



UKCS Story so far

Over 8000
wells drilled to date

46bn boe
Delivered to date

Significant
resource potential
remaining

2020 Wells

9 E&A
wells
spudded



73 development
wells completed



2625
well
stock

Interventions



Protected
24 million boe
through safeguarding



Well stock surveillance has
dropped marginally
from 2019



Over 30%
of well stock is either
temporarily plugged
or shut in

**E&A wellbore
investment dropped
by >75% from 2019**

**Development wellbore
investment remains
high at over £2bn**

30 million boe
were not released due
to production losses

Executive Summary

The 2021 Wells Insight Report is based on an analysis of data from the 2020 UK Stewardship Survey (supplemented with data from the Well Operations Notification System (WONS)), providing real insight into well activity in the UK Continental Shelf (UKCS).

The Wells Insight Report includes trends and performance benchmarks in three distinct well categories: exploration and appraisal (E&A), new development wellbores, and existing well stock activities.

For the first time, the report is being launched through an interactive platform. It offers content “buttons” to help readers quickly navigate the document, as well as filtering, which allows users to interact with charts and data.

Exploration and Appraisal Wellbores

The number of UKCS E&A wellbores spudded per year has declined in the past decade. Despite this more than 0.5bn boe of potential resources have been discovered in the past three years (125 million boe in 2018, 243 million boe in 2019 and 212 million boe in 2020).

OGA analysis indicates a positive trend with respect to the cost per foot, which decreased in 2020, mostly due to lower costs associated with infrastructure-led exploration.

The UKCS offers opportunities to explore and appraise many new prospects. However, to assess and mature these prospects, acceleration of investment and additional technical work is required by operators.

Development Wellbores

The number of development wellbores drilled in 2020 was comparable with 2017 & 2018. In 2019 there was a relatively high number of wellbores completed (over 40% of the 2017, 2018 & 2020 average).

Although there was a reduction in the number of development wellbores drilled in

2020, the overall wellbore investment did not drop proportionately. This suggests that the average wellbore cost in the UKCS increased between 2019 and 2020.

A notable performance improvement was observed in 2020 as fewer mechanical sidetracks were drilled (versus 2019) and the overall non-productive time (NPT) percentage associated with these wellbores also decreased.

Well Stock

Total well stock has remained flat over the past four years as the number of new wells was offset by the plugging and abandonment of others (as discussed in a separate OGA report on Decommissioning activities).

The number of operating wells declined in 2020 because of the increasing number of shut-in and temporarily plugged wells. Without restoration work being performed on these wellbores, they are unlikely to be returned to operation and will likely be permanently abandoned.

The positive trends in intervention rate for the previous three years have been interrupted and partially reversed in 2020 likely because of the Covid-19 pandemic. However, it is noticeable that intervention costs are declining which makes wellbore interventions an economically attractive operation for operators to restore well production.

Industry needs to increase cost effective drilling activity, improve the number of wells with surveillance, and improve the management of existing well stock.

This can be achieved by leveraging lessons learned, exploiting technology, and working collaboratively with the supply chain to achieve transformational gains in performance.

The OGA is supporting this goal through an improved wells stewardship, which includes working with industry to develop a wells strategy, sharing lessons learned, and bringing new and improved well technologies to the field.

UKCS New well trends

Wells Spudded in 2020
(inc sidetracks)
71

Completed operating well stock
change from 2019 - 2020
-239

OGA Insight

New Wells

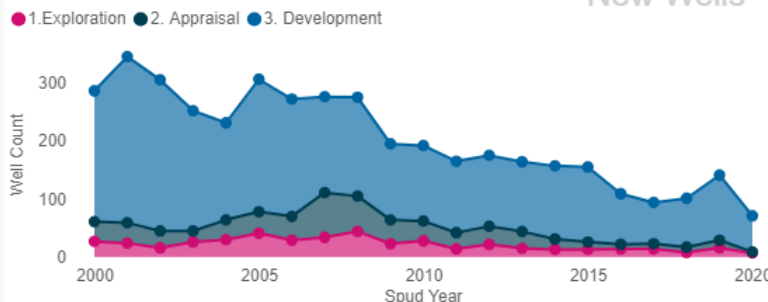
Over the past 20 years there has been a steady decline in the number of wells spudded on the UKCS. This trend was reversed in 2019 during which the UKCS experienced a significant uptick in the number of wells (141) spudded, up from 101 in 2018. In 2020 however, the decline returned and only 71 wells were spudded.

OGA Insight: An explanation for the 2019 increase may be the recovery of the oil industry after three years of low crude prices. However, due to the Covid-19 pandemic, 2020 was an unprecedented and challenging year for operators. These challenges have been reflected across the entire UKCS well landscape.

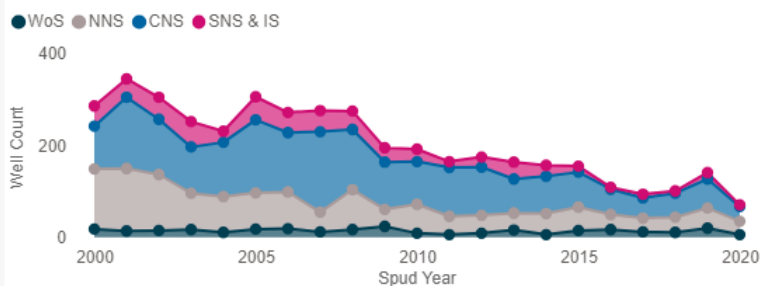
UKCS Well Stock

Well stock is defined as the total number of production wells in the UKCS which have a status of either, operating, temporarily plugged or shut-in. Newly

Wells Spudded by wellbore intent (incl. sidetracks)



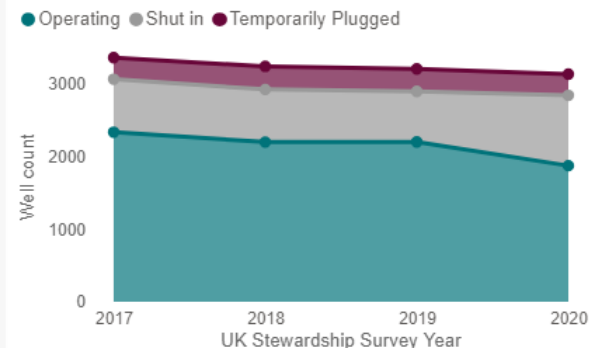
Wells Spudded per region (incl. sidetracks)



Source: [ogauthority](http://ogauthority.gov.uk)

New Wells

Well Stock overview



Wellbore Status	Wellbore No. 2019	Wellbore No. 2020	Wellbore change 2019 - 2020
Operating	1975	1736	-239
Shut-in	476	717	241
Temp. Plugged	164	172	8
Total	2615	2625	10

Note: Suspended, plugged & abandoned wells are not reflected in the table above table.

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UKCS Well Stock

- The total UKCS well stock from 2017 to 2020 has remained consistent.
- The number of completed operating wells in the UKCS has reduced from 1,975 in 2019 to 1,736 in 2020.

OGA Insight: Many of these wells are within SNS Fields that have reached Cessation of Production (COP).

Exploration & Appraisal Wells: Activity Overview

OGA Insight

• The number of E&A wells drilled has dropped over the past decade (2010 – 2020). Despite this, the exploration success rate has been increasing relative to the number of wells drilled.

OGA Insight: This reflects the UKCS being a mature hydrocarbon basin with fewer investments in a challenging environment, but which can still offer opportunities to investors.

• Over the past three years more than half a billion barrels of oil equivalent have been discovered in the UKCS.

OGA Insight: Large discoveries in the CNS high-pressure, high-temperature (HPHT) plays have returned significant volumes. This is coupled with infrastructure-led exploration, which typically yields lower discovery volumes but is lower risk and can return higher value.

• In 2020 fewer planned wells were drilled/delivered than in previous years. In 2020, 19 wells were planned but only nine were delivered (47%). In

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Discovered Resources
2020 (mmboe)

212

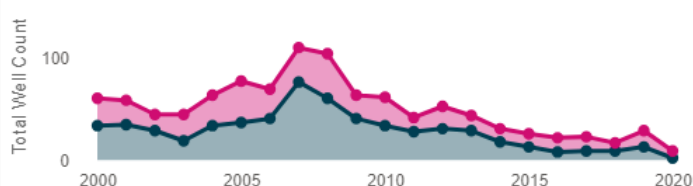


E&A Well Count 2020

9

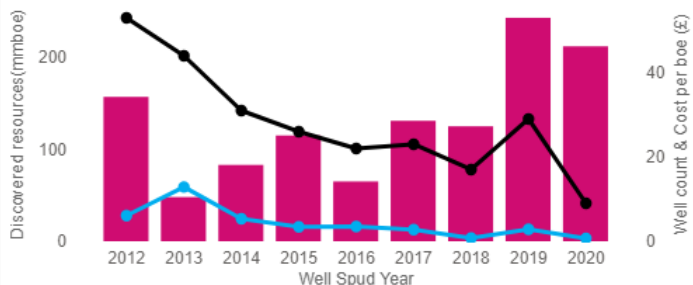
Total Well Count by Spud Year and Well Type

● Appraisal ● Exploration



Exploration trends

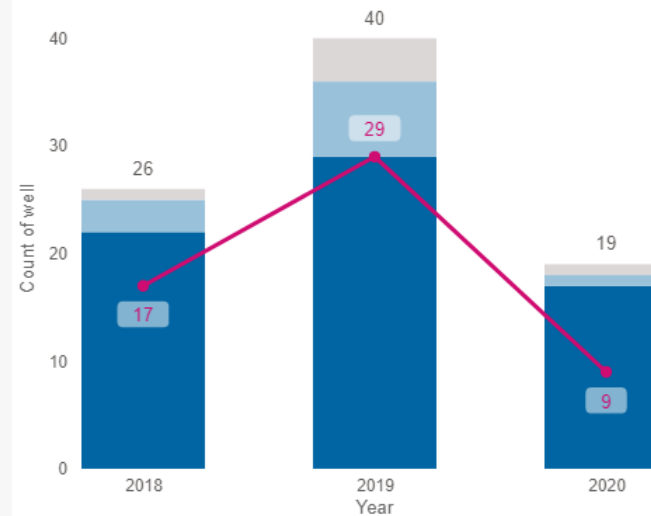
● Discovered Resources (mmboe) * ● E&A Well Count ● Cost per Barrel (£/boe)



* Technical discoveries

Planned wells in years vs actually drilled

● 1) Highly Likely ● 2) Moderately Likely ● 3) Less Likely ● Actual



The bar represents the wellbores which were planned in the previous UK stewardship survey year broken up by the chance of happening. The line represents the actual number of wellbores which were drilled in that year.

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• In 2020 fewer planned wells were drilled/delivered than in previous years. In 2020, 19 wells were planned but only nine were delivered (47%). In 2019, 40 wells were planned and 29 were delivered (73%).

OGA Insight: The Covid-19 pandemic and the global drop in commodity prices directly impacted offshore operations in 2020.

Exploration and Appraisal: Costs

2020 Total E&A Wellbore investment

£146M

2020 Average NPT% of total spend

15%

OGA Insight

- In 2019 E&A well costs increased significantly compared to previous years. 2020 has seen a reduction to the same level of spend as 2018.

OGA Insight: There was no activity in the WoS or SNS/IS areas in 2020. In 2019 a significant investment into exploration was made in the WoS and SNS and IS regions, accounting for approximately £420MM.

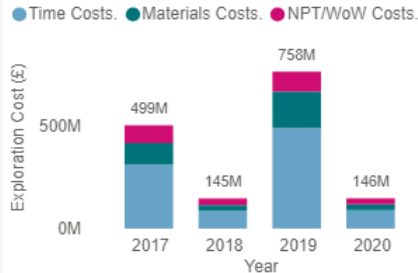
- Services and rentals in 2020 became the primary costs in E&A wells, overtaking rig costs.

OGA Insight: A contributing factor in the lowering of rig costs is related to oversupply, coupled with the reduction in global drilling activity.

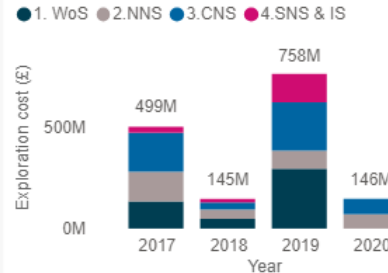
- In 2020 overall well spend and average well costs was reduced.

OGA Insight: Fewer challenging wells in 2020 were drilled when compared with 2019.

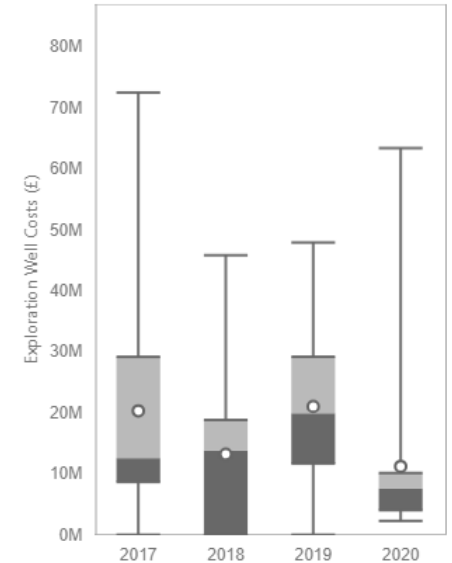
E&A Total Wellbore Investment UKCS



E&A Wellbore Cost by region

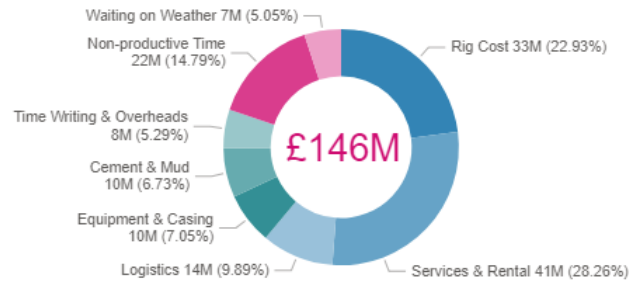


Individual E&A Wellbore investment Distribution



For box and whisker legend click 'Help' button in top right

E&A Wellbore Breakdown UKCS 2020



Exploration and Appraisal: Wellbore Performance

OGA Insight

• In previous years cost per foot of an E&A wellbore has been approximately £2000/ft. In 2020 this dropped considerably to £1200/ft.

OGA Insight: The only E&A wellbores drilled in 2020 were in the CNS and NNS regions of the UKCS with no wells drilled in the more expensive, deep water WoS area. Proportionally, very little E&A HPHT drilling took place in 2020 compared with 2019 and 2021.

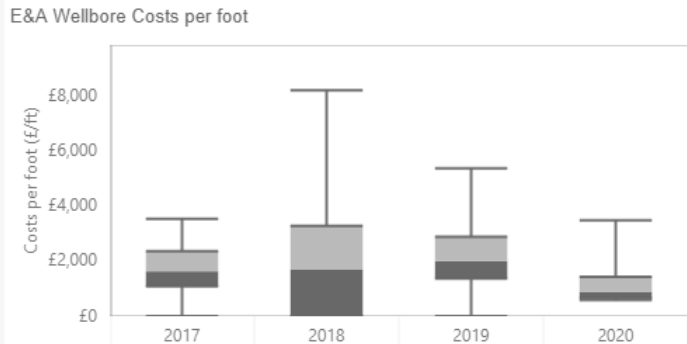
• When comparing 2020 E&A Well NPT with previous years, the average has increased from 8% in 2019 to 15% in 2020. Also, the range in distribution of NPT% per wellbore has increased with a maximum NPT cost of £5.7MM in 2020.

OGA Insight: NPT increased in 2020 due to problems in drilling the top-hole sections in several wells.

2021 Average cost per foot (£/ft)
 £1,197

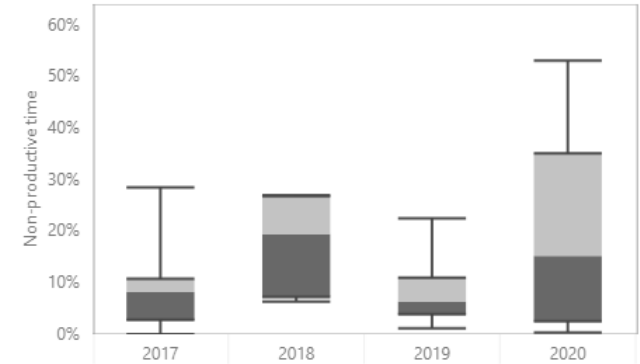
2021 Average NPT of total cost (%)
 15%

Benchmark metric **Feet** **Meters**

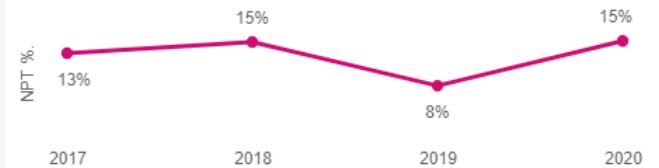


* Wellbore lengths are measured depths of the wellbore from spud depth to wellbore TD. Source: WONS.

Wellbore NPT % of overall wellbore costs



NPT % of total wellbore cost by Year



Exploration and Appraisal: Lookahead 2021 - 2023

OGA Insight

• Forecasts for 2021 and beyond (made by operators at year end 2020) indicate a return of confidence in investments and a likely return to higher activity levels.

OGA Insight: Much of the firm or likely E&A activity is the result of deferred activity from 2020. At the time of writing, it is clear that the UKCS will continue to face the impacts of the Covid-19 pandemic, a volatile crude price, and restricted access to capital.

• Although the year end 2020 survey data for forecast drilling in 2022 and 2023 reflect potentially higher activity levels, overall confidence in activity levels currently remains low.

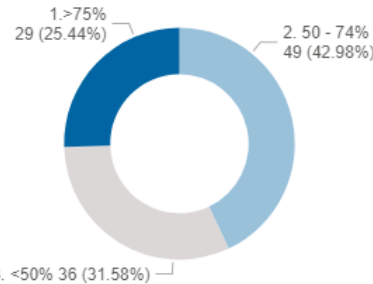
OGA Insight: Further technical work is required to better define the chances of success for prospects. This will allow final investment decisions to be made prior to drilling or relinquishment.



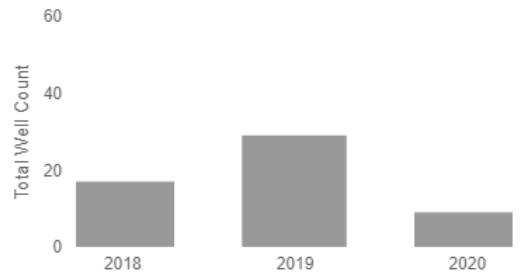
2021 All Potential Prospects

20

UKCS Future E&A Wellbore Probability 2021 - 2023



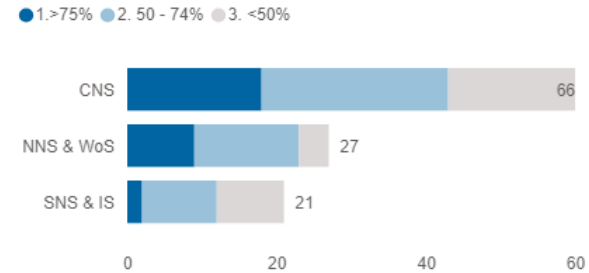
Historical E&A wellbore spud count (all regions only)



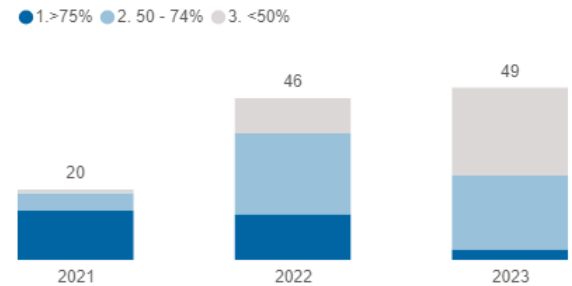
2021 Highly Probable Prospects

14

E&A Wellbore Count lookahead by probability of drilling (2021-2023)



E&A Wellbore Count lookahead by probability of drilling



Select filter
(Hold ctrl for multiple)

CNS

SNS & IS

NNS & WoS

Prospect Drill Probability

1. >75%

2. 50 - 74%

3. <50%

Reset Filters

Development Wells: Activity Overview

OGA Insight

• The number of wells completed in 2019 was higher (106) than the previous years. The 2020 well count (73) has seen a return to levels consistent with 2017 and 2018.

OGA explanation: The increase in 2019 activity is explained by drilling activity associated with multiple projects. Three of these were large multi-well campaigns (>5 wells).

• In 2020, 50% of the development wellbores drilled were mechanical or geological sidetracks. This is lower than the 4-year historical trend of >50 % of wellbores drilled being sidetracks (either geological or mechanical).

OGA Insight: In the UKCS mature basin the existing well infrastructure can be used to access new areas of a reservoir and increase recovery factors, via sidetracks from existing wellbores. Throughout the years there has always been a significant number

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Dev Wellbore completed in 2020 (inc Sidetracks)

73

Count of Mechanical sidetracks (2020)

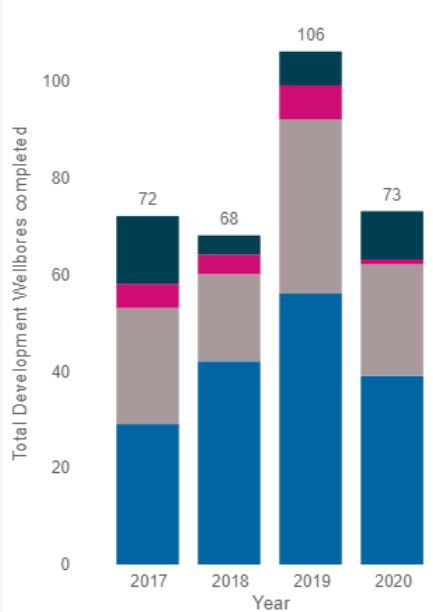
8

Count of Geological sidetracks (2020)

27

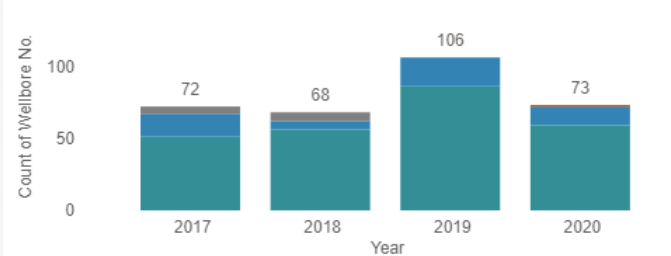
Completed wellbores by region

● CNS ● NNS ● SNS & IS ● WoS



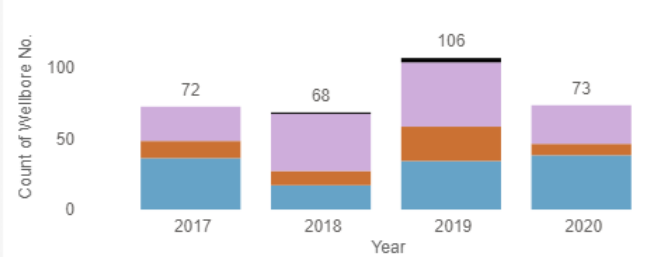
New Development Wellbore Type

● 1. Producer ● 2. Injector ● 3. Disposal ● 4. Other



Wellbore Sidetracks and respuds

● 1. Parent Well ● 2. Mech ST ● 3. Geol ST ● 4. Re-spud



Select filter
(Hold ctrl for multiple)

- WoS
- NNS
- CNS
- SNS & IS
- PLATFORM
- JACK UP
- SEMI
- Reset Filters

Development Wellbores: Wellbore Investment



Total Well Spend 2020

2,074M

OGA Insight

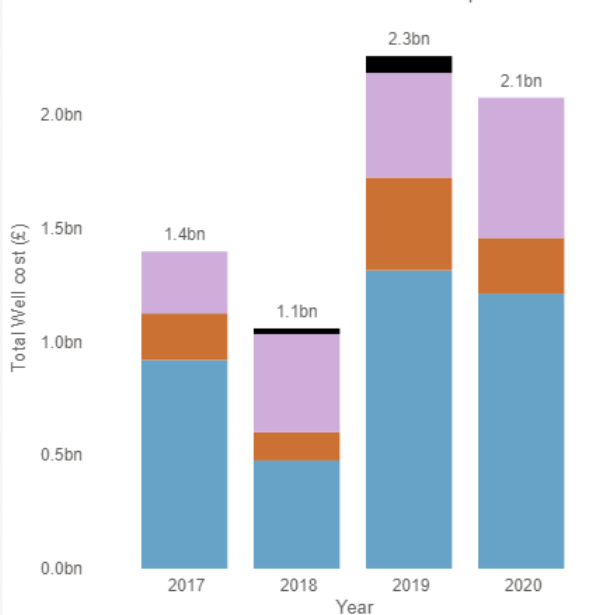
• Total well spend remained high for wells completed in 2020, above the well spend in 2017 and 2018, yet, the number of wells drilled was down by ~25%.

OGA Insight: A number of high cost development wells were completed in 2019 and 2020. These wells have been either in HP/HT fields or the operator has designed the well to a higher specification in order to maximise the production return.

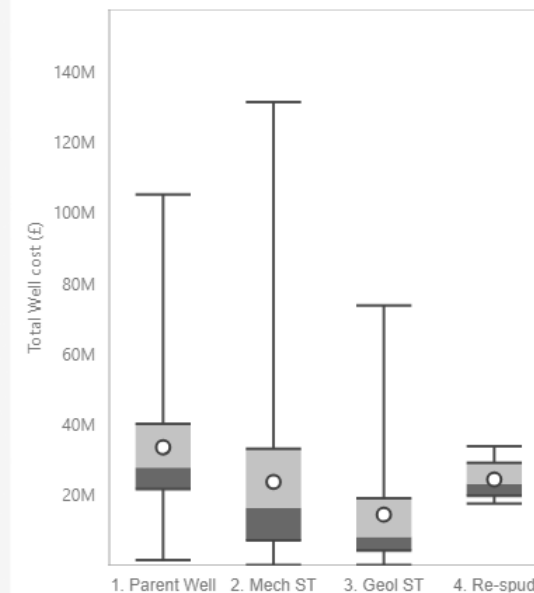
Mechanical sidetracks can still be expensive relative to the cost of the parent well (costing on average 70% of a parent wellbore). The average geological sidetracks is typically half the cost of drilling new wells from surface and can provide an economical way of reaching a new target if that target lies within reach of an existing well.

Total Wellbore Investments

● 1. Parent Well ● 2. Mech ST ● 3. Geol ST ● 4. Re-spud



Development Wellbore Investment Distribution by sidetrack type (combined years)



Select filter
(Hold ctrl for multiple)

- 2020
- 2019
- 2018
- 2017

Reset Filters

*Geological sidetracks includes re-drills

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Well cost distribution chart

- 1 New Well: In cases where wells are spudded and completed in one attempt, the average well cost is illustrated in the spud column.
- 2. Mech ST: This distribution only shows the cost of the portion of the well which has been sidetracked due to unplanned operational challenges.

Note: In these cases the cost of the mechanical sidetrack would be added to the original spudded well cost in order to reflect the overall well cost.

- 3. Geol ST: (Includes redrills) This distribution only shows the cost of the portion of the well which has been geologically sidetracked. This represents wells which are drilled from an existing well to a new geological target.

Note: If the geological sidetrack was unplanned then its cost would be added to the original spudded well cost to reflect the overall well cost.

Development Wellbores: 2020 Wellbore cost analysis



OGA Insight

*Note - Data reported for all individual wellbores. This is not the total amount of inefficiencies due to sidetracks and respuds.

Total Cost observations and insights
 • The trend for the well cost breakdown (time costs, materials and inefficiency costs) has remained consistent through the years with time costs accounting for 50%, materials 30% and inefficiency costs 20%.

• The Central North Sea received the highest amount of investment in 2020 with regards to new development wells. Over £1.1bn was spent with 75% of this being spent on the drilling costs.

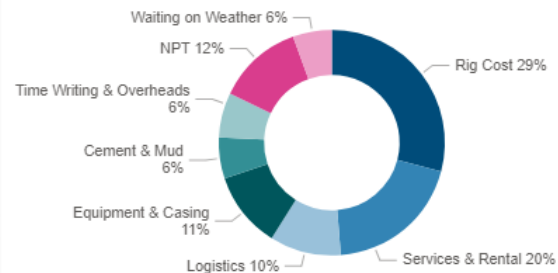
OGA Insight: A significant amount was invested in the CNS HPHT sector. With higher well costs and longer well drill times on average costs for these wells can be up to four times higher than the average UKCS well.

Drilling Cost Observations and insights
 • WoS drilling equipment and casing are lower than those in the NNS and CNS.

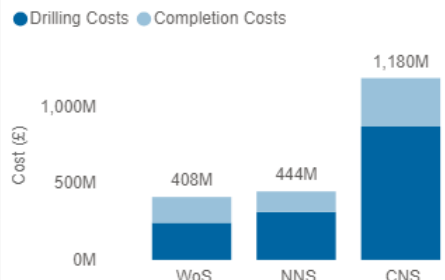
Total Wellbore Cost Breakdown (all wellbores including sidetracks and respuds)



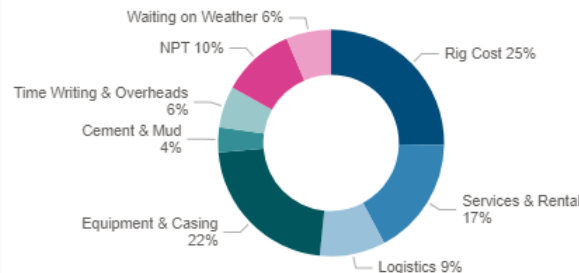
Drilling Costs Breakdown in 2020



Drilling and Completion costs by region in 2020



Completion Costs Breakdown in 2020



Select filter
(Hold ctrl for multiple)

-
-
-
-

2020 SNS & IS new development well(s) omitted for confidentiality

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Total Cost observations and insights

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OGA Insight: A significant amount was invested in the CNS HPHT sector. With higher well costs and longer well drill times on average results in the costs for these wells can be up to four times higher than the average UKCS well.

Drilling Cost Observations and insights

- WoS drilling equipment and casing are lower than those in the NNS and CNS.

OGA Insight: WoS well designs are simpler than those in CNS/NNS . The CNS/NNS wellbores which have been completed may also include a deep high pressure high temperature completions which may bring up the cost in these regions.

- WoS drilling. Waiting on weather costs (15%) are higher than the NNS (4%) / CNS (4%) regions.

OGA Insight: An explanation for this trend is likely associated to the WoS rig schedules have been optimised to perform less weather sensitive drilling operations through the winter months.

Completion cost observations and insights

- In the CNS & NNS the completion equipment & casing costs are the highest proportion of the spend.

OGA Insight: An explanation for this trend might be more complex/expensive CNS and NNS completions in HPHT fields, some with H2S.

- In WoS, completion Equipment costs are the fourth largest spend.
- WoS completion waiting on weather costs are 10% of the total completion costs.

OGA Insight: This is considered good performance in the harsh WoS environment taking into account rig schedule optimisation to perform more weather sensitive completion operations through the summer months.

Development Wellbores: Non-Productive Time (NPT) Cost Analysis



2020 NPT % of total spend

12%



2020 NPT Costs (£)

238M

OGA Insight

- In 2020 NPT costs accounted for 12% of the overall well spend. This is a four-percentage point reduction from 16% which was observed in 2018 and 2019.

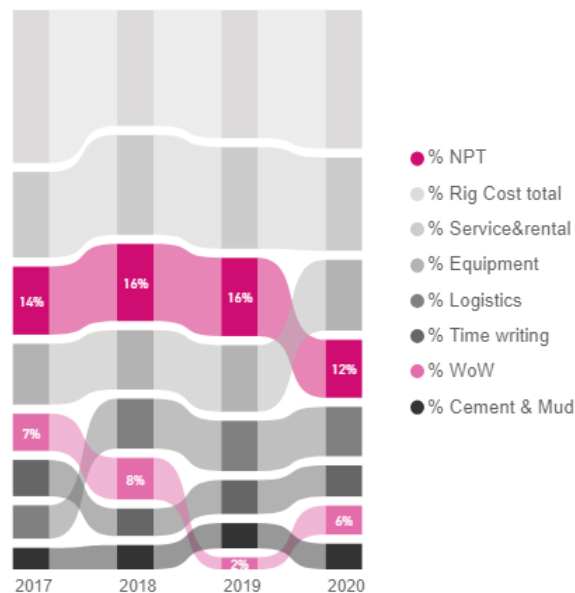
OGA Insight: NPT has dropped by four percentage points, however, waiting on weather has increased by four percentage points resulting in total time inefficiencies remaining constant. The drop in NPT may be related to operators recategorising their costs.

- NPT has reduced across all rig types in the UKCS in 2020. The rate has dropped from 16% in 2019 to 12% of total costs in 2020.

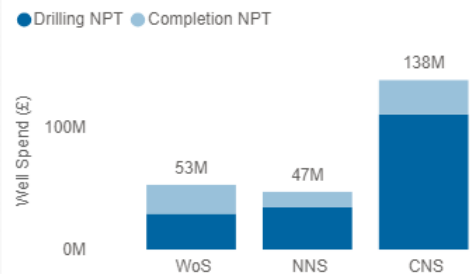
OGA Insight: Less activity in 2020 combined with slower pace has allowed operators increased planning times, combined with more experienced service and rig personnel during the execution phase.

- The proportion of NPT associated with the drilling costs is approximately 75% of the overall NPT which is in line with the cost breakdown of drilling vs completion

Drilling and completion cost breakdown by year



Non productive time drilling and completion Costs 2020



Select filter
(Hold ctrl for multiple)

Rig type

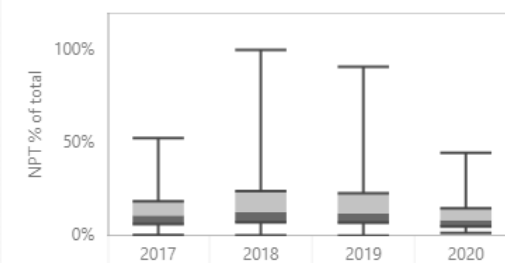
PLATFORM

JACK UP

SEMI

Reset Filters

Drilling & Completion NPT % of Total well spend



2020 SNS & IS new development well(s) omitted for confidentiality

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OGA Insight: Less activity in 2020 combined with slower pace has allowed operators increased planning times, combined with more experienced service and rig personnel during the execution phase.

- The proportion of NPT associated with the drilling costs is approximately 75% of the overall NPT which is in line with the cost breakdown of drilling vs completion costs.

Development Wellbores: Lookahead

Potential Development wells 2021



51

2021 Approved Wellbores



51

OGA Insight

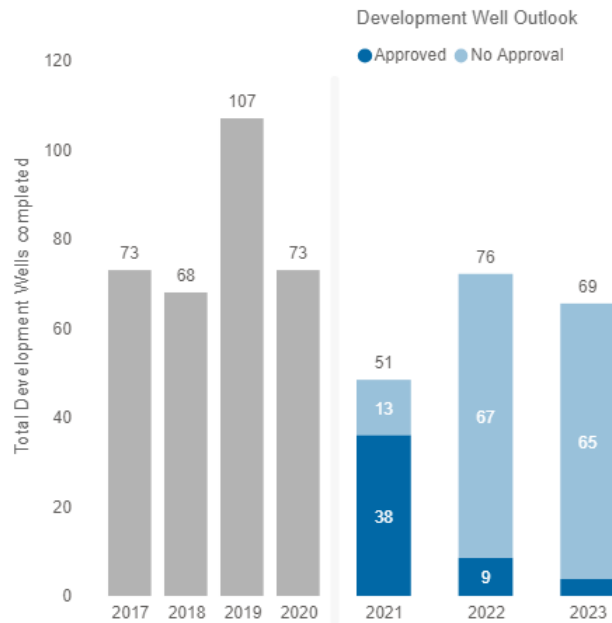
- The number of wells approved for 2021 (38) is approximately half of the wells which were drilled in 2020.

OGA Insight: Although the number of wellbores planned for the year is below the historical wellbore count, this does not consider the wellbores which have been unexpectedly sidetracked.

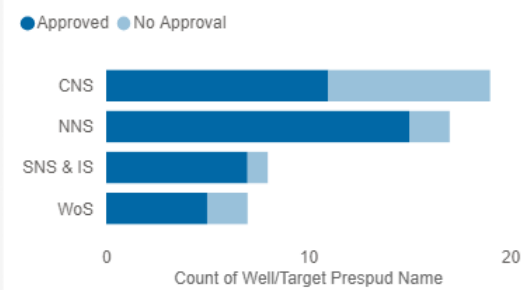
- For the following years, there is a planned rebound in drilling activity. However, these plans have not yet been approved.

- The CNS followed closely by the NNS are the two regions where major activity is planned for the future.

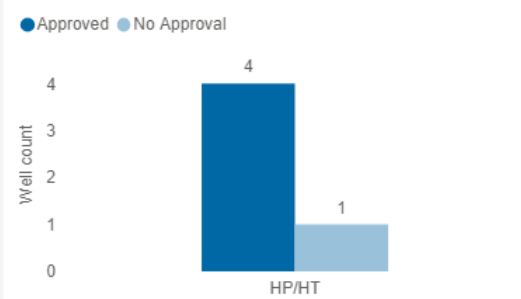
UKCS Historical Well count



Well Outlook by Region



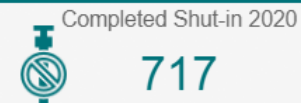
HP/HT Development well outlook



Select filter
(Hold ctrl for multiple)

-
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UKCS Well Stock



OGA Insight

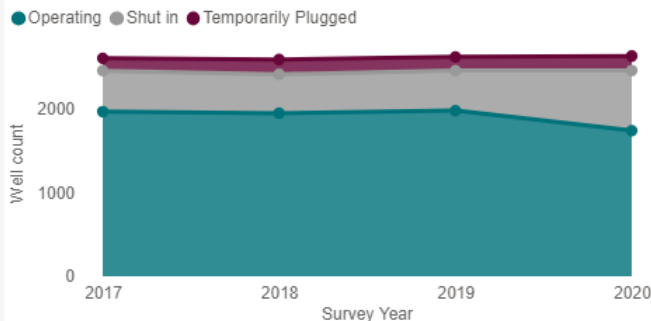
Note. Well stock consists of all completed wells which have not been permanently abandoned. Well Stock is broken down into operating, shut-in & plugged wellbores in the UK stewardship survey.

- In 2020 a total of 2,625 UKCS wells comprise the well stock. This level has been constant over the past four years, implying the number of new wells has been approximately equal to the number of wells abandoned.

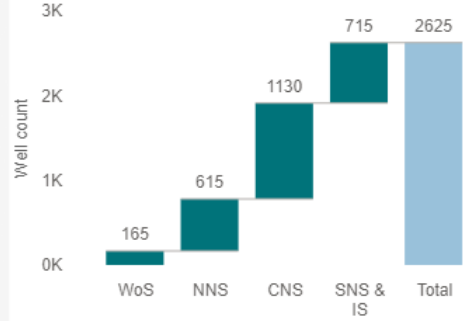
- In the past year there has been an increase of 239 wellbores that have moved from operating to shut in. Of the 239, 150 wells have been removed from operating in the SNS & IS regions alone.

OGA Insight: A significant proportion of the shut-in well stock are related to wells which are waiting to COP, significant interventions required on infrastructure or are on hold for export routes to be reinstated. Without investment in infrastructure or downhole

UKCS Well Stock



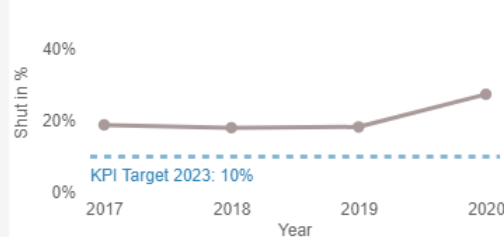
Well Stock by region



Wellbore Status	Well Stock 2019	Well Stock 2020	Well Stock Change 2019 - 2020
Operating	1975	1736	-239
Shut-in	476	717	241
Temp. Plugged	164	172	8
Total	2615	2625	10

Note: Suspended, plugged & abandoned wells are not reflected in the table above table.

Shut in % Wells Task Force KPI



Select filter
(Hold ctrl for multiple)

- CNS
- NNS
- SNS & IS
- WoS
- Platform
- NUI
- Subsea
- Reset Filters

Note. Well stock consists of all completed wells which have not been permanently abandoned (AB1, AB2, AB3). Well Stock is broken down into Completed Operating, Completed Shut-in & Temporarily Plugged wellbores in the UK stewardship survey.

- In 2020 a total of 2,625 UKCS wells comprise the well stock. This level has been constant over the past four years, implying the number of new wells has been equal to the number of wells abandoned.

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removed from completed operating in the SNS & IS regions alone.

OGA Insight: A significant proportion of the shut-in well stock are related to wells which are waiting to COP, significant interventions required on infrastructure or are on hold for export routes to be reinstated. Without investment in infrastructure or downhole interventions, it is likely many of the shut-in well stock will be permanently lost.

Well Stock: Surveillance



Well Stock 2020

2625



Well Stock Surveillance Rate 2020

23%



Well Stock with surveillance 2020

550

OGA Insight

• In 2020 there were a total of 608 wells which had surveillance, down by 54 wells from 2019. This is a big reduction on a small percentage of wells which have been surveyed every year - 26% in 2019 reduced to 23% in 2020.

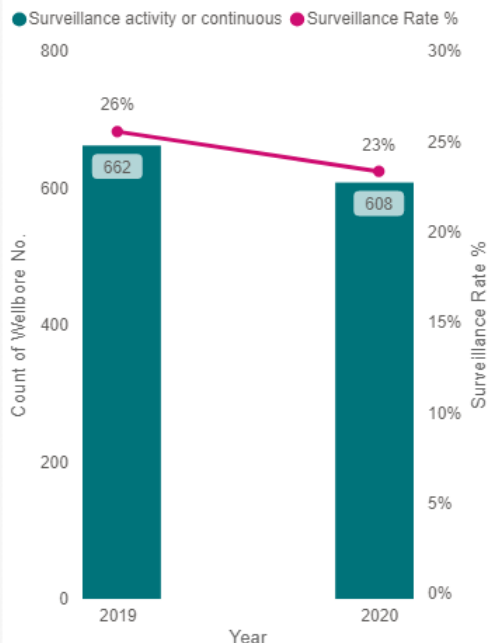
• In 2020 23% of the Well Stock had either primary (continual surveillance) or secondary (intervention-based activity) surveillance.

• The lowest surveillance rates are in the SNS (gas) wells (7%) and normally unmanned facilities (9%) which are also most frequently located in the SNS.

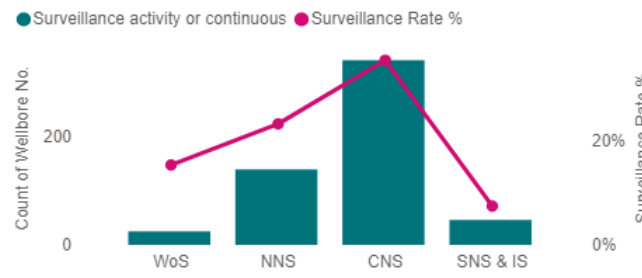
• Subsea wells (which tend to be more expensive to perform surveillance) have a higher surveillance rate than Normally Unmanned Installations (NUI) wellbores.

OGA Insight: It appears there could be an opportunity for operators to improve their surveillance, both on manned and unmanned platforms to reach the 50% KPI established by the [Reservoir and Wells Optimisation Group](#).

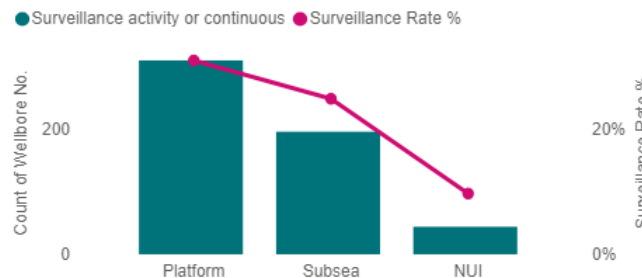
UKCS Wells with Surveillance + Surveillance rate



Surveillance rates by Wellbore region



Surveillance Rates by Wellbore environment



Select filter
(Hold ctrl for multiple)

- WoS
- NNS
- CNS
- SNS & IS
- Operating
- Plugged
- Shut-in
- Reset Filters

[Reservoir and wells optimisation group](#)

Well Stock: Issues

OGA Insight

In the 2020 enhancement of the UK Stewardship survey the Well Issues section was amended. Operators which report that a well is shut in have now been asked to report the issues associated with those wellbores. This has resulted in a significant increase in reported issues, therefore, a retrospective comparison has not been formulated.

- A total of 1356 issues have been reported in 2020 across 1167 wellbores.
- The largest reported issue with operating/shut in wells is well integrity. Within well integrity the most reported sub-issue presented to operators is annular and downhole valve issues.

OGA Insight: Reviewing the "Other" category highlights that there are several wells which are in the process of becoming COP'd and are currently temporarily shut-in with the aim of

Total number of issues in 2020

1356

Wellbores with Issues in 2020

1167

Select filter
(Hold ctrl for multiple)

CNS

NNS

SNS & IS

WoS

NUI

ONSHORE

Platform

Subsea

Reset Filters

Number of issues per region

Region	Count of wellbores
WoS	56
NNS	302
CNS	567
SNS & IS	431

Status: x Issue Type: x Issue Subtype: x

Click here to interrogate issues data tree

Top 5 Reported issues in UKSS per year

Issue Type	Number of issues
Other	557
Well Integrity	310
Water Production	184
Reservoir Pressure	88
Scale	55

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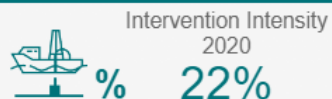
- A total of 5321 issues have been report in 2020 across 1178 wellbores.
- The largest reported issue with operating/shut in wells is well integrity. Within well integrity the most reported sub-issue presented to operators is annular and downhole valve issues.

OGA Insight: Reviewing the "Other" category highlights that there are several wells which are in the process of becoming COP'd and are currently temporarily shut-in with the aim of becoming permanently abandoned.

There is a large others category with wells which have unknown issues, no issues or they are waiting for abandonment and have been shut-in due to being at the end of their economic life.

OGA Insight: As highlighted in the intervention section, repairing and maintaining downhole valves can return significant value, both financially and hydrocarbon volumetrically. There is possible scope for more downhole valve operations to be conducted, allowing more production to be realised efficiently.

Well Stock: Intervention Overview



OGA Insight

• After three years of growth the total number of well interventions and the intervention rate have dropped from 2019 to 2020.

• Only 18% (460 wellbores) of the well stock was intervened in 2020 with an intervention rate of 22% (589 intervention jobs).

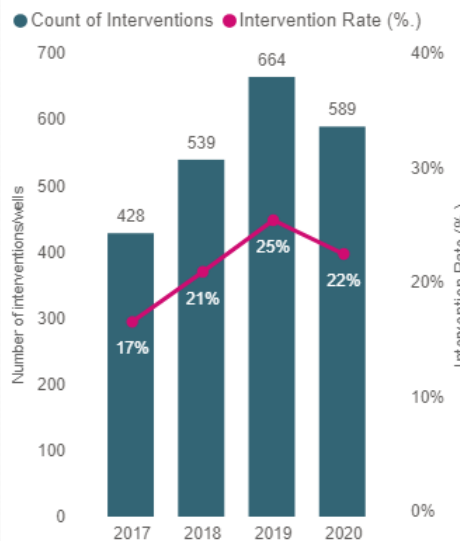
OGA Insight: An explanation for this may be the Covid-19 pandemic which reduced travel for key offshore UKCS workers.

• Using the filters (right hand side), the operating well intervention rate is 3x higher at 29% compared to the shut-in intervention rate of 10%.

OGA insight: Operators are focusing interventions on operating well stock. Is there existing opportunity which is being missed as shut-in wells are not being intervened as much as they could?

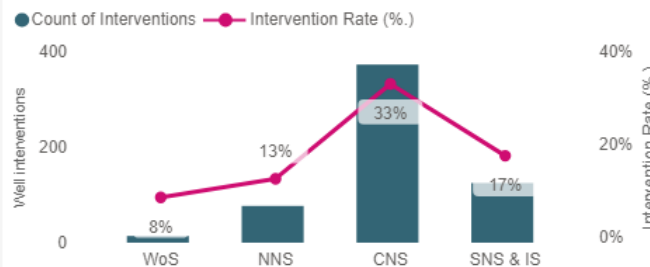
- Regionally CNS intervention rate is

Yearly count of Operations by Objective*

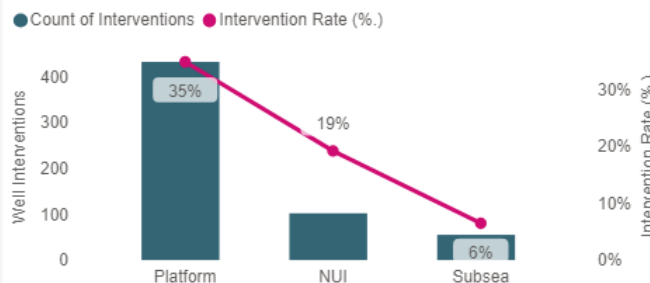


*Included intervention objective types - Plugging & Abandonment, restoration, safeguarding, surveillance, optimisation.

2020 Interventions by Region



2020 Operations by facility type



Select filter
(Hold ctrl for multiple)

- CNS
- NNS
- SNS & IS
- WoS
- Operating
- Plugged
- Shut-in
- Reset Filters

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OGA insight: Operators are focusing interventions on operating well stock. Is there existing opportunity which is being missed as shut-in wells are not being intervened as much as they could?

• Regionally CNS intervention rate is 3x higher than other regions.

OGA Insight: In the CNS most of the wells are platform (dry) wells and can be intervened far easier than subsea wells. In the NNS & SNS most wells have a shorter life expectancy and therefore are less likely to be intervened.

Well Stock: Intervention Activity

Total Production Added from intervention (mmboe/12 months)
12.0

Average production added per job (boe)
122,755

Number of intervention jobs
98

OGA Insight

There has been a growing trend of well interventions over the past four years with the largest number of jobs aimed at safeguarding/protecting hydrocarbon production.

The specific findings by intervention categories are;

Safeguarding

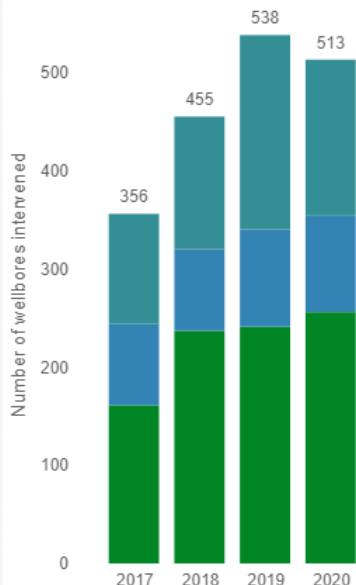
- Is the most frequently performed intervention objective.
- Prevention of flow assurance issues are the safeguarding jobs (scale squeezes & chemical washes) performed.
- Scale squeezes also rank as the highest contribution to volume of hydrocarbon production by interventions.

Optimisation

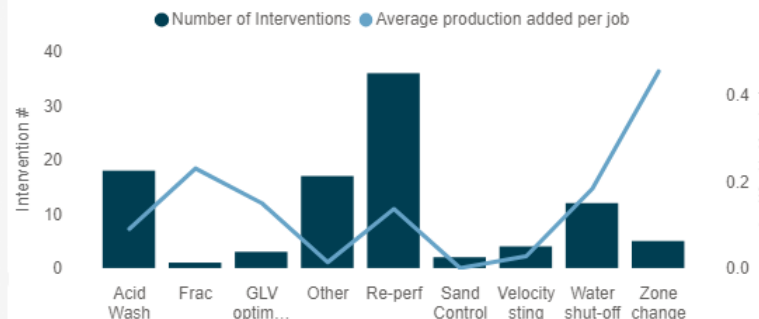
- The main optimisation jobs are re-perforations, water shut offs and acid washes.
- Re-perforations and water shut-offs have also given a significant contribution to reinstating wells

Intervention objective breakdown

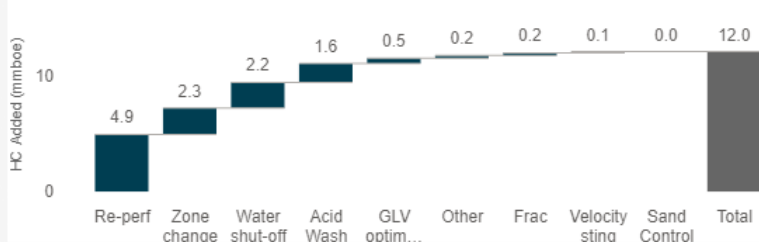
● 1)Safeguard ● 2)Optimise ● 3)Restore



OPTIMISATION RESTORATION SAFEGUARDING
 Intervention Activity frequency and production (Hold CTRL to add multiple)



Production volume added, restored or protected by intervention



Select filter (Hold ctrl for multiple)

CNS

NNS

SNS & IS

WoS

Operating

Shut-in

Reset Filters

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Optimisation

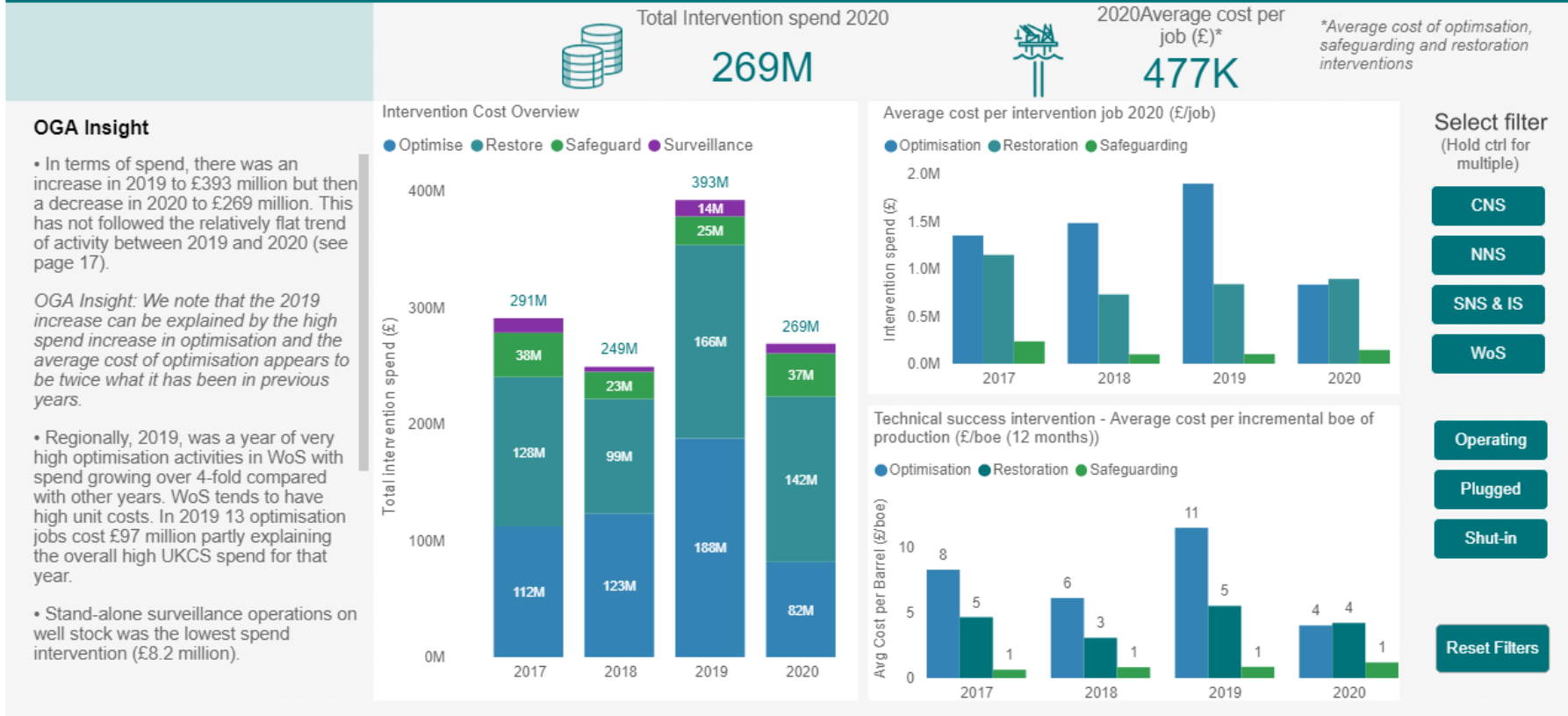
- The main optimisation jobs are re-perforations, water shut offs and acid washes.
- Re-perforations and water shut-offs have also given a significant contribution to reinstating wells production.

Restoration

- The main interventions in restoration are associated with downhole valves, pump repairs and wellhead maintenance.
- Fixing downhole safety valve issues has supplied the third largest production return.

Note* Please use active filters to drill into the individual intervention categories.

Well Stock: Intervention Costs



• In terms of spend, there was an increase in 2019 to £393MM but then a decrease in 2020 to £269MM. This has not followed the relatively flat trend of activity between 2019 and 2020 (see page 17).

OGA Insight: We note that the 2019 increase can be explained by the strong spend increase in optimisation and the average cost of optimisation appears to be twice what it has been in previous years.

Regionally, in 2019, was a year of very high optimisation activities in WoS with spend growing over 4-fold compared with other years. WOS tends to have high unit costs. In 2019 13 optimisation jobs cost £97MM partly explaining the overall UKCS spend for that year.

• Stand-alone surveillance operations on well stock was the lowest spend intervention (£8.2MM).

• Total spend on Shut-in wells appears to increase significantly, as well as bringing the average cost per job up by double that of 2019.

OGA Insight: There have been a small number of intervention jobs on wellbore restoration which have cost significantly above the average intervention cost, this has resulted in the restoration costs being far higher in 2020 than previous years. Safeguarding operations offer the best value for intervention when comparing the cost per boe returned from the investment.

Well Stock: Production Losses



OGA Insight

For more information on production losses please see the [2020 OGA Production Efficiency Report](#)

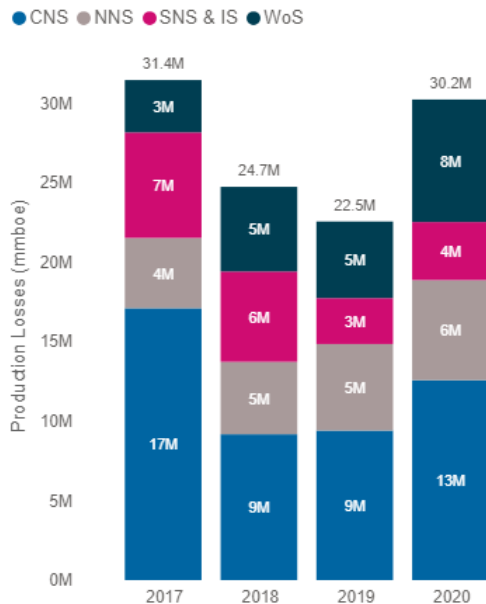
- After two years of decline in Well Production Losses (2018 & 2019), there was an increase in 2020, returning to 2017 levels.

OGA Insight: Despite the progress made on improving the overall production efficiency in recent years, well production losses are high at 31 MMboe per year.

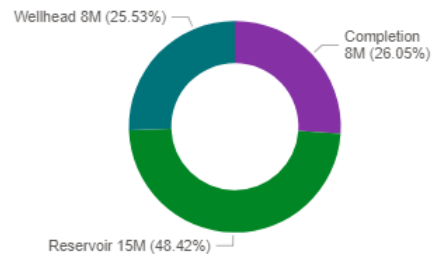
- The WoS region experienced the most notable increase (from 3 million boe in 2017 to 8 million in 2020).

OGA Insight: An explanation for this trend might be large topside outages and associated low water injection rates, resulting in reduced reservoir pressure maintenance.

Production losses attributed to wells



Production Losses by loss category 2020



Production Losses by Fluid type 2020



Select filter
(Hold ctrl for multiple)

CNS

NNS

SNS & IS

WoS

Reset Filters

For more information on production losses please see the [2020 OGA Production Efficiency Report](#)

- After two years of decline in Production Losses (2018 & 2019), there was an increase in 2020, returning to 2017 levels.

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OGA Insight: An explanation for this trend might be large topside outages and associated low water injection rates, resulting in reduced reservoir pressure maintenance.

Losses Definitions from survey:

(from choke model - actual production vs expected production)

Completion: This covers loss associated with all aspects of the well jewellery within the barrier envelope of the well, using the fact that a well is a system.

Reservoir: This covers all reservoir related losses e.g. lack of voidage.

Wellhead: This covers loss associated with wellhead equipment (excl. completion) and operation (from the tubing hanger upwards to the Christmas tree and the wellhead system including annulus valves within the boundary of the well)

Glossary & Notes

Data Caveat

The data analysed in this report is obtained from two key sources

The UKSS survey is an annual survey of Operator activity, linked by Well Registration No. to WONS, but sorted primarily on Regulatory Completion date or (in the case of active wells) reported at year end (31st December).

The differences in the reporting protocol mean that the data analysed can only be a snapshot of a specific timeframe and may not be representative of the whole picture.

This report is presented as a factual analysis of available data and is restricted to Field Area levels of detail to avoid identification of assets and to anonymise any data. More detailed analysis may be available on request, subject to OGA approval.

Exploration and Appraisal volumes are the OGA analysed values and may or may not align with the publicly announced volumes.

Insight Report Notes

Annual drilling activity data is based on wellbore spud date. All other annualised well related data is based on the regulatory completion date, defined in this case as the date at which planned drilling operations on the wellbore were completed to leave it completed for production, abandoned or suspended (as per WONS). This is particularly important when discussing NPT and cost figures.

Glossary & Definitions

Sidetracks

A wellbore may be sidetracked for several reasons:

Geological - In most cases a geological side-track is planned to enhance subsurface information. A geological side-track is defined as a wellbore that is steered towards a different subsurface target than the previous wellbore. In the case of a geological side-track, total cost reporting will be the sum of the different cost categories.

Mechanical - In most cases these are unplanned wellbores, initiated due to operational issues such as hole instability, directional control or tool failure. In the case of a mechanical side-track, the reported costs of the side-tracked wellbore will be added to the NPT costs of the original wellbore.

Respud - If a well must be re-spudded, the costs of the original wellbore will be added to the NPT category of the respudded well.

Redrill - If an existing producing wellbore is side-tracked to a different geological location, this is classified as a re-drilled well. The surface location is preserved. In this case, the cost of the re-drilled wellbore is preserved as reported.

Regions

CNS – Central North Sea

NNS – Northern North Sea

WoS – West of Shetland

SNS & IS – Southern North Sea and Irish Sea (East)

Abbreviations & Definitions

COP – Cessation of Production - Production has ceased and all wells are shut in; redevelopment/re-use options have been reviewed and discounted and there is a clear intent by the licensees to proceed to decommissioning

Dev Wells - Development Wells - Wells that are drilled to produce or enhance hydrocarbon exploitation.

E&A – Exploration and Appraisal Wells which are primarily drilled to gather subsurface information.

HP/HT – High Pressure High Temperature – Wells drilled into fields or areas where reservoir pressure exceeds 10,000 psi (690 bar) and/or reservoir temperature above 300 deg. F (149 deg C) is determined HP/HT.

Infill well - A well drilled for a development project that been in production for >5 years.

MMboe – Million barrels of oil equivalent.

NPT - Non-Productive Time – defined as the cost (as reported) of any operational, mechanical or geological event interrupting the effective delivery of a well and excluding any weather-related delays.

WONS - Well Operations Notification Scheme – a transactional regulatory database containing details of well construction activities, production status and abandonment activities.

WoW – Waiting on weather, cost associated with drilling and completion activities that have been halted due to poor weather conditions.

Well Status

Completed (Operating) - A wellbore that is currently active

Completed (Shut in) - A wellbore that is shut-in (either at the tree valves or subsurface safety valve (usually only applied if the wellbore is intended to be shut-in for 90 days or more)

Plugged - A wellbore that has been plugged with a plug rather than an abandonment barrier

AB1 - A wellbore that has had the reservoir permanently isolated

AB2 - A wellbore with all intermediate zones with potential to flow permanently isolated

AB3 (Permanently Abandoned) - A wellbore that has had the well origin at surface removed and will never be used again

Losses Definitions from survey:

Completion: This covers loss associated with all aspects of the well jewellery within the barrier envelope of the well, using the fact that a well is a system.

Reservoir: This covers all reservoir related losses e.g. lack of voidage.

Wellhead: This covers loss associated with wellhead equipment (excl completion) and operation (from the tubing hanger upwards to the Christmas tree and the wellhead system including annulus valves within the boundary of the well)

Wellbore Environment

Platform – Wellhead is located on a well bay within a normally manned offshore platform

NUI – Normally Unmanned Installation - Wellhead is located on a well bay within an offshore platform which is either unmanned or temporarily unmanned.

Subsea – Wellhead is located on the seabed and is tied back to an installation on the surface.