Microseismics: Application in Hydrocarbon Reservoir Management

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Abstract : Tilting of our interest towards unconventional exploitation of hydrocarbons has raised a serious concern to environmentalists. Emerging technologies like horizontal/multi-lateral drilling with subsequent hydraulic fracturing or fracking etc., for exploitation of different conventional/unconventional hydrocarbon reservoirs, are related to creating micro-level seismic events below the surface of the earth. Monitoring of these micro-level seismic events is not possible by the conventional methodology of the seismic method. So, to tackle this issue, a new technology that is microseismic is very much in discussions around the globe. Multiple researches are being carried out these days around the globe in order to prove microseismic as a new essential in the E & P industry, especially for unconventional reservoir management. Microseismic monitoring is now used for reservoir surveillance, and the best application is checking the integrity of the caprock and containment of fluid in it. In general, in whatever terms we want to use micro-seismic related events monitoring and understanding the effectiveness of stimulation, this technology offers a lot of value in terms of insight into the subsurface characteristics and processes, and this makes it really a good geophysical method to be used in future.

Keywords : microseismic, monitoring, hydraulic fracturing or fracking, reservoir surveillance, seismic hazards
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