World Academy of Science, Engineering and Technology
International Journal of Chemical and Molecular Engineering
Vol:18, No:11, 2024

Generation & Migration Of Carbone Dioxid In The Lower Cretaceous Bahi Sandstone Reservoir Within The En-naga Sub Basin, Sirte Basin, Libya

Authors : Moaawia Abdulgader Gdara

Abstract : En -Naga sub - basin considered to be the most southern of the concessions in the Sirte Basin operated by HOO. En Naga Sub – basin have likely been point-sourced of CO_2 accumulations during the last 7 million years from local satellite intrusives associated with the Haruj Al Aswad igneous complex. CO2 occurs in the En Naga Sub-basin as a result of the igneous activity of the Al Harouge Al Aswad complex.Igneous extrusive have been pierced in the subsurface are exposed at the surface. The lower cretaceous Bahi Sandstone facies are recognized in the En Naga Sub-basin. They result from the influence of paleotopography on the processes associated with continental deposition over the Sirt Unconformity and the Cenomanian marine transgression In the Lower Cretaceous Bahi Sandstones, the presence of trapped carbon dioxide is proven within the En Naga Sub-basin. This makes it unique in providing an abundance of CO_2 gas reservoirs with almost pure magmatic CO_2, which can be easily sampled. Huge amounts of CO2 exist in the Lower Cretaceous Bahi Sandstones in the En-Naga sub-basin, where the economic value of CO_2 is related to its use for enhanced oil recovery (EOR) Based on the production tests for the drilled wells that makes Lower Cretaceous Bahi sandstones the principle reservoir rocks for CO2 where large volumes of CO2 gas have been discovered in the Bahi Formation on and near EPSA 120/136(En -Naga sub basin). The Bahi sandstones are generally described as a good reservoir rock. Intergranular porosities and permeabilities are highly variable and can exceed 25% and 100 MD. In the (En Naga sub – basin), three main developed structures (Barrut I, En Naga A and En Naga O) are thought to be prospective for the lower Cretaceous Bahi sandstone reservoir. These structures represents a good example for the deep over pressure potential in (En Naga sub - basin). The very high pressures assumed associated with local igneous intrusives may account for the abnormally high Bahi (and Lidam) reservoir pressures. The best gas tests from this facies are at F1-72 on the (Barrut I structure) from part of a 458 feet+ section having an estimated high value of CO2 as 98% overpressured. Bahi CO) en naga sub basin, 2)al harouge al aswad igneous complex., 3) lower cretaceous bahi reservoir, 4)co) en naga sub basin, 2)al harouge al aswad igneous complex., 3) lower cretaceous bahi reservoir, 4)co) en naga sub basin, 2)al harouge al aswad igneous complex., 3) lower cretaceous bahi reservoir, 4)co) en naga sub basin, 2)al harouge al aswad igneous complex., 3) lower cretaceous bahi reservoir, 4)co_2 generation and migration to the bahi sandstone reservoir generation and migration to the bahi sandstone reservoir generation and migration to the bahi sandstone reservoir generation and migration to the bahi sandstone reservoir prospectivity is thought to be excellent in the central to western areas where At U1-72 (En Naga O structure) a significant CO2 gas kick occurred at 11,971 feet and quickly led to blowout conditions due to uncontrollable leaks in the surface equipment. Which reflects a better reservoir quality sandstones associated with Paleostructural highs. Condensate and gas prospectivity increases to the east as the CO_2) en naga sub basin, 2)al harouge al aswad igneous complex., 3) lower cretaceous bahi reservoir, 4)co) en naga sub basin, 2)al harouge al aswad igneous complex., 3) lower cretaceous bahi reservoir, 4)co_2 generation and migration to the bahi sandstone reservoir generation and migration to the bahi sandstone reservoir prospectivity decreases with distance away from the Al Haruj Al Aswad igneous complex. To date, it has not been possible to accurately determine the volume of these strategically valuable reserves although there are positive indications that they are very large.

Keywords : 1) en naga sub basin, 2)al harouge al aswad igneous complex., 3) lower cretaceous bahi reservoir, 4)co2 generation and migration to the bahi sandstone reservoir

Conference Title : ICAPPE 2024 : International Conference on Advances in Petroleum and Petrochemical Engineering

Conference Location : Jeddah, Saudi Arabia

Conference Dates : November 11-12, 2024