

# Guidelines for production licence applications



NORWEGIAN PETROLEUM  
DIRECTORATE

## **APA 2018**

Awards in Predefined Areas

## GENERAL APPLICATION INFORMATION

### Submission of application

One copy of the application shall be sent to the Ministry of Petroleum and Energy (MPE) in any electronic format. One copy shall be delivered to the Norwegian Petroleum Directorate (NPD) in electronic format on a USB flash drive. The application letter must also be submitted in paper format (one copy) to the Norwegian Petroleum Directorate. The deadline for submission is 12:00 noon on Tuesday, 4 September 2018.

### Overview of submissions to the MPE and the NPD

|     | Paper format       | Memory stick                    | Optional electronic format      |
|-----|--------------------|---------------------------------|---------------------------------|
| NPD | Application letter | Application letter              | -----                           |
|     |                    | Application(s) with attachments |                                 |
|     |                    | Company information             |                                 |
| MPE | -----              | -----                           | Application letter              |
|     |                    |                                 | Application(s) with attachments |
|     |                    |                                 | Company information             |

The total size of the application must not exceed 400 MB.

### Application format

The application to NPD must be delivered in an electronic format on memory stick. There should be one memory stick per application. A label with the company name must be securely affixed to the memory stick. The memory stick must be labelled in a manner which clearly shows which application it relates to.

The tables requested for the applications can be found in the Excel workbooks:

1. ApplicationData
  - a. Table 1: Application Summary
  - b. Table 2: Resource Potential
  - c. Table 3: Work program and duration
2. Discovery and Prospect data
  - a. Table 4: Discovery and Prospect data
3. CompanyInformation
  - a. Table 5: Application list from company
  - b. Table 6: Size and experience
  - c. Table 7: Financial status

The forms must be delivered together in the above-mentioned Excel workbooks. Legal intervals have been defined for values that must be filled in for parts of the information requested. An error message will show if filled in incorrectly. The accepted interval is specified in the headings of each column. The Excel workbooks are electronically uploaded to the NPD's database for APA rounds. Formatting of the Excel forms beyond entering new rows at the bottom is therefore not permitted. Files delivered in an incorrect format will be returned to the companies. The forms are only available in English, but can be completed in both Norwegian and English where a selection does not have to be made from a drop-down list.

Shape files for the applied for area must be named AppliedArea\_ "applicationname\_company" and contain a polygon showing the area applied for. The shape file must also contain information on company name, information regarding whether or not the application is stratigraphically split, and whether this is an application for additional acreage. The format in which we want this information delivered is described in example file AppliedArea.

Shape files for discoveries/prospects/leads must be named

Prospect\_Lead\_ "applicationname\_company" and must contain at least one polygon (Psans/Mean) for each reported discovery, prospect or lead, i.e., "Table 4: Discovery and Prospect data". The names of these prospects/leads must be spelled the same in all tables/files.

Note: All discoveries/prospects/leads discussed in an application must be delivered in the same shape file. The format in which we want this information delivered is described in example file Prospect\_Lead.

The following must be delivered for each application:

- One memory stick per application. Memory stick must be labelled with the company name.
- Electronic appendices:
  1. The application
  2. Application summary
  3. ApplicationData
  4. Discovery and Prospect data
  5. Map of area applied for
  6. Shapefile with the area applied for
  7. Shapefile with discoveries, prospects and leads
- Files on memory stick must be structured and named as indicated below:

| Name of file   | Format | Description   |
|--|--------|---|
| Application_ "block number"  | .pdf   | Electronic copy of application  |
| Application summary_ "block number"  | .pdf   | Electronic copy of application summary  |
| "block number"_ApplicationData   | .xlsx  | Completed Excel workbook "ApplicationData"<br>One Excel workbook per application  |
| "block number"_ "discovery, prospect and lead name"_ Discovery and Prospect data | .xlsx  | Completed Excel workbook "Discovery_and_Prospect_data"<br>One Excel-workbook per discovery, prospect and/or lead  |
| "block number"_ "company name"   | .jpg   | Map of area applied for with prospects, max. 200 kb   |
| AppliedArea_ "applicationname_company"   | .shp   | Shapefile with outline of area applied for. Name must contain max. 40 characters  |
| Prospect_Lead_ "applicationname_company"   | .shp   | Shapefile with outline for discovery, prospect and lead, attributes in the shapefile must describe resource class. Name must contain max. 40 characters |

Maximum limits have been indicated for the number of pages for the various parts of the application. If total number of pages exceeds the number of pages under each item, without a clear explanation of why this is considered necessary, it will have a negative impact on the application

evaluation. Use a font size corresponding to Times New Roman 12 and single/standard spacing. Maps and illustrations should not be larger than A4. All information in figures and maps must be legible. All maps must contain coordinates, as well as a scale.

The Excel-workbooks to be used in the applications can be found on the NPD's website together with these guidelines at:

<http://www.npd.no/apa2018>

The Excel form formats must not be changed. Exemptions are adding new rows in Tables 1, 2, 3 and 4.

All sizes (depth, area, volume, etc.) must be provided in metric units.

### **Application for additional acreage**

Companies can apply for additional acreage where discoveries or mapped prospects extend continuously from the applicant's production licence into the area announced in APA 2018. The following criteria must be fulfilled in order to be awarded additional acreage:

1. All licensees in the existing production licence/unit are applicants.
2. The distribution of ownership interests will be identical to the existing production licence.

If the application comprises additional acreage for a new prospect mapped in an existing licence, a work programme must be proposed for the additional acreage which comprises exploration/drilling.

### **Application for stratigraphic area**

In an application for stratigraphic area, the applied for interval must be indicated in the application summary.

## **APPLICATION CONTENT**

### **1. APPLICATION SUMMARY**

The application summary must appear first in the application. The application summary should be approximately three pages and must contain:

- A. Overview of applicants and the area applied for, indicating the block number in completed form "Table 1: Application Summary"  
(Table 1 must also be in the Excel workbook "ApplicationData" on memory stick)
- B. Area description with completed form "Table 2: Resource Potential"  
(Table 2 must also be in the Excel workbook "ApplicationData" on memory stick)
- C. Map with geographical coordinates, block number and scale which shows the applied for area with an outline of the discoveries, prospects and leads that are specified in the form "Table 2: Resource Potential", and presented in the application.  
(The map must also be included as a separate .jpg file and the area outline as a .shp file on memory stick)
- D. Completed form "Table 3: Work programme and duration"  
(Table 3 must also be in the Excel workbook "ApplicationData" on a memory stick).



### A. Application summary:

Provide a brief description of applicants and applied for area. For applications for **additional acreage**, provide a brief description for why the application is relevant for the production licence. The form "Table 1: Application summary" is to be completed with the necessary data. An example of a filled out form is shown below.

**Table 1: Application Summary**

| Application for Production License in blocks: | Region    | If application for additional acreage <sup>1</sup> , PL no.: | Participants (Correct name of company from list) | O P O/P <sup>2</sup> | Participation share [%] <sup>3</sup> (0.00001 - 100) |       |       | Application delivered by: <sup>4</sup> | Fee paid by: <sup>4</sup> |
|---|-----------|--|--|----------------------|--|-------|-------|--|---------------------------|
|   |           |  |  |                      | Preferred  | Lower | Upper |  |                           |
| 16/7  | North Sea |  | Selskap A  | O                    | 60   | 50    | 70    | x                                      | x                         |
|   |           |  | Vårt selskap AS                                  | P                    | 40   | 30    | 40    |  |                           |

<sup>1</sup> Additional acreage: where discoveries or mapped prospects extend into announced acreage from an existing production licence with the same licensee(s) and ownership interests, indicate licence number/unit.

<sup>2</sup> O= operator, P= partner, O/P= no particular preference regarding operator or partner status.

<sup>3</sup> The size of the ownership interests primarily preferred, as well as an upper and lower limit which the applicant can accept, in an interval between 0.00001 and 100%. The ownership interests must be in accordance with the interests listed in the application letter from each company. An upper and lower limit are **not** indicated for **additional acreage**.

<sup>4</sup> Place an X by the company actually delivering the application, individually or on behalf of the group. Place an X by the company that paid the application fee, individually or on the behalf of the group.

### B. Resource potential

A brief summary of the resource potential in the applied for area must be given and outlined on a map showing the discoveries, prospects and leads described in the application, and that are listed on the form "Table 2: Resource Potential". Use different colours to show different stratigraphic levels. Key data for the discoveries, prospects and leads described in the application must be listed on the form "Table 2: Resource Potential". An example is shown below:

**Table 2: Resource Potential**

| Discovery/<br>Prospect/ Lead<br>name <sup>1</sup> | D/<br>P/<br>L <sup>2</sup> | Case<br>(Oil/<br>Gas/<br>Oil&Gas)<br><sup>3</sup> | Unrisked recoverable resources <sup>4</sup>       |                |               |   |                |               | Probability of<br>discovery <sup>5</sup><br>(0.00 - 1.00) | Resources in<br>acreage applied<br>for [%] <sup>6</sup><br>(0.0 - 100.0) | Reservoir  |                                       | Nearest relevant<br>infrastructure <sup>8</sup> |            |
|---|----------------------------|---|---|----------------|---------------|---|----------------|---------------|---|--|--|---------------------------------------|---|------------|
|   |                            |   | Oil [10 <sup>6</sup> Sm <sup>3</sup> ]<br>(>0.00) |                |               | Gas [10 <sup>6</sup> Sm <sup>3</sup> ]<br>(>0.00) |                |               |   |  | Litho-/ Chrono-<br>stratigraphic level<br><sup>7</sup> | Reservoir<br>depth<br>[m MSL]<br>(>0) | Name  | Km<br>(>0) |
|   |                            |   | Low<br>(P90)                                      | Base<br>(Mean) | High<br>(P10) | Low<br>(P90)                                      | Base<br>(Mean) | High<br>(P10) |   |  |  |                                       |   |            |
| 16/7 Karlsvogna                                   | P                          | Oil   | 6,80  | 11,70          | 15,90         | 0,80  | 1,80           | 2,20          | 0,22  | 100  | Skagerrak Fm/<br>Upper Triassic                        | 3640                                  | Sleipner Øst                                    | 20         |
|   |                            | Gas   | 0,10  | 0,70           | 1,80          | 4,00  | 13,40          | 24,20         | 0,13  | 100  | Skagerrak Fm/<br>Upper Triassic                        | 3640                                  | Sleipner Øst                                    | 20         |
| 16/7Storebjørn                                    | L                          | Oil   | 1,71  | 2,78           | 6,98          | 0,94  | 2,61           | 4,56          | 0,17  | 100  | Sleipner Fm/<br>Middle Jurassic                        | 3500                                  | Sleipner Øst                                    | 20         |
| 16/7 Lillevogna                                   | L                          |   |   |                |               |   |                |               |   | 85   | Sleipner Fm/<br>Middle Jurassic                        | 3400                                  |   |            |

<sup>1</sup> The name of the prospect or lead is informal and can be chosen freely. Ensure the name is used consistently throughout the application documentation. For discoveries, the correct name should be collected from the NPD FactPages.

<sup>2</sup> D =discovery, P =prospect, L = lead

<sup>3,4</sup> For different alternatives for the same prospect (case), the prospect must be listed with the associated discovery probability for each phase. The calculation method is explained in Ch. 2.3 of the application. The low and high values are P90 and P10, respectively. Any deviations from this must be clarified.

<sup>5</sup> The discovery probability must be stated between 0.00-1.00. Calculation of discovery probability is explained in Ch. 2.3 of the application.

<sup>6</sup> Percentage of the prospect located in applied for area.

<sup>7</sup> Nomenclature approved by the Norwegian Stratigraphic Committee should be used where available, see <http://www.npd.no/en/Topics/Geology/Lithostratigraphy/>

<sup>8</sup> The nearest relevant facility with petroleum processing plants.

### C. Maps

The applied for area and outline of the discoveries, prospects and leads mapped are shown in a map containing geographic coordinates, block number and scale. The applied for stratigraphic interval must be indicated for applications for stratigraphic production licences.

### D. Work programme and duration

The applicant's proposed work programme and duration of the production must be listed in the form "Table 3: Work programme and duration", shown below. Examples of/suggested work programmes, and decisions that will be used, are provided below the form. Other activities can also be entered. A more detailed description of the work programme should be provided in Chapter 3 of the application. An example of a completed form is shown below:

**Table 3: Work programme and duration**

| Period             | Phase<br>(>0) | Duration<br>[year]<br>(>0.0) | Work program                          | Decision at milestone          |
|--------------------|---------------|------------------------------|---------------------------------------|--------------------------------|
| Initial<br>period: | 1             | 1                            | Reprocess 3D seismic, Acquire EM-data | 3D seismic acquisition or Drop |
|                    | 2             | 2                            | Acquire 3D seismic                    | Drill or Drop                  |
|                    | 3             | 2                            | Drill exploration well                | Concretize (BoK) or Drop       |
|                    | 4             | 2                            | Conceptual studies                    | Continuation (BoV) or Drop     |
|                    | 5             | 1                            | Prepare development plan              | Submit PDO or Drop             |
|                    | Sum           | 8                            | Extension period [years] (>0.0):      | 20                             |

G&G studies  
 Procure 2D seismic  
 Reprocess 2D seismic  
 Acquire new 2D seismic  
 Procure 3D seismic  
 Reprocess 3D seismic  
 Acquire new 3D seismic  
 Procure and reprocess 3D seismic  
 Compile 3D seismic  
 CSEM feasibility study  
 Procure EM data  
 Drill (one) firm exploration well  
 Drill exploration well  
 Concept studies  
 Prepare development plan  
 As for PL XXX

Procurement of 2D/3D seismic or drop  
 Acquisition of new 2D/3D seismic or drop  
 Drill exploration well or drop  
 Concretisation (BoK) or drop  
 Continuation (BoV) or drop  
 Submission of PDO or drop

## 2. GEOLOGICAL AND TECHNOLOGICAL ASSESSMENT

### 2.1 Database and data utilisation

Seismic, wells and other data types such as EM data, used in the evaluation of the area/resource potential. How data has been utilised will be emphasised, as well as to what extent new and own interpretations and analyses were performed by the applicant.

Information must be provided on consultant reports, purchased studies and other information that is not publicly available that has been used in the application.

Ch.2.1 should not exceed 5 pages including maps and tables.

#### Seismic database

Seismic used in the evaluation is listed with the survey name and type of seismic, and is shown clearly in a database map of the applied for area. Data quality and measures to improve data can also be mentioned here.

#### Well database

Well data that has been used in the evaluation is listed by name and shown clearly in a database map of the applied for area. Key wells are marked and commented/discussed.

#### Studies

Provide information on internal or purchased relevant technical studies with clear references, e.g. reprocessing/geophysical special studies, geochemistry studies, basin modelling, etc.

### 2.2 Petroleum geological overview

The application should choose one exploration concept with associated prospect(s)/lead(s) that are given primary focus in the descriptions, while alternative exploration concepts are described more generally. The analysis should focus on the factors that are considered critical for mapped prospectivity in the area and for evaluation of those. If previously documented studies have been used in the assessment, these must be referenced along with a short summary.

The documentation under Item 2.2 should not exceed 5 pages of text in addition to about 20 figures. In mature areas/areas near existing fields in particular, documentation should be limited. If the main focus in the application is an existing discovery, chapter 2.2 can be kept to a minimum.

#### Seismic mapping

Describe which horizons are interpreted, "well tie" and the depth conversion method.

The following figures must be included as a minimum:

- Synthetic seismogram which documents "well tie"
- Seismic line which shows calibration of seismic interpretation vis-à-vis well(s)

#### Regional Geology

Briefly describe the primary stratigraphic, sedimentological and structural characteristics of the area.

The following figures must be included as a minimum:

|                                |   |
|--------------------------------|---|
|                                | <ul style="list-style-type: none"> <li>- Chronographic and lithostratigraphic column showing levels for identified prospectivity</li> <li>- Paleogeographical map which illustrates the extent of the main reservoir for mapped prospectivity</li> <li>- Map showing structural framework in the area</li> </ul>  |
| Basin development              | <p>Describe source rocks, maturity and migration of hydrocarbons. The following figures must be included as a minimum:</p> <ul style="list-style-type: none"> <li>- Basin map showing migration routes towards evaluated prospectivity</li> </ul>   |
| Plays                          | <p>Describe the play that represents the application's primary prospectivity. Briefly present other relevant plays in the applied for area, if applicable.</p> <p>The following figures must be included as a minimum:</p> <ul style="list-style-type: none"> <li>- Map showing the scope of the primary play in the area</li> </ul>  |
| <b>2.3 Resource evaluation</b> | <p>Mapping and evaluation of discoveries, prospects and leads in the area applied for.</p> <p>The primary prospect in the application (defined as the prospect with the greatest risk-weighted resource potential) is described in detail, while secondary prospectivity/leads are described in less detail. In areas where several prospects/leads are mapped within the same play/exploration concept and area, an overall description of mapping, resource calculation and uncertainty analysis is provided.</p> <p>If the primary focus in the application is an existing discovery or a field that is shut down, the content of the evaluation must be adapted, with greater emphasis on production properties and development plans and less emphasis on topics related to undiscovered resources.</p> <p>The documentation under Item 2.3 <u>should not exceed 10 pages of text, in addition to about 10 figures</u>, including:</p> <ul style="list-style-type: none"> <li>• a maximum of 5 pages for the defined discovery/primary prospect/group of prospects, in addition to relevant figures/maps, and:</li> <li>• maximum one page of text in addition to figures for each prospect in potential secondary exploration concepts.</li> </ul> <p>The form "Table 4: Discovery and Prospect data" must be filled in with data/parameters used in the evaluation of the mapped discovery/primary prospect/group of prospects. For leads, the table is filled in with as much data as possible.</p> |
| Mapping                        | <p>For the discovery, primary prospect or group of prospects within the primary exploration concept, provide a description of how the discovery/prospect/prospects are mapped, the type of trap and seal, expected reservoir properties, expected hydrocarbon type and fill percentage.</p>   |



The evaluation must, in particular, explain factors considered critical to the prospect or critical for recovery from the discovery.

The following documentation must be included for the discovery/primary prospect/group of prospects:

- One overview map with coordinates and outline of the discovery/prospect, as well as position of seismic lines and geological profiles
- Two seismic and geological profiles in intersecting directions
- Time map and depth map in equal scale for reservoir horizon(s)
- Seismic attribute map/time slices, if applicable

Other figures can be included to the extent they are relevant for the description of discoveries, prospects and leads. For discoveries/shutdown fields, we expect well correlations and interpreted well logs, reservoir zonation as well as illustrations from static reservoir models.

A shorter description is provided for mapped prospects/leads within potential secondary exploration concepts.

#### Resource calculation

For the discoveries, mapped prospects and potential leads, describe the method for calculating the following:

- rock volume with uncertainty range
- resources in place with uncertainty range
- recoverable resources with uncertainty range

The description shall include the method for uncertainty calculation, and explanation for the chosen reservoir and fluid parameters, as well as recovery rate.

A resource estimate with spread must be listed in the form "Table 4: Discovery and Prospect data" for all discoveries, prospects and leads. For leads, Table 4 must be completed with as many details as possible.

For discoveries/shutdown fields, the calculation of recoverable resources should cover multiple development concepts and recovery methods, and should be illustrated with tornado diagrams for uncertainty range. Upsides and downsides should be described.

If only parts of the mapped discovery, prospect or lead are located in the applied for area, the form "Table 2: Resource Potential" must clearly indicate the percentage this constitutes, as well as the total resource estimate.

|   |   |
|---|---|
| Discovery probability                                     | Discovery probabilities and associated sub-probabilities listed for prospects in the form "Table 4: Discovery and Prospect data" are addressed and explained with regard to the critical factors for the prospect. See also definitions enclosed with the form "Table 4: Discovery and Prospect data".  |
| Technical reservoir conditions                            | <p>For prospects, there must be a brief description of the expected production schedule with the planned production strategy, and the most important reservoir uncertainties and challenges that can be expected. Indicate which IOR measures could be relevant in the short and long term. A simple production profile is included.</p> <p>A more detailed description must be provided if an existing discovery/shutdown field is the primary focus in the application. Reservoir data (SCAL, PVT, etc.) that is of significance for selecting the recovery method must be presented. Dynamic reservoir models should be described and production profiles for various cases should be included. Explain how uncertainties such as reservoir communication, aquifer support and pressure development can affect the production profile and how the challenges can be managed.</p>   |
| <b>2.4 Technological assumptions and development plan</b> | <p>For the mapped discovery/primary prospect or group of prospects, there must be a description of what is assumed to provide the most optimal and feasible development solution for the area. Relevant alternative solutions can also be discussed. The description must comply with the IOR measures discussed in Item 2.3.</p> <p>The gas solution should be discussed, and future processing/transport capacity with possible connection to existing infrastructure is discussed if the applicant has access to such information.</p> <p>The description is limited to <u>about three pages including illustrations for prospects</u>. A more detailed description must be provided for discoveries/shut down fields: Relevant development alternatives must be presented and compared. Drainage strategies, wells, facilities, tie-in, power and transport solutions should be included in the description. Profitability calculations with assumptions should be presented for the various concepts. Brief discussions should be provided for challenges/risks and plans for potential commercial negotiations. Particular attention should be devoted to new solutions/new technology.</p> |
| <b>3. Work programme</b>                                  | <p>Information about the work programme for the applied for area, provided in the form "Table 3: Work programme and duration" in the application summary, must be discussed and explained. The entire work programme for the initial period must be described, with primary emphasis on the initial phase. Reference</p>  |

is made to examples and formulations in the form "Table 3: Work programme and duration".

Discuss briefly:

- the time frame for the various phases of exploration and/or development plans for a discovery
- estimated timeframe in relation to the phasing in to existing infrastructure
- possible need for clarification/coordination in relation to adjacent production licences
- proposed duration of the production licence (extension period)

The initial phase can be no longer than 10 years. The duration of the extension period is set at the expected production length, maximum is generally 30 years.

If the application includes leads, describe how they will be matured into drillable prospects.

The possibility of cooperating with other production licences in the area on joint geophysical acquisition should be discussed.

If significant parts of a mapped discovery, prospect or lead in the applied for area extend into an already existing production licence, the impact this will have for the plans must be discussed.

The description should be limited to about two pages of text. If the focus in the application is development of an existing discovery/shutdown field, a detailed schedule is expected for studies, decisions and area clarifications leading up to a PDO.

With an application for **additional acreage**, include a brief description of performed, ongoing and planned work in the existing production licence, and how the additional acreage will be included in the work ahead.

If the existing production licence does not have remaining work commitments which include a decision to drill the applied for prospect, a work programme must be suggested for the additional acreage.

#### **4. Environmental conditions**

Comment on any special environmental provisions associated with the applied for area, and how these will be safeguarded during the exploration phase and during development and production.

#### **5. References**

References to reports, studies, publications used in the evaluation work.