UR 1947/83-86

REPORT ON IRON DEPOSITS AT NELSON RIVER. 83

Location and Access.

Nelson River is situated on the west coast of Tasmania at six miles south of Arthur River and 15 miles south of Marrawah, the nearest township.

Access is gained from Marrawah in a southerly direction by way of an unmetalled road, 12 miles in length, to Arthur River ferry. From the latter, Nelson River bridge is reached in a distance of seven miles by cart track.

The iron deposit is located adjacent to the river on south-west side, three miles south-easterly from the bridge.

Whales Head Boat Harbour lies six miles south-south-west of the deposit.

Topography.

The area represents a coastal peneplain stretching inland for a considerable distance from the shore line. In the vicinity of the iron deposit (300 feet above sea level) the peneplain has been dissected to a large extent by Nelson River, now flowing in entrenched meanders about 100 feet below the general level of the surface. The stream exhibits the usual features of youth including steep gorges, cliffs and water-falls. Nelson River rises on the northern slopes of Mt. Balfour and flows in a general north-westerly course to the Southern Ocean.

Geology.

The rocks of this area consist of light coloured siliceous quartzites, sandstone, grits and banded, light and dark slates belonging to the Balfour series of Cambrian age. The strata strike in a general north-westerly direction and dip at 50°-60° to the north-east.

The nearest igneous rocks occur in the vicinity of Balfour, 11 miles to the south-east, in the form of small amphibolite dykes. Granite is exposed on the coast line at Sandy Cape, 18 miles to the south of Nelson River.

The Iron Deposit.

Abandoned Sections 2923/M - 40 acres and 2942/M - 40 acres.- The lode outcrop was discovered towards the end of 1906 and two 40 acre mineral sections were applied for in the names of M.H. Gaffney and J.S. Fulton, and E. Farley respectively. It was considered at the time that the exposure represented the oxidised outcrop of a copper lode. Some superficial prospecting was undertaken at surface and a high level adit commenced. This work was soom abandoned, however, and no mining development has since been carried out.

The deposit consists of a well defined tabular lode traversing the mineral sections over a length of 33 chains from north-west to south-east. The lode commences in the north, a short distance inside the northern boundary of Section 2923/M and continues with a short interruption, on a general strike of S. 31°E., across the southern boundary, and penetrates into Section 2942/M for a distance of 10½ chains.

It follows the course of a ridge adjacent to the south-east bank of Nelson River. At northern end the lode occurs on the western fall but further south it crosses the ridge top and outcrops as a cliff face, 20 to 30 feet high, along the eastern fall, a steep gorge, dropping 110 feet to the river.

The width of the lode varies from a maximum of 40 feet to a minimum of 3 feet, and averages about 20 feet. At one point in the south of Section 2923/M, the only indication of its existence consists of a few scattered pieces of detrital iron at surface along a length of two chains. In numerous places, the outcrop is largely concealed by boulders of iron and other detrital matter. Other than along the cliff face, the outcrop rises little above the general level of the surface and in no place exceeds a height of 6 feet.

The deposit varies with reference to the type of iron mineral present and also the iron content, along the strike of the lode. The greater portion of the outcrop in the northern section, consists of magnetite and limonite with minor quantities of hematite, containing siliceous blebs and patches. Quartz veinlets traverse the lode at frequent intervals.

The exposure of the lode along the cliff, northwards of the south boundary of Section 2923/M, shows no change in the character of the deposit from the ridge to a depth of 30 feet below. In this locality, it consists principally of hematite and limonite with small quantities of magnetite. Films of quartz are visible along joint planes and quartz veins occur up to ½ inch in width.

In the southern section, the grade of ore gradually improves, with an increase of hematite and a corresponding decrease of magnetite, limonite and silica. The last five chains at the south end consist almost wholly of hematite with a little magnetite in places.

With the exception of some superficial trenching at surface the only opening is represented by a short high level adit. This is sited four chains north of the southern boundary of Section 2923/M and 25 feet below the outcrop, on the steep eastern slope to Nelson River Gorge. The adit is directed westerly over a length of 18 feet and was driven for 14 feet in sandstones, grits and banded slates. The rocks have a strike of N. 20°W. and dip to the north-east of 55°. The iron lode, here consisting of massive limonite in association with a little fine grained magnetite, was cut at four feet from the end. A defined wall, dipping steeply to the west, occurs at the junction of the lode with soft weathered slates. Specimens of quartz containing finely chrystalline pyrite are present on the spoil dump at adit entrance. Similar material could not be detected in the adit but it probably exists in the form of veins in the wall rocks.

The following assay results of samples taken at intervals across the outcrop give an indication of the quality of the deposit :

Constituents.	Reg. No. 453/40	Reg. No. 454/40	Reg. No. 455/40	Reg. No. 456/40	Reg. No. 457/40	Reg. No. 458/40	Reg. No. 459/40
	Sample No.1	Sample No. 2	Sample No. 3	Sample No. 4	Sample No. 5	Sample No. 6	Sample No. 7
	Sample Width 4'	Sample Width 23'	Sample Width 28'	Sample Width 32'	Sample Width 20'	Sample Width 25'	Sample Width 10'
SiO_2	24.0 %	20.52%	1.44%	19.12%	23.24%	22.28%	23.08%
Fe	48.9 %	52.6 %	65.7%	54.2 %	50.3 %	51.9 %	50.6 %
Mn	0.03%	0.12%	0.13%	Trace	0.03%	0.04%	0.05%
P_2O_5	0.04%	0.04%	0.08%	0.05%	0.05%	0.01%	0.01%
S	0.02%	0.03%	0.02%	0.01 %	0.01%	0.01%	0.03%

The above table illustrates that, with the exception of No. 3 sample taken from the southern end of the deposit, the silica content averages 22 %.

An assay of No. 2 sample for gold returned a nil result.

Conclusions.

The Nelson River body is a low grade iron deposit with a high silica content.

For open-cut mining purposes, only small tonnages of usable ore above the zone of contact with the surrounding country rocks, are available.

To allow for sufficient batter for the sides of an open cut, probable reserves can only be calculated as a wedge of ore extending below the zone of contact to a depth equal to the width of the body at country rock level, in this instance not exceeding 20 feet as an average.

Taking the above details into consideration, the deposit at Nelson River cannot be regarded as a usable body of iron ore under present ruling conditions.

(F. Blake)
GEOLOGIST

Department of Mines,
HOBART.

9th September, 1947.