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Gas and Gas Hydrate Potential Offshore Amasra,Bartın and Zonguldak and Possible Agent for Multiple BSR Occurrence

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Gas hydrates, shallow gases and mud volcanoes have been studied intensively in the Black Sea in recent years. Researches have shown that the Black Sea region has an important potential about hydrocarbon. BSR reflections in the seismic sections and seabed sampling studies also have proven the formations of hydrates clearly. In this respect, total of 2400 km multichannel seismic reflection, chirp and multibeam bathymetry data were collected along shelf to abyssal plain in 2010 and 2012 offshore Amasra, Bartın, Zonguldak-Kozlu in the central Black Sea.. Collected data represent BSRs, bright spots and transparent zones. It has been clearly observed that possible gas chimneys cross the base of gas hydrate stability zones as a result of possible weak zones in the gas hydrate bearing sediments. Seabed samples were collected closely to possible gas chimneys due to shallow gas anomalies in the data. Head space gas cromatography was applied to seabed samples to observe gas composition and the gas cromatography results represented hydrocarbon gases such as Methane, Ethane, Propane, i-Butane, n-Butane, i-Pentane, n-Pentane and Hexane. Thermogenic gas production by Turkish Petroleum Corp. from Akçakoca-1 and Ayazlı-1 well is just located at the southwest of the study area and the observations of the study area point out there is also thermogenic gas potential at the eastern side of the Akçakoca.

In addition, multiple-BSRs were observed in the study area and it is thought the key point of the multiple-BSRs are different gas compositions. This suggests that hydrate formations can be formed by gas mixtures. Changing of the thermobaric conditions can trigger dissociation of the gas hydrates in the marine sediments due to sedimentary load and changing of the water temperature around seabed. Our gas hydrate modelling study suggest that gas hydrates are behaving while their dissociation process if the gas hydrates are generated by gas mixture. Monitoring of our gas hydrate modelling study based on depressurization at constant temperature have shown that some of the gases start to dissociate while the other gases are stable in the gas hydrate formation. This respective dissociation of the gases from gas hydrates suggest that each multiple-BSR can be related with hydrate formations including different gas composition.