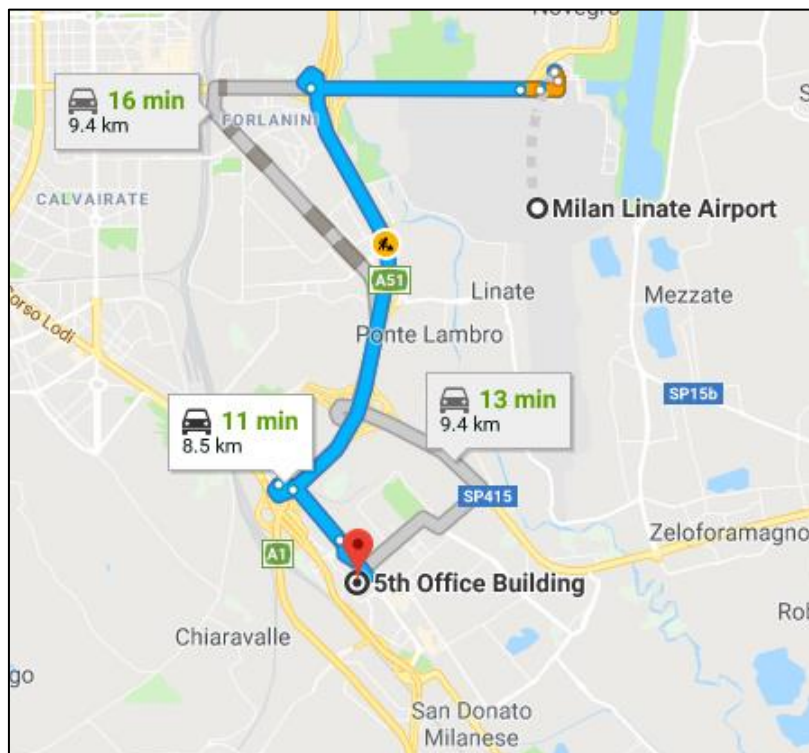


Geomechanics Initiative Meeting

- Topic:** Challenges in Wellbore Stability
- Date:** Thursday 21st and Friday 22nd June 2018
- Time:** 10:00 to 16:00 Thursday
09:00 to 13.30 Friday
- Host:** Eni E&P
- Location:** ENI E&P – 5° Palazzo Uffici, Via Emilia, 1, 20097 San Donato Milanese (Milano) – Italia
- Contact:** Francesca Tate/ Dawn Dukes, OTM Consulting Ltd, Great Burgh, Yew Tree Bottom Road, Epsom, KT18 5XT, UK
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dawn.dukes@otmconsulting.com
- Accommodation:** Suggested hotels in San Donato Milanese - walking distance from ENI office:
 1. Crowne Plaza Milan - <https://www.ihg.com/crowneplaza/hotels/us/en/san-donato-milanese/milsd/hoteldetail>
 2. Atahotel The One - <http://milan-the-one-ata.hotel-rn.com/?l=ggj-ex>
 3. Hotel Santa Barbara - <http://www.hotelsantabarbara.it/hotel-sud-milano/hotel-santa-barbara>
- Directions:** The meeting location is approximately 10-15 minutes' drive from Milan Linate Airport, or 50 minutes from Malpensa Airport. Eni's office is walking distance from the above recommended hotels.



Challenges in Wellbore Stability

How can I mitigate wellbore stability issues to improve drilling performance & increase casing/cementing efficiency?

Preventing significant wellbore instability during drilling is one of the main and recognised objectives of the Geomechanics community. Geomechanics practitioners try to summarise in one optimal mud weight window subsurface uncertainties coming from various sources: i.e. regional tectonics, underconstrained local stress distributions, missing data for mechanical stratigraphy interpretation, ambiguous drilling events used for model calibrations, etc. On the top of these, cross-disciplinary communication issues can contribute to the challenge of sharing wellbore stability risks and influence the well planning and design to improve drilling performance.

The aim of the meeting is to discuss which methodologies are applied and when, who determines which approach is the most applicable and how the predicted collapse pressure are calibrated and shared with the rest of the organisation. Some specific questions regarding processes and modelling for wellbore stability are the following:

The Manager's Point of View:

- a) Who's doing what? (pore pressure, in-situ stress estimation, borehole collapse pressure, rock properties, real time monitoring)
- b) Where in the organisation does this fall? G&G or Drilling?
- c) With which skillset/ certification?
- d) KPI management: Who owns the KPIs to track efficiency and effectiveness? 100% drilling or 100% G&G or a combination of the two?
- e) How good are we in predicting borehole collapse pressure?
- f) Do you have in-house tools or third parties? Who owns it?
- g) People & communication: How do you efficiently communicate WBS risks? Your experience of pros and cons of sitting in G&G/ Drilling.

The Geomechanics Practitioner's Point of View:

- a) Let's start with definitions: What is your definition of stable well and optimal mud weight window?
- b) How do you define the high/ worst case? 90deg allowable breakout? Or the probabilistic P90?
- c) Which approach is preferred (the Fit for Purpose Geomechanics: Simple Versus Complex Approaches). How many fields have you worked where:
 - i. Mohr-coulomb/ modified lade is sufficient for WBS modelling
 - ii. A Quantitative Risk Analysis (QRA) is sufficient and helps the planning
 - iii. The weak bedding plane modelling is required
 - iv. A 3D mechanical model is required
 - v. A complex finite element modelling is required
- d) The range of geomechanics issues is wide and interfaces with many other disciplines (e.g., petrophysics, geophysics, production geology, drilling, production and reservoir engineering). How and when do you start integrating input from other disciplines in the modelling? Or when are you called into the game to explain issues that cannot be explained in other ways?
- e) How easy is it for you to get the data you need? Do your organisation's procedures help with Data Requirement and Acquisition for well planning and monitoring?
- f) Field Cases – Learning from success and failure: Let's discuss about calibrating models with field/well/lab data, and the pros and cons of analytical versus numerical models. How all these have helped optimising well placement/ planning and improving drilling performance