Schedule of Wells

Newfoundland and Labrador Offshore Area

April - 2009
Introduction

The Schedule of Wells is a summary of the results of all wells drilled offshore Newfoundland and Labrador, within the area of jurisdiction of the Canada-Newfoundland and Labrador Offshore Petroleum Board. The information contained herein has mainly been compiled from well history reports submitted by industry operators in accordance with section 228 of the Canada Oil and Gas Drilling Regulations prior to proclamation of the Canada-Newfoundland Atlantic Accord Implementation Acts, and in accordance with requirements established by the Board thereafter.

Information is released from confidential status in accordance with subsection 119(5) of the Canada-Newfoundland Atlantic Accord Implementation Act, and subsection 114(5) of The Canada-Newfoundland Atlantic Accord Implementation (Newfoundland Act), which stipulate that most information or documentation may be disclosed as follows:

- in respect of an exploratory well, two years following the termination date of that well.
- in respect of a delineation well, the later of two years following the termination date of the relevant exploratory well and ninety days following the termination date of the delineation well.
- in respect of a development well, the later of two years following the termination date of the relevant exploratory well and sixty days following the termination date of the development well.

The “data release date” is provided in the information posted for individual wells and is referenced to the “well termination date” posted for the well.

Information which is obtained from development wells subsequent to the termination date is not released from confidential status (i.e. production logging, abandonment of a perforated zone or reperforation). Should the status of a development well change (i.e. abandonment of the entire well or the conversion from a producer to an injector) only the change of status will be noted in the Schedule of Wells. Occasionally, with the drilling of additional wells and the acquisition of new data there may be a change in the formation tops pick. Formation tops and other data for previously released wells may be revised at this later date. There is a date posted in the upper right corner of each well ‘ticket’. This date reflects the timing of the latest update to that well information.

The wells in the Schedule have been classified as exploratory, delineation or development, as defined in subsection 119(1) of the Canada-Newfoundland Atlantic Accord Implementation Act. This subsection defines an exploratory well as "a well drilled on a geological feature on which a significant discovery has not been made"; a delineation well as "a well that is located in relation to another well penetrating an accumulation of petroleum that there is reasonable expectation that another portion of that accumulation will be penetrated by the first-mentioned well and that the drilling is necessary in order to determine the commercial value of the accumulation"; and a development well as "a well that is so located in relation to another well penetrating an accumulation of petroleum that it is considered to be a well or part of a well drilled for the purpose of production or observation or for the injection or disposal of fluid into or from the accumulation".

Where a well is classified as a “delineation well” or a “development well”, and that well has an exploration or delineation component associated with its approval, then data associated with the “exploration” or “delineation” component will be treated as “privileged data” to be released accordingly.

In this Schedule, wells are arranged by chronological order of spud date. Information for wells drilled prior to January 1, 1979 is reported in both SI and Imperial units. Information for wells drilled subsequently is reported in SI units only.

The Schedule of Wells provides comprehensive data for all wells drilled offshore Newfoundland and Labrador, including casing, coring, testing and formation information. The location data for the wells have been converted from the NAD27 to the NAD83 geographic datum.

The Unique Well Identifier (UWI) reflected in this schedule is a 16 digit code for standard well identification developed in 1978 by the Geoscience Data Committee of the Canadian Petroleum Association, more recently replaced by
the Canadian Association of Petroleum Producers (CAPP).

The UWI designations represent a modified approach to assigning UWI’s to East Coast Canada offshore wells. This approach is captured in the recently revised draft (December 2000) to the original UWI document (The Canadian Unique Well Identifier - July 1978).

The 1st digit in the 16 digit code is a ‘3’ reflecting the ‘Federal Survey System’ which is in use for all offshore Newfoundland wells. The 2nd and 3rd digits indicate the sequence in which wells were drilled within a common Unit/Section, with ‘00’ representing the first well, ‘02’ (skipping ‘01’) representing the 2nd well, ‘03’ representing the 3rd well, etc. Digits 4 through 6 represent the Unit and Section number of the grid in which the well is located. Digits 7 through 15 represent the latitude (digits 7-10) and longitude (digits 11-15) in degrees and minutes of the upper right corner of the grid in which the well was spudded (i.e., surface location). The last or 16th digit represents the event sequence code and is used for the expressed purpose of identifying new wellbore, i.e. the use of a '0' represents the original wellbore and ‘1’ represents the 1st side track of the well or deepening of the well beyond that approved with ‘2’ representing the 2nd sidetrack etc..

The Schedule of Wells also lists all other information pertaining to the well, including casing size and set depth, well testing information, coring activity information, wellbore perforation intervals and geological information. However, it should be noted that any testing, coring, perforation and geological information will only be listed in accordance to the data release guidelines discussed earlier.

**Source of Geological Information**

Unless otherwise stated, formation tops used in this Schedule of Wells were selected by staff of the Canada-Newfoundland and Labrador Offshore Petroleum Board, on the basis of industry lithologic and wireline logs, biostratigraphic and lithostratigraphic data from industry reports and reports from Geological Survey of Canada and available publications.

Development wells (unlike Exploration and Delineation wells) are frequently highly deviated and consequently require both a Measured Depth value and a True Vertical Depth value. Frequently the upper portion of the well is logged while drilling (LWD and MWD data) and the reservoir section of the well is logged by wireline and/or pipe conveyed logging tools. Due to the different methods for acquiring the logging data there are frequently large differences in the depths to formation tops from one logging run to another or from one logging method to another. One final log will be designated the “primary depth control log” and all detailed calculations should be referenced to this log. In this publication, the relevant log has been indicated as the reference log but it is not necessarily the “primary depth control” log. For this reason, the user is cautioned to ensure that any calculations based on different logs or different logging methods are referenced back to the “primary depth control” log and the relevant directional survey.

Publications are listed below:

**LABRADOR SHELF**

**Lithostratigraphic Chart**

Selected Bibliography:


**SOUTH GRAND BANKS**

**Lithostratigraphic Chart**

Selected Bibliography:


**NORTHEAST NEWFOUNDLAND SHELF AND NORTH GRAND BANKS**

**Lithostratigraphic Chart**

Selected Bibliography:


WESTERN NEWFOUNDLAND

Lithostratigraphic Chart

Selected Bibliography:


Knight, I. And Cawood, A. 1992. Palaeozoic geology of western Newfoundland: An exploration of a deformed Cambro-Ordovician passive margin and foreland basin, and Carboniferous successor basin. Centre for Earth Resources Research, Memorial University of Newfoundland, St. John’s, 1 & 2.


Geologic Tops Format

Tops are presented, as below, using the following conventions:

<table>
<thead>
<tr>
<th>Geologic Tops</th>
<th>RT (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dawson Canyon</td>
<td>1759</td>
</tr>
</tbody>
</table>
Petrel Member 1846 - 1875
Cenomanian Unconformity 2061
Nautilus 2061
Ben Nevis 2377
Aptian Unconformity 2713
Avalon 2713
'A' Marker member 2974 - 2981
Whiterose 2981
Catalina Member 3536 - 4168
'B' Marker member 4168 - 4257
Hibernia 4257
Fortune Bay 4875
Jeanne d'Arc 5264
Rankin 5562

Formation names are listed from shallowest to deepest (i.e. Dawson Canyon, Nautilus, etc.). Lower ranks, such as members, lenses, etc., are indented below the formation of which they are a part (i.e. Petrel Member of the Dawson Canyon Formation). In accordance with the International Stratigraphic Guide, the first letters of all words used in the names of formal lithostratigraphic units are capitalized (i.e. Petrel Member). The first letter of informal lithostratigraphic units is not capitalized (i.e. 'A' Marker member). Each formation extends from the top given to the top of the next lower formation (i.e. the Dawson Canyon Formation extends from 1759-2061 mRT). Each member or lens extends from the top given to the top of the next lower unit (i.e. the 'A' Marker extends from 2874 to 2981 mRT) or else the upper and lower limits of the unit are given (i.e. the Petrel extends from 1846 to 1875 mRT). Unconformities are named after the age of the oldest sediments known to occur above the surface of the unconformity or its lateral equivalent. Faults, where recognized, are noted at their intersection in the well bore or at their approximate location as indicated by seismic data.

Lithostratigraphic nomenclature of the Labrador Shelf is after McWhae et al. (1980), for the Jeanne d'Arc Basin is after Sinclair (1988 and 1993), and for Western Newfoundland is after James et al. (1989) and Cooper et al. (2001).
ABBREVIATIONS

API .................................American Petroleum Institute
BPD .................................barrels per day
Cl  ..................................chlorides
DST .................................drill stem test
FIT .................................Formation Interval Tester
FMT .................................Formation Multi-Tester
KB  .................................kelly bushing
m  .................................metres
mm  .................................millimetres
MCF/D ..............................thousand cubic feet per day
MMCF/D ...........................million cubic feet per day
N  .................................north
NFTS ..............................no flow to surface
ppm .................................parts per million
RFS .................................Repeat Formation Sampler
RT  .................................rotary table
TSTM ..............................too small to measure
W  .................................west
Labrador Shelf Stratigraphy

<table>
<thead>
<tr>
<th>Geochronologic Scale</th>
<th>Formation</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pleistocene</td>
<td>Unnamed Glacial Beds</td>
<td>Sandstone</td>
</tr>
<tr>
<td>Pliocene</td>
<td>Saglek</td>
<td>Conglomerate, Coal</td>
</tr>
<tr>
<td>Miocene</td>
<td></td>
<td>Argillaceous Sandstone</td>
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<tr>
<td>Oligocene</td>
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<td>Shale</td>
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<tr>
<td>Paleogene</td>
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<td>Arkosic</td>
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<tr>
<td>Eocene</td>
<td>Leif Member</td>
<td>Mafic Volcanics</td>
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<td></td>
<td>Kenamu</td>
<td>Intravolcanic Sediments</td>
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<tr>
<td>Cretaceous</td>
<td>Gudrid</td>
<td>Limestone</td>
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<tr>
<td></td>
<td>Cartwright</td>
<td>Dolomite</td>
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<tr>
<td></td>
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<td>Metasediments</td>
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</tbody>
</table>

After McWhae et al 1980
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