Cross-section restoration and basin modeling of the Central Subbasin in the southern Kunsan Basin, Yellow Sea

YOUNGHO YOON[1], GWANG H. LEE[1], SANGHOON HAN[2], HEONHAK LIM[1], HYEWON SA[1], YISEUL LEE[1], HYUN C. HAN[3], MOO H. KANG[3], and JINHO KIM[3]

[1]*Department of Energy Resources Engineering Pukyong National University Busan 608-737, Korea*

[2]*DSME E&R, Seoul 100-180, Korea*

[3]*Korea Institute of Geoscience and Mineral Resources Daejeon 305-350, Korea*

Restoration of two depth-converted seismic profiles across the Central Subbasin in the southern Kunsan Basin, Yellow Sea, shows that extension was interrupted by inversions in the Late Oligocene-Middle Miocene that created anticlinal structures. One-dimensional basin modeling of the IIH-1Xa well suggests that hydrocarbon expulsion in the northeastern margin of the depocenter of the subbasin peaked in the Early Oligocene, predating the inversions. Hydrocarbon generation at the dummy well location in the depocenter of the subbasin began in the Late Paleocene. Because the basin-fill strata are dipping north, hydrocarbons generated from the depocenter are likely to have migrated southward toward the anticlinal structures and faults away from the traps along the northern and northeastern margins of the depocenter. Faulting that continued during the rift phase (~ Middle Miocene) of the subbasin may have acted as conduits for the escape of hydrocarbons. Thus, the anticlinal structure and associated faults to the south of the dummy well may trap hydrocarbons that have been charged from the shallow source rocks in the depocenter since the Middle Miocene.

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