

# Well Plugging and Abandonment in the Netherlands

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## Updated Regulations

### History/Background

The North Sea Offshore Authorities Forum Wells Working Group (NSOAF WWG) evaluated differences in abandonment rulings in each of its member countries around the North Sea in 2016. The WWG agreed to try to come to a common code of practice within member countries and presented, at the Annual NSOAF Meeting in May 2017 in The Hague, a position paper [1] on well decommissioning. The paper addressed for each respective NSOAF country the legislative approaches, challenges and differences on the criteria for well decommissioning barriers (i.e. varying cement heights in annuli, lengths of cement plugs, testing and logging requirements to qualify for barrier acceptance, etc.).

The position paper recommended alignment of guidelines and standards within NSOAF territory on well decommissioning towards one code of practice, which may result in the following possible gains:

- Capitalize on 'lessons learned' and in doing so assure that a common set of best practices is developed and updated;
- Set of common standards towards exploration and production (E&P) service contractors;
- Benefits for NSOAF countries that have no national standard yet;
- Multi-country approach instead of individual approach may strengthen the social license to operate of the E&P sector;
- One voice from the 'North Sea regulator community' towards their E&P operators assuring clarity of purpose;
- Development of well decommissioning technology

(More detail can be found in the October 2018 monthly article on the IRF website)

In each of the NSOAF member countries the oil and gas operator associations have been requested to work together to get to a common code of practice. In the Netherlands, the "Netherlands Oil and Gas Exploration and Production Association" (NOGEP) had a Standard 45 Well Decommissioning. Based on the responses received in consultation with the regulators of the Netherlands, UK and Norway, NOGEP has revised this standard based on the agreed best practices and cap rock restoration.

After several rounds of review and feedback, the final version of the new Standard 45 was then used as the basis for a revision of the Dutch Mining Regulations, finalized and implemented in March 2019.

### Basis of the new mining Regulations and Standard – what changed?

Although up until now very few issues have been encountered with wells abandoned on the basis of the previous standard, changes in abandonment philosophy and engineering effective methods have led to the practice of 'cap rock restoration'. Where previously a plug was set over the reservoir section with additional plugs higher up in the well, the philosophy of cap rock restoration is to contain the reservoir fluids below the cap rock. To achieve this a cement plug will be set wall-to-wall across the cap rock. More reservoir formations can be sealed off by a single cap rock plug only if the pressure regimes are similar and no significant crossflow can be expected. If the isolation in the annulus has been proven to be sufficient, this can be used in combination with a regular in-casing cement plug to restore the cap rock. Otherwise a window will have to be milled and under-reamed for the wall to wall cement plug.

In many cases this will allow abandoning several reservoir sections using one plug over a cap rock, which is sufficiently strong to withstand the various reservoir pressures. The operator will need to prove that the plug is capable of sustaining the long-term built-up pressure.

The goal setting standard and regulation leave room for non-cement materials, which allows the industry to search for alternatives.

**Why change, what more is coming?**

The Dutch sector of the North Sea is dotted with small oil and gas fields. Most of these have come or will be coming to the end of their lives within a few years. Similarly, onshore an increasing number of fields will be decommissioned in the coming years. Therefore the Dutch regulator, State Supervision of Mines, saw a need to ensure the best practice in safe plug and abandonment would be used to ensure that future generations will not be troubled by issues with leaking abandoned wells. At the same time, the industry is looking at how to carry out the large number of abandonments in an efficient way and into methods to reduce the cost. The cost of abandonment of the fields in the Netherlands is estimated at €7 billion, of which half are well abandonment costs.

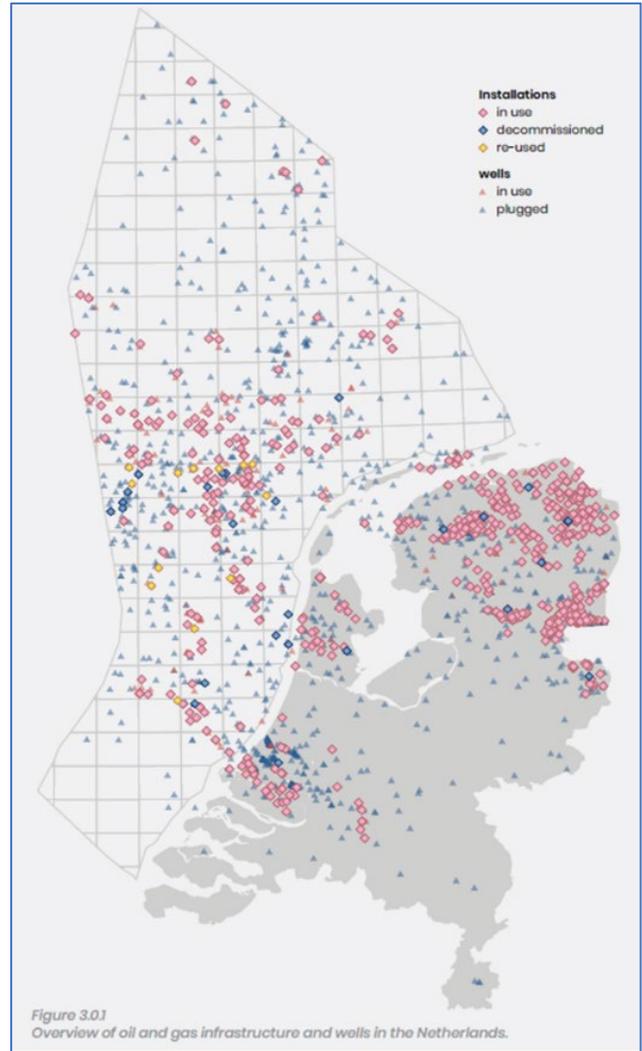
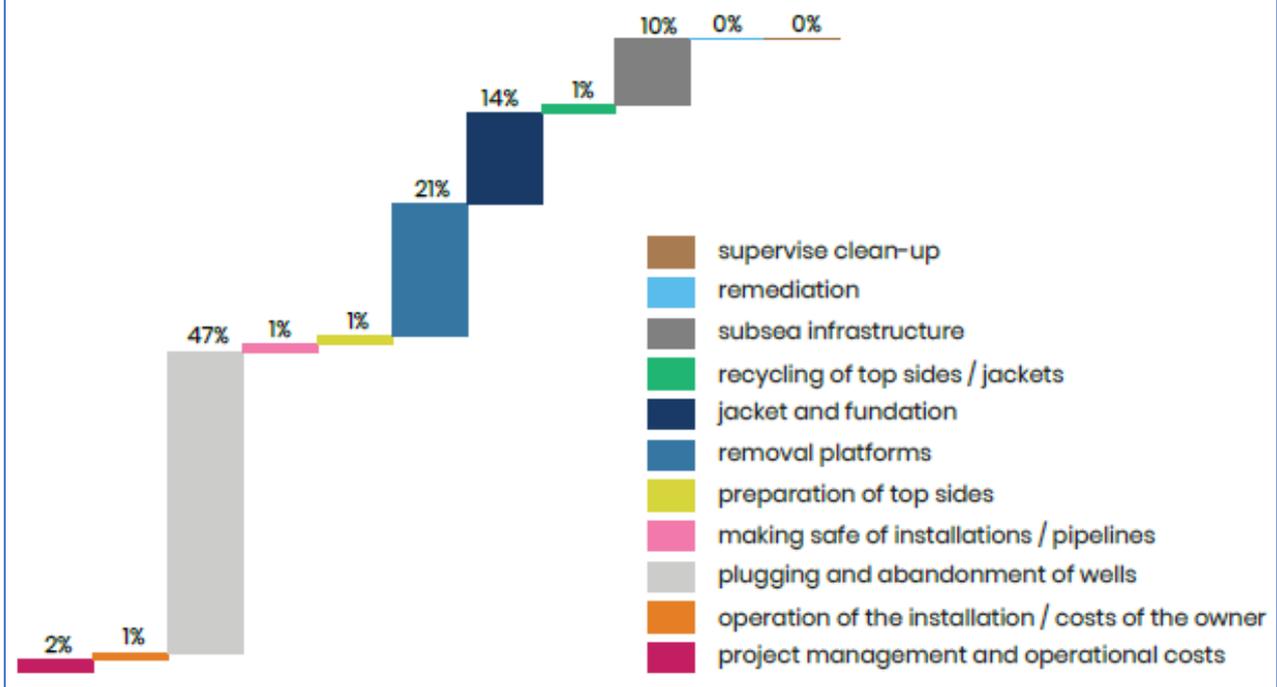


Figure 5.0.2a: total decommissioning costs of offshore infrastructure subdivided by activities.



## Which trends and initiatives do we see in the Netherlands?

### Re-use of wells and structures

In some areas reuse of wells is being looked at: can the wells and field be re-used for carbon capture (CCS) or for geothermal purposes? Offshore reuse of structures for windfarms, as substations, is being studied. Reuse of a structure or onshore location by a third party can only be done after the wells have been abandoned, which may lead to incompatible time lines. All in all, only a small fraction of wells or structures will be suitable for reuse, the rest will need to be properly abandoned and decommissioned.

“A regulator has no preference other than that reuse must not lead to reduced safety or any environmental damage. Integrity must therefore also be safeguarded at all times.” – The Inspector General of Mines, 2018.

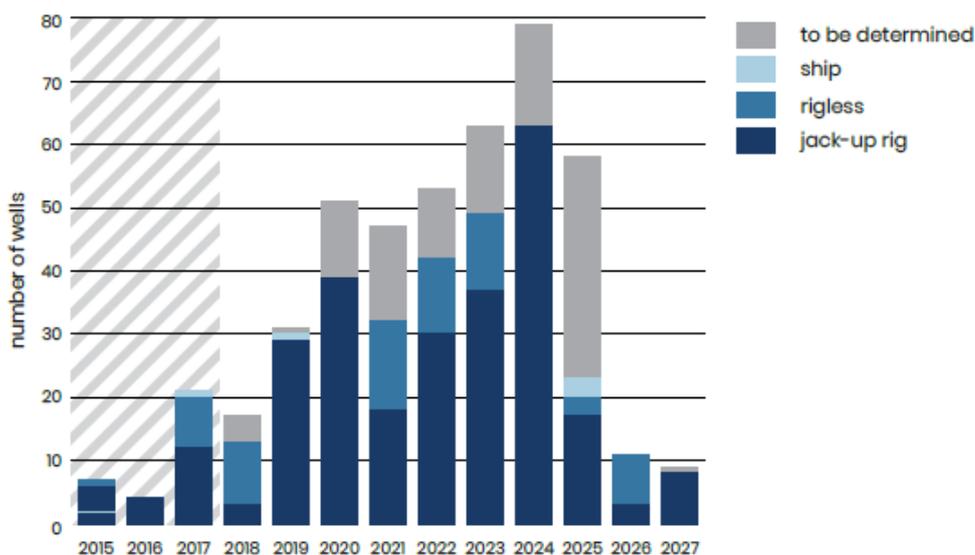
### Collaboration

NexStep was established in October 2017 by the Dutch oil and gas industry (NOGEPA), Energie Beheer Nederland (EBN, invests in the exploration, production and storage of oil and gas on behalf of the Dutch state) and the Ministry of Economic affairs. The goals for NexStep are to:

- reduce cost by means of mutual cooperation between parties, sharing knowledge and through use of innovative technology
- investigate how re-use of infrastructure could contribute to the energy transition

Examples are combined abandonment campaigns between six operators to investigate joint contracting and joint campaigns for abandonment of mudline suspended wells using a vessel for rigless plugging and abandonment. The operators will face a number of issues, such as conflicting company interests, misalignment of timing or funding, conflicts over risk acceptance (for instance who will take the rig during the high waiting on weather season) and more.

Figure 4.2.2. Expected method for decommissioning offshore wells.



## What are the risks and problems with collaboration from the regulator perspective?

The regulator is to assure on behalf of the government and the public that operators carry out the complete decommissioning and abandonment chain safely and properly. A joint batch campaign can lead to significant numbers of notifications and programs that need to be processed and reviewed in a timely manner. Also there can be legal issues between companies from shared responsibilities for some of the activities.

There are other issues: the mining regulations were set up with drilling wells in mind. Strict adherence to some of these regulations makes abandonment difficult or unnecessarily costly. Further adjustments to the regulations will be required to ensure a safe process.

All images: Re-use & decommissioning report 2018, [www.nexstep.nl](http://www.nexstep.nl)

1. <https://irfoffshoresafety.com/wp-content/uploads/2018/10/2018-October-The-Netherlands-NSOAF-initiative-for-a-common-standard-for-well-decommissioning.pdf>

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