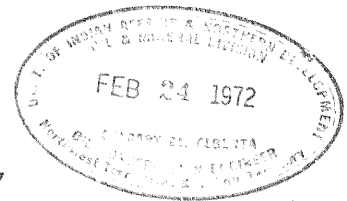




CANADA

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
OIL AND MINERAL DIVISION

Application for a Drilling Authority



This notice of intention to begin drilling operations, in triplicate, and where required a plan of survey approved by the Surveyor General showing the target area or the site of the well must be submitted and approved before commencing operations.

In compliance with the "Canada Oil and Gas Land Regulations", application is hereby made for approval to drill:-

Name and number of well . . . CHEVRON SOBC WM. E. PORCUPINE YT F-18

Location: Unit . . . F Section . . . 18 Grid 66-10-137-45
Latitude . . . 66°07'25" Longitude . . . 137°48'16"
Unique Well Identifier . . . 300F186610137450
Universal Well Location Reference. Lat. 66.12361°N, Long. 137.80444°W

Elevation: Ground . . . 1565 K.B. 1580 feet above sea-level.
Well is expected to produce from . . . Chance Sandstone formation at a depth of about . . . 5950 feet. Expected total final depth . . . 7000
Area assigned to well
(for District Conservation Engineer's use only)

Permit No. . . . 3362 Lease No. Acreage . . . 51966
Permittee, licensee, or lessee . . . Western Minerals Ltd.
Explanatory Licence No. . . 1944 Lic. No. for SOBC 1914
Surface owned by Crown
(If alienated submit name and address of owner and occupant.)

Petroleum and natural gas rights owned by . . . Crown
We propose to use the following strings of casing, either cementing or landing them as indicated below:-

Casing Size O.D. (Inches)	Weight (Lb./Ft.)	Grade	New or Used	Estimated Depth	Sacks of Cement
1. . . . 19"	47.1 (approx)	Welded	New	60	150
2. . . . 9-5/8"	36	K-55	New	800	375
3. . . . 7	23 & 26	K-55	New	To be determined	
4.					
5.					

Expected water, gas, and oil horizons and type of control equipment. Blackie sand, Basal Cret. sand, Chance sand, Mississippian Limestone, Hydril GK 10"-900, Shaffer Hydraulic double gate 10"-900, Payne 40 gal. Accumulator, Remote Hydraulic controls, High Press. manifold, Hand Wheels on Ram Preventers.
Well will be drilled with Rotary Rig No. . . 24 by . . . GP Drilling Ltd.
(Drilling Contractor or company)

. . . 3604 Eighth Street S.E., Calgary 24, Alberta
Responsible agent of applicant:- Contractor Business Licence No.
At well . . . R. K. Cannon At registered office . . . R. C. Richardson
Address . . . 400 Fifth Avenue S.W. Address . . . 400 Fifth Avenue S.W., Calgary 1, Calgary
It is understood that if changes become necessary, notice of the change of plan will be submitted.
Dated at . . . Calgary this . . . 22 day of . . . February 19 72
Signed by . . . R. K. Cannon Company . . . Chevron Standard Limited
Title . . . Project Manager Operator's Licence No. . . . 1913

(For Oil and Mineral Division use only)

APPROVED

This application has been examined and approved subject to the following conditions:
Please see attached sheet for Conditions of Approval
Dated . . . February 29 19 72
District Conservation Engineer
Forms to be submitted to District Conservation Engineer,
Department of Indian Affairs and Northern Development.

CONDITIONS OF APPROVAL FOR DRILLING AUTHORITY NO. 583
FOR Chevron SOBC WM E. Porcupine YT F-18

1. Copies of this Drilling Authority shall be exhibited at the Drilling Rig in both the Doghouse and the Drilling Foreman's Office between spud and rig release dates.
2. The Company will submit to this office, on Tuesday of each week/ [REDACTED] the latest reports received by radio on the progress of the well.
3. During well drilling and testing operations, every effort shall be made to ensure that drilling fluids, chemicals and wastes shall be disposed of or contained in a manner that will prevent the contamination of adjacent vegetation and surface or sub-surface waters.
4. We draw your attention to Sections 95 and 96 of the Canada Oil and Gas Land Regulations.
5. Any additional strings of casing must be approved by the District Conservation Engineer prior to running.

L. Thomas

L. Thomas
District Conservation Engineer
Districts 2 and 3

29th February 1972



CHEVRON SOBC W1 E. Porcupine YT F-18
N 66° 07' 25" : W 137° 48' 16"

CONFIDENTIAL

This well will be drilled under "Tight" hole classification and all information regarding the well will be restricted to Chevron Standard personnel and authorized representatives of Western Minerals. Pertinent information must be transmitted in code.

Elevations

Ground Elevation (estimated) - 1565'
K.B. Elevation (estimated) -
K.B. Elevation (surveyed) -

PROPOSED GEOLOGICAL PROGRAM

A. Estimated Depth and Elevation of Significant Markers

	<u>Estimated</u>		<u>Corrected</u>	
	<u>Elevation</u>	<u>Depth</u>	<u>Depth</u>	<u>Thickness</u>
<u>Mesozoic</u>				
Cretaceous	+1565	+1565		
Eagle Plain Formation	+1565	+1565		3498
Blackie Sandstone	-1933	3498		180
K14 Shale	-2113	3678		1180
K13 Siltstone (Orange Marker)	-3293	4858		250
K12 Shale	-3543	5108		583
Basal Siltstone Unit	-4126	5691		230
<u>Paleozoic</u>	-4356	5921		
U. Mississippian Chance Member	-4356	5921		
Chance Sandstone	-4356	5921		250
Chance Limestone & Sandstone	-4606	6171		250
U. Mississippian Cherty Limestone	-4856	6421		
TOTAL DEPTH		6450		

Note: These depths are based on seismic events and regional geological control and are subject to revision after the location has been surveyed and after good sample picks are established as the well is drilled.

B. Objective Horizons

Primary - Upper Mississippian Chance Sandstone and Chance Limestone and Sandstone.

Secondary - Blackie Sandstone
- K13 Siltstone and Sandstone
- Basal Cretaceous Sandstone

C. Ditch Samples

Two sets of bagged samples are required, one for Chevron Standard and one for the Geological Survey. One set of washed bottled samples and one set of washed enveloped (double volume) samples are required for Chevron; one set of washed bottled samples is required for Western Minerals.

Sample Interval :

Surface to T.D. - 10' samples

Five foot samples will be caught at the wellsite geologist's direction.

D. Penetration Rate Records

A mechanical drilling time recorder should be used on this well.

E. Sample Description

An up-to-date written sample description and a plotted rock log chart must be maintained by the wellsite geologist. A copy of the written description is required by the Federal Government. In cored and/or oil stained intervals, a detailed written description of the reservoir characteristics and hydrocarbon shows must be made.

F. Gas Analyzer

A gas detector will be used on the well. Samples will be collected and canned every 30' for future analysis.

Note: Nitrate Tracer - Nitrate tracer in the form of fertilizer (up to 150 lbs. or more) will be added to the mud system from just below surface casing to T.D. The wellsite geologist will maintain a controlled nitrate level during drilling and test the DST recoveries for nitrate measurements.

G. Formation Evaluation

General

Well control in this area is very sparse and it is possible that unanticipated reservoir rocks could be present in the Cretaceous and Carboniferous sections to be penetrated by this well. The wellsite geologist must be prepared to evaluate potential reservoirs other than those listed under primary and secondary objective horizons.

Any hydrocarbon occurrences above the Upper Mississippian Chance Member primary objective will be evaluated after logging, unless substantial porosity (10') is encountered with positive indications of hydrocarbons (live oil, staining, fluorescence or gas in drilling samples or the mud). Consult Calgary if substantial porosity and positive indications of hydrocarbons occur.

1. Coring and Testing Program

Coring should commence when the top of the Chance Sandstone is encountered; report core results to the Calgary office and further instructions will follow. After the Chance Member has been properly evaluated by coring and drillstem testing, according to Calgary instructions, drill ahead to final total depth.

After logging is completed, sidewall cores may be taken for paleontological control. One run of the sample barrel with 24 shots should be sufficient.

A nitrate tracer should be added to the mud in adequate time prior to any testing.

2. Logging Program

Use Schlumberger

One logging run will be made at T.D.

The Primary Log Suite will be:

(a) Dual Induction Laterolog/S.P.

Run from T.D. to surface casing.

Vertical scales:

2" = 100' and 5" = 100'

Try a 10 m.v. SP scale.

A 200' repeat section must be run at T.D.

(b) B.H.C. Sonic/Gamma/Caliper (Integrated)

Run from T.D. to surface casing, run gamma to surface and check caliper in casing.

Vertical scales: 2" = 100' and 5" = 100' from T.D. to surface casing

Transit time scales: T.D. to top Paleozoic (5900' approx.)
40-70-100

From top Paleozoic to surface casing 40-90-140.

Gamma scale: 0-150 API

A 200' repeat must be run at T.D.

(c) Formation Density Log (Including Gamma & Caliper)

Run from T.D. to top of Paleozoic (5900' approx.) and over any other zones of interest.

Vertical scales: 5" = 100' bulk density

5" = 100' sandstone porosity trace

Porosity scale: 0 - 45%

(d) Sidewall Neutron Porosity Log

Run from T.D. to top of Paleozoic (5900' approx.) and over any other zones of interest.
Run on a sandstone porosity scale (0 - 45%).

Secondary Logs:

The following logs may be run should the conditions outlined below exist.

(e) Gamma Ray Neutron

This log will be run if gas is known to be present in the well and the SNP fails to outline an interface.

(f) Microlog

This log may be run over zones that have not been cored and are known to be hydrocarbon bearing. A microresistivity device (microlaterolog, proximity log) may be run in conjunction with the microlog.

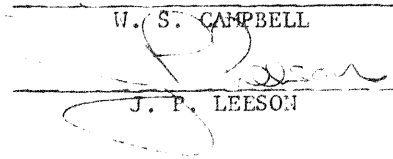
H. Fluid Samples

1. Representative fluid samples from all DST recoveries are required for lab analysis. Samples are required from the top, middle and bottom of the fluid column. One sample is sufficient for recoveries under 60'. A set of water samples is required by the logging company for R_w determinations.
2. An extra quart sample of any clean oil, or oil cut liquids obtained on DST is to be taken and forwarded to the Northern Task Force office. The wellsite personnel should have on hand a supply of special containers for these samples.
3. Three one quart mud samples should be collected at 15 minute intervals from the flowline prior to each logging run for R_m and R_{mf} measurements at the wellsite.
4. Stainless steel containers are to be available to collect a sample of any gases obtained on test.

Approved:



W. S. CAMPBELL



J. P. LEESON

Calgary, Alberta
February 1972

MINIMUM I.D. 1 1/2" FOR 7" CASING

FILL-UP LINE

FLOW NIPPLE

HIGH PRESSURE
MUD FILL-UP LINE

SERIES 900
TYPE GK
HYDRIL

HYDRAULIC CONTROL
LINES

POSITIVE BEAN
TYPE CHOKE

2" SERIES 900 SCREWED
FLANGED MUD VALVE

TO MUD TANK

HALF
UNION

2" SERIES 900
FLANGED STEEL
GATE OR PLUG
SERIES 900
CHECK VALVE

2" SERIES 900
FLANGED STEEL
GATE OR PLUG
VALVES

3000 PSI MUD
GAUGE

TO FLARE PIT

HALF
UNION

SERIES 900
DRILLING SPOOL

SWEEP BEND TO
CONNECT(304)

TOP PIPE RAMS

2" SERIES 900
FLANGED STEEL
GATE OR PLUG
VALVES

2" SERIES 900 SCREWED
FLANGED MUD VALVES

TO SUMP

2" H.P.
LINE

SERIES 900
HYDRAULIC
DOUBLE GATE

HYDRAULIC CONTROL
LINES
BOTTOM - BLIND RAMS

GROUND LEVEL

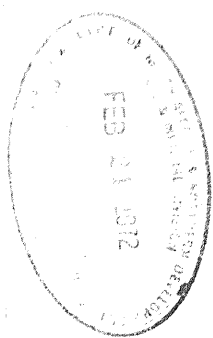
WELLS ADJUSTABLE
CHOKE

SERIES 900
FLANGED STEEL
GATE OR PLUG VALVES

SERIES 900
SCREW-ON CASING BOWL
(SUPPLIED BY CHEVRON)

NOTE - ALL FITTINGS IN THE MANIFOLD
MAY BE SCREWED FITTINGS

CHEVRON STANDARD LIMITED
SPACER SPOOL
AND
WING VALVE ASSEMBLY



SCALE DRAWN DATE
NOT TO SCALE E W W FEB 0, 70 A-9057E
FC-1