

Survey of temporary abandoned wells

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Temporary abandoned wells

Definition:

All wells/all wellbores except all active wells and wells that are permanently plugged and abandoned according to the regulations

- Active wells are defined as *production-/injection wells* that are currently producing or injecting
- This should include both platform wells and subsea wells



Temporary abandoned wells

Total number of wells included in the survey: 193 wells

Companies with temporary abandoned wells:

- BP
- ConocoPhillips
- ExxonMobil
- Lundin
- AS Norske Shell
- Statoil
- Talisman
- Total

PSA have analyzed the received information together with consultants

We will prepare a summary report together with our consultants

PSA will evaluate the need for clarification meetings

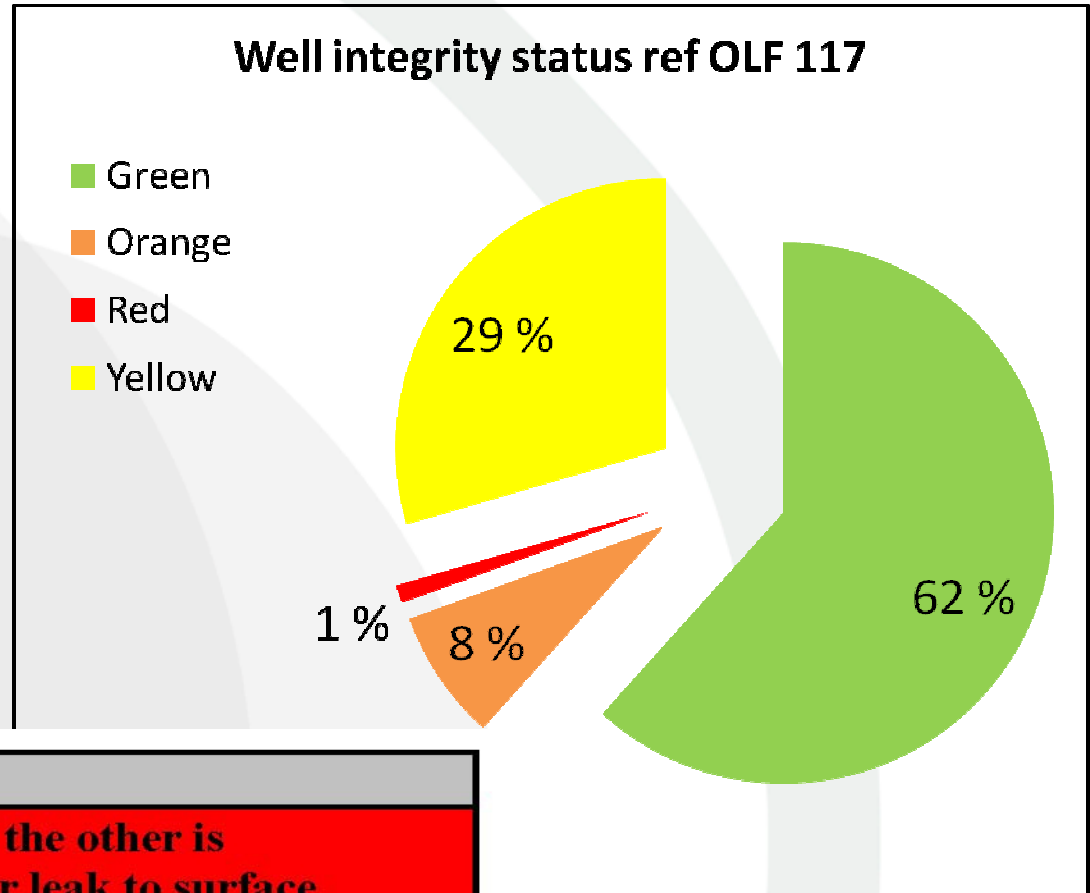


Results - Well integrity status

Number of wells:

- Red: 2 wells
- Orange: 15 wells
- Yellow: 57 wells
- Green: 119 wells

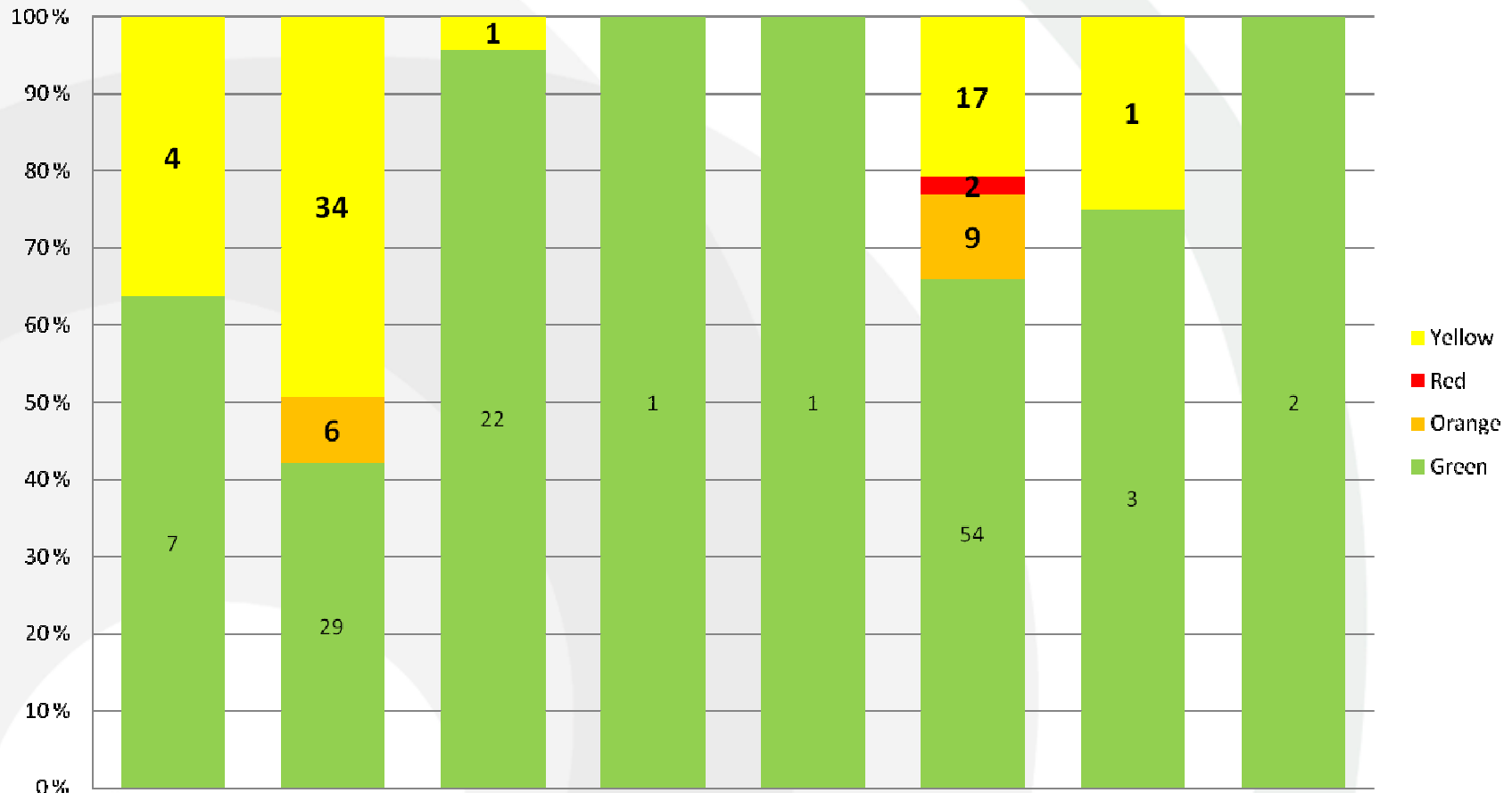
38% (74/193) temporary abandoned wells have some degree of well integrity problems



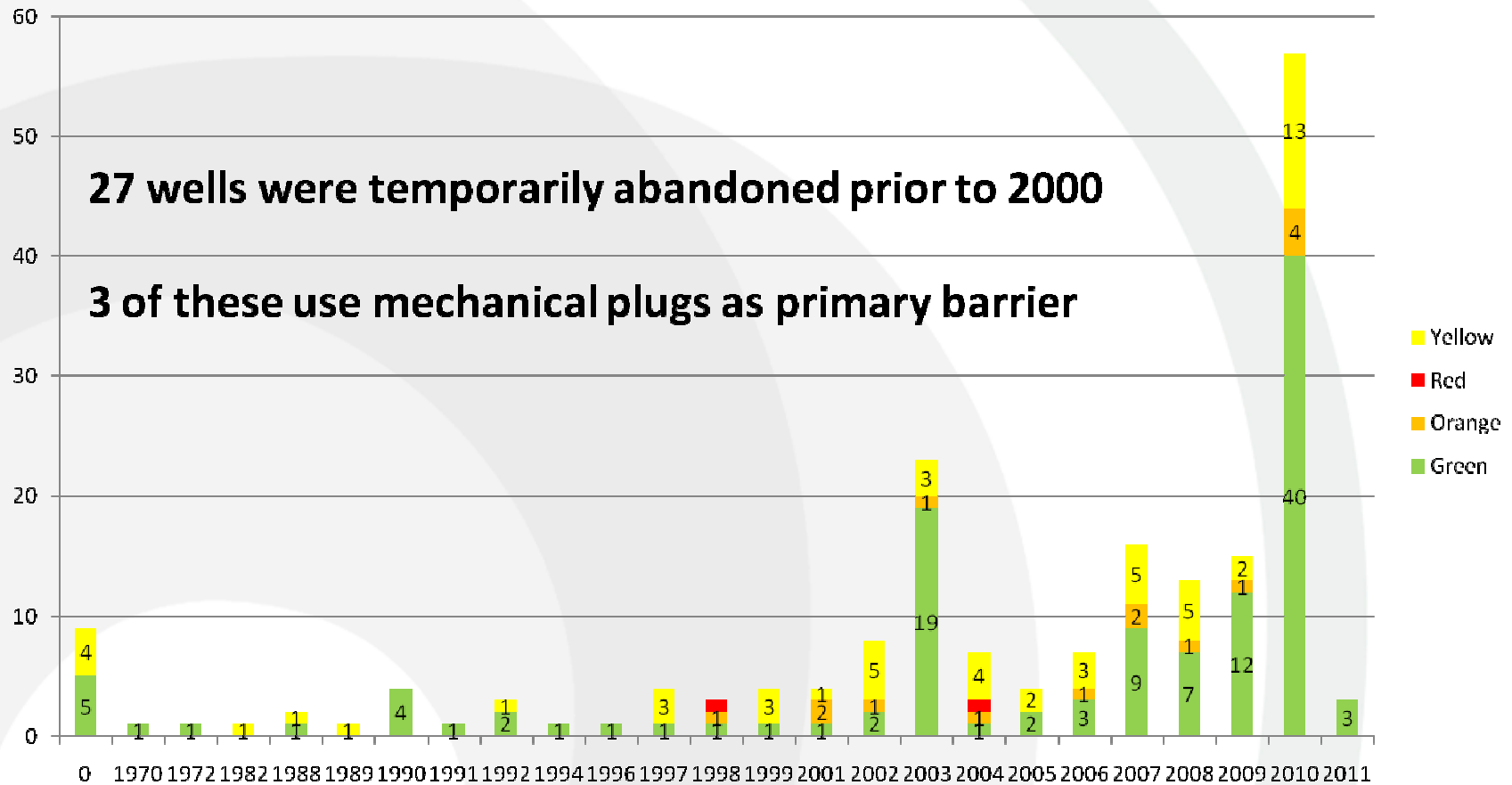
Category	Principle
Red	One barrier failure and the other is degraded/not verified, or leak to surface
Orange	One barrier failure and the other is intact, or a single failure may lead to leak to surface
Yellow	One barrier degraded, the other is intact
Green	Healthy well - no or minor issue

Results - Well integrity status

Well integrity categorization and company



Results – Well integrity status



Regulations and standards

Activities Regulations Section 88 securing wells.

“All wells shall be secured before they are abandoned so that well integrity is safeguarded during the time they are abandoned”.

Facilities Regulations Section 48 Well barriers

“When a well is temporarily or permanently abandoned, the barriers shall be designed such that they take into account well integrity for the longest period of time the well is expected to be abandoned”.

Activities Regulations Section 85 Well barriers

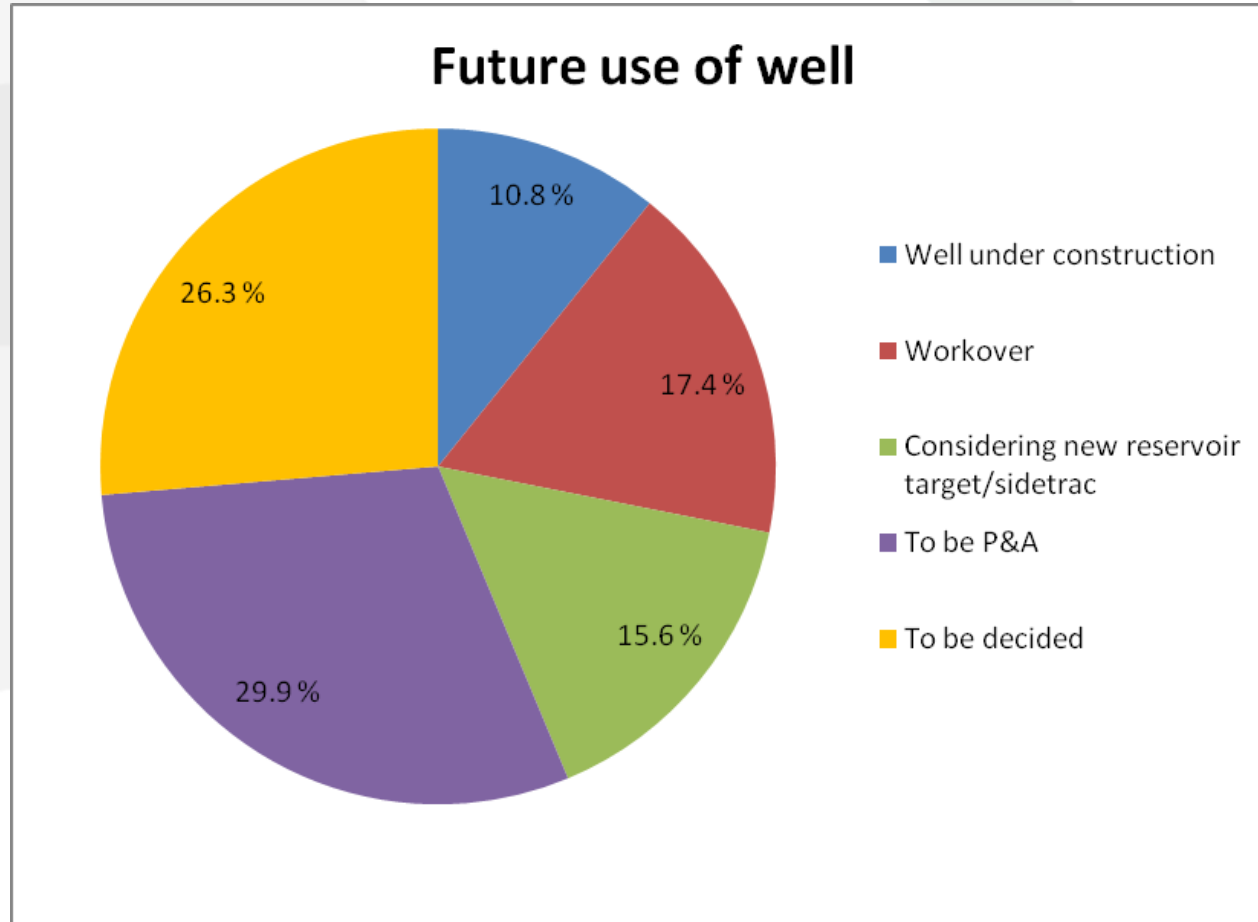
“If a barrier fails, activities shall not be carried out in the well other than those intended to restore the barrier”.

NORSOK D-010 Standard - Temporary abandonment:

- A mechanical barrier may be acceptable for temporary abandonment
- The integrity of the material should be ensured for the planned abandoned period times two.
- Degradation of casing body should be considered for longer temporary abandonment scenarios



Results - Future well plans:



Results - Well barrier schematics

The OLF 117 guideline indicates the minimum amount of data to be included on the Well Barrier Schematics (WBS)

Analysis of the WBS show that 4 operators does not follow the OLF 117

1. The **formation strength** of formation within the barrier envelopes
2. **Reservoir(s)** should be shown on the drawing.
3. Each barrier element in both barrier envelopes should be presented in a table along with its **initial integrity-verification test results**.
4. Depths should be shown relatively correct according to each barrier element on the drawing.
5. All **casings and cement**, including the surface casing, should be shown on the drawing and labeled with its size.
6. There should be separate fields for the following **well information**: Installation, well name, well type, well status, rev. no and date, “Prepared by”, “Verified/Approved by”.
7. Include a **Note field** for important well integrity information.



Conclusions

- The operators needs to define what is meant by temporary abandonment
 - Mechanical barriers are not suited for long term abandonment
- PSA will further focus on reducing the number of temporary abandoned wells
 - Activity Regulations § 85 “If a barrier fails, activities shall not be carried out in the well other than those intended to restore the barrier”
 - Hence the operator wells in category red and orange should be taken care of.
- The operators should follow the minimum requirements for well barrier schematics in OLF 117.
 - PSA will prepare a summary report together with our consultant
- The further work related to temporary abandoned wells will be included in the risk level project (RNNP)



Questions?

