

# Well Control Seminar

## → Communication



### Brønnkontroll og usikkerhet i formasjonsprognoser

Havtil ønsker bransjen velkommen til en fagdag om brønnkontroll og usikkerhet i formasjonsprognoser!

Boring og brønn |

**Dato:** Torsdag 18. januar 2024

**Sted:** Valhall, Havtil (Professor Olav Hanssens vei 10)

# Communication

## to avoid major accidents

*“common understanding”*  
*“involvement”*  
*“collaboration”*  
*“barrier understanding”*  
*“assessment”*  
*“decisions”*



## Q1 2024

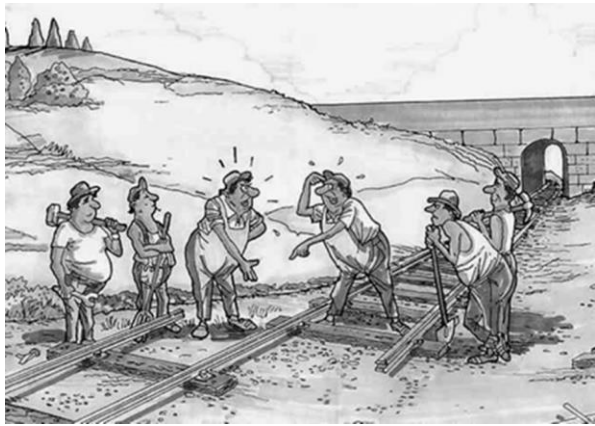
### Avoid major accidents

The goal of the learning package is to avoid major accidents by ensuring common situational understanding through:

- Early involvement of the right competence and experience
- Good collaboration, facility specific expertise and barrier understanding
- Thorough assessment of how decisions and framework conditions affect the risk of major accidents



# Communication



“common understanding”

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→ Well operations are a team effort

- Multi Discipline, Multi Company
- Diversity is not an option it is a requirement
- ... Multiple Points of view

→ One Team → Best chance of success

→ What makes a good team work well?

→ Communication → **Transmission\***  
**of Information**

*\*Transmission = Send + Receive + Understand*

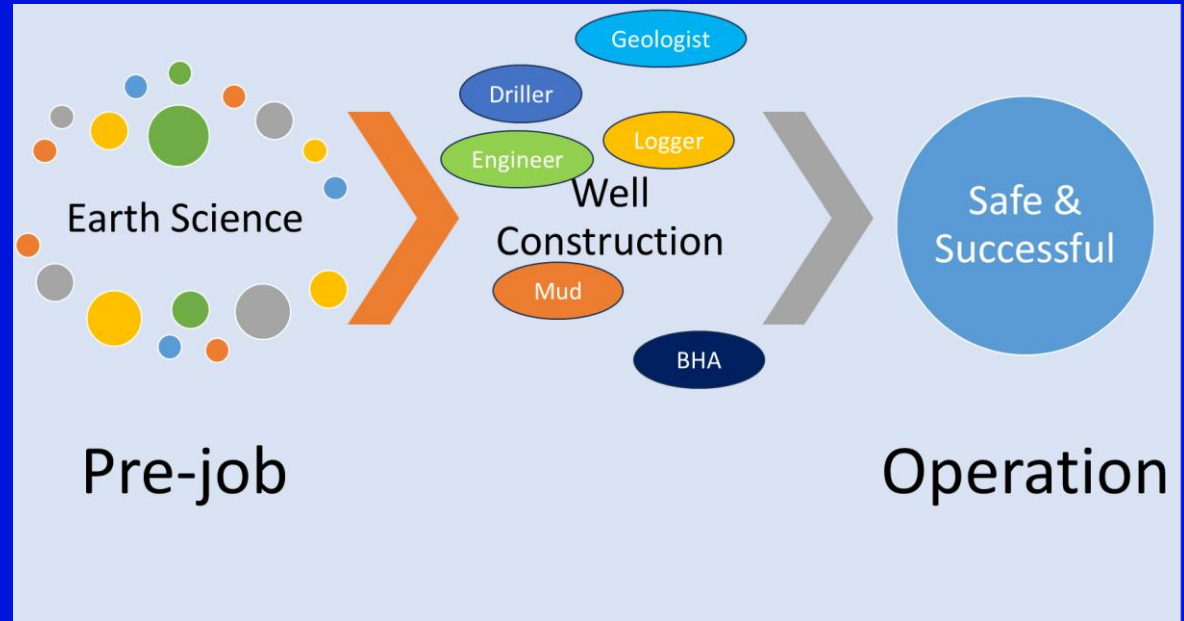
# Communication

formation pressure  
& avoiding well  
control incidents

*“common understanding”*  
*“involvement”*  
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*“barrier understanding”*  
*“assessment”*  
*“decisions”*



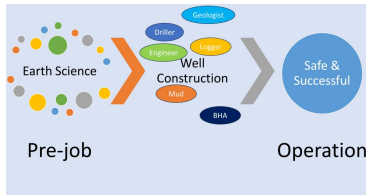
- Many people
- Widely varying areas of expertise
- A Big Challenge



# Communication

## formation pressure & avoiding well control incidents

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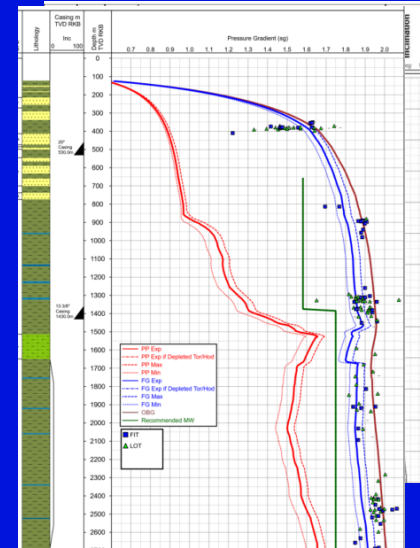
### → Formation Pressure estimation is not easy

- Wildcat exploration wells will likely have limited data available  
Seismic, Offset wells (if any) geographically distant
- Production\PnA wells may have an overwhelming amount of data  
4D Seismic, Formation pressure, Multiple offsets close by
- ... but Production may complicate the pressure/stress regime and just the amount of data can be overwhelming)

### → In all cases Formation Pressure estimations contain some degree of uncertainty

### → Pre-Ops Communication

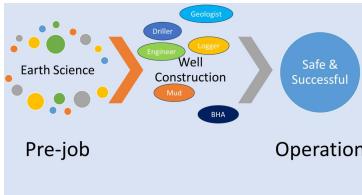
- Team Understanding of the **prognosed** risks (& objectives)
- Can the objective be achieved at an acceptable level of risk?



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→ Operations Phase  
– Are observations & data in line with the model?

→ Vast majority of operations

→ Reactive\Passive Monitoring

- Surface rig data
- RT M\LWD data
- Lag data: Gas, Cuttings, Cavings

→ Site Specific Communications Plan

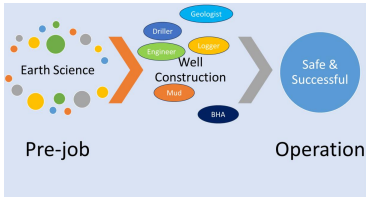
- Formalised reporting requirements
- Levels of escalation
- Data Analyst, Driller, DSV, Wellsite Geologist

Site Specific Communication Plan (SSCP)				Page 1 of 1
Customer Organization		Geometek:		
Building Contractor		Well Job Number:		
Rig Name		CSS Representative Name(s):		
Phone Number(s)		Phone Number(s)		
Contact Name / Position	Phone Number(s)	Contact Name / Position	Phone Number(s)	
1. Driller (DM)		Company Representative (CM)		
2. Site Geologist (WSG)		Service Manager (SM)		
3. Engineer (EM)		Rig Manager (RM)		
4. Driller (DP)		Control Room (CR)		
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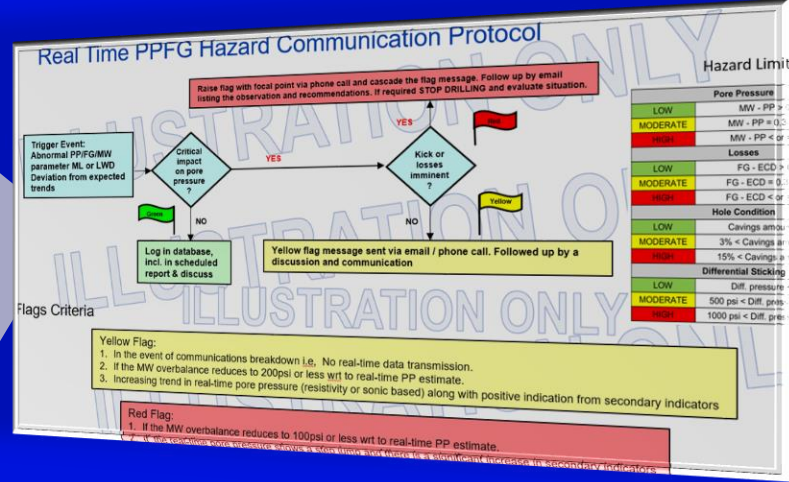
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## → Proactive Forecasting based on Real-Time Updates



Observations & Data

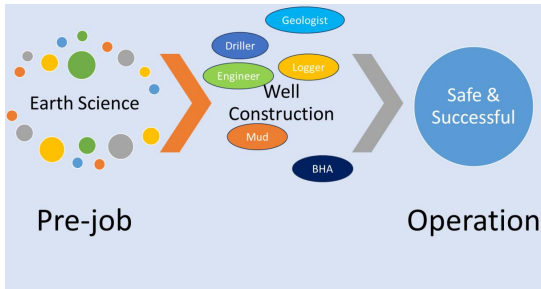


### RT Pore Pressure Specialist

- Analysis & interpretation
- 24/7 Model updates
- Look-ahead Forecast
- Drilling window desktop sharing
- Formalised Communication Protocol
  - Defined together with client
  - Onshore & Offshore personnel

# Communication

## formation pressure & avoiding well control incidents



- Models can be built incorporating a significant amount of “geological” information enabling formation pressure estimation
- Even in the best case, uncertainties still exist in the pre-drill earth model
- Risks and Uncertainties can be mitigated if understood
- Uncertainties can be constrained as new data is acquired

- The best available source of uncertainty reduction is often the data being acquired in the well

...but communications must be effective

**“The single biggest problem in communication is the illusion that it has taken place.” - George Bernard Shaw**