

27 (C)
37-1-4-3
(27c)

REPORT ON EXPLORATION

NORMAN WELLS AREA

PERMITS 775-812 (INCL.)

As required by Section 30 (1) of the Territorial Oil and Gas Regulations the following report is submitted in respect of the captioned permits.

No aerial photographs were taken by the permittee during the 18-month period from April, 1954 to October, 1955 covered by this report.

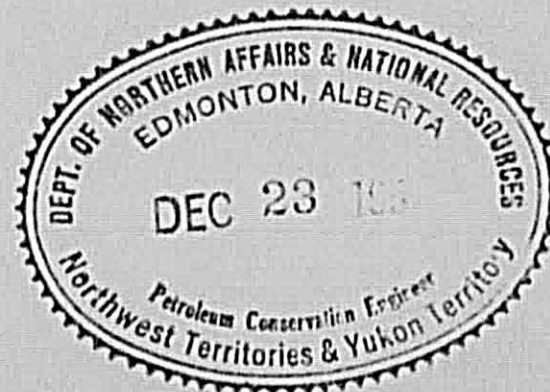
No geophysical examination was made; consequently there is no information to report concerning the presence of water, coal, etc., revealed by shot or core holes.

The accompanying map shows the principal geologic features revealed by the surface geologic mapping and photogeologic work done within the permits. The outcrops examined together with strikes and dips determined are shown, as are determined or closely located contacts.

This work was done between June and September, 1954 and between June and September, 1955.

During the two field seasons approximately 120 outcrops or areas of outcrop were examined within the limits of the permits.

No oil or gas seeps were found. One poorly exposed coal seam of undeterminable thickness was found on Coal Creek near the centre of Permit 797. A spring carrying a considerable amount of iron salts was found on the right bank of East Little Bear River in the northwest quarter of Permit 802.



The work recorded herewith indicates that the geology of the permits is but little different from that shown on map 1032 A, Sheet 1, accompanying G.S.C. Memoir 273. There are two differences however, that are worthy of mention. One of these is the presence of pre-Devonian Ronning group beds at the core of the Imperial anticline in the northeast quarter of Permit 779. The other is the presence of pre-Ronning beds in Mackay Mountains in the northern part of Permit 802.

The lithology of the formations examined was found to be as described in Memoir 273. The presence of considerable bodies of evaporites, shown by sink holes in Permit 780, is a feature of possible future economic interest revealed by our work.

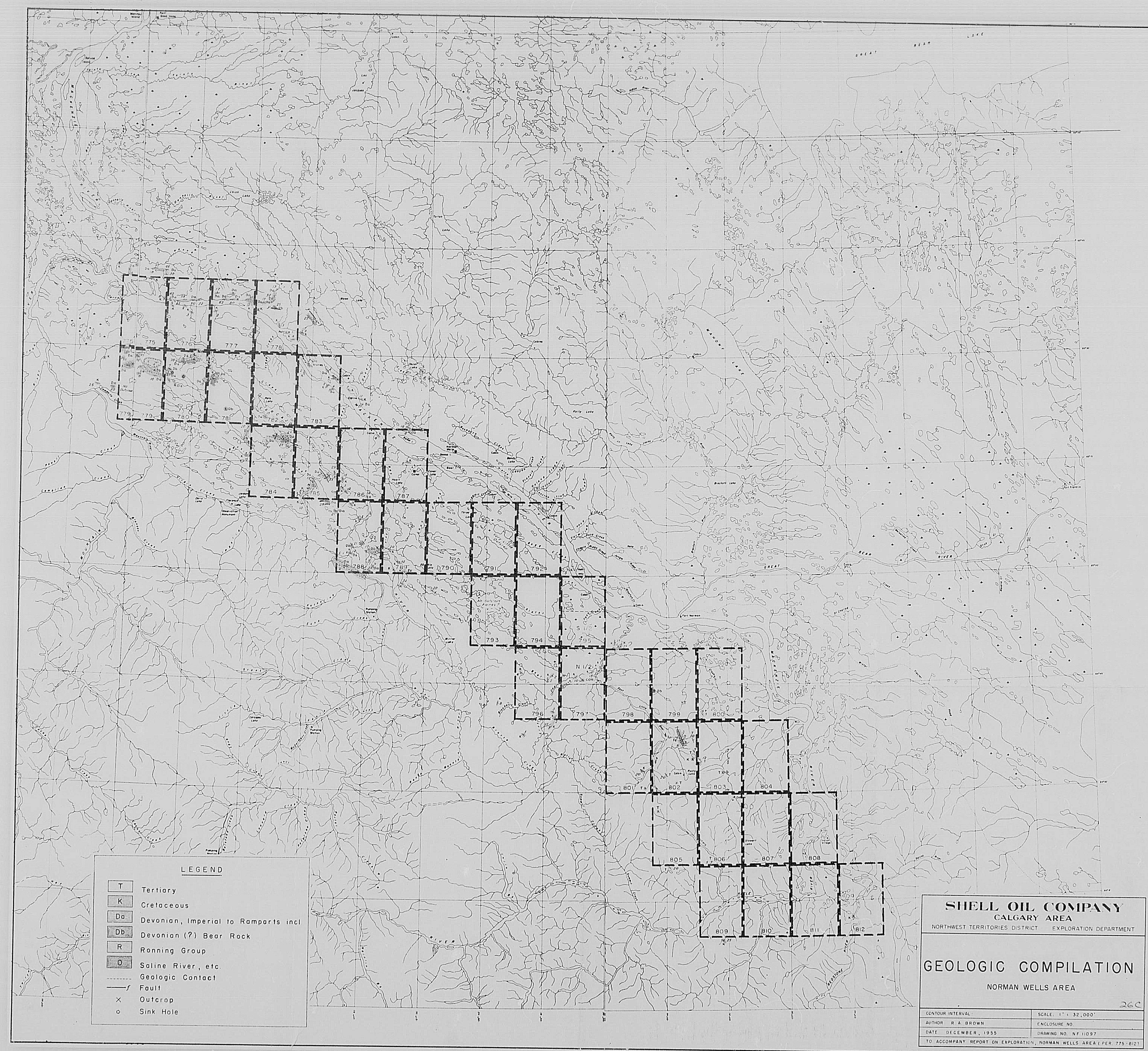
As shown on the accompanying map, the north limb of the Imperial anticline is steep to overturned, with overturned beds dipping 70° towards the south being found in Permits 779 and 780.

Respectfully submitted,



R.A. Brown
District Geologist
N.W.T. District
Shell Oil Company

Calgary, Alberta.
December 9, 1955.



27 (2)

37-1-4-5
(27e)

REPORT ON EXPLORATION
MOON LAKE - VIRGIN CREEK AREAS
PERMITS 828 - 836 INCLUSIVE



As required by Section 30(1) of the Territorial Oil and Gas Regulations the following report is submitted in respect of the captioned permits.

No aerial photographs were taken by Shell during the 18-month period from October, 1954 to April, 1956 covered by this report.

No geophysical examination was made; consequently there is no information to report concerning the presence of water, coal, etc., revealed by shot or core holes. No stratigraphic tests, structure tests or wildcat wells were drilled.

The accompanying map shows the factual data revealed by the surface geologic mapping and photogeologic work done within the permits. The new outcrops found and examined together with strikes and dips are shown, as are the locations of major faults and anticlines whose presence was observable.

This work was done between June and September, 1954 and between June and September, 1955.

During the two field seasons the outcrops or areas of outcrop, shown on the accompanying map, were examined as well as the critical outcrops shown on the unpublished maps resulting from the Canol project surveys. No oil or gas seeps were found. Considerable time was spent in searching

for additional outcrops in the low, muskeg-covered areas of the permits, but without much success.

The work recorded herewith indicates that the geology of the permits 835 and 836 agrees very closely with that shown on map 1032 A, Sheet 1, accompanying G.S.C. Memoir 273. An exception is found in the northeastern corner of permit 835 where the Bear Rock formation outcrops in the Imperial Anticline, which in this region can be separated into three en echelon anticlines.

Much of the terrain included in the Virgin Creek permits (835 and 836) is covered by muskeg. The consolidated rocks exposed northeast and southwest of this muskeg belt are Cretaceous sediments which dip southwest and northeast respectively. The structure in these permits is therefore a broad northwest trending syncline flanked on the northeast by the uplift of the Imperial Anticline and on the southwest by the front ranges of the Mackenzie Mountains.

The Moon Lake permits (828 - 834 inclusive) consist of a number of fault blocks trending easterly and southeasterly in which the rocks have been uplifted as much as 3,000 feet above their counterparts in the plains to the west. The area between the fault blocks is mainly covered by muskegs and only a few outcrops were seen. The succession of rocks appearing at surface includes Ronning through Cretaceous.

In the northern part of permit 832, although outcrops are lacking, numerous sinkholes give evidence that evaporites of the Bear Rock formation are developed in significant thickness here.

To evaluate the stratigraphy in this area properly, numerous sections and outcrops were visited in the surrounding areas, such as the Imperial and Mackenzie Mountains. Thus the Ronning was found to have a total thickness of slightly more than 2,000 feet, and the overlying Bear Rock formation a thickness of about 700 to 800 feet. As the brachiopod Strinrocephalus burtoni was found in the Moon Lake permits and is of Middle Devonian Age, all beds containing this brachiopod were included with the Middle Devonian (contrary to the Canol geologists, who referred these beds to the Upper Devonian). The thickness of the Middle Devonian thus ranges from 900 to 1,300 feet. Outcrops of the Upper Devonian Imperial formation and Cretaceous are too poorly exposed in the permits for accurate measurements.

The lithology of the formations was found to be as described in Memoir 273.

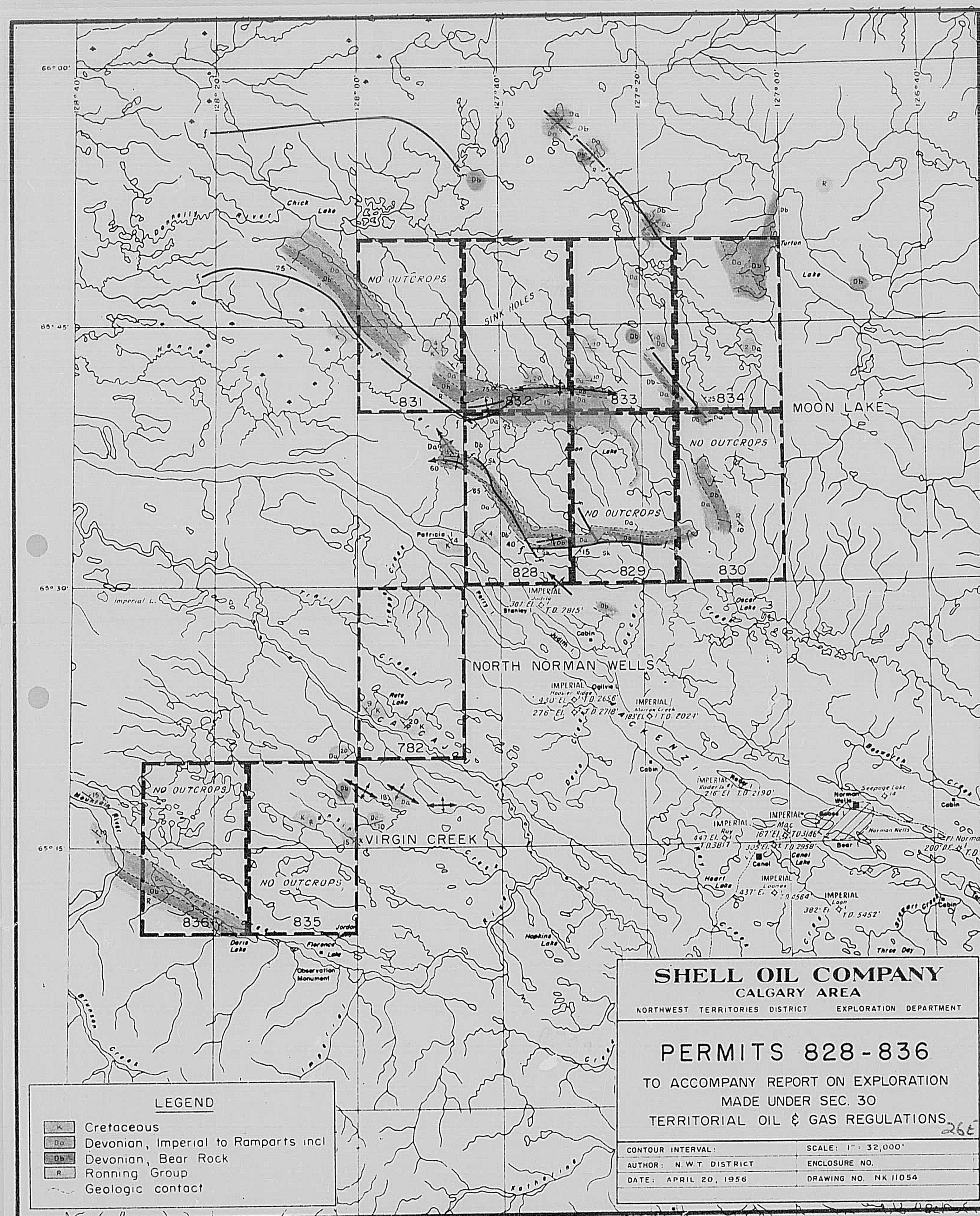
On the accompanying map most of the outcrops marked are not to be found on map 1032 A, Sheet 2, G.S.C. Memoir 273. On the other hand only very little geology already known from G.S.C. Memoir 273 has been plotted on the accompanying map.

Other work done in the general region has already been reported upon under "Report of Work Completed Under Exploratory Licenses Nos. 116, 122 to 126 inclusive" dated January 1956, of which a copy was sent to the office of the Oil Conservation Engineer under covering letter dated February 9, 1956.



R.A. Brown
District Geologist
Northwest Territories District
Shell Oil Company

FAF/RAE/kw.
April 20, 1956
Enclosure



16x