

Production Efficiency

This section will appear for all Hubs that you are operator of
If you think there are any errors with allocation please
contact

stewardshipsurvey@nstauthority.co.uk



North Sea
Transition
Authority

UKSS 2022 Changes

No changes were made in this section

Section Guidance



Guidance

Terminology

REGULATOR -Oil & Gas Authority (NSTA) The NSTA is the regulator for the Production Efficiency data collection & reporting process , which collects and reports UKCS production data.

SPE (Society of Petroleum Engineers)The Society of Petroleum Engineers (SPE) is the organisation that has documented the new basis for reporting UKCS production -in the (SPE's) 2016 draft white paper "Production Efficiency Reporting -Best Practice Guidelines".

2016 Production Efficiency data collection & reporting process The regulator has interpreted this best practice requirement & updated the Production Efficiency data collection template, reporting process definitions & guidelines accordingly.

Additional information

The regulator will, on request, provide clarification of the Production Efficiency data collection & reporting process . This process is based upon the Production Efficiency best practice guidance (recommended by the SPE) that uses a 4 stage production choke model to evaluate SMPP (per choke) and hence production loss per choke. The SPE shall be consulted on any technical / structural queries on the 4 stage production choke model to evaluate SMPP (per choke) and hence production loss per choke.

The regulator will also, on request, provide additional interpretation of the Production Efficiency best practice guidance as used in this data collection template, these definitions and the supporting guidance notes.

Please note that there are multiple questions based on the selections made. The screenshots provided in this document do not cover every scenario. Example from oil export below

Oil export method Please report the oil export scheme from the list or select 'Other' and clarify in comments box.

☒ Pipeline

☐ Tanker

☐ Other

Oil export pipeline If applicable, please report the main trunk pipeline used for oil export.

Oil export method Please report the oil export scheme from the list or select 'Other' and clarify in comments box.

☐ Pipeline

☒ Tanker

☐ Other

Gas export method Please report the gas export scheme or select 'Other' and state other types in comments box.

☒ Pipeline

☐ Reinjection

☐ None

☐ Other

Oil export method Please report the oil export scheme from the list or select 'Other' and clarify in comments box.

☐ Pipeline

☐ Tanker

☒ Other

Please clarify oil export method scheme

Hub members and Duty holder

Hub member

Regulator will list all fields that feed to the facility/platform/hub and will classify each field (hub field or satellite field)

Field type is selected from drop down menu (Oil, Gas, Condensate, Other).

Field Operator refers to the licenced UKCS Operator of the oil/gas field.

Hub fields are those whose wellhead production is gathered and processed on the facility/platform/hub covered by this PE return.

Satellite fields are those whose production is routed to the facility/platform/hub covered by this PE return and requires some form of processing prior to export. 'Processing' refers to a process resulting in compositional change.

Production that goes "up & over" with no processing that involves a compositional change shall not be reported on this data collection template. Pressure boosting is not considered as 'processing' if there is no compositional change.

Please check to ensure the correct Field and classification are listed as Hub members.

Questions asking for information on Satellite fields will only appear in this section if there is a satellite field listed as a Hub member.

Name	Field operator	Field classification
Field 1	Operator 1	HUB
Field 2	Operator 2	HUB
Field 3	Operator 1	HUB
Field 4	Operator 3	SATELLITE
Field 5	Operator 1	HUB
Field 6	Operator 1	HUB
Field 7	Operator 3	HUB
Field 8	Operator 2	HUB
Field 9	Operator 4	HUB

Duty holder

Is the duty holder different from
your organisation?

☒ Yes
☐ No

Duty holder organisation

Cover Sheet and Additional Data 1

Development and Exports

Hub member

Regulator will list all fields that feed to the facility/platform/hub and will classify each field (hub field or satellite field)

Field type is selected from drop down menu (Oil, Gas, Condensate, Other).

Field Operator refers to the licenced UKCS Operator of the oil/gas field.

Hub fields are those whose wellhead production is gathered and processed on the facility/platform/hub covered by this PE return.

Satellite fields are those whose production is routed to the facility/platform/hub covered by this PE return and requires some form of processing prior to export. 'Processing' refers to a process resulting in compositional change.

Production that goes "up & over" with no processing that involves a compositional change shall not be reported on this data collection template. Pressure boosting is not considered as 'processing' if there is no compositional change.

Options for 'Development scheme?': **Platform Manned; Platform NUI; FPSO/FPS; Subsea Tieback; Other**

Options for 'Gas contract type?': **None; Depletion contract; Supply contract; Spot market; Hybrid; Other**

Development

Development scheme

Please report the development scheme of the hub field from the list. If scheme not available within the list, or a combination of options, please select 'Other' and provide further details in the comments box.

Platform NUI 

Exports

Oil export method

Please report the oil export scheme from the list or select 'Other' and clarify in comments box.

- ☐ Pipeline
☐ Tanker
☒ Other

Please clarify oil export method scheme

Export 1

Gas export method

Please report the gas export scheme or select 'Other' and state other types in comments box.

- ☒ Pipeline
☐ Reinjection
☐ None
☐ Other

Gas export pipeline

If applicable, please report the main trunk pipeline used for gas export.

Gas contract type

If applicable select the type of gas contract from the list and comment below if the contract is driven by Buyers or Sellers nomination. If contract type is not listed select "other" and clarify the type of contract in comments below.

Supply Contract 

How was the contract driven forward?

- ☐ Buyer
☒ Seller

Additional Production Information

There is now a validation looking at the relationship between TAR days and TAR losses.

It is expected that Actual Annual shutdown (TAR) duration for 2022 would equate to TAR losses of EMPP.

Warnings have been found

The following warnings have been found. You are still able to submit this section but you must first provide a comment.

You have entered 150 TAR days, which you would expect to equate to TAR losses in the region of 41.1% (41095.89 boe) of EMPP. Your TAR losses are actually 100% (100000 boe) of EMPP, please explain.

Please provide an explanation for the warnings above

test

Additional Production Information

Planned annual shutdown (TAR) duration at start of 2022

Report duration of planned annual shutdown (TAR), as defined within facility planning process (at the beginning of year)

10 days

Is actual shutdown duration different to planned?

☒ Yes

☐ No

Actual annual shutdown (TAR) duration for 2022

Report duration of annual turnaround (TAR), as defined within facility planning process (at the beginning of year)

15 days

Please explain difference

test

Deferred annual shutdown (TAR) duration for 2022

Report duration of planned annual shutdown (TAR) that have been deferred into a subsequent year, when compared to the facility planning process (at the beginning of the year)

23423 days

Planned annual shutdown (TAR) duration for 2023

Report duration of planned annual shutdown (TAR), as defined within facility planning process (at the beginning of year)

20 days

Unplanned (non-TAR) shutdown duration for 2022

Report the cumulative duration in days of unplanned full plant shutdowns during the year. Do not include time shut down that is associated with TARs, e.g. TAR over-run

4 days

Number of HSE improvement notices

Report the number of HSE Improvement or prohibition notices that the facility / platform / hub has received in the reporting year.

► Show additional information

0

Production Balance and Production totals for the year

Calculated fields

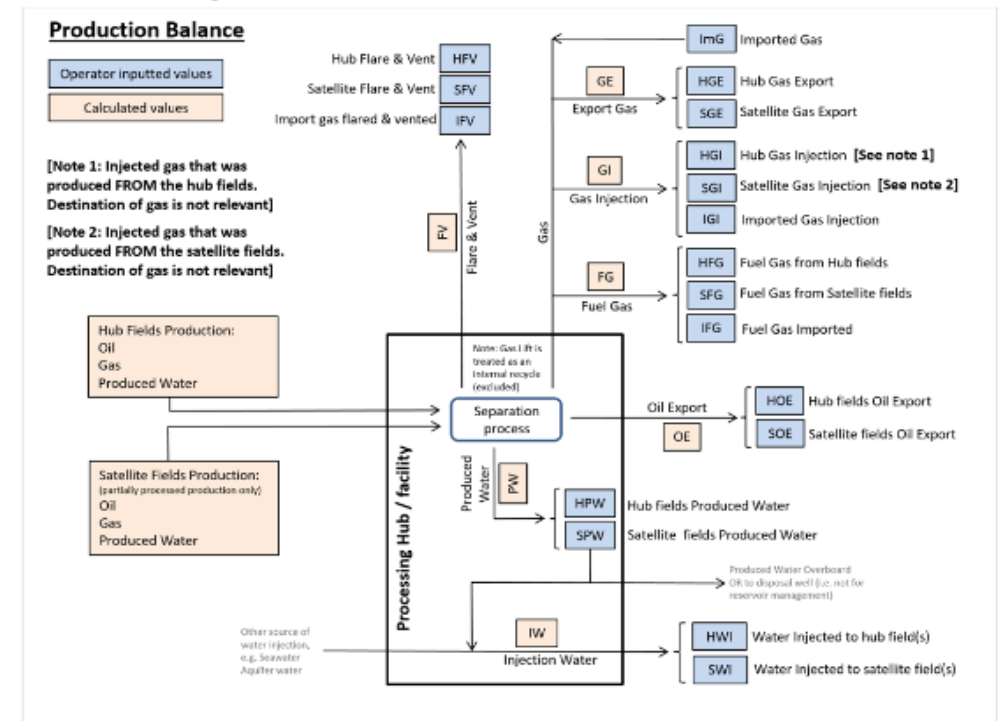
This page contains fields whose value is calculated automatically. These fields are greyed out and unmodifiable.

Please note: 'mm' signifies 'millions' e.g. mmboe

Production Balance

- Hub fields flow to the facility/platform/hub for processing. Well production is calculated in the balance
- Satellite fields require a measure of pre-processing before flowing to the facility/hub for further processing
- Fuel, flare & vent volumes now included in the Production balance calculation.
- Gas lift is not included as it is an internal process recycle
- The Operator of the named facility/platform/hub is responsible for collecting & inputting data into the production balance sheet in the PE data collection template

Production balance guidance



Production totals for year

Total volume of hydrocarbon (MMboe) exiting the facility/platform/hub facility, in the reporting year. This is a calculated value.

Oil	0.0366	mmboe
Gas	37.21	mmboe
Water	0.0732	mmbw
Total HC	37.2466	mmboe

Exported Oil

For further information in this section, please select ‘Show additional information’

Exported oil

Total exported oil

Total volume of hydrocarbon (MMboe) exiting the facility/platform/hub facility, in the reporting year. This is a calculated value.

▼ Show additional information

Sum of the hydrocarbon processed and exported by the facility/platform/hub facility including satellite field(s) hydrocarbons processed within the facility/platform/hub facility.

100

bbl/d

Hub field(s) oil export

100

bbl/d

Satellite field(s) oil export

Volume of satellite field(s) liquid hydrocarbon processed within the facility/platform/hub facility. Such processing must result in a compositional change (e.g. separation, dehydration, fractionation, conditioning etc.)

▼ Show additional information

This category covers production from satellite field(s) facilities that requires additional processing on the host facility/platform/ hub.

Excludes hydrocarbon flows that simply go “up and over” the facility/platform/hub and that do not require processing.

00

bbl/d

Do you need to add further clarification?

☐ Yes

☒ No

Exported/Imported gas

Input data must only contain up to 3 decimal places

Note, the Satellite questions will only appear when there is a Satellite field listed in the Hub members. Please contact the stewardship survey team if information is incorrect at stewardshipsurvey@nstaauthority.co.uk

Total exported gas (or import)

Total volume of hydrocarbon gas exiting the facility/platform/hub facility. This is a calculated value.
▼ Show additional information
Sum of the hydrocarbon gas processed and exported by the facility/platform/hub facility including satellite field(s) gas processed within the facility/platform/hub facility
Excludes gas flows that simply go "up and over" the facility/platform/hub or receive pressure boosting.
110mmscfd

Hub field(s) gas export

Volume of hydrocarbon gas exported from the 'hub' field(s) processed by the facility/platform/hub facility, at the export ESDV (or export flange). This entry covers gas export only (not import).
▼ Show additional information
Where possible use the metered and/or allocated facility/platform/hub export hydrocarbon gas value, adjusted to standard conditions.
100mmscfd

Satellite field(s) gas export

Volume of hydrocarbon gas exported from the 'satellite' field(s) processed by the facility/platform/hub facility, at the export ESDV (or export flange).
Excludes gas flows that simply go "up and over" the facility/platform/hub that require no additional processing (i.e. no compositional change).
▼ Show additional information
Where possible use the metered and/or allocated facility/platform/hub export hydrocarbon gas value, adjusted to standard conditions.
10mmscfd

Imported Gas

Volume of gas imported to the facility/platform/hub.
▼ Show additional information
Where possible use the metered and/or allocated facility/platform/hub import hydrocarbon gas value, adjusted to standard conditions
300mmscfd

Do you need to add further clarification?

☐ Yes

☒ No

Injected Gas

Input data must only contain up to 3 decimal places

Have any hub fields received injected gas?

☐ Yes
☒ No

Total injected gas

Total volume of hydrocarbon gas injected by facility/platform/hub into the hub field(s) and/or the satellite field(s), at the injection gas ESDV (or injection system flange). This excludes gas lift. This is a calculated value

Show additional information

Sum of facility/platform/hub field(s) injected gas volumes and satellite field(s) injected gas volumes. Excludes gas lift

200

mmscfd

Hub field(s) gas injected

Volume of hydrocarbon gas produced from the hub fields which is injected by the facility/platform/hub into the hub field(s) and/or satellite field(s), at the injection gas ESDV (or injection system flange).

Show additional information

Note that the destination of the injected gas is not relevant, but please indicate the fields that receive this injection from the drop down menu.

100

mmscfd

Satellite field(s) gas injected

Volume of hydrocarbon gas produced from the satellite field(s) which is injected by the facility/platform/hub into the hub field(s) and/or satellite field(s), at the injection gas ESDV (or injection system flange).

Show additional information

Note that the destination of the injected gas is not relevant, but please indicate the fields that receive this injection from the drop down menu.

0

mmscfd

Imported gas injected

Volume of hydrocarbon gas, which was imported to the facility/platform/hub, injected to any of the hub or satellite fields.

Show additional information

Note that the destination of the injected gas is not relevant, but please indicate the fields that receive this injection from the drop down menu.

100

mmscfd

Do you need to add further clarification?

☐ Yes
☒ No

Fuel Gas

Input data must only contain up to 3 decimal places

Total fuel gas

Total volume of hydrocarbon gas used by the facility/platform/hub facility as fuel. This is a calculated value

▼ Show additional information

Sum of hydrocarbons used as fuel, whether from hub or satellite fields or from import gas

300

mmscfd

Fuel gas from hub field(s)

Volume of hydrocarbon gas produced from the hub field(s) which is used as fuel by the facility/platform/hub.

100

mmscfd

Fuel gas from satellite field(s)

Volume of hydrocarbon gas produced from the satellite field(s) which is used as fuel by the facility/platform/hub.

▼ Show additional information

Also the data entry point for those facility/ platform/ hubs that import gas and use the imported gas for fuel. All fuel gas volumes are positive values

100

mmscfd

Imported Fuel Gas

Volume of hydrocarbon gas, which was imported to the facility/platform/hub, which is used as fuel by the facility/platform/hub.

100

mmscfd

Do you need to add further clarification?

☐ Yes

☒ No

Production 5

Flare and Vent

This should be reported in a manner consistent with the issues flare and vent consents, i.e. flare quantity should relate only to the hydrocarbon fraction (excludes inert fraction), whereas vent quality should be inclusive of inert fraction.

Input data must only contain up to 3 decimal places

A new question has been added asking for the cold flared hydrocarbon volumes. Cold flare is hydrocarbon gas emissions that should normally be combusted at the flare tip. This figure should not include volumes that are vented via vent routes.

If you do not know this please add in the further clarification box.

Total flare and vent gas	<p>Total volume of all sources of hydrocarbon gas emissions from the facility/platform/hub facility. This is a calculated value.</p> <p>▼ Show additional information</p> <p>Sum of hub field(s) flare & vent volumes plus satellite field(s) flare and vent volumes, plus import gas that is flared (if applicable), at the facility/platform/hub</p> <p>In the new SPE model Flare & Vent are not logged as production losses.</p> <p>300 mmscfd</p>
Hub field(s) flare and vent gas	<p>Volume of hydrocarbon gas produced from the hub field(s) which is flared or vented at the facility/platform/hub.</p> <p>▼ Show additional information</p> <p>This should be reported in a manner consistent with the issued flare and vent consents, i.e. flare quantity should relate only to the hydrocarbon fraction (excludes inert fraction), whereas vent quantity should be inclusive of inert fraction.</p> <p>100 mmscfd</p>
Satellite field(s) flare and vent gas	<p>Volume of hydrocarbon gas produced from the satellite field(s) which is flared or vented at the facility/platform/hub.</p> <p>▼ Show additional information</p> <p>This should be reported in a manner consistent with the issued flare and vent consents, as noted above.</p> <p>Flare/vent volumes are positive values.</p> <p>Import gas flaring volumes are also reported as part of the calculation of this data entry value.</p> <p>100 mmscfd</p>
Imported gas flared and vented	<p>Volume of hydrocarbon gas, which was imported to the facility/platform/hub, which is flared or vented at the facility/platform/hub.</p> <p>► Show additional information</p> <p>0 mmscfd</p>
Cold flared hydrocarbons	<p>Volume of 'cold flared' hydrocarbon gas</p> <p>▼ Show additional information</p> <p>Cold flare is hydrocarbon gas emissions that should normally be combusted at the flare tip</p> <p>This figure should not include volumes that are vented via vent routes</p> <p>If not known, please leave this blank</p> <p>0 mmscfd</p>
Do you need to add further clarification?	<p><input type="radio"/> Yes</p> <p><input checked="" type="radio"/> No</p>

Conversion factor

Input data must only contain up to 4 decimal places

Gas/oil conversion factor

Number used for overall conversion of gas volume to oil equivalent. This is an energy or calorific conversion. Typically this figure will be around 6000 scf/boe.

▼ Show additional information

Gases of differing composition or molecular weight will have slightly differing gas/oil conversion factors. The figure entered here should represent a typical but generic factor for the types of gas typically processed.

6000

scf/boe

Production 7

Produced Water and Injected Water

Input data must only contain up to 4 decimal places



North Sea Transition Authority

Total produced water	Total volume of produced exiting the facility/platform/hub facility. Calculated value. ▼ Show additional information Sum of all facility/ platform/hub produced water exit & discharge routes 200 bwpd
Hub field(s) produced water	Volume of produced water derived from the hub field(s) and processed by the facility/platform/hub. 100 bwpd
Satellite field(s) produced water	Volume of produced water derived from the satellite field(s) and processed by the facility/platform/hub. 100 bwpd
Do you need to add further clarification?	<input type="radio"/> Yes <input checked="" type="radio"/> No
Have any hub fields received injected water?	<input type="radio"/> Yes <input checked="" type="radio"/> No
Total water injected	Total volume of water (seawater, processed water and produced water) injected by the facility/platform/hub into the hub and/or satellite field(s) ▼ Show additional information Sum of all water sources injected in the hub and/or satellite field(s) (sum of seawater, processed water (eg reduced sulphate) and produced water) 200 bwpd
Water injected to hub field(s)	Volume of water injected into the hub field(s). Water may be any, or a combination, of produced water, seawater, aquifer water and imported water. ▼ Show additional information Please indicate the fields that receive water injection from the drop down menu. 100 bwpd
Water injected to satellite field(s)	Volume of water injected into the satellite field(s). Water may be any, or a combination, of produced water, seawater, aquifer water and imported water. ▼ Show additional information Please indicate the fields that receive water injection from the drop down menu. 100 bwpd
Do you need to add further clarification?	<input type="radio"/> Yes <input checked="" type="radio"/> No

The Choke Model

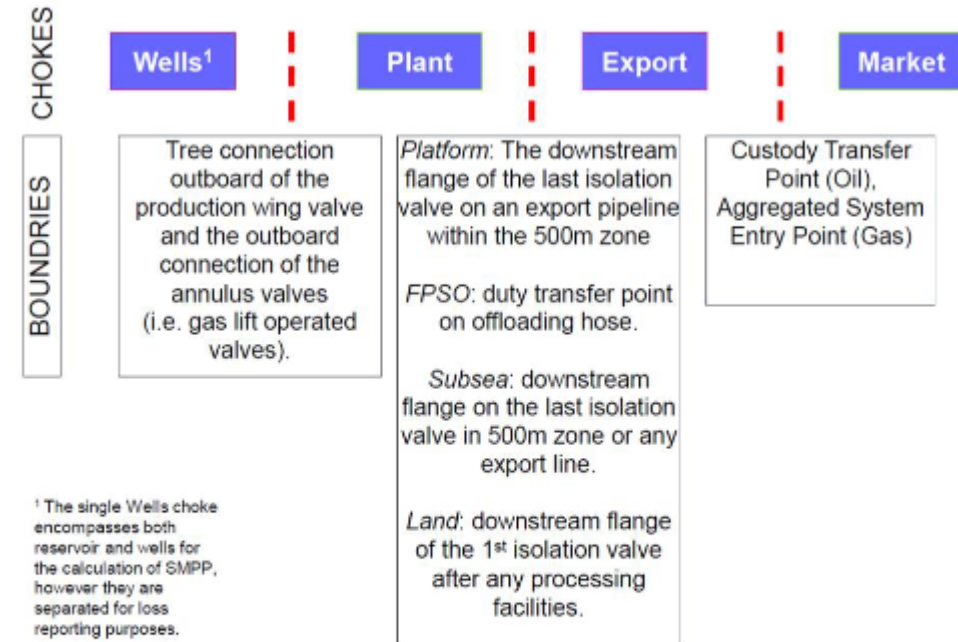
Calculated fields

This page contains fields whose value is calculated automatically. These fields are greyed out and unmodifiable.

Please note: 'mm' signifies 'millions' e.g. mmboe

The Choke Model

- The Production Efficiency (PE) Data Collection & Reporting process uses a 4 stage production choke model
- The 4 chokes in the production choke model are: Wells, Plant, Export & Market
- The production choke model evaluates MPP (per choke), production loss, production potential and hence the Production Efficiency (PE) of the production process References -SPE draft white paper: Production Efficiency Reporting –Best Practice Guidance (2016) -SPE paper SPE-36848-MS 'Increasing Production in a Mature Basin: the 'choke' model(1996)



References:

SPE draft white paper: Production Efficiency Reporting - Best Practice Guidance (2016)
SPE paper SPE-36848-MS 'Increasing Production in a Mature Basin: the 'choke' model' (1996)

Further Information

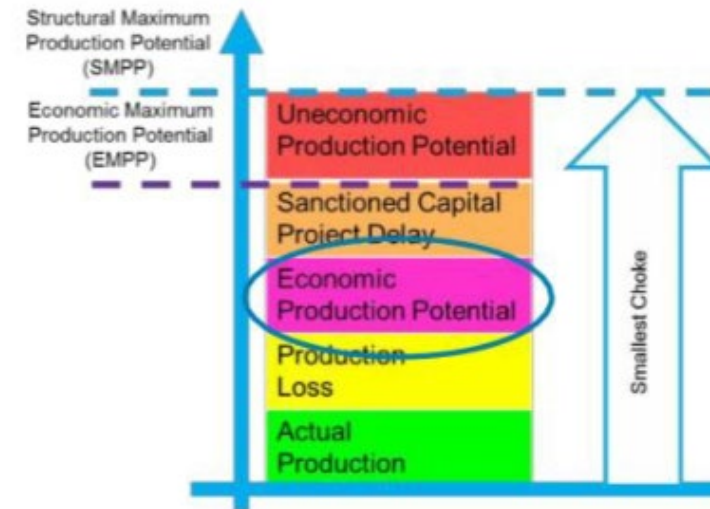
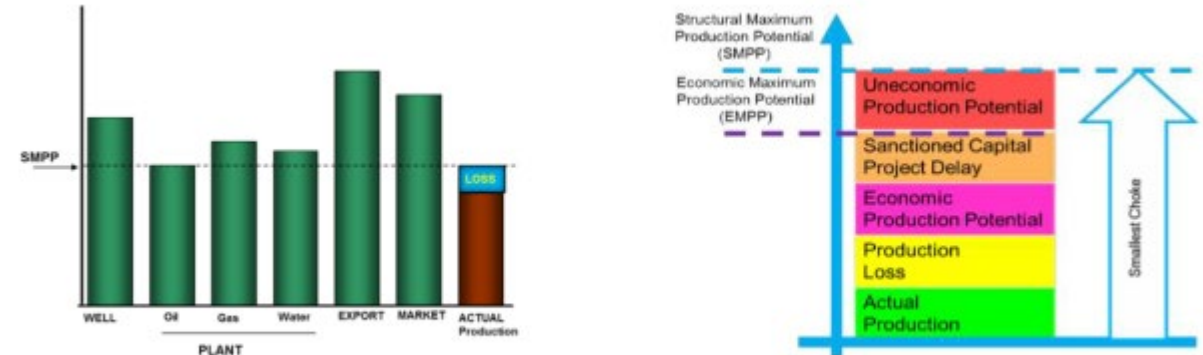
Structural Maximum Production Potential (SMPP) is the lowest structural production potential of the well, plant, export & market systems including volumes processed from satellite fields.

The update introduced some new categories (UPP, EPP & SCPD) aligned with MERUK, in addition to the original SMPP calculation

Contributor to SMPP Economic Production Potential (EPP)

Production potential identified as realisable production potential in the reporting year

- Made up of production potential which is economically achievable for the Operator through actions such as intervention, workover, repair, maintenance activity, etc.
- EPP is usually described in the Operators annual asset or field plan, for the reporting year
- EPP can also be found in Operators commitments to the regulator (eg approved Field Development Plans (FDPs or FDP Addendum)
- The economic evaluation & justification of EPP shall be reported separately to the regulator (for review as part of the regulator's Asset Stewardship process)



Further Information

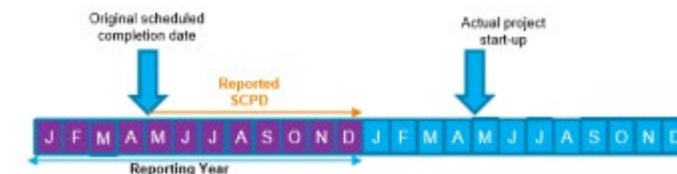
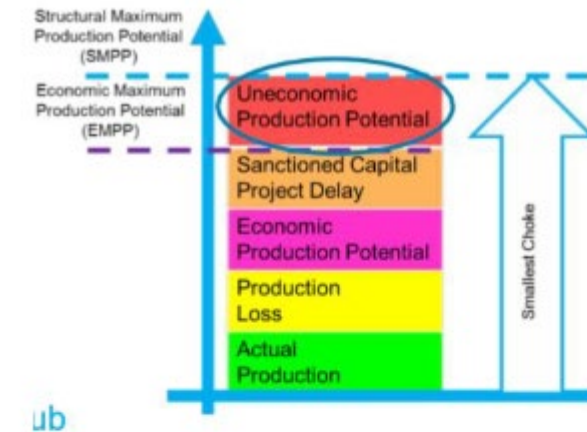
Contributor to SMPP Uneconomic Production Potential (UPP) Production potential which is not economically achievable for the Operator, in the reporting year. UPP is part of SMPP.

- This category can include Capital Project production potential that has met the Operators technical approval requirements but that has been put on hold (not meeting the Operators economic approval criteria)
- UPP can be Field or Facility specific. Hence both the field Operator and the facility/platform/hub Operator shall evaluate & report UPP.
- The Facility/Platform/Hub Operator is responsible for collecting & reporting all advised UPP in the new data collection template,
- The basis & economic evaluation of Field or Facility UPP shall be reported separately (for review as part of the regulator's Enhanced Asset Stewardship process)

Contributor to SMPP Sanctioned Capital Project Delay

- Sanctioned capital projects are defined as projects that have received the Operators Financial Investment Decision approval
- The Sanctioned Capital Project Delay (SCPD) category identifies production potential loss in the reporting year, for Sanctioned Capital Projects which have reached their Original Scheduled Completion Date at FID but have yet to complete

SCPD should be recorded as the total loss during the reporting year. I.E if a project was delayed for 12 months from March then 8 months of SCPD are recorded for the current survey year with the remaining 4 months reported the following year



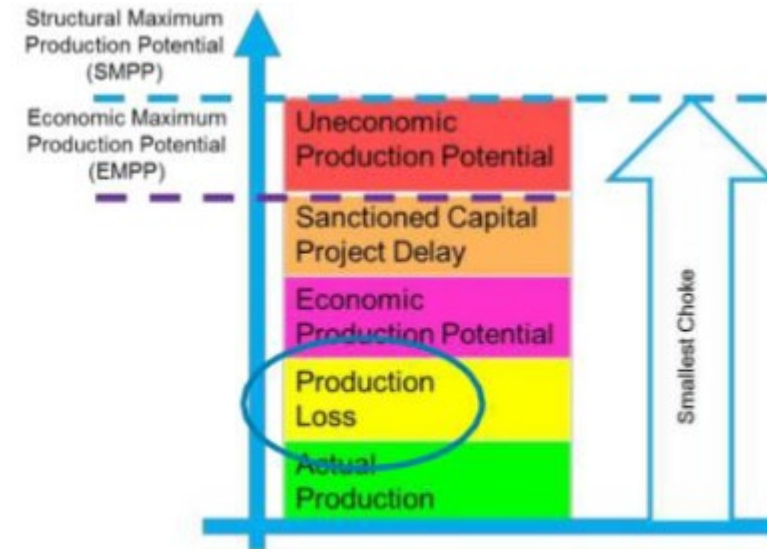
Further Information

Contributor to SMPP Production Loss

In the new SPE choke model, Production Loss has been redefined as:
Production Loss is calculated as:

$$\text{Production Losses} = \text{SMPP} - \text{Uneconomic Production Potential} - \text{Capital Project Delays} - \text{Economic Production Potential} - \text{Actual Production}$$

- Production losses are allocated into defined “loss categories” designed by the SPE to provide a high level approximation of where losses occur, per choke
- The new template is based on SPE “source of loss” categories to record production loss. Individual choke production loss values are summed together to obtain the total production loss for the facility/platform/hub



Potential 5

Calculated Maximum Production Potential

SMPP

The Maximum Production Potential (MPP) , per choke, is calculated as:
Uneconomic Production potential + Capital Project Delays + Economic Production Potential + Actual Production + Production losses

SMPP for the facility/ platform / hub is the smallest MPP of the 4 chokes and is reported in mmboe

Refer to SPE draft white paper and the guidance notes (below) for additional information on how these SMPP contributors are applied.

EMPP

The Production Efficiency data capture process captures only the Operator advised production data for the various chokes and production categories.

The Operator is responsible for collating all hydrocarbon data required in this form, checking allocation into the correct category and using the relevant Operators Technical Authorities to assure data entry and allocation.

No economic data is to be submitted with the Production Efficiency return but the individual Field Operators have a responsibility to report separately to the regulator the basis, calculation and decision for any economic based decision / economic allocation of shut in production potential. This report will be subject to separate review between the Operator and regulator.

Previous year SMPP

The previous survey calculated value is: 13.383 mmboe

SMPP - Structural Maximum Production Potential (annual)

The Structural Maximum Production Potential (SMPP) is set automatically at the level of the smallest of the 4 constituent chokes - Wells, Pans, Export or Market.

Note: If a Capital Project is due to add production potential during the reporting year, this potential should be included in the SMPP, from the planned start up date at Project Sanction (i.e. at #ID).

Refer to the guidance notes for additional supporting definition

Show additional information

The Maximum Production Potential (MPP) , per choke, is calculated as:
Uneconomic Production potential + Capital Project Delays + Economic Production Potential + Actual Production + Production losses

SMPP for the facility/ platform / hub is the smallest MPP of the 4 chokes and is reported in mmboe

Refer to SPE draft white paper and the guidance notes (below) for additional information on how these SMPP contributors are applied

20

mmboe

Please explain SMPP difference between this year and last year

Details

Previous year EMPP

The previous survey calculated value is: 13.383 mmboe

EMPP - Economic Maximum Production Potential (annual)

Economic Maximum Production Potential (EMPP) is equal to SMPP, less any provision for Uneconomic Production Potential.

"Economic" is defined as production which is commercially achievable i.e. within the Operator's defined financial operating parameters.

The Operator of the facility/platform or hub is responsible for evaluating and reporting EMPP.

Show additional information

The Production Efficiency data capture process captures only the Operator advised production data for the various chokes and production categories.

The Operator is responsible for collating all hydrocarbon data required in this form, checking allocation into the correct category and using the relevant Operators Technical Authorities to assure data entry and allocation.

No economic data is to be submitted with the Production Efficiency return but the individual Field Operators have a responsibility to report separately to the regulator the basis, calculation and decision for any economic based decision / economic allocation of shut in production potential. This report will be subject to separate review between the Operator and regulator

0.0000

mmboe

Please explain EMPP difference between this year and last year

Details

Potential 6

Production choke

Note the Dominant choke is calculated automatically by determining the lower potential specified below

By design, no two potentials should be exactly the same. If they are you must provide an explanation

WMPPTThe Wells MPP is the sum of the individual operating well flow rates tested at the optimum operating condition: The well potential is based on measured dry oil and gas flow rates corrected to export conditions, reviewed on a standard periodic basis

Flowing well rates may decline according to a reduction based on well test rate trend

Pseudo tests are acceptable in lieu of measured rate where the test separator is unavailable and there is no other means of establishing a measured rate

Where artificial lift is installed, the well potential shall be expressed as total potential inclusive of any uplift from artificial lift well is included as part of Wells MPP until it is unable to flow -either naturally or with artificial lift, where installed. Removal from Wells MPP requires regulator approval

Production potential as a result of a Capital Project (e.g. a new infill well), should be included from the planned start-up date at Project Sanction (i.e. at FID). Any delay to planned start-up date will be recorded as a Capital Project Delay (CPD).

The Wells MPP for each field should be reviewed on a standard periodic basis against both production data and the facility/platform/hub operating strategy (eg voidage strategy as discussed with the regulator). Review and amendment of well potential, hence Wells MPP shall be formally documented and approved by the Operators technical authority

Dominant choke in determining SMPP

The Production Efficiency process uses a 4 stage production choke model to evaluate SMPP (per choke) and hence production loss per choke.
The 4 chokes in the production choke model are Wells, Plant Export & Market.
References:
SPE draft white paper: Production Efficiency Reporting - Best Practice Guidance (2016)
SPL paper SPL-26848-M5 'Increasing Production in a Mature Basin: the 'choke' model' (1996)
The dominant choke is calculated automatically by determining the lowest potential specified below

Market

WMP - Wells Maximum Production Potential

The Wells MPP is defined as the sum of individual well flow rates when tested at optimum reservoir operating conditions, based on the field development strategy (for the reporting year) as discussed with the regulator.
The Wells MPP for each field should be reviewed on a standard periodic basis against both production data and the facility/platform/hub operating strategy (eg voidage strategy as discussed with the regulator).
Review and amendment of well potential, hence Wells MPP shall be formally documented and approved by the Operators technical authority.

Show additional information

100mmboe

PMPP - Plant Maximum Production Potential

The Plant MPP is defined as the maximum production rate of the primary product through the Plant choke that can be achieved in the absence of any failure, interruption or any other event, including planned events.
The Plant MPP for each facility/ platform/ hub should be reviewed on a standard periodic basis.
Review and amendment of Plant MPP shall be formally documented and approved by the relevant Operators technical Authorities personnel.

Show additional information

100mmboe

ExMPP - Export Maximum Production Potential

Export MPP is defined as the maximum volume which can be exported from the producing asset to the duty transfer point. This is essentially set by the nature of the physical infrastructure from the installation FSDV to the duty transfer point

Show additional information

50mmboe

MMPP - Market Maximum Production Potential

The Market MPP is defined as the maximum volume which can be received at the duty transfer point.
If Market potential is unlimited leave blank.
Market potential may be influenced by contractual arrangements, government and/ or regulatory restrictions, sanctions or the ability to sell production. Commercial decisions not to produce (e.g. seasonal production) will not influence Market Potential.
Market Potential should be reported in equivalent wellhead volumes, accounting for fuel, flare, vent etc
The Market MPP for each facility/ platform/ hub should be reviewed on a standard periodic basis.
Review and amendment of Market MPP shall be formally documented and approved by the Operators technical authority

Show additional information

20mmboe

Debottlenecking 'prize'

80mmboe

Do you need to add further clarification?

☐ Yes

☒ No

Potential 7

Production choke

PMPP

The Plant MPP is defined as the maximum production rate of the primary product through the Plant choke: The throughput potential is measured as the quantity of oil, gas, condensate and NGLs that could be processed over a set period of time when no interruptions occur.

Throughput potential should include gas for re-injection, fuel or flare.

The constraint on the throughput can be from any of the following; water, gas, oil processing, flare limits or water disposal limits

Plant potential should not be reduced for planned or unplanned shut-downs

Production potential as a result of a Capital Project (e.g. new or modified plant giving additional potential for processing), should be included from the planned start-up date at Project Sanction (i.e. at FID). Any delay to planned start-up date will be recorded as a Capital Project Delay (CPD).

ExMPP

Export losses are due to factors outside the control of the Platform operations, and Market constraints should not reduce the Export potential.

The Export MPP for each facility/ platform/ hub should be reviewed on a standard periodic basis. Review and amendment of Export MPP shall be formally documented and approved by the Operators technical authority.

MMPP

The Market MPP is defined as the maximum volume which can be received at the duty transfer point; for some gas fields production is constrained by the type of gas contract that is in place, and this can be the overriding consideration when calculating the Market MPP. The monthly volume should be the sum of the daily gas nominations for that month. Market potential should be reviewed on a standard periodic basis where buyer nominated contracts require it. Nominations do not include "best endeavours" element of contract, which means that fields can legitimately achieve over 100% MPP.



UPP, CPD and EPP

If data is entered you must provide descriptions.

UPP –Uneconomic Production potential

The UPP loss value (per field) producing to the facility/platform/hub facility is to be provided in supporting documentation with this return. Includes Capital Project production potential that has been put on hold due to economic assessment/decisions. No economic data supporting the UPP loss value is to be submitted with this Production Efficiency return. The Field Operator has a responsibility to report the economic basis / assessment, calculation and decision for such production potential loss. This will be subject to discussion as part of the regulators Enhanced Stewardship process

CPD –Capital Project Delays

The production loss associated with a capital project delay (per field) producing to the facility/platform/hub facility is to be provided in supporting documentation with this return. The loss resulting from the delay could start in the reporting year or over-run from previous years. No economic data supporting the CPD loss value is to be submitted with this Production Efficiency return. The Field Operator has a responsibility to report the economic basis / assessment, calculation and decision for such production potential loss. This will be subject to discussion as part of the regulators Enhanced Stewardship process

EPP –Economic Production Potential Includes all economic potential, including activities where the work plan is not yet set. "Economic" is defined as production which is commercially achievable i.e. within the Operator' defined financial operating parameters

Uneconomic Production Potential

The Uneconomic Production Potential (UPP) category may only contain shut-in Production Potential that has previously been available. UPP should only be made up of Production potential which is not commercially achievable for the operator. UPP will remain part of SMPR.

"Economic" is defined as production which is commercially achievable i.e. within the Operator's defined financial operating parameters

The Operator of the facility/platform or hub for evaluating and reporting UPP for the reporting year.

[► Show additional information](#)

Input data must only contain up to 3 decimal places.

UPP - Uneconomic Production Potential (annual) 20.0000 mmbow ⓘ

UPP oil 10 mmbow

UPP gas 10 mmbow

Please provide a description of activities identified as part of this potential

Description

Capital Project Delays

Capital Projects are projects which require investment to deliver benefit across multiple years, and may make available production potential which has not previously been available.

Sanctioned Capital Projects which have reached their Original Scheduled Completion Date but have not yet been completed should be included in the Capital Project Delays (CPD) category.

(Note: production potential from such capital projects will be reflected in the SMPR, from the original start-up date specified at Project Sanction (HID)).

[► Show additional information](#)

Input data must only contain up to 3 decimal places.

CPD - Capital Project Delays (annual) 2.0000 mmbow

CPD oil 1 mmbow

CPD gas 1 mmbow

Please provide a description of the delays encountered

Description

Economic Production Potential

The Economic Production Potential (EPP) category may only contain production potential that has been identified as realisable production potential in the reporting year. Hence EPP shall only be made up of production potential which is commercially achievable for the Operator through actions such as intervention, workover, repair, maintenance activity, etc.

The Operator of the facility/platform or hub for evaluating and reporting EPP for the reporting year.

[► Show additional information](#)

Input data must only contain up to 3 decimal places.

EPP - Economic Production Potential (annual) 0.0000 mmbow

EPP oil 0 mmbow

EPP gas 0 mmbow

Please provide a description of activities identified as part of this potential

Production efficiency and losses and Injection

Depending on the Voidage replacement / pressure maintenance strategy is selected various questions will appear below and on the Losses page.

Options for ‘Voidage replacement / pressure maintenance strategy?’: **None; Water injection; Gas injection; WAG (water alternating gas injection); SWAG (simultaneous water and gas injection); Other**

If ‘None’ or ‘Other’ is selected you will not be able to enter any injection losses in the Losses page.

Production efficiency and losses

The Actual Wellhead Production is defined as total hydrocarbon production volumes prior to any processing losses. AWP figures are automatically calculated and included from data entered on the Production page.

Show additional information

In the Production Efficiency data capture process, this hydrocarbon value is calculated from the volume (mass) balance across the facility/ platform /hub

Note that in the new SPE balance, Flare & Vent volumes are not losses but part of the PE calculation

AWP - Actual Wellhead Production (annual)	Excluding water	11.3026	mmboe
AWP oil		3.9697	mmboe
AWP gas		7.3329	mmboe
AWP water		0.5296	mmboe

CPL - Calculated Production Losses (annual)

This is a calculated value, derived from the elements that make up the SMPP, i.e. Production Losses (PL) = SMPP - UPP - CPD - EPP - AWP

Show additional information

0.7

mmboe

PE - Production Efficiency

The Production Efficiency (PE) ratio is defined below:
PE = (Actual Wellhead Production / SMPP)
PE is expressed as a percentage

Show additional information

94.19

%

EPE - Economic Production Efficiency

The Economic Production Efficiency (EPE) ratio is defined below:
EPE = (Actual Wellhead Production/EMPP)
EPE is expressed as a percentage

94.19

%

Do you need to add further clarification?

☐ Yes

☒ No

Injection potential

Input data must only contain up to 4 decimal places.

Voidage replacement / pressure maintenance strategy

WAG (water alternating gas injection)

OWI - Optimum Water Injection Rate

Total water injection rate to the hub and/or satellite field(s) that maximises economic recovery from the fields listed, in line with the development strategy of the hub/satellite field(s) reservoir management

Show additional information

Value to be determined by the relevant Operators Technical Authority and agreed with the regulator (asset stewardship review)

0

bwpd

Please list the names of fields for which water injection is intended

OGI - Optimum Gas Injection Rate

Total gas injection rate to the hub and/or satellite field(s) that maximises economic recovery from the fields listed, in line with the development strategy of the hub/satellite field(s) reservoir management

Show additional information

Value to be determined by the relevant Operators Technical Authority and agreed with the regulator (asset stewardship review)

0

mmstd

Please list the names of fields for which gas injection is intended

WIE - Water Injection Efficiency

Ratio (expressed as a percentage) of Total volume of water injected into all fields to the Optimum water injection volume (defined by the Operators field development strategy)

0

%

GiE - Gas Injection Efficiency

Ratio (expressed as a percentage) of Total volume of hydrocarbon gas injected into all fields to the Optimum gas injection injection volume (defined by the Operators field development strategy)

0

%

Do you need to add further clarification?

☐ Yes

☒ No

Combined losses

It is expected that reported HC losses should be within 2% of the calculated production losses shown on the Potential Page (production efficiency and losses).

From Potential Page

CPL - Calculated Production Losses (annual)

This is a calculated value, derived from the elements that make up the SMPP. I.e. Production Losses (PL) = SMPP - UPP - CPD - EPP - AWP

▼ Show additional information

Production Losses are events which occur and prevent an asset achieving its SMPP and are not classified within other categories, i.e.

- Uneconomic Production Potential
- Capital Project Delays
- Economic Production Potential

Hence Production Losses (per choke) is calculated as:

SMPP

less Uneconomic Production potential

less Capital Project Delays

less Economic Production Potential

less Actual Production

Each choke production loss will be further split into the relevant source of loss category

0.7

mmboe

Combined losses (annual)
Combined reported production losses

Total **reported** HC losses should be within 2% of the **calculated** production losses (CPL) as shown in the Potential page.

Please review reported loss figures and/or the elements used to calculate CPL (ie. SMPP, UPP, CPD, EPD and AWP)

Please correct your submission so Total HC loss is within 2% of the Calculated Production Losses (CPL) value. CPL is calculated on the Potential page in mmboe, the current value is 700000boe.

Total HC loss should be in the range [686000boe to 714000boe].

Oil		Gas		Total HC	
852807	bbl	1487000	boe	2339807	boe
Total HC Loss is not within 2% of the Calculated Production Losses (CPL) value					

Well losses

If there are well losses, please provide details about the main contributors in the text box

Wells losses (annual)

Total well losses	Oil	Gas	Total HC
	<input type="text" value="160000"/> bbl	<input type="text" value="257000"/> boe	<input type="text" value="417000"/> boe

Reservoir	<input type="text" value="0"/> bbl	<input type="text" value="0"/> boe
-----------	------------------------------------	------------------------------------

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

Wellhead	<input type="text" value="160000"/> bbl	<input type="text" value="257000"/> boe
----------	---	---

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)

Completion	<input type="text" value="0"/> bbl	<input type="text" value="0"/> boe
------------	------------------------------------	------------------------------------

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.

▼ Show additional information

For example annulus problems that highlight a well loss would be captured within this level.

Other examples: Failure of any component of an ESP (includes power supply if within the well completion boundary); failure of downhole gas lift valve(s).

Please provide details on the main contributors

Main contributors to losses examples

Losses 3

Plant losses (annual)

If there are plant losses, please provide details about the main contributors in the text box.

Click on the ‘Show additional information’ to reveal more guidance on screen.

Plant losses (annual)

Total plant losses

Oil

892807

bar

Gas

1230000

bar

Total HC

1922807

bar

Oil systems

0

bar

0

bar

This covers the loss from systems which process production fluids (a mixture of oil, gas and produced water) from oil & gas Well(s) Gathering System in order to separate out key components and prepare the oil for export

Show additional information

Gas systems

55000

bar

103000

bar

This covers the loss from systems which treat production gas (a mixture of gas, condensate and water) directly from gas Wells, Gathering Systems or Oil Systems in order to separate out key components (water, gas, solids & contaminants) and prepare (e.g. compress) the treated gas for export (reservoir support (injection) or artificial lift) or artificial lift. Includes flare & vent loss

Show additional information

Includes gas phase treatment systems that remove hydrocarbon liquids, water, solids or other contaminants (CO₂, H₂S etc), gas dehydration systems, gas to be processed for fuel, fuel gas distribution systems, gas metering systems, gas import systems. Equipment includes: separators, vessels, pipework, manifolds, compressors, pumps, metering

Includes fluids for Artificial Lift (e.g. supply for gas lift etc.)

Loss of Artificial lift will produce a Production Loss.

Gathering system (inc. subsea)

0

bar

0

bar

This covers the loss from flowline network and process facilities that transport and control the flow of oil or gas from the Well wing valve to Plant.

Show additional information

Power system

2800

bar

5000

bar

This covers the loss from power systems, delivered by the facility/platform/hub power generation system(s) or through an incoming electrical power supply cable.

Show additional information

Produced Water system

0

bar

0

bar

This covers the loss from systems which treat Produced Water (a mixture of water, oil, gas, solids and contaminants) directly from Oil & Gas Systems in order to separate out key components (water, gas, solids & contaminants) that prepare the treated produced water for reservoir injection (e.g. PWR) or discharge overboard (to specification).

Show additional information

Utility system

230000

bar

435000

bar

This covers the loss from the utility (and auxiliary) systems that constitute the support network for the Plant (e.g. Facility platform / Hub) including the flare system

Show additional information

Injection system

274000

bar

440000

bar

This covers production lost as a result of not achieving required volume replacement for reservoir support in line with the field strategy, i.e.

- gas injection (hydrocarbon, CO₂, inert gas etc) for NGL gas lift
- water injection (seawater, produced water, aquifer water, treated water etc.)
- chemicals (specifically those injected into reservoirs for production improvement)
- does not include fluids for Artificial Lift (e.g. supply for gas lift)

Show additional information

Control system

150000

bar

247000

bar

This covers the loss from:

- systems that control all plant systems (where control elements are distributed throughout the system through a communications network or which use a single controller in location)
- Safety Instrumented Systems (SIS, ESD etc.) consisting of an engineered set of hardware and software controls which are especially used on critical process systems
- systems for Plant (inc. Marine) control Plant (and Marine) shutdown and communication

Show additional information

Structural

0

bar

0

bar

This covers production loss arising from issues impact production resulting from equipment supporting the production process

Show additional information

TAR and/or planned shutdown

7

bar

0

bar

This category is to be used to record loss associated with a planned annual shutdown or TAR, or planned total plant outage, and any unplanned over-run of these planned activities.

Show additional information

Please provide details on the main contributors

test

Export losses (annual)

If there are export losses, please provide details about the main contributors in the text box

Export losses (annual)

Total export losses	Oil 0 bbl	Gas 0 boe	Total HIC 0 boe
Pipeline	0 bbl	0 boe	
<div>Includes:</div> <ul style="list-style-type: none">Blockage (e.g. from hydrates, waxes, naphthenates, debris, corrosion products).Construction activity resulting from pipeline repairsExternal or internal damage (e.g. production loss resulting from dropped objects, military ordinance, anchor drag, damage to in-line pipeline equipment (PWRs etc.) or internal coatings.Pipeline outage or shutdown, or denial of service, planned or unplanned.			
Shuttle tanker	0 bbl	0 boe	
For example, production loss due to waiting on weather to hook up and hence offload to shuttle tanker or cargo tanks at full capacity (inability to offload). Production loss due to failure of equipment (to connect to shuttle tanker) or failure to agree contractual terms.			
Blending / back-out	0 bbl	0 boe	
Constraint imposed by pipeline operator. E.g. losses due to the unavailability or undersupply of blend gas. Losses due to backout of export line from operations elsewhere.			
Planned terminal outage	0 bbl	0 boe	
Any planned terminal outage or denial of service			
Unplanned terminal outage	0 bbl	0 boe	
Any unplanned terminal outage or denial of service			
X-over platform	0 bbl	0 boe	
Losses due issues on another installation that prevents an up-and-over service normally on that installation.			
Force majeure (export)	0 bbl	0 boe	
This category shall only be used for export choke production loss of events agreed with the regulator that can be deemed Force Majeure			
Utilities import	0 bbl	0 boe	
This category covers export choke production loss resulting from loss of utilities eg Electricity, Water, Chemicals (hydrate inhibitors, corrosion inhibitors, etc.), fuel (fuel gas, diesel), communications, hydraulics			

Please provide details on the main contributors

0

Market losses (annual)

If there are market losses, please provide details about the main contributors in the text box

Market losses (annual)

Total market losses	Oil 0 bbl	Gas 0 boe	Total HIC 0 boe
Contractual	0 bbl	0 boe	
This category covers market choke production loss arising from contractual impact, as agreed with the regulator			
Sanctions	0 bbl	0 boe	
This category covers market choke production loss arising from sanction impact, as agreed with the regulator			
Government/Regulator	0 bbl	0 boe	
This category covers market choke production loss arising from specific activity or events, as agreed with the regulator			
Buyer nominated contract(s)	0 bbl	0 boe	
This category covers market choke production loss specifically arising from the impact of Buyer nominated contracts, as agreed with the regulator			
Force majeure (market)	0 bbl	0 boe	
This category shall only be used for market choke production loss arising from events agreed with the regulator that can be deemed Force Majeure			

Please provide details on the main contributors

0

Supporting information

Please upload:

- 1 Infrastructure connectivity diagram
- 4 Topsides process flow diagrams (You will no longer be made to upload 4 separate diagrams, but must confirm all 4 flow diagrams are in the documents uploaded)
 - Separation systems
 - Gas compression (inc. injection) systems
 - Produced water systems
 - Water injection systems
- 1 Third part data collection template if necessary. [\(LINK\)](#)

Supporting Information

Infrastructure Connectivity Diagrams

You have uploaded 0 of 1 files

[Upload a file](#)



The following topside process flow diagrams are to be uploaded:

- Separation systems
- Gas compression (inc. injection) systems
- Produced water systems
- Water injection systems

Topsides Process Flow Diagrams

You have uploaded 0 of 4 files

[Upload a file](#)



Have you received any third party templates to complete this submission? ☒ Yes ☐ No

Third Party Data Collection Templates

You have uploaded 0 of 10 files

[Upload a file](#)



General Comments

Please use this area to provide us with any information you think is important, or clarifies any data entered in the rest of the section.

General comments

Please provide any extra details that will help in the understanding of your responses in this section

optional

Submit Section

Autosave functionality

Data entered into the form is automatically saved. If you need more time to complete the form, you can return to the matrix or log off and any progress will be safe.

Submission.

Prior to submitting the form, please ensure any data entered is correct. You will not be able to modify your responses until the NSTA have reviewed the submission and asked for a correction.

The link ‘UKSS Guidance Page’ will take you to the NSTA webpage where all the guidance notes can be found.

The section can be exported either via spreadsheet or PDF at any time during the survey live period.

Submit section

Autosave functionality

Data entered into the form is automatically saved. If you need more time to complete the form, you can return to the matrix or log off and any progress will be safe.

Submission

Prior to submitting the form, please ensure any data entered is correct. You will not be able to modify your responses until the NSTA have reviewed the submission and asked for a correction.

This section contains invalid pages, please correct the errors in these pages before submitting.



Checklist

Below are some of the detailed QC steps that each section will go through. If you think your data will not pass these checks, please add as much information in the general comments section as possible to help us understand why.

- SMPP vs previous year(s). A comment will now be necessary if figure is different from previous year. (this includes EMPP)
- Production vs previous year(s)
- Production v PPRS
- Sense check of third party volumes
- What determines the choke and does it make sense (i.e. v previous years or field team knowledge)
- General field team intelligence v input overall (i.e. water inj for winj fields)
- Check all producing fields/PPRS reporting units are allocated to a hub (possible exceptions are recent start ups or any fields/hubs deliberately excluded by the Area Teams)
- Check specified export routes and export methods are correct
- Any cross reference to Wells section eg well losses ?
- Dominant potential is now automatically populated as the lowest potential.
- There is now a flag when reported and calculated losses >2%
- New validation rule where 2+ Potentials cannot be the same value.

Q&A Examples [\(LINK\)](#)

Well MPP

• Definition is sum of the well tests... but will this always be the case? We could use the modelled potential of a well... the issue is up for debate but in the end the Operators subsurface or wells TA will determine the potential ... and hence it is for the Operator to justify the value at the asset stewardship review with NSTA

Sanctioned Capital Production Delay (no production in the year)

• If the sanctioned capital project has a delay of more than 12 months (from sanctioned first oil date) and the delay has resulted in no production in the reporting year then the whole of the estimated production in the reporting year will be logged as SCPD

Loss examples

- Demand due to extreme weather (Loss categorised as -Plant choke loss, full plant loss)
- Production stopped due to regulatory action (Loss categorised as -Plant choke loss, full plant loss)
- Well awaiting intervention, (in asset work activity plan to do) (Loss categorised as -Well choke loss, EPP loss)
- Well expected on line in May, comes on line in Dec (Loss categorised as -Well choke loss, SCPD loss from May to start-up date)
- EPP (plant configuration N or N+1)? (It could be argued that N+1 configuration had a potential to bring on additional plant capacity, but if the Operator can show the facility runs a maintenance strategy of N+1, the plant capacity (for loss calculation) is therefore based on N)

Thank You

North Sea
Transition
Authority

Thank you
