Gas hydrate formation in multi phase mixtures containing an aqueous phase (with dissolved salts), reservoir fluid (crude oil) and natural gas phase was investigated by using a standard rocking cell (RC-5) apparatus. The hydrate formation temperature was reduced in the presence of crude oils in comparison with that in pure water. This observed hydrate inhibition potential shows significant variation depending on the type of crude oil. The influence of crude oil composition (saturates, aromatics, resins and asphaltenes) on this behavior was probably due to the existence of a combination of different inhibition mechanisms and potentially a competition among inhibition-promotion mechanisms. Moreover, the hydrate formation time has been determined at different water cuts in each crude oil and it was found that the inhibition capability increases with an increase in the oil content. The effect of the biodegradable commercial kinetic inhibitor (Luvicap-Bio) on natural gas hydrate formation with and without crude oil (30%) was investigated. The strength of kinetic inhibitor was not affected by salts, but decreased significantly in the presence of crude oil. Data for hydrate formation at practical conditions can contribute to the safe operation of sub sea pipelines in the oil and gas industry.