Hole No:	TCD3					
Prospect:	Thomas Creek					
Section:	369800mE					
Co-ordinates:	369800	mE	5790	mN	~220	mRL
Azimuth:	180 °G		167 °M	Inclination		-45°
EOH:	122m					
Logged by:	Robert Reid 1/6/96					
Date commenced:	31/05/96		Date completed:		3/06/96	

0.00-29.05m

light green (locally pinkish) feldspar-augite-porphyritic Diorite. This unit is variably sil-ks-mag altered. Cream to pale green feldspar crystals are near close packed as sub to euhedral crystals (1-3mm dia, 60-70%). Feldspars are notably weakly sericitised and often concentrically zoned from 23.70m. Dark green subhedral to euhedral and locally weakly glomerophyric augite phenocrysts (3-5mm dia) are variable in abundance from 10 to 30%. Augite is particularly scarce from 22.80m (constituting <10%) but feldspar remains abundant ("acid" Diorite?). It is not clear whether mineral destructive alteration or melt fractionation is responsible for the paucity of augite here.

Where less altered, a medium grained feldspar-augite phenocryst crowded texture is commonly evident. An equigranular groundmass is infrequently evident in the upper 13m. Elsewhere, a sandy texture with abundant fine grained primary magnetite specks is seen, particularly from 22.80 to 29.05m and 13.53 to 17.40m.

The groundmass becomes fuzzy with increasing silicification. Silicification is weak/moderate throughout and often pinkish when accompanied by ks alteration, which varies from weak to locally moderate. Broken core , un-foliated, and poor core recovery in 0 to 4.5m.

Minor intervals:-

0.00-5.30m weathered, mag(w) as silvery grains in patches and weakly disseminated. Ch(w) replaces augite. Intensity of disseminated py and cpy increases with ks and mag content. py(2-3%), cpy(tr), sil(m), ks(w)

5.30-13.53m pink and green, ch(m) throughout, mag(w/m) locally strong over 5cm intervals. Cpy often concentrated in magnetite rich patches. Locally displays pseudo fragmental? texture with sub-rounded moderately magnetic grey "clast-like" zones enclosed by pervasive sil-ks alteration. Chlorite and magnetite alteration are commonly interstitial between/within ks-sil alteration. Intensity of silicification grades from weak to moderate, being strongest over the basal 50cm. Silicification is matrix pervasive with feldspar crystals within the host feldspar-augite-phyric Andesite being evident. Basal 30cm contains common (10%) fracture plane veins of dark green coarse grained fibrous actinolite. unfoliated, core sticks 2 to 25cm, mostly 10-20cm. py(5%), cpy(<0.5%) dss, sil(m), ks(w)

13.53-17.40m Yellowish pale green mg feldspar-augite-porphyritic Diorite. Feldspar crystals are near close packed as sub to euhedral crystals (60-70%) within a very fg black speck(mag) bearing groundmass. Dark green sub to euhedral and locally weakly glomerophyric augite phenocrysts are variable in abundance from

10 to 30%. Mag(w), ch(w). Note sharp change in alteration intensity at both ends of interval, with rubbly / more broken core at either end.

17.4-18.3m Interval exhibits pink ks replacement of feldspar crystals and commences with diffuse edged qtz-tour-py-cpy veins(5% by volume). Several fragments of up two 2 by 2 by 1cm contain up to 10% Cpy. Poor core recovery over this interval.

18.30-20.75m displays fragmental texture with pseudoclasts of sub-rounded grey feldspar-augite moderately porphyritic andesite enclosed by ks(w) sil(w/m) py(3%) cpy(tr, 0.5% locally). "clasts" appear largely un-sulphide mineralised.

20.75-22.8m cream/pale green feldspar-augite-porphyritic Diorite. Weak alteration. with sericitisation(w) of feldspar crystals. py(0.5%). Contains irregular edged zones/alteration patches of magnetite(m)-py(4%)-cpy(0.5%). These zones are up to 15cm long and constitute 8% overall.

22.8-23.7m very pale brown and spotted green, feldspar-augite moderately porphyritic microdiorite intrusive. fg sandy appearing matrix with abundant fg black specks of magnetite(/rutile?). Feldspar (20%, 1-3mm dia) and augite(10%, 3-5mm dia) phenocrysts are locally weakly glomerophyric, particularly in augite. Both margins appear chilled with groundmass grading to aphanitic and grey in colour. Groundmass contains fg and mg aggregates of disseminated py (1%), mag(m).

23.7-25.00m zone of pervasive mag(m) alt patches, py(2%), cpy(tr), ch(w). Interval terminates with 40cm of ep(w), sil(w/m) mag(w/m), py(6%), cpy(0.5%)

26.6-29.05m As above, mag(w/m) patches, py(2-3%), cpy(tr), ch(w). Final 15cm py(4%), cpy(0.5%+), sil(m), ks(w), ch(w).

29.05-29.95m

light brown fg augite-feldspar-phyric weakly porphyritic Micro-monzodiorite intrusive. cpy(tr-0.5%), unlike 22.8 to 23.7m, phenocrysts smaller(2-3mm max) and more sparse. Irregular upper intrusive contact. Chalcopyrite appears to be more concentrated near margins, locally reaching 1% over 15cm. Pyrite is more prevalent in the main body of unit (<0.5%). Chilled margins (dark grey) 10cm wide. mag(m). Lower contact obscured by broken core.

29.95-37.5m

pale green and patchy grey altered feldspar-phenocryst crowded "Acid" porphyritic Diorite(similar to 23.7-29.5m.). Patches of dark grey magnetite(m) up to 30cm length (<10% overall). They contain py(1%), cpy(tr). Note these zones are frequently moderately feldspar-augite-porphyritic and appear to be small intrusives. Their appearance is superficially very similar to the chilled margins of micro-monzodiorite intrusives. Margins of these alteration zones are commonly sharp and irregular. Psuedobreccia textures occur intermittently throughout.

Minor intervals

29.95-30.70m similar alteration sequence to 26.6 to 29.05m with grey mag(m) py(2%), cpy(tr) within a psuedobrecciated altered light green andesite. sil(m), mag(w/m), ep(w), ser(w?), ks(vw) in patches with py(6%), cpy(tr).

33.25-~35m zone of pink sil(m), ks(w/m) to locally strong over 34.5-34.7m with disseminated py(4%), cpy(tr), ep(w), ch(w).

37.50-38.05m
brown and green fine grained augite-feldspar-Micro-monzodiorite. Augite(~30%) 2-3 mm in size, feldspar (30%) 1-3mm in size. Features sharp, chilled intrusive margins, chloritisation(w) of augite, pink ks-altered feldspar and py(1%, dss), cpy(tr).

38.05-44.85m
light green feldspar-augite- porphyritic Diorite. Feldspar phenocryst crowded (60%), augite (10-15%). Interval contains minor dark grey moderately porphyritic feldspar-augite-phyric andesite intrusives?(10-15%, by volume). "Intrusives" are numerous and of irregular form imparting a dark grey patchy appearance to the core. These andesites are composed of feldspar(20%) and augite(20%) phenocrysts in a fine grained/aphanitic groundmass. Both intrusives and host porphyritic Diorite are moderately magnetic, lending weight to the likely intrusive nature of dark grey patches versus origin as just magnetite alteration patches/ psuedobreccia texture.
Mineralisation:- late stage siderite/smectite veinlets crosscut the core, mostly at acute angles, and overprint both rock types. Chlorite alteration occurs as psuedomorphs of augite crystals and reaches moderate intensity at intrusive margins. Feldspars in the host Diorite are weak to moderately sericitised. Several narrow zones of ser-ks-sil-py(6%)-cpy(<0.5%) exist locally and covering intervals up to 20cm.
Minor interval
41.10-44.85m py(7%), cpy(tr), ks(m)-sil(m), ser(w/m).

44.85-47.20m
brown/dark green Micro-monzodiorite contains disseminated cpy(<0.5%+), ks(m) within a fine grained pink groundmass. This unit features ks-sil-py-cpy-ser mineralised margins within the host. Core is largely coherent/weakly broken.

47.20-69.75m
Altered brownish red and green moderately feldspar-augite porphyritic Diorite/I?. Fine grained to aphanitic matrix where visible. This zone contains ks(m)-sil(m) pervasive alteration with ch(m), py(1%), cpy(0.5%, locally 1% over 0.5m). Barren late stage siderite-smectite veins occupy 1%. Diffuse edged siderite-ch-py-cpy veins occupy less than 2%. Mineralisation weakens beyond 68m.
Minor Interval
66.15-66.85m brown, weak to moderately porphyritic feldspar-augite Micro-monzodiorite, containing cpy(0.5%), py(<1%).

69.75-81.20m
light green feldspar?-augite(15%) porphyritic Diorite. Feldspars not visible through alteration. Silica alteration is pervasive and feldspar destructive.

Minor Intervals
69.75-72.60m sericitised(w) feldspar, sil(m) ch(m) ep(w) py(1%).
72.60-81.20m feldspar-augite-phyric Andesite/Diorite? moderate to strong pervasive ks-sil alteration with py(1%) cpy(<0.5%).

81.20-87.75m
green feldspar-augite-porphyritic Diorite?. This is a chloritic zone with early pervasive ks(w/m), sil(w/m) overprinted by pervasive ch(m) and chlorite veins. These veins have diffuse edges, irregular form and crosscut core at a variety of angles, acute to obtuse. They comprise 15% overall. Early pervasive ks-sil alteration appears to be accompanied by diffuse edged silica(qtz)-rich zones/veins that locally carry magnetite +/- tourmaline?-py-cpy and account for <2% by volume. Veins are mostly <5mm in width. Cpy is approximately trace to 0.5% in these veins but rich spot highs are also evident. For example at 82.13m a 2cm wide mag +/- tourmaline-cpy (20%)- py(2%) occurs. Sulphides in these veins are often sub-hedral (cubic) in form. Both ks-sil and mag-tour-py veins are overprinted and crosscut by late pale to apple green epidote-siderite?-smectite veinlets. Veinlets often form zones of anastomosing vein sets covering 5 to 8cm width and are strongest where chlorite vein intensity is greatest. They account for 3% overall are have irregular orientation where overprinting chlorite veined zones, but typically lie at 55 to 60 degrees to the long core axis and to other similar veins. This 120/60 degree crosscutting relationship could reflect a reidel shear set.
Zone weakens to 87.75m, returning to dominantly ks-sil alteration. Augite-phyric texture (15% crystals) is locally evident within this interval with feldspar crystals destroyed by pervasive silica alteration. Augite crystals are replaced by chlorite and locally by a yellowy-brown coloured siderite? in the less altered areas.
Sulphide mineralisation is patchy with up to 4% py-0.5% cpy over narrow (<40cm) intervals. Overall sulphide content is as follows:- py(1%), cpy(tr-0.5%).

87.75-100.00m
pinkish feldspar-augite-phyric Diorite? Interval/unit is a pervasively altered zone, characterised by ks(m)-sil(m) and zoned ch(w) with disseminated? mag(w). Late stage yellowish siderite-smectite veinlets constitute <0.5%.
Sulphide mineralisation is variable:- py(1-2%), cpy(tr-0.5%) overall, but locally high (see minor intervals)
Minor Intervals
91.2-91.8m py(6%), cpy(<0.5%)
91.90-92.5m grey feldspar-phyric Acid Andesite/dacite with common lath-like euhedral feldspar phenocrysts. These reside in a fine grained groundmass with a sil(w/m) overprint which is particularly prevalent at both ends making the margins location fuzzy. The siliceous overprint suggests the intrusion is pre-silicification (unrelated to micro-monzodiorite). Pyrite at the margins maybe related to this intrusion.
94.2-100.0m green and pink feldspar-augite-phyric Andesite/Diorite. Similar to 81.2 to 87.75m. Contains moderately chloritic zones and a late siderite smectite overprint (<2%). ks(w/m) and sil(w/m) both increase adjacent to the interval end.

100.00-102.30m
Mixed interval of brown feldspar(30%)-augite(5%)-phyric Micro-monzodiorite intrusives with a central (101.3-101.8m+) unit of light green feldspar-augite-phenocryst crowded Diorite comprising 40% of total interval and containing py(1%), cpy(tr). The micro-monzodiorite displays lath-like pink feldspars, a very fine grained groundmass and a chilled knife edge grey/brown upper margin. The lower margin is obscured by broken core. Unfoliated. cpy(0.5%), py(0.5%).

102.3-122m
Variably altered pink to light green feldspar-augite-phenocryst crowded Andesite/Diorite. Alteration fades in and out with varying degrees of 1)ks-sil, reaching moderate intensity but mostly weak (70%), ks very weak locally. 2)mag-tour-qtz-py-cpy veins, intermittently dispersed throughout as 3-4mm max width veinlets on fracture planes and 3)late apple green epidote with yellow siderite-smectite veins. The later are mostly concentrated in chlorite rich zones.
Overall py(<1%), cpy(tr), mag(w).
Minor Intervals
109.95-111.40m mag-tour-qtz-py-cpy veins, 8% with cpy(<0.5%) py(2%) and ch(w/m).
116.9-118.5m zone of chlorite(m)-ks(w)-sil(w)-py(2-3%)-cpy(<0.5%) with 10%+ yellow siderite-smectite veins. Pyrite often occurs in chlorite-rich veins/zones overprinted by yellow siderite-smectite veins.

E.O.H @ 122m
TOFR difficult to position exactly. Occurs at 5.5m but weathered zones occur intermittently beneath this depth.