



Minimum viable content - Daily production report



The Norwegian Oil and Gas Association is an employer and industry association for oil companies and supplier firms engaged in the activities on the Norwegian Continental Shelf. The Norwegian Oil and Gas Association is affiliated with the Confederation of Norwegian Business and Industry, NHO.

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1 Introduction

The following document describes the minimum dataset that is recommended to exchange daily as part of a daily production reporting process between an operator and associated asset partners.

This document is accompanied by a sample viewable daily production HTML report and an associated sample xml file.

2 Definitions

Nomenclature	Description
DPR	Daily production report
Export	A product or a set of products leaving the installation for commercialized purposes
Import	A product or a set of products entering the installation for commercialized purposes

3 Scope and objective

3.1 Scope and deliverables for work

The scope for the minimum viable content work defined the following deliverables, that are described in this document and associated sample report and dataset.

- A best practice document describing the recommended minimum viable content daily production report
- A high-level tabular overview, describing the best practice minimum viable content daily production report
- A sample minimum viable content daily production report xml file
- A sample minimum viable content daily production viewable report
- A description of expected usage scenarios for the viewable report and the minimum viable content xml file

3.2 Business value for work and example usage

The outcome from this workgroup will bring value with respect to having a standardized minimum daily production report dataset that can assist in defining requirements for e.g.

- Benchmarking between assets, ensuring that one asset performance can be compared to another based on the assumption that both will have at least the minimum data set represented
- Requirements specification for green developments or revitalization of the reporting regime of a brown asset.
- Communication tool, assist in communication internally with respect to what is possible and what is not
- The minimum viable content dataset can act as a minimum data model to be used e.g. in a common larger database setup.
- Ensure a minimum common dataset internally to be used e.g. in a large common asset data-ware house or database.
- Ensure as an operator that all partners get access to the same minimum daily production dataset
- Ensure as an operator that internal aggregated internal reporting requirements are using the same measurements and nomenclature to drive benchmarking
- Deliver a standardized report layout that can be used in other situations externally or internally where the dataset is delivered using the DPR 2.0 xml standard.
- Ensure that when used between assets, there is a high recognition effect with respect to the viewable report.

4 General rules and assumptions

4.1 Stability and usage of the daily production reporting dataset

The daily production dataset should be considered as being a temporary indication of how things are going, and the data reported will most likely change in the future due to reallocations. Changes in the daily production dataset will in most cases not be reported as resubmittal of the daily production report but it will rather be part of the monthly production reporting process. Possible changes back in time for the given production month and the daily production report might be reflected as part of using the month to date volume numbers.

4.2 Target audience for daily production report dataset

The daily production report is the tool to exchange daily production information data from the operator of a given asset to its associated partners in the same asset. The typical audience for this daily production report is business resources that have an internal association with the given asset that is reported on.

4.3 Dataset context

When defining the minimum viable dataset for a daily production report the considered reporting context is defined as being an offshore producing or processing asset such as a platform or a tie-in host (e.g. a subsea template). Terminals and other onshore facilities have been considered as being out of scope for this work with the exception for cases where the wellbore product stream is directly connected to an onshore facility (e.g. Nyhamna) and where e.g. fuel and flaring is reporting at the onshore facility.

4.4 Data section classification and categories

Each section of data in a daily production report that is currently covered as part of the xml standard has been classified into the following categories;

1. **Required:** the information element is important and must be required as minimum viable content given that the measurement is available, hence if an asset do not have injection wells or gas lifted wells they cannot report on them.
2. **Recommended,** the information is important but not available for all fields/platforms. It should be added if it is available
3. **Optional,** the information is not important in a minimum viable production report and it should be optional for the companies to add the information
4. **Not to be included,** the information cannot be provided, or it does not belong as part of a daily production dataset.

4.5 Naming conventions for facilities

Naming of facilities is assumed to follow the NPD fact pages when possible. The NPD fact pages contains naming information relating to;

- Wellbore
- Platform
- Terminal
- Field
- Business area agreement
- Company
- License
- Movable facility, e.g. a drilling rig or vessel
- Fixed facility over and below water e.g. a well template, a harbour
- Transport and utilization facility e.g. a pipe system used for transport

Identification of the facility should then follow the naming conventions and utilise the unique id as defined for it on the fact pages. Naming in the xml dataset is done using the name element, where the element itself is the carrier for the name, the uid attribute is equal to the NPD fact pages id and the namingsystem attribute should then be set to NPD.

4.6 Data precision and rounding

The viewable report generation assumes that the dataset that is used to generate the report is already rounded to the wanted precision, hence it is up to the data generation tool to round number that should be published as part of the daily production report. The following sections outlines some best practice guidelines with respect to rounding of numbers in a daily production report dataset.

- Well/Wellbore parameters are specified using 1 decimal (e.g. WHP, WHT, BHP, BHT, choke, Allocated products, hours producing or injecting)
- Component content in a product stream such as e.g. CO₂ content are specified using 2 decimals
- Density are specified using 3 decimals
- Wobbe index, GoR and GCV measurements are specified using one decimal
- Topside volume measurement such as e.g. produced oil and gas, or fuel/flare usage are rounded to zero decimals
- Welltest well parameters such as e.g. choke size, WHP are specified using one decimal

- Welltest product flow rate results are rounded to zero decimals.

-null value

4.7 Assumptions for reporting entities

It is assumed that when reporting on daily production data reporting is done only on entities that are active as part of the current production regime (e.g. temporary closed wellbores would be part of this regimes as they are expected to be active soon and can be closed e.g. due to a pressure build-up test regime).

For welltest data it is expected that the last valid test is reported on given that it has an impact on the allocation calculations.

It is not expected that you would report on e.g. wellbores that are plugged and abandoned but might have installed pressure monitoring equipment as these are not considered as being part of the active production regime.

4.8 Assumption for dataset reporting qualifiers


It is assumed that most of the values within the transported dataset are allocated based on some type calculation, hence measured values are expected to be relating to water handling or well/wellbore daily status parameters such as e.g. wellhead pressure.

- Topside produced volumes that are reported for the products oil, gas and condensate are expected to be allocated
- Topside produced water volumes are expected to be either allocated or most likely measured
- Injected or exported volumes are expected to be either allocated or measured
- Consumption is assumed to be either allocated or measured
- Well or wellbore produced volumes are expected to be allocated, given that there is a daily allocation routine, otherwise the dataset is recommended to be accompanied by the latest valid welltest information.
- Well or wellbore injected, or gas lift volumes are expected to be allocated or measured.

4.9 Assumptions for reporting time and date

The base assumption for the daily production dataset is that data is reported in the Norwegian time zone and not GMT. This implies that when using timestamp information (e.g. timing of an operational comment entry) the correct time zone offset from Zulu or GMT time is highly recommended to be specified otherwise the data might be interpreted as belonging to the default time zone in which the reading application resides. Notice also that time zone offset will change due to daylight time savings.

Time zone offset from Zulu/GMT



```

<kind>gas day</kind>
<dTimStart>2017-06-01T06:00:00+01:00</dTimStart>
<dTimEnd>2017-06-02T06:00:00+01:00</dTimEnd>
<volumeValue>

```

Figure 1 Example of reporting a timed event with timezone information

4.10 Assumptions for dataset reporting period

When reporting a daily production dataset, it is assumed that assets report either on a production day spanning from 00:00 to 24:00 or as a gas day spanning from 06:00 to 06:00. If reporting is done on an asset that is operating on a gas day time schedule, the reporting period should be "gas day" and not day. In addition, for such an asset the reporting period should be specified using the DTimStart and DTimEnd elements where it is possible to specify time information in addition to the actual date (see example below).

```
<flow uid="ASG_GAS_EXPORT_06_06_FROM_ASGB">
  <name>Gas Export 06-06 Total from ASGB</name>
  <kind>export</kind>
  <qualifier>measured</qualifier>
  <product>
    <kind>gas</kind>
    <period>
      <kind>gas day</kind>
      <dTimStart>2017-06-01T06:00:00+01:00</dTimStart>
      <dTimEnd>2017-06-02T06:00:00+01:00</dTimEnd>
    </period>
    <volumeValue>
      <volume uom="m3">1100</volume>
      <temp uom="degC">15</temp>
      <pres uom="atm">1</pres>
    </volumeValue>
    <mass uom="kg">2300</mass>
    <densityValue>
      <wobbelIndex uom="MJ/m3">33.1</wobbelIndex>
    </densityValue>
  </product>
</flow>
```

Figure 2 Example reporting on a gas day

It is recommended to include month to date and year to date aggregations for volumes that are reported.

4.11 Structuring of the xml dataset

The DPR data exchange standard allows for flexibility when structuring the dataset for exchange but it is recommended that data contained within a given DPR xml file is structured using the following rules

- The object productvolume element is used to gather information related to one facility in case of e.g. a tie-in situation where you report on several tie-in assets in the same DPR xml file (see example below). For example, if you have the field Åsgard with 3 different tie-ins, wells and facility data relating to Åsgard would be gathered under one object productvolume element and the other tie-ins would be separate object productvolume elements.
- Wells and wellbore should be sorted alphabetically or using the block codes, e.g. a well template with four wells should all come after each other.
- Injection and production wells should not be intermixed

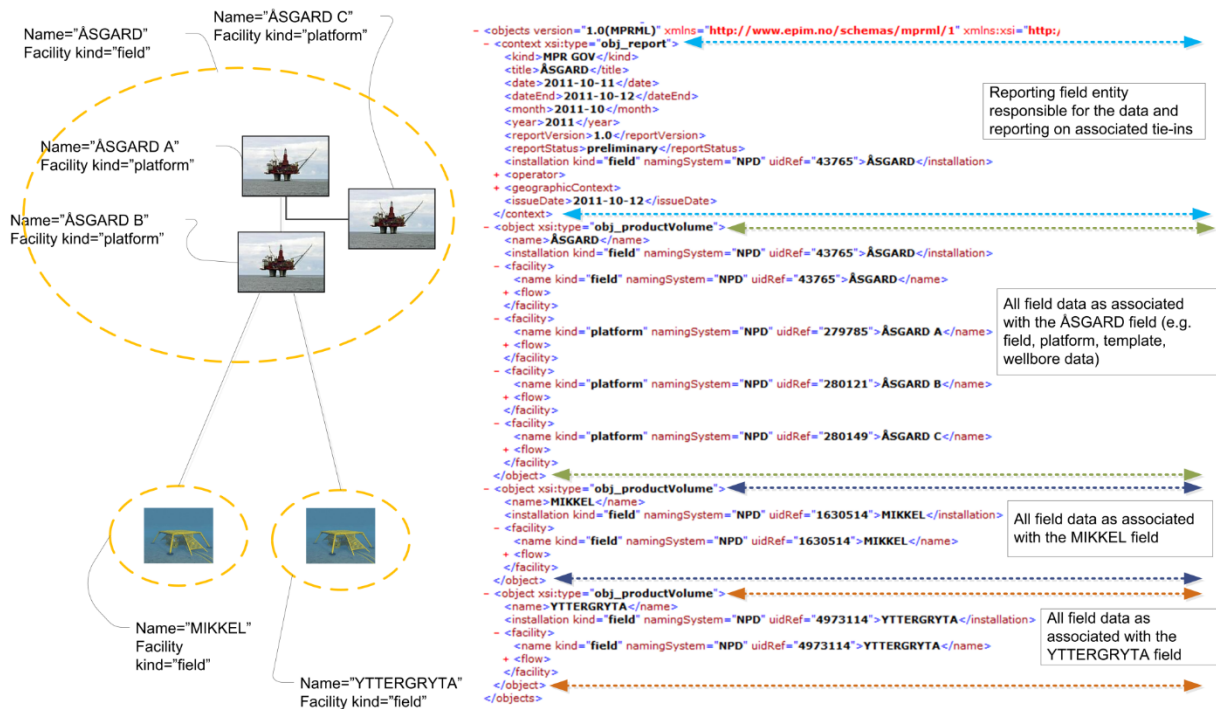


Figure 3 Structuring of a tie-in asset

Note that structuring of the xml datafile is especially essential in cases where you do not have enough identification information to tell where a given equipment measurement belongs to, e.g. should compressor A be under field A or field B.

4.12 Measurement units

The base assumption is made that all measurements reported tries to follow SI units or derived SI units.

- It is expected that volume measurements are reported in SI units using cubic meters, where standard conditions are at 15 degrees celsius and 1 atmosphere and normal conditions are measured at the conditions 0 degrees celsius and 0 atmosphere.
- Temperatures are expected to be reported in Celsius
- Pressures such as e.g. WHP, BHP and so on are in most instances expected to be reported in barg or bar.
- Operation time is expected to be reported in hours
- Choke is expected to be reported in either relative % or e.g. number of rotations such as e.g. 1/64th inch
- Rates are expected to be daily rates

4.13 Flow/Product stream assumptions

Flows with associated products are expected to have a unique identifier and an associated name that will be used as the name for a given entry in the viewable report.

5 Data elements

The table below illustrates the different data elements that has been agreed upon as being part of a recommended daily production data set. The table below should be seen in conjunction with the sample viewable report that illustrates the same sections using colour highlighting.

Data section	Required	Recommended	Optional	Not to be included	Recommended precision	Comments
Personell on board	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Acknowledged as important but submitted in other reports (does not belong in DPR)
Lost production	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Acknowledged as important but submitted in other reports (does not belong in DPR)
Shutdown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Does not belong in a production report
Alarms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Does not belong in a production report
Marine operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Does not belong in a production report
Cargo ship operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Not important
Operational comments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		All operational comments classified as beeing of the type "production"
Accidents and injuries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Acknowledged as important but submitted in other reports (does not belong in DPR)
Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Does not belong in a production report
Production	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Allocated production is required, measured gross production is optional
Injection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Allocated injection is required
Gas lift	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Allocated gas lift is required
Export	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Recommended for the fields that have export
Import	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Recommended for the fields that have import
Inventory	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Consume - fuel and flare	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Allocated or measured fuel and flare is required
Consume other	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Measured diesel, venting is optional, HP and LP flaring
Consume chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Well/Wellbore parameters	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Minimum requirement is well/wellbore name and uptime
Well/Wellbore production	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Minimum requirement is well/wellbore name and uptime
Well/Wellbore injection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Minimum requirement is well/wellbore name and uptime
Well/Wellbore gas lift	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Minimum requirement is well/wellbore name and uptime
Well test information	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		To be included if not running daily well allocation. To include the latest valid welltest for well/wellbores that are still have a producer or injector role
Water information	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		If water is produced it is recommended to include the total water produced
Water cleaning quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		



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6 Change log

Version	Date	Changed by	Sections affected	Approved by	Change description
1.0	01.10.18	Magnus Svensson			First version



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