

PH01-01

0 - 6.30m **OVERBURDEN**

6.30-22.00m **Interbedded PELITE and FELSIC VOLCANIC** - Dark grey, thinly laminated with foliations at 90CA; ~2-3mm rounded qtz eyes/clasts within with very fine-grained grey matrix; ~5-10% po as very small or thin ≤ 1 mm wide laminations parallel to foliation; trace cpy, see pyrite along crosscutting features

6.93-6.98m **DIORITE (?)** - Coarse-grained qtz-rich, crosscutting medium-grained felsic volcanic (80CA)

7.24-7.46m Sharp and irregular contacts crosscutting **FELSIC VOLCANIC**, between two smaller coarse-grained **DIORITE (?)** intrusions; ~1cm wide qtz-rich veins crosscutting felsic volcanic; their contacts are 90CA and 40CA, respectively

Polished section at 8.70m

Core loss/ fractured core ~40cm @ 8.00m

8.20m - chlorite rich fractures (20CA) with large (max 4cm wide) py clots

9.88m Qtz rich vein (~2 cm wide) @ 60CA with py and po in felsic volcanic near contact with qtz rich vein and in inclusion of felsic volcanic within qtz vein; overall sulfides at contact and within qtz vein is 10%

22.00- 23.00m **PELITE** - As you go downhole (ie from 6.20m to the coarse-grained felsic volcanic layers), the grain size gets very fine-grained with very fine-grained po along foliations; 1-2 mm grey-bluish color cordierite along foliations; 9.15m: thin py rich fracture (10CA)

10.09m: Qtz vein (2 cm wide, 70CA) with 1 cm wide green altered felsic volcanic clasts, po within vein and wrapping around clasts (overall sulfides 5%)

Pyrite clots along chlorite-rich fracture planes 9.25m (60CA) and 9.70m (10CA)

11.32m: 2 cm wide qtz vein about perpendicular to CA with 5% po and possibly 3% sph along contacts and around clasts with qtz vein; very thin (< 1 mm) sph ? and py-po laminations decreasing at top and bottom contacts away from the qtz vein

Thin po laminations continue in very fine-grained (aphanitic) grey (dark and light) felsic volcanic

11.55m - ~0.5cm wide pistachio green epidote alteration vein (70CA)

Core loss: 12.38-13.67m fractured and broken core, still same grey fine-grained with po (and possibly sph) laminations (up to 15%) and 1-5cm clots of po)

13.67-15.20m **ALTERATION**: light green alteration (sericite and chlorite) especially at 13.70-14.25m; foliation (70CA) at 14.45m; < 1 mm wide garnets (faint pink) @ 13.95m and continuing downhole; very little (trace) diss po; py clots along fracture @ 14.20m; very fine-grained grey shiny mineral (possibly graphite); thin ~0.5cm wide qtz veins 20CA @ 14.20m; thin 0.5cm wide qtz veins @ 14.75m parallel to CA crosscutting altered felsic volcanic with purple and green alteration, foliation is 60CA

14.96m 3 cm wide qtz vein with py along contact, gradual contact within alteration (50CA)

Alteration gradually goes to dark purple with thin < 0.5 cm to 1cm wide qtz veins and garnets (< 1 mm; ~3-7%)

15.60m 1mm dark foliation with fine-grained rounded garnets parallel to foliation (70CA); shiny dark mineral (biotite); biotite-rich fracture plane @ 15.75m

After alteration zone: banding of biotite and qtz, fine-grained rounded garnets throughout

16.91m: 9cm piece of core consisting of very fine-grained dark grey **PELITE** like above with very thin po laminations (80CA) ~10% po overall; piece is out of sequence

17.07 - 17.47m Fractured core/core loss; same fine-grained grey with small garnets and pyrite; garnets up to 5%, foliations of biotite (~2mm thick ~90CA) with minor qtz veins (eg 18.13m 80CA 0.5cm wide; 18.95m 30CA ~2mm)

17.83m 1x3cm clots of qtz and Kfsp, qtz band (70CA, <0.5cm) with very fine-grained brown mineral (biotite or phlog) away from qtz band; no sulfides visible, garnet overprinted qtz band and mica

Continuation of fine-medium-grained pelite with crosscutting qtz veins, garnet, and pyrite blebs along fracture planes

19.32-20.09m fractured core 70-80CA

19.30m 1-1.5cm wide qtz rich vein (50CA) crosscutting foliation (perpendicular CA), <1mm rounded garnet within qtz vein

Note: not much sulfides where ever garnet is found

20.08-20.25m Coarser grained qtz rich, light grey, fractured (15-40, 90CA), py blebs along fracture plane, sericite alteration (possibly felsic volcanic)

20.25-21.75m Fractured core with py along fracture planes and foliations; still aphanitic, dark grey pelite, po along foliations (20-60-90CA) continues from 20.25 to 23.30m; no garnet here; 5% po overall; in places core is broken; fracture planes range from 40-90CA; sharp lower contact 25CA; below this is garnet-rich (up to 1cm wide garnet, 5%) pelite, fine-grained, dark grey sulfide-rich pelite with po along foliations (~perpendicular to CA), continues to 26.60m to weak contact (60CA)

22.00m 5cm wide zone of po and alteration along foliations ($\perp$ CA) and further down py continues but is decreasing; very fine-grained (aphanitic) dark grey pelite

23.00-23.75m **DIABASE DYKE** - Fine-grained, light grey, homogeneous texture; upper contact 30CA, lower contact 25CA

23.75- 33.06m **FELSIC VOLCANIC**

24.82m - 7cm wide alteration zone (sericite), with qtz, py and possibly talc and graphite

26.58-26.94m Coarse-grained qtz-rich as above with py stringers (50CA) with qtz blebs and veins (60CA); gradual top contact ~60CA, sharper bottom contact ~90CA

26.60m Coarser grained with rounded qtz grains and minor garnet (<1mm), ptigmatic folds (axis 60CA) @ 29.12m; minor fracture zones (fractures ~25CA @ 29.70m); purplish color with very fine-grained biotite; sulfide poor

Qtz veins within dark grey rock - 27.05m (80CA; 0.25cm wide) and 27.23m (60CA; 0.5 cm wide)

27.77m 6 cm wide alteration zone $\sim \perp$ CA with beige alteration and trace diss cpy and po

27.83m 12cm wide layer of coarser grained metasandstone (?) Or felsic volcanic

28.96m Thin 0.5cm wide qtz veins (60CA)

~24.09-25.60m Coarse-grained qtz rich felsic volcanic with po and possibly sph throughout; fractured core

25.14~25.62m siliceous medium-grained light grey felsic volcanic with 5% po overall, coarse-grained qtz blebs within, gradual contacts top and bottom

Purplish aphanitic with <1% garnet and qtz blebs (up to 5 cm wide) within, very fine-grained biotite-rich, gets coarser grained qtz downhole to where it is truncated by gabbro; rounded qtz clasts along

foliation which is about $\perp$ CA

33.06-45.30m **GABBRO** - finer grained chill (50cm) at sharp top contact (60CA) with felsic volcanic above; lower contact is gradual; overall gabbro has a homogeneous texture, subophitic, medium grained (~30% fsp); minor py along fractures (one at contact 10CA); trace <1% diss po, py; thin qtz-epidote rich veins 1-2mm wide @ 34.90m 30CA and 1cm wide at 37.10m 30CA
42.00m - 2cm x 2mm vein or bleb po (~60CA)

45.30 - 90.18m **INTERBEDDED PELITE AND FELSIC VOLCANIC** - aphanitic, thinly laminated/foliated $\sim \perp$ CA; dark grey po rich, po occurs as thin laminations or stringers along foliation or localized irregular blebs; also thin veins of po crosscutting foliation; overall core is intact with a few localized zones of fracturing and qtz veining

Gradual contacts with coarser grained felsic volcanic or meta-sedimentary rock (more siliceous with less po laminations)

From 45.92m to downhole: po mineralization, wispy thin discontinuous diss and laminations (70CA); 50CA @ 46.28m

46.80m - thin 1-3mm wide qtz vein 30CA @ 46.80m

46.90m - small (1mm or less) rounded garnet, no sulfides

47.00-48.15m Fine-grained dark grey PELITE with qtz veins; qtz zones have gradual contacts (40CA and $\sim \perp$ CA); beige alteration minerals (?), pelite still has wispy py-po laminations

48.22m <1mm wide po-py rich vein (50CA) crosscutting po laminations

Continuing downhole: gradual increase of coarse-grained pelite

48.87m (~10cm total) Qtz rich band with ~3% po, trace cpy and partially digested pelite throughout; possible sph along outer contacts of qtz vein within pelite as thin very fine-grained laminations

50.00m laminations/foliations 80CA

51.10m Thin 0.5cm wide or less po rich with trace cpy laminations and wispy diss along lam/foliation plane (overall ~10%, 25% locally)

53.72m Thin 2mm wide py rich vein/fracture (10CA)

54.10m Coarse-grained cordierite-rich FELSIC VOLCANIC with po (not as foliated as at top of hole); continues to 62.00m with interbedded fine-grained dark grey PELITE and po laminations

55.77-56.00m Coarse grained white qtz rich vein (top contact 50CA) with po rich pelite clast

56.00m Continuation of fine grained PELITE with coarser grained PELITE, dark grey-black with po-py; py is seen particularly along fractures; core is fractured (parallel to 30CA) in places but overall intact; overall sulfides 10-15% with a few localized bands of po; 58.95m: very thin po lamination (70CA); also at 60.45 1-1.5cm wide perpendicular to CA, <1% cpy, others are <0.5cm wide; 62.68m 2mm (50CA)

Very fine-grained biotite-rich (sheen appearance); localized 1mm rounded garnets, qtz rich clasts and bands throughout which look like breccia clasts; localized zones of cordierite; sulfide mineralization decreasing and fine grained where garnet and cordierite exist; places of coarser grained qtz have qtz eyes and sericite alteration

63.40m Thin band (~10CA) of felsic volcanic (?) coarse-grained sericite, blue qtz eyes with bleb and diss po; with a 1cm wide qtz rich vein @ 60CA

From 59.70-61.55m are qtz clasts with diss po and trace cpy

64.00m 3 cm wide greenish alteration band 80CA, qtz biotite and garnet and along contacts

63.15m Gradual contact to more qtz rich coarse-grained felsic volcanic with blue qtz eyes and fewer

sulfides (~max 3%) and garnet

62.70-63.14m Brown band (mica?) 80CA with po bands in very fine-grained dark PELITE

62.90m 0.5 cm wide qtz vein parallel to foliation and sulfides in fine-grained dark grey PELITE

62.16m cordierite-rich zone (~16cm) with a <0.5cm wide vein/band of brown mica (phlog?), ~perpendicular to CA

~64.50m - see small fine-grained shiny grey minerals (graphite) in coarse-grained qtz rich felsic volcanic or meta-sedimentary rock with garnet and qtz eyes

Continuation of very fine-grained dark grey qtz-rich (qtz eyes?) with graphite (?) PELITE with very small round garnets; 64.95m fracture plane 10CA with py

65.35m - very thin laminations of po (~perpendicular to CA) interbedded with coarser grained qtz rich FELSIC VOLCANIC or meta-sandstone with 5-10% po (locally greater po as patches of irregular blebs, eg 66.85m 8 cm wide 20%), foliation of po and qtz veins ~70 to perpendicular to CA

Polished section 66.60m

67.70m 40 cm of qtz rich, fine-grained siliceous alteration zones, large garnets, chlorite alteration, 1% po and diss py within; banding and po lamination 70CA

Same intersection as above at 68.28m 3 cm wide garnet rich with alteration (~ $\perp$ CA) with thin py along fractures (60CA)

From this is fine-grained dark grey PELITE with less sulfides (po, py), diss and discontinuously strung out along foliation planes (70-90CA), overall sulfides 1% max

69.22m 1cm wide qtz vein with po, py within 30CA

PELITE is very siliceous with 1% po, minor py and trace cpy throughout, thin 0.25cm wide or less po-rich veins 70-90CA

74.07m 2cm wide qtz vein 60CA

71.05m 3 cm wide qtz vein 70CA

71.36m 1.5cm wide qtz vein 70CA; 1 cm wide qtz vein with po 40CA opposite dip direction

71.73-72.08m Siliceous qtx rich zones, veins 30-90CA, alteration

72.35m 0.5cm wide po-rich vein @ 80CA with thinner fractures (30CA) from the vein

From here to 72.76m po increases to ~2%, po discontinuous along foliation (~ $\perp$ CA)

72.76-75.90m ALTERATION ZONE - Fine-grained qtz rich, pink-green-purple alteration, minor po and py; 80-90CA foliation, garnets; core is still altered below this zone but less so; with dark purple foliations (40-90CA), qtz rich, <1% diss po throughout along foliation 90CA

78.06-82.57m Continuation of coarse-grained FELSIC VOLCANIC with biotite and coarse-grained qtz (qtz eyes); not as altered as above; becomes increasingly qtz/silica rich downhole; sulfides: po-py <1% overall

78.52m Thin 1-2mm wide po-py rich vein @ 70CA

82.57-90.18m Possibly PELITE - silicified, foliation 70-90CA, interlayered of qtz and biotite?, trace <1% sulfides, minor fracture planes throughout 30CA

86.60m 1 cm wide qtz vein 60CA with elongated (" to vein) at contact po-py overall sulfides 1%; alteration and silification increases at 90.18m

Core is very fractured from ~1m with qtz and epidote vein ~parallel to CA and angular fragments of white siliceous altered pelite within very fine-grained dark grey diabase

90.18-100.25m **DIABASE DYKE** - Dark grey, fine-grained, homogeneous texture with small plagioclase laths, minor py sulfide blebs throughout, see similar thin green alteration (possibly

epidote) veinlets (~parallel to CA) throughout

100.25-113.32m Interbedded PELITE and FELSIC VOLCANIC

100.25 - 101.18m ALTERATION: near lower diabase contact (70CA) is coarser grained with pink and green alteration, silicified, with very fine-grained po and py about parallel to contact (1% sulfides);

101.18-106.00m Qtz veins 50-70CA 0.5 to 1 cm wide with greenish-brown alteration (from 101.40-102.25m); veins are crosscutting fine-grained (aphanitic) dark grey PELITE (or chilled DIABASE) with minor (<1%) sulfides (po, py, trace cpy) with biotite and very thin po perpendicular to CA; qtz-biotite rich no foliation or laminations; qtz veins throughout (1mm - 5 cm; 30-90CA) with green alteration at contacts and biotite and minor sulfides within; 103.45m 30CA 1mm wide po rich vein crosscutting core

From 105.50m to 106.00m alteration and qtz veins increase with more biotite (patches of very fine-grained biotite) with very fine-grained dark grey PELITE and small 1cm or less blebs of po within qtz veins

105.50 - 113.32m Very siliceous coarse-grained **FELSIC VOLCANIC** with qtz veins throughout; sericite and biotite, foliation 70CA; qtz veins/bands along foliation or crosscut; sulfides minor; first 40cm has more sulfides, very thin discontinuous po along foliations (40-60CA); lower contact is sharp and brecciated by GABBRO below

113.32 - 134.05m **GABBRO** - Fine-medium grained, grey with feldspar porphyry (~15-20%; <0.5 cm); unfoliated, homogeneous porphyritic texture; trace diss sulfides (py) especially along fractures; minor fractures 20-60CA; green (epidote) alteration along fractures; plag are much bigger and more subrounded (no subophitic texture) than the first gabbro intrusion above; 115.87m thin epidote alteration vein 30CA 1-2mm wide; 117.40m thin epidote alteration vein (2mm wide) 30CA; lower contact is sharp 15CA

134.05-142.00m **FELSIC VOLCANIC** - Coarse-grained qtz rich, silicified with foliations of 50-90CA; in places variably foliated; sericite-rich; epidote along thin foliations; trace sulfides but py @138.25m within darker bands and along fracture planes (eg 137.24m and 138.00m 5CA); thin qtz veins crosscutting foliation throughout; epidote alteration with !% diss po 141.60-141.85m; qtz rich long foliations (60CA)

142.00m **EOH**