Technical Study on Discovered Resources Opportunities in Malaysia

Peninsular Malaysia: BIGST (Bujang-Inas-Guling-Sepat-Tujoh) Cluster

FIELDS NAME:	Bujang, Inas, Guling Sepat & Tujoh
LOCATION	~ 130 Km NE Kuala Terengganu
WATER DEPTH	~ 65 m avg
SEISMIC	2D 4C OBC & 3D Seismic
WELLS	A total of 28 wells drilled in the cluster
NEARBY FACILITIES	~ 20 km North West Dulang

SUBSURFACE SYSTEM

GEOLOGY

Bujang: Structural interpretation shows normal faults resulted in compartmentalization of this field into three blocks (NW, SW and East Blocks).

Inas: The Field structure is an east-west trending anticline intersected by numerous north-south normal faults and an east-west trending fault. The faults divide the field into three blocks which are northwest (NW), southwest (SW) and central/east blocks. The general depositional setting for the stacked reservoir units in the Inas field is considered as being a lower coastal plain environment with occasional marine influxes. Overall, Inas has sufficient seismic data for detailed geophysical evaluation. The latest (2012) 340 sqkm 3D PSTM & PSDM reprocessed data is available for seismic interpretation.

Guling: The field comprises an EW trending faulted asymmetrical anticline situated between Bedong field 12.5 km to SW and Inas field 14 km ENE.

Sepat: The structure is a large West –East trans-compressional fold and encompassed 2 culminations namely Sepat Barat and Sepat Main. These two culminations are separated by a saddle.

Tujoh: The Field consist of an NW elongated asymmetrical anticline. The depositional environment is coastal plain, fluvio-marine. A total of 160 Km 3D seismic has been obtained.

RESERVOIR

Bujang: Potential reservoirs are Group B, D & E. The fluids encountered are characterized for containing CO_2 levels between 28 – 75 %. Presence of sweet gas has been also identified. A total of 9 wells have been drilled in the Field.

Inas: CO_2 overcharges reservoirs filling to spill. Oil zones localizes near base of large gas charged stacked sequences. A total of 9 wells have been across the Field. CO_2 levels found are between 28 to 75 %.

Guling: Reservoirs consists of B, D, E and F groups, approximately 50% of the layers are gas filled in both wells. CO_2 levels found up to 56 %. Estimated reservoir pressure between 2,000 – 2,400 Psi. D Reservoir flowed clean gas. 3 wells are drilled in the Field, 1 exploration & 2 appraisals.

Sepat: The reservoir type is Sandstone and the main formations are B, D, E, F, H and I Groups (Sepat Deep) and E, F & H (Sepat Barat Deep). A total of 5 wells have been drilled across the two culminations. Approximated CO_2 levels of 44 – 56 %.

Sepat Deep-1 proved the presence of oil & gas via DST in Groups B & D.

Sepat Deep-2 proved oil and gas in Group H and gas in Group I. Also upper section in Group B , D, E and F proved to have oil and gas bearing.

Sepat Barat Deep-1 logs showed gas in the layers B100, D35/36, E8, E20, E25, E28, E30, E40, E41 and oil in E40L.

Sepat Barat Deep-2 logs showed oil in E & F groups, and gas in D, E, F & H groups.

Tujoh: 2 wells have been drilled in the Field. Well test performed on well Tujoh-2 resulted on an average gas rate of 12 MMSCFD during main flow and 23 MMSCFD during maximum flow, the gas is very dry . The estimated initial reservoir pressure from DST is 1,820 Psi. Tujoh showed CO_2 levels up to 16 %.

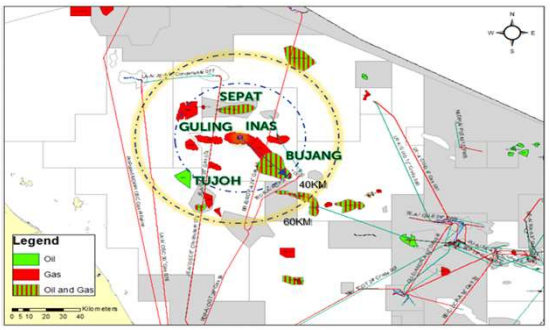
INFORMATION AVAILABLE

Field Name	Openhole Logs	Mudlogging	RFT/MDT	DST	Core Data	PVT	Technical Reports
Bujang	✓	✓	✓	✓	✓	✓	✓
Inas	✓	✓	✓	✓	✓	✓	✓
Guling	✓	✓	✓	✓	✓	n/a	✓
Sepat	✓	✓	✓	✓	✓	✓	✓
Tujoh	✓	✓	✓	✓	✓	n/a	✓

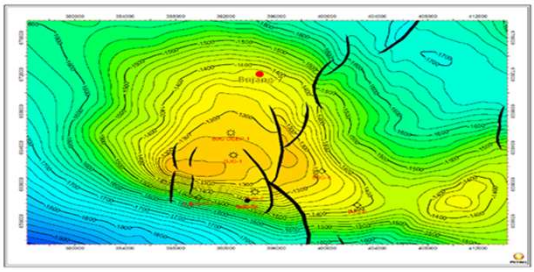
Note: data from offset wells can be made available upon request.

OPPORTUNITIES

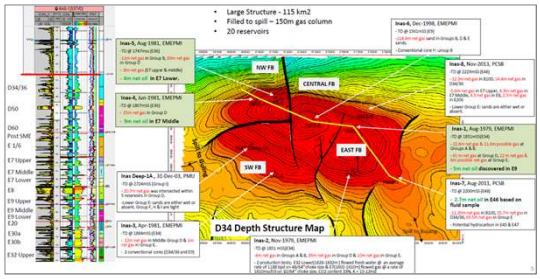
- Sepat, Guling, Bujang & Tujoh are ~ 25 Kms from Inas Field creating the opportunity for synergies by cluster development.
- Overall gas volume estimations show a total GIIP ~ 16,000 Bscf.
- Well testing performed indicates the presence of condensate and sweet gas in several layers across the Fields.
- The cluster is surrounded by several gas producer fields approaching their late life stage. This is a factor to be considered for potential development synergies.



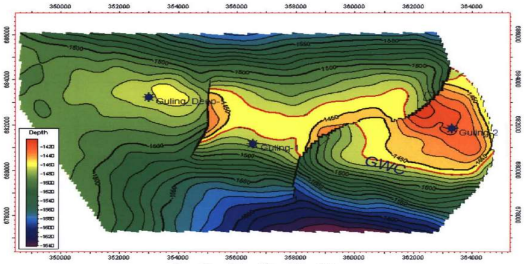
FIELDS LOCATION



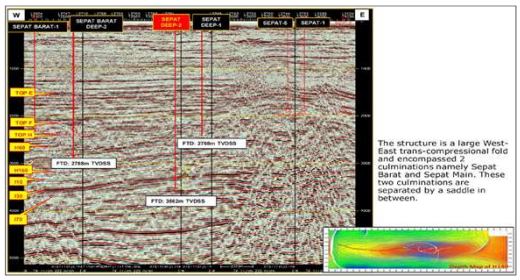
STRUCTURE MAP – BUJANG FIELD



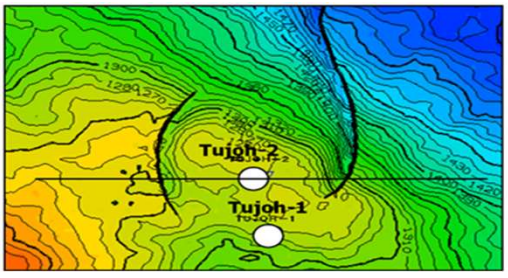
WELLS LOCATION – INAS FIELD



STRUCTURE MAP - GULING FIELD



SEISMIC SECTION – SEPAT FIELD



STRUCTURE MAP – TUJOH FIELD