

Quest Exploration Pty Ltd

EL. 3/67 + 9/65

67-484

SCOUT DRILLING OF THE
EAST COAST AREA OF
KING ISLAND

MICROFILMED

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P. N. JOHNSTON

1967

See loose plan



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1. INTRODUCTION

This report describes the scout exploration of an area covered under Tasmanian Exploration Licences No. 3/67 held by Quest Exploration Pty. Ltd. Agreement had been reached with Quest for W.T.N.L. to investigate this area.

The area of the exploration leases investigated comprises the coastal strip about 7 miles wide from the Sea Elephant River northwards to the N.E. coast, with a complex area in the southern half excepted (this belonging to Hawkes Alluvial). The approximate area of the leases is 65 square miles. The area can be roughly divided into three N - S strips, -

- 1) the modern coastal dunes 30 - 80 chains wide, -
- 2) a long permanent swamp 30 - 50 chains wide and, -
- 3) a roughly flat area stretching from the swamp to the western boundary of the area. This flat area has a vaguely defined ridge running parallel to the swamp and is broken by isolated sand ridges and hills. The general drainage is from the west into the swamp by numerous small creeks and the only outlet from the swamp is south into the Sea Elephant River. This swamp virtually isolates the coastal dune area, the only access being around the northern end.

Mount Counsel (Sea Elephant Hill) is the only prominent feature and consists of a weathered granite intrusion into highly micaceous schists. The area south of Mount Counsel is inaccessible except in very dry periods and appears to be the alluvial plain of the Sea Elephant River. This is further confirmed by the small alluvial tin workings in this area.

2. SUMMARY

From the results of the limited drilling carried out it does not appear that the area is of significant economic interest. The heavy mineral assemblage is so low in rutile and zircon that the area of deposit required to be of economic significance for a potential mine for these minerals would be very large, and it is unlikely to have been missed even with the scout drilling described. Based on the heavy assemblage, a deposit containing 6-10% heavy mineral is required, whereas the average of the holes drilled is in the region of 0.1%.

3. DRILLING

On instruction from the Western Titanium N.L. consulting geologist, Mr. Forman, investigation was centered on the ridges

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running parallel to the swamp with lateral lines running E.W. from this line. No attention was to be payed to the recent dunes.

In June a line was cleared from a point S.S.E. of Penny's Lagoon on a magnetic bearing of 174° to a point due E of Mount Counsel. This line was pegged at 8 chain intervals and the relative heights of the pegs ascertained. A point on an E.W. ridge near the middle of the line was taken as the datum point "00" and all drilling was done in relation to this point.

In June when the line was finished it was possible to drive down its full length; by the middle of July it was possible to traverse the line even with the Snocat without numerous detours. Unfortunately, an access track cleared from Mount Counsel to Reekara Road proved unusable due to flooding in the paddocks at the end of Reekara Road. The creek at the north end of the line was also impassable so that the only access was through the gate opposite 80N. The gate was approximately $3\frac{1}{2}$ miles from the nearest point on the line and it frequently took over an hour to get from the gate to the drilling site.

Drilling was started at the north end of the line in the third week in July and continued southward at 8 chain intervals, staying whenever possible, on the line. The ridges proved to be barren at the northern end and to be mostly wind blown sand. Between 80N and the creek at 40S the underlying weathered mica schist was only 9 ft. down and this undoubtedly caused the heavy ti-tree growth. Some schist in fact outcrops at the creek. The area between 40N and 80S was generally barren sands with the appearance of being wind blown and in fact the relatively high E-W ridge at 00 proved to have no "rock" core, but to be sand to over 50 feet. From 80S to 144S the ground to the west of the line was heavily timbered and gave the appearance of having weathered mica schists near the surface. These were in fact found 12 chains west at 128S 1 foot below the surface. This area was too heavily timbered to enter with the Snocat. South of 144 was a swampy area with deep bog to the west and rising gradually from 200S onwards. From 200S to the end of the line weathered rock was found just under the surface.

Having reached the southern end of the line it was decided to put in lateral lines where ever this was possible. The most obvious place to start was in the area around 136S where some enrichment had been found. This was a difficult area with very heavy timber and swamp; some sort of pattern was drilled more or less outlining the enrichment (see separate note for this area).

No further lateral lines were possible until 00 was reached. Here lines were drilled as far east and west as possible. Some slight enrichment was found at 0034W and a small pattern laid out for drilling. The enrichment however, proved very small and to be only at about 17-25 feet. This enrichment is probably associated with the creek running through it. The sand in the ridges in this area all had the appearance of being wind blown. It was now decided that every effort should be made to drill a lateral line as far west as possible and 104N was chosen, as the ground to the west was only timbered in patches. It was hoped that the N-S track could be reached to give access from both ends. Eventually after reaching 112N 128W there was so much standing water that it was impossible to drill and we came out south to the track leading into 80N. We then drilled along this track and up the N.S. track to Scots Road.

a) Drilling Methods

A standard gemco drill was used with 3" x 6' solid auger rods and rock bit. There being surface water over much of the area and a very high water table it was obvious that if any samples were to be taken, drilling had to be done below the water table. Although no gemco technique gives particularly accurate results, the corkscrew method was adopted as the only way to get samples under water. This method was then used for all holes to avoid different types of errors. On the whole, good recoveries were obtained and whenever possible 12' or 18' of rod was pulled at a time to avoid too much disturbance of the saturated sands. In certain places no samples could be collected at depth. This applied particularly on the line running north from 80N 168W where there was clay and dry sand over very wet sands. In general the quality of the sample dropped off with depth except where peaty material was encountered.

In the conditions encountered on King Island it is not considered that the errors inherent in the Gemco augering techniques were serious. It is extremely unlikely that the sample was ever contaminated by as much as 50% and if seriously contaminated, then seldom by more than 25%. No-where does it appear that barren sand occurred under enrichment so that all errors will have tended to lower the apparent grade. Considering then that our error produced an apparent grade 25% below the true grade the effect would be to lower 5% material to 3.8%, and 1% material to 0.8% and 0.5% to 0.4%. This would only be serious in borderline areas. With an average rutile content of 6% in the heavy mineral and a cut off of 0.5% rutile, the economic level might be an apparent grade of 7% instead of 8.3%. In only two holes was the apparent grade anywhere near this level.

b) Sampling & Testing

Samples were collected at 6' intervals but in most cases the top foot of each hole was rejected as the root matter caused blockages in the table feed system. The samples were sorted and when they were too small for tabling bulked proportionally with the next sample from the same hole. Spear samples were then taken for moisture calculation. The sample was then weighed and tabled, the middlings being retabled. The concentrate was then dried and weighed. The dry weight of the sample was calculated from the result of the moisture determination and the weight of the concentrate calculated as a percentage of the dry weight of the sample. A home made oven heated by bottled gas was used for drying and although the running temperature was only about 180°F this was quite adequate for clean sands. Occasional samples with high clay content had to be puddled before tabling.

Checks on the tailings for heavy mineral showed a maximum loss of about 0.04%. The sample as received was weighed to the nearest 10 gms. and the concentrate to ± 2 gms. With a sample weighing 8 kilos and a concentrate weighing 500 gms., this would give a maximum error of about $\pm 0.03\%$. The heavy mineral was determined using bromoform and weighed with a maximum error of ± 0.02 gms. This gave, with a head sample of 25 gms. and a heavy mineral of 1.2 gms. (i.e. 5% H.M. in the concentrate), an error of 0.1% i.e. if the concentrate was 10% of the total sample, an error of 0.01%. If the heavy mineral were 50.0% of the concentrate the error was 0.08% or 0.008% of the total sample.

4. DRILLING RESULTS

a) General (See Appendix A "Drilling Plan", and Appendix B "Drilling Results".)

Only one area of enrichment was found during drilling and this was small (see below). Unfortunately the pattern of drilling was very much dictated by the nature of the country and the large areas of standing water. The scant drilling pattern makes it impossible to draw up any detailed geological conclusions; only one obvious shore line was discovered over a small area. However, certain general assumptions can be made.

Two rock areas were found, the obvious outcrop at Mount Counsel, which stretches northwards for at least a mile and another small less obvious area between 40N and 80N. There is also some evidence of rock about 180 chains west of 80N. The only other surface rock in the area is a quartz quarry about 1 mile north of the bridge over the drain on Scots Road. The sand hills

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and ridges all have the appearance of being wind blown. Over most of the area a layer of "peat", more correctly fine organic matter and staining, was found near the bottom of the sand. In one or two places fairly angular pebbles were found, suggesting old stream beds. The line of holes drilled northwards at 187W had a layer of hard silty clay about 3 ft. thick near the surface.

The general impression is that most of the area is an old swamp lying on the schists and shales and filled in by wind blown sands and some detrital material. The "bottom" seems to be rising generally westwards and there is some suggestion that the old shore lines may have run more N W from Mount Counsel, but there is very little real evidence to support this.

Although the drilling done has been very limited, it does not appear that the area is of significant economic interest. The mineral assemblages are disappointing (see separate report), and the area of deposit require with these low grade rutile concentrates would be so large that it is unlikely that an area of this size has been missed. The average heavy mineral content for all the holes drilled is in the region of 0.1%. If there were a large deposit of the necessary 6-10% heavy mineral concentration, then the average grade of the sand could be expected to be higher.

a) Area of Enrichment

The only area with any significant enrichment that was found lies between 112S and 152S. This is on the eastern edge of an area of heavy timber. The presence of heavy timber often signified the presence of weathered shale and schist near the surface. The only place where it was possible to drill west of the line in fact revealed clay one foot below the surface at 11 chains west of 128S.

The weathered shales also approach the surface to the south being only 5 ft. deep at 168S and there is no sand cover from there to Mount Counsel.

Even in this area only one hole showed a H.M. value over 5.0%. The area showing heavy mineral values over 1% is very small and not well defined but at the best might be 8 chains wide by 40 chains long with an average depth of 25 ft. The only holes with heavy mineral content over 1% are listed below together with the percentage of rutile and zircon and the depth in each case.

| Location | % H.M. | % Rutile | % Zircon | Depth |
|----------|--------|----------|----------|-------|
| 112S | 1.3 | 0.08 | 0.12 | 23' |
| 120S | 1.0 | 0.06 | 0.11 | 23' |
| 128S 4W | 2.3 | 0.25 | 0.38 | 8' |
| 128S | 3.8 | 0.16 | 0.38 | 29' |
| 136S 2E | 11.1 | 0.46 | 1.07 | 25' |
| 144S | 5.1 | 0.32 | 0.73 | 11' |
| 144S 4E | 1.2 | 0.08 | 0.12 | 19' |
| 168S 3W | 1.2 | *0.08 | *0.12 | 5' |

* No heavy mineral assemblage done. Figures are based on average of other results.

The variation between holes relatively close together makes it impossible to calculate with reasonable accuracy the heavy mineral content of the area. The area of enrichment may be larger than that found by drilling but the mineral assemblage and very difficult terrain made further drilling appear unnecessary.

c) Mineralogy

Fifteen separate samples were made up for analysis of their heavy mineral contents. These fall into three geographical groups; (i) sample S6 from the recent dunes near Boulder Point (ii) composite samples from holes 152N 0-4-6E and 160N 0-2-4-6E and (iii) composites of 12 holes between 112S and 144S.

Approx. Percentage (By Weight)

| Location | Zircon | Rutile | Ilmenite | Leucosene | Garnet | Trash |
|----------|--------|--------|----------|-----------|--------|-------|
| S6 | 14 | 5 | 14 | 2 | 13 | 52 |
| 152N | 10 | 4 | 35 | 10 | 6 | 35 |
| 160N | 11 | 4 | 36 | 6 | 5 | 38 |
| 112S | 9 | 6 | 13 | 2 | 40 | 30 |
| 120S | 11 | 6 | 12 | 1 | 15 | 55 |
| 128S | 10 | 4 | 8 | 1 | 22 | 55 |
| 128S 4W | 16 | 11 | 12 | 6 | 6 | 49 |
| 128S 2E | 7 | 5 | 8 | 2 | 14 | 64 |
| 136S 2E | 10 | 4 | 6 | 0 | 44 | 36 |
| 136S 12E | 11 | 3 | 7 | 3 | 13 | 63 |
| 136S 24E | 18 | 11 | 22 | 7 | 18 | 24 |
| 136S 28E | 19 | 12 | 36 | 10 | 11 | 12 |
| 144S | 14 | 6 | 14 | 1 | 12 | 53 |
| 144S 4E | 10 | 6 | 8 | 3 | 27 | 46 |
| 144S 20E | 17 | 7 | 28 | 3 | 18 | 27 |
| Average | 12 | 6 | 17 | 4 | 18 | 43 |

Very little significant difference can be found between the groups, there being too few samples in groups (i) and (ii). However, group two does seem to have a high ilmenite content.

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The trash mineral content (tourmaline, hypersthene) is very high and there is very little intermediate material between ilmenite and leucoxene. These two features possibly indicate that the heavy mineral "concentration" has not been subjected to much weathering or wave action and has perhaps been derived direct from a crystalline source and not by the reworking of a heavy mineral bearing sediment.

The average Rutile and Zircon contents of the heavy mineral assemblage is 6% and 12% respectively. With this low rutile and zircon content the possibility of finding economic deposits is much reduced.

Much of the zircon and rutile was minus 100 mesh B.S.S. in size.

Attention is drawn to the similarity between these assemblages and those found by Billingshurst (1) in his previous work on King Island material.

Ref:

- (1) Billingshurst W.M. "Investigation of Beach Sands from East Coast, King Island. 11.4.67."

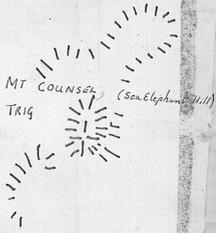
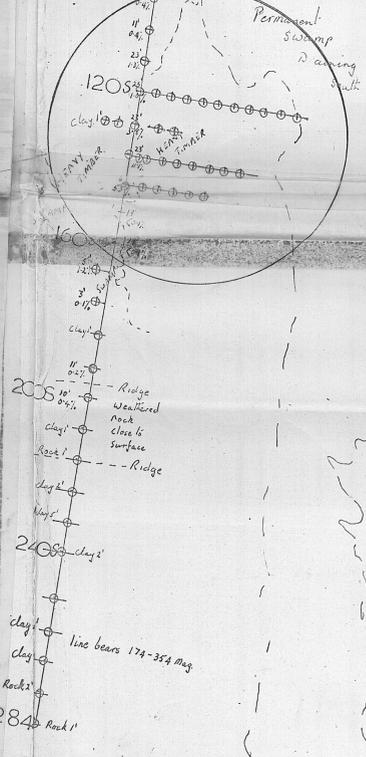
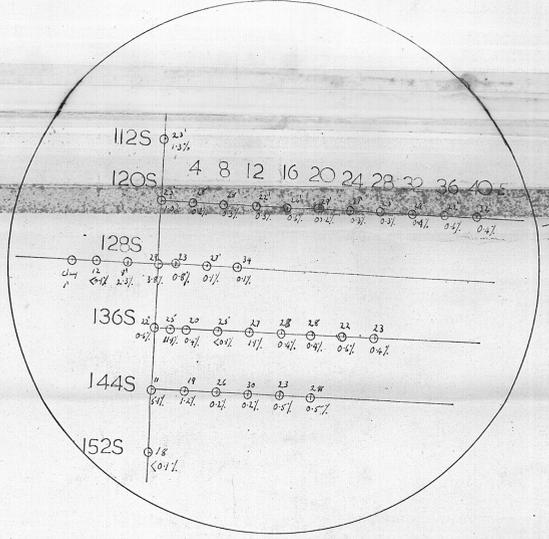
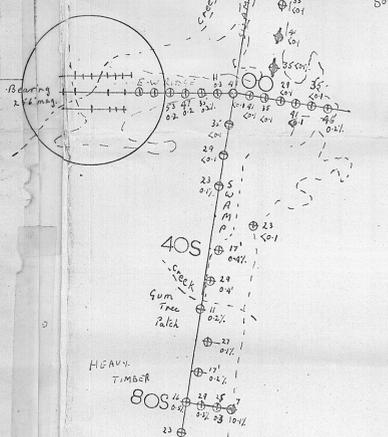
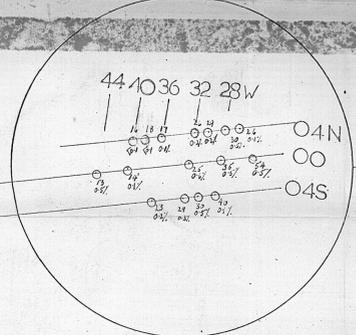
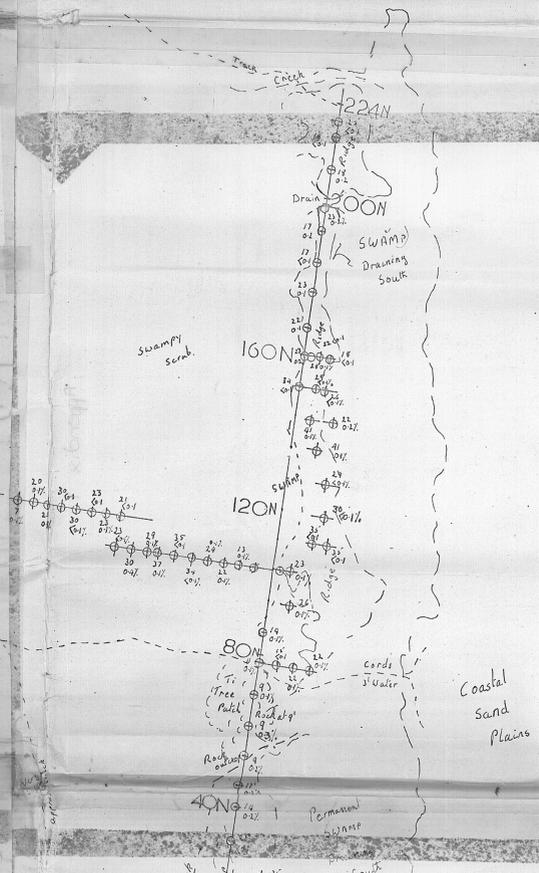
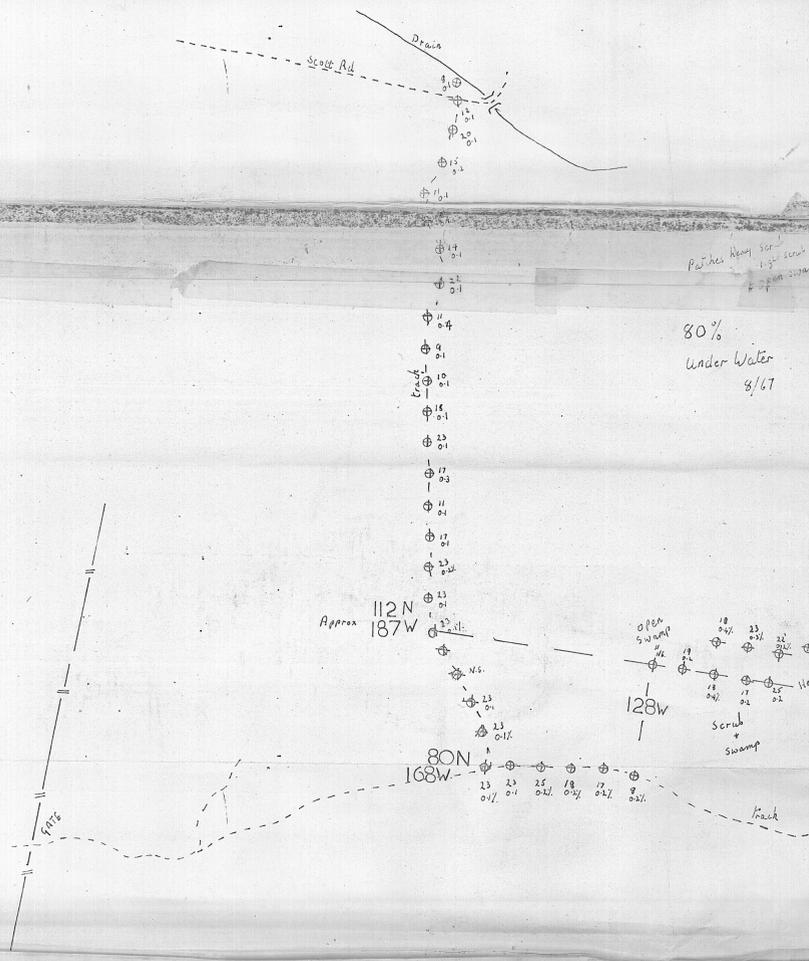
APPENDIX "A"

DRILLING PLAN

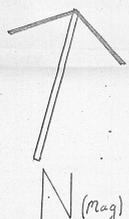
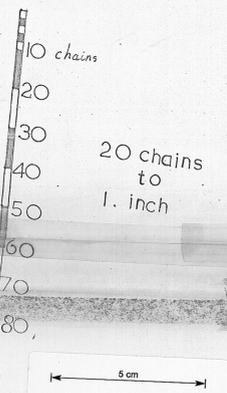
LAKE MARTHA LAVINIA

PENNYS LAGOON

LAVINIA POINT



King Island
drilling plan
1967
Western Titanium NL



To accompany report by P.W. JOHNSTON 1967
as APPENDIX "A"

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APPENDIX "B"

DRILLING RESULTS

| LAB. NO. | LOCATION | DEPTH | % H.M. | COMPOSITE |
|----------|----------|-------|--------|-----------|
| 015 | 220N | 0-15 | 0.03 | |
| 016 | | 15-25 | 0.04 | .2 |
| 017 | 216N | 0-10 | 0.05 | |
| 018 | | 10-18 | 0.09 | .2 |
| 019 | 208N | 0-10 | 0.09 | |
| 020 | | 10-18 | 0.24 | 0.2 |
| 021 | 199N | 0- 8 | 0.17 | |
| 022 | | 8-18 | 0.29 | |
| 023 | | 18-23 | 0.29 | 0.25 |
| 024 | 192N | 0- 6 | 0.17 | |
| 025 | | 8-17 | 0.17 | 0.2 |
| 026 | 184N | 0- 5 | 0.08 | |
| 027 | | 6-17 | 0.05 | < 0.1 |
| 028 | 176N | 0-11 | 0.02 | |
| 029 | | 11-23 | 0.16 | 0.1 |
| 030 | 152N 4E | 0-16 | 0.05 | |
| 031 | | 16-29 | 0.12 | 0.1 |
| 032 | 152N 6E | 0-17 | 0.03 | |
| 033 | | 17-26 | 0.18 | 0.1 |
| 034 | 160N 6E | 0-10 | 0.04 | |
| 035 | | 10-18 | 0.06 | < 0.1 |
| 036 | 160N 4E | 0-16 | 0.04 | |
| 037 | | 16-22 | 0.19 | < 0.1 |
| 038 | 160N 2E | 0-10 | 0.07 | |
| 039 | | 10-28 | 0.18 | < 0.1 |
| 040 | 160N | 0-11 | 0.22 | |
| 041 | | 11-25 | 0.22 | 0.2 |
| 042 | 168N | 0-10 | 0.06 | |
| 043 | | 10-22 | 0.15 | < 0.1 |
| 044 | 152N | 0-17 | 0.06 | |
| 045 | | 17-34 | 0.15 | 0.1 |
| 046 | 144N | 0-17 | 0.07 | |
| 047 | | 17-29 | 0.25 | 0.1 |
| 048 | 144N 4E | 0-17 | 0.05 | |
| 049 | | 17-29 | 0.11 | |
| 050 | | 29-41 | 0.20 | 0.1 |
| 051 | 144N 8E | 1-17 | 0.22 | |
| 052 | | 17-22 | 0.09 | 0.2 |
| 053 | 136N 6E | 1-17 | 0.03 | |
| 054 | | 17-29 | 0.12 | |
| 055 | | 29-41 | 0.22 | 0.1 |
| 056 | 128N 9E | 1-17 | 0.09 | |
| 057 | | 17-29 | 0.1 | < 0.1 |
| 058 | 120N 10E | 1-17 | 0.05 | |
| 059 | | 17-23 | 0.07 | |
| 060 | | 23-35 | 0.07 | < 0.1 |
| 061 | 112N 8E | 1-17 | 0.03 | |
| 062 | | 17-23 | 0.09 | |
| 063 | | 23-35 | 0.15 | < 0.1 |
| 064 | 112N 12E | 1-23 | 0.07 | |
| 065 | | 23-35 | 0.12 | < 0.1 |

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| LAB. NO. | LOCATION | DEPTH | % H.M. | COMPOSITE |
|----------|----------|-------|--------|-----------|
| 066 | 104N 4E | 1-11 | 0.04 | |
| 067 | | 11-23 | 0.12 | < 0.1 |
| 068 | 96N 6E | 1-11 | 0.04 | |
| 069 | | 11-23 | 0.17 | .1 |
| 070 | 88N | 1-11 | 0.13 | |
| 071 | | 11-14 | 0.4 | 0.19 |
| 072 | 80N | 1-11 | 0.14 | 0.14 |
| 073 | 72N | 1-9 | 0.1 | 0.1 |
| 074 | 64N | 1-9 | 0.33 | 0.33 |
| 075 | 56N | 1-9 | 0.21 | 0.21 |
| 076 | 46N | 1-17 | 0.21 | 0.21 |
| 077 | 40N | 1-11 | 0.09 | |
| 078 | | 11-17 | 0.24 | 0.18 |
| 079 | 32N | 1-11 | 0.03 | |
| 080 | | 11-17 | 0.17 | < 0.1 |
| 081 | 24N 8E | 1-11 | 0.04 | |
| 082 | | 11-23 | 0.05 | |
| 083 | 24N 8E | 23-35 | 0.10 | < 0.1 |
| 084 | 16N 8E | 1-11 | 0.05 | |
| 085 | | 11-23 | 0.03 | |
| 086 | | 23-29 | 0.04 | < 0.1 |
| 087 | | 29-41 | 0.06 | |
| 088 | 08N 8E | 1-11 | 0.03 | |
| 089 | | 11-23 | 0.03 | |
| 090 | | 23-35 | 0.03 | < 0.1 |
| 091 | 00N | 1-11 | 0.08 | |
| 092 | | 11-23 | 0.09 | |
| 093 | | 23-29 | 0.05 | |
| 094 | | 29-41 | 0.08 | < 0.1 |
| 095 | 8S | 1-11 | 0.02 | |
| 096 | | 11-23 | 0.02 | |
| 097 | | 23-35 | 0.02 | < 0.1 |
| 098 | 16S | 1-11 | 0.05 | |
| 099 | | 11-17 | 0.15 | |
| 100 | | 17-29 | 0.09 | < 0.1 |
| 101 | 24S | 1-11 | 0.16 | |
| 102 | | 11-23 | 0.10 | 0.13 |
| 103 | 32S 10E | 1-11 | 0.06 | |
| 104 | | 11-23 | 0.07 | < 0.1 |
| 105 | 40S 3E | 1-11 | 0.18 | |
| 106 | | 11-17 | 0.70 | 0.36 |
| 107 | 48S 2E | 1-11 | 0.12 | |
| 108 | | 11-17 | 0.46 | |
| 109 | | 17-23 | 0.73 | 0.37 |
| 110 | | 23-29 | 0.36 | |
| 111 | 56S | 1-2 | 0.16 | |
| 112 | | 2-11 | 0.36 | 0.23 |
| 113 | 64S 3E | 1-11 | 0.19 | |
| 114 | | 11-17 | 0.12 | |
| 115 | | 17-23 | 0.04 | 0.13 |
| 116 | 72S 3E | 1-11 | 0.13 | |
| 117 | | 11-17 | 0.38 | 0.21 |
| 118 | 80S 2E | 1-11 | 0.17 | |
| 119 | | 11-17 | 0.27 | |
| 120 | | 17-29 | 0.49 | 0.34 |

| LAB. NO. | LOCATION | DEPTH | % H.M. | COMPOSITE |
|----------|----------|-------|--------|-----------|
| 121 | 88S 2E | 1-11 | 0.39 | |
| 122 | | 11-17 | 0.58 | |
| 123 | | 17-23 | 0.32 | 0.41 |
| 124 | 96S | 1-11 | 0.43 | 0.4 |
| 125 | 104S | 1-11 | 0.38 | 0.4 |
| 126 | 112S | 1-11 | 1.08 | |
| 127 | | 11-17 | 1.82 | 1.34 |
| 128 | 120S | 1-11 | 1.40 | |
| 129 | | 11-17 | 0.99 | |
| 130 | | 17-23 | 0.45 | 1.0 |
| 131 | 128S | 1-11 | 2.05 | |
| 132 | | 11-17 | 7.75 | |
| 133 | | 17-23 | 3.94 | 3.85 |
| 134 | 136S 2E | 1-11 | 15.5 | |
| 135 | | 11-17 | 8.0 | |
| 136 | | 12-23 | 7.6 | 11.1 |
| 137 | 144S | 1- 6 | 5.5 | 5.5 |
| 138 | 152S | 1- 5 | 0.1 | |
| 139 | | 5-19 | 0.05 | < 0.1 |
| 140 | 160S 2W | 1- 5 | 0.87 | |
| 141 | | 5-14 | 0.81 | < 0.1 |
| 142 | 168S 3W | 1- 5 | 1.25 | |
| 143 | 8S | 0- 3 | 0.2 | 0.2 |
| 144 | 7S | 0-10 | 0.3 | 0.3 |
| 145 | 6S | 0-10 | 0.7 | 0.7 |
| 146 | 128S 2E | 1-11 | 0.58 | |
| 147 | | 11-17 | 1.1 | |
| 148 | | 17-23 | 1.3 | 0.85 |
| 149 | 176S 2W | 0- 3 | 0.14 | 0.14 |
| 150 | 192S | 0- 5 | 0.21 | |
| 151 | | 5-11 | 0.23 | 0.2 |
| 152 | 200S | 3-10 | 0.4 | 0.4 |
| 153 | 216S | 1- 3 | 0.02 | < 0.1 |
| 154 | 5S | 0-10 | 0.31 | 0.3 |
| 155 | 128S 6E | 1-17 | | |
| 156 | 128S 6E | 17-27 | 0.09 | |
| 157 | 128S 10E | 0-17 | | |
| 158 | | 17-34 | 0.16 | |
| 159 | 136S 4E | 1- 5 | 0.13 | |
| 160 | | 5-11 | | |
| 161 | | 11-20 | 0.63 | |
| 162 | 136S 8E | 1-17 | 0.09 | |
| 163 | | 17-25 | 0.08 | < 0.1 |
| 164 | 136S 16E | 1-17 | 0.26 | |
| 165 | | 17-28 | 0.59 | 0.39 |
| 166 | 136S 20E | 1-17 | 0.38 | |
| 167 | | 17-28 | 0.42 | 0.40 |
| 168 | 136S 24E | 1-11 | 0.67 | |
| 169 | | 11-22 | 0.61 | 0.64 |
| 170 | 136S 28E | 1-11 | 0.61 | |
| 171 | | 11-23 | 1.16 | 0.88 |

| LAB. NO. | LOCATION | DEPTH | % H.M. | COMPOSITE |
|----------|----------|-------|--------|-----------|
| 172 | 136S 12E | 1-11 | 0.76 | |
| 173 | | 11-17 | 1.74 | |
| 174 | | 17-27 | 1.07 | 1.10 |
| 175 | 120S 4E | 1-11 | 0.45 | |
| 176 | | 11-17 | 0.08 | |
| 177 | | 17-25 | 0.12 | 0.25 |
| 178 | 120S 8E | 1-11 | 0.33 | |
| 179 | | 17-28 | 0.21 | 0.27 |
| 180 | 120S 12E | 1-11 | 0.30 | |
| 181 | | 11-17 | 0.31 | 0.3 |
| 182 | 120S 16E | 1-11 | 0.40 | |
| 183 | | 11-17 | 0.43 | |
| 184 | 120S 16E | 17-24 | 0.96 | 0.58 |
| 185 | | | 0.34 | |
| 186 | 120S 20E | 1-11 | 0.24 | |
| 187 | | 11-17 | 0.16 | |
| 188 | | 17-29 | 0.17 | 0.19 |
| 189 | 120S 4W | 1- 8 | 2.31 | 2.31 |
| 190 | 120S 8W | 1-12 | 0.05 | 0.05 |
| 191 | 120S 24E | 1-11 | 0.26 | |
| 192 | | 11-17 | 0.46 | |
| 193 | | 17-29 | 0.37 | |
| 194 | | 29-37 | 0.26 | 0.33 |
| 195 | 120S 28E | 1-11 | 0.31 | |
| 196 | | 11-17 | 0.23 | |
| 197 | | 17-23 | 0.19 | 0.26 |
| 198 | 120S 32E | 1-11 | 0.38 | |
| 199 | | 11-17 | 0.41 | |
| 200 | | 17-23 | 0.42 | |
| 201 | | 23-29 | 0.42 | 0.40 |
| 202 | 120S 36E | 1-11 | 0.42 | |
| 203 | | 11-27 | 0.72 | 0.60 |
| 204 | 120S 40E | 1-11 | 0.59 | |
| 205 | | 11-17 | 0.33 | |
| 206 | | 17-23 | 0.27 | |
| 207 | | 23-32 | 0.36 | 0.41 |
| 208 | 136S | 1-11 | 0.20 | |
| 209 | | 11-22 | 0.89 | 0.56 |
| 210 | 144S 4E | 1-11 | 0.49 | |
| 211 | | 11-19 | 2.04 | 1.18 |
| 212 | 144S 8E | 1-11 | 0.10 | |
| 213 | | 11-17 | 0.21 | |
| 214 | | 17-26 | 0.13 | 0.15 |
| 215 | 144S 12E | 1-11 | 0.16 | |
| 216 | | 11-17 | 0.23 | |
| 217 | | 17-30 | 0.19 | 0.19 |
| 218 | 144S 16E | 1-11 | 0.46 | |
| 219 | | 11-17 | 0.55 | |
| 220 | | 17-23 | 0.49 | 0.52 |
| 221 | 144S 20E | 1-11 | 0.47 | |
| 222 | | 11-17 | 0.63 | |
| 223 | | 17-28 | 0.39 | 0.47 |
| 224 | 80S | 1-11 | 0.53 | 0.53 |
| 225 | 80S 12E | 1- 7 | 0.13 | 0.13 |

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| LAB. NO. | LOCATION | DEPTH | % H. M. | COMPOSITE |
|----------|----------|-------|---------|-----------|
| 226 | 80S 8E | 1-11 | 0.20 | |
| 227 | | 11-17 | 0.41 | |
| 228 | | 17-25 | 0.28 | 0.28 |
| 229 | 80S 4E | 1-11 | 0.24 | |
| 230 | | 11-22 | 0.49 | 0.37 |
| 231 | 004E/2 | 0-10 | 0.25 | |
| 232 | | 10-15 | 0.07 | < 0.19 |
| 233 | 004E | 1-11 | 0.13 | |
| 234 | | 11-17 | 0.11 | |
| 235 | | 17-23 | 0.05 | |
| 236 | | 23-29 | 0.04 | |
| 237 | | 29-35 | 0.06 | |
| 238 | | 35-41 | 0.07 | < 0.1 |
| 239 | 008E | 1-11 | 0.07 | |
| 240 | | 11-17 | 0.07 | |
| 241 | | 17-23 | 0.05 | |
| 242 | | 23-35 | 0.08 | < 0.1 |
| 243 | 0012E | 1-11 | 0.09 | |
| 244 | | 11-17 | 0.02 | |
| 245 | | 17-23 | 0.03 | |
| 246 | | 23-29 | 0.05 | < 0.1 |
| 247 | 0016E | 1-11 | 0.10 | |
| 248 | | 11-17 | 0.06 | |
| 249 | | 17-23 | 0.10 | < 0.1 |
| 250 | | 23-29 | 0.10 | |
| 251 | | 29-41 | 0.09 | 0.1 |
| 252 | 00 20E | 1-11 | 0.12 | |
| 253 | | 11-23 | 0.13 | |
| 254 | | 23-35 | 0.1 | 0.11 |
| 255 | 00 24E | 1-11 | 0.06 | |
| 256 | | 11-17 | 0.05 | |
| 257 | | 17-29 | 0.35 | |
| 258 | | 29-35 | 0.23 | |
| 259 | | 35-46 | 0.24 | 0.20 |
| 260 | 00 8W | 1-11 | 0.17 | |
| 261 | | 11-17 | 0.20 | |
| 262 | | 17-29 | 0.11 | |
| 263 | | 29-35 | 0.17 | 0.15 |
| 264 | 00 12W | 1-17 | 0.35 | |
| 265 | | 17-29 | 0.11 | |
| 266 | | 29-41 | 0.22 | |
| 267 | | 41-47 | 0.16 | 0.23 |
| 268 | 00 16W | 1-11 | 0.13 | |
| 269 | | 11-23 | 0.26 | |
| 270 | | 23-35 | 0.11 | |
| 271 | | 35-53 | 0.21 | 0.18 |
| 272 | 00 20W | 1-11 | 0.29 | |
| 273 | | 11-17 | 0.20 | |
| 274 | | 17-29 | 0.20 | |
| 275 | | 29-41 | 0.24 | |
| 276 | | 41-50 | 0.28 | 0.25 |
| 277 | 00 4W | 1-11 | 0.26 | 0.26 |
| 278 | 00 24W | 1-11 | 0.24 | |
| 279 | | 11-17 | 0.21 | |
| 280 | | 17-29 | 0.29 | |
| 281 | | 29-41 | 0.82 | |
| 282 | | 41-54 | 0.67 | 0.48 |

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| LAB. NO. | LOCATION | DEPTH | % H.M. | COMPOSITE |
|----------|----------|-------|--------|-----------|
| 283 | 00 28W | 1-11 | 0.24 | |
| 284 | | 11-23 | 0.28 | |
| 285 | | 23-35 | 0.95 | 0.51 |
| 286 | 00 32W | 1-11 | 0.29 | |
| 287 | | 11-17 | 0.12 | |
| 288 | | 17-25 | 1.50 | 0.65 |
| 289 | 00 40W | 1-14 | 0.11 | 0.11 |
| 290 | 00 44W | 1-13 | 0.52 | 0.52 |
| 291 | 104N 8W | 1-13 | 0.13 | 0.13 |
| 292 | 104N 12W | 1-11 | 0.09 | |
| 293 | | 11-22 | 0.11 | 0.10 |
| 294 | 104N 16W | 1-11 | 0.07 | |
| 295 | | 11-24 | 0.12 | 0.1 |
| 296 | 104N 20W | 1-11 | 0.05 | |
| 297 | | 11-23 | 0.08 | |
| 298 | | 23-34 | 0.12 | 0.1 |
| 299 | 104N 24W | 1-11 | 0.05 | |
| 300 | | 11-23 | 0.15 | |
| 301 | | 23-35 | 0.09 | 0.1 |
| 302 | 104N 28W | 1-11 | 0.12 | |
| 303 | | 11-23 | 0.09 | |
| 304 | | 23-27 | 0.19 | 0.14 |
| 305 | 104N 32W | 1-17 | 0.13 | |
| 306 | | 17-29 | 0.09 | 0.11 |
| 307 | 104N 36W | 1-11 | 0.13 | |
| 308 | | 11-17 | 1.05 | |
| 309 | | 17-30 | 0.36 | 0.41 |
| 310 | 104N 40W | 1-11 | 0.05 | |
| 311 | | 11-25 | 0.06 | 0.1 |
| 312 | 112N 40W | 1-11 | 0.08 | |
| 313 | | 11-21 | 0.08 | 0.1 |
| 314 | 112N 44W | 1-11 | 0.07 | |
| 315 | | 11-23 | 0.14 | 0.11 |
| 316 | 112N 48W | 1-17 | 0.07 | |
| 317 | | 17-23 | 0.11 | 0.1 |
| 318 | 112N 52W | 1-17 | 0.04 | |
| 319 | | 17-30 | 0.15 | 0.1 |
| 320 | 112N 56W | 1-17 | 0.04 | |
| 321 | | 17-30 | 0.04 | 0.1 |
| 322 | 112N 60W | 1-11 | 0.07 | |
| 323 | | 11-21 | 0.22 | 0.14 |
| 324 | 112N 64W | 1-11 | 0.06 | |
| 325 | | 11-20 | 0.17 | 0.11 |
| 326 | 112N 68W | 1-7 | 0.10 | 0.1 |
| 327 | 80N 4E | 1-15 | 0.08 | 0.1 |
| 328 | 80N 8E | 1-11 | 0.03 | |
| 329 | | 11-22 | 0.25 | 0.14 |
| 330 | 80N 12E | 1-11 | 0.04 | |
| 331 | | 11-17 | 0.06 | |
| 332 | | 17-21 | 0.16 | 0.1 |
| 333 | 04S 28W | 1-11 | 0.05 | |
| 334 | | 11-17 | 0.09 | |
| 335 | | 17-23 | 0.29 | |
| 336 | | 23-29 | 0.13 | |
| 337 | | 29-35 | 0.11 | |
| 338 | | 35-40 | 0.20 | 0.13 |

| LAB. NO. | LOCATION | DEPTH | % H.M. | COMPOSITE |
|----------|-----------|-------|--------|-----------|
| 339 | 04S 30W | 1-11 | 0.20 | |
| 340 | | 11-17 | 0.17 | |
| 341 | | 17-23 | 0.15 | |
| 342 | | 23-30 | 1.84 | 0.5 |
| 343 | 04S 32W | 1-11 | 0.50 | |
| 344 | | 11-17 | 0.11 | |
| 345 | | 17-25 | 0.09 | |
| 346 | | 23-29 | 0.79 | 0.3 |
| 347 | 04S 36W | 1-11 | 0.24 | |
| 348 | | 11-17 | 0.07 | |
| 349 | | 17-23 | 0.11 | 0.2 |
| 350 | 04N 28W | 1-11 | 0.14 | |
| 351 | | 11-17 | 0.15 | |
| 352 | | 17-23 | 0.29 | |
| 353 | | 23-30 | 0.55 | 0.3 |
| 354 | 04N 26W | 1-11 | 0.10 | |
| 355 | | 11-17 | 0.09 | |
| 356 | | 17-23 | 0.14 | |
| 357 | | 23-26 | 1.4 | 0.1 |
| 358 | 04N 30W | 1-11 | 0.14 | |
| 359 | | 11-17 | | |
| 360 | | 17-26 | | |
| 361 | | 23-34 | 0.40 | 0.2 |
| 362 | 04N 32W | 0-11 | 0.24 | |
| 363 | | 11-17 | 0.24 | |
| 364 | | 17-26 | 0.34 | 0.2 |
| 365 | 04N 36W | 1-17 | 0.10 | 0.1 |
| 366 | 04N 38W | 1-11 | 0.05 | 0.1 |
| 367 | 04N 38W | 11-18 | 0.08 | |
| 368 | 04N 40W | 1-16 | 0.07 | 0.1 |
| 369 | 122N 88W | 1-11 | 0.38 | |
| 370 | | 11-17 | 0.25 | |
| 371 | | 17-25 | 0.20 | 0.3 |
| 372 | 120N 96W | 1-11 | 0.30 | |
| 373 | | 11-22 | 0.13 | 0.2 |
| 374 | 120N 104W | 1- 5 | 0.32 | |
| 375 | | 5-17 | 0.25 | |
| 376 | | 17-23 | 0.49 | 0.3 |
| 377 | 120N 112W | 1-11 | 0.46 | |
| 378 | | 11-18 | 0.36 | 0.4 |
| 379 | 112N 98W | 1-11 | 0.15 | |
| 380 | | 11-15 | 0.24 | 0.2 |
| 381 | 112N 104 | 1-11 | 0.16 | |
| 382 | | 11-17 | 0.25 | |
| 383 | 112N 112W | 0-10 | 0.53 | |
| 384 | | 10-18 | 0.32 | |
| 385 | 112N 120W | 11-19 | 0.21 | 0.4 |
| 386 | 80N 128W | 1- 8 | 0.19 | 0.2 |
| 387 | 80N 136W | 1-11 | 0.11 | |
| 388 | | 11-17 | 0.23 | 0.2 |
| 389 | 80N 144W | 1-11 | 0.14 | |
| 390 | | 11-18 | 0.23 | 0.2 |
| 391 | 80N 152W | 1-11 | 0.13 | |
| 392 | | 11-17 | 0.41 | |
| 393 | | 17-25 | 0.23 | 0.2 |

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| LAB. NO. | LOCATION | DEPTH | % H.M. | COMPOSITE |
|----------|-----------|-------|--------|-----------|
| 394 | 80N 160W | 1-11 | 0.08 | |
| 395 | | 11-25 | 0.08 | 0.1 |
| 396 | 80N 168W | 1-11 | 0.12 | |
| 397 | | 11-23 | 0.13 | 0.1 |
| 398 | 88N 173W | 1-11 | 0.15 | |
| 399 | | 11-23 | 0.10 | 0.1 |
| 400 | 96N 178W | 1-11 | 0.18 | |
| 401 | | 11-23 | 0.10 | 0.1 |
| 402 | 112N 178W | 1-11 | 0.12 | |
| 403 | | 11-23 | 0.12 | 0.1 |
| 404 | 120N 178W | 1-11 | 0.12 | |
| 405 | | 11-23 | 0.08 | 0.1 |
| 406 | 128N 178W | 1-11 | 0.12 | |
| 407 | | 11-25 | 0.31 | 0.2 |
| 408 | 136N 178W | 1-11 | 0.11 | |
| 409 | | 11-17 | 0.19 | 0.1 |
| 410 | 144N 178W | 1-11 | 0.12 | 0.1 |
| 411 | 152N 178W | 1-11 | 0.24 | |
| 412 | | 11-17 | 0.28 | 0.3 |
| 413 | 160N 178W | 1-11 | - | |
| 414 | | 11-23 | 0.27 | 0.1 |
| 415 | 168N 178W | 1-11 | - | |
| 416 | | 11-18 | 0.17 | 0.1 |
| 417 | 176N 178W | 1-10 | 0.14 | 0.1 |
| 418 | 184N 178W | 1- 9 | 0.12 | 0.1 |
| 419 | 192N 178W | 1-11 | 0.67 | 0.7 |
| 420 | | 11-20 | 0.07 | 0.1 |
| 421 | 200N 187W | 1-11 | 0.06 | |
| 422 | | 11-22 | 0.09 | 0.1 |
| 423 | 208N 187W | 1-14 | 0.10 | 0.1 |
| 424 | 216N 187W | 1- 8 | - | 0.1 |
| 425 | 224N 187W | 1-11 | 0.09 | 0.1 |
| 426 | 232N 187W | 1-15 | 0.16 | 0.2 |
| 427 | 240N 187W | 1-11 | - | 0.1 |
| 428 | | 11-20 | 0.10 | 0.1 |
| 429 | 248N 187W | 1-12 | - | 0.1 |
| 430 | 256N 187W | 1- 8 | - | 0.1 |