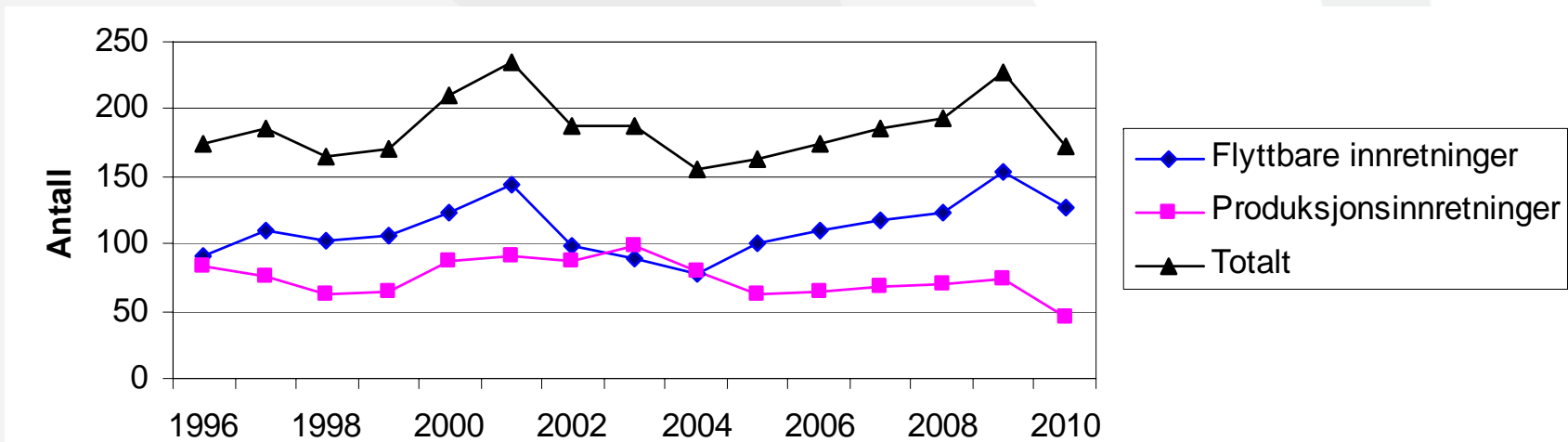
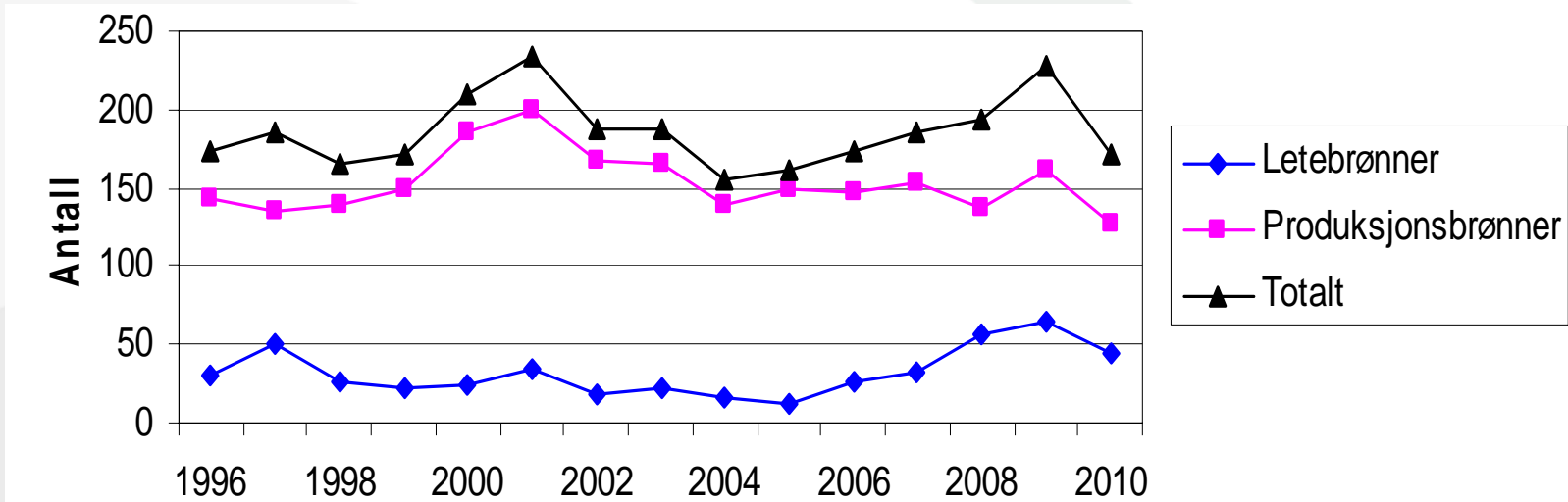


*RNNP - risk level of the norwegian  
continental shelf operations  
- the Macondo incident  
- PSA' focus points of 2011 - 2012*

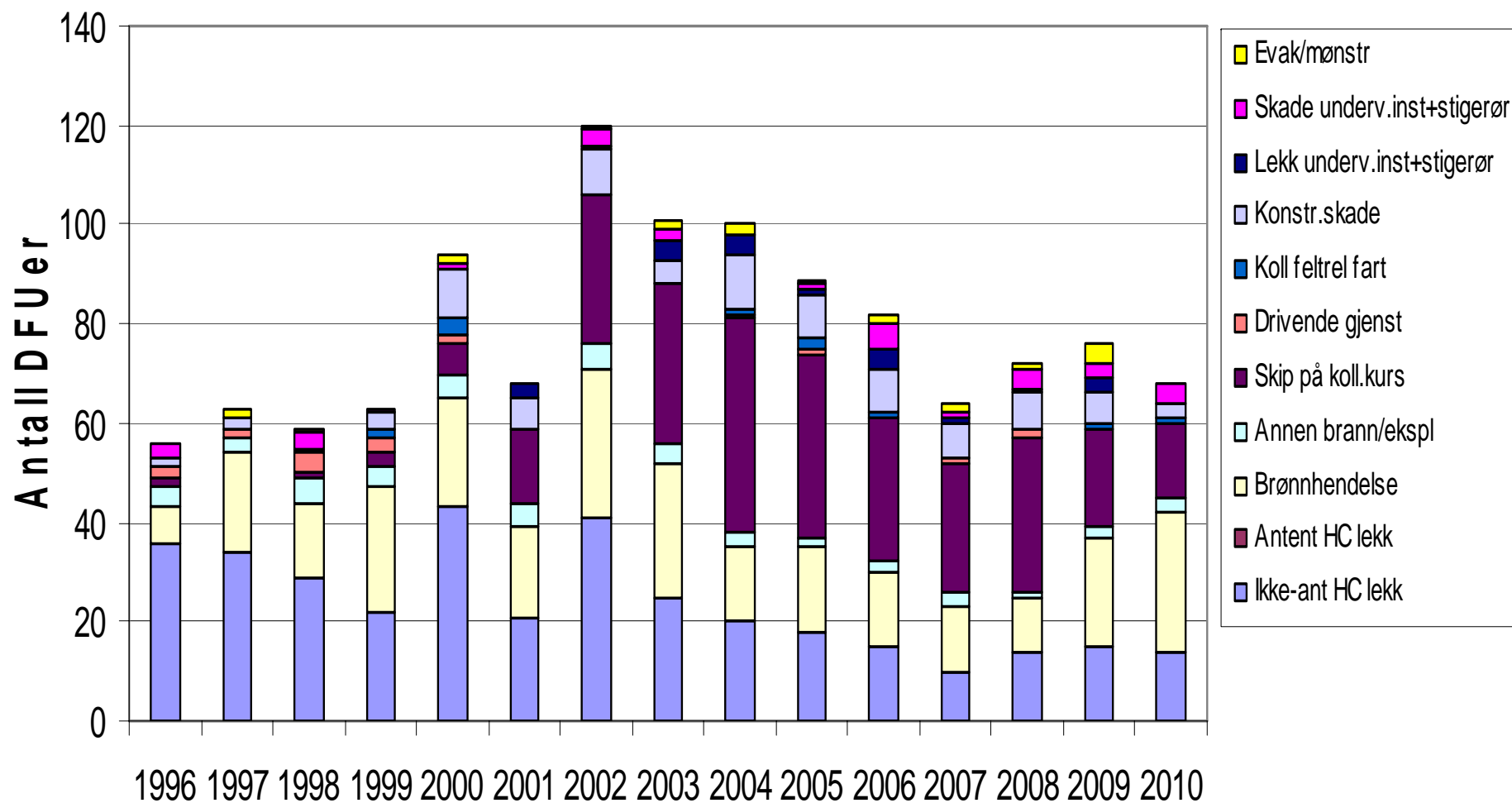
Well Integrity Workshop 26.5.2011  
Arne M. Enoksen  
Drilling and Well technology  
PSA



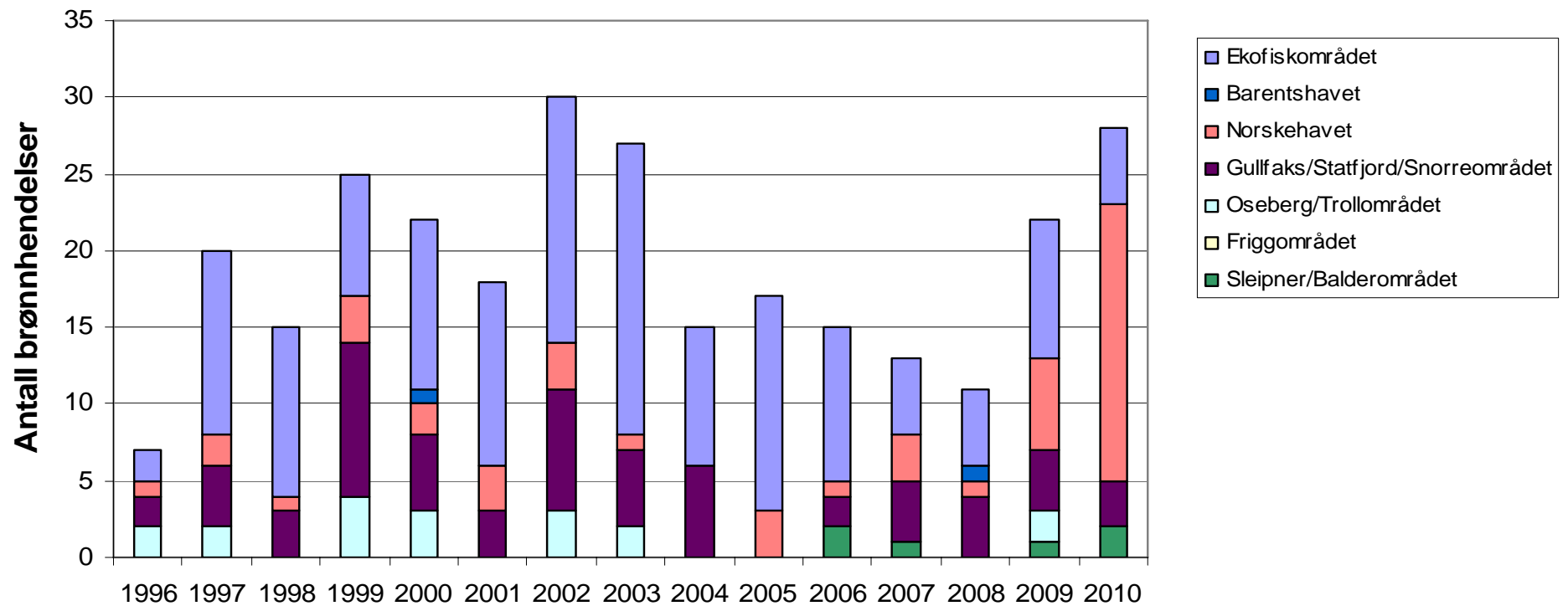
# Number of wells /2010



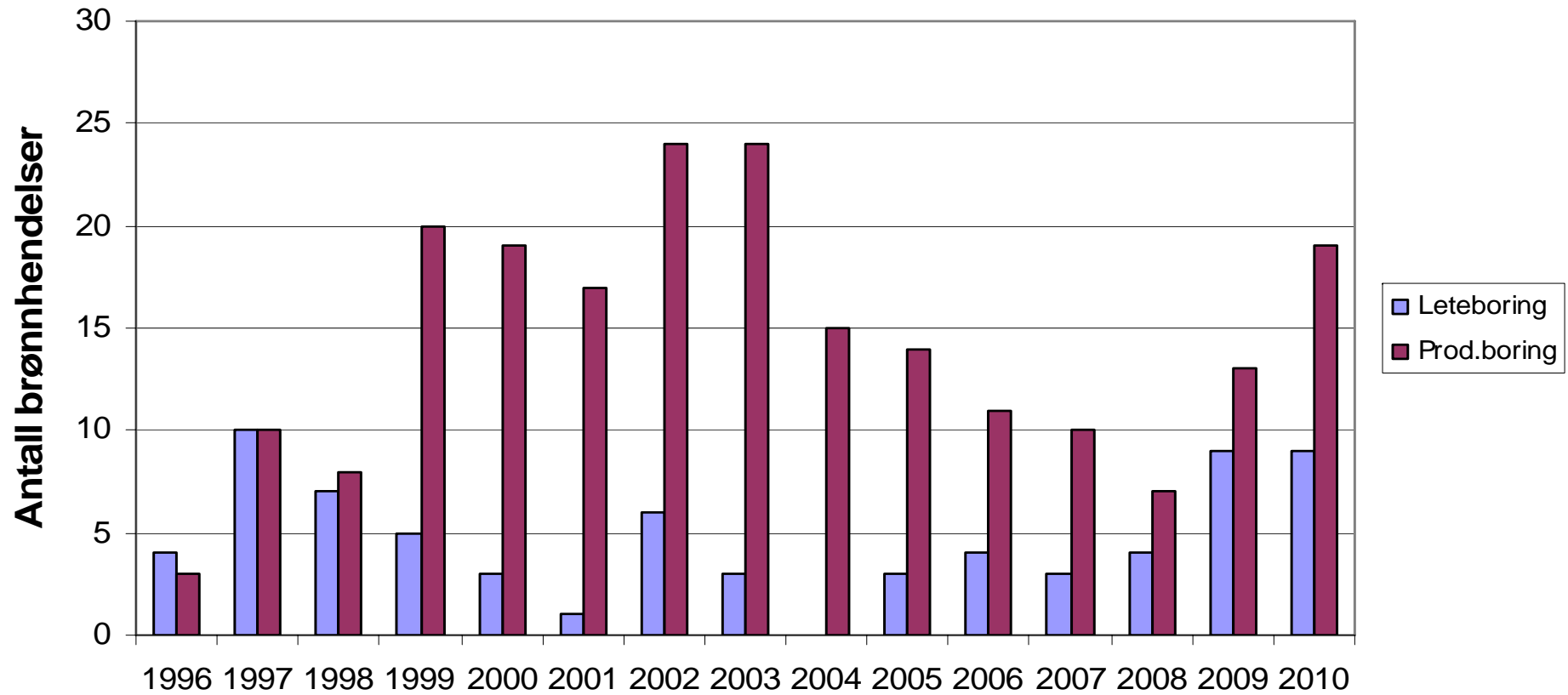
# DFUs - "major risk accidents / incidents"



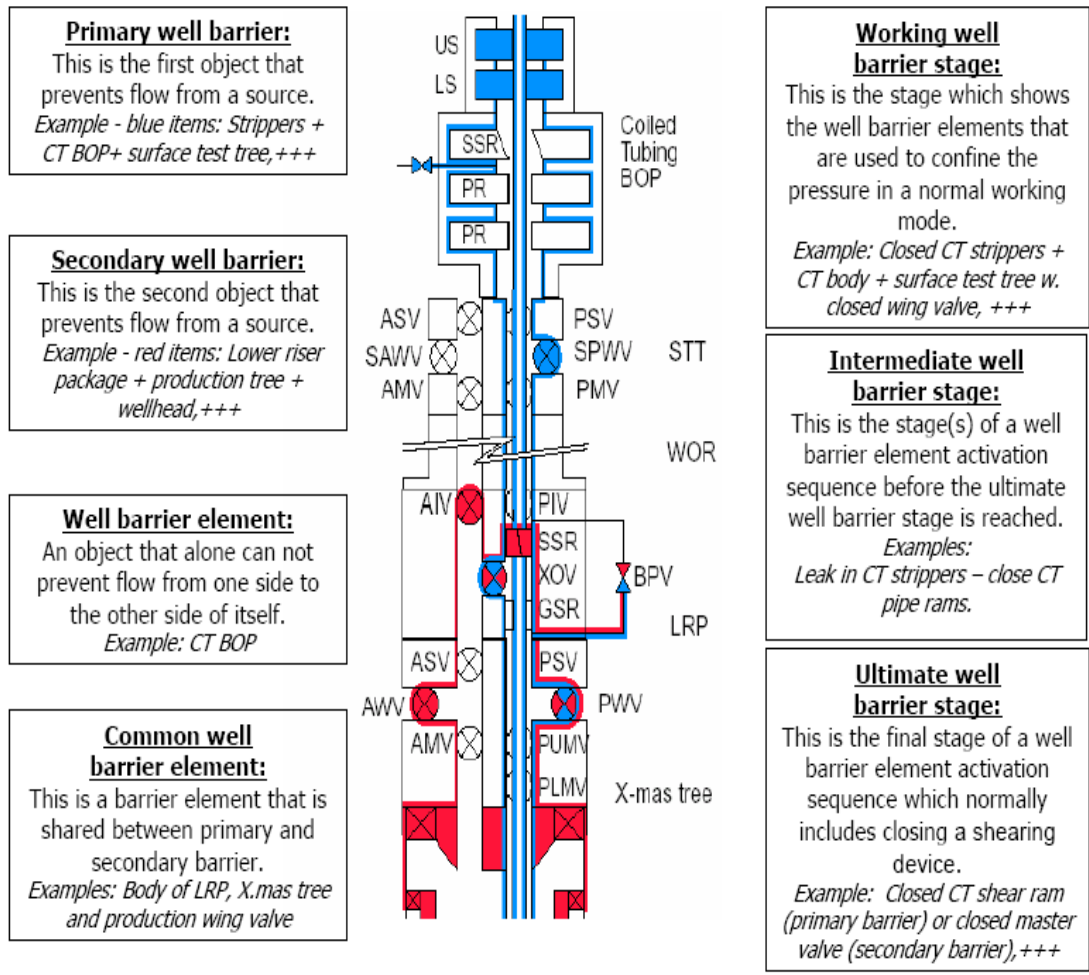
# Well control incidents /2010



# Well control incidents /2010



# Trends - risk level in the petroleum activity by RNNP indicators



## Function tests and Pressure tests:

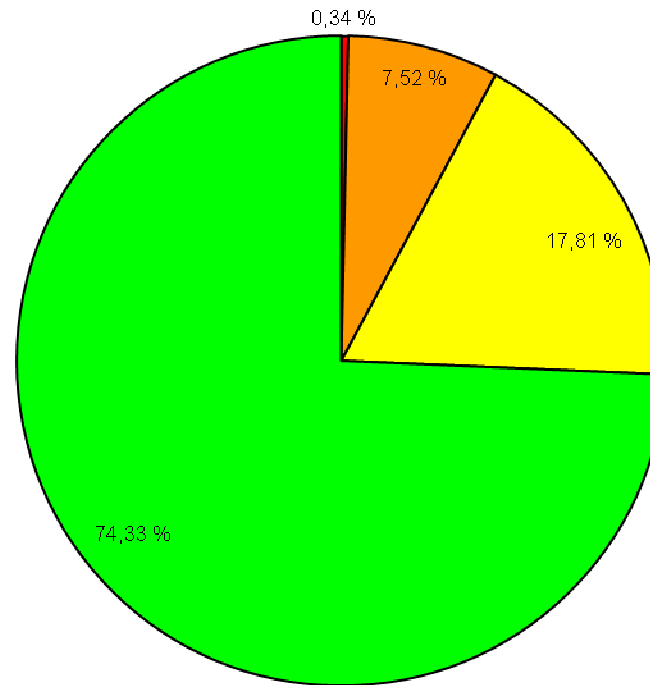
- Production Master Valve
- Production Wing Valve
- Downhole Safety Valve
- BOP pressure test
- Well control incidents
- Well integrity status

PSA/RNNP initiative to include drilling contractor and well intervention BOP test results (responsibility of owners to report test data)



# Well integrity - NCS 2010

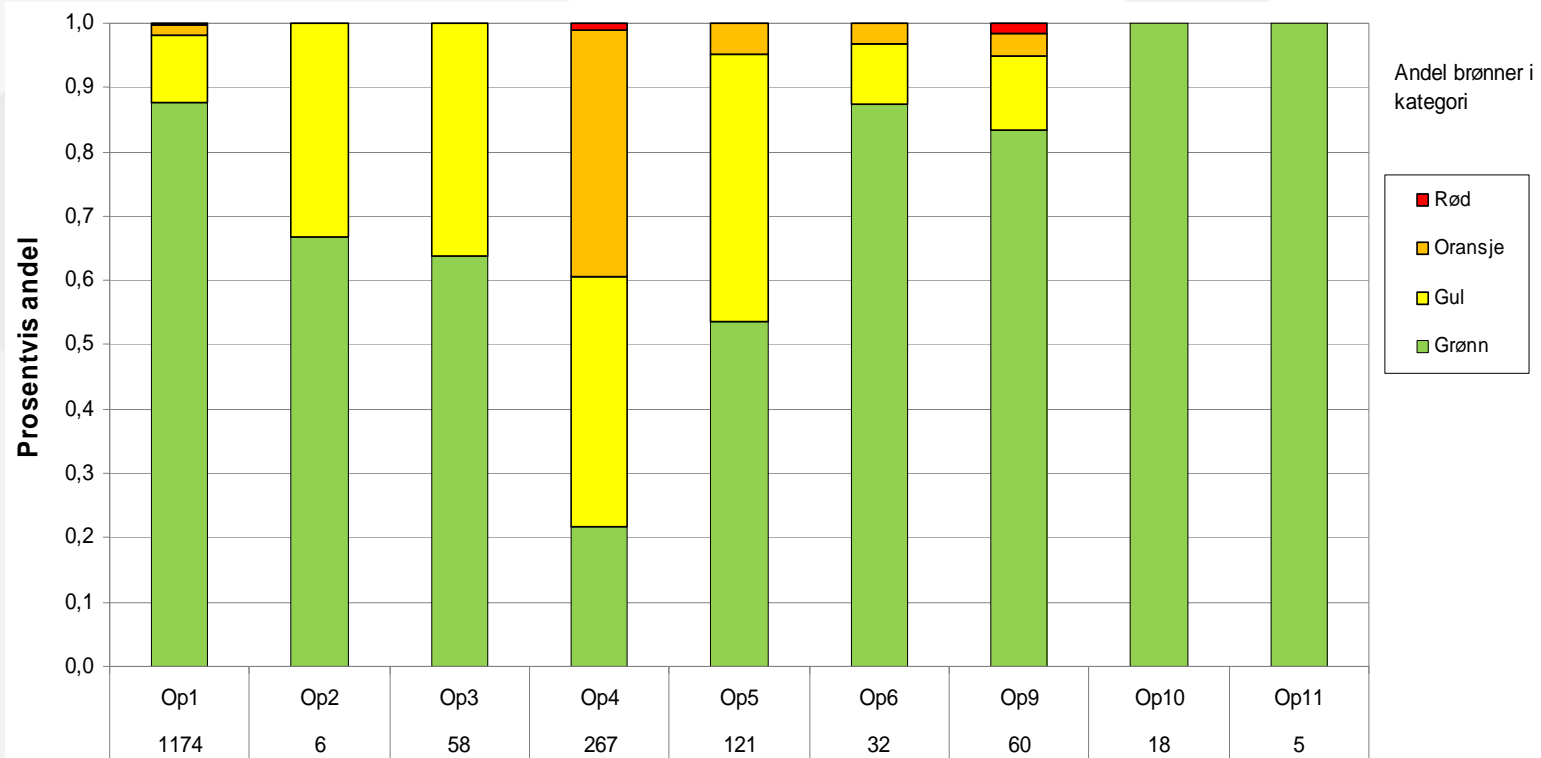
Category	Principle
Red	One barrier failure and the other is degraded/not verified, or leak to surface
Orange	One barrier failure and the other is intact, or a single failure may lead to leak to surface
Yellow	One barrier degraded, the other is intact
Green	Healthy well - no or minor issue



More than 1215 topside wells and more than 497 subsea wells to date (4400+)  
Ongoing:  
Promote operators to register status of all wells in the RNNP database

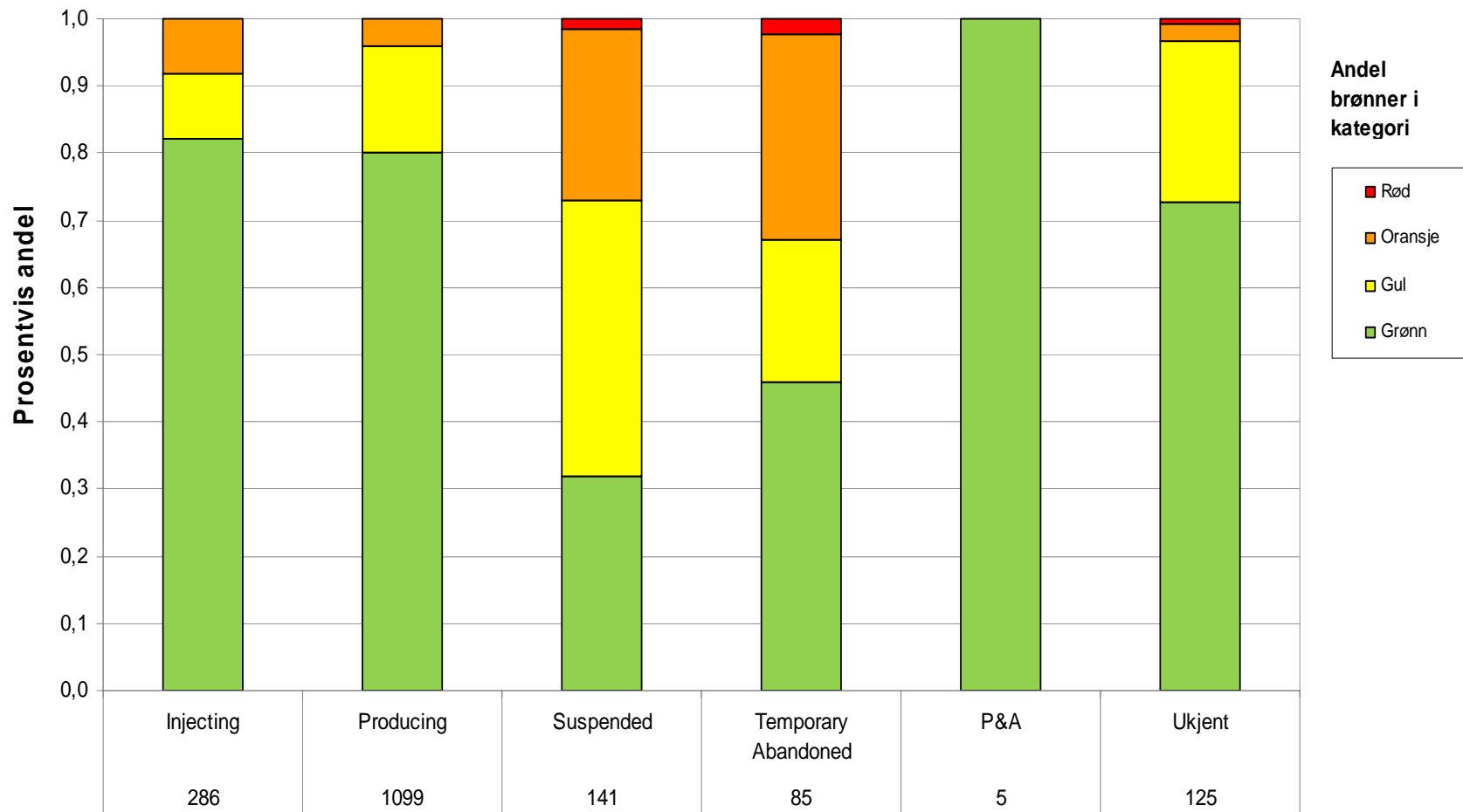


# Well integrity /2010





# Well status /2010



# PSA follow up of requirements to the industry

well control competence & training  
BOP requirements  
casing design parameters

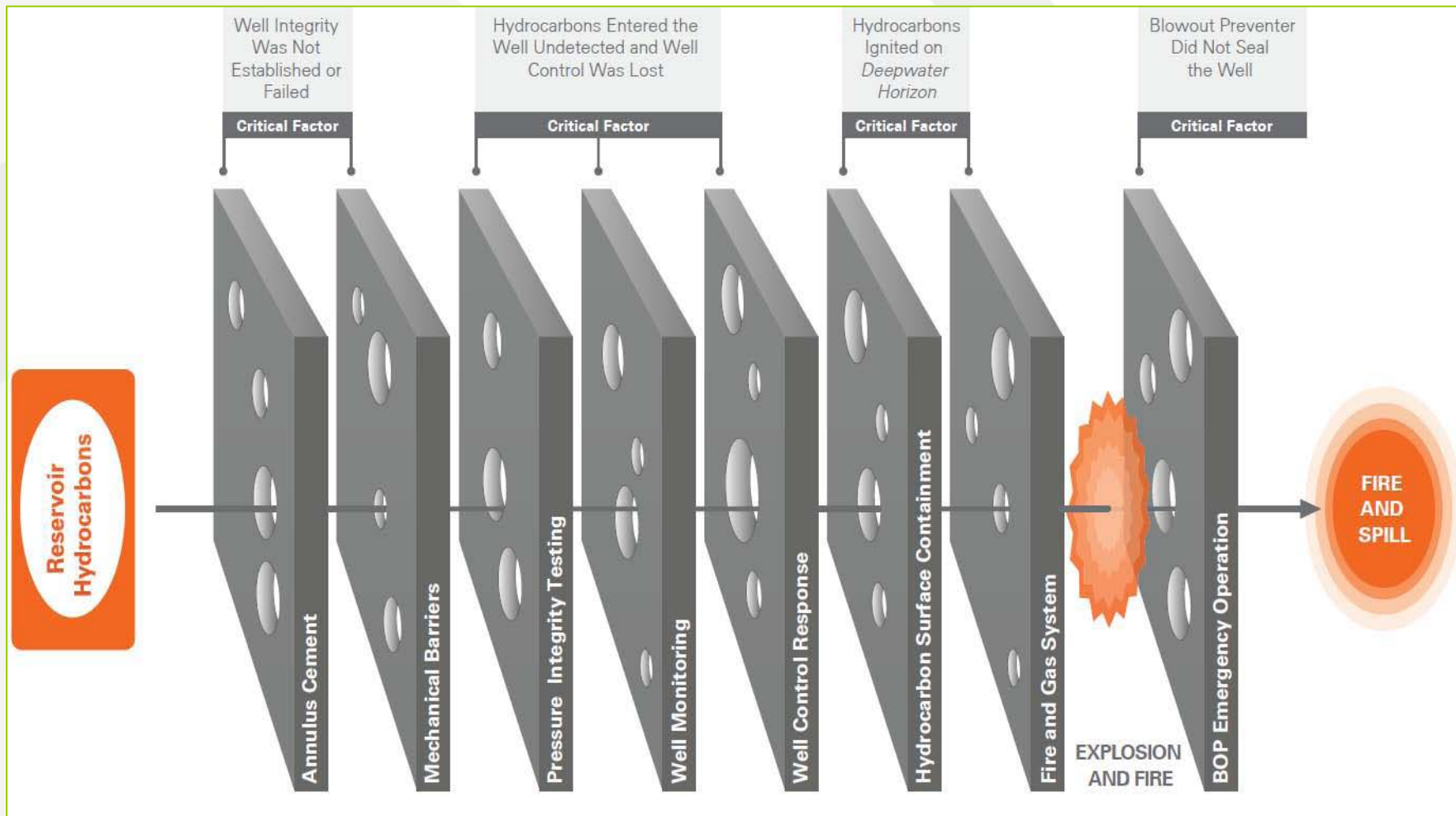


# Macondo follow up by PSA /OLF

- DMF subcommittee – improvement of -"well control competence" and - "qualification of training facilities":
- IWCF - Centre accreditation
  - Management systems
  - Human and physical resources
  - Course details and materials
- IWCF - Training accreditation
  - Primary Centre
  - Secondary Centre
  - Temporary Centre
- Revive Int Alliance of Well Control (IAWC)
- To review IADC curriculum and IWCF syllabus and concentrate on common ground between the two'
- Plan made to audit "Aker training centre" in Stavanger

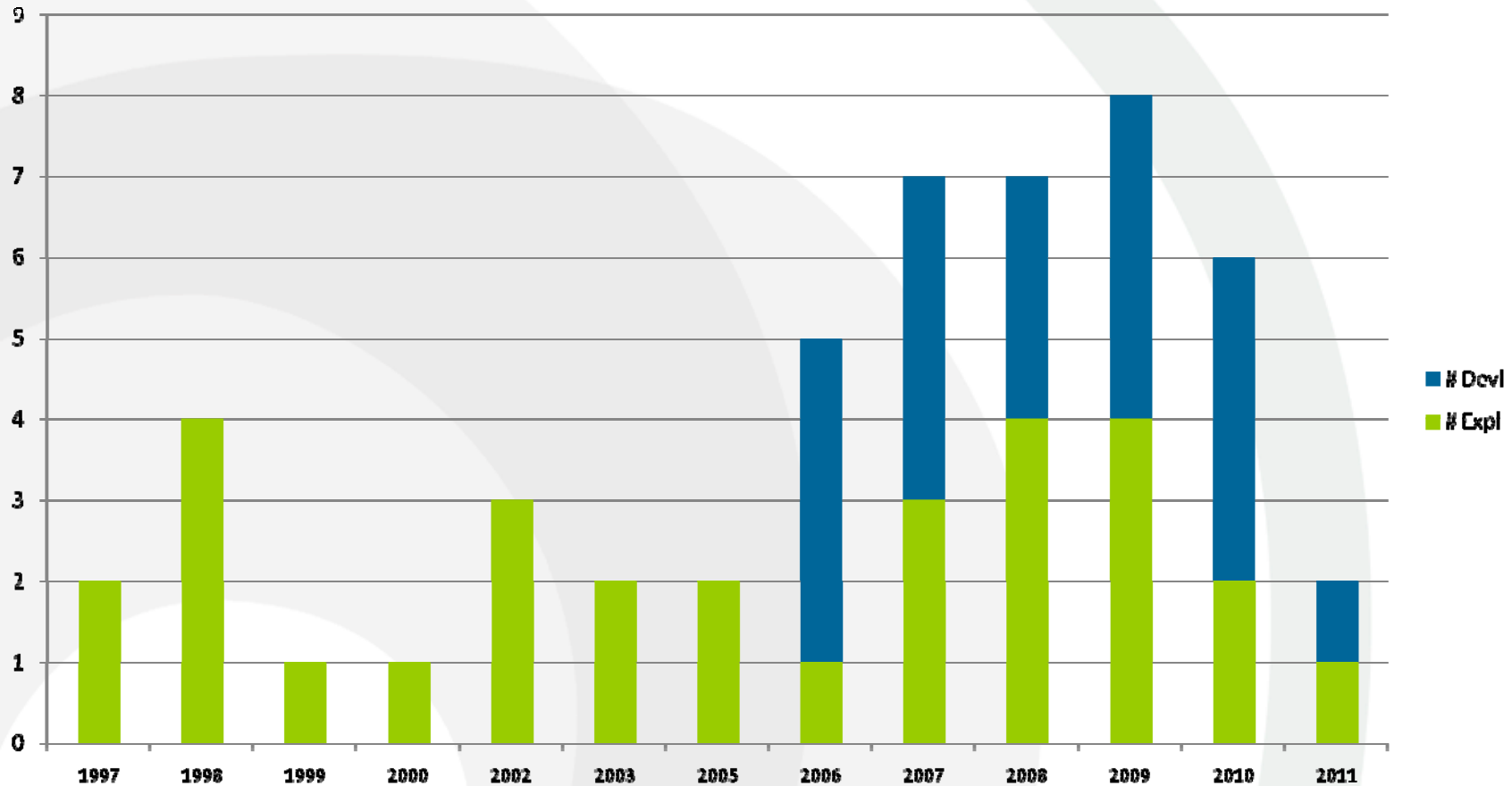


# Macondo follow up by PSA



by British Petroleum (BP)

# Deepwater drilling in norwegian waters, depth > 600 m



2002: 1717 m MD and 2006: 1721 m MD

# Macondo / PSA projects

- Interdisciplinary project group from aug 2010
- PSA initiated a SINTEF project in parallell in 2011
  - Report due date 31.5.2011
  - No issued recommendations up until now
  - Revision of NORSOK D-001 Drilling Facilities is ongoing
  - Task group to update chapter 9 (P&A) of D-010 is ongoing
  - Emergency preparedness contingencies and formation dynamics simulations - requirements to be considered



# PSA / focus points 2011 - 2012

- New comers' on NCS – systems audits and casing reviews (Mærsk, Idemitsu, Premier, E-on Ruhrgas, OMV and Rocksource)
- Well design, well kill simulations and blow out contingencies of exploration wells (ie prod casing setting depth)
- Well barrier envelopes of gas lift wells' and qualification of well barrier elements in same (gas lift valves)
- Follow up of cementation practices i standard wells, CO2 wells & P/A)
- MPD application and rig up practise



# PSA / focus points 2011 - 2012

- Coiled tubing applications
- Acknowledgement of compliance' of well intervention installations (seabed applications)
- Wellhead fatigue considerations
- Deep water drilling and HPHT well conditions and requirements
- Promote an update of NORSOK SR-007 Well testing requirements
- Promote a 'cold climate conditions' chapter in D-010 for the Barents Sea to be introduced

