



Oil & Gas Authority

Geological Sidetrack

WONS/10042/0/GS/1 Version 1

LR/24-X4

General Details

Anticipated earliest commencement date

11-DEC-2016

Anticipated latest completion date

Any work carried out in a well in preparation for future use as part of a field development is considered as well completion activity. In most cases the plan to complete the well will have formed part of a formal Field Development Plan which will have received consent from the OGA.

27-JAN-2017

Anticipated Drilling Time (Days)

6

What is the intent of this wellbore?

- ☐ Exploration
- ☐ Appraisal
- ☒ Development
- ☐ Carbon capture & storage

Anticipated development wellbore product (please tick all that apply)

- ☐ Water
- ☐ Gas
- ☒ Oil
- ☐ Condensate

Anticipated development wellbore type

The wellbore usage associated with reservoir development and hydrocarbon production

- ☒ Producer
- ☐ Injector
- ☐ Disposal
- ☐ Other

Target field

The defined hydrocarbon field that is being targeted by the wellbore. A hydrocarbon reservoir will be defined as a 'field' if: a) The reservoir oil water contact (OWC) has been defined by geologically mapping - either by physical (e.g. wells) or geophysical methods, or commonly a combination of techniques. b) The field definition has been approved as part of a Field Development Plan.

BROCKHAM

Rig datum type

The datum type to be used for all MD measurements throughout the application

- ☒ Mean Sea Level
- ☐ Ground Level Elevation
- ☐ At Ground Level
- ☐ Rotary Table
- ☐ Kelly Bushing

Rig Datum Elevation (m)

56.9m

Planned wellbore trajectory

- ☐ Vertical
- ☒ Deviated
- ☐ Horizontal

Casing1(8 1/2")

Hole diameter

8 1/2"

Mud type

Oil based/Synthetic

Does this hole have a casing?

☒ Yes

☐ No

Casing description

Other

Please describe the casing

There is 7" casing currently in the well that will be used as the production casing in the sidetracked well

Casing diameter

7"

Shoe

MD (m)

The distance along the wellbore to the horizon intersection point. Measured from 52.121m (m) above sea level

686.9

TVDSS (m)

The vertical distance between mean sea level and the horizon level

624.27

Shoe formation

Portland Sandstone

Liner Programme

Liner1(6")

Hole diameter

Other

Please specify the hole diameter

6"

Liner description

Please describe the liner

Liner is a 5" production liner

Liner top

MD (m)

The distance along the wellbore to the horizon intersection point. Measured from 52.121m (m) above sea level

586.9

TVDSS (m)

The vertical distance between mean sea level and the horizon level

623

Liner bottom

MD (m)

The distance along the wellbore to the horizon intersection point. Measured from 52.121m (m) above sea level

1317

TVDSS (m)

The vertical distance between mean sea level and the horizon level

1083.1

Wellbore primary prospect identifying letter(s)

Kimm1

Projected dry hole approval for expenditure cost (million pounds)

Projected success case Approval For Expenditure cost (million pounds)

Projected cost of wellbore abandonment (million pounds)

Parent Wellbore Details

Does the wellbore to be sidetracked have production/injection/EWT history?

- ☒ Yes
☐ No

Will the parent wellbore to be sidetrack be abandoned before kickoff?

- ☒ Yes
☐ No

Will this happen in Phase 1 or Phase 2?

- ☒ Abandoned Phase 1
☐ Abandoned Phase 2

Licence Details

Is this sidetrack an obligation wellbore?

Where there is an outstanding drilling or well evaluation obligation on a licence, and the planned well is designed to fulfil all or part of this obligation, it is essential that the Operator confirm the details prior to spud. When consent to drill is granted this will specify the requirements of the activity planned to meet these obligations. It is essential that the Operator address these requirements prior to abandonment of the well. Failure to comply with licence conditions may result in refusal of consent.

- ☐ Yes
☒ No

Rig Details

Will the wellbore be drilled from a fixed installation or Mobile Drilling Unit?

Fixed installations are directly grounded to the sea-bed (Fixed Platform, Compliant Tower, Jack-up rig). Mobile drilling units are transportable floating structures which can either be tethered to the sea floor or kept in place with dynamic positioning systems (e.g. semi-submersible, drillship, truss, spar, tension leg platform). Mobile drilling units over platforms are mobile units (as described above) which are located over platforms.

- ☒ Fixed installation
- ☐ Mobile drilling unit
- ☐ Mobile drilling unit over platform

Platform

Subsurface Details

Target Formations

The geological target formations are the main objectives for the well. Any maps submitted to support the application should include those at target levels. Select "Add Target" to add additional geological targets.

Target reservoir formation name

Kimmeridge

Corallian

Portland

Anticipated stratigraphic column

Formation

Kimmeridge

Formation top

MD (m)

The distance along the wellbore to the horizon intersection point. Measured from 56.9m (m) above sea level

TVDSS (m)

The vertical distance between mean sea level and the horizon level

Chronostrat

Upper Jurassic

Are any overpressured zones anticipated in this wellbore?

- ☐ Yes
☒ No

Are any under-pressurised/depleted zones anticipated in this wellbore?

- ☐ Yes
☒ No

Target: Kimmeridge

Anticipated reservoir target age

Select age interval from the BGS period classifications for the reservoir target formation

Upper Jurassic

Is this reservoir target conventional?

Select whether the target is conventional or unconventional. Conventional targets do not require the use of unconventional stimulation or production techniques (e.g. Tight Gas, Coalbed Methane, Shale Gas, Shale Oil)

- ☒ Yes
☐ No

Phantom-top-location

Anticipated location of well intersection with the upper horizon of the target reservoir formation

Coordinate type

- ☐ Degrees Minutes Seconds
- ☐ Decimal Degrees
- ☐ National Grid Reference
- ☒ National Grid Easting/Northing

Datum

- ☒ OSGB NG

National grid easting

National grid northing

Anticipated reservoir target top depth

Anticipated depth of well intersection with the upper horizon of the target reservoir formation

MD (m)

TVDSS (m)

The distance along the wellbore to the horizon intersection point. Measured from 56.9m (m) above sea level

The vertical distance between mean sea level and the horizon level

Anticipated reservoir target bottom depth

Anticipated depth of well intersection with the lower horizon of the target reservoir formation

MD (m)

TVDSS (m)

The distance along the wellbore to the horizon intersection point. Measured from 56.9m (m) above sea level

The vertical distance between mean sea level and the horizon level

Anticipated gross thickness (m)(TVD)

The true vertical distance between the

upper and lower horizon of the target reservoir formation

Anticipated net-to-gross (%)

Net sand divided by gross thickness

Anticipated net pay (m)(TVD)

Net pay is hydrocarbon-bearing net sand

Anticipated target mud weight (ppg)**Has there been any oil/gas contact?**

☐ Yes

☒ No

Anticipated reservoir fluid (please select all that apply)

☒ Oil

☐ Gas

☐ Condensate

If pre-drill reserves not available in this format, please explain why**Anticipated gas/oil ratio (GOR)**

The ratio of volume of gas to volume of oil

Anticipated gas/condensate ratio

The ratio of volume of gas to volume of condensate

Anticipated average porosity range**Anticipated lowest average porosity****Anticipated highest average porosity**

Pre-drill geological probability of success

Critical pre-drill success factors

What is the source rock formation?

Anticipated reservoir pressure

Minimum (PSI)

Maximum (PSI)

Anticipated reservoir temperature

Minimum (°C)

28.9

Maximum (°C)

29.8

Pressure classification

Select the option for below which describes the anticipated well conditions, areas of high pressure (abnormal pressure) need not necessarily be accompanied by high temperatures and vice versa. NP - Normal pressure: Pressure below that defined in HP HP - High pressure: High Pressure can be defined as either the maximum pore pressure of any porous formation that exceeds a hydrostatic gradient of 0,18 bar/m (0,8 psi/ft) (representing an equivalent mud weight (EMW) of 1,85 SG or (15,4 ppg) or, needing deployment of pressure control equipment with a rated working pressure in excess of 690 bar (69 MPa, 10 000 psi). UHP - Ultra high pressure

- ☒ NP
- ☐ HP
- ☐ UHP

Temperature classification

Select the option for below which describes the anticipated well conditions, areas of high pressure (abnormal pressure) need not necessarily be accompanied by high temperatures and vice versa. NT - Normal temperature: Temperatures below that defined in HT. HT - High temperature: High Temperature in this context can be defined as when the undisturbed bottom hole temperature is greater than 149C (300F). UHT - Ultra high temperature

- ☒ NT
- ☐ HT
- ☐ UHT

Target: Corallian

Anticipated reservoir target age

Select age interval from the BGS period classifications for the reservoir target formation

Upper Jurassic

Is this reservoir target conventional?

Select whether the target is conventional or unconventional. Conventional targets do not require the use of unconventional stimulation or production techniques (e.g. Tight Gas, Coalbed Methane, Shale Gas, Shale Oil)

- ☒ Yes
- ☐ No

Phantom-top-location

Anticipated location of well intersection with the upper horizon of the target reservoir formation

Coordinate type

- ☐ Degrees Minutes Seconds
☐ Decimal Degrees
☐ National Grid Reference
☒ National Grid Easting/Northing

Datum

- ☒ OSGB NG

National grid easting

National grid northing

Anticipated reservoir target top depth

Anticipated depth of well intersection with the upper horizon of the target reservoir formation

MD (m)

TVDSS (m)

The distance along the wellbore to the horizon intersection point. Measured from 56.9m (m) above sea level

The vertical distance between mean sea level and the horizon level

Anticipated reservoir target bottom depth

Anticipated depth of well intersection with the lower horizon of the target reservoir formation

MD (m)

TVDSS (m)

The distance along the wellbore to the horizon intersection point. Measured from 56.9m (m) above sea level

The vertical distance between mean sea level and the horizon level

Anticipated gross thickness (m)(TVD)

The true vertical distance between the upper horizon and lower horizon of the target reservoir formation

Anticipated net-to-gross (%)

Net sand divided by gross thickness

Anticipated net pay (m)(TVD)

Net pay is hydrocarbon-bearing net sand

Anticipated target mud weight (ppg)

9.66

Has there been any oil/gas contact?

☐ Yes

☒ No

Anticipated reservoir fluid (please select all that apply)

☒ Oil

☐ Gas

☐ Condensate

If pre-drill reserves not available in this format, please explain why**Anticipated gas/oil ratio (GOR)**

The ratio of volume of gas to volume of oil

Anticipated gas/condensate ratio

The ratio of volume of gas to volume of condensate

Anticipated average porosity range**Anticipated lowest average porosity****Anticipated highest average porosity**

Pre-drill geological probability of success

Critical pre-drill success factors

What is the source rock formation?

Anticipated reservoir pressure

Minimum (PSI)

Maximum (PSI)

Anticipated reservoir temperature

Minimum (°C)

41

Maximum (°C)

42

Pressure classification

Select the option for below which describes the anticipated well conditions, areas of high pressure (abnormal pressure) need not necessarily be accompanied by high temperatures and vice versa. NP - Normal pressure: Pressure below that defined in HP HP - High pressure: High Pressure can be defined as either the maximum pore pressure of any porous formation that exceeds a hydrostatic gradient of 0,18 bar/m (0,8 psi/ft) (representing an equivalent mud weight (EMW) of 1,85 SG or (15,4 ppg) or, needing deployment of pressure control equipment with a rated working pressure in excess of 690 bar (69 MPa, 10 000 psi). UHP - Ultra high pressure

- ☒ NP
- ☐ HP
- ☐ UHP

Temperature classification

Select the option for below which describes the anticipated well conditions, areas of high pressure (abnormal pressure) need not necessarily be accompanied by high temperatures and vice versa. NT - Normal temperature: Temperatures below that defined in HT. HT - High temperature: High Temperature in this context can be defined as when the undisturbed bottom hole temperature is greater than 149C (300F). UHT - Ultra high temperature

- ☒ NT
- ☐ HT
- ☐ UHT

Target: Portland

Anticipated reservoir target age

Select age interval from the BGS period classifications for the reservoir target formation

Middle Jurassic

Is this reservoir target conventional?

Select whether the target is conventional or unconventional. Conventional targets do not require the use of unconventional stimulation or production techniques (e.g. Tight Gas, Coalbed Methane, Shale Gas, Shale Oil)

- ☒ Yes
- ☐ No

Phantom-top-location

Anticipated location of well intersection with the upper horizon of the target reservoir formation

Coordinate type

- ☐ Degrees Minutes Seconds
☐ Decimal Degrees
☐ National Grid Reference
☒ National Grid Easting/Northing

Datum

- ☒ OSGB NG

National grid easting

National grid northing

Anticipated reservoir target top depth

Anticipated depth of well intersection with the upper horizon of the target reservoir formation

MD (m)

TVDSS (m)

The distance along the wellbore to the horizon intersection point. Measured from 56.9m (m) above sea level

The vertical distance between mean sea level and the horizon level

Anticipated reservoir target bottom depth

Anticipated depth of well intersection with the lower horizon of the target reservoir formation

MD (m)

TVDSS (m)

The distance along the wellbore to the horizon intersection point. Measured from 56.9m (m) above sea level

The vertical distance between mean sea level and the horizon level

Anticipated gross thickness (m)(TVD)

The true vertical distance between the upper horizon and lower horizon of the target reservoir formation

Anticipated net-to-gross (%)

Net sand divided by gross thickness

Anticipated net pay (m)(TVD)

Net pay is hydrocarbon-bearing net sand

Anticipated target mud weight (ppg)**Has there been any oil/gas contact?**

☐ Yes

☒ No

Anticipated reservoir fluid (please select all that apply)

☒ Oil

☐ Gas

☐ Condensate

If pre-drill reserves not available in this format, please explain why**Anticipated gas/oil ratio (GOR)**

The ratio of volume of gas to volume of oil

Anticipated gas/condensate ratio

The ratio of volume of gas to volume of condensate

Anticipated average porosity range**Anticipated lowest average porosity****Anticipated highest average porosity**

Pre-drill geological probability of success

Critical pre-drill success factors

What is the source rock formation?

Anticipated reservoir pressure

Minimum (PSI)

Maximum (PSI)

Anticipated reservoir temperature

Minimum (°C)

23.5

Maximum (°C)

27

Pressure classification

Select the option for below which describes the anticipated well conditions; areas of high pressure (abnormal pressure) need not necessarily be accompanied by high temperatures and vice versa. NP - Normal pressure: Pressure below that defined in HP HP - High pressure: High Pressure can be defined as either the maximum pore pressure of any porous formation that exceeds a hydrostatic gradient of 0,18 bar/m (0,8 psi/ft) (representing an equivalent mud weight (EMW) of 1,85 SG or (15,4 ppg) or, needing deployment of pressure control equipment with a rated working pressure in excess of 690 bar (69 MPa, 10 000 psi). UHP - Ultra high pressure

- ☒ NP
- ☐ HP
- ☐ UHP

Temperature classification

Select the option for below which describes the anticipated well conditions, areas of high pressure (abnormal pressure) need not necessarily be accompanied by high temperatures and vice versa. NT - Normal temperature: Temperatures below that defined in HT. HT - High temperature: High Temperature in this context can be defined as when the undisturbed bottom hole temperature is greater than 149C (300F). UHT - Ultra high temperature

- ☒ NT
- ☐ HT
- ☐ UHT

TD Details

TD age

The geostatigraphic age for the formation at total depth

Upper Jurassic

TD formation

Oxford Clay

TD depth

The geological formation to be intercepted by the well at its furthest extent, at total depth (TD).

MD (m)**TVDSS (m)**

The distance along the wellbore to the horizon intersection point. Measured from 56.9m (m) above sea level

The vertical distance between mean sea level and the horizon level

Anticipated TD location**Coordinate type**

- ☐ Degrees Minutes Seconds
☐ Decimal Degrees
☐ National Grid Reference
☒ National Grid Easting/Northing

Datum

- ☒ OSGB NG

National grid ~~east~~ing**National grid ~~nor~~thing****Is the TD in a different licence than the well origin?**

- ☐ Yes
☒ No

Anticipated TD mud weight (ppg)

Anticipated TD pressure**Minimum (PSI)****Maximum (PSI)****Anticipated TD temperature****Minimum (°C)****Maximum (°C)**

Formation Evaluation

Coring Programme

Will this wellbore be cored?☐ Yes☒ No**Please explain why**

Sidewall Coring Programme

Will sidewall cores be acquired?

- ☐ Yes
☒ No

Logging Programme

Log type

resistivity

Hole Diameter

Other

MWD or Wireline

Wireline

6"

Criteria for Logging

The exact electronic logging suite is still to be decided but will probably be a combo tool run on drill pipe to avoid issues in the high angle hole (c.76 deg) at the sidetrack kick off point. Special interpretation techniques will be used to evaluate the key formations and to identify the possible natural fractures in the Kimmeridge Limestones.

Will a shear log be run?

- ☐ Yes
☒ No

Please explain why

Logging suite still TBC

Will a checkshot survey be run?

- ☒ Yes
☐ No

Will a VSP be run?

- ☐ Yes
☒ No

Please explain why

We have extensive seismic for this field

Will wireline fluid samples be taken in a success case?

- ☒ Yes
☐ No

What type of fluid will be taken?

- ☐ Water
☐ Gas
☒ Oil
☐ Condensate

Will wireline pressure measurements be taken?

- ☐ Yes
☐ No
☒

Hazards

Potential Safety Hazards and Related Issues

Swelling in the Kimmeridge clays could result in tight hole conditions, overpull and balled up stabilisers.