

**Billiton Exploration Canada Ltd.  
Diamond Drill Log**

**PROJECT:** Buchans Junction    **DRILLED BY:** Petro Drilling    **DATE STARTED:** 29.7.99    **AZIMUTH:** -150°T    **LOCATION:** Grid 92+00W 110+00N    **HOLE #:** BJ 99-03

**PROPERTY:**    **LOGGED BY:** Barry Greene    **DATE COMPLETED:** August, 8, 1999    **DIP:** -50    **SHEET #:** 1

**LICENCE:** 6167M    **CORE SIZE:** NQ    **TOTAL DEPTH:** 179.0m

| FROM | TO     | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SAMPLE # | FROM | TO | LENGTH | %REC | Cu | Pb | Zn | Au |
|------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|----|--------|------|----|----|----|----|
| 0    | 8.90m  | Overburden / casing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |      |    |        |      |    |    |    |    |
| 7.90 | 17.54m | Qtz crystal felsic tuff (lapilli)<br>Light to medium green with strongly foliated / elongated felsic lithic clasts to 1cm long and 1-2m qtz eyes. Pyritic clasts? or distended veinlets to 1%.<br>- elongation of clasts @ ratio 3 : 1 defines macroscopic fabric<br>- good foliated sericitic matrix. Fabric @ 70 -75 degreeTCA<br>- > 10% Carbonate content (calcite?).... very reactive to HCL<br><br>12.55 – 13.92m – siliceous rhyolite dyke?<br>- buff to light yellowish –white, good siliceous alteration, well fractured<br>- --- 1% very fine disseminated pyrite throughout<br>- scattered 1mm quartz eyes / phenos<br>- sharp contacts @ 70 – 85degree TCA<br>- irregular fractures (brittle) filled with dark green chlorite and creamy sericite.<br><br>16.52 - 17.54m - fault gauge @ 55-60degree TCA<br><br>16.53 29.73 Tuffaceous sediment<br>Light green, strongly foliated and crenulated (70 degree TCA)<br>- fining downward sequence of bedded tuff or tuffaceous wacke. bedding @ 70 TCA<br>- moderately sericitic and containing <1% fine dissem. py. throughout<br>- locally (e.g. – 27.83 – 29m) mylonitic fabric. |          |      |    |        |      |    |    |    |    |

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| 28.73 | 32.0m  | Rhyolite dyke<br>Light grey, strongly siliceous, massive to weakly fractured...., strongly fractured to hectonically brecciated on the margins and bleached (on the margins) <ul style="list-style-type: none"><li>- very few sparce, tiny plag + qtz phenos (&lt;1mm)</li></ul>                                                                                                                                                                                                                                  |
| 32.0  | 42.90  | Felsic to intermediate tuff<br>Light to medium green, strongly foliated <ul style="list-style-type: none"><li>- good carbinite (calcite) alteration</li><li>- mod to good sericitic matrix</li><li>- locally 20-30% broken calcite veinlets give pseudofragmental texture.</li><li>- 1-2mm qtz grains / eyes in the matrix are rimmed by calcite.</li></ul>                                                                                                                                                       |
| 42.90 | 52.30m | Mafic tuff with intercalated rhyolite (dykes?)<br>Medium green mafic looking lithology with silica amygdules to 1cm. Siliceous intervals without amygdules - look like rhyolite but no visible qtz or plag phenos?<br><br>49.21 – 50.96 – Siliceous rhyolite looking lithology with 1-2% dissem.py and minor tott cpy ... badly broken.<br><br>44m – 59m - Core is broken badly – 85% recovery<br><br>48.28 - 66.07m - trace to minor << 1% specks of cyp to 5-8mm in size. also – 1-2% dissem pyrite throughout. |

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| 52.30 | 76.0m | Poly lithic volcanic breccia |
|-------|-------|------------------------------|

Multicoloured pink to light green to dark green predom matrix to locally clast supported breccia.

- contact with unit above is gradational
- basal contact is fault bounded
- matrix is medium green and chloritic to sericitic .. locally epidote altered (matrix contains 1% dissem py and local clots of cpy to 66.07m)
- clasts are subround and consists of pink rhyolite and epidote altered mafic
- poorly to unsorted from <1cm to 4cm clasts.

76.0  
~~1.56~~

89.91

Mineralized Rhyolite Breccia

76.0 – 77.3m - very badly broken – poor recovery

76.0 – 80.50 - Cream colored, silicified with 1-2% dissem. py and trace cpy in small clots.

- bleached, Fe Carb alt'n.
- fractured and brecciation fault related Gouge @ 80.5m @ 50 degree TCA.

79.50 - 82.33m – dark green chloritic matrix with minor creamy sericite or leucoxene specks.

- 10-15% white quartz phenos and possible clasts of white felsic material containing dissem. py. to 5%.

82.33 – 84.52 - fault zone with good gouge at top for 40cm and at bottom for 10cm.

Lithology within this interval is back to siliceous rhyolite as between 76.0 – 80.50m

N.B There appears to be juxtaposition of lithologies along some of the faults in this hole.

84.52 – 85.04m – akin to 80.50 – 82.33m

85.04 – 89.24 - Rhyolite breccia

- siliceous, light green to cream lithology consisting of brecciated rhyolite with monolithic but variably altered, sub angular clasts to 2-3cm
- Pervasive fault related fracturing throughout and fault gouge between 85.80 – 86.00m
- matrix supported bx is in part chloritic in part sericitic.
- 1-2% dissem. py throughout
- rhy. frags contain tiny qtz phenos.

89.24 – 89.91 – dark green diabase dyke. Fault gouge at top Sharp intrusive contact @ 85 degree TCA at base.

- 89.91 101.05m Massive Rhyolite (large qtz)  
Light brownish –yellow-tan, massive rhyolite with 10% 3-6mm qtz phenos.  
Some of which are round to subround and look like amygdules. Light brown  
due to Fe-Carb alteration. not completely pervasive but has progressed along  
cracks or fractures.  
- basal contact is faulted @ 50 degree TCA
- 101.05 110.70m Massive Rhyolite (small qtz)  
Light brownish – yellow , fe –carb altered rhyolite with 1-2mm qtz and plag Phenocrysts.  
- strongly fractured (fault related)  
- tr. dissem. py.  
- fault bound contacts.
- 110.70 112.28m Major Fault zone  
Very friable zone of unconsolidated to locally Semi-.....  
consolidated fault gouge / breccia  
- bottom 50cm contains grey pyritic matrix gouge with lithons of  
rhyolite floating in matrix
- 112.28 132.54m Large qtz rhyolite  
112.28 – 114.91m - light pink potassic alteration  
- minor dark green chlorite  
- 15-20% 1-2cm white siliceous rhyolite ‘ clasts’?... some of  
which may be phenos?  
  
114.91 – 120.00m – massive to fractured qtz and plag phyric rhyolite  
3-4mm white plag and 2-4mm qtz phenos.  
fracture surfaces lined with chlorite  
- mod ser. silica alteration - tr to <1% dissem. py.  
  
120.0 – 126.76m - brecciated rhyolite as above  
- local 10-15cm intervals of 3-5% fine dissem.py.  
  
128.80 – 132.40m - light pink potassic alteration associated with silica – ser- alteration  
Chloritic microfractures tr.py.

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- 132.54 141.07 Rhyolite breccia  
Matrix supported rhyolite bx with rounded rhy clasts to 3cm in sericitic matrix

- minor (<1%) dissem.py.

- 141.07      158.05      Polyolithic Breccia Sequence  
Mixed massive rhyolite clasts <1% dissem py in clasts, up to 30cm with red to dark grey granular wacke to mafic tuff looking matrix. Smaller round to subround clasts of pyritic siltstone?
- 143.5 – 143.68m - fault gouge
- 143.68 – 143.95m - bleached mafic dyke.
- 158.05      164.86      Massive large qtz rhyolite  
25 – 35%, 5mm to 1cm round to euhedral qtz phenos and aggregates set in a light pink somewhat K-spar altered sericitic matrix.
- sharp but conformable basal contact @ 80 TCA
- 164.86      179.0m      Intermediate Ashtuff  
Light green to green grey, fine grained granular tuff.
- no (or few) visible qtz eyes
  - good brittle-fracture network to 5-8% Calcite infilling fractures
  - no mineralization, weak sericite alteration in matrix of tuff.
- 179.00m - END OF HOLE