

## **Numerical analysis of early casing collapse in deviated wells**

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Casing is an essential component in a well, it is the main structural barrier that prevents the uncontrolled flow of fluids from the subsurface to the surface and constitutes the channel for oil and gas production during the operational life of the well. A casing failure has economic implications, a high environmental impact and excessive non-productive times (NPT) in remedial operations. Statistics of conventional and unconventional wells in producing countries show that approximately 7% of wells have at least one form of integrity failure (Davies et al., 2014). To mitigate these problems, certain practices have been established following API design standards, and strict operating programs. But despite these precautions, early casing collapse has been observed in deviated wells. Due to the recurrence of this problem, efforts have been made to establish techniques that allow evaluating the integrity of the casing in a more accurate way, being the numerical simulation the most appropriate to evaluate the collapse of casing in deviated wells (Xi et al., 2018). For this reason, in this research, the effects of parameters such as wear and ovalization on the casing integrity were numerically evaluated, in order to determine the degree of material damage and its interference in early casing collapse. Results obtained show that the deformation effects in the tubulars during the well run, as well as their wear by mechanical action, early decrease the resistance of the material up to 30%.

### **Biography**

Jhoao Villabona is Master of Science candidate in Hydrocarbon Engineering and Chemist of the Universidad Industrial de Santander with twelve years of experience in the oil industry, in geomechanical modeling, wellbore stability monitoring, drilling optimization and real-time operations in North and Latin American Region. He is Exploration Geomechanics in Ecopetrol, the National Oil Company in Colombia. He has published papers in reputed journal, has participated in oral presentations and had co-director of research thesis in Petroleum Engineering.