North Sea Transition Authority

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

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Section Guidance

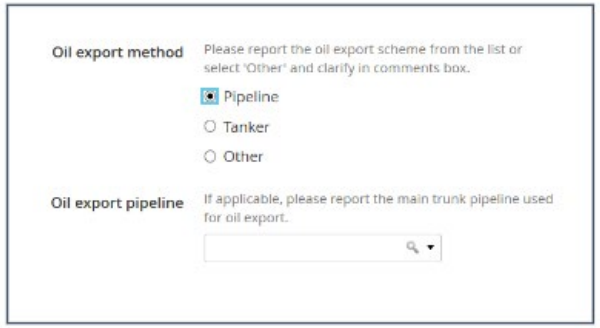
North Sea Transition Authority

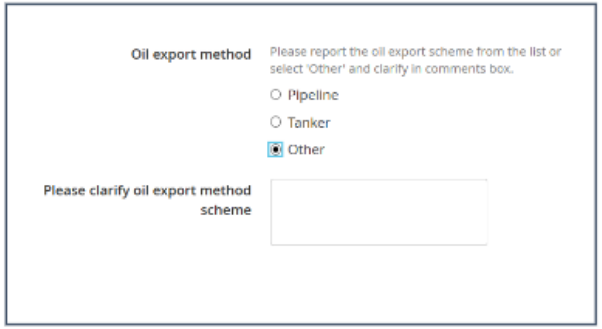
Guidance

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





Cover Sheet and Additional Data

North Sea Transition Authority

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

North Sea Transition Authority

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.

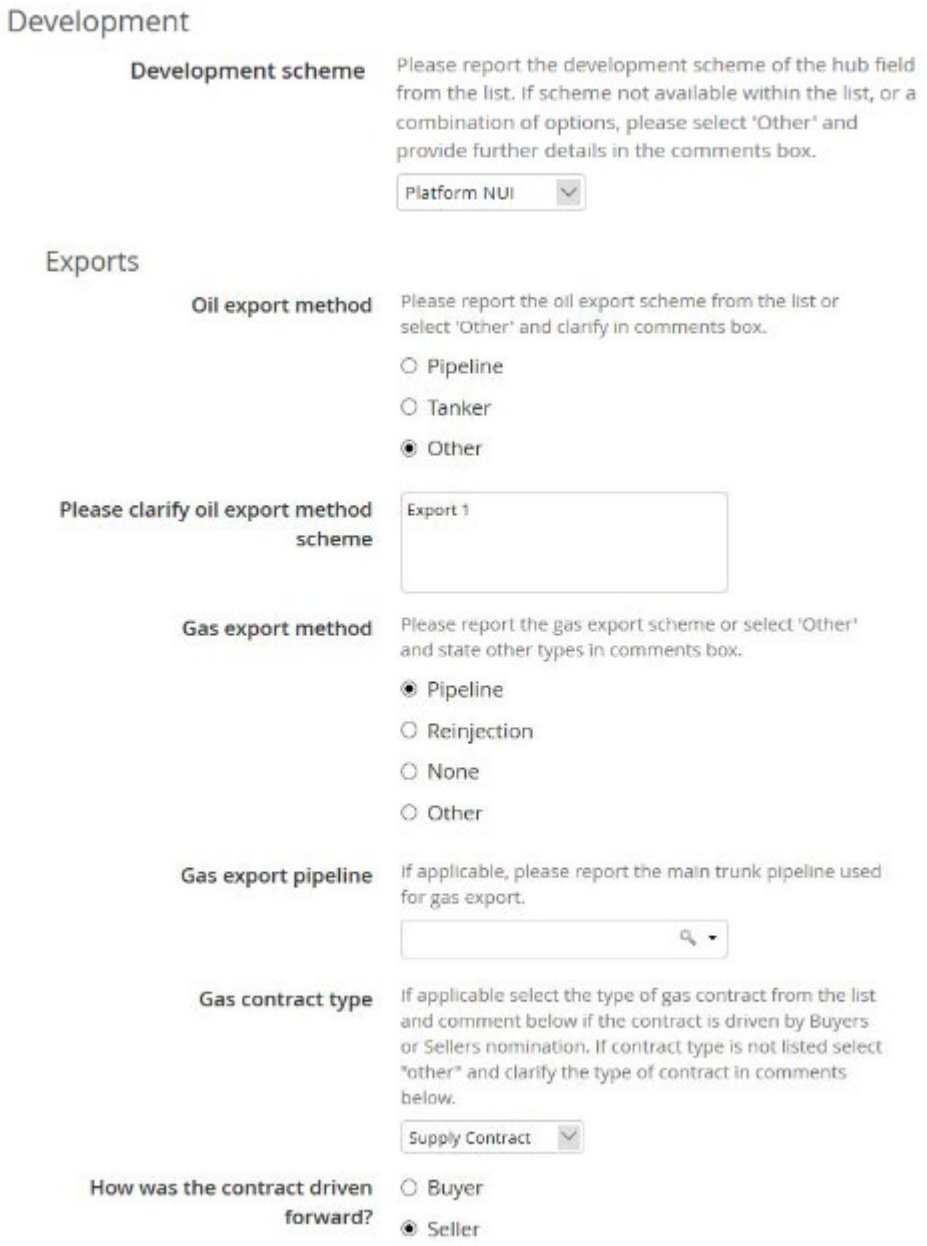
Hub fields are those whose wellhead production is gathered and processed on the facility/platform/hub covered by this PE return.

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**



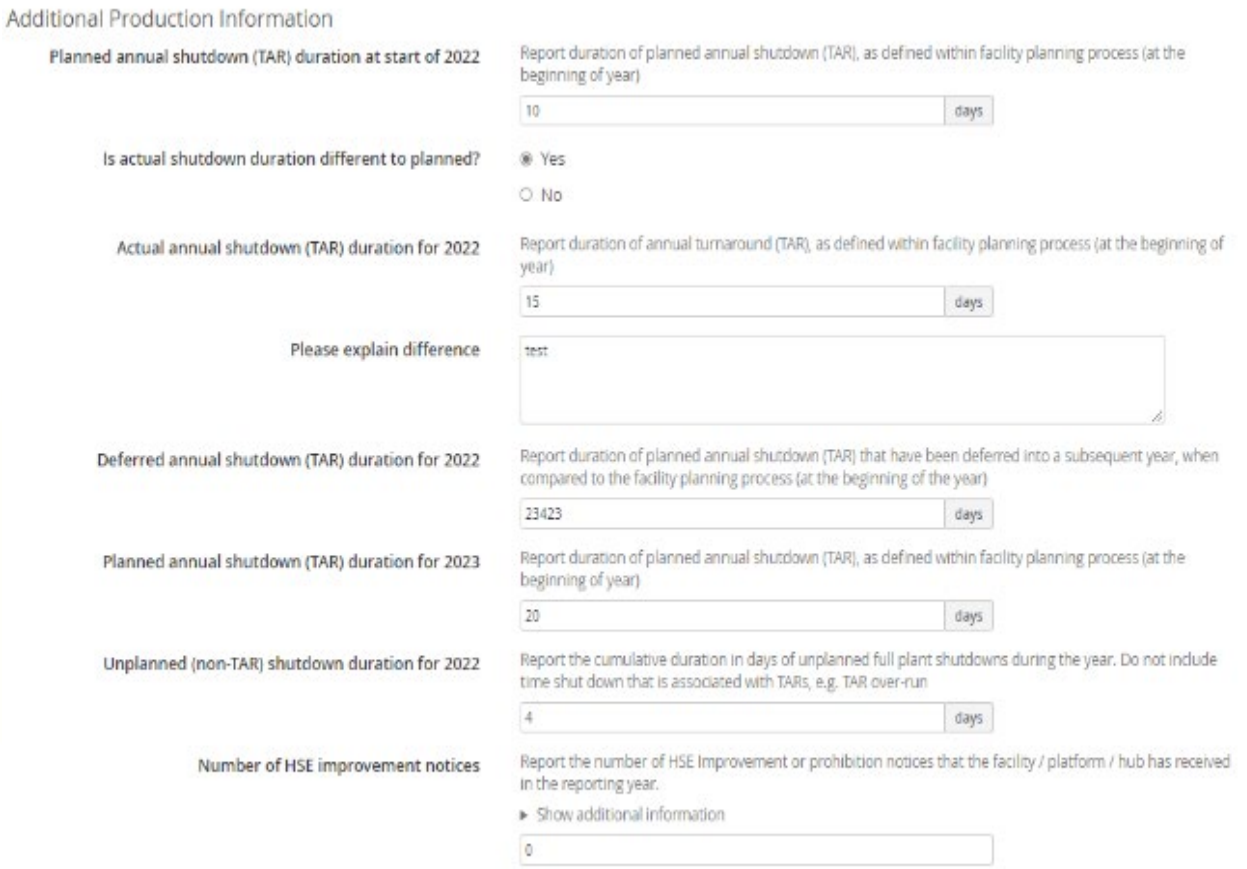
Cover Sheet and Additional Data 2

North Sea Transition Authority

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.



Production

North Sea Transition Authority

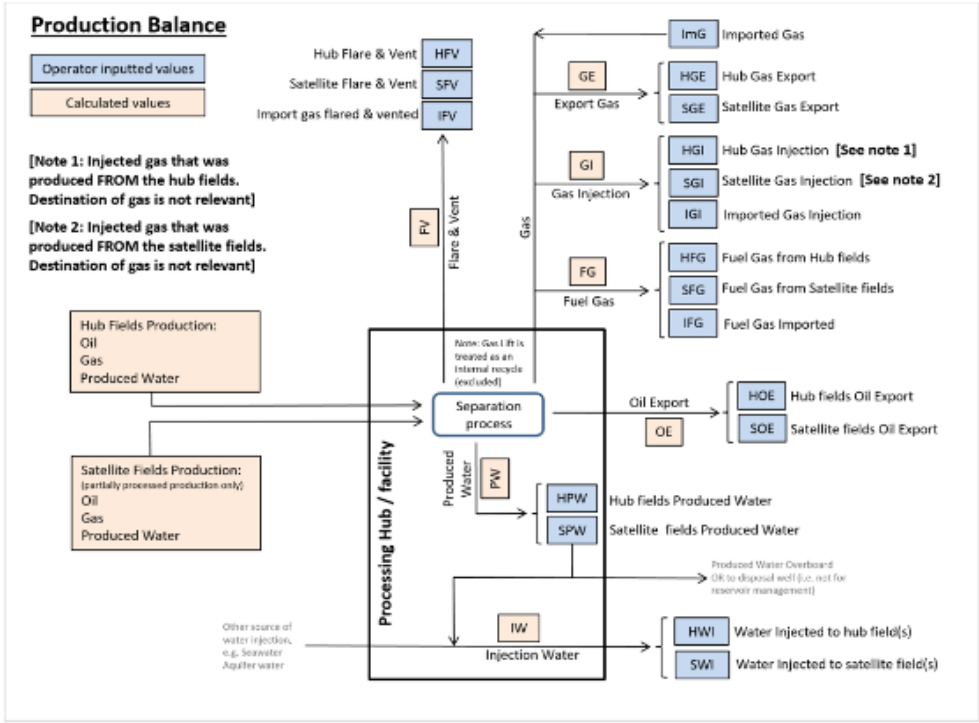
Production Balance and Production totals for the year

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.

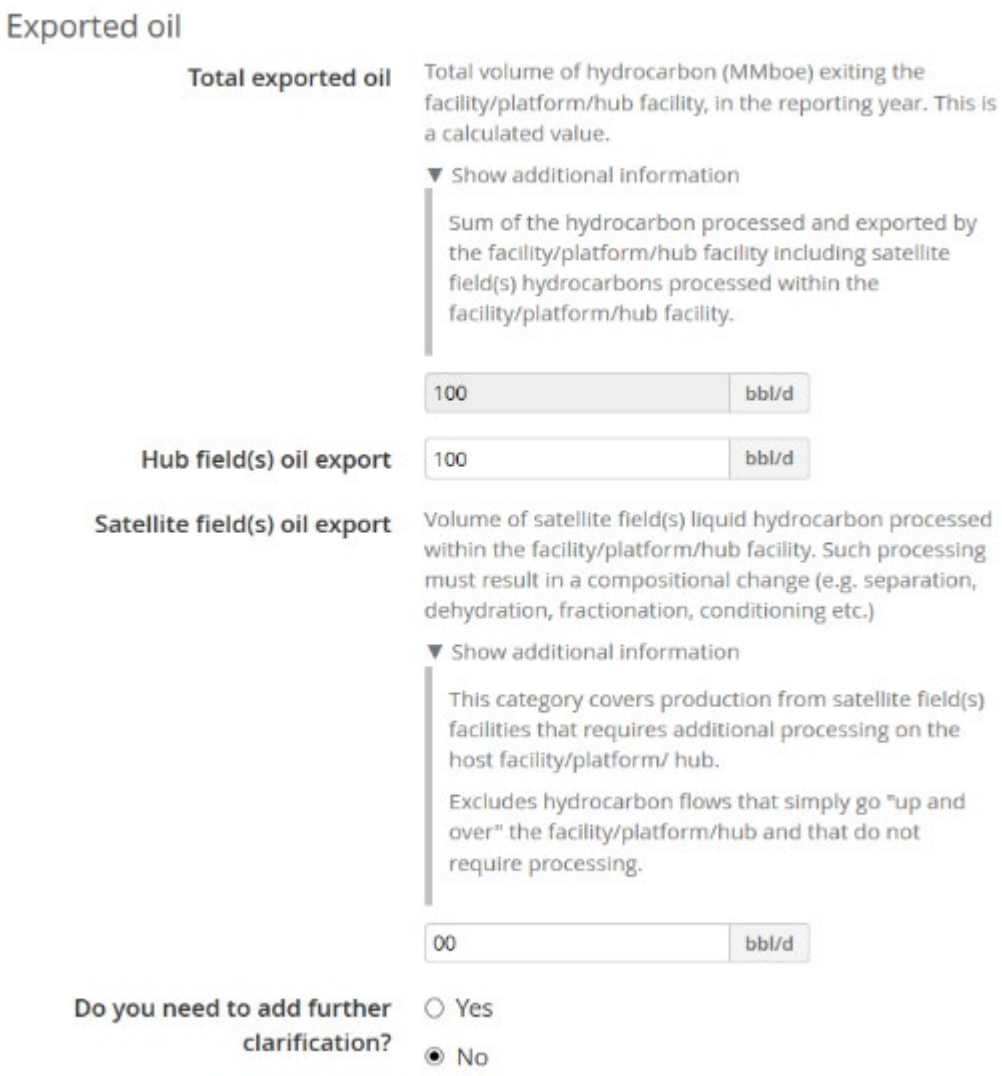
Oil	0.0366	mmboe
Gas	37.21	mmboe
Water	0.0732	mmbw
Total HC	37.2466	mmboe

Production 1

North Sea Transition Authority

Exported Oil

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



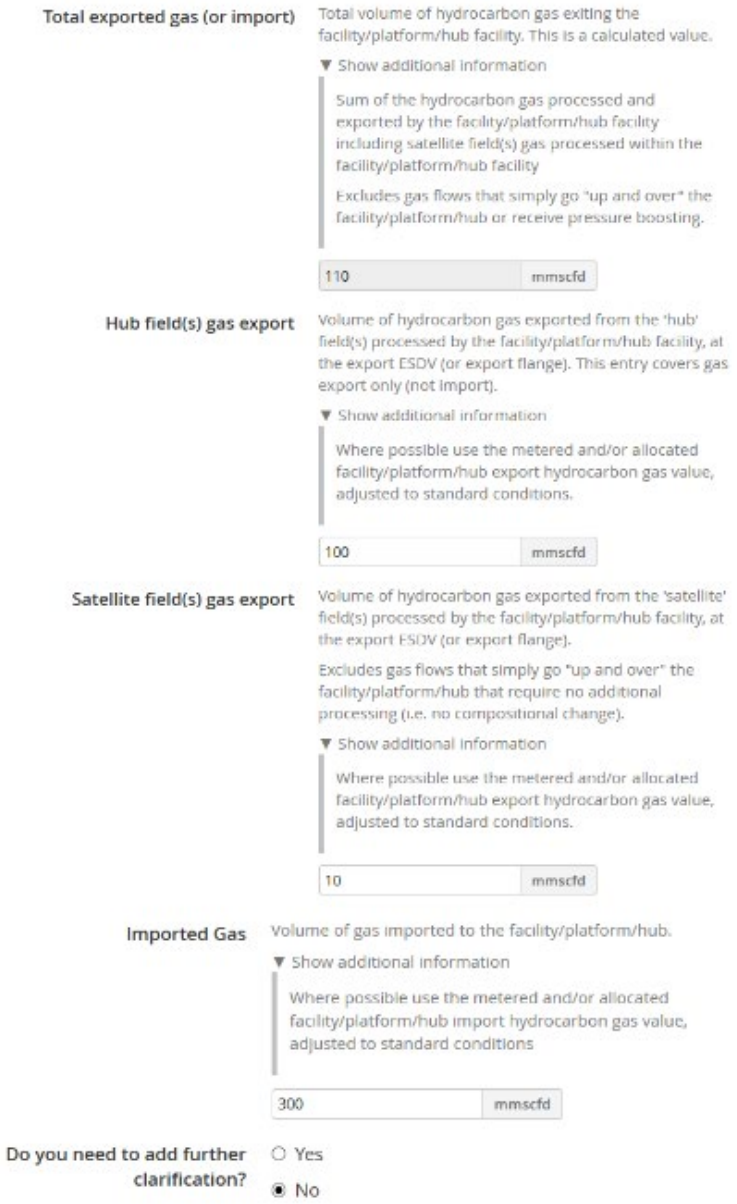
Production 2

North Sea Transition Authority

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@nstauthority.co.uk



Production 3

North Sea Transition Authority

Injected Gas

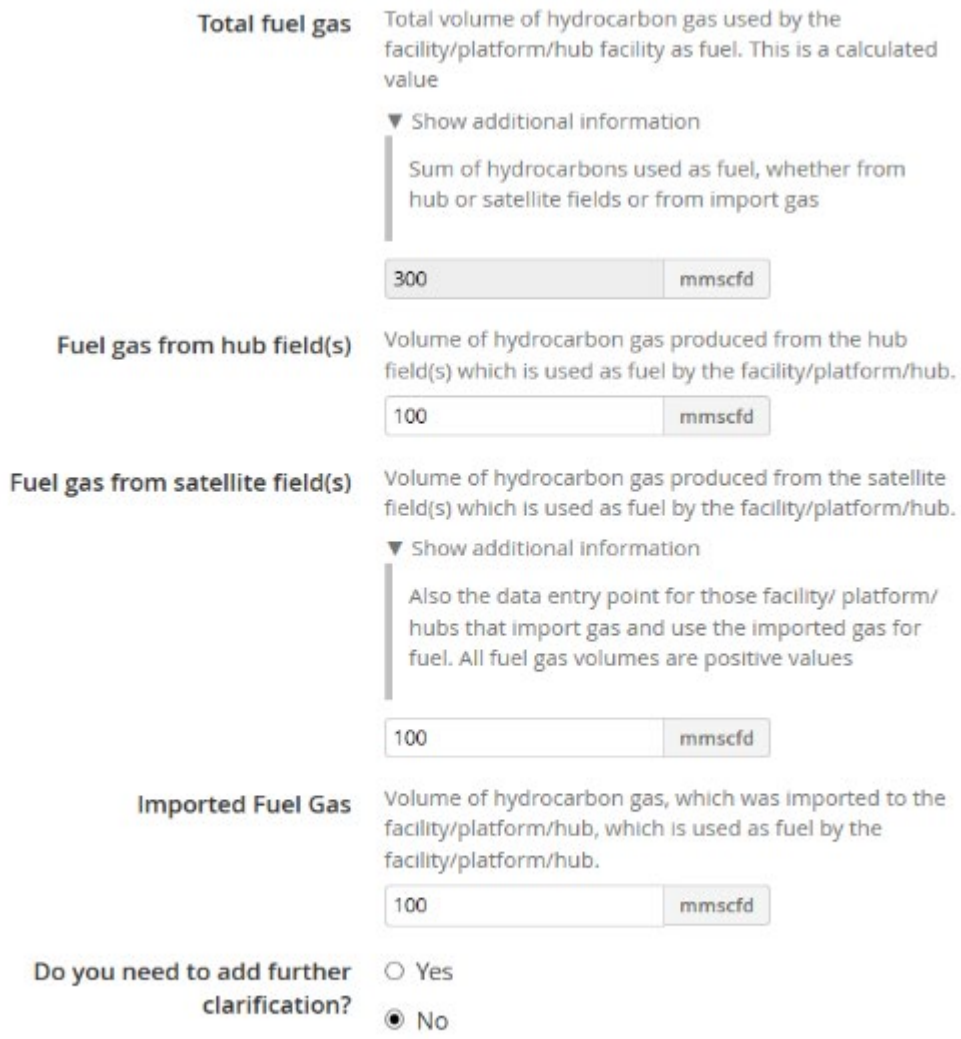
Input data must only contain up to 3 decimal places

Production 4

North Sea Transition Authority

Fuel Gas

Input data must only contain up to 3 decimal places



Production 5

North Sea Transition Authority

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.

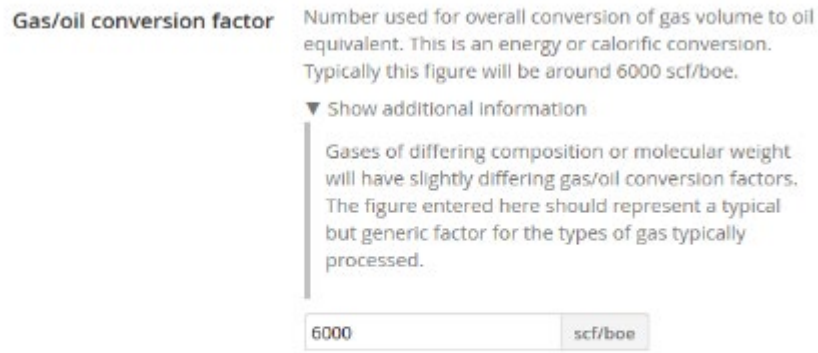
If you do not know this please add in the further clarification box.

Production 6

North Sea Transition Authority

Conversion factor

Input data must only contain up to 4 decimal places

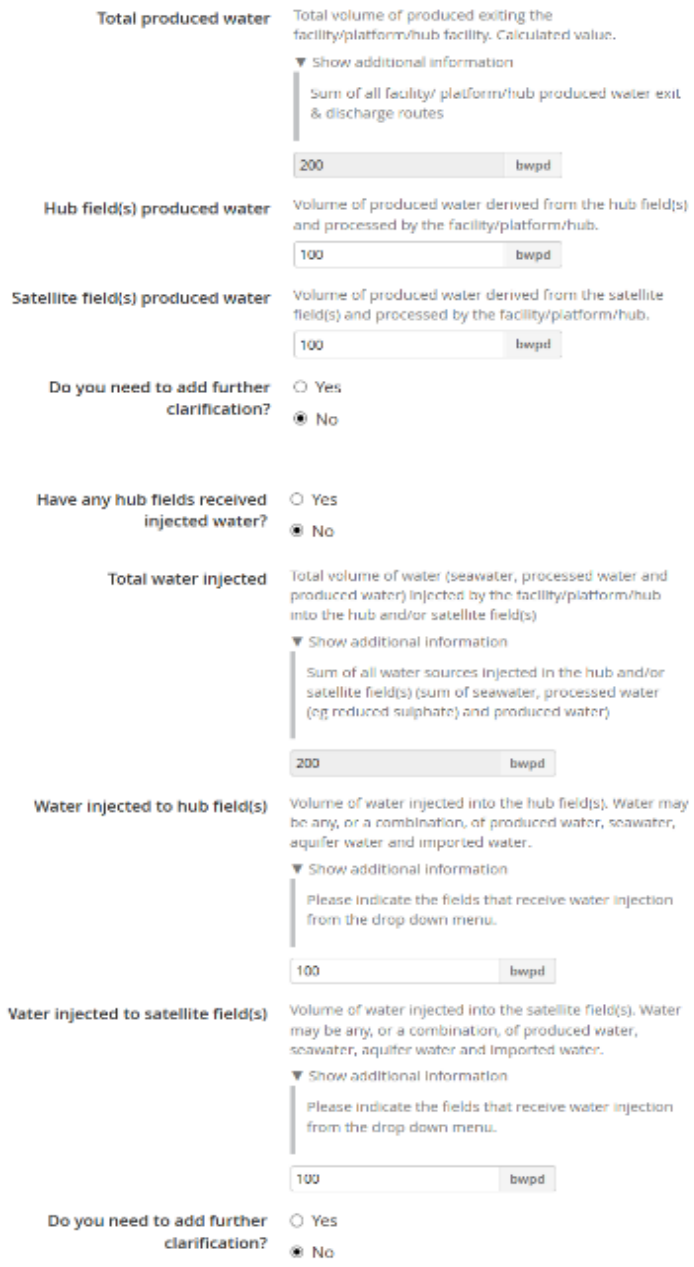


Production 7

North Sea Transition Authority

Produced Water and Injected Water

Input data must only contain up to 4 decimal places



Potential 1

North Sea Transition Authority

The Choke Model

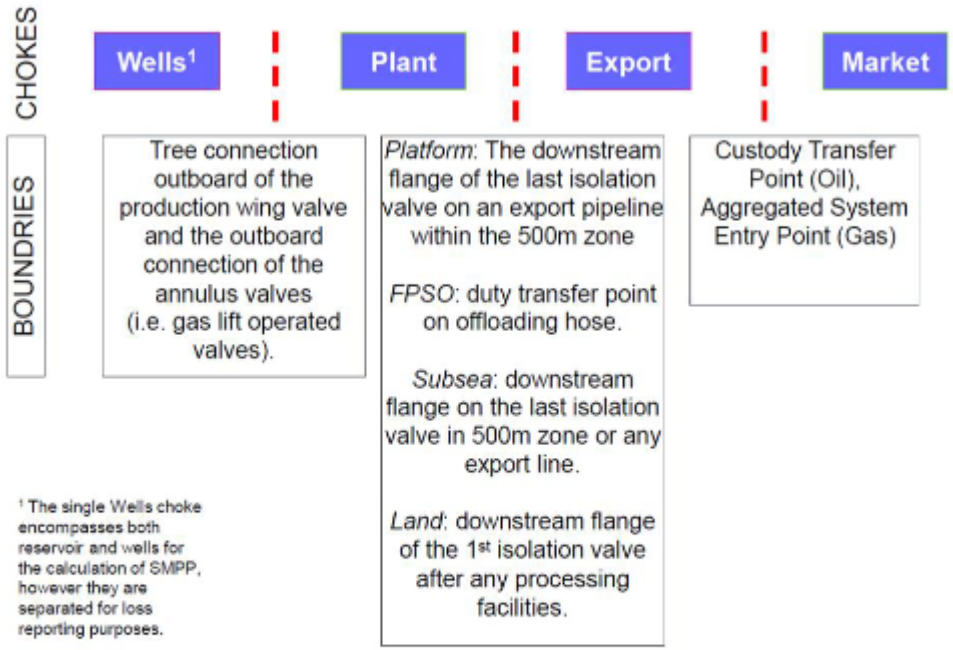
Calculated fields

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)

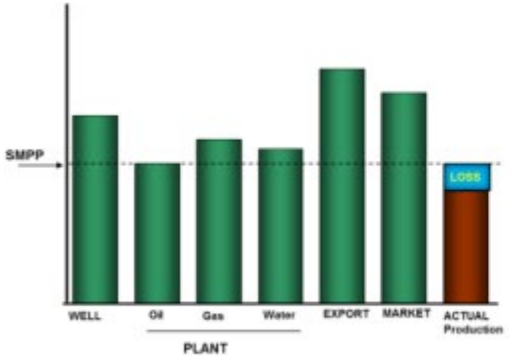
Potential 2

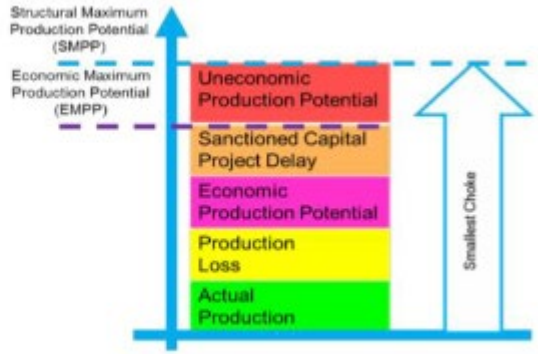
North Sea Transition Authority

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

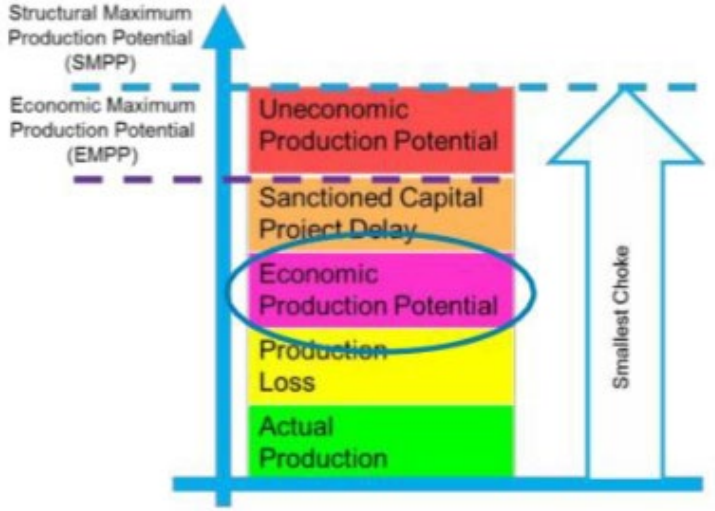




Contributor to SMPP Economic Production Potential (EPP)

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)



Potential 3

North Sea Transition Authority

Further Information

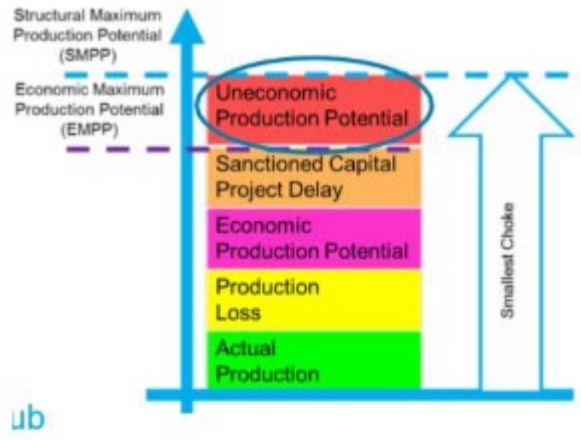
Contributor to SMPP Uneconomic Production Potential (UPP)Production potential which is not economically achievable for the Operator, in the reporting year. UPP is part of SMPP.

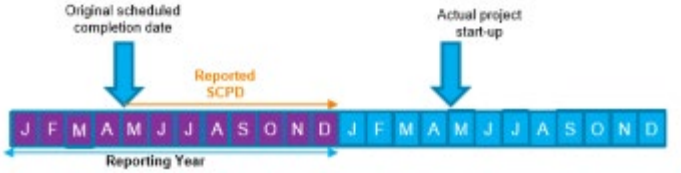
- This category can include Capital Project production potential that has met the Operators technical approval requirements but that has been put on hold (not meeting the Operators economic approval criteria)
- •UPP can be Field or Facility specific. Hence both the field Operator and the facility/platform/hub 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





Potential 4

North Sea Transition Authority

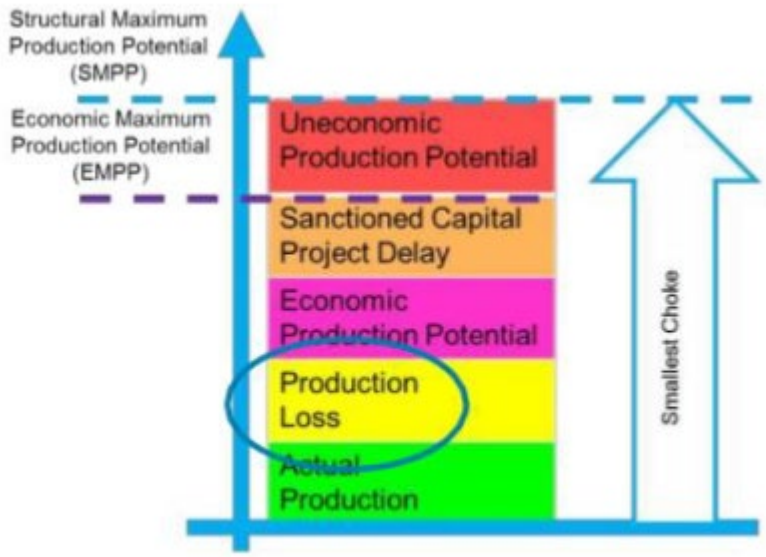
Further Information

Contributor to SMPP Production Loss

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

Production Losses = SMPP - Uneconomic Production Potential - Capital Project Delays - Economic Production Potential - 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

North Sea Transition Authority

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

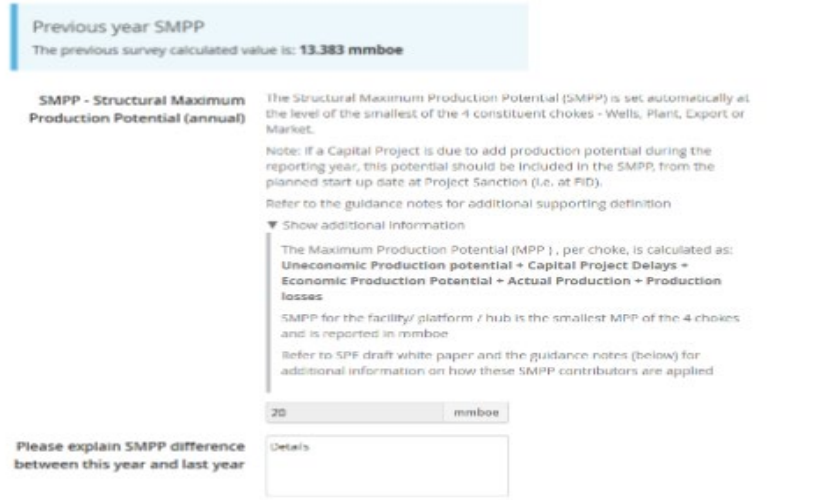
SMPP for the facility/ platform / hub is the smallest MPP of the 4 chokes and is reported in mmboe

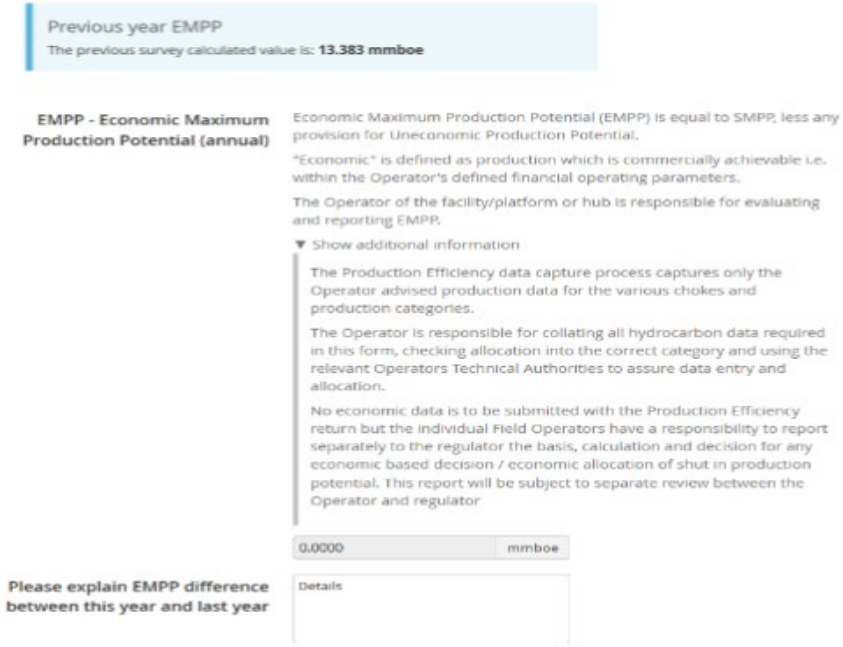
Refer to SPE draft white paper and the guidance notes (below) for additional information on how these SMPP contributors are applied.

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.





Potential 6
Production choke

North Sea Transition Authority

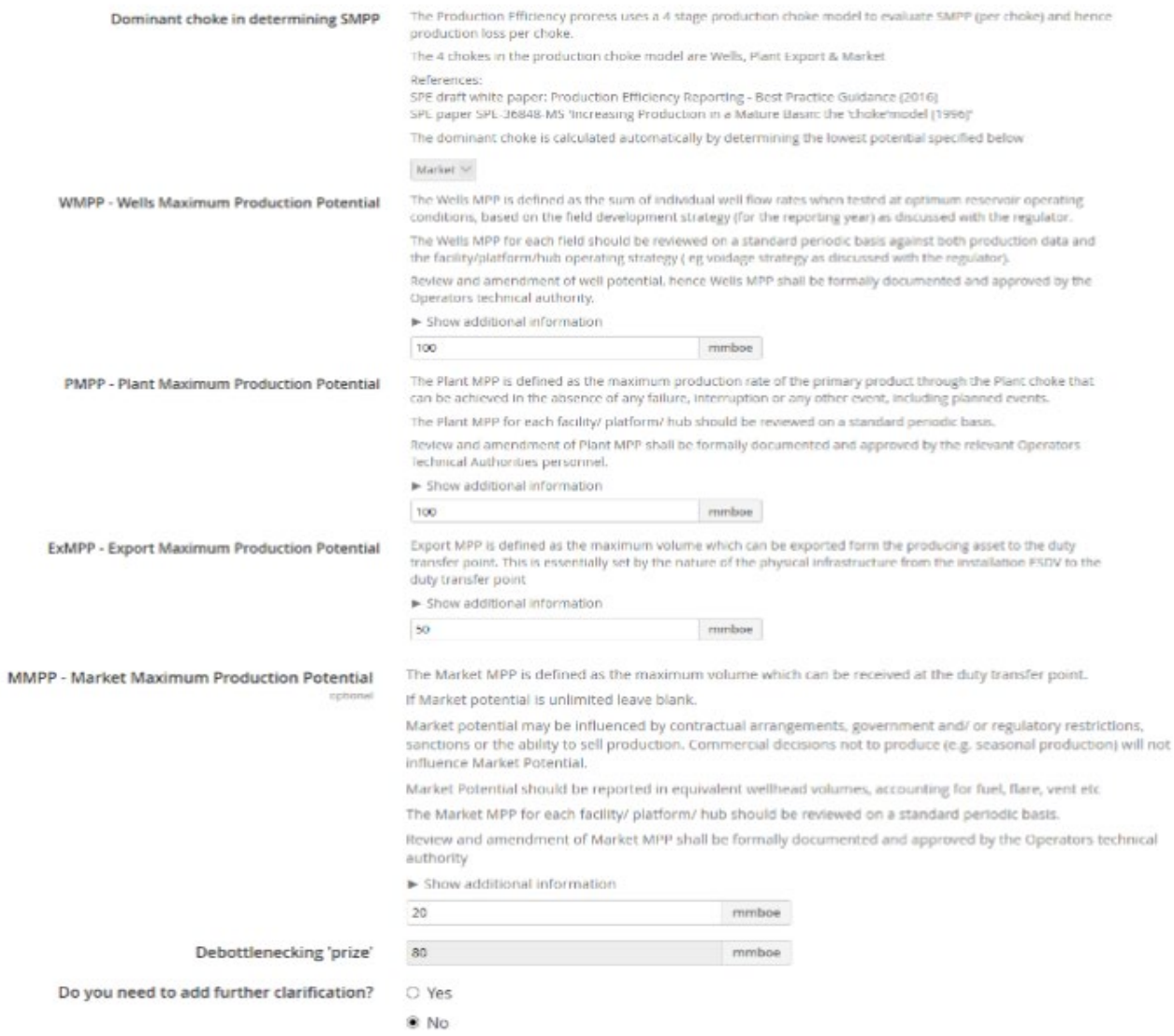
Note the Dominant choke is calculated automatically by determining the lower potential specified below
By design, no two potentials should be exactly the same. If they are you must provide an explanation

WMPPThe 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



Potential 7
Production choke

North Sea Transition Authority

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.

Potential

North Sea Transition Authority

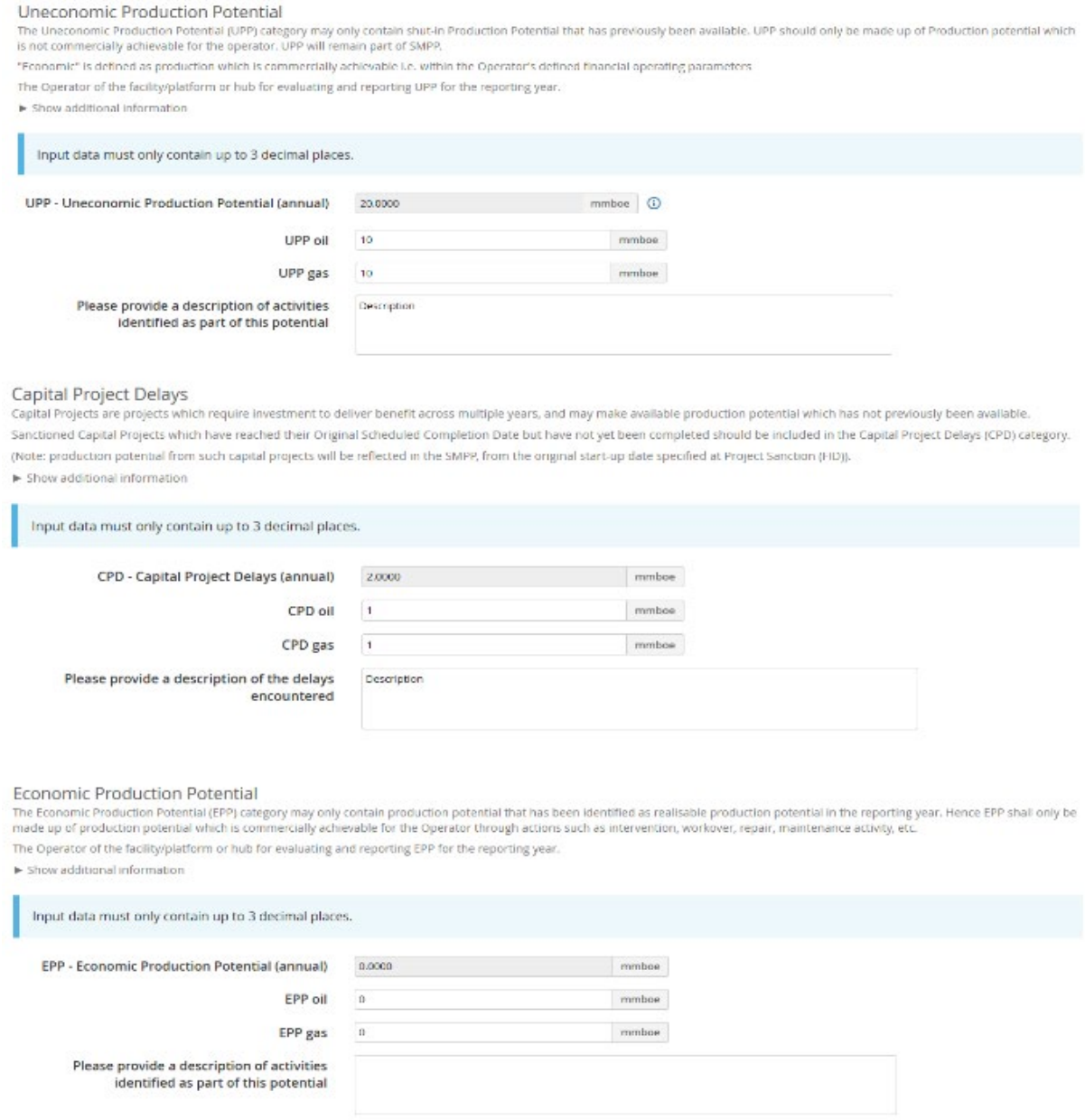
UPP, CPD and EPP

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



Potential 8

North Sea Transition Authority

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.

Losses 1

North Sea Transition Authority

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

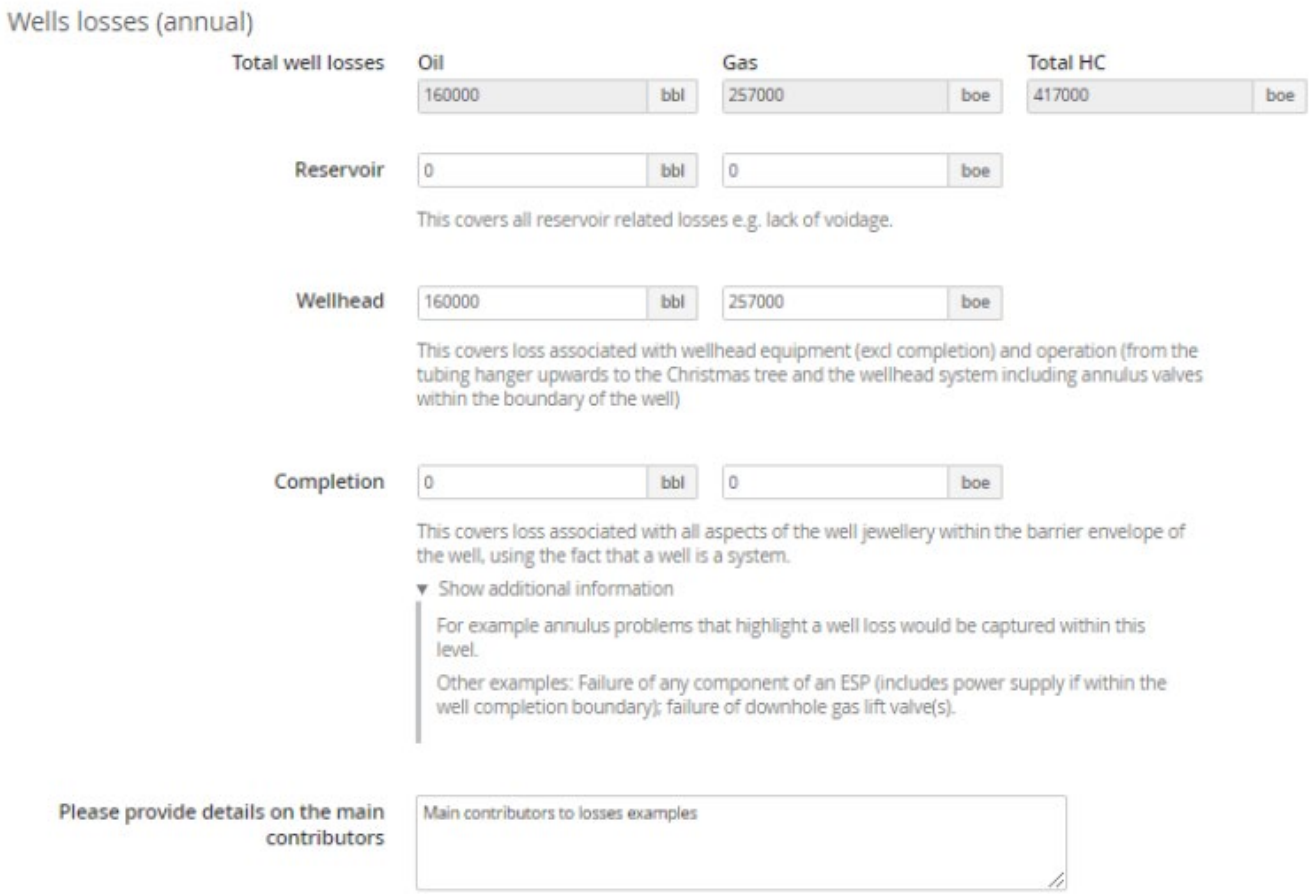
Total HC Loss is not within 2% of the Calculated Production Losses (CPL) value

Losses 2

North Sea Transition Authority

Well losses

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



Losses 3

North Sea Transition Authority

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.

Losses 4

North Sea Transition Authority

Export losses (annual)

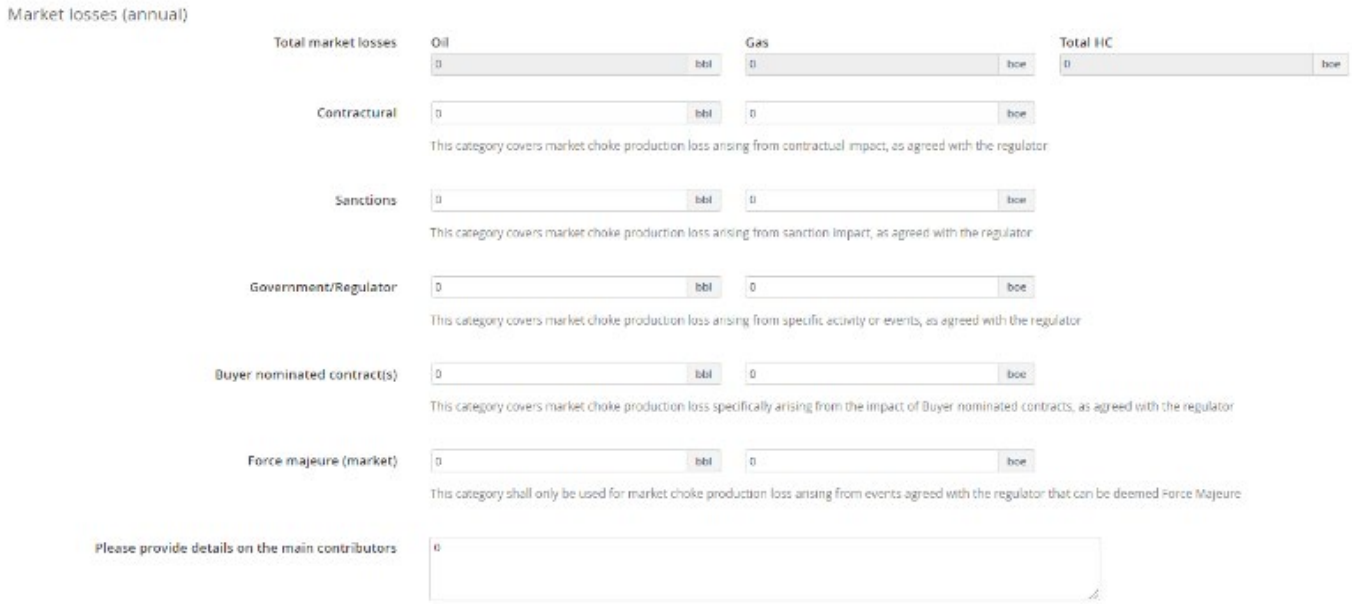
If there are export losses, please provide details about the main contributors in the text box

Losses 5

North Sea Transition Authority

Market losses (annual)

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

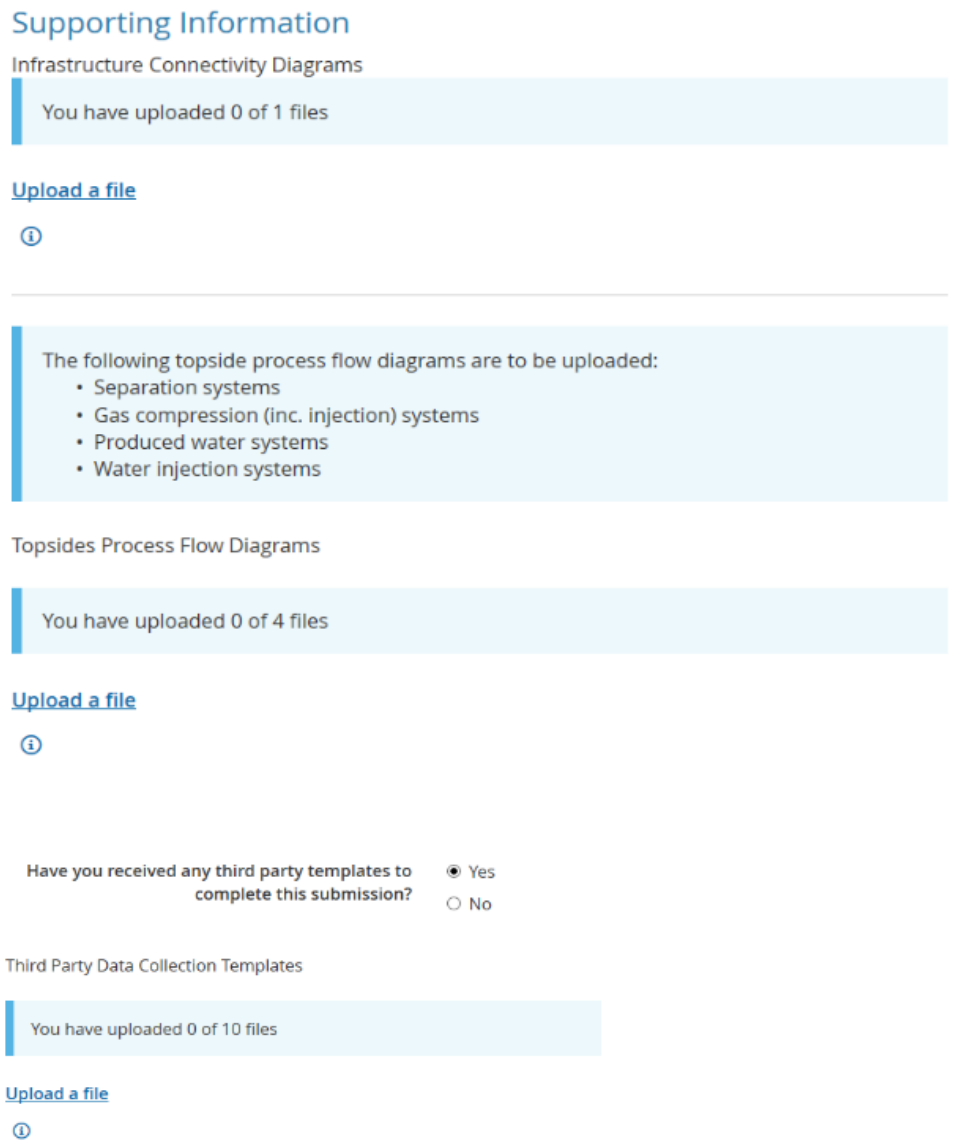


Supporting information

North Sea Transition Authority

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)



General Comments

North Sea Transition Authority

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.

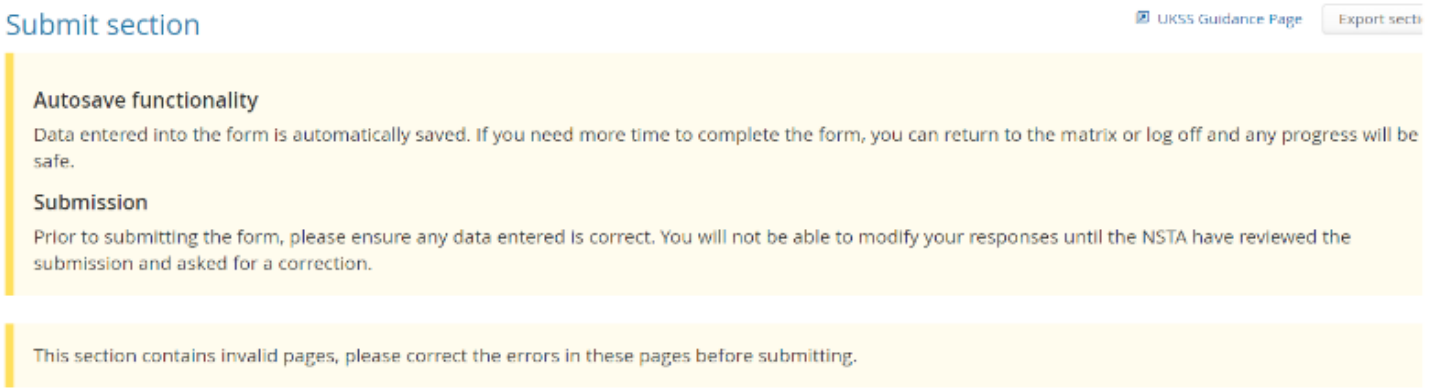
Submit Section

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.



Checklist

Below are the 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