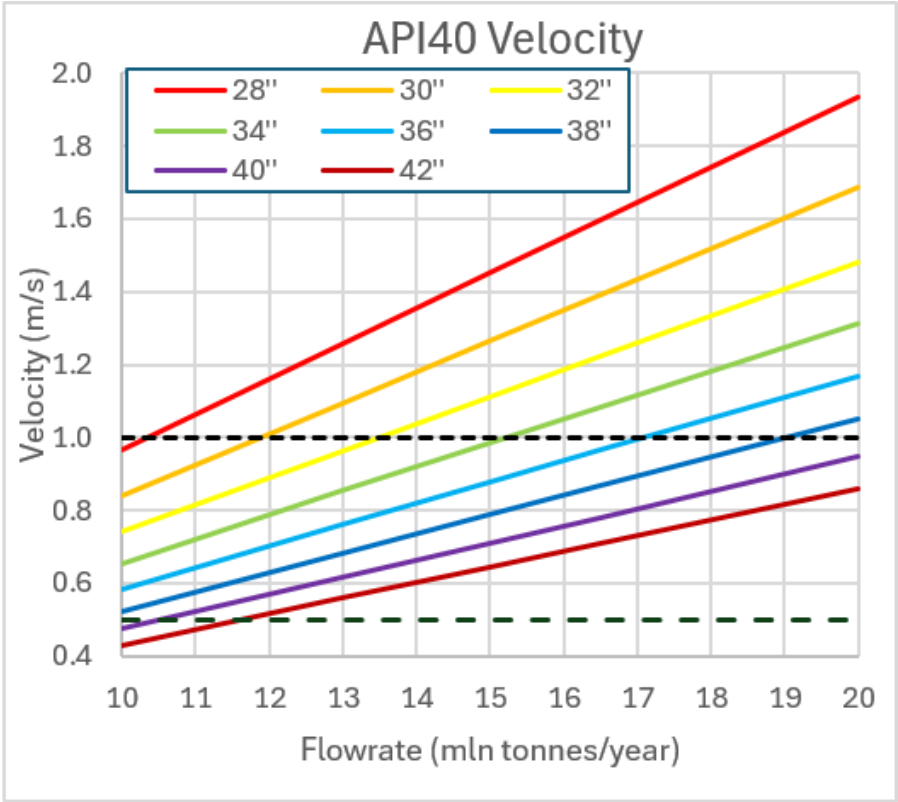
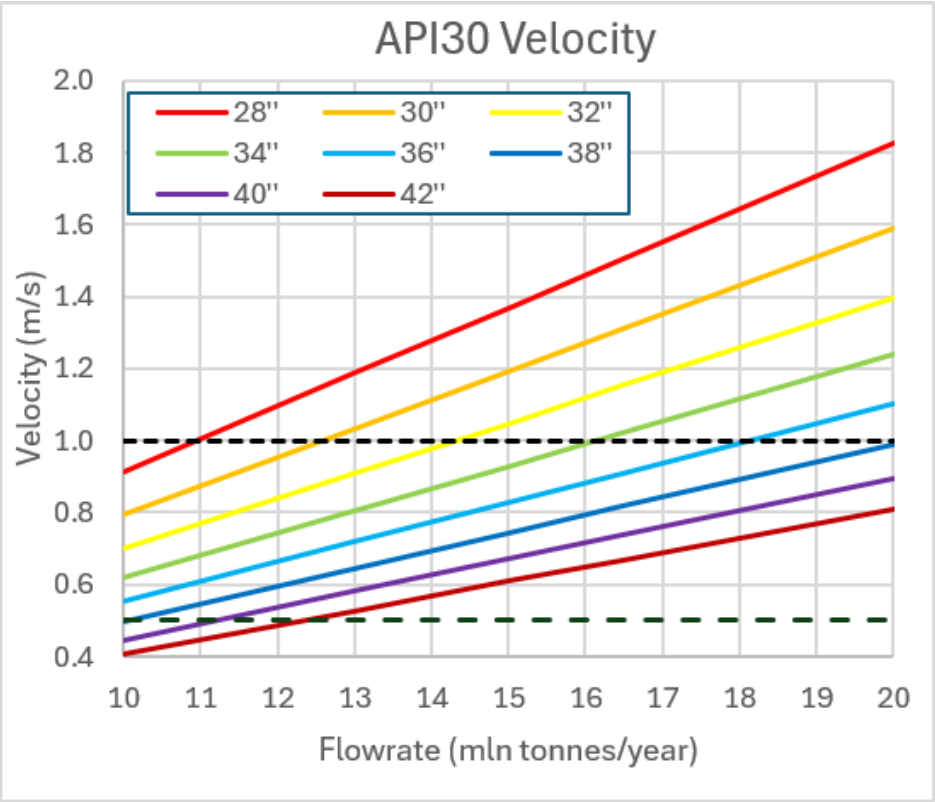
KEY

- Based on pump suppliers information
- Each pump operates at ~10,000 l/min at ~160bar
- Outlet Pressure: 20bar (assumed)
- One pump kept as spare

Therefore to achieve the flow rates in question the following pumps are required:

Flowrate (mln tonnes/yr)	Pumps Req. (API40)	Pumps Req. (API30)
10	4	4
13.5	4	5
15	5	5
18	5	6
20	6	6

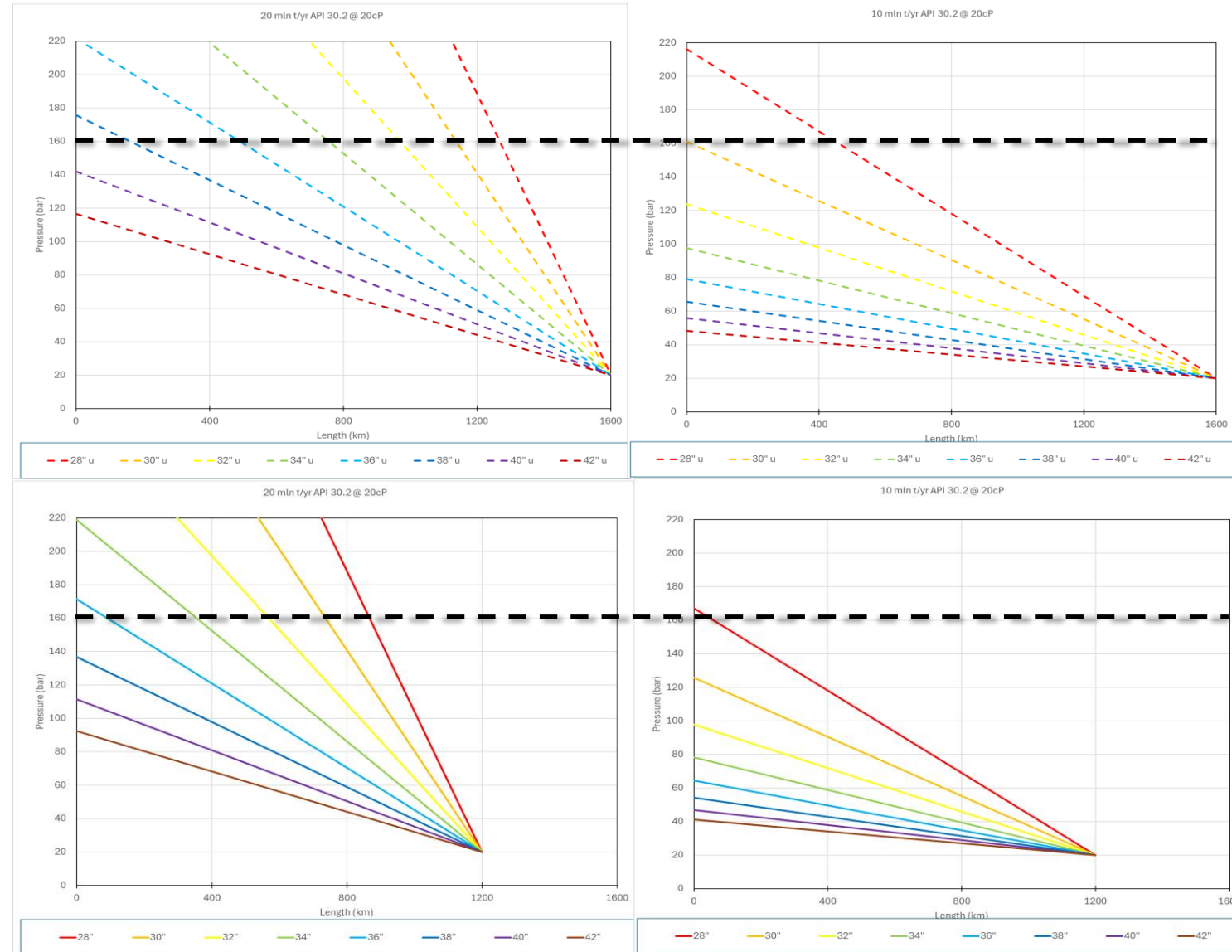
- Flow velocity must be >0.5m/s, and ideally between 1-4m/s



All pipe ID’s can achieve minimum 0.5m/s with flowrate > 13 million tonnes/yr, 38”, 40” and 42” ID pipe can not achieve 0.5m/s at 10 million tonnes/yr.

SAGE - MEIDOP – FLOW ASSURANCE PRESSURE DROP

- Pressure drop along the pipeline is calculated according to route length and contents parameters.
- Since the pumps are limited to 160bar and 20bar outlet is required, pressure drop must be limited to approx. 140bar.
- Required Pipe size to deliver 10M tonne/yr of API 30 Oil ID $\geq$ 32"(Fujairah), $\geq$ 30"(Oman)
- Required Pipe size to deliver 20M tonne/yr of API 30 Oil , ID $\geq$ 40""(Fujairah), $\geq$ 38"(Oman)



- Considering the analysis performed to date. The minimum possible pipe ID for the given contents and lengths are presented below.

Min Possible ID (in) and Respective Inlet Pressure (bar)								
Flow (MMT /yr)	API30				API40			
	Oman (1200km)		Fujairah (1600km)		Oman (1200km)		Fujairah (1600km)	
Viscos ity	5cP	20cP	5cP	20cP	2cP	10cP	2cP	10cP
10	28" / 130	30" / 126	30" / 125	32" / 124	28" / 120	30" / 117	30" / 115	32" / 115
13.5	32" / 120	34" / 120	34" / 119	36" / 121	30" / 144	32" / 141	32" / 140	34" / 141
15	32" / 141	34" / 140	34" / 140	36" / 142	32" / 130	34" / 129	34" / 129	36" / 131
18	34" / 145	38" / 117	38" / 118	40" / 122	34" / 134	36" / 135	36" / 135	38" / 138
20	36" / 135	38" / 137	38" / 138	40" / 142	36" / 125	38" / 127	38" / 127	40" / 132

- Min. required wall thickness considering burst and collapse is checked.
- Propagation buckling is excluded as this will be resolved using buckle arrestors.
- DNV 450 (X65) and DNV 485 (X70) steel are checked.
- Pipeline collapse is checked considering pipeline flooded with content.
- Supplier wall thickness limits are not exceeded.

- Worst case burst/collapse, worst case contents and steel type.

Pipe ID (in)	WD (m)						
	500	1000	1500	2000	2500	3000	3500
28	19.6	18.9	19.3	20.9	22.3	23.6	24.7
30	20.7	20.0	20.4	22.1	23.6	25.0	26.2
32	21.8	21.0	21.4	23.3	24.9	26.3	27.6
34	22.9	22.1	22.5	24.5	26.2	27.7	29.1
36	24.0	23.1	23.6	25.7	27.5	29.1	30.6
38	25.1	24.2	24.7	26.9	28.8	30.5	32.0
40	26.2	25.5	25.7	28.1	30.1	31.9	33.5
42	27.3	26.7	26.8	29.3	31.4	33.2	34.9

10mt/yr
20mt/yr

Suppliers quoted up to 40mm maximum wall thickness

- Preliminary S-Lay & J-Lay installation assessment performed
- S-Lay Tension Capacity assumed as 2000mT
- J-Lay Tension Capacity assumed as 2000mT
- 28 – 42in ID checked with required WT
- Buoyancy Coating 0mm, 50mm, 100mm considered (700kg/m³ considered)
- S-Lay Stinger radius and tension required for each case is determined
- Pipeline flooded with seawater assumed (to MSL)
- Overbend bending strain limit: 0.4%
- Sag bend limit: 0.12% - 0.25% Considered

- Capacity Limits (S-Lay & J-Lay)
 - 28” to 32” at deepest load case within 1500mT capacity
 - 34” to 36” at deepest load case within 2000mT capacity
 - Pipe sizes >36” require >4” buoyancy or <=500kg/m³ buoyancy or both

Pipe ID (in)	Buoyancy (in)	Vessel Tension at 3500m WD (mT)		Acceptable ?	
		S-Lay	J-Lay	S-Lay	J-Lay
28	0"	1480	1485	Yes	Yes
30	2"	1492	1506	Yes	Yes
32	4"	1478	1491	Yes	Yes
34	4"	1678	1699	Yes	Yes
36	4"	1907	1924	Yes	Yes
38	4"	2159	2176	No	No
40	4"	2403	2422	No	No
42	4"	2677	2698	No	No

Table: Acceptable Pipe Sizes for Fujairah Oil Pipeline (Flooded to MSL)

- 1500mT capacity
- 2000mT capacity
- >2000mT capacity

Flowrate	API30		API40	
	1600km		1600km	
	5cP	20cP	2cP	10cP
10	30"	32"	30"	32"
13	32"	34"	32"	34"
15	34"	36"	34"	36"
16.5	36"	38"	34"	36"
20	38"	40"	38"	38"

- Assessment based on flooded installation (to MSL)
- Further consideration should be given to partial flooding (-400m WD to lower the tension demand)
- Higher buoyancy thickness may be possible with J-Lay if Collars are used

Five vessels are capable of installing the pipeline in maximum water depth of MEIDOP Project



1. Allseas Pioneering Spirit S-Lay 2000t tension capacity
2. Saipem Castorone S-Lay 1200t /J-Lay 2000t tension capacity
3. Saipem S7000 J-Lay 2500t tension capacity
4. Saipem JSD6000 S-Lay 1200t / J-Lay 2000t tension capacity
5. M^c Dermott Amazon J-Lay 2000t tension capacity



- It is concluded that it is feasible to install a 36” oil pipeline from Fujairah UAE to Gujarat India (1600km) that would deliver approx 16.5mT/year (121m barrels) of 35-40 API Sweet Light stabilised Crude
- 16.5 million Tonnes / yr equates to approximately 5 VLCC per month

SAGE have proved the Technical Feasibility of Installing an Oil pipeline from Fujairah UAE to Gujarat India which can deliver significant quantities of Sweet Light Crude (approx. 5 VLCC's per month), however it is stressed that this work is at a very high level. As such the following next steps are recommended:

- Undertake a advanced concept design (Pre-FEED) on MEIDOP. This work should concentrate on crossing known geohazards (OFZ, Indis Fan, Continental Slopes) with a very heavier pipe (in operation).
- Undertake detailed installation assessments including discussions with Installation Contractors on methods and limitations of laying a large diameter flooded pipeline
- Develop a robust cost estimate

THANK YOU

South Asia Gas Enterprise Pvt. Ltd. (SAGE)

*A-6, Connaught Place,
New Delhi, India.*

Pin -110001

Phone : +91-11-23324245

E-mail : sms@siddhomalgroupp.com

Website: www.sage-india.com

Peritus International Ltd.

*4D Dukes Court,
Woking, Surrey.*

UK, GU21 5BH

Phone : +44-7789-515862

E-mail : ian.nash@peritusint.com

Website: www.peritusint.com