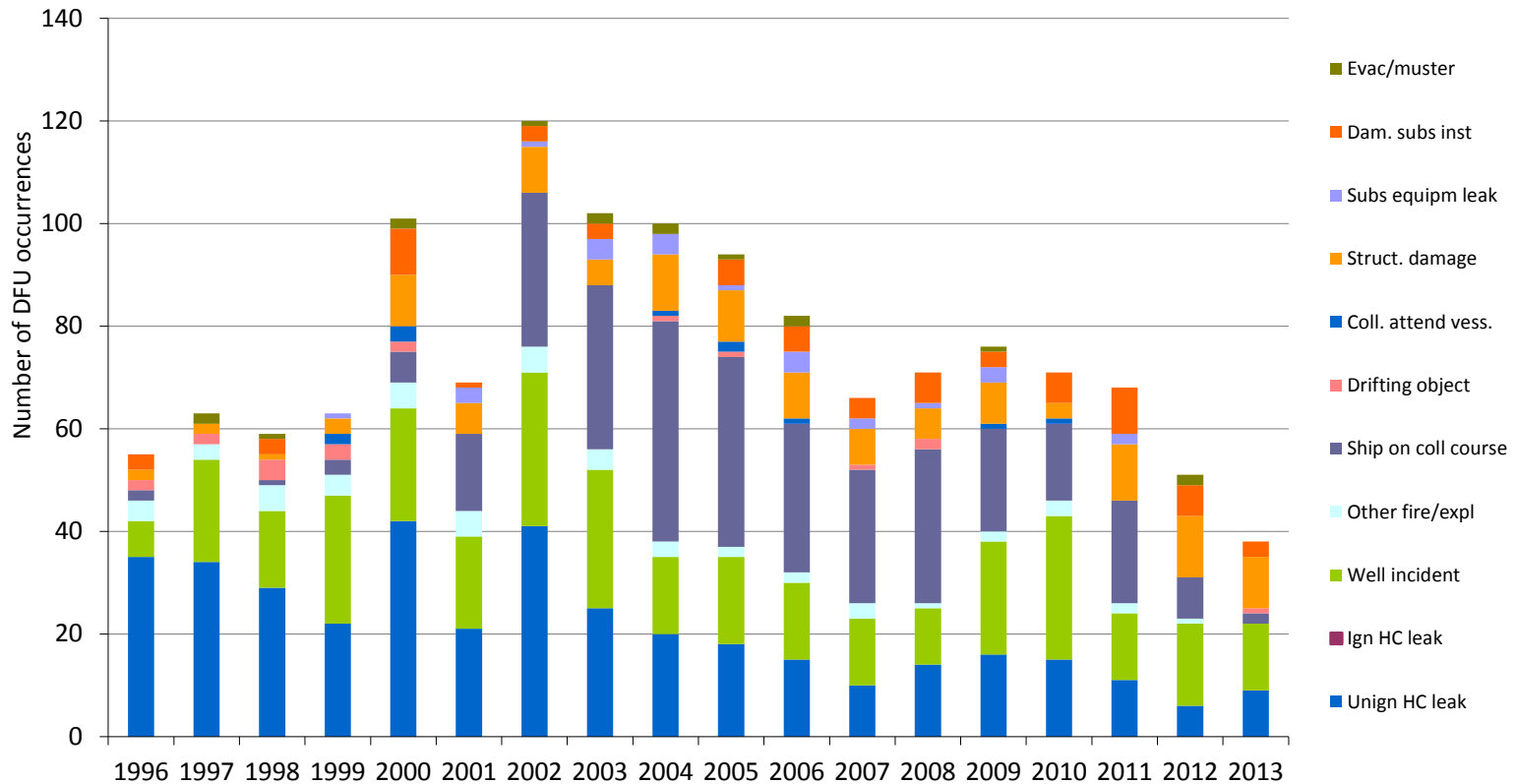


# ***Trends in risk level in the petroleum activity 2013***

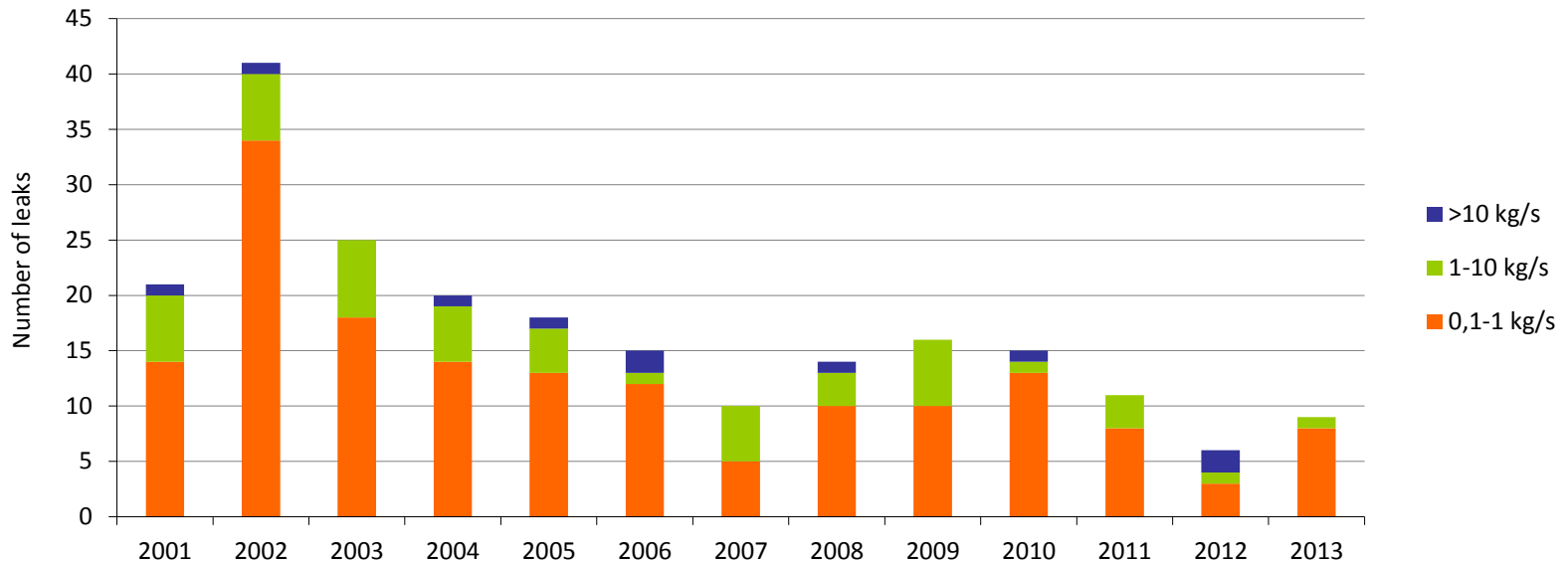
Tore Endresen  
Petroleum Safety Authority



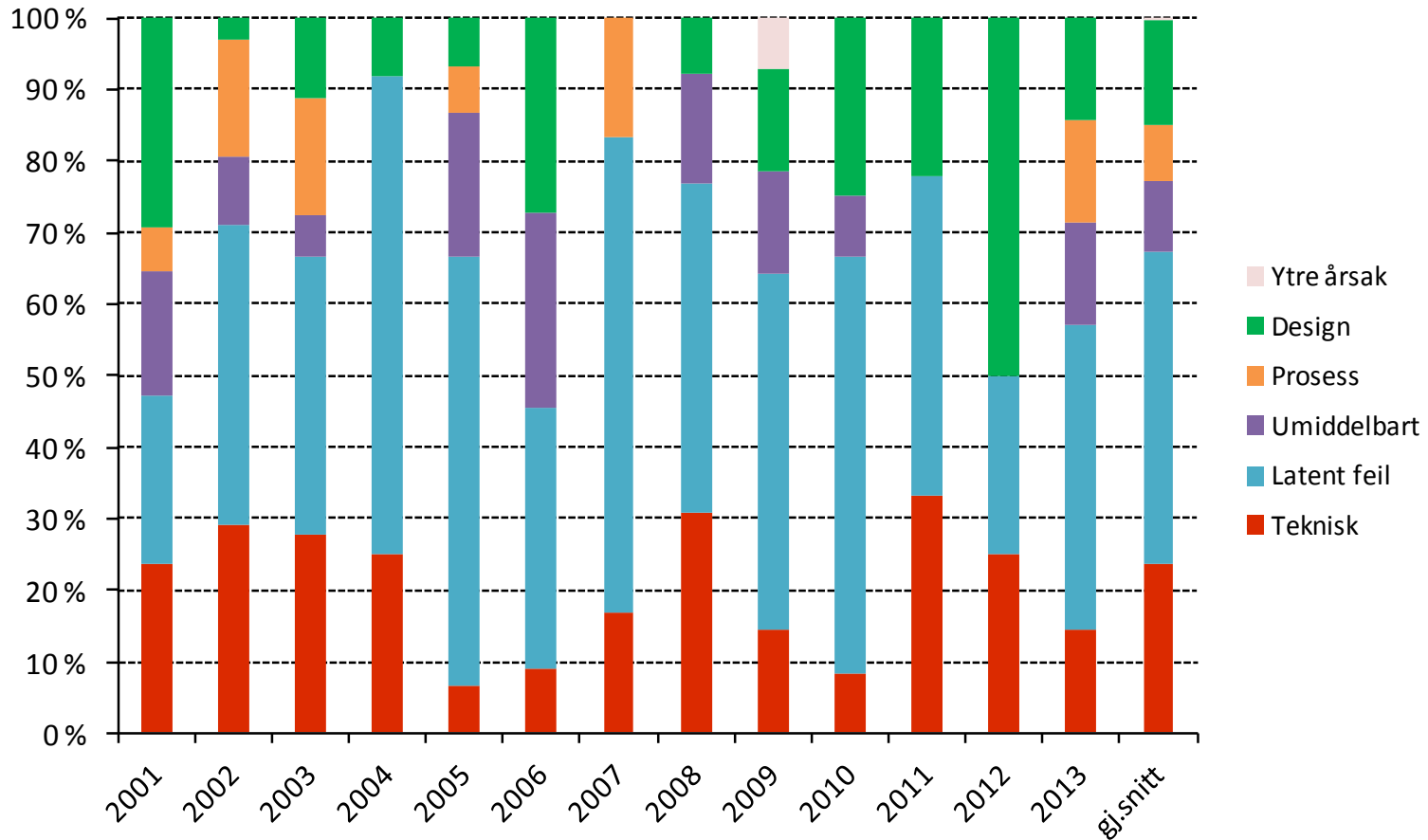
# Incidents and near misses (DHAs) all facilities (excluding helicopters)



# Hydrocarbon releases

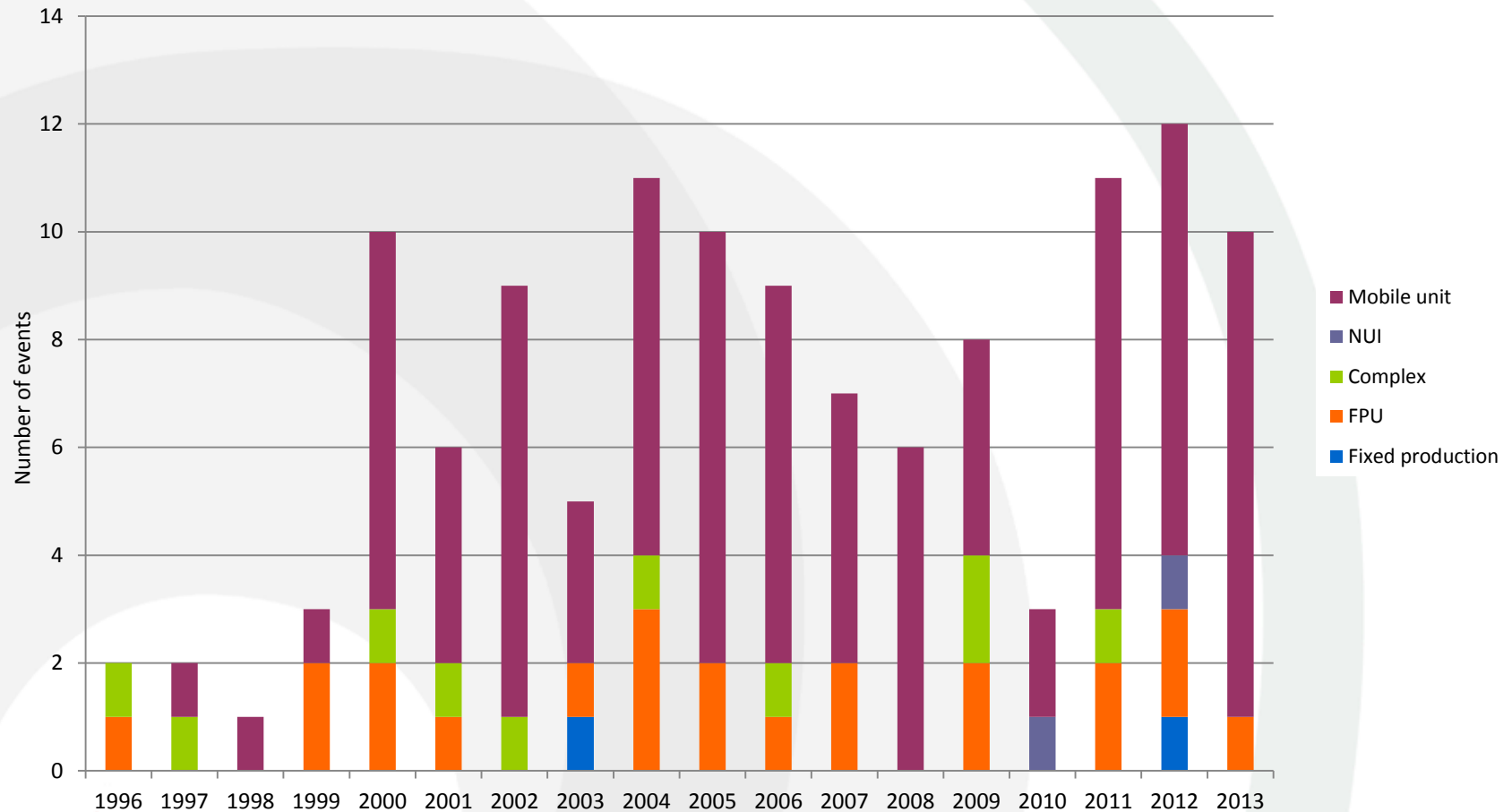


# Hydrocarbon releases - initiating cause (2001–2013)



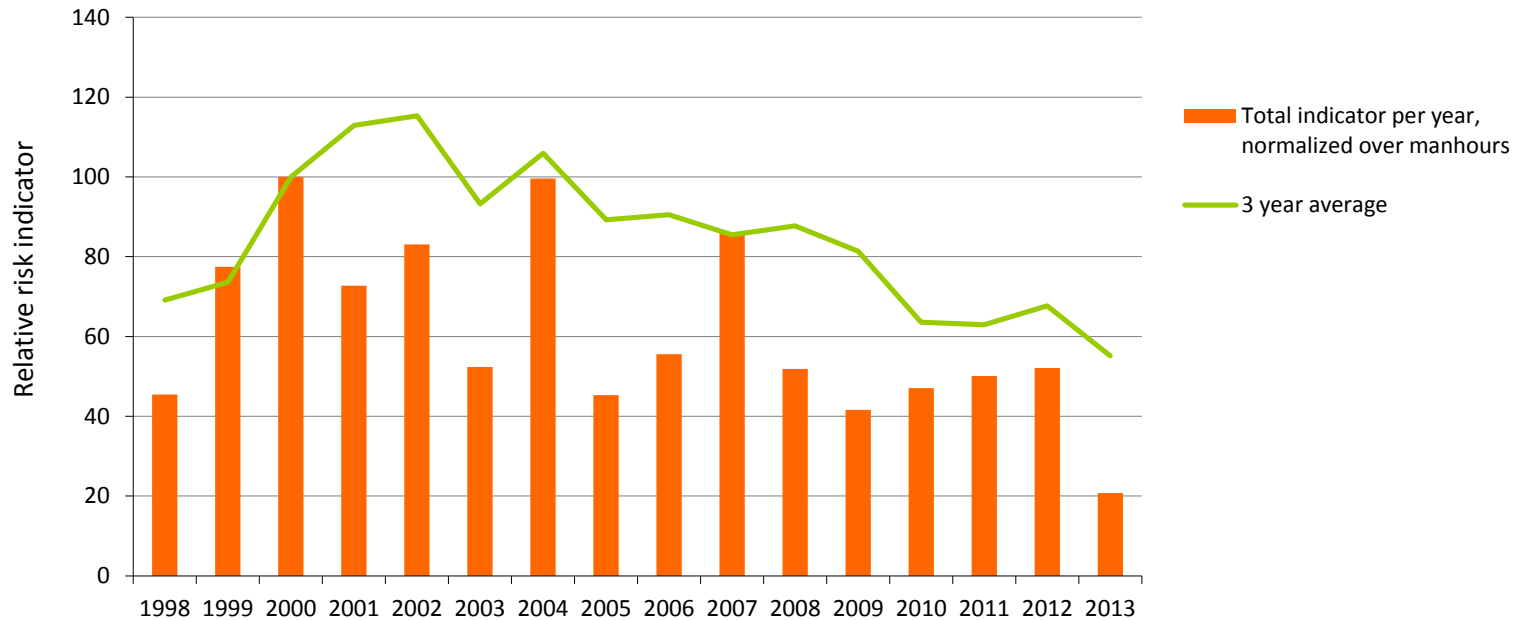
# Construction and maritime systems

## Most severe incidents



# Total indicator – major accidents

## Production facilities

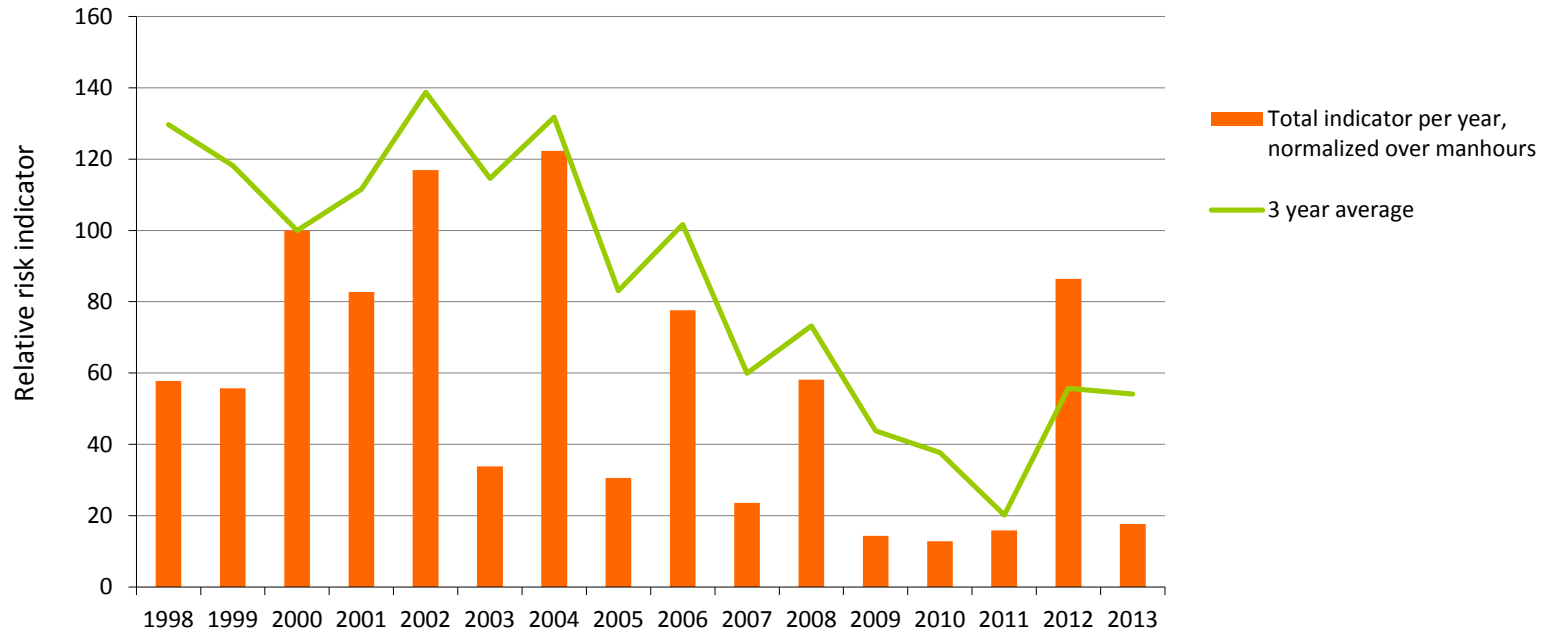


Based on observations, does not express risk directly

**Weight factor based on loss of life**



# Total indicator – major accidents MODUs

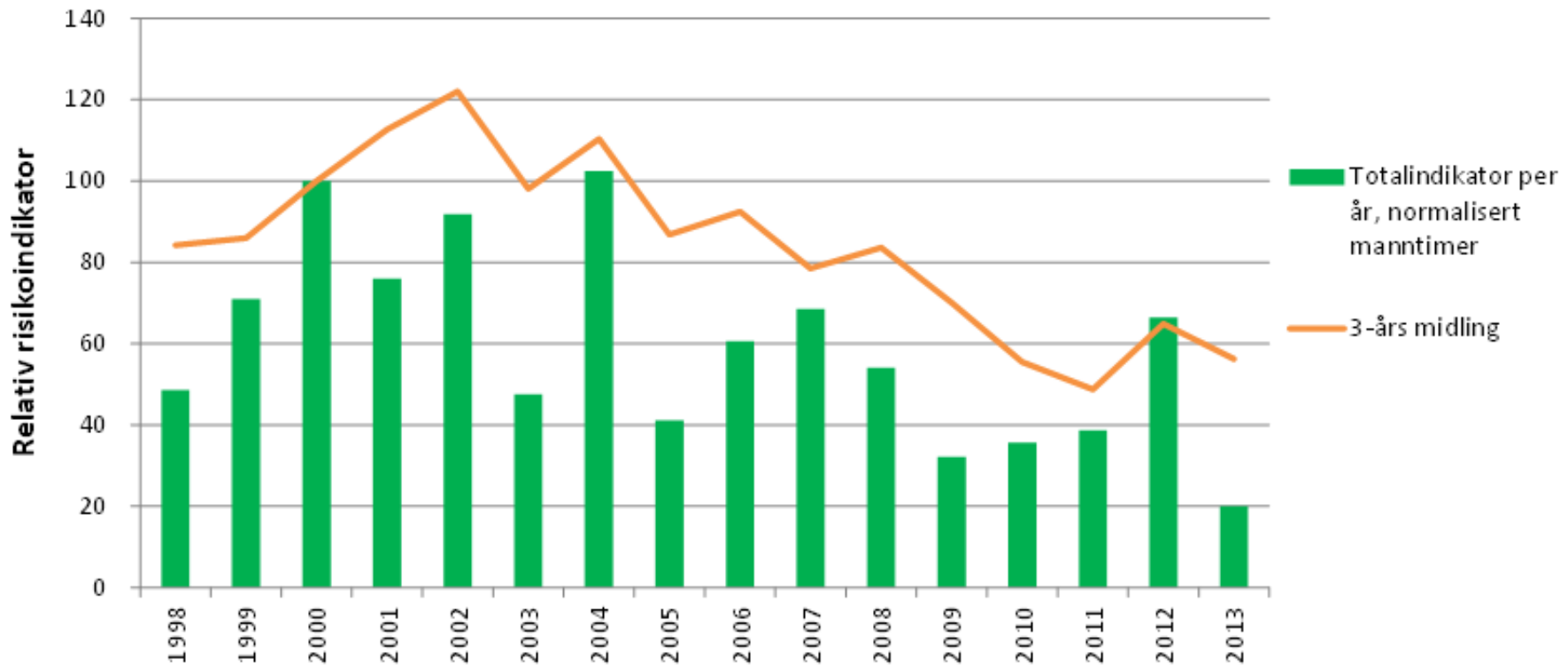


Based on observations, does not express risk directly

**Weight factor based on loss of life**



# Major accident indicator, all installations, normalised against manhours, yearly values and 3-year rolling averages

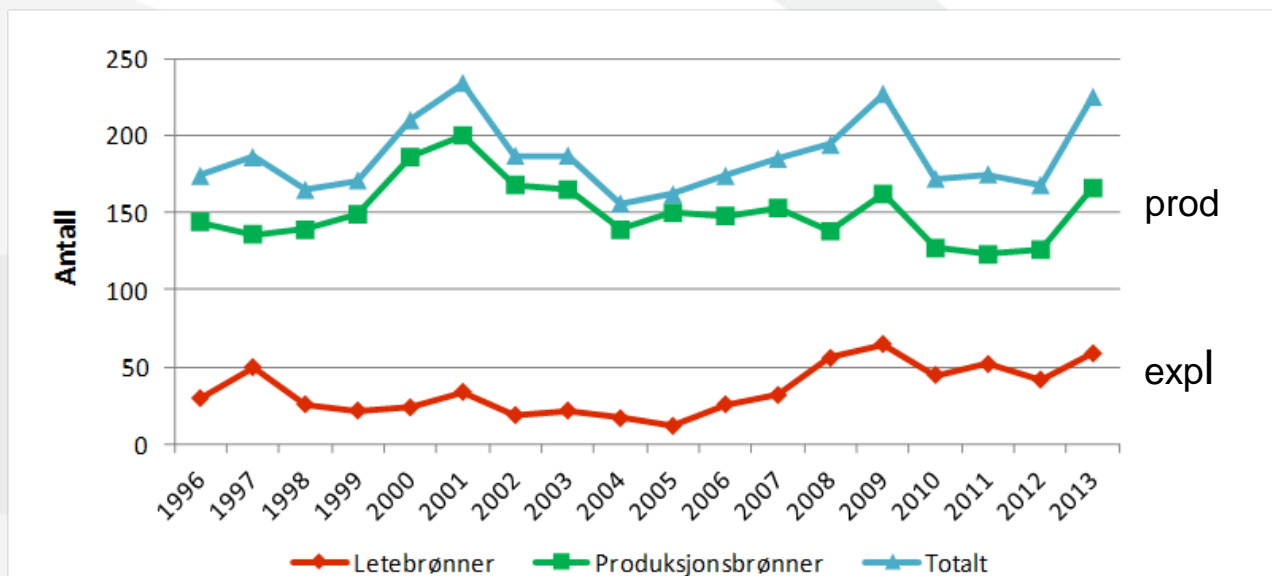


Based on observations, does not reflect risk as explicit numbers.

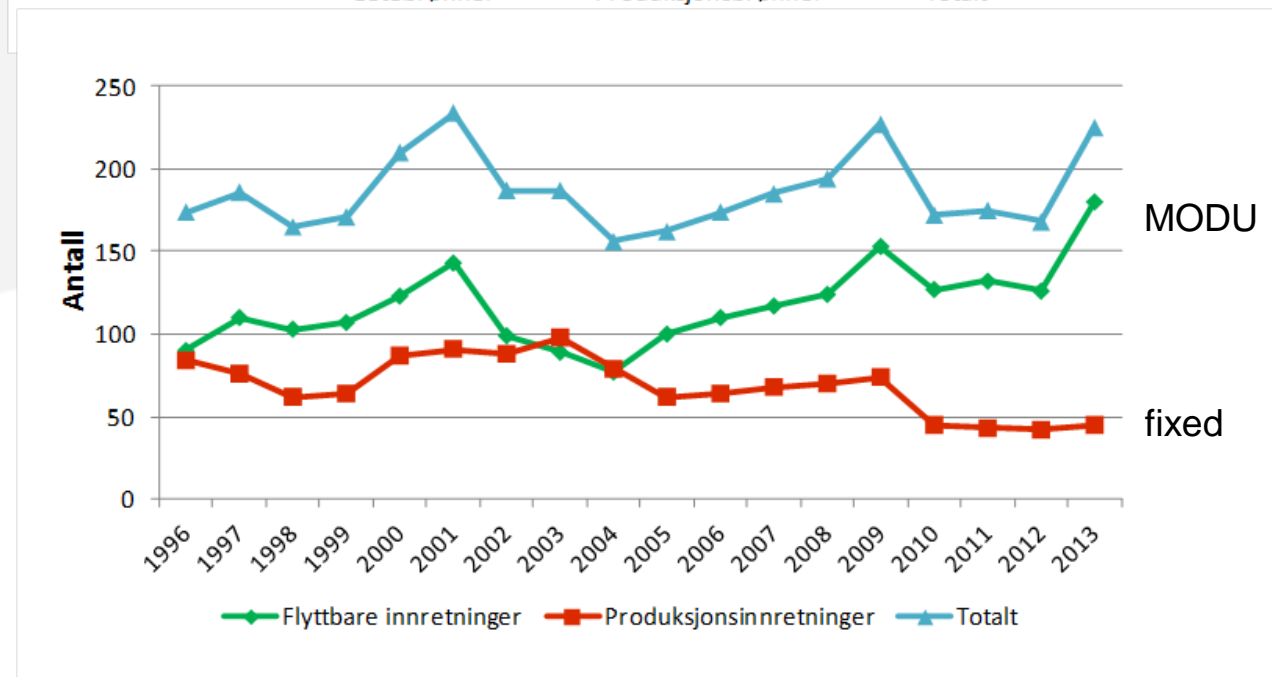




# Wells drilled 1996-2013



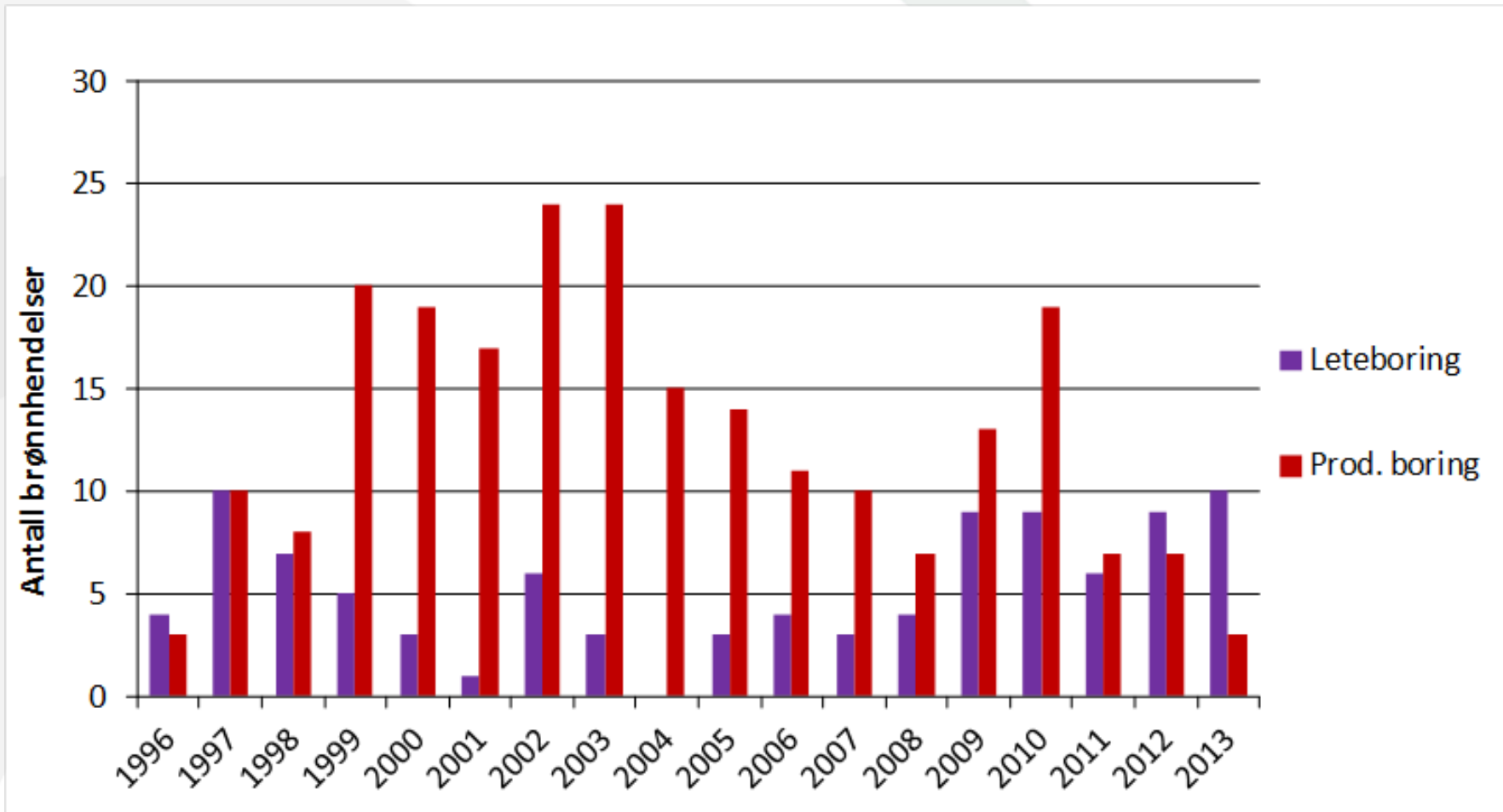
Type of well



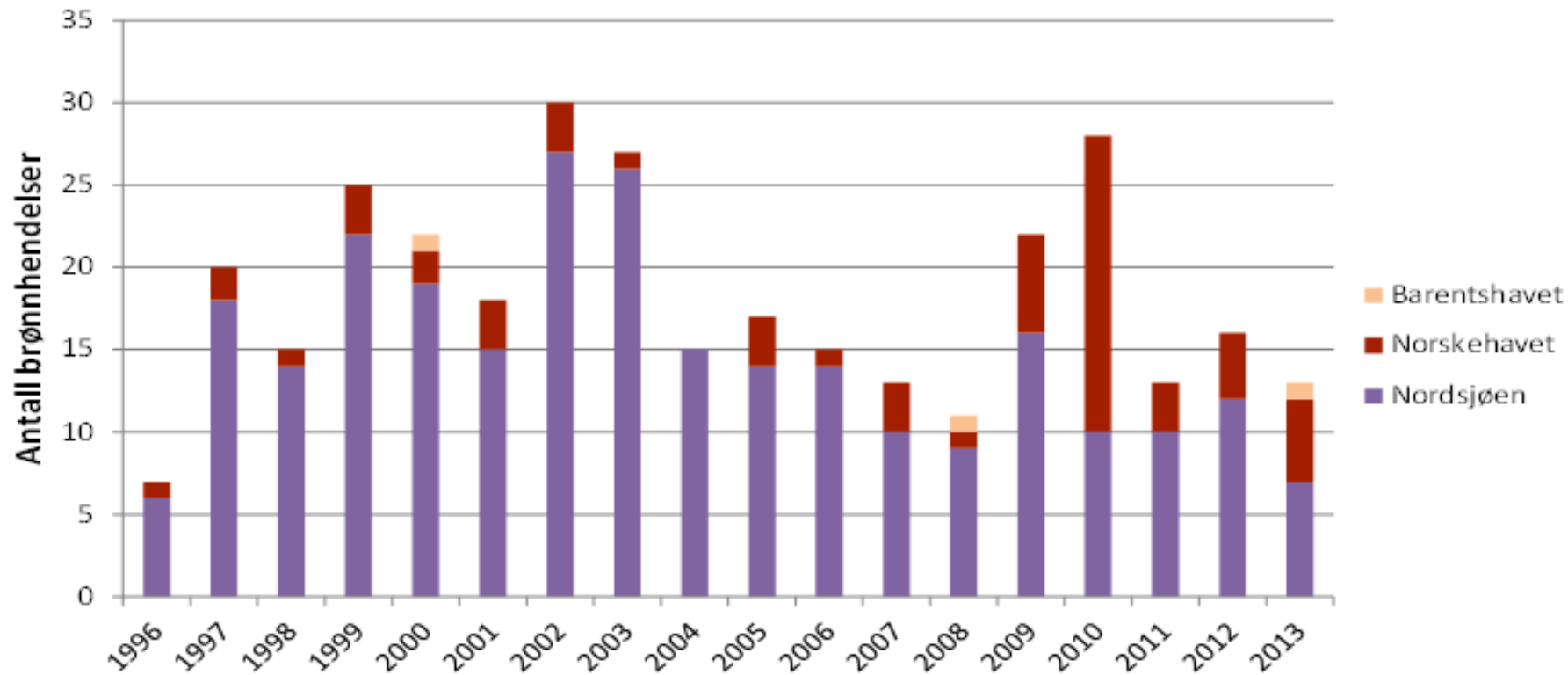
Type of drilling unit



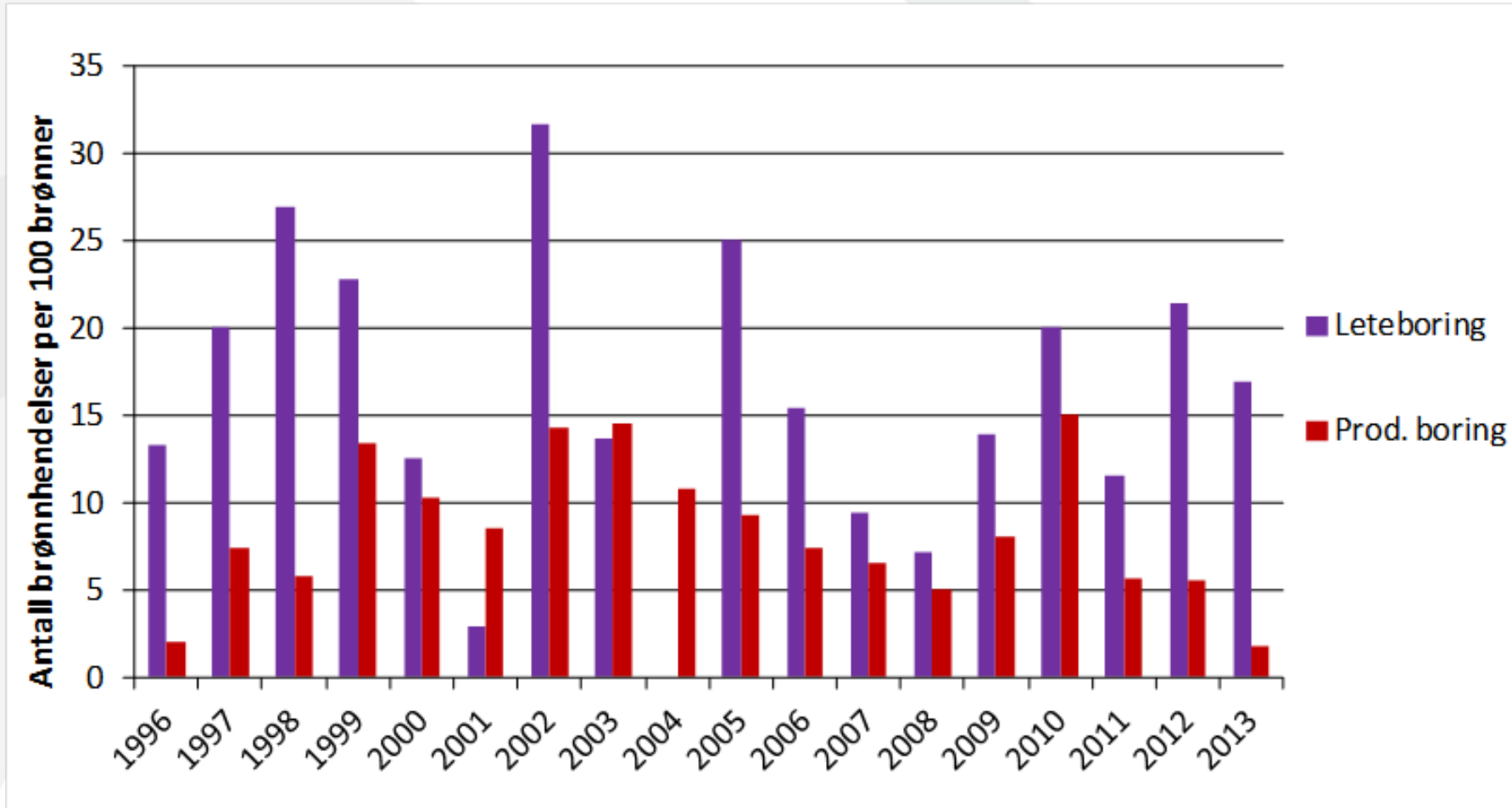
# Well Control Incidents 1996-2013



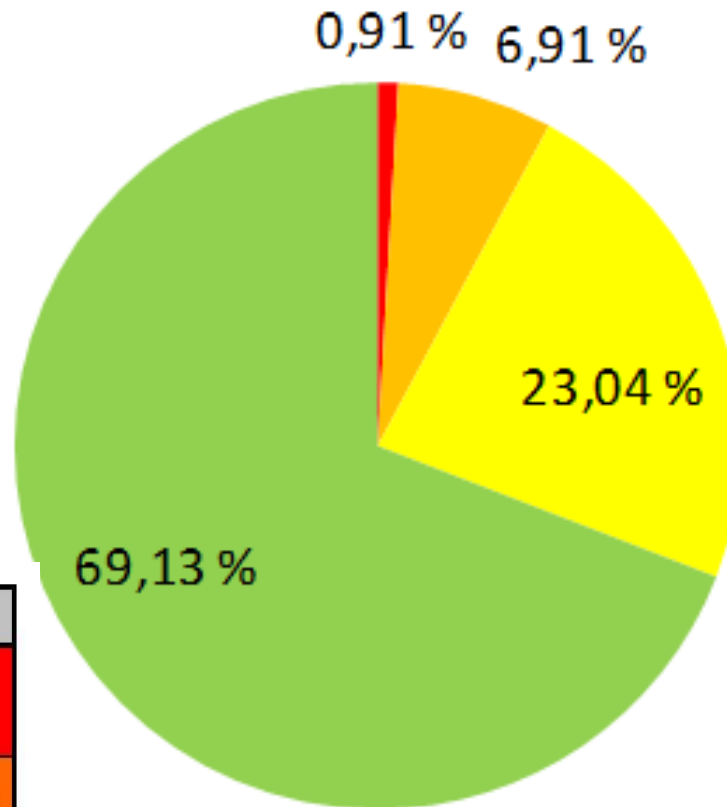
# Well control incidents 1996-2013



# Well control incidents / 100 wells

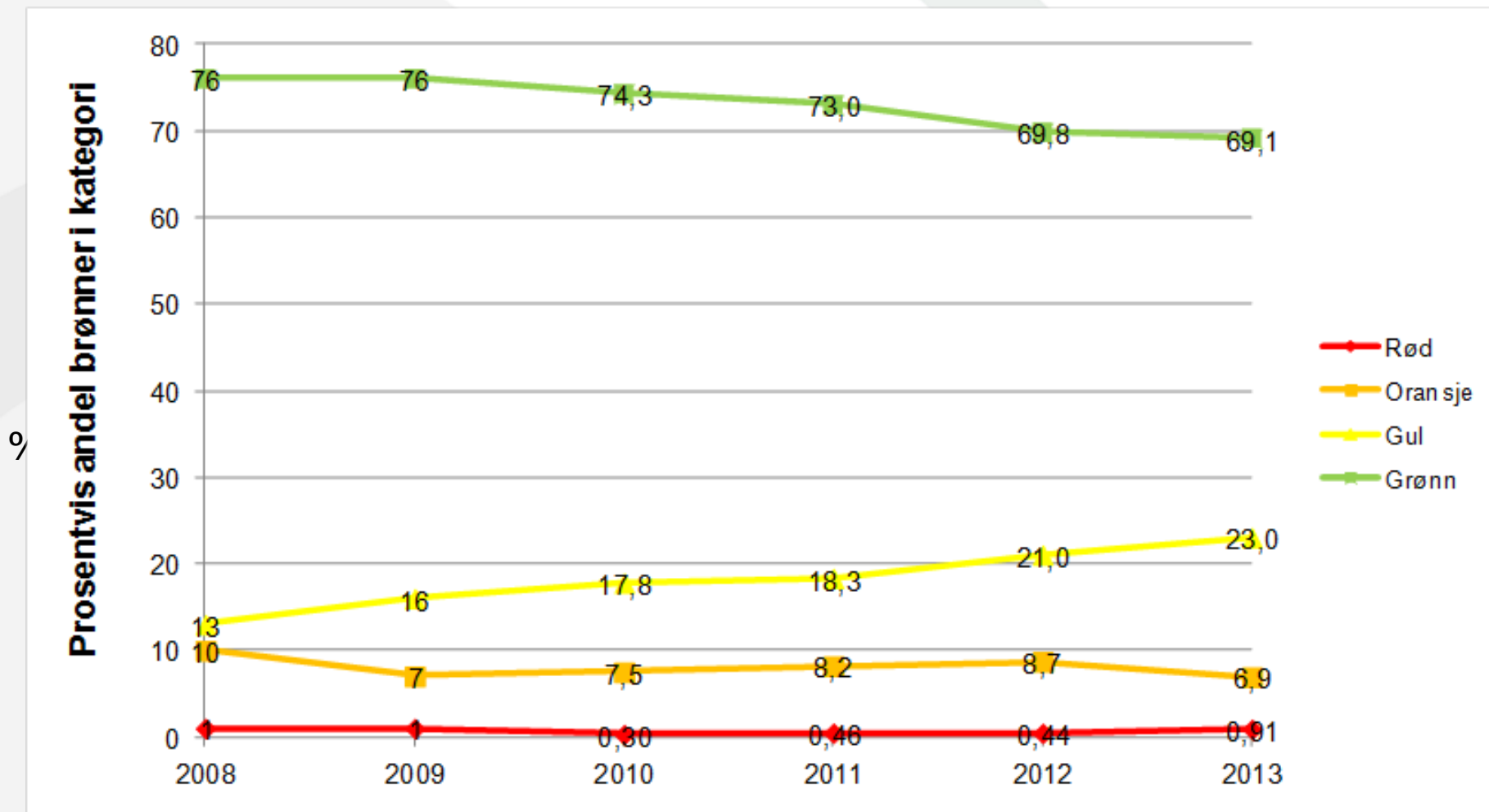


# Well integrity – NCS 2013

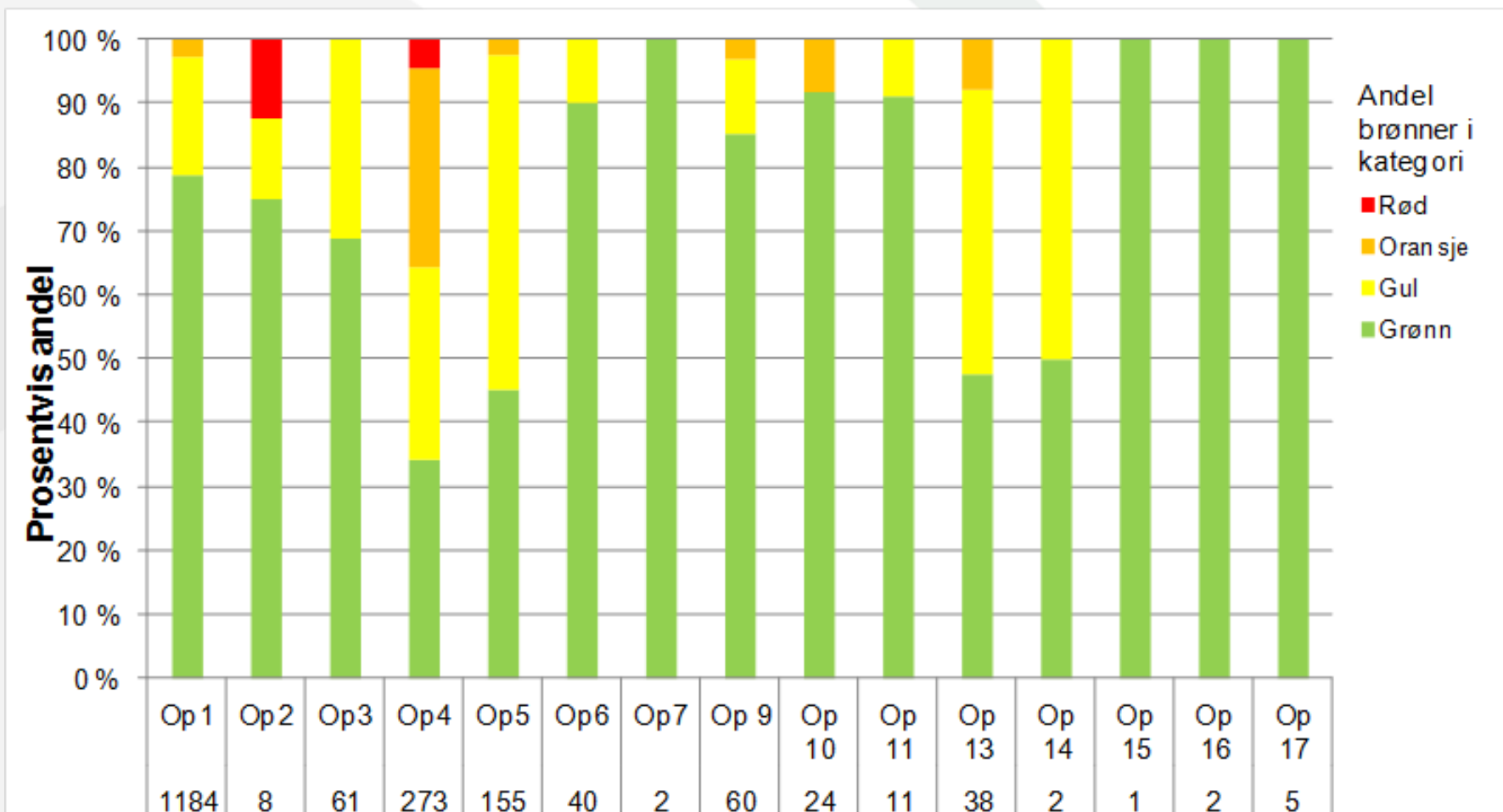


Category	Principle
Red	One barrier failure and the other is degraded/not verified, or leak to surface
Orange	One barrier failure and the other is intact, or a single failure may lead to leak to surface
Yellow	One barrier degraded, the other is intact
Green	Healthy well - no or minor issue

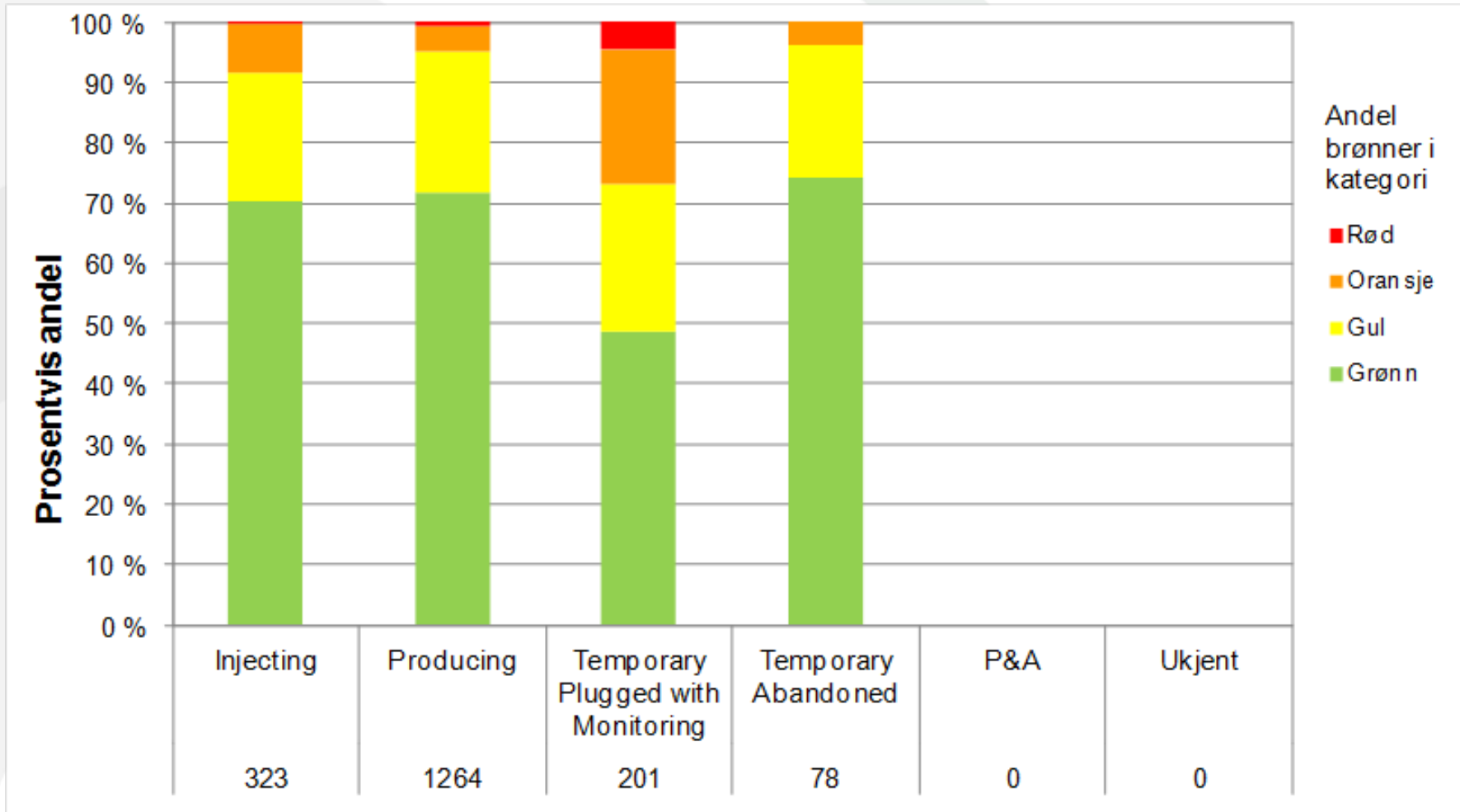
# Well integrity – NCS 2008-2013



# Well integrity - per operator in 2013



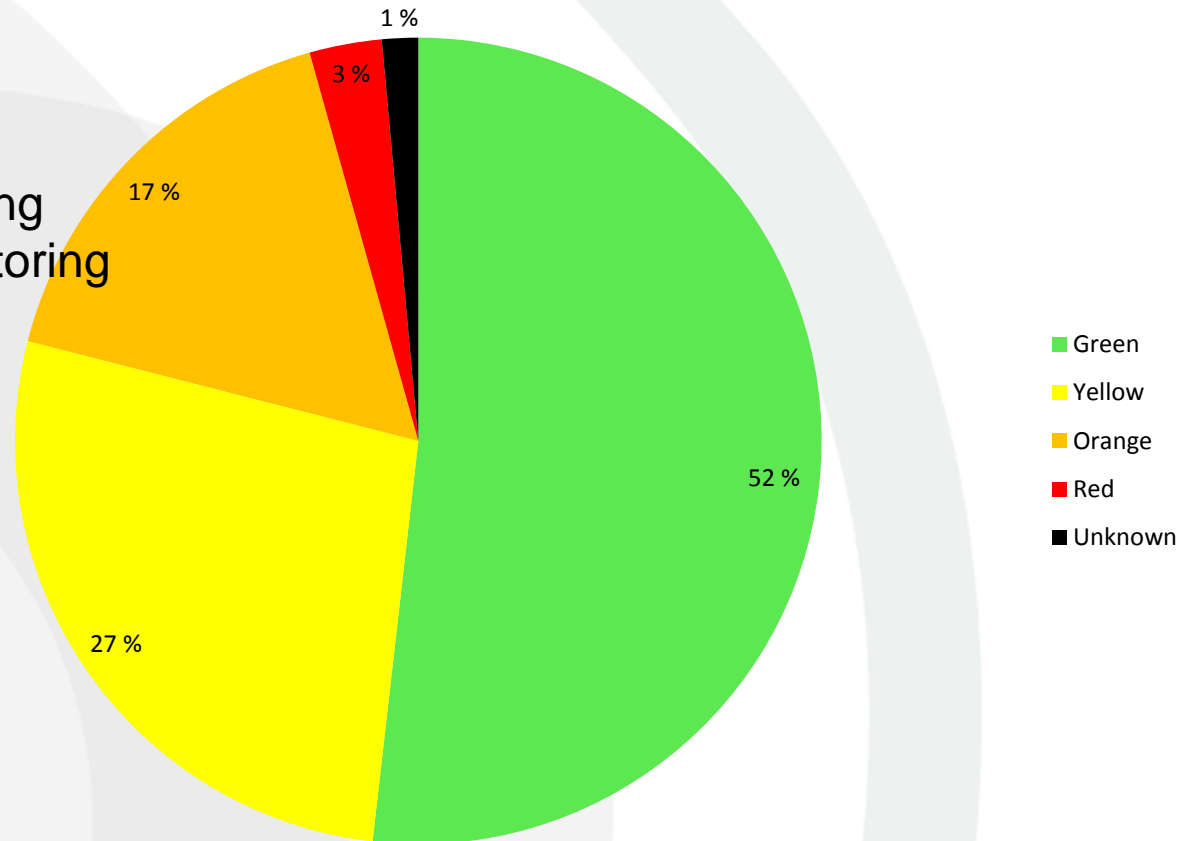
# Well integrity – per category in 2013





# 2014 – Temporary P&A Well Integrity

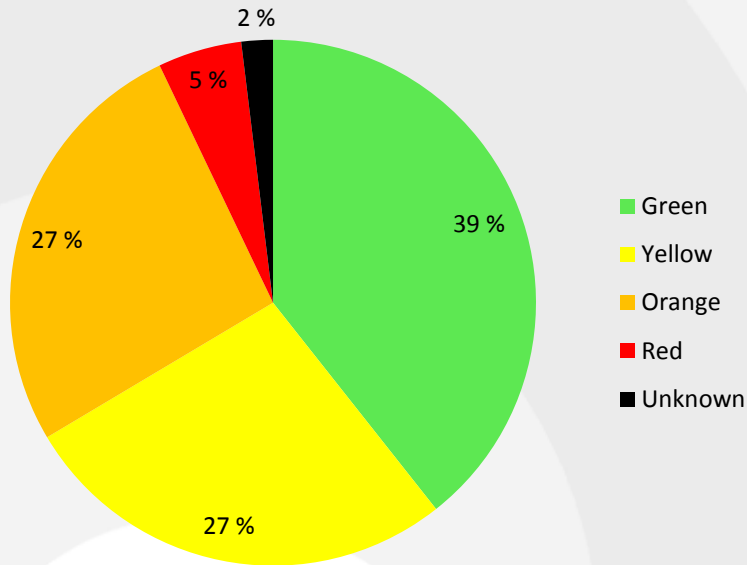
- Total 276 wells
- 155 Platform wells
- 121 Subsea wells
- Temp P&A with monitoring
- Temp P&A without monitoring



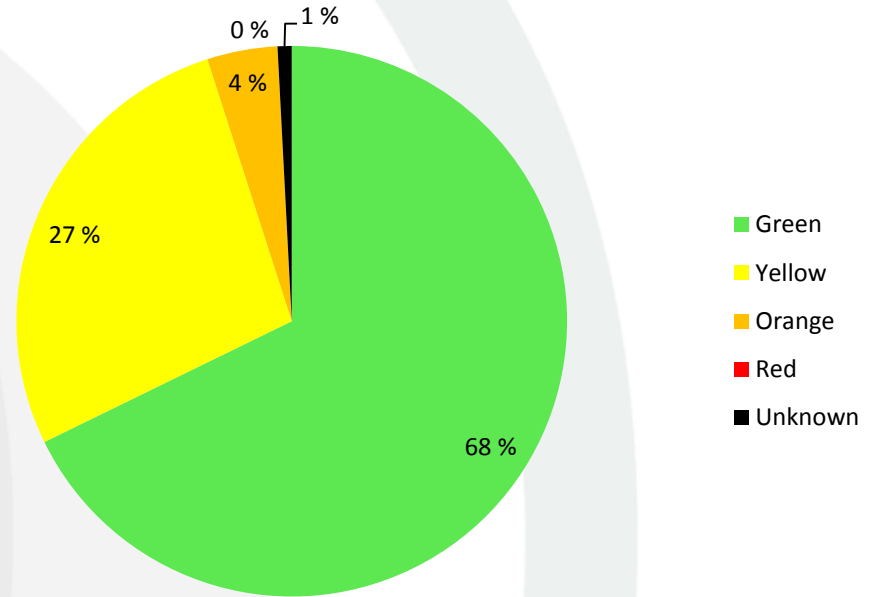
Categorized according to Norsk olje og gass guideline 117



# 2014 – Temporary P&A Well Integrity



Platform wells(155)

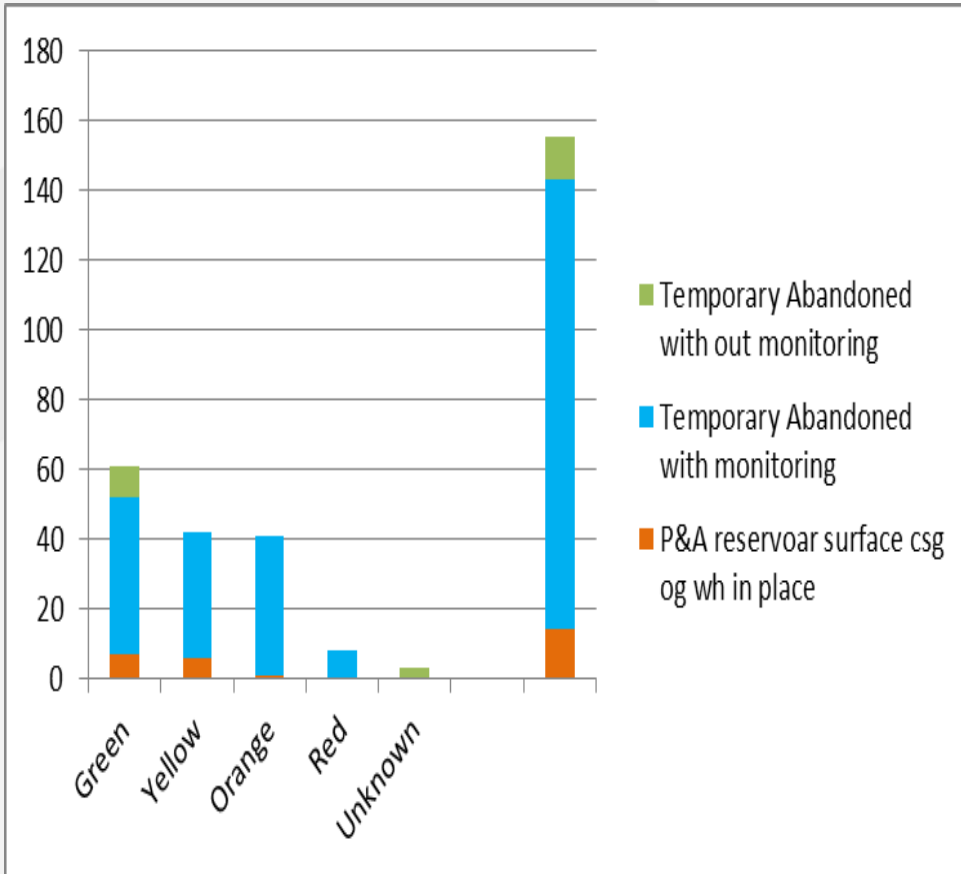


Subsea Wells (121)

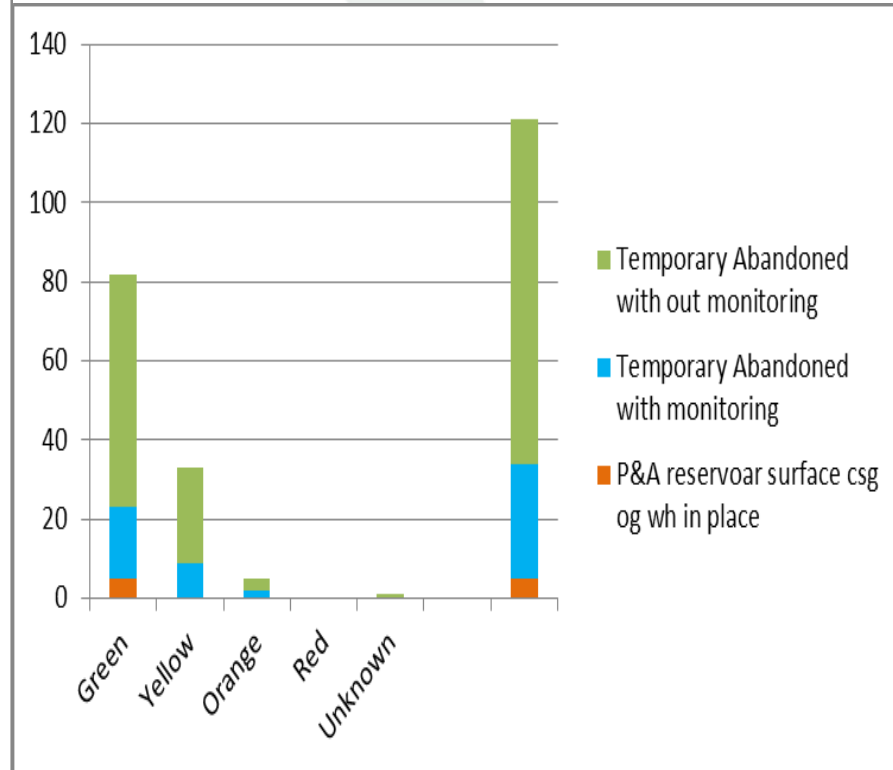


# Type of Temporary P&A

Platform wells



Subsea wells



# P&A – Challenges

- P&A of existing wells
  - Poor or lacking barriers
  - Requirement for “eternal seal”
  - Time and cost
- P&A of wells drilled today/future
  - Life cycle planning of wells
  - Use of best practice doing primary cementing
- Verification of barriers



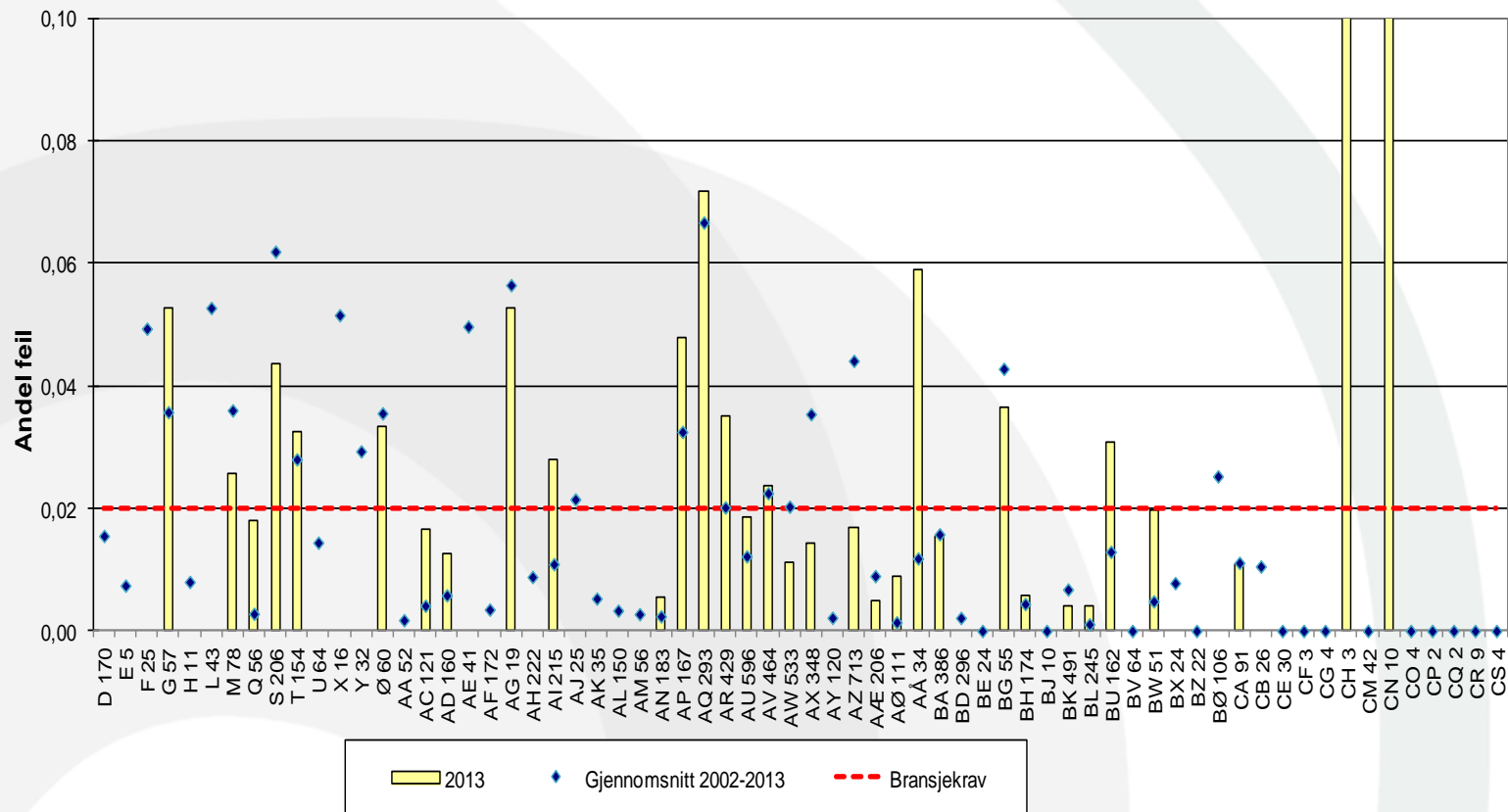
# RNNP Barrier data

- In 2013 PSA wrote a letter to operators with facilities scoring lower than expected on failure rate
- Answers can be divided into the following main categories
  1. **Dataset** - the dataset is imprecise due to errors during reporting, errors during testing and so forth
  2. **Observed failure rates** have improved during the last years, and also beyond the expected values  
*(PSA used a 10 year average in the letter)*
  3. Some barrier elements are difficult to operate below the expected level, for instance due to operational issues

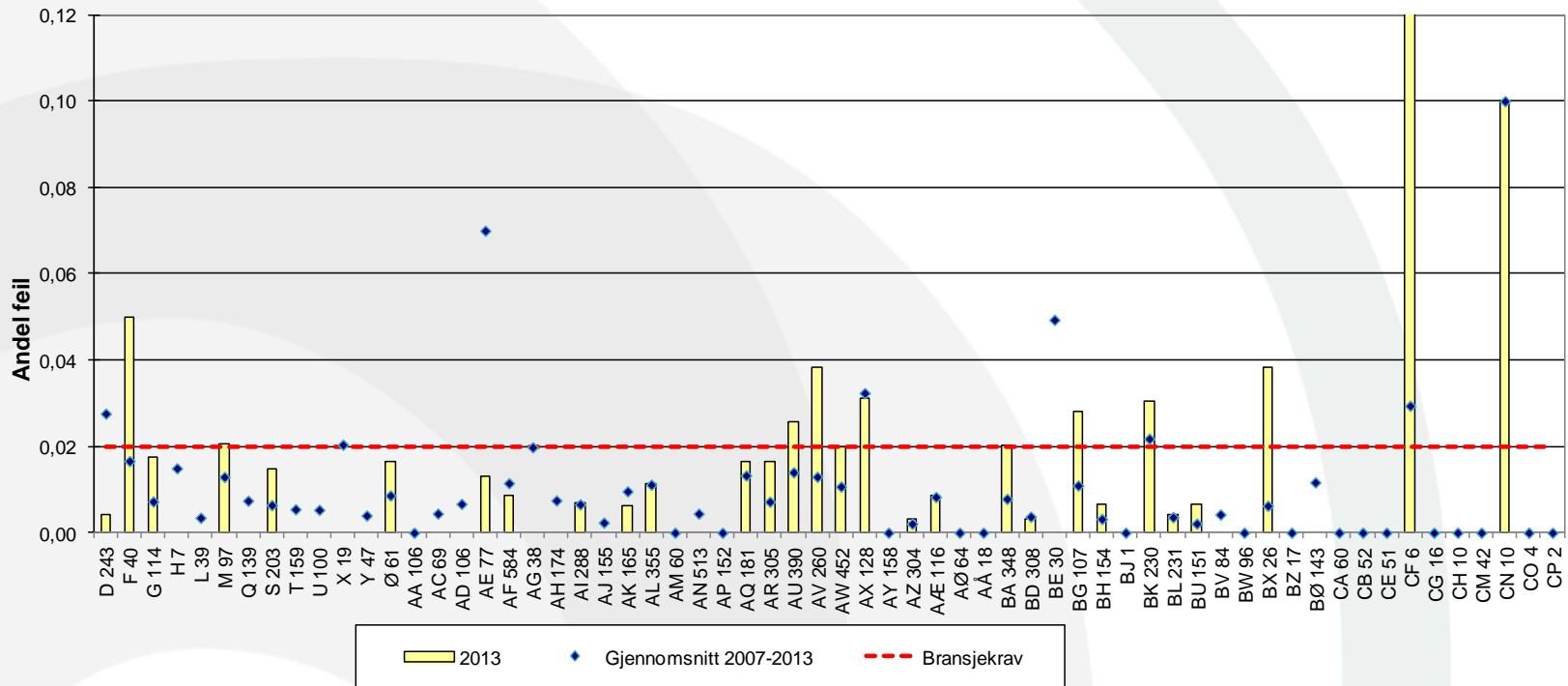
**Issue 1 and 2 in particular should result in an improved score for 2013**



# Andel feil for DHSV/ Nedihullsventil



# Andel feil lekkasjetest ving- og masterventil



# Pressure test - BOP

Tabell 1 Andel feil for isolering med BOP, flyttbare innretninger

<b>Isolering av BOP</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<i>Antall tester</i>	1293	1124	2506
<i>Antall feil</i>	24	20	20
<i>Antall BOP enheter</i>	65	46	66
<i>Andel feil</i>	0,019	0,018	0,008

