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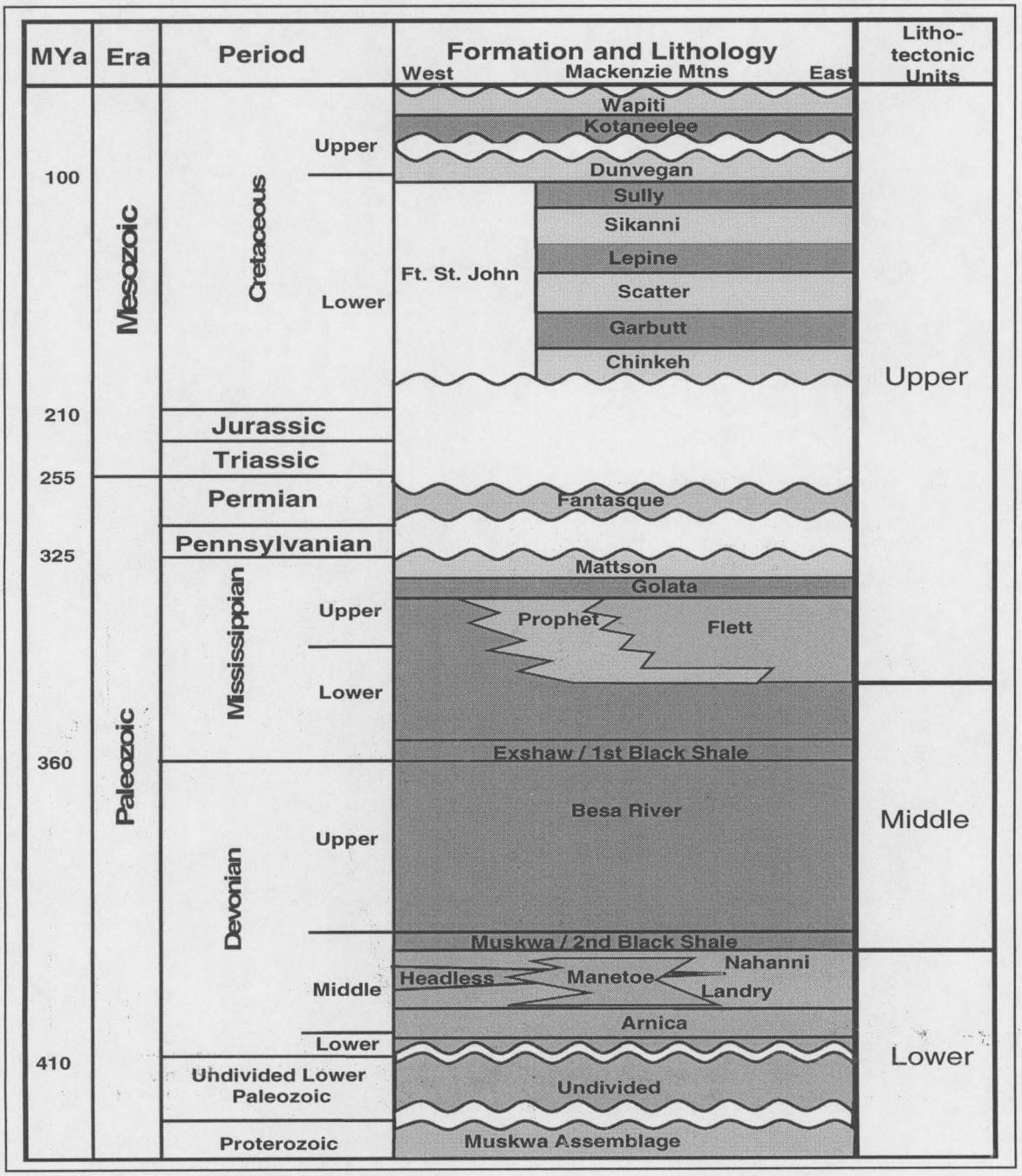
Introduction

An exploration well is proposed for the location O-80 60-20 123-30 to be drilled to the top of the Flett formation. The name of the well is "Chevron et al McKay Lakes O-80" and is posted on the Basemap that is included with this report. The well is located near the intersection of the two seismic lines posted (see map), and interpreted copies of the seismic sections and a synthetic seismogram of the K-02 well are also included.

Stratigraphy

The following table shows the general stratigraphy of the area.



The surface geology from the GSC geological map of Fort Liard is used for this report (Douglas & Norris 1976). The contacts, faults and axes were digitized and posted on the Basemap and the geology hand coloured. We expect the proposed well to penetrate the Lepine Formation at surface followed by the Scatter, Garbutt, Chinkeh, Fantasque, Mattson and finally Flett Formations. Below is a discussion of these formations at the O-80 location.

Cretaceous

The GSC map only shows Garbutt at the surface location of O-80. However, seismic line 13 shows a bright event at the O-80 location at 540 ms which correlates nicely (in terms of constant isochronal thickness and general character) with the Scatter that has been picked to the east on the seismic line from shot point 741 to 854. The Lepine is low velocity/density shale while the Scatter is higher velocity/density sandstone resulting in a good seismic marker. The surface near O-80 is covered by thick vegetation and has little topographic relief. This renders outcrop information non-existent or difficult to interpret. It is not surprising that the GSC map simply defines the entire outcrop near the O-80 location to be Garbutt. The map shows the east dipping contact between the Garbutt and Mattson west of the O-80 location as "assumed" on reconnaissance and has not been observed nearby. Interpretation of line 13 clearly indicates that the "assumed" contact is incorrect and the top of the Mattson does not reach the surface as mapped. Seismic line 51 is poorer quality than 13 and does not show the Scatter event well. The Chinkeh is a thin basal sandstone that unconformably lies over Fantasque or Mattson. It is interpreted that the bright event at 700 ms at the O-80 location is a thin Chinkeh sand that may contain hydrocarbons.

Paleozoic

The Chinkeh, Fantasque and Mattson are each separated by significant unconformities. The Fantasque Formation is composed of very hard Chert that unconformably overlies the Mattson. Both the Fantasque and the Chinkeh appear to thin to the north, based on seismic line 51 which shows divergent events between the Mattson, Fantasque and Chinkeh events from shot point 780 to shot point 1248. Shot point 1124 of seismic line 13 and shot point 770 of seismic line 51 both show the Fantasque event terminating against the Mattson event. The K02 well (located to the south) shows a much thicker Chinkeh and Fantasque formation than our prognosis for O-80. There is no Golata expected near the O-80 location so the well should penetrate Flett immediately below the Mattson.

Structure

The O-80 location is situated directly above a syncline that has been identified at surface and at depth on seismic. The axis of the syncline is oriented north south and plunges to the south. Seismic line 51 illustrates the gentle plunge to the south. Seismic line 13 appears to show a tilt to the axis of the syncline, as it appears to move to the west with increasing depth. The seismic image (line 13) in the fold of the syncline is not crisp and we are uncertain of the reason for the degradation. The Liard fault is not imaged on

seismic line 13 but it is located according to the surface geology map (Douglas & Norris 1976).

Time to Depth Conversion

The following table shows the calculations involved in converting the seismic picks from time to depth. The velocities were derived from the sonic log of the K-02 well. The final prognosis depths used are rounded off due to the lower resolution of seismic.

Formation	time (ms)	velocity (m/s)	depth (m)	final depth
Surface	480	4000	0	0
Scatter	536	3925	112	110
Garbutt	610	3450	257	260
Chinkeh	720	3640	447	450
Fantasque	725	4670	456	460
Mattson	760	4760	538	550
Flett	1015		1145	1155

References

Douglas, R. J. W. and Norris, D. K. 1976. Geology, Fort Liard, District of Mackenzie. Geological Survey of Canada, "A" Series Map , 1379A.