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@ogauthority.co.uk

The UKSS 2020 survey will open on Friday 30th October 2020 and will close on Friday 26th February 2021. As in previous years the Activity section will close on Friday 15th January 2021.
UKSS 2020 Changes

The following changes are being implemented in the Production Efficiency section of the survey.

1. When a hub has satellite fields, a validation will flag if you have not provided data for satellite field production/sales.

2. When on the Potential page, a clarification comment is now mandatory if data is entered into EPP, CPD and UPP.

3. A validation will flag if you have injection loss data but have not entered a voidage replacement strategy.

4. When on the Potential page, if you have entered data for 2 or more potentials that are within 5% of each other then you will be asked to clarify why these are so close.

5. There will now be a new validation linking TAR days and TAR losses with a clarification required if they do not align. E.g. ‘You have entered 180 TAR days, which you would expect to equate to TAR losses in the region of 50% EMPP. Your TAR losses are 30%, please explain’

6. A new question in the Production page asking for the volume (mmscfd) of ‘cold flare’ (hydrocarbon gas emissions that should normally be combusted at the flare tip’. A clarification comment will be required if you cannot provide this value.

7. We have removed the breakdown category ‘Full Plant’ within the Losses page, Plant Losses (annual).

8. All sections have enhanced guidance and explanatory notes.
## Section Guidance

### Guidance

#### Terminology

**REGULATOR - Oil & Gas Authority (OGA)**
The OGA 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:
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.

**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.

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@ogauthority.co.uk

<table>
<thead>
<tr>
<th>Name</th>
<th>Field operator</th>
<th>Field classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field 1</td>
<td>Operator 1</td>
<td>HUB</td>
</tr>
<tr>
<td>Field 2</td>
<td>Operator 2</td>
<td>HUB</td>
</tr>
<tr>
<td>Field 3</td>
<td>Operator 1</td>
<td>HUB</td>
</tr>
<tr>
<td>Field 4</td>
<td>Operator 3</td>
<td>SATELLITE</td>
</tr>
<tr>
<td>Field 5</td>
<td>Operator 1</td>
<td>HUB</td>
</tr>
<tr>
<td>Field 6</td>
<td>Operator 1</td>
<td>HUB</td>
</tr>
<tr>
<td>Field 7</td>
<td>Operator 3</td>
<td>HUB</td>
</tr>
<tr>
<td>Field 8</td>
<td>Operator 2</td>
<td>HUB</td>
</tr>
<tr>
<td>Field 9</td>
<td>Operator 4</td>
<td>HUB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duty holder</th>
<th>Is the duty holder different from your organisation?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes [ ] No [ ]</td>
</tr>
</tbody>
</table>

Duty holder organisation [ ]
Development and Exports

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
**Additional Production Information**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned annual shutdown (TAR) duration at start of 2020</td>
<td>182 days</td>
</tr>
<tr>
<td>Is actual shutdown duration different to planned?</td>
<td>☑ No</td>
</tr>
<tr>
<td>Actual annual shutdown (TAR) duration for 2020</td>
<td>182 days</td>
</tr>
<tr>
<td>Deferred annual shutdown (TAR) duration for 2020</td>
<td>12 days</td>
</tr>
<tr>
<td>Planned annual shutdown (TAR) duration for 2021</td>
<td>12 days</td>
</tr>
<tr>
<td>Unplanned (non-TAR) shutdown duration for 2020</td>
<td>1 days</td>
</tr>
<tr>
<td>Number of HSE improvement notices</td>
<td>0</td>
</tr>
</tbody>
</table>

There is now a validation looking at the relationship between TAR days and TAR losses.
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 totals for year
Total volume of hydrocarbons (MMboe) exiting the facility/platform/hub facility in the reporting year. This is a calculated value.

<table>
<thead>
<tr>
<th>Component</th>
<th>Volume</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>0.096</td>
<td>mmboe</td>
</tr>
<tr>
<td>Gas</td>
<td>37.21</td>
<td>mmboe</td>
</tr>
<tr>
<td>Water</td>
<td>0.0792</td>
<td>mmboe</td>
</tr>
<tr>
<td>Total HC</td>
<td>37.396</td>
<td>mmboe</td>
</tr>
</tbody>
</table>
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.

Hub field(s) export
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.

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.)

Do you need to add further clarification?
- Yes
- No

Exported Oil

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

If you have Satellite fields, you will be asked to provide data for satellite field oil production, or a comment to explain why there is no production.

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@ogauthority.co.uk
**Exported/Imported gas**

Input data must only contain up to 3 decimal places.

If you have Satellite fields, you will be asked to provide data for satellite field oil production, or a comment to explain why there is no production.

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@ogauthority.co.uk
Production

Injected Gas

Input data must only contain up to 3 decimal places.

If you have Satellite fields, you will be asked to provide data for satellite field oil production, or a comment to explain why there is no production.

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@ogauthority.co.uk
**Production**

**Fuel Gas**

Input data must only contain up to 3 decimal places.

If you have Satellite fields, you will be asked to provide data for satellite field oil production, or a comment to explain why there is no production.

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@ogauthority.co.uk

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total fuel gas</td>
<td></td>
</tr>
<tr>
<td>Fuel gas from hub field(s)</td>
<td></td>
</tr>
<tr>
<td>Fuel gas from satellite field(s)</td>
<td></td>
</tr>
<tr>
<td>Imported Fuel Gas</td>
<td></td>
</tr>
</tbody>
</table>

**Do you need to add further clarification?**

- Yes
- No
**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.

### Cold Flare

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 but were released unignited e.g. as a result of flare going out.

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

Input data must only contain up to 4 decimal places.
Produced water and Injected water

Input data must only contain up to 4 decimal places.

If you have Satellite fields, you will be asked to provide data for satellite field oil production, or a comment to explain why there is no production.

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@ogauthority.co.uk
The Choke Model

Potential

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)
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 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.
Potential

Further information

**Contributor to SMPP Production Loss**

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

Production Loss is calculated as:

\[
\text{Production Loss} = \text{SMPP} - \text{Uneconomic Production Potential} - \text{Capital Project Delays} - \text{Economic Production Potential} - \text{Actual Production}
\]

- 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.
The Maximum Production Potential (MPP), per choke, is calculated as:

\[ \text{MPP} = \text{Uneconomic Production potential} + \text{Capital Project Delays} + \text{Economic Production Potential} + \text{Actual Production} + \text{Production losses} \]

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 MPP contributors are applied.

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.
The 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.

The plant potential 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.

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).

The Market MPP is defined as the maximum volume which can be received at the duty transfer point.

For most facilities, the above definitions mean that WMPP, PMPP, ExMPP and MMPP are different. If they are very similar for your facility please provide supporting comments and confirm that each have been assessed separately.

Note the Dominant choke is calculated automatically by determining the lower potential specified below.
UPP, CPD and EPP

Potential

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 regulator's Enhanced Stewardship process.

- Where you report UPP please provide a high level description of that production potential in the supporting comments box

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 regulator's Enhanced Stewardship process.

- Where you report CPD, please provide a high level description of the project, delay and whether project is now onstream

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’s defined financial operating parameters.

- Where you report EPP please provide a high level description of that production potential in the supporting comments box
Production efficiency and losses and Injection

Depending on the Voidage replacement / pressure maintenance strategy 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 and Injection

Depending on the Voidage replacement / pressure maintenance strategy 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.

If very high or very low injection efficiency is reported, please provide some comments in the Further Clarification field that provide some context (e.g. if reporting injection efficiency >100%).
Supporting information

Please upload:

- 1 Infrastructure connectivity diagram
- 4 Topsides process flow diagrams
  - Separation systems
  - Gas compression (inc. injection) systems
  - Produced water systems
  - Water injection systems
- 1 Third part data collection template if necessary. (LINK)
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 OGA have reviewed the submission and asked for a correction.

The link ‘UKSS Guidance Page’ will take you to the OGA 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.

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.
**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 vs PPRS
- Sense check of third-party volumes
- What determines the choke and does it make sense (ie v previous years or field team knowledge)
- General field team intelligence v input overall (ie 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%
- Potentials have each been assessed independently – validation check will require comments where reported potentials are similar

**Q&A Examples [LINK]**

**Well MPP**
- Definition is sum of the well tests, but this might not always be the case. The modelled potential of a well could be used, but in the end the Operators subsurface or wells TA should determine the potential. Hence it is for the Operator to justify the potential value at the asset stewardship review with OGA.

**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**
- De-man due to extreme weather loss example – Loss categorised as Plant Losses – Structural if de-man is as a result of structural concerns relating to the facility, or Plant Losses – Utility if as a result of inability to maintain systems required to support personnel on the facility
- Production stopped due to regulatory action – HSE/OPRED action – Loss categorised as Plant Loss under the defective system, other regulatory action can be categorised under Market – Government/regulator.
- Well awaiting intervention, (in asset work activity plan to do) (Loss categorised as Well choke loss, EPP loss)
- Well expected online in May, comes online 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).