NorthSTAR User Manual

Application for Permit to Drill
Addendum: Wellbore

This function of NorthSTAR is not yet live.

As such the information in the attached user manual is subject to change while the function is being built.

The User Manual will no longer hold this disclaimer, or the DRAFT watermark once finalized.

Questions contact oilandgasinfo@nd.gov
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Building/Modifying the Wellbore

Part 1: Features and Cement

This section is used to provide details in four consecutive segments: “Wellbore Information”, “Wellbore Construction Feature”, “Cement Segment”, and “Cement Class”.

TIP: You must complete each section for each wellbore in order. (e.g. For Wellbore 1, complete the wellbore information, wellbore construction feature, cement segment, and cement class; then move to wellbore 2)

Click “Save” at the bottom of each picker grid once all strings for all wellbores have been added.
Wellbore Information

This section is used to add wellbore information. Click the “Actions” dropdown menu and choose “Add Wellbore”. A pop-up window will appear.

Note: Repeat these steps for each string in the wellbore (e.g. Surface Hole, Vertical & Curve, and Lateral).

Fields and Functions

Wellbore Type: Choose the type of wellbore from the dropdown menu. Note: do these steps again for each string in the wellbore (e.g. Surface Hole, Vertical & Curve, and Lateral).

Wellbore Sequence #: Choose a “Wellbore Sequence #” for each wellbore from the shallowest depth (i.e. 00) to the deepest depth (e.g. Surface Hole would be “00”, while “Vertical & Curve” would be “01”, and Lateral would be “02”).

Wellbore Code (API-12):

Wellbore Construction Status: Choose “Not drilled” for new wells and choose “Drilled” for existing wells that are being proposed to be re-entered from the dropdown menu.

Parent Wellbore: Choose the appropriate wellbore accordingly (e.g. Surface Hole would be the parent wellbore of Vertical & Curve).

Wellbore Start Depth (ft MD): Indicate the wellbore start depth (MD - Measured Depth). For example, a surface hole’s start depth would be “0”.

Total Depth (MD ft): Input the total depth. Input the total depth (e.g. A surface holes total depth could be “2100”).

Total Depth (TVD ft): Input the total vertical depth (TVD). (i.e. A surface hole’s TVD would be coincident with its MD)

Drilling Mud Type: Choose the appropriate mud type from the dropdown menu.

Legal Entry Point & Spacing Unit – Entry Point Coordinates from Well Head: Complete the all fields as they are in relation to the Well Head location in order to demonstrate the legal entry point of the borehole into the pool and spacing unit.

KOP Footages from Nearest Section Line: Choose all pertinent information for each field (i.e. Qtr-Qtr or Lot, Section, Township, Range, and County) from their respective dropdown menu.

Bottom Hole Coordinates from Well Head: Choose all pertinent information for each field (i.e. From WH, (N/S), From WH, and (E/W)) from their respective dropdown menu.

Description: Enter a detailed description of each string in the wellbore.

Click “Save” at the bottom of the pop-up window, then repeat steps for each string in the wellbore.
Although not shown as required; indicate the following (if known):

- MWD Contractor
- Hole Size
Wellbore Specific Requirements from Oil and Gas Permitting Dept:

Surface Hole Wellbore:
- Should not have any deviation, so there is no need to indicate the Azimuth, or Kick Off Point.
- Required field is bottom hole coordinates.

Vertical & Curve Wellbore:
- Legal Entry Point into Pool & Spacing Unit: (enter the coordinates for the point at which the well is legal into the Pool & Spacing unit)
- KOP Footages from Nearest Section Line: Enter all pertinent data.
- Bottom Hole Coordinates from Well Head: This point will typically be the end of the curve.
- Bottom Hole Footage

Lateral Wellbore:
- Do not need Legal Entry Point into Pool & Spacing Unit
- Do not need to repeat KOP information (unless there is more than 1-Lateral)
- Enter Data for Bottom Hole Coordinates from Well Head & Bottom Hole Footages from Nearest Section.
Wellbore Construction Feature
This section is used to add wellbore construction feature information. Click the “Actions” dropdown menu and choose “Add Feature”. A pop-up window will appear.

**Note: Do these steps again for each string in the wellbore.**

**Fields and Functions**

**Feature**: Choose a feature from the dropdown menu (e.g. Surface Casing 1) that you had created from the “Wellbore Information” step.

**Wellbore Start**: Choose a wellbore start from the dropdown menu (e.g. Surface Casing 1) that was created from the selection from the “Feature” dropdown menu.

**Wellbore End**: Choose a wellbore end from the dropdown menu (e.g. Surface Casing 1) that was created from the selection from the “Wellbore Start” dropdown menu.

**Construction Status**: Choose “Not drilled” for new wells and choose “Drilled” for existing wells that are being proposed to be re-entered from the dropdown menu.

**Feature Top MD (ft)**: Input the top depth (i.e. “0” for Surface Casing 1)

**Feature Bottom MD (ft)**: Input the bottom depth (i.e. “0” for Surface Casing 1).

Click “Save” at the bottom of the pop-up window, then repeat steps for each string on the wellbore.

Although not shown as required; indicate the following for all casing strings (if known):

- Outside Diameter
- Weight
- Grade/Type
- Feature Condition
Cement Segment
This section is used to add cement segment information. Click the “Actions” dropdown menu and choose “Add Cement Segment”. A pop-up window will appear.

Note: Do these steps again for each string in the wellbore.

Fields and Functions
Associated Feature: Choose an associated feature from the dropdown menu (e.g. Surface Casing 1).
Inside/Outside Casing?: Dependent upon which wellbore was chosen in the previous step, select “Inside”, “N/A”, or “Outside

Construction Status: Choose “Not drilled” for new wells and choose “Drilled” for existing wells that are being proposed to be re-entered from the dropdown menu.

Click “Save” at the bottom of the pop-up window, then repeat steps for each string in the wellbore.

Although not shown as required; indicate the following for all casing strings (if known):
• Top & Bottom MD
• Verify Method (typically will be calculated)
• Cementing Company
Cement Class
This section is used to add cement class information. Click the “Actions” dropdown menu and choose “Add Cement Class”. A pop-up window will appear.

**Note: Do these steps again for each string in the wellbore.**

Fields and Functions

Associated Cement Segment: Choose an associated cement segment that was created in the “Cement Segment” step from the dropdown menu (e.g. C2).

Cement Type: Choose the appropriate cement type from the dropdown menu.

Construction Status: Choose “Not drilled” for new wells and choose “Drilled” for existing wells that are being proposed to be re-entered from the dropdown menu.

Click “Save” at the bottom of the picker grid (Figure 24) once all strings for all wellbores have been added.

Although not shown as required; indicate the following for all segments (if known):

- Weight
- Lead/Tail
- Volume
Part 2: Completion & Perforation Details

This section allows the applicant to provide the details in two segments: “Completion Interval” and “Completion Open Hole or Perforations”.

Please disclose as much information as known for the completion of the wellbore.

TIP: Select “Action” in the grid to add features to each completion interval. Select “Action” in the row to edit a specific feature that has been previously added.
Completion Interval
This section is used to add completion interval information. Click the “Actions” dropdown menu and choose “Add Completion Interval”. A pop-up window will appear.

Fields and Functions
Wellbore: Choose a wellbore from the list (e.g. Surface Hole 1)
Completion Interval Type: Select the appropriate type (e.g. Oil & Gas, Salt Water Disposal, Coal Bed Methane etc.).
Pool Status: Select the appropriate status (e.g. Permitted to Drill, Permit to Re-Complete, Permit to Re-Entry, Salt Water Disposal etc.).
Top MD (ft): Input the appropriate depth (i.e. ‘0’ for Surface hole 1)
Bottom MD (ft): Input the appropriate depth (i.e. ‘2100’ for Surface Hole 1).
Longstring: Choose all the pertinent information for each field (i.e. Qtr-Qtr or Lot, Section, Township, Range, and County) from their respective dropdown menu and be sure to include footages.

Click “Save” at the bottom of the pop-up window.

Note - An example of “Longstring” on a typical Bakken well is seven-inch casing set into the pool and across the hard lines.

Although not shown as required; indicate the following for a lateral wellbore in a typical well (if known):

- Pool Status (typically would be permitted to Drill)
- Top Coordinates would typically indicate the 7” casing point. Or the point at which the well is legal within the spacing unit and setbacks.
- Long string Casing Point information (typically the 7” casing point)
- Spacing/Drilling Unit Type
- Acres in Unit
- Industrial Commission Order
- Legal Description of the Spacing/Drilling Unit
- Reservation Surface boundary intersected by Spacing/Drilling Unit
### Wellbore
- **Wellbore**: Vertical Hole 1
- **Completion Interval Type**: Oil & Gas
- **Top MD (ft)**: 7500
- **Top TVD (ft)**: 7500
- **Top Coordinates (ft)**:
  - **1250**: From WH, S, N/S
  - **750**: From WH, W, E/W
- **Bottom MD (ft)**: 10000
- **Bottom TVD (ft)**: 10000
- **Bottom Coordinates (ft)**:
  - **1250**: From WH, N, N/S
  - **750**: From WH, W, E/W

### Longstring Casing Point

#### Footages:
- **From**: Line
- **Line**: Line

#### Coordinates (ft):
- **From**: N/S
- **E/W**: E/W

#### Qtr-Qtr
- **Section**: N
- **Township**: W
- **Range**: N
- **County**: 

### Enhanced Recovery Unit
- **Field**: JIM CREEK
- **Pool**: BAKKEN

### Spacing/Drilling Unit Type
- **Permit Classification**: 

### Legal Description of the Spacing/Drilling Unit
- 

### Reservation Surface Boundary Intersected by Spacing/Drilling Unit
- 

**Description**
Completion Open Hole or Perforation

To add completion open hole or perforations information, click the “Actions” dropdown menu and choose “Add Completion Open Hole or Perforation”. A pop-up window will appear.

**Fields and Functions**

**Associated Completion Interval:** Choose the appropriate wellbore (e.g. C3 which is for Lateral 1).

**Construction Status:** Choose “Not drilled” for new wells or “Drilled” for existing wells that are being proposed to be re-entered from the dropdown menu.

**Type:** Choose the appropriate type for completion (e.g. Sliding Sleeve)

**Open Hole or Perforation Status:** For new wells, choose “proposed”. Otherwise, choose the appropriate type.

**Top MD (ft):** Input the appropriate depth for the start of the process.

**Bottom MD (ft):** Input the appropriate depth for the end or bottom of the process.

**Objective Horizons:**

Click “Save” at the bottom of the pop-up window, then click “Save” at the bottom of the picker grid.

Although not shown as required; please fill out as much information in this section known at the time of permitting.